Towards a New Consensus
Poverty Reduction Strategies for Bolivia

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Abstract
The Washington Consensus may be seen as the policy approach inherent in the depressive phase of the long wave. A new consensus for the long expansive phase may be formed around objectives such as policy autonomy, structural change, and distributive justice. A model formalizing these objectives is applied to the analysis of poverty reduction strategies for Bolivia. Poverty reduction strategy is a combination of policies associated with these objectives, viz. foreign debt policy, investment policy, and income distribution policy. The Millennium Development Goal of halving extreme poverty by 2015 seems to be a difficult, but attainable goal for Bolivia. Given the expected debt reduction agreed with international creditors, the goal can be attained by a combination of investment and redistribution policies.

Author keywords:
Latin America, development strategy, employment strategy, industrial policy, economic planning, PRSP.

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1. Introduction
The theory of long waves in economic development is a useful point of departure for introducing our approach to a new policy consensus around the United Nations’ Millennium Development Goals. According to relatively well established observations, economic growth and development occurs in long waves or cycles recurring with periods of a length of approximately 50-60 years. That is, low growth phases of roughly 25-30 years follow high growth phases of about the same duration. This at least clearly fits the pattern of the last century, starting with the interwar downturn period containing the Great Depression, followed
by the post-World War II “golden age of growth,” which ended in the mid-1970s. In the mid-
1970s started a new phase of low growth — which is statistically more clearly seen if the
“special case” of China is excluded (see e.g. Weisbrot, Baker & Rosnick, 2005, or Angus
Maddison’s historical dataset in: http://www.ggdc.net/Maddison/). For Latin America, for
instance, growth has more than halved in the last 30-year’s period, as compared to the
previous one.

According to the techno-economic paradigm approach to long cycles (see, e.g., Pérez, 1985),
the wavelike long-run movement of economic and social evolution is explained by the
interplay between the techno-productive system and the social and institutional regulation
system. Socio-economic evolution is characterized by the succession of technological epochs,
i.e. historical periods in which a particular complex of techniques, or technological paradigm,
prevails. To each successive specific technological complex corresponds a particular system
of economic and social institutions. The coherence or mismatch between the two (sub)systems
marks the emergence, zenith and replacement of successive techno-economic paradigms.
These phases, in turn, correspond to successive stages of the long wave. The depressive phase
of the wave corresponds to a period of mismatch between emergent techniques and
obsolescing institutions (pertaining to the declining technical paradigm). The expansive phase
corresponds to a period of agreement between a consolidated technological paradigm and a
consistent set of social rules and institutions.

In the light of this simplified conceptual framework, the depressive phase initiated in the mid-
1970s corresponds to the period of emergence of a new, “information technology” paradigm,
and the decline, or increasing irrelevance, of the set of rules and institutions inherent in the
decaying technical paradigm. In this light, for instance, the seemingly activist
deconstructionism of the Washington Consensus — with its wholesale deregulation, decontrol
and denationalization — is nothing but a formal ratification of the ongoing deactivation of a
whole set of obsolescing social arrangements.

This conceptual framework would also suggest that consolidation of the emergent technical
paradigm should be associated with a new long phase of accelerated growth. And, even more
importantly for our present purposes, it would suggest that a new expansion phase — and the
concomitant consolidation of the evolving technical paradigm — would require the
emergence of an appropriate set of enabling socioeconomic mechanisms and institutions.
Washington’s deconstructionist consensus needs to be replaced by a new economic, social
and institutional constructivist consensus.

The Régulation approach (see e.g. Boyer & Saillard, 2002) offers important additional
insights into the socioeconomic transformations along the long wave. Different growth
regimes are associated with particular modes of regulation. The “Fordist” mode of regulation
of the extinct ancien régime of growth supplied propitious conditions for stable accumulation.
Steadily growing markets were the result of wage incomes growing pari passu with output,
social services and redistributionist policies by the Welfare State, and macroeconomic policy
management of aggregate demand. A consequence of Régulation analysis is that a new
growth regime — a new long expansion phase — would require (or imply) the concomitant
development of a new mode of regulation. A new mode of regulation would in particular
imply new (re)distributional arrangements and new approaches to macroeconomic policy.
New arrangements and new policies are required for the steady deployment of the new growth
regime.
The work of the late Richard Goodwin provides a third important insight into long run growth cycles (see e.g. Goodwin, 1993). Goodwin’s conceptual framework focuses on the interaction between profits, investments, innovations, unemployment and wages. A verbal synthesis of the several variants of his mathematical models may go as follows. In the beginning of the long expansion phase — the end of a long depressive phase — sustained increases in the rate of investment accelerate the rate of output growth. (New investments, occurring at increasing rates, embody a whole collection of innovations and techniques discovered during the depressive phase, and now available for development and use.) Output growth entails growing employment, and a reduction of the “reserve army of the unemployed.” Growing investment and accelerated growth can continue as long as additional employment does not result in increasing wages. Above full employment, increasing wage rates and declining rates of profit set a limit to accelerated investment and growth — as investments are financed out of profits. At this point the rate of incorporation of new labor-saving innovations accelerates, stimulated by the higher wage rates. At some later moment, however, slowing investment rates attain a limit under which output starts growing slower — the low growth phase of the long cycle has started. Declining investment, growth and employment may get amplified through Keynesian low expectation, accumulative feed-back on aggregate demand. The decline in investment and output growth adds successively to the reserve of the unemployed, effecting in time downward pressure on wage rates. (Within the stagnating and low expectation atmosphere, however, invention, discovery and experimentation are in search for ways out the crisis. A whole complex of scientific applications waits for large scale development and implementation in the next expansion phase.)

At some point during the depressive phase, the increase in the rate of profit and the wide availability of funds for investment should induce acceleration in the rate of investment, a recovery of growth, and a reduction in unemployment. Yet low investor expectations about market growth (unemployment, low purchasing power), and/or restrictive economic policies (pro-cyclical monetary and fiscal policies of high interest and low expenditure) may postpone the recovery. As an important concomitant factor of the long depression, the Kaleckian approach to the “political business cycle” (Kalecki, 1943) would add also the pro-cyclical role of economic experts and economic research. The postponement of the turning point is also due to the continuing prevalence of pre-Keynesian theory — which articulates the orthodox policy-mix of the depressive phase — and to the lack of comprehensive theoretical alternatives functional to the new expansion phase. The currently (by the orthodoxy) disparaged theory of economic development, for instance, came into existence and matured during the previous “golden age of growth.”

Among the many interesting insights of Goodwin’s approach we would select for our purposes the crucial role of investment activity in generating the cycles, and the crucial dependence of income distribution on the level of employment. Increasing unemployment implies falling wages and wage shares, and deteriorating income distribution. Policies that encourage higher employment would therefore simultaneously work for higher wages and less unequal distribution. Most innovations inherent in the emerging technological paradigm are labor saving — particularly unskilled labor saving — and the risks of “jobless growth” are common to both developed and developing countries. The permanent technological pressure in the sense of increasing wage- and income-disparities would require of an appropriate mix of countervailing policies — such as for instance, assured public/private training and employment, publicly supported non profit and associative work, basic income schemes, reduced working hours.
To recapitulate the conclusions of the analysis above on the conditions for a new long period of accelerated growth, we focused first in the emergence of a new set of mechanisms, rules and institutions enabling steady deployment of the new technological paradigm. Second, this new array of enabling social and economic rules and institutions can also be understood as a new mode of regulation, associated with a new growth regime. Inherent in the mode of regulation are the rules that link the expansion of output to the expansion of wage incomes and employment, and of public services such as health and education. Third, new techniques are embodied in investment, which has a causal role in determining the rate of growth. Investment growth determines in turn the growth of employment, wages and the wage share (progressive redistribution). Fourth, economic theorizing plays a pro-cyclical role. To the new growth phase corresponds an economic theorizing which informs the discussion of rationally conceived policies and institutions for economic and social development. The laissez faire corollaries of orthodox theory which underpin the deconstructionist reforms of the depressive phase are to be replaced by a new, constructivist consensus based on new theoretical insights.

In what follows, we present an outline of such a constructive theoretical framework in line with the above analysis, which we then apply to the study of poverty reduction strategies for Bolivia. The three deconstructions of the Washington Consensus (liberalization, deregulation and privatization) are replaced by three broad objectives, namely, policy autonomy, structural change and distributive justice. To these objectives correspond three specific policy construction yards: foreign debt policy, investment policy and income distribution policy.

The new consensus objectives are not final, but intermediate objectives. The overarching goal and general direction of the ethical compass for development should be the fullest possible enlargement of human capabilities for every individual. The present study focuses specifically on the operational Millennium Development Goal of halving extreme poverty by 2015. It includes also, for comparative purposes, the analysis of the implications of adopting enlarged employment as a central policy objective. In forthcoming articles we aim to extend the comparison to other relevant goals for development, such as distribution-sensitive welfare functions.

The following section deals with these three proposed objectives of a new, constructive consensus, namely (a) policy sovereignty, (b) structural change and (c) distributive justice. The section describes how policies influencing these objectives shape the overall evolution of the economy over time. In Section 2 we present the results of applying the framework to the analysis of poverty reduction strategies in Bolivia. The last section concludes.

2. A new consensus design

The long low growth deconstructionist period has in many cases eroded government capabilities, decelerated or stopped industrialization, and fragmented societies. This was consistent with the pattern of the depressive phase described in the previous section, with both technical change and economic policy converging to erode the basis of a declining techno-economic paradigm or mode of regulation. It is also consistent with the decline of investment in “Fordist” branches oriented towards internal markets — particularly, industrial activity sectors. Fragmented societies are the result increased unemployment, reduced real wages, and increased income and wealth inequalities.
The new growth regime implies a whole new set of institutional innovations and arrangements — a new mode of regulation. A new mode of regulation may naturally articulate around the three major themes of increased policy autonomy, renewed structural change and augmented distributive justice. These are the central objectives for the regulation of the long expansive phase. In correspondence to each of these broad objectives, specific regulating instruments and institutions should unfold. Appropriate socioeconomic tools and mechanisms for public agency in the three key areas of international financial flows, investment activity and income redistribution should evolve.

In what follows, we describe how a model of development strategy can be constructed around these three central themes of a new consensus design. Each objective corresponds to a particular policy area, in which new instruments and rules are to be developed. In the present description these instruments appear only in rough outline, but (it is hoped) with a sufficient degree of concreteness. A verbal depiction of the economy’s way of functioning is attempted. Mathematical expression is included in order to add to clarity, and to precisely show how the expected effects of different strategies result in the specific case of Bolivia. In the present section, the particular characteristics of the three central components of the new consensus model are described, and how these components interact, influencing the overall evolution of the economy through time. In Section 3, the new consensus model is used to explore the effects of alternative Millennium poverty reduction strategies.

(a). External indebtedness and policy sovereignty

The most important factor in explaining the decline of economic policy sovereignty in recent decades is the liberalization of international financial flows. There is an element of over-determination in this decline, because dramatic advances in information and communication technologies made previously existent forms of regulation of international capital movements rather obsolete. Washington Consensus policies decontrolled what had already become uncontrollable. In any case, capital account and financial liberalization introduced an unavoidable depressive bias in economic policy, with the impending menace of capital outflows imposing permanent pre-Keynesian orthodoxy. Washington Consensus-inspired, restrictive economic policy is almost a logically necessary implication of capital account liberalization.

Liberalization of financial flows opened for cycles of fast growing financial inflows and indebtedness, followed by financial panics and massive capital flight. After each payments’ crisis, the level of external indebtedness attained new heights. External debt crises demanded IMF intervention, with its sequels of “conditionality” and “structural reforms” in line with the Washington Consensus, that is, letters of intention in which policy autonomy is formally abdicated.

Policy sovereignty is required for “country ownership” of development policies — particularly so in the case of strategies aiming at reducing poverty and inequality. This in turn requires regulation of international financial flows. Permanent depressive policy bias, recurrent payments’ crises and exponentially accumulating external indebtedness are not conducive to economic growth and poverty reduction. There are several approaches to regulation of international financial flows — see the discussion in the special section on the subject in World Development 28(6), June 2000. In that issue, Joseph Stiglitz (2000) shows how taxation of inflows (Chile) or of outflows (Malaysia) of short-term capital, have been effective in diminishing the effects of financial crises. Also, a uniform tax on foreign
exchange transactions would reduce exchange rate speculation and increase stability and policy autonomy (Tobin, 2000). The “Tobin tax” could even be modulated along the financial cycle through a “two-tier system” combining a low transaction tax with an exchange surcharge severely taxing excess volatility (Spahn, 1996). Different types of “trip wires” and “speed bumps” could be used as risk indicators and dampers of accelerating speculative flows (Grabel, 2003). At the other end of the spectrum there is direct control, i.e. administrative oversight of international transactions by banks or their customers on-a-case by case basis or by expenditure category basis (Davidson, 2000). A dual exchange market is an intermediate approach, in which the exchange market for capital transactions is separated from the market for current transactions (Mikesell, 2001). As Davidson (2000, p.1127) says: “[T]he type of capital regulations a nation should choose from the spectrum of tools available at any time will differ depending on the specific circumstances involved.”

Regulation of international financial flows would thus allow greater predictability of capital flows within a certain strategic horizon. With recovered economic policy autonomy and greater international financial cooperation, capital and aid flows might even become policy instruments, i.e. a variable that within certain limits can be chosen so as to optimize development within a medium or long run horizon. However, after a long period of recurring foreign debt crises and growing “debt overhang,” the probable situation in many cases will be that of net capital outflows for the foreseeable future. In many cases, that is, a period of permanent current account surpluses will be necessary in order to pay back foreign debt. The necessary price for policy sovereignty may be net capital outflows and trade surpluses, in order to attain desendeudamiento — “de-indebtedness,” a new South American term and policy goal. In many cases then, developing countries will need to be capital exporters, providing savings to already satiated international capital markets.

As said before, the kind of instruments chosen for regulating international financial flows, and the type of de-indebtedness arrangements arrived at with international creditors, may assume different forms. Yet whatever their assumed form, within the new consensus design net capital flows (foreign saving) will be a knowable variable. In the context of the model, \( \phi_t \), the net inflow of foreign saving of period \( t \) — equivalent by definition to the trade surplus (or trade deficit in the case of net outflows) — is a variable whose value within the strategy horizon can be predicted or planned. The sequence \( \{ \phi_t \} \) of net foreign saving flows for each period within the policy horizon is one of the three crucial policy parameters of the new consensus strategy — the other two being investment policy and distribution policy, to be presented in short.

Net inflows of foreign savings \( \phi_t \) add (or when negative, deduct) to the flow of domestic saving. Foreign saving thus increases (or when negative, decreases) the volume of funds available for domestic investment. External debt is the accumulated amount of trade deficits (net capital inflows). Foreign savings add (or when negative, subtract) to the external debt of the period.²

(b). Investment policy and structural change

With consolidation of a new technological paradigm unfolds a new growth regime. Enlarged consumption and investment possibilities, and incorporation of previously unemployed, underemployed or non participating labor, stimulate structural change and growth. Changes in
output structure tend to favor the expansion of activities that contribute to enlarging markets through increased employment, redistribution and growth.

During the long depressive phase instead, structural change tended to cement patterns of specialization that are not particularly conducive to growth and/or redistribution. Exchange-rate overvaluation — the effect of waves of speculative capital inflows — provoked widespread “de-industrialization” and the return to output and export patterns in which dominate natural resource and other primary production, along with a large and growing low income (“informal”) service sector.

Economic policy can actively influence structural change and growth. Laissez faire, Washington Consensus doctrine, inherent to the depressive phase, of course denies this. According to some interpretations, present international economic regulations by the World Trade Organization even interdict several types of structural policies — what has been graphically called “kicking away the ladder” (Chang, 2002).³ It is not very well known that not only East Asian countries or even Chile applied this type of policies (Moguillansky & Bielschowsky, 2001), but also most now-industrialized countries have utilized different trade and industrial policies at initial stages of their development (Chang, 2002).

Economic research has in recent years rediscovered and further developed some of the theoretical insights of the previous long phase of high growth. At the dawn of the previous growth phase economic thinking was confident about the efficacy of economic policy and the possibility of rationally designing it. Keynes, the most influential economist of the period, believed in the possibility of guiding structural change and growth according to the general interest. For Keynes, investment policy was the key instrument for organizing investment on long views and on the basis of the general social advantage, taking into account the efficiency of investments (Keynes, 1936, p. 164).

Since at least Rosenstein-Rodan (1943), one of the most prominent ideas of development economics is that investment is essential for growth, and that the coordination of investments across sectors is essential for industrialization and structural change. Recent models have extended to the open developing economy Rosenstein's ideas about coordination failures and "low-level-equilibrium traps." In the new models, the role of development policy is to find a way out of the trap of low-productivity specialization, encouraging appropriate linkages and strategic complementation among sectors. Coordination of investments may also be the key to high "animal spirits," and positive expectations about investment by other firms — the task of investment policy is to coordinate expectations around high investment.⁴

The most comprehensive and illuminating guiding principle for all the above activities seems to be the Keynesian idea of the “general social advantage” as the overall objective, and investment policy as the common vehicle for a whole array of tools and institutions contributing to it. Investment policy includes for instance “industrial policy,” and the theoretical and practical experience of designing strategies for industrial renewal in developed countries (see e.g. Elsner & Groenewegen, 2000). It includes also “technology policies” for technological progress and industrialization in newly industrialized countries (see e.g. Lall & Teubal, 1998; Rodrik, 2004). But investment policy should also include “agricultural policy,” “educational policy,” “financial sector policy,” etc. — i.e., policies oriented to every particular sector of economic activity. According to the present approach, technical progress, industrial renewal, etc., are not ends in themselves, but parts of a general framework aiming to fulfill social ends.
A new consensus for the long expansive phase should enlarge societies’ capabilities to orientate structural change and growth towards the fulfillment of social aims. The instrument for orienting such structural change is investment policy. In the present new consensus model, investment is defined in a very wide sense, including both the familiar investment in fixed means of production, and the less familiar idea of investment in research, education, health, and even in immaterial goods such as patents. Well-designed interventions such as technological or industrial policies are also investments — public investments. The costs of these policies in terms of sacrificed consumption are investment costs. Public expenditures in infrastructure and in nationalized and mixed enterprises are also public investment costs.

The principle governing growth in each sector of activity is investment of social surplus. Growth in each sector depends on the rate of investment in the sector, and on the level of investment efficiency (i.e., the output response to investment) specific to the sector. Formally,

$$x_{t+1} = \alpha^{-1} d_t + x_t,$$

that is, the time-path of sectoral outputs $x_t$ (a vector corresponding to $n$ activity sectors) depends on the sectoral coefficients of investment efficiency $\alpha^{-1}$ (a diagonal $n$-matrix) and on the sectoral investments $d_t$ (a $n$-vector). Investment expenditure in each particular sector $d_t$ is composed of a private component $d_t^p$ and a public component $d_t^g$.

In the new consensus model, an investment policy is a decision about the distribution of the public saving/investment fund among activity sectors within the strategy horizon. An investment policy is a decision about the sequence of shares $g_{tz}$ of the public investment fund $g_{ts}$ allocated to each sector during the period of analysis. An investment policy is a time sequence $\{g_{tz}\}$ of $n$ public investment allocation shares. Public investment by sector in period $t$ is then:

$$d_t^g = g_{ts} g_{tz}.$$

Private investments $d_t^p$, on the other hand, are allocated according to decisions by private investors. Private investment decisions follow the acceleration principle, i.e., investment accrues relatively more to sectors in which growth is higher, and/or with higher capital/output ratios.

The total saving/investment fund available for investment by the private and public sectors comprises a domestic and a foreign component. As explained at the end of the previous subsection, trade deficits (positive net foreign savings) add to the flow of funds available for investment — or subtract to the flow, in the case of surpluses.

Savings are non-consumed incomes. Different income groups have different saving and consumption behaviors. These can be approximated by assuming proportionality relationships between income levels and consumption by type of output.
We have until now briefly described two of our three crucial policy instruments for new consensus strategy, namely (de-)indebtedness policy \( \{ \varphi_t \} \), and investment policy \( \{ z_t^i \} \). In the following subsection we discuss income distribution policy, the third critical component.

(c). Income distribution and social justice

The long depressive phase implied large unemployment and concomitant erosion of rules and institutions inherent in the “Fordist” mode of regulation. Labor unions, which were in several ways important actors in this regime, lost much of their memberships and of their influence in the wage conflict and in society at large. Real wages stagnated or declined, and profits and other non-wage incomes increased. Financial and capital account deregulation introduced cycles of speculative finance and capital flight, followed by restrictive monetary and fiscal policies. Deterioration of factorial income distributions — i.e. decline in wage shares and deterioration or stagnation of real wages, along with increased financial rents and capital incomes — is one of the most fundamental factors behind increased income inequality since the mid-70s.

A wide study on the causes of the surge in inequality by Cornia and associates (see Cornia, 2004) suggests that capital account deregulation and labour market deregulation were among the factors with strongest disequalizing effect. These policies reinforced tendencies inherent in the long depressive phase, and aggravated the negative impact on income distribution. IMF programs, in particular, have been shown to redistribute income away from labor, and generally to have negative distributional consequences (Vreeland, 2002).

One of the main findings of the study by Cornia and associates is that the fall in inequality during the “golden age of growth” was followed by a rise over the last two decades. Since the early 1980s inequality increased in 53 of the 73 countries of the study. The surge of inequality “was universal in the transition economies, almost universal in Latin America and the OECD, and increasingly frequent, if less pronounced, in South, Southeast, and East Asia” (Cornia, 2004, p. 8). In a most characteristic case for rich countries, U.S. inequality followed a U-shaped pattern — it decreased in the post war years until the early 1970s, and it constantly increased since then (see Atkinson, 2003). For Latin America, comparable available data starting in the 1950s show a decrease during the 1960s and an increase since then.\(^8\)

A new long expansive period should reverse this long regressive redistribution process. A new mode of regulation would evolve a whole new array of rules, mechanisms and institutions for progressive income redistribution, enabling steady unfolding of the new techno-economic paradigm. Growing investment rates (and possibly also negative foreign saving) require increasing savings. After several decades of recurring capital flight — resulting in accumulated flight capital stocks now equivalent in some countries to the external debt — mechanisms must be found for channeling profits and savings towards domestic investment (Akyüz & Gore, 1996). Growing outputs require increasing demands, incomes and wages. Along with diminishing unemployment, this allows for new deployment of institutions such as wage earners unions and other groups of the poor (unemployed, self-employed, peasants, indigenous groups, woman’s rights groups, etc.).
Besides enabling development of new forms of institutional inclusion of wage earners and other low-income groups, public policy can facilitate progressive income redistribution in a number of different ways. Both the income and the expenditure sides of the public budget have redistributive effects. As almost all other aspects of public policy, the distributional effects of the budget in the long depressive phase have been mostly pro-cyclical, in the sense that they reinforced the inherent regressive distributional drift. A survey of tax incidence studies by Chu, Davoodi & Gupta (2004) shows that only in 13 of 36 countries tax systems were progressive, the rest were either proportional or regressive. They found also that over time, tax progressivity declined in several developing countries, following the introduction of tax reforms. For Latin America, for instance, Cornia (2004, based on Morley, 2000) found that tax reforms have shifted on average the burden of taxation away from the high income groups and towards the middle classes and the poor.

The most general distributional policy choice is about the adequate level of the public revenue/GDP ratio. This ratio determines the range of policy capabilities available, for both de-indebtedness, investment and distributional policies. Along with reducing direct taxation and tax progressivity, the effect of most tax reforms in recent decades has been to reduce the tax/GDP ratio (Chu, Davoodi & Gupta, 2004; Cornia, 2004). For many developing countries — and for most Latin American countries — the tax/GDP ratio is below the average, even when account is taken of the positive relationship between this ratio and per capita income (Wagner’s law) — see de Ferranti et al. (2004, Ch.9).

Given the chosen level of the overall public revenue/GDP ratio, new consensus tax policy serves the objective of distributive justice. Pro-cyclical, disequalizing tax reform policies of recent decades have reduced progressive income taxes and other types of direct taxation. (They had previously lost in popularity among economists.) The expansive phase should evolve new effective forms of progressive and direct taxation, and augment the distributionally progressive role of the public budget’s income side. Given the annotated pro-cyclical character of economic research, direct and progressive taxation should regain respectability in the expansive redistributionist phase. Optimal taxation — in the sense of taxes that most effectively contribute to the fulfillment of social aims such as eradicating poverty — may again enter the ivory tower of mainstream economic research.

Public expenditures have important distributive effects, and they should be also analyzed from both the perspectives of growth and distribution (see e.g. de Ferranti et al., 2004). Infrastructure expenditures such as electricity, communication and roads benefit some income groups more than others. Expenditure in services such as health, water, sanitation, housing, and particularly education, can be used to redistribute earning- and other capabilities towards lower income groups. Land redistribution programs and other forms of asset redistribution such as e.g. promotion of associative forms of production and credit are effective redistributive types of public expenditure. The new progressive redistributive consensus should redesign public income and expenditure policies and institutions so as to make them effective instruments for achieving overall social justice aims.

A new consensus strategy model should thus have a detailed representation of income generation and distribution, enabling careful design and monitoring of income redistribution policies. A comprehensive picture is given by the matrix $V$, a $(k \times n)$ matrix that distributes incomes generated in $n$ different sectors of economic activity, and accruing to $k$ different
income groups in period \( t \). (One of the rows of \( V_t \) matrix describes the public sector’s income generation.) Given these income-share coefficients pertaining to each income group in each sector of activity, incomes by income group \( y_t \) (a \( k \)-vector) depend linearly on (the \( n \)-vector of) sectoral gross outputs \( x_t \):

\[
y_t = V_t \cdot x_t.
\]

The \( V_t \) matrix of sectoral income distribution may assume different specifications. The original Kaldor-Miyasawa-Masegi specification analyses the sectoral distribution of income among *socio-economic classes*.\(^{10}\) This type of partition is an important instrument for understanding the socio-economic dynamics of growth and development.\(^ {11} \) The analysis of poverty and poverty reduction policy requires also a representation of the *size distribution* of incomes. Unless defined very narrowly, socio-economic groups may include both poor and non-poor households. Thus, a \((10 \times n)\) matrix \( V_t^* \) is defined, describing the sectoral income shares by deciles. The \( 10 \)-dimensional vector:

\[
y_t^* = V_t^* \cdot x_t
\]

depicts now the overall size distribution of incomes by deciles, with its elements showing the income of the corresponding deciles. Given the poverty line income \( y^* \) (a scalar), the sum of deciles of \( y_t^* \) under the poverty line gives the number of deciles affected of poverty in period \( t \).\(^ {12} \)

In previous sections we have described *(de-)*indebtedness policy \( \{ \varphi \} \), related to the policy sovereignty objective, and investment policy \( \{ z_t^k \} \), influencing growth and structural change. With the above detailed representation of income distribution, we can now introduce the third component of the new consensus strategy. *Income distribution policy* is the adopted sequence of income distribution matrices \( \{ V_t^* \} \) within the strategy’s horizon. The \( \{ V_t^* \} \) policy sequence reflects the redistributive effects over time of tax and expenditure policies such as those discussed above. A given temporal sequence of triplets \( \{ \varphi_t, z_t^k, V_t^* \} \) represents policies directed to the external sector, to structural change, and to income distribution. We will call any such sequence a *development strategy*, or in the context of the present study, a *poverty reduction strategy*.\(^ {13} \)

Important efforts have been made in recent years for analyzing in detail the meaning and implications of economic justice and distributive equity (see e.g. Kolm, 2002; Roemer, 1996). There are several conceptions of what a distributionally just and equitable objective for development should be. The most basic — and perhaps the most pertinent in highly segregated societies with sizeable excluded groups such as indigenous populations — is the Rawlsian idea of taking first care of the needs of the poorest members of society (see e.g. Streeten, 1981). This idea is of course not inconsistent with other approaches, such as the equitable enlargement of human capabilities (Sen, 1988, 1999), or the fulfillment of basic human rights (Häusermann, 1998; Nelson & Dorsey, 2003).
The first United Nations’ Millennium Development Goal is to reduce by half the proportion of people living on less than a dollar a day by 2015 (http://www.un.org/millenniumgoals/). The strategy simulations of the next section attempt to show how this Millennium objective might be attained.  

3. Millennium strategies for Bolivia

According to the international Debt Initiative for the Heavily Indebted Poor Countries, countries willing to reduce their debt with external official creditors engage in a process which involves, among other things, the formulation of a poverty reduction strategy, a so-called Poverty Reduction Strategy Paper (PRSP). PRSPs are worked out in conjunction with the IMF and the World Bank, and often contain poverty reduction (and other) goals in line with the Millennium Development Goals. Many highly indebted poor countries have until now entered the debt reduction process, and formulated their own PRSPs. Most often, however, these PRSPs do not significantly depart from existing, Washington Consensus approaches to economic policy. A natural reaction to this has been “[…]the widespread suspicion that including poverty on the economic development reform agenda has basically served as sugar-coating on the Bretton Woods institutions’ economic liberalization agenda despite their by now well known inequitable and contractionary consequences” (Jomo, 2005, p.17).

The Estrategia Boliviana de Reducción de la Pobreza (EBRP) is not an exception to this rule (see Bolivia, 2001). In spite of a quite deep and detailed diagnostic of the causes of poverty, the prescriptive part of the strategy is rather silent about any structural or distributional policies that might act on the roots of poverty. The natural resource intensity of the past pattern of growth, with its concentration on oil, gas and export crops, is maintained. There are no clear statements of policies addressing the highly unequal distribution of resources and incomes.

The effects of an EBRP scenario, explored with the model briefly described in the previous section, have been presented in Buzaglo & Calzadilla (2004). As a largely laissez faire or status quo strategy, the EBRP scenario includes only one policy change, namely the reduction in foreign debt payments agreed with international creditors in the framework of the initiative for highly indebted poor countries. Investment and income distribution policies, on the other hand, preserve the priorities and preferences of the constellation of social and political forces prevalent along the depressive phase. Not unexpectedly then, model simulation shows that the EBRP does not succeed in attaining the Millennium goal of halving the proportion of people living in absolute poverty by 2015. By 2015, the EBRP has made only about one fifth of its way towards the goal (see Figure 1).

In what follows, we assume that the new consensus model can be applied in all the three critical areas of foreign saving, structural change, and income redistribution. In the two following subsections, active policies in these three areas are oriented towards fulfilment of the Millennium Goal of halving extreme poverty by 2015. In 3.(a) the isolated effects of investment policy are considered, and in the 3.(b) the simultaneous effects of investment policy and income distribution policy together are explored. De-indebtedness policy, i.e. the expected foreign saving sequence \( \{ \varphi_t \} \), is the same for all simulations and includes the effect of foreign debt reduction. Finally, 3.(c) explores a strategy in which the goal is not poverty reduction, but maximal employment growth — maximal reduction of un- and
underemployment. As commented in the Introduction, a new long period of higher growth should imply decreasing unemployment and a concomitant increase in the wage share and income equality.

(a). Poverty minimizing structural change

The Washington Consensus policies inherent to the depressive phase of the long cycle had involutorial effects on output structures in many developing economies. Financial and trade liberalization, along with overvalued exchange rates — the effect of waves of speculative capital inflows — provoked massive elimination of “uncompetitive” industries. Activities and jobs eliminated by import competition were only partially replaced by new ones, and informal, low-pay employment in trade and services swelled, along with unemployment. Structurally, there was a regress to output and specialization patterns characteristic of the pre-industrial phase. Export crops and natural resources such as energy and mineral exports were the new “dynamic sectors.” It is known, however, that unilateral expansion of these sectors is in most cases not conducive to sustained growth, and that this kind of specialization tends to reproduce wide poverty and high inequality. Also, model simulation showed that continuing the pattern of growth prioritizing oil, gas and export crops attains only one fifth of the goal of halving extreme poverty by 2015 (Buzaglo & Calzadilla, 2004).

The new consensus design for the long expansive phase allows for deployment of the whole panoply of investment policy instruments referred to by the literature commented on in Section 1.(b) above. These instruments are used to “organize investment on long views and on the basis of the general social advantage, taking into account the efficiency of investments.” The Millennium Goal of halving extreme poverty by 2015, formally endorsed by the 191 members of the United Nations, represents a remarkably universal definition of the social advantage.

Hence, we use the \( \{ z_t^\ell \} \) investment policy sequence so as to determine the pattern of growth and structural change that comes closest to the goal of halving extreme poverty by 2015. That is, we solve for the allocation of available public investment funds — i.e. public savings available for financing the use of investment policy instruments — such that the sectoral growth pattern of the economy is the most effective in reducing extreme poverty. In order to separately analyze the effects of investment and income distribution policies, we assume first a status quo distribution policy \( \{ V_t^* \} \). Income distribution is the constant matrix sequence \( \{ V_{2000}^* \} \), that is, the distribution (corresponding to the latest income survey) remains unchanged throughout the strategy horizon. The de-indebtedness” policy sequence \( \{ \varphi_t \} \), as said before, is the same as in all other cases — the result of the debt-reduction agreement with international official creditors.

The model is thus solved for the \( \{ z_t^\ell \} \) investment policy sequence that (closest to) halves the proportion of people earning less than one dollar a day. We can see in Figure 1 the effect of this poverty minimizing “Millennium investment policy” on the evolution of extreme poverty (incomes below one dollar a day). The poverty minimizing “Millennium investment policy” does not succeed in halving poverty by 2015. Pro-poor structural change achieves only two
fifths of the reduction in poverty needed to attain the Millennium Goal. The Millennium investment policy is twice as effective as the EBRP in reducing poverty, but it is still a bit more than halfway from the target.

The changes in output structure obtained by the Millennium investment policy are rather large (see Fig. 2). In order to minimize poverty, investment policy favours sectors with pro-poor income distributions and/or high dynamic (investment) efficiency. Activity sectors in which the poor account for a relatively large income share, and/or where the output response to investment is relatively high, tend to get higher weights in the investment policy vector. Thus, sectors such as Petroleum, gas and mining, favoured by past investment policy and enjoying high growth rates, tend to gradually lose its privileged position, due to its particular, non-pro-poor distributional structure, and relatively low dynamic efficiency. Big industry, with the largest initial output share is a similar case — only partially similar, as the efficiency of investment in the sector is not particularly low. Big industry loses its position of a relatively important contributor to total output, to become a more ordinary sector. Similarly, the output share of Export crops agriculture gradually declines along the period.

The Millennium investment policy favours the expansion of Small and medium industries, due to their particular income distribution structure. While this sector’s dynamic efficiency is about the same as Big industry, its more “pro-poor” income distribution structure makes it superior from the poverty reduction efficiency perspective, and increases its weight in investment policy. This, in turn, accelerates growth in the sector, and increases its share in total output and employment.
The case of Food staples agriculture deserves a special comment. Sustained growth of output and incomes in this sector has been singled out by the literature as the key for distributionally progressive, pro-poor growth. A wide survey of the literature by Lipton & Ravaillon (1995) characteristically emphasizes the critical role of food staples agriculture in sustaining a pro-poor pattern of development: "The key sector identified for pro-poor growth in most LDCs is the rural farming sector. Agricultural growth, especially growth and stabilization of food staples production, is likely to benefit poor people." (p. 2608.)

The poverty minimizing Millennium investment policy results in a disappointingly low growth for Food staples agriculture. Food staples agriculture is mostly in the hands of Aymara and Quechua peasants of the highlands (Altiplano), producing in very difficult soil and climatic conditions, and without significant infrastructure, or technical and credit support. Most peasants producing Food staples are poor — i.e., the income distribution structure of the sector should qualify it for a high weight in investment policy. The problem is in the sector’s very low dynamic efficiency. A peso invested in Food staples agriculture gives rise to a very low increase in the sector’s output — the second lowest after Transport, a very capital-intensive sector. This problem seems to be today common to the sector in many poor countries. According to Dorward et al. (2004) there has been

[...] disillusionment with the lack of agricultural growth in poor areas despite heavy investments in agricultural development in these areas in the past; concern that agricultural development in more marginal areas is more difficult; and acceptance that many of agriculture’s problems lie outside the agricultural sector (in roads and telecommunications infrastructure, and in governance, for example). There are also limited prescriptions for direct investment in agriculture, with doubts about the effectiveness of research and extension, and concerns about recurrent costs, fiscal commitments, and appropriate models for finance and delivery. (Dorward et al., 2004, p.78)

In any case, present knowledge seems to suggest a prudent approach to policy reform in the food staples agricultural sector. Careful study and experimentation should be required to
arrive to effective policy reforms. Also, land tenure reform should be considered among the efficiency increasing reforms (de Janvry, Sadoulet & Wolford, 2001). But the most widely shared implication of the analyses is that agricultural policy and land reform need to be embedded in comprehensive policy and institutional reforms (ibid., p. 23).

The present study of optimal poverty reducing investment policies also suggests the possibility and convenience of combining agricultural reform and development with promotion of small and medium industry (and services) in rural areas. The existence of traditional, communal forms of property and production in the Altiplano and other agricultural regions might resemble the conditions in the Chinese countryside two or three decades ago. The Chinese experience in recent decades shows the vast potential capacities existent in rural areas for expanding non-agricultural production. For instance, the output of China’s rural industry sector increased in 1978-2000 at the astonishing rate of 22 percent per year in average (Kwong & Lee, 2005; see also Bramall, 2000).

Let us finally comment on the effect on GDP growth of the present poverty minimizing strategy, as compared to the natural resource intensive EBRP strategy. Despite quite different output patterns, average growth along the period 2000-2015 is in fact the same in both strategies. Inequality (as measured by the Gini index) is about the same as in the EBRP — a somewhat unexpected result, given the lower incidence of poverty in the present strategy. On the other hand, the democratic index (Pyatt & Thorbecke, 1976), which gives the same weight to the growth of incomes accruing to any income decile, gives a slightly higher score to the present poverty minimizing strategy.

We have until now explored the consequences of a poverty reducing strategy that relies on two of our available policy instruments, namely external indebtedness policy and investment policy. The given sequence of external savings, along with the poverty minimizing Millennium investment policy did not succeed in attaining the Millennium Goal of halving extreme poverty by 2015. In the next subsection, income distribution policy is activated, in order to determine the distributional changes required to attain the Millennium (and a somewhat more ambitious) Goal.

(b). Millennium income redistributions

According to long cycle analysis, increased unemployment and declining wage shares during the depressive phase set a disequalizing pressure on income distribution. In Latin America — the most unequal of all world regions — Washington Consensus policies aggravated these inherent tendencies of the long depressive phase. In addition, these trends and policies were overimposed on deeply rooted historical, cultural, social, economic and other conditions (see e.g. de Ferranti et al., 2004). Bolivia is one of the Latin American countries with highest income concentration, and with highest increase in inequality since the 1980s (de Ferranti et al., 2004; Székely, 2003).

A new consensus regime of higher growth implies a reversal in the direction of the pressures on income distribution. Acceleration of output growth and employment, along with parallel emergence of new institutional forms, and of new rules and solution concepts for the distributive game — new modes of regulation — work all in the direction towards equalization in living conditions, and steady unfolding of the techno-economic paradigm.
In the case of the Latin American countries, and particularly of Bolivia, with a long history of inequality deeply rooted in causes such as racial discrimination, a deliberate and carefully planned effort must be done in order to succeed in “breaking with history” (cf. de Ferranti et al., 2004). To achieve this “break with history,” there is available a wide range of policy instruments on both the income and expenditure sides of the public budget, briefly referred to in section 2.(c) above. New instruments and mechanisms should also emerge which specifically respond to the needs and possibilities of the new consensus mode of regulation.

In order to analyze the overall economic effects of redistribution, we summarize all these different elements of a comprehensive income distribution policy in an extremely simple “Millennium tax [and expenditure] reform.” The Millennium income redistribution policy simply taxes incomes above twice the poverty line (of two dollars a day), and redistributes the proceeds of the tax towards the extremely poor (i.e. with incomes below one dollar a day). That is, the tax is applied at a uniform rate (on all incomes above four dollars a day), and the proceeds distributed in equal amounts to every person in absolute poverty. The “Millennium tax reform” is the tax, so defined, whose rate performs the redistribution needed to achieve the Millennium Goal of halving extreme poverty by 2015.

The Millennium tax reform solution thus consists in finding the tax rate that, added to the foreign saving and investment policy sequences of the previous subsection, would halve the share of people in extreme poverty by 2015. This tax changes the initial \( V_{2000} \) income distribution matrix in a new, post tax \( \{ V^*_t \} \) income distribution policy sequence. To the given rate of foreign saving and the optimal investment policy is now added an income redistribution policy — the three policy instruments \( \{ \varphi_t, z_t^g, V^*_t \} \) are now activated. The effect of the Millennium tax reform on the share of people in absolute poverty is shown in Figure 1. The tax rate associated with this trajectory is 8.1 percent. A not unrealistically high rate, if it is kept in mind that, as for most Latin American countries, Bolivia’s tax revenues are relatively low. Bolivia’s tax revenues/GDP ratio is low in comparison to what is “normal” given the country’s level of development, that is, below the regression line relating this ratio to GDP per capita. As calculated by Perry et al. (2006, Table 5.7) Bolivia is “undercollecting” — i.e., collecting less than would be expected given its level of development — at 3.6 percent of GDP.

The Millennium tax reform reduces the disposable incomes of the non-poor (earning above 4 dollars a day), thus diminishing private savings, investment, and growth. The effect, however, is not significant — average GDP growth with the Millennium tax reform strategy is 4.3 percent per year, as compared to 4.5 percent in the poverty minimizing investment policy (without tax reform) of the previous subsection. Income inequality, on the other hand, is 14 percent lower — the Gini coefficient for 2015 is 0.58 as compared to 0.67.

The above results encourage exploration of the feasibility of more ambitious goals. A natural such objective should be to totally eliminate extreme poverty within the Millennium strategy horizon. The trajectory of the share of extremely poor in this “Rawlsian tax reform” strategy is shown in Figure 1. The tax rate which solves for zero extremely poor in 2015 is about twice the Millennium tax, i.e. 16.7 percent. Average GDP growth is now 4.1 percent, and \( Gini_{2015} \) is 0.50.
(c). A Millennium employment strategy

The long wave view of economic development — particularly, the Goodwin’s view — gives the level of employment/unemployment a crucial role in the long cycle, determining the sign of the change in real wages and profits, and the direction of income redistribution.

According to this view, a strategy encouraging higher employment should reinforce the inherent tendencies of the expansive phase towards higher wages and progressive redistribution. If the costs of such a strategy in terms of output growth and poverty reduction were not too high, it should be an important alternative to consider. The risks of “jobless growth” associated with the mostly labor saving technologies of the present technical paradigm add also to the relevance of such an analysis. The object here is to explore the effects of a strategy which has employment as its main focus, as compared to those in previous subsections.

In terms of our analytical model, such an employment focus is represented by the search of the investment policy that obtains the highest employment. Given the expected flows of foreign saving \(\{\varphi_t\}\) assumed in all other strategies, and the (unchanged) initial income distribution \(\{V_{2000}\}\), we solve for the investment policy \(\{z_t^e\}\) that maximizes employment in the final year 2015.

The path of extreme poverty along this “Millennium employment strategy” is shown in Figure 1. This strategy is slightly less effective in reducing poverty than the Millennium investment policy of Section 3.(a) — the final extreme poverty rate is 41.2 percent, against 40.3 of the poverty minimizing strategy. It is, on the other hand, slightly more effective in expanding employment — there are about thirty thousand more occupied persons in 2015. That is, there are in general only slight differences between both strategies, and this is reflected in rather similar GDP growth rates, 4.4 percent versus 4.5 percent annually in average for the employment and poverty minimizing strategies respectively.
The small differences existing between the strategies are due to slightly different output growth patterns — the Millennium employment strategy growth pattern is shown in Figure 3. Compared to the poverty minimizing strategy, the Millennium employment strategy increases the weight of Food staples agriculture, and decreases that of Small and medium industry.\textsuperscript{22}

Increasing the weight of Food staples agriculture in investment policy has effects on the sector’s output and employment. Food staples agriculture is able to keep its share in total employment — i.e. about one fifth of the working population. Food output growth accelerates (from 1.3 to 2.7 percent yearly in average), but it is still slower than population growth (3.2 percent). Permanent excess demands of food staples make redistribution policies particularly critical, and the comments in Section 3.(a) on agricultural reform are also pertinent here.\textsuperscript{23}

Small and medium industry is the leading sector also in the Millennium employment strategy. But a slightly diminished weight in investment policy makes growth in this sector slightly lower, as compared to the poverty minimizing strategy (13.8 and 14.4 percent yearly in average respectively).

These large similarities between a poverty reducing strategy and a strategy aiming at expanding employment have been recently been confirmed by a wide cross country study by the World Bank (Perry et al., 2006; see also Loayza & Raddatz, 2005). According to the study, relative labor intensity determines a sector’s influence on poverty alleviation. Both the size of growth and the degree of labor intensity in that growth are relevant for explaining poverty reduction. “[A]griculture, the most labor-intensive sector, presents the largest growth elasticity of poverty, while mining [including oil] and utilities carry the lowest elasticities for poverty reduction” (ibid., p. 91). The authors emphasize however that these results should not be used as a rationale for adopting investment policies. Reduction of poverty, it seems, is less an important goal than complying with the religion of “comparative advantage.”

4. Conclusions

The long wave perspective endogenizes the several policy deconstructions of the Washington Consensus, and also the orthodox economic theorizing underpinning it. That is, they can be seen as the economic policy and theory congruent with the long depressive phase, characterized by low growth, large unemployment, and regressive income redistribution. A new long phase of accelerated growth would require — would endogenously give rise to — a new policy consensus enabling increasing employment, progressive redistribution, and steady deployment of the new techno-economic paradigm. A new, constructivist consensus can be conceived around the three broad objectives of policy autonomy, structural change and distributive justice. Corresponding to these objectives are three associated policy areas, namely, foreign indebtedness (or financial regulation), investment policy, and income distribution. A new consensus model, constructed around these objectives and policy dimensions, provided a fruitful approach to poverty reduction strategy. The approach gave some new insights into the implications for Bolivia of seriously aiming to attain the Millennium Development Goal of halving extreme poverty by 2015. The Washington Consensus, laissez faire approach of the extant poverty reduction strategy contributes little to poverty reduction. Active policies, leading to both pro-poor structural change and poverty reducing income redistribution, are necessary. Pro-poor, poverty minimizing structural change
accelerates the growth of activities such as small and medium industry, where many of the poor are occupied. Another such critical sector is food staples agriculture, in which reforms leading to increased investment efficiency seem necessary. Pro-poor structural change decreases on the other hand the weight of capital intensive sectors such as oil and gas, with highly concentrated income distribution structures.

Pro-poor structural change alone is however not sufficient to halve extreme poverty in Bolivia by 2015. Active, well-designed income redistribution policies — from both the income and the expenditure sides of the public budget — are also necessary. A stylized, simulated tax and expenditure reform halving extreme poverty by 2015 resulted in a not unrealistically high tax rate — i.e., not unrealistic given Bolivia’s abnormally low tax/GDP ratio. Simulation also showed than even total elimination of extreme poverty is not that unrealistic. Finally, the study showed that pro-poor structural change is in Bolivia very similar to pro-employment structural change. Similar effects on poverty can be obtained when structural change is guided by the objective of increasing employment (instead of minimizing poverty). Similar effects on structural change also follow from this objective. An interesting difference is that the objective of enlarging employment increases the significance of food staples agriculture — and consequently of growth stimulating reforms in the sector.

REFERENCES


NOTES

1 The social structure of accumulation theory of long-term capitalist evolution is a closely related approach (see Kotz, 1994).
2 The effect of the rate of interest on debt growth is also considered. For details, see Buzaglo & Calzadilla (2004), Appendix A, equations 11 to 14.
3 Chang & Grabel (2004) have, however, a more optimistic message: “Current WTO rules do not preclude all interventionist trade policies. Moreover, the rules are subject to interpretation and negotiation” (ibid., p. 69). Also, “WTO rules are not immutable” (p. 70).
4 See e.g. surveys by Bardhan (1995) and Rodrik (1995).
6 See Buzaglo and Calzadilla (2004), Appendix A eq.(15).
7 For details on saving and consumption behaviors, see Buzaglo & Calzadilla (2004), Appendix A eqs.(5-8)
8 See Deininger and Squire (1996). In the 1990s, inequality increased in most Latin American countries; the greatest increases were in Argentina, Bolivia, El Salvador and Nicaragua (Szekely, 2003; see also de Ferranti et al., 2004). The combination of political democratization with rapidly increasing inequality — a “savage anomaly,” to use Antonio Negri’s (1991) phrase — is a plausible explanation of the extended corruption in these countries.
9 The state of Kerala (India) has been cited (Heller, 1996) as a particularly successful case of redistributionist reforms as the result of the interaction between a democratic state and the labor movement (and other social organizations).
10 See Kaldor (1956) and Miyasawa & Masegui (1963).
11 This type of categorization allows for the analysis of e.g. the crucial profits-investment nexus (see Akyüz & Gore, 1996). The present study defines the following socioeconomic classes: owners, rural smallholders, landless rural workers, skilled workers, non-skilled workers, and self-employed (see Buzaglo et al., 2002). For data on income distribution by social class (not disaggregated sectorally) for Bolivia and other Latin American countries, see de Ferranti et al. (2004) Appendix A11.
12 In order to obtain a poverty measure which changes by steps of one percentage point, a submatrix of percentiles is also included. This allows for calculation of the number of people below the poverty line (see Buzaglo and Calzadilla, 2004, eqs. 26-29).
13 Given: (a) initial outputs $x_0$ and $x_{-1}$, (b) investment efficiency parameters $\alpha^{-1}$ and consumption coefficients $\Gamma$, and (c) policy sequences $\{q_i, z_i^g, V^*_i\}$, the model can be recursively solved forward in time so as to determine sectoral output trajectories. Policy sequences can be exogenously given, as when past evolution is simulated, or when the effects of a particular strategy are explored — e.g., when the effects of the official Poverty Reduction Strategy Paper are simulated (Buzaglo & Calzadilla, 2004). Policy sequences can also be obtained by optimization — e.g. finding the strategy that minimizes poverty by 2015, the object of the next section.
14 It is possible to conceive poverty reduction strategies in which inequality is allowed to increase. To ensure that it is not the case, the model includes indicators such as the Gini inequality index, Graaff’s (1977) efficiency-equity index, and Pyatt & Thorbeckes’ (1976) democratic index. Our study includes optimization of these types of functions — to be reported in coming papers — and of an employment function — the object Section 3.(c).
These results are confirmed by other studies using different model structures (see e.g., Devarajan, Swanson & Miller, 2002).

Several statistical cross country studies have shown that the ratio of natural resource exports to GDP is negatively correlated with growth (e.g., Sachs and Warner, 2001), and that inequality is positively correlated with a pattern of primary export specialization (e.g., Bourguignon & Morrison, 1990).

See Buzaglo & Calzadilla (2004), Appendix B, for the model’s database and its sources.

The model is formulated and solved within the general algebraic modelling system GAMS (see e.g. Broke, Kendrick & Meeraus, 1992). For simplicity, we solve for a constant \( \{ z^g \} \) sequence for the whole period. A restriction is imposed on the excess demands of non-tradables’ sectors (7th to 12th), so as to maintain the initial equilibria. (For definition of sectoral excess demands (i.e., net trade), see Buzaglo & Calzadilla (2004, Appendix A, eq. 9).) A third of the public investment budget is allocated equally to all sectors. The resulting \( z^g \) vector is: 
\[
(0.029 \ 0.029 \ 0.029 \ 0.029 \ 0.238 \ 0.029 \ 0.078 \ 0.029 \ 0.374 \ 0.054 \ 0.043 \ 0.037)'
\]

Detailed simulation results on GDP and all other model variables can be obtained from the authors on request.

In order to evaluate employment creation under different strategies, a \((k \times n)\) matrix of sectoral employment coefficients by type of labour \( \Lambda \) is defined, and a \( k \)-vector of employment \( \ell_t \) is so determined: 
\[
\ell_t = \Lambda x_t.
\]

The \( z^g \) solution vector is: 
\[
(0.065 \ 0.029 \ 0.029 \ 0.029 \ 0.221 \ 0.029 \ 0.075 \ 0.029 \ 0.368 \ 0.049 \ 0.044 \ 0.033)'
\]

Cf. the first and fifth elements of the corresponding investment policy \( z^g \) vectors of notes 18 and 22.

The classical analysis of the restriction posed by the agricultural sector to pro-poor growth is Kalecki (1954).