Routledge
Taylor & Francis Group

Macroeconomics, Human Development, and Distribution

STEPHANIE SEGUINO

Stephanie Seguino is Professor of Economics at the University of Vermont, Burlington, VT, USA

Abstract   Policies designed to pursue an equity-led macroeconomic growth strategy must take into account feedback effects, with distribution itself influencing macroeconomic outcomes. Under the right conditions, a more equitable distribution of income and opportunities in the form of human development can be a stimulus to growth, funding further investments in human development. Developing the policies to create those conditions is the central challenge for any human development-centered macroeconomic framework. I review here some macro-level policies that achieve this goal, identifying a key role for fiscal policy to raise productivity and for monetary policy to expand employment, a central goal of any macro-inclusive strategy.

Key words: Income distribution, Public investment, Equality, Human development, Macroeconomic policy

Introduction

A large body of macroeconomics research supports the notion that the distribution of income, assets, and capabilities—whether measured as the functional, size, gender, or ethnic distribution—has implications for the rate of economic growth and development. Neoclassical economists emphasize repercussions on the supply side of the economy in the long run, and are inclined to focus on a narrow set of capabilities (life expectancy and education) as the distributional variable of choice. In contrast, heterodox scholars using Kaleckian approaches highlight the relationship between the functional distribution of income and macroeconomic outcomes as shaped by the structure of the economy and institutions, with both demand-side and supply-side effects in the short and long run. They have, however, given limited formal consideration to the relationship between capabilities and growth.[1]

This collective body of work is a useful starting point for developing a macroeconomic framework that integrates human development concerns. A human development framework comprises policies that result in the progressive eradication of material deprivation and the expansion of broadly-shared capabilities. This suggests the need for an inclusive macroeconomic

framework where the distribution of resources and capabilities is a key policy target. A human development, equity-focused macroeconomic framework is a rare species. Such an inclusive macroeconomic approach stands out by identifying real policy targets, such as employment, broadly-shared health and education improvements, economic security, and an equitable distribution of resources.

This paper considers how human development concerns might be integrated into a Kaleckian macroeconomics framework that already incorporates income-based equity concerns. A main premise that emerges is that greater equality can either be a drag on or a stimulus to growth, depending on the type of inequality and macro-level policies regulating trade and investment. Under the right conditions, a more equitable distribution of income and opportunities (in the form of human development) can be a self-sustaining stimulus to growth, funding further investments in human development.

Developing the policies to create those conditions would be central to any human development-centered macroeconomic framework, some examples of which are reviewed here. I supplement this discussion with simple short-run and long-run models that allow distribution to be altered in two ways: through increases in the real wage[2] and public investments that enhance income-earning opportunities and expand capabilities.

A human development macroeconomic framework

Several concerns have converged to bring a greater focus on an inclusive macroeconomics that addresses not only the problems of deprivation and economic insecurity, but also inequality of well-being. Amartya Sen notes that equality is a precondition for broadly shared capabilities acquisition (Robeyns, 2005). Inequality can affect the allocation of resources in ways that inhibit agency, a fundamental feature of capabilities, due to differential power of economic elites to constrain democratic participation and voice.

The challenge for governments is to develop mechanisms that promote broadly shared well-being, thus reducing inequality without, however, sacrificing the aggregate goal of stimulating economic growth. Mainstream macroeconomists have emphasized supply-side expenditures on, most notably, education, as a means to promote equality. The theoretical problem with this approach is that it assumes Say's Law—that supply will create its own demand. More specifically, it assumes that more education will automatically be converted into gainful livelihoods at living wages.

Some aspects of globalization—trade and investment liberalization—do not, however, ensure there will be sufficient employment opportunities to utilize skills, nor that even when workers find jobs they will have the bargaining power to obtain wages commensurate with skills. Moreover, increased financial liberalization since the 1970s has given rise to increased economic volatility, disproportionately more difficult for low-income households to weather. Supply-side investments in skills alone cannot address this problem.

2

For their part, heterodox macroeconomists have tended to rely on income as the distributional measure of well-being. This class of models demonstrates that higher real wages, for example, may fuel economic growth under some conditions, especially in closed economies, by increasing worker consumption and stimulating employment creation. But in open economies, higher wages can trigger economic contractions, especially if firms can easily relocate and if demand for exports is price-elastic. Negative effects on investment and exports, in that scenario, are likely to swamp any positive employment-creating effects derived from increased worker consumption. This work highlights that efforts to improve the distribution of income can, under some conditions, reduce aggregate demand and thus employment.

This research can help to illuminate the conditions required for wage-led, or more broadly, equity-led growth, whereby greater equality in measures of well-being are compatible with economic growth. Although heterodox macroeconomic theory has not heretofore explicitly incorporated broader well-being concerns, the framework fits within a human development approach because it explicitly emphasizes distribution as a measure of well-being. Human development, however, is a broader concept than income, emphasizing the centrality of people's choices by providing the conditions for capabilities acquisition. Capabilities are the conditions or opportunities that offer people choices about how to live their lives. These conditions include but are not limited to access to education, a long and healthy life, access to meaningful employment, and agency (such as freedom of movement and effective opportunities for voice in decision-making). This approach expands the notion of well-being beyond measures of income or consumption bundles to include the conditions for agency. One of those conditions would be an equitable distribution of material resources and capabilities, both of which influence agency.

The policy targets of a human development macroeconomic framework will differ, depending on the structure of the economy and stage of development. In some countries, access to doctors, clean water, women's access to land, and sufficient food will be the explicit policy targets. In others, the primary goals may be social protection and employment at living wages. Because economic stability is fundamental to being able to use one's capabilities to provision for the family, macro-level policies that reduce economic volatility will be part of any human development macroeconomic strategy.

Robeyns (2005) notes that provision of capabilities is not sufficient. Without freedom of movement, for example, women will not be able to convert education into real choices and opportunities. Workers will not be able to secure wages commensurate with their productivity if firm mobility undermines worker bargaining power. Power relations, structures of social stratification, and social norms thus can limit the ability to convert resources into capabilities. This suggests that beyond promoting the acquisition of capabilities, the role of macro-level policies is to facilitate the conversion of capabilities into real opportunities. Policies that address problems of racial

3

discrimination, or that reduce women's care burden will be required to ensure capabilities can be acted on. A human development macroeconomics policy agenda then has a much broader scope than what we traditionally consider the terrain of macroeconomics.

Integration of human development goals into a macroeconomics agenda requires models and policy research that are capable of accounting for the complexity of the feedback effects between economic growth and human development. Although there is empirical evidence that at least some measures of human development are positively correlated with macroeconomic growth (Ranis and Stewart, 2007), most Kaleckian models and macroeconomic analyses have not fully integrated new research on these linkages.

One particular area of research that finds important human development feedback effects on economic growth comes from feminist economics. Feminist scholars challenge the implicit assumption in current macroeconomic thinking that a key factor of production, labor, is a non-produced good or can be produced costlessly. Gendered macro models and analyses underscore that the production of labor is gendered, with women providing the bulk of reproductive (caring) labor, frequently unpaid and invisible in national accounts. The distribution and level of caring labor, paid or unpaid, influences macroeconomic outcomes via the effect on labor supply and productivity (Braunstein *et al.*, 2011).

Human development-type investments that reduce women's care burden can stimulate long-run labor productivity growth. This growth occurs because reduced care burdens allow women to spend more time in paid work, and because it increases resources invested in children (cross-country evidence shows that women tend to spend more of their income than men on children). Similarly, higher female wages, improved access to rural health clinics, and more equitable access to credit for women can all stimulate productivity growth via effects on children's well-being. A human development macroeconomics theoretical framework should capture these additional factors that produce macroeconomic outcomes. Such investments have two positive effects: they promote gender equality (a form of intergroup equality but not necessarily class equality) and stimulate growth.

But it should be emphasized that a limited focus on human development goals cannot be self-sustaining if the growth effects of human development expenditures are negative, on net. For example, funding of human development through higher taxes on corporations to finance social programs may induce capital flight and economic slowdown. Policies such as minimum wage increases and anti-discrimination measures that raise female wages may have negative macroeconomic effects under some conditions (Blecker and Seguino, 2002). Moreover, there is no guarantee that households will use higher incomes to finance human development expenditures that stimulate growth. Incomes may be diverted to consumption expenditures (e.g. alcohol abuse or those that lead to obesity) that lower, rather than raise, productivity, and thus produce inflationary pressures. Further, at some level, spending on pensions, disabilities, and end-of-life care, while desirable,

185 may become unaffordable, and thus be macroeconomically infeasible. Amsden (2010) pointedly underscores the macroeconomic dangers of human development social expenditures that do not stimulate growth and development.

Similarly, growth based on increased inequality of incomes can be stymied if it leads to deterioration of complementary human resources
190 required in the production process. Haiti's long downward trend, due in great part to parasitic consumption by the elite and failure to invest in the rural sector, physical infrastructure, and universal education is a case in point. There are thus potentially positive *and* negative feedback effects between growth and human development expenditures. Hence human devel-
195 opment proponents must also be macroeconomic realists.

A macroeconomic framework that is equity-focused should be able to account for both the positive and negative feedback effects between human development and growth. It should also integrate the short-run and long-run macroeconomic effects of income distribution and public investment,
200 each of which can—within limits—fund expenditures to secure human development. In Appendix 1 I develop skeletal short-run and long-run macroeconomic models in the Keynes/Kalecki/Kaldor tradition with the added feature of a role for public investment in promoting human development. The models, intentionally sparse, serve as heuristic devices to illuminate
205 some of the linkages between theoretical models and the macroeconomic policies discussed below.

The models yield several interesting results. Human development can be expanded through higher real wages and public physical and social infrastructure investments. Public investments are self-financing to the extent they
210 'crowd in' private investment in the short run and/or raise labor productivity in the longer run, stimulating economic growth and thus tax revenues. Under some, although not all, conditions, higher real wages are a stimulus to growth. There is a role for government to play in promoting a win–win outcome through macro-level regulations on, for example, trade, investment, and
215 finance. Further, because demand and supply growth can get out of gear (i.e. may not grow at the same rates), macroeconomic management is required to ensure their equality over time.

220 ## Inclusive macroeconomics policies

In this section, I explore macro-level policies that can promote inclusive, broadly-shared growth. I call this *equity-led* to identify a focus on policies that promote both economic growth and greater equality of well-being (not
225 just income) as a central feature of a human development paradigm. To do this requires that we recognize the potential macroeconomic pitfall of assuming that greater equality will automatically be a boon to growth. Moreover, we face the challenge of ensuring that aggregate demand and supply grow at the same pace, so as to avoid excess demand or supply. Together these goals imply
230 a key role for government in managing the macroeconomy—a role that is

5

more expansive in a human development framework but is not incompatible with Kaleckian-type approaches.

Although specifics of inclusive macroeconomic policy will be particular to the structure of an economy, we can outline the broad 'real' targets of an inclusive macroeconomic framework, based on identifying key social and economic problems to be addressed by policy. In the process of identifying real targets, we would also want to consider whether there are salient forms of intergroup inequality that should be targeted, such as rural–urban disparities, and ethnic or gender inequality. Obvious basic policy targets include employment, health, education, and social protection commensurate with the degree of macroeconomic volatility, as well as a reduction of income and wealth inequality.

The discussion that follows is organized into three categories of government intervention that directly promote human development and/or an equitable distribution of resources, enabling individual households to leverage their own human development investments. These are: fiscal policy, including public investment that promotes the acquisition of capabilities and stimulates job growth; monetary policy; and macro-level policies that enable the conversion of capabilities into effective well-being. I do not address issues of environmental sustainability, but they could easily be worked into the agenda outlined here, with public investment geared towards 'green' jobs, and tax policies shaping incentives for sustainable consumption and production.

Fiscal policy

Fiscal policies fall into two broad (and overlapping) categories: countercyclical policy and public-sector spending on current consumption and public investment in infrastructure. While countercyclical policies are important, I emphasize here some approaches to thinking about public investment in physical and social infrastructure so as to promote human development.

Public investment has an important role to play in facilitating growth, especially in the lowest-income countries. Targeted public investment can leverage private investment, stimulating aggregate demand and employment growth. The latter can expand opportunities for acquisition of complementary skills required as an economy moves up the technological ladder. Because public investment can raise economy-wide productivity (Ranis and Stewart, 2007; Roy and Heuty, 2009), it has two beneficial features. It creates fiscal space in the long run by stimulating income growth, expanding the taxable income base. Secondly, well-targeted investment can be anti-inflationary if it addresses supply bottlenecks that drive up prices.

Physical infrastructure investments that promote equity and productivity growth. The first step in prioritizing public investment spending is to identify key social and economic groups to target, and strategic industries and sectors. In some countries, the key group will be ethnic minorities; in others, it might be women or rural inhabitants. I provide examples of public investments in

6

the case where gender equality is prioritized with reference to some of the research on linkages between public investment and gender equality.

Research identifies a strong link between physical infrastructure expenditures, women's unpaid care burden, and the growth of potential output (Agenor *et al.*, 2010). Targeted investments can reduce women's unpaid labor burden, freeing up time to spend in remunerative labor activities, with benefits for children's well-being and economy-wide long-run productivity growth.[3]

For example, improved water and sanitation facilities decrease illness and time spent fetching water, a major factor adding to the unpaid labor burden in a number of developing countries. This is considered 'female' work; and in regions where this burden is very high, rates of child labor are also higher, with negative effects on educational attainment (Edmonds and Pavcnik, 2005). Transportation improvements reduce the time women spend in marketing goods, and they also improve women's ability to access medical care. Improvements in mothers' health have been found to affect children's health *in utero*, with evidence of long-term positive effects on children's cognitive skills and thus productivity. Further, a large body of evidence indicates that improvements in women's access to income result in more resources invested in children's health, education, and development. This is due to women's propensity to spend a larger share of their income than men on children (Folbre, 2002; Xu, 2007).

These linkages imply that physical infrastructure investments to reduce women's care burden and improve their health have long-term economic benefits in the form of a healthier, more educated and productive workforce (Agenor, 2008). An added advantage is they contribute to greater gender equality. It should be noted that the positive effects of this category of physical infrastructure investment on potential output hold, regardless of whether or not we focus on the gender-equalizing effect of such spending (Fay *et al.*, 2005). That is, children's well-being benefits from physical infrastructure investments, whether due to reduced care burdens that free up women's time for market labor or because children's access to health and education are improved directly.

Public investments that improve livelihoods and stimulate job growth. Public investments in physical infrastructure (for instance, roads, transportation, irrigation, communications networks) can stimulate job growth as noted above. Employment growth, while not necessarily income redistributive (between the wage and profit shares of income),[4] generates income for households that can be used for capabilities expenditures, including education. In this way, so long as the expansion of total capabilities resulting from employment expansion disproportionately benefits those at the bottom, the distribution of *capabilities* becomes more equitable. Intergroup inequalities in job access will not automatically be reduced, however, due to various types of social stratification by gender, race, caste, and religion. For example, physical infrastructure investment tends to create 'male' jobs.

Countries can make such investments more gender-responsive by ensuring women's equitable access to employment created by public infrastructure projects. On-site care facilities and ensuring access to work close to home would facilitate this; equal employment opportunity legislation and enforcement as well as quotas also help. Affirmative action policies and spatially-targeted public investment in response to residential segregation can promote ethnically-balanced job access. These examples are not new. The key point is that macroeconomic policies have distributional implications and require associated policies to ensure equitable outcomes.

In contrast to semi-industrialized or fully-industrialized economies, low-income agricultural economies can target public investments that enhance farmers' access to inputs and other resources, thereby raising agricultural productivity. Emerging evidence suggests that relaxing constraints faced by women farmers is particularly beneficial. Blackden *et al.* (2006) summarize research results for sub-Saharan Africa that find gender-equitable access to inputs, technology, extension services, and credit would increase women farmers' agricultural yields by 10–20%. One constraint women farmers face is access to credit due to restrictions on their right to own land, which could otherwise serve as collateral. But even this constraint can be overcome with appropriate monetary policy, a point I take up in more detail below.

Gender-sensitive agricultural investment can, as a result, increase domestic food production, lower food prices, and reduce reliance on imported food, thus relaxing the balance of payments constraint to growth (Seguino, 2010). The latter suggests the potential for a beneficial demand-side effect (import leakages are attenuated). Of course, public investments that raise agricultural productivity will be beneficial even if not targeted to closing gender gaps. But there is an additional productivity boost derived from targeting women in so far as this improves children's outcomes in the long run.

Social infrastructure investment. Investments in people's capabilities have a public goods quality with positive spillover effects on economy-wide productivity (Ranis and Stewart, 2007). Such investments are therefore more properly classified as social infrastructure spending rather than government current consumption or even simply human development expenditures. By expanding the productive base of the economy, such investments generate a flow of revenues into the future, made easier if increases in human productivity can be converted to higher incomes. The latter is indeed not always assured, and thus a challenge for the state is to raise the bargaining power of workers to support the conversion of productivity into higher incomes (a challenge I discuss in more detail below).

It should be noted that tax revenues would rise, regardless of the distributional effects of public investment, so long as there is a 'crowding in' effect that stimulates output *and* governments are in a position to collect taxes on higher firm profits. With globalization, governments are experiencing an eroding tax base, especially due to constraints on taxing corporate

profits, however. This has challenged their ability to recoup on public invest-
ment, increasing reliance on labor incomes as a source of revenue.

Social infrastructure is a relatively new and underdeveloped concept and
much more empirical work is needed to identify its quantitative impact on long-
run productivity growth. There is, however, already substantial evidence that
social infrastructure spending that addresses key intergroup inequalities has size-
able economy-wide effects. Several studies provide evidence that closing the edu-
cation gap between boys and girls has a positive effect on economic growth (Hill
and King, 1995). More education for women makes it easier for them to control
their fertility, with more resources available to invest in each child and a positive
effect on the quality of the future labor supply. Further, underinvestment in female
education (as well as female exclusion from jobs and job segregation) results in
selection distortion, reducing the efficiency of such investments. According to
Klasen and Lamanna (2009), per-capita gross domestic product growth rates in
sub-Saharan Africa and South Asia could increase by as much as one percentage
point annually, with gender equality in education.

As these examples suggest, social infrastructure expenditures help gov-
ernments finance development for the future by generating increased pro-
ductive capacity. That is, they have a public goods effect, which should not
be classified as social welfare, but rather as investments that produce a
stream of financial and human development returns into the future, thus gen-
erating the resources to pay down the debt incurred by the investment.[5]

Inclusive monetary policy

Monetary policy is a key tool for promoting equitable distribution and employ-
ment growth. This potential has been undermined by the adoption of inflation
targeting. Now the dominant focus of most central banks, this strategy—
which addresses inflationary pressures by raising interest rates—generates
heavy costs in the form of reduced aggregate demand, slower growth, and
higher unemployment. Apart from the broad-brush strokes with which
inflation targeting attacks narrower structural problems, research over the
past 15 years has found that annual inflation rates under 20% are not
harmful to a country's growth (Pollin and Zhu, 2006).[6]

Moreover, there is growing evidence that inflation targeting increases
inequality in job access, with disparate effects by race and gender. Unemploy-
ment triggered by contractionary monetary policy has been found to lead to
disproportionate layoffs among blacks in the USA relative to whites, and differ-
entially affects women in some developing countries as well as the USA
(Braunstein and Heintz, 2008; Seguino and Heintz, 2012).

A key question is whether we can address inflationary problems in a way
that avoids the negative side-effects that come with inflation targeting. For
many developing countries, inflation is not primarily a demand-side problem
due to excessive expansion of the money supply. Rather, the challenge of
inflationary pressures is strongly linked to supply-side problems of low pro-
ductivity related to widespread health problems such as HIV/AIDs, poor

415 transportation networks, and exchange rate pass-through effects on imported necessities such as food, and more generally, constrained food supplies (Heintz and Ndikumana, 2011). As can be surmised, inflationary tendencies might be more efficiently targeted with appropriate public investment rather than contractionary monetary policy.

420 Adopting an alternative framework that emphasizes inclusive macroeconomic policy, the central bank would identify 'real' (rather than monetary) targets, determined by identifying the key social and economic problems to be addressed by policy (Epstein, 2007). As noted in the previous section, an obvious one is employment and with it, inequality. Under this scenario, the

425 central bank's policy goal would shift to employment targeting in place of inflation targeting. If a country has a particular problem with generating good jobs for ethnic minorities or women, or more jobs in a particular region of the country, then the real targeting approach can accommodate such needs.

An example of a policy to reach employment targets would be for the

430 central bank to identify priority sectors or groups, and provide loan guarantees to banks that extend loans in these areas. In agricultural economies where women are subsistence farmers, small-scale agriculture is an obvious choice. Priority might also be given to small-sized and medium-sized businesses that are labor-intensive and disproportionately employ targeted

435 groups. Credit could also be directed to large-scale businesses that can demonstrate their ability to promote significant increases in employment relative to their total spending. Pollin *et al.* (2006) produce a fully-developed blueprint for employment-led growth for South Africa using this approach.

In this framework, the private sector would still provide the bulk of

440 credit, but it would be characterized by low interest rates leveraged with government loan guarantees. Governments would guarantee a certain percentage of loans extended to priority areas, thereby reducing a bank's risk exposure and lowering the cost of lending to borrowers. These loan guarantees substitute for collateral, leveraging access to credit for farmers who do not hold land

445 titles, including women farmers.

The discussion of inclusive monetary policy presented here is not exhaustive. Additional features of an inclusive monetary policy would include, for example, forms of capital controls to stabilize financial flows and reduce the risk of economic crisis. I leave aside that discussion which

450 has been covered by a number of heterodox economists. Instead, I want to hone in on the main point of this section, which is that monetary policy's strength lies in its employment generation possibilities, as well as its ability to overcome asset inequality, whether in the form of land title or other forms of wealth that serve as collateral. Inclusive monetary policy cannot

455 be unanchored. To be effective and well targeted, it must be coordinated with public investment goals. To the extent that public investment reduces inflationary pressures, central banks can afford to lower interest rates, in turn making it less costly for governments to finance public investment.

It is worth emphasizing more explicitly that what I am suggesting here is

460 a partial role-reversal between fiscal and monetary policy in developing

countries that face problems of poor infrastructure, volatility of agricultural output and prices, and a population that is poor and in ill-health. Those problems, which can raise costs of production and thus contribute to inflation, can be remedied by the judicious use of fiscal policy that emphasizes the goal of reducing long-run supply constraints through public investment. Lowering inflationary pressures through public investment leaves more space for expansionary monetary policy and targeted credit allocation that can stimulate employment generation.

Macro-level policies to stimulate demand and improve bargaining power

Being a more productive worker is no guarantee that one's wages will rise, or that one will even find employment. The former depends on bargaining power and the latter on the level of aggregate demand. This implies that a society's broadly shared prosperity is not determined solely by the level of education or health. That skills acquisition is insufficient is demonstrated by the growing gap in the USA between productivity and wages as well as the gap between women's education and their access to employment in a number of developing countries. Moreover, the 'crowding in' effect of public investment will not increase demand for labor if induced private investment simply adds to excess capacity.

Policies that expand the productive capacity of the economy must therefore avoid the trap of Say's Law. In addition to investments in human development that raise labor productivity, institutions and policies that restore labor's bargaining power are required along with measures to ensure a win–win outcome—that is, higher wages that are a stimulus to growth.

In the current global environment, downward pressure on wages derives from several factors: a shift in bargaining power of firms due to their mobility (Choi, 2006; Seguino, 2007); declining unionization rates; pressures on government to promote labor flexibility to increase the ease of shedding workers; and, in some countries, the declining value of the real minimum wage, which provides a wage floor.[7] Even where wage increases might improve labor productivity in the short run (due to perceptions of fairness and thus more labor effort, or for physiological reasons associated with better nutrition), mobile firms can veto efficiency wage effects by relocating to or sourcing from lower wage sites *before* the benefits of higher wages emerge. Whether firms respond to higher wages by relocating to lower wage sites or investing in productivity-enhancing processes and product innovations will depend on macro-level policies regulating trade and investment flows, and financial systems that influence access to credit.

In thinking about how to use macro-level tools to ensure a sufficient level of demand via an equitable distribution of income, it is useful to recall that wages have three macro-level effects. These are: a cost of production; a source of demand; and a stimulus to productivity growth, either by spurring firms to improve efficiency or through efficiency wage effects. Wages can be

either too high *or* too low. Why is this so? Wages that are too low hamper productivity growth by reducing the pressure on firms to innovate, leading to a low-wage, low-productivity equilibrium. But wages that are too high generate losses in aggregate demand via the negative effect on investment and exports that can more than offset increases in consumption demand. Macroeconomic managers then should develop innovative levers to ensure that wages remain within a target band and to reduce the propensity for firms to escape to lower wage sites, which would veto beneficial effects of wage increases.[8]

This is especially needed in developing countries where many small firms comprise the least powerful link in global commodity chains. They have limited bargaining power relative to multinationals at the top of the commodity chain that source globally, thereby squeezing not only wages but also profits of the subcontracting firm. The capacity of such small firms to maintain and improve competitiveness without lowering wages is circumscribed by the shortage of retained earnings with which to finance productivity improvements (Kaplinsky, 2005). Targeting such firms for affordable credit, organizational and technical assistance for domestic entrepreneurs, and government efforts to incentive foreign firms to share technology solve several macro-level problems. Domestic firms can improve their chances of generating foreign exchange. Downward pressure on wages is alleviated as productivity increases, and domestic demand and thus employment are stimulated.

This suggests the importance of integrating fiscal and monetary policy with longer-run development strategies. A challenge for low-income and middle-income countries in particular is to give a central role to development of industrial and agricultural policies to move the economy up the productivity ladder, and into the production of goods for which rents are possible—that is, goods produced in increasing-returns industries and where product differentiation is feasible (Memis and Montes, 2008). In those types of industries, it becomes more feasible to raise wages without incurring negative effects on product demand.

Some countries have successfully managed trade and investment competition in order to move their economies up the ladder to higher valued-added production, using both carrots *and* sticks to incentivize domestic firms, controlling cross border flows of foreign direct investment and capital, and promoting multinational technology transfer to domestic firms. The sticks have been in the form of performance targets. In the case of South Korea, the targets were investment and export goals. An employment target can be woven into such incentive structures. By expanding the macroeconomic policy vista to include methods of influencing trade, foreign direct investment, and finance, we can develop a comprehensive framework for altering the bargaining relationship between firms and workers, as well as the relationship between distribution and the level of aggregate demand.

Embedded in those development policies would be strategies for managing trade and foreign direct investment in ways that incentivize firms to share the rewards of productivity growth with workers, create backward linkages that stimulate demand, and share best-practice technology (Chang, 2002).[9] While the precise policies differ widely, what countries like

12

Singapore, Taiwan, South Korea, China, and Japan have had in common is a 'managed market' approach and a commitment to strategic economic openness— that is, a flexible policy approach tailored to achieving the domestic goals of promoting industrialization and rising standards of living while pursuing the means to acquire advanced technologies.

Figure 1 provides examples of some of the inclusive macroeconomic policies discussed in this section, according to stage of development. This is not an exhaustive list (e.g. efforts to overcome ethnic inequality will be country-specific), but does illustrate how targets and tools will differ, depending on the structure of the economy and salient inequalities.

Conclusion

This paper brings together several strands of research: heterodox macroeconomic models interrogating the relationship between income distribution and growth; the capability approach as operationalized in human development theories; and feminist economics that explores the role of a particular type of intergroup inequality and its relation to economy-wide well-being. These three branches of thought can be combined to offer a cohesive framework for addressing the goals of human development and equality in ways that are macroeconomically sustainable. Creating the conditions for an equity-led growth path will require targeted public investment, policies to improve worker bargaining power, macro-level regulation that incentivizes firms to share productivity gains with workers, and attention to the impact of gender inequality on growth and development.

I have emphasized public investment as a key ingredient of an inclusive macroeconomic strategy, serving three interrelated purposes. It stimulates demand and therefore employment; it creates productive capacity; and it can improve the distribution of capabilities. I call attention to evidence that has circulated for some time—that public investment can crowd in private investment.[10] But, in addition, the ability of targeted public investment to address fundamental inequalities is also worthy of greater attention and incorporation into macroeconomic policy-making.

I highlight here the role of public investment in both physical and social infrastructure, each with the potential to raise economy-wide productivity, stimulating private investment, and thus job growth. The investment nature of such public spending suggests that, if well targeted, it can generate a flow of revenues into the future. In this sense, appropriate public-sector investment targets can create fiscal space. I also suggest that fiscal policy could be used to address inflationary pressures by funding social and physical infrastructure (for roads, R&D in agriculture and industry, irrigation, clean water, HIV/AIDs). Public investment can be targeted to address and alleviate inequalities in productive capacity, access to jobs, and care responsibilities that inhibit labor market participation.

It would be macroeconomically naïve to assume that we can easily attain a win–win–win outcome—greater equality, economic growth, and expanded

	Low-Income Agricultural Economies	Middle-Income Economies	High-Income Skill-Intensive Economies
Physical Infrastructure Investment	*Basic infrastructure*: Roads, electricity, irrigation, schools and clinics. *Women's care burden*: Clean water and sanitation.	*Core infrastructure*: Energy, transportation, water and sewerage; communications, public transportation. *Energy and environment*: Conservation, green energy R&D.	*Core infrastructure*: Energy, transportation, water and sewerage, communications, transportation. *Green economy and environment:* Energy efficiency, weatherization, hazardous waste clean-up, public transportation.
Social Infrastructure Investment	*Agricultural productivity*: Extension; agricultural R&D. *Capabilities*: Youth and adult education and training, health and nutrition expenditures and programs. *Gender equality*: Maternal health; publicly-funded care services for children, elderly, and sick; gender equalizing expenditures on education and training	*Employment*: Public employment programs. *Economic security*: Unemployment and health insurance, child care services. *Capabilities*: Early childhood education, youth and adult education and training.	*Employment*: Employer of last resort programs. *Social protection*: Supports to lone parents, unemployment and health insurance. *Capabilities*: Early childhood education, youth and adult education and training. *Gender equality:* Subsidized care (elderly, children sick), gender-equitable social protection and pension schemes.
Monetary Policy	*Employment generation:* Loans to small- and medium-sized labor-intensive firms and small firms in global commodity chains. *Agricultural output and rural incomes*: Targeted loans and guarantees to small farmers.	*Employment generation*: Targeted credit to sectors with large multiplier effects and domestic linkages. *Energy*: Targeted loans to support development of energy efficiency.	*Employment generation:* Targeted credit to sectors with large multiplier effects and domestic linkages. *Energy*: Targeted loans to support development of energy efficiency.
Macro-level Policies to Balance Bargaining Power	*Economic diversification:* Trade and foreign direct investment (FDI) policies to promote technology sharing.	*Bargaining power of workers:* Regulations on FDI to reduce firm mobility; industrial policies (e.g. infant industry rules) to move economy up the industrial ladder to the production of knowledge-intensive goods with rents; labor standards and minimum wages.	*Bargaining power of workers*: State support for paid time off, health insurance, and pensions; minimum wage increases.

FIGURE 1. Examples of inclusive macroeconomic policies by stage of development

S. Seguino

human development. There is no guarantee that more skills or better health will translate into higher earnings in the face of weak bargaining power of workers, which can then result in slack demand. A central job of macro-level policies then is to promote demand, via a variety of strategies, including trade and investment policies that rebalance workers' bargaining power and incentivize firms to share the benefit of increases in earnings with workers. Adopting employment targets in place of inflation targets permits monetary policy to generate affordable credit targeted to priority sectors, thus producing a demand-side stimulus that can fuel growth.

The state's role in influencing distribution and in incentivizing firms to align their profit goals with that of society as a whole is key. The challenge is in carefully defining that role, and in expanding research to understand the types of public investment required to crowd in private investment that also produce intergroup equality.

Acknowledgements

Notes

1 Some notable exceptions exist. Dutt (2010), for example, explores the macroeconomic implications of education.

2 In the short run, real wage increases cause the profit share of income to decline, holding productivity constant (i.e. assuming that there are no efficiency wage effects) by forcing down the firm's mark-up rate. If real wages do stimulate proportionate increases in worker effort in the short run, then downward pressure on the mark-up is attenuated or even neutralized, workers are better off, and the distribution of income is unchanged, thus avoiding any macroeconomic pitfalls. Throughout this paper, I focus my discussions on the narrower case where real wage hikes are not matched by productivity increases in the short run.

3 These effects are captured in the model in Appendix 1 in Equation $(14')$ (both λ and H rise in response to a reduction in women's care burden).

4 Making the restrictive assumption that unemployment is sufficiently high that an increase in output does not put upward pressure on wages, employment expansion nevertheless increases the wage bill (i.e. the money wage rate multiplied by the number of employed).

5 This can be formalized as an intertemporal budget constraint—see Equation (13) in Appendix 1—although there are other approaches that disaggregate public investment from current expenditures.

6 The inflation rate threshold (at which growth turns negative) differs by level of development. The threshold is highest for low-income countries (between 14 and 23 %), while for middle-income countries it lies between 14 and 16%, and between 15 and 18% for the full sample of countries (including the OECD). These are well above current inflation targets of 3–5%.

7 Some notable exceptions to the declining value of minimum wages are from the left-of-center governments in Latin America (Cornia and Martorano, 2010).

8 In terms of the short-run model in Appendix 2, this would imply a policy that would reduce the size of the profitability effect (f_1) in the investment function (Equation (4)).

9 For a comprehensive discussion of the factors that mediate the effects of foreign direct investment on inequality, see Cornia (2011).

10 Agenor (2008) provides a useful review of studies on this topic. See also Bose *et al.* (2007), who find that government capital expenditures are positively and significantly correlated with economic growth, while current expenditures have an insignificant effect. Further disaggregating what are typically defined as current expenditures, however, the authors find that government investment in education is significantly associated with growth.

References

Agenor, P-R. (2008) 'Fiscal policy and endogenous growth with public infrastructure', *Oxford Economic Papers*, 60, pp. 57–88.

Agenor, P-R., Canuto, O. and da Silva, L. P. (2010) 'On gender and growth: The role of intergenerational health externalities and women's occupational constraints', *Policy Research Working Paper No. 5492*, World Bank, Washington, D.C.

Amsden, A. (1992) Asia's Next Giant: South Korea and Late Industrialization, *Oxford University Press, Oxford.*

Amsden, A. (2010) 'Say's Law, poverty persistence and employment neglect', *Journal of Human Development and Capabilities*, 11(1), pp. 57–66.

Bayraktar, N. and Moreno-Dodson, B. (2010) 'How can public spending help you grow? An empirical analysis for developing countries', *Policy Research Working Paper 5367*, World Bank, Washington, D.C.

Bhaduri, A. and Marglin, S. (1990) 'Unemployment and the real wage: the economic basis for contesting political ideologies', *Cambridge Journal of Economics*, 14, pp. 375–393.

Blackden, M., Canagarajah, S., Klasen, S. and Lawson, D. (2006) 'Gender and growth in sub-Saharan Africa: issues and evidence', *UNU-WIDER Research Paper No. 2006/37*, Helsinki, <http://www.wider.unu.edu/publications/working-papers/research-papers/2006/en_GB/rp2006-37/>.

Blecker, R. (2002) 'Distribution, demand, and growth in neo-Kaleckian macro models', in M. Setterfield (Ed.), *The Economics of Demand-led Growth. Challenging the Supply-Side Vision of the Long Run*, Edward Elgar, Cheltenham, UK, pp. 129–152.

Blecker, R. and Seguino, S. (2002) 'Macroeconomic effects of reducing gender wage inequality in an export-oriented, semi-industrialized economy', *Review of Development Economics*, 6(1), pp. 103–119.

Bose, N., Haque, M. E. and Osborn, D. R. (2007) 'Public expenditure and economic growth: a disaggregated analysis for developing countries', *The Manchester School*, 75(5), pp. 533–556.

Braunstein, E. and Heintz, J. (2008) 'Gender bias and central bank policy: Employment and inflation reduction', *International Review of Applied Economics*, 22(2), pp. 173–186.

Braunstein, E., van Staveren, I. and Tavani, D. (2011) 'Embedding care and unpaid work in macroeconomic modeling: A structuralist approach', *Feminist Economics*, 17(4), pp. 5–31.

Calderón, C. and Servén, L. (2004) 'The effects of infrastructure development on growth and income distribution', *Working Paper N° 270*, Central Bank of Chile, Santiago, Chile.

Chang, H.-J. (2002) *Globalization, Transnational Corporations, and Economic Development*, Zed Books, London.

Choi, M. (2006) 'Threat effects of capital mobility on wage bargaining', in P. Bardhan, S. Bowles and M. Wallerstein (Eds) *Globalization and Egalitarian Redistribution*, Princeton University, Princeton, NJ, pp. 64–86.

Cornia, G. A. (2011) 'Economic integration, inequality and growth: Latin America vs. the European economies in transition', *UN DESA Working Paper No. 101*, New York, <http://www.un.org/esa/desa/papers/2011/wp101_2011.pdf>.

Cornia, G. A. and Martorano, B. (2010) 'Policies for reducing income inequality: Latin America during the last decade', *Social and Economic Policy Working Paper*, UNICEF, New York.

Dutt, A. (2010) 'Keynesian growth theory in the 21st century', in P. Arestis and M. Sawyer (Eds) *Twenty-first Century Keynesian Economics*, Palgrave Macmillan, Basingstoke, Houndmills and New York, pp. 39–80.

16

Edmonds, E. and Pavcnik, N. (2005) 'Child labor in the global economy', *Journal of Economic Perspectives*, 19(1), pp. 199–220.

Epstein, G. (2007) 'Central banks as engines of employment creation', in J. A. Ocampo and K. S. Jomo (Eds) *Towards Full and Decent Employment,* Orient Longman, Zed Books, and Third World Network, London, pp. 92–122.

Epstein, G., Grabel, I. and Jomo, K. S. (2005) 'Capital management techniques in developing countries: An assessment of experiences from the 1990's and lessons for the Future', in G. Epstein (Ed.) *Capital Flight and Capital Controls in Developing Countries*, Edward Elgar Press, Northampton, MA, pp. 301–333.

Estache, A., Foster, V. and Wodon, Q. (2002) *Accounting for Poverty in Infrastructure Reform: Learning from Latin America's Experience*, World Bank, Washington, D.C.

Fay, M., Leipziger, D., Wodon, Q. and Yepes, T. (2005) 'Achieving child-health-related millennium development goals: The role of infrastructure', *World Development*, 33(8), pp. 1267–1284.

Folbre, N. (2002) *The Invisible Heart: Economics and Family Values*, The New Press, New York.

Heintz, J. and Ndikumana, L. (2011) 'Is there a case for formal inflation targeting in sub-Saharan Africa?', *Journal of African Economies*, 20(AERC Suppl. 2), pp. ii67–ii103.

Hill, M. A. and King, M. (1995) 'Women's education and economic well-being', *Feminist Economics*, 1(2), pp. 21–46.

Kaplinsky, R. (2005) Globalization, Poverty, and Inequality, *Polity Press, London.*

Klasen, S. and Lamanna, F. (2009) 'The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries', *Feminist Economics*, 15(3), pp. 91–132.

Memis, E. and Montes, M. (2008) *Who's Afraid of Industrial Policy?* Asia-Pacific Trade and Investment Initiative Discussion Paper, UNDP Regional Centre, Colombo, Sri Lanka.

Palley, T. I. (2002) 'Keynesian macroeconomics and the theory of economic growth: putting aggregate demand back into the picture', in M. Setterfield (Ed.), *The Economics of Demand-led Growth. Challenging the Supply-side Vision of the Long Run*, Edward Elgar, Cheltenham, pp. 19–40.

Pollin, R., Heintz, J., Epstein, G. and Ndikumana, L. (2006) *An Employment-targeted Economic Programme for South Africa*, Edward Elgar, Cheltenham.

Pollin, R. and Zhu, A. (2006) 'Inflation and economic growth: A cross-country non-linear analysis', *Journal of Post Keynesian Economics*, 4, pp. 593–614.

Ranis, G. and Stewart, F. (2007) 'Dynamic links between the economy and human development', in J. A. Ocampo, K. S. Komo and S. Khan (Eds) *Policy Matters: Economic and Social Policies to Sustain Equitable Development,* Zed Books, London, Third World Network, Malaysia and Singapore, and Orient Longman Private Limited, Hyderabad, India, pp. 37–53.

Robeyns, I. (2005) 'The capability approach: a theoretical survey', *Journal of Human Development*, 6(1), pp. 93–114.

Roy, R. and Heuty, A. (Eds) (2009) *Fiscal Space: Policy Options for Financing Human Development*, Earthscan, London and Sterling, VA.

Seguino, S. (2007) 'Is more mobility good?: Firm mobility and the low-wage low-productivity trap', *Structural Change and Economic Dynamics*, 18(1), pp. 27–51.

Seguino, S. (2010) 'Gender, distribution, and balance of payments constrained growth in developing countries', *Review of Political Economy*, 22(3), pp. 373–404.

Seguino, S. and Heintz, J. (2012) 'Monetary tightening and the dynamics of race and gender stratification in the US', *American Journal of Economics and Sociology*, forthcoming.

Setterfield, M. (2006) 'Thirlwall's Law and Palley's pitfalls: a reconsideration', in P. Arestis, J. McCombie and R. Vickerman (Eds) *Growth and Economic Development: Essays in Honour of A.P. Thirlwall*, Edward Elgar, Cheltenham, pp. 47–59.

Taylor, L. (2004) *Reconstructing Macroeconomics*, Harvard University Press, Cambridge, MA and London.

Xu, Z. (2007) 'A survey of intra-household models and evidence', *Munich RePEc Archive, MRPA No. 3763*, <http://mpra.ub.uni-muenchen.de/3763/>.

17

Appendix 1. Income distribution and human development in Kaleckian models

I develop here skeletal short-run and long-run macroeconomic models in the Keynes/Kalecki/Kaldor tradition, featuring a role for public investment in promoting human development.

Demand-constrained growth in the short run.
In most heterodox macro models, the distributional variable in the short run is income. Here I consider the short-run effects of two types of equality: income and capabilities. Income can be redistributed via an exogenous increase in the real wage (possibly policy-induced such as through a higher minimum wage). Capabilities can be directly expanded via policies that stimulate output and thus employment increases, since more households will have income to invest in these measures of well-being. Alternatively, public investment can serve to directly leverage capabilities expansion as described in the section 'Inclusive Macroeconomics Policies'.

Ignoring, for simplicity, a variety of structural conditions that also shape distributional dynamics, a simple short-run model can be developed around the macroeconomic equilibrium condition in a closed economy:[A1]

$$g^S + \left(t - v^C - v^I\right) = g^I \tag{1}$$

where g^S is private saving, t is taxes, v^C is government consumption spending, v^I is public investment, and is g^I desired private investment. All variables are normalized by the capital stock K. Examples of government consumption (or current expenditures) include defense spending, non-innovation generating subsidies to businesses, and pension transfers. Public investment may be directed to social or physical infrastructure spending as discussed in the section 'Fiscal Policy'.

Assuming saving propensities of non-capitalists are zero for simplicity, then savings are determined by the tax rate, assumed to be a flat tax, the saving propensity of capitalists, and the profit rate or:

$$g^S = (1 - \tau)s_\pi r \tag{2}$$

where τ is the tax rate, s_π is the propensity to save out of profit income, and r is the profit rate. The latter is simply an accounting relationship:

$$r = \left(\frac{R}{K}\right) = \left(\frac{R}{Y}\right)\left(\frac{Y}{K}\right) = \pi u \tag{3}$$

where R is total profits, Y is national income, π is the profit share of income, and $u = Y/K$ is the output-capital ratio, a measure of capacity utilization and thus a proxy for aggregate demand.

Private investment spending is a positive function of the profit rate, and thus, the profit share of income, capacity utilization (capturing the 'accelerator' effect), as well as public investment in physical and social infrastructure (reflecting 'crowding in' effects):

$$g^I = f_o + f_1(1 - \tau)\pi + f_2 u + f_3 v^I. \tag{4}$$

The price equation, with firm mark-ups over unit labor costs, is:

$$P = (1 + \mu)wb \tag{5}$$

where P is prices; μ is the mark-up rate over prime unit labor costs, reflecting the firm's degree of monopoly power; w is the nominal wage rate; and b is the labor coefficient (the inverse of labor productivity). The distribution of income between wages and profits can be derived from the national income identity :

$$PX = wBX + \pi PX \tag{6}$$

where X is output. From this, we can develop an explicit expression for the profit share of income:

$$\pi = 1 - \omega b, \tag{7}$$

which indicates the profit share is inversely related to the real wage ω and the labor coefficient.

Taxes in proportion to the capital stock are:

$$t = \tau u. \tag{8}$$

Finally, the budget surplus (deficit) is:

$$\left(\tau u - v^C - v^I\right). \tag{9}$$

Substituting Equations (2), (3), (4) and (8) into (1) yields the IS curve:

$$(1 - \tau)s_\pi \pi u + \tau u - v^C - v^I = f_o + f_1(1 - \tau)\pi + f_2 u + f_3 v^I. \tag{1'}$$

19

Solving for u, the equilibrium rate of capacity utilization (our proxy for aggregate demand), the explicit solution is:

$$u = \left(\frac{1}{s_\pi \pi (1 - \tau) + \tau - f_2}\right)\left[f_o + f_1(1 - \tau)\pi + v^C + (1 + f_3)v^I\right]. \qquad (10)$$

The first term on the right is the multiplier, assumed positive for Keynesian stability (private and public savings must respond more strongly to an increase in output than private investment).

This modified IS curve can be used to demonstrate the effects of a redistribution on equilibrium output and employment in the short run.[A2] In addition to a change in the real wage, greater equality of well-being can be induced by some types of public investment in social and physical infrastructure. Both can promote human development goals if the impact is not contractionary. To that end, I conduct comparative statics on these two illustrative cases.

I turn first to the impact of a change in the profit share (say, due to a lower real wage, holding b constant) by totally differentiating Equation (10), yielding:

$$\frac{du}{d\pi} = \frac{1\left[s_\pi u - f_1\right](1 - \tau)}{s_\pi \pi (1 - \tau) + \tau - f_2}. \qquad (11)$$

The sign of this derivative tells us whether a redistribution is expansionary or contractionary with consequent effects on employment. A positive derivative $\left(\frac{du}{d\pi} > 0\right)$ implies a 'trickle-down' (profit-led) regime—a lower real wage increases output, employment, and growth, highlighting the pitfalls of redistributive policies. This outcome will be more likely, the larger f_1 (i.e. the more 'footloose' firms are). Conversely, $\frac{du}{d\pi} < 0$ implies the economy is wage-led— a higher real wage improves worker consumption *and* expands employment.[A3] This can happen if the induced consumption from higher real wages swamps the negative effect of higher wages on firm profits and thus business spending. It is an empirical question as to whether economies are wage-led or profit-led although state-level policies can influence the strength of the effects as discussed in the section 'Macro-level Policies to Stimulate Demand and Improve Bargaining Power'.

Public investment serves as another vehicle to promote broadly shared well-being. Assuming it is funded by borrowing (and thus $\tau u = v^C$), differentiating Equation (10) with respect to u and v^I yields:

$$\frac{du}{dv^I} = \frac{\left(1 + f_3\right)}{s_\pi \pi (1 - \tau) + \tau - f_2} > 0. \qquad (12)$$

This slope is unambiguously positive in sign. Public investment provides an additional boost to output and thus employment via the 'crowding in' effect,

20

f_3. The result is not surprising.[A4] Rather, the concerns about deficit government spending relate to the longer-term problem of financing debt repayment.

The sustainability of debt-financed public investment is influenced by the impact of public investments on national income and associated tax revenues used to repay the debt.[A5] Assuming the initial budget deficit is zero, governments face an intertemporal budget constraint:

$$\sum_{\alpha=1}^{T} \left(\frac{1}{1+i}\right)^{\alpha} \tau u(v^I) = \sum_{\alpha=1}^{T} \left(\frac{1}{1+i}\right)^{\alpha} [v^C + v^I]. \tag{13}$$

The term on the left of the equality sign in Equation (13) is the present value of tax revenues accumulated over T years of fiscal expansion, where α is the year, i is the interest rate, and $u_{v^I} > 0$ from Equation (12). That is, public investment stimulates output, with a positive impact on tax revenues. The term on the right side of the equality represents the present value of current expenditures and public investment. These results suggest public investment v^I has the potential to be self-financing, depending on the extent to which output u responds positively, via the leveraging of private investment and the multiplier effect of government spending.

This simple static model emphasizes the 'real' side without explicit consideration of money, expectations, and inflationary dynamics. However, it helps to identify the pathways by which public investment and explicitly redistributive policies—higher minimum wages, support for unionization, wage guidelines, anti-discrimination legislation and enforcement that reduce gender and racial/ethnic wage discrimination—can have a beneficial effect on output and employment in the short run.

Long-run growth and distribution

While not all expansions of capabilities have macroeconomic effects, some have observable effects on labor productivity. As a result, carefully identified public expenditures have the potential to raise the long-run productivity growth rate of the economy, thus reducing inflationary pressures and with that, alleviating the central bank's propensity to raise interest rates. I present here a skeletal growth model that incorporates the role of distribution of income and capabilities:[A6]

$$y^P = \lambda + \beta \tag{14}$$

$$\beta = \phi_o + \phi_1 g^D + \phi_2 H \tag{15}$$

$$g^D = y^P \tag{16}$$

Equation (14) describes the growth rate of potential output y^P as a positive function of the growth rate of the labor force λ, assumed exogenous,[A7] and endogenously-determined productivity growth β.

21

Equation (15) models productivity growth as function of the growth of demand-induced output g^D, the quality of the labor supply H, and autonomous technical progress ϕ_o. Demand growth is determined by the independent variables identified in Equation (10). The stimulus to potential output provided by the rate of growth of aggregate demand g^D represents labor-augmenting technical progress or the Verdoorn effect (productivity growth induced by increasing returns, process innovation, and new ideas embodied in investment) as well as learning-by-doing effects (Amsden, 1992).

H captures the level of human development, which positively affects the productivity of labor. Equation (16) is the condition for sustainable steady-state growth, which requires that demand and supply grow at the same rates. From the short-run model, distribution affects demand growth, with the profit share (negatively related to the real wage) and public investment our key distributional variables.[A8]

A variety of factors can induce increases in H: government and household expenditures on aspects of human development such as children's education and health, publicly-financed extension services, and adult training. Greater income equality can induce household expenditures that promote human development, according to recent endogenous growth-theoretic research.

Substituting Equation (15) into Equation (14) and incorporating the effect of distribution on productivity growth, transmitted through the impact on labor quality and demand growth, we obtain:

$$y^P = \lambda + \phi_o + \phi_1 g^D \underset{?,+}{(\pi, \upsilon^I)} + \phi_2 H \underset{-,+}{(\pi, \upsilon^I)} \tag{14$'$}$$

with hypothesized signs beneath independent variables. The impact of a change in the profit share (via, for example, a lower real wage) on demand-induced growth is ambiguous, and depends on whether the economy is wage- or profit-led from Equation (11). In contrast, public investment in infrastructure has an unambiguously positive effect on potential output growth.

The steady-state growth rate g^* at which $g^D - y^P = 0$ is:

$$g* = \left(\frac{1}{1-\phi}\right)\left[\lambda + \phi_o + \phi_2 H\right]. \tag{17}$$

In the event the growth of demand and potential output get out of gear, a variety of adjustment mechanisms might ensure that growth can be sustained at a steady-state equilibrium (Palley, 2002; Setterfield, 2006; Dutt, 2010). A full elaboration of these is beyond the scope of this paper, but the point to be emphasized is that, absent economically-salutary endogenous adjustment in response to a distributional shock, the government has a key role to play by using countercyclical policy as well as public investment to ensure the balance of demand and output growth.

For example, an initial improvement in human development, H, induced by an increase in public investment, is likely to have a positive effect on

22

demand growth *and* potential output. But even this can lead to macroeconomic imbalances. That is because excess supply will emerge unless such investments induce demand to grow at the same higher rate. Fine-tuned targeted policies that promote productivity growth *and* sufficient demand to absorb the added productive capacity are required to ensure their equality. Some countries serve as role-models of this approach to macroeconomic management, having enacted active labor market policies and social protection programs that support long-run productivity growth, as well as incentive mechanisms to ensure wages match productivity growth.

Notes to the Appendix

A1.   A closed economy specification is not a very realistic assumption, and inclusion of net exports can yield important and interesting distributional insights (Blecker, 2002). But for the purposes of this paper, I simplify by narrowing our focus to consider the macroeconomic effects of directly altering distribution and public investment.

A2.   For examples of models that reflect the stylized features of economies with differing structures and social relations, see, for example, Taylor (2004).

A3.   See Bhaduri and Marglin (1990) for a discussion of the elasticity conditions of these derivatives that result in either 'cooperative' or 'conflictive' regimes.

A4.   The impact would be less positive were we to model this to capture the negative effect of higher interest rates on private investment. Available evidence from a wide spectrum of studies shows, however, the net effect is positive (Bose *et al.*, 2007; Agenor, 2008). Several studies provide evidence that, in addition to the positive effects of infrastructure on economic growth, income inequality declines with higher infrastructure quantity and quality (Estache *et al.*, 2002; Calderón and Servén, 2004). For a review of literature that finds weak or no effects of infrastructure investment on growth, see Bayraktar and Moreno-Dodson (2010).

A5.   This discussion draws on Roy and Heuty's (2009) human development approach to analyzing the financial solvency and sustainability of government debt financing, although there are other methods for treating public investment separately from current expenditures in setting fiscal targets. This does not resolve the fact that securing financing for development is an important roadblock for poor countries. But it does address the limited understanding of the linkages between public investments and longer-run growth. Among the strategies to reduce borrowing constraints is to implement capital controls, reducing the foreign reserve holdings required to protect countries against the risks of financial crises engendered by speculation on foreign exchange markets. For a fuller discussion of these issues, see Roy and Heuty (2009) and Epstein *et al.* (2005).

A6.   Inclusion of open economy constraints complicates the model in useful ways, but here we attend to our primary focus on distributional and public investment implications.

A7.   Here, too, we simplify in order to discipline our focus although fertility and female labor force participation rates have been found to vary with women's bargaining power.

A8.   Movements up the industrial ladder require a complementary force of qualified workers, and similarly a more educated workforce in the absence of capital investment is inefficient and unsustainable. A useful extension would be to include an interaction term, reflecting the complementarity of physical and human development in the production process.