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EMPLOYING INDIA

Guaranteeing Jobs for the Rural Poor

Eduardo Zepeda
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Ganesh Kumar

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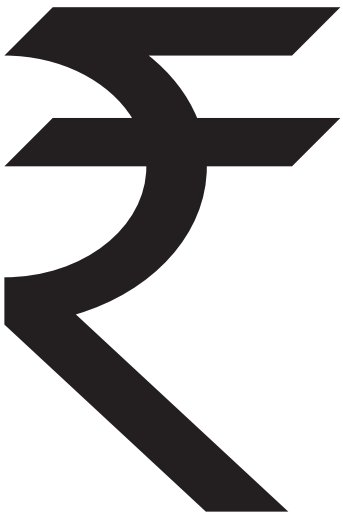

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Summary

INDIA'S RURAL EMPLOYMENT GUARANTEE is a milestone in social policy and employment creation. The Mahatma Gandhi National Rural Employment Guarantee Act was mandated in 2005 to implement an ambitious, demand-driven employment-creation program to benefit the rural poor through projects that improve agricultural productivity and alleviate land degradation. Guaranteeing the right of rural households to 100 days of unskilled manual work, the program's size sets a worldwide precedent. It has achieved impressive results, but the act continues to pose immense design and management challenges.

IMPORTANT FACTS

- India faces persistent poverty and inequality despite burgeoning growth. Between 1988 and 2005 the country's GDP almost tripled, but its poverty rate only decreased by 30 percent, underscoring the need for poverty reduction policies.
- Under the program, members of 50 million households worked a total of 2.5 billion days in 2011.
- The act looks to empower women, widen opportunities for marginalized population groups, and reinvigorate community decisionmaking bodies.
- The program is meant to operate transparently and fight corruption, but corruption has been seen in the act's implementation.

KEY FINDINGS

- The act is having a significant impact on the lives of the poor with rural wages increasing, but its effectiveness varies according to activity and location.
- Simulations using an economy-wide model indicate that the act has a positive macroeconomic impact, leading to increases in GDP and trade.
- As the program shifts purchasing power from the urban rich to the rural poor, the structure of demand changes. Economic activity in agriculture, processed food, and light manufacturing increases and activity in heavy manufacturing and services declines. Likewise, the demand for unskilled labor in urban and especially rural areas increases, while the demand for mainly urban skilled labor decreases.
- Poor households benefit from added employment opportunities, while high-income households might suffer from weaker demand.
- The act is likely increasing land productivity, which boosts GDP and opens the opportunity to introduce incentives to investment while keeping tax rates constant.
- Given India's weak institutional setting, a new way of doing business is necessary to implement the act's detailed and ambitious procedures. Institutions must solidify processes for making information transparently available, and communities need to be involved in creating and managing projects.
- The act is a work in progress that needs ongoing evaluation to fully succeed and keep the corruption affecting the program's implementation in check.

Introduction

ON AUGUST 25, 2005, the Indian parliament enacted a law guaranteeing the right of rural households to a minimum of 100 days of work; this important piece of legislation was later renamed the Mahatma Gandhi National Rural Employment Guarantee Act.[1] In many ways, the act represents a milestone in social policy and employment creation. Its rights-based approach, social inclusion features, reliance on local self-government, and focus on livelihood security make it a very important public endeavor. Its size has no precedent nationally or internationally, posing important design and management challenges.

The act mandated the implementation of an ambitious, demand-driven employment creation program aiming to benefit the rural poor with the income provided by jobs paying a socially acceptable wage and with projects to improve productivity in agriculture and alleviate land degradation. It also set important social goals, such as empowering women and widening opportunities for marginalized population groups. At the same time, the act seeks to reinvigorate community decisionmaking bodies, operate transparently, and fight corruption. The act's timing also adds distinction: The legislation came after several years of high economic growth, the "India Shining" years, that had failed to significantly improve the living conditions of the poor.

As the act was implemented and its program thus began to revamp prior employment programs, job creation accelerated from less than 1 billion workdays distributed among 20 million households in the act's first year of operation, 2006–2007, to 2.5 billion workdays for 50 million households in 2010–2011. Any initiative of such breadth and ambition cannot be expected to operate with satisfactory standards after only a few years. There are reports, by both critics and supporters, indicating instances in which the program's resources have been diverted to the pockets of local elites, that the poor have only received some of the payments they were supposed to have gotten for their work, that the work females do in the program is paid to their husbands, and that the program's projects are in-

adequate, not maintained, or simply not completed, and hence are incapable of effectively increasing agricultural productivity. Some of the reports highlighting failures are part of the program's own auditing provisions. The fact that information on these failures, which are to be expected, is publicly available might contribute to improving the act's design and above all its implementation. In this case, evidence of deficient performance is potentially a good sign. There are also positive results. Both a number of the act's own program audits and independent studies indicate that jobs are in fact being created, that wages are being paid, that females are participating in the program and directly receiving wage payments, that the projects the program is undertaking are considered useful by their communities, that overall wages have increased, and that living conditions have improved. In particular, a recent India-wide household survey offers evidence that the program is reaching and benefiting the poor but does not seem to be effectively guaranteeing jobs. Nevertheless, there is no evaluation instrument proportional to the magnitude of the program that can give a consistent response to the questions the program has raised.

This study seeks to shed light from a different angle on some of the questions the evaluations so far have concentrated on. It assumes that the program under the Rural Employment Act is effectively creating jobs, that the jobs pay the official program wage and are mainly being taken by the rural poor, and that the nation's castes and tribes are participating in these jobs in proportions similar to those stated in the program's official figures. It then asks, first, what are the macroeconomic and distributional implications of running an employment generation program like the Rural Employment Act. Second, it explores the economic and distributional consequences of partially diverting the program benefits away from the poorest rural households. And, third, it assesses the economic and distribution effects of contracting the program to its initial dimensions or significantly expanding it beyond its current size. Taking a long-term perspective, the study then details the economic and distributional effects of the program effectively increasing land productivity, and looks into the consequences of varying the size of the increase in productivity.

It finds that the program has had a positive impact on economic activity, and since its inception, has triggered effects that benefit the poor beyond the immediate and direct impact of wage payments to the poor participating in the program. It finds that the Act's employment creation brings benefits to the economy as a whole, as productive activity expands, and that significantly redistributes welfare toward the rural poor and marginally towards the urban poor. These increases in welfare are made possible by moderate reductions in the welfare of the rural and urban rich. It also finds that the long-term effects of the potential increases in agriculture the Act might be bringing about not only expand economic activity but also increase welfare among all population groups; however, its distributional effects are not positive, for the increase in welfare is be higher for the rich than the poor. These impacts are all significant, yet small, in part because the program—as impressive as it might be—is still very small when compared to the millions of people engaged in the labor markets.

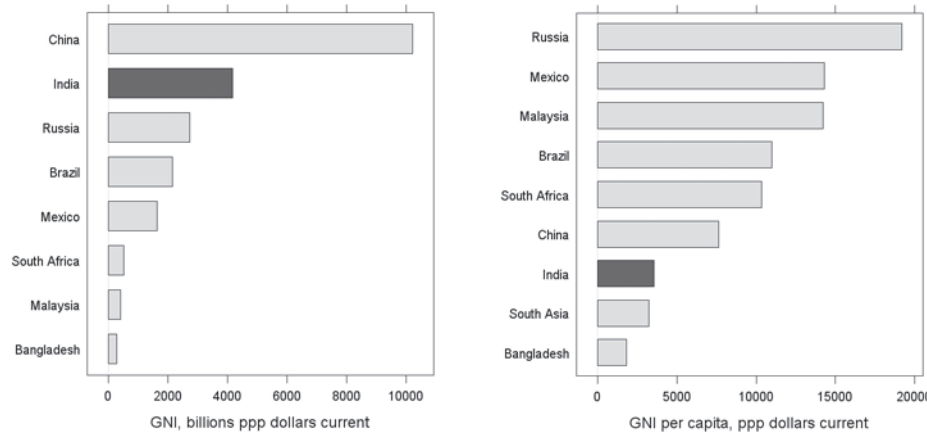
India: Growth, Poverty, and Inequality

INDIA IS THE SECOND-LARGEST country in the world as measured by population, with about 1.2 billion people. It is also an emerging economic power, with a strong growth record spreading over the last twenty years. In terms of size, India is the tenth- or fourth-largest economy in the world, depending on whether market exchange rates or purchasing power parity rates are used to translate local currency to dollars. Either way, the size of India's economy clearly stands out among emerging market and neighboring economies (figure 1.1, left graph). Yet, at market exchange rates, India's income per capita is only $1,330, and thus it is a country that has just migrated from the "low-income" to "low-middle-income" group of countries. Regionally, its income per capita is the lowest among the emerging market economies, similar to the South Asian average and nearly double that of Bangladesh (figure 1.1, right graph).

ECONOMIC GROWTH

Since India gained its independence in 1947, policymakers in the country have considered economic growth and poverty eradication as their two major objectives. During the first three decades after independence, the Indian economy grew at the modest rate of 3.5 percent per year. However, faced with a rapidly growing population (at 2 percent per year), the growth rate was clearly insufficient to make a significant dent in poverty (figure 1.2). The 1980s marked a turnabout in economic conditions. During that decade, economic growth accelerated to a rate of 5.5 percent per year, which resulted in increases in per capita income on the order of 3.5 percent per year. This opened the door for significant poverty reduction. The 1990s removal of widespread government controls on trade

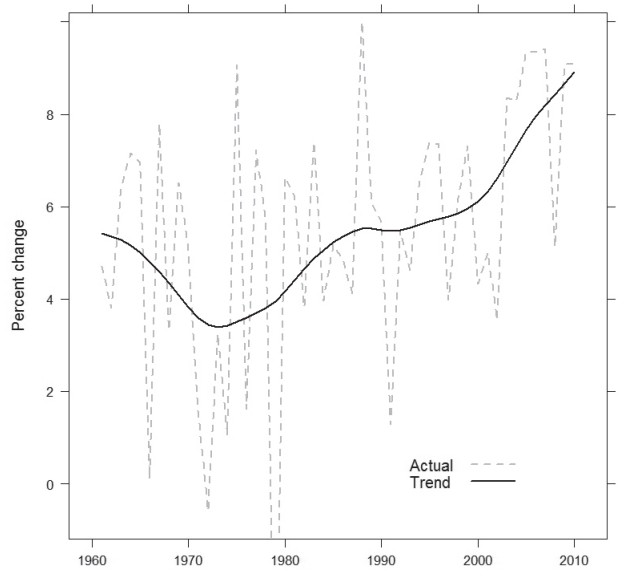
FIGURE 1.1 INDIA'S GROSS NATIONAL PRODUCT IN PERSPECTIVE, 2010



Source: Authors' construction based on World Bank, World Development Indicators data.
Note: For additional data and methodologies supporting this study, see the online supplemental material at http://carnegieendowment.org/files/india_rural_empl_appendix.pdf.

and industry and the long-lasting and rapid expansion of world markets resulted in the acceleration of India's growth. More recently, the economy proved resilient to a variety of shocks. Droughts, high international oil prices, and the global recession did not prevent the economy from growing at rates above 8 percent between 2009 and 2012. The performance of the Indian economy, along with those of other emerging market countries, lost steam during 2011–2012, and the outlook is not as bright. The growth forecast for the 2012–2013 fiscal year is 6.5 percent.

FIGURE 1.2 INDIA'S ANNUAL GROWTH RATE IN REAL GDP, 1961–2009 (PERCENT)



Note: The trend line corresponds to a spline smoother with 7 degrees of freedom.
Source: Authors' construction based on data from World Bank, World Development Indicators.

As the pace of growth has accelerated over the last thirty years, the nation's economic structure has undergone a transformation toward a service-based economy. From representing about 30 percent of the economy in 1960, services came to account for almost 60 percent of India's gross domestic product (GDP) in 2010. India is now widely recognized as a strong world competitor in skill-based services such as information technology. And while the importance of industry has also increased, from less than 20 percent to just about 30 percent, that of agriculture has plummeted—from representing slightly more than 50 percent in 1960 to less than 20 percent in 2010. The shift from agriculture to industry and services is the normal transformation accompanying a country's unfolding economic development. However, as has been the case in other developing economies, India's economic transformation has come at the cost of lags in agriculture's productive capacity and rural living standards.

POVERTY AND INEQUALITY

Poverty in India has been falling since 1983 at a varying pace. While poverty reduction was particularly fast during the years that preceded the passage of the Rural Employment Act, this fast reduction did not compare with the concurrent acceleration of growth. The country's success in increasing its growth rate did not equate with the pace at which poverty was being reduced. Between 1973–1974 and 1987–1988, GDP almost doubled and poverty decreased by 30 percent, but between 1987–1988 and 2004–2005 poverty decreased again by about 30 percent and GDP almost tripled. Further, according to government figures, poverty not only continued to decrease between 2004–2005 and 2009–2010, but it did so at a faster pace.[2] As in many other countries, faster growth was accompanied by rising inequality. India's Gini coefficient, a widely used measure of inequality, increased from 0.286 in 1993–1994 to 0.305 in 2004–2005 in rural areas, and from 0.343 to 0.375 in urban areas.

India's rising inequality also saw the widening of regional disparities among its states. Between the 1990s and the 2000s, the difference between the states' income per capita and national income per capita clearly increased.[3] By the mid-2000s, strong differences in well-being were evident. The proportion of the poor in a state's population ranged between 3 percent and 57 percent. Whereas in four highly equitable states fewer than one in ten people were poor, in fourteen other states more than one in three people were poor. The four equitable states accounted for 2 percent of all Indian poor people, whereas the fourteen other states accounted for 80 percent. In two states, Orissa and Bihar, more than half the population is poor, accounting for almost 20 percent of the country's poor.

Social disparity in India traces back to historical discrimination against and isolation of particular population groups from mainstream society. According to the Indian constitution, official data classify the population into four groups: the scheduled tribes (STs),

the scheduled castes (SCs), other backward classes (OBCs), and other population groups (Others). At about the time of the passage of the Rural Employment Act, these groups respectively accounted for 8, 20, 41, and 31 percent of the total population. They were and remain at the bottom of the social and economic ladder and thus include large concentrations of poor people. In rural areas, respectively, about 49, 40, and 30 percent of the ST, SC, and OBC households had consumption expenditures lower than 410 Rupees, compared with 20 percent of Others. Deprived population groups also have limited access to land. The group with the most limited access to cultivable land is the SCs, whereas Others have the best access. When the act became law, about three-quarters of ST households had land possessions smaller than 0.4 hectare; in contrast, the proportions for SCs, OBCs, and Others are respectively 46, 56, and 52 percent. The more ample access to land of Others is best seen in the proportion of them with land possessions bigger than 4 hectares. Though only 1 percent of people in the STs have land possessions larger than 4 hectares, 6 percent of Others have land possession bigger than 4 hectares; in turn, 3 percent and 4 percent of the SCs and OBCs have lands bigger than this size.[4]

EMPLOYMENT CONDITIONS AND POLICIES

Living standards critically depend on employment opportunities and the effectiveness of jobs to generate earnings. Open unemployment rates are low in India, at 2.5 and 5.3 percent in rural and urban areas, respectively. Rather than a sign of abundant employment opportunities, particularly in rural areas, such low unemployment rates confirm the well-known dictum that the poor cannot afford to be unemployed and suggest that low labor force participation might be a critical issue. India's employment rate—that is, the proportion of the population that actually works—is indeed low. It is low among men, but it is particularly low among women; the rate for males is 55 percent, regardless of the area, whereas female rates are 33 percent and 17 percent in rural and urban areas, respectively.[5]

Having a job or being in possession of land does not ensure a way out of poverty. Wages were and are low in rural areas, and they are particularly low for women. At the extreme, the mean wage of a female illiterate living in rural areas is less than one-tenth of the mean wage of a male worker with a university education living in a city.[6] In a country where the majority of people still work in agriculture, low agricultural productivity is an important determinant of poverty. Rural workers either work as employees in farms for a low wage or squeeze a living out of small and low-quality landholdings.

Employment has been an important consideration in the Indian economic policy discourse. However, its importance in the narrative of policies has lagged behind its relevance in development plans. During the initial decades of development planning, the goal of achieving the maximum possible economic growth and complementary special considerations for the labor-intensive small enterprise sector were expected to substantially im-

prove employment conditions. The growth of the small enterprise sector was encouraged by reserving the production of certain goods to this sector and by providing fiscal concessions. Aside from these policies, employment generation was effectively treated as a side outcome of policies promoting growth and the change in the production structure.[7]

In the face of persistently poor living conditions in rural areas, the government added to the small toolbox of employment-minded policies the design and implementation of employment generation programs, with a focus on low-income groups. The Seventh Five-Year Plan (1985–1990) and Ninth Five-Year Plan (1997–2002) clearly identified productive employment generation as one of the major objectives of the plans, but the overall policy approach to job creation was largely residual. Job creation policies supplementing the plan's emphasis on growth included the promotion of labor-intensive sectors and two major employment creation programs, the Sampoorna Grameen Rozgar Yojana and the National Food for Work Program. In comparison with the Rural Employment Act, these two programs were quite limited.[8]

The Mahatma Gandhi National Rural Employment Guarantee Act

THE ACT

The 2005 Mahatma Gandhi National Rural Employment Guarantee Act guarantees a minimum of 100 days of paid employment to rural households during a financial year. The hope is that by making such additional employment available, the living conditions of the rural poor will improve. Building on India's long-term experience with employment programs, the act adopted a self-targeting mechanism to reach the poor. By specifying that work must be limited to manual tasks that only call for basic skills, and that work is to be remunerated at the state's minimum wage, the universal right that the act establishes becomes a policy that reaches the poor through self-selection.

Although the act does not explicitly indicate a time of the year when work should take place, it expects the program to function primarily during the agricultural lean season because it is during this time that work is scarce in villages and the poor are in desperate search of ways to cope. In the absence of jobs, meager food reserves and no savings lead many people to accept the economic and social costs of migrating, often only to find a low-paying job far from home. The absence of jobs might also lead poor people to sell valuable assets to secure food, at the cost of undermining their capacity to sustain living conditions in the future, or/and incur burdensome debts that might pile on top of prior liabilities. Such flexible employment generation projects might provide timely support to sustain poor people's livelihoods during the agricultural lean season.

For the right to work to be effective, the program under the Rural Employment Act needs to ensure that jobs are made available in a context where poor people find them attractive. On the edge of survival, the costs of taking a job need to be considered carefully. In the absence of child care facilities, women with children might not be able to take the guaranteed jobs even if the additional income is much needed. The act stipulates that, when needed, work sites must have child care facilities. It also calls for work sites to provide drinking water, shady places for resting, and first aid kits. Without these amenities, poor people might not find it advantageous to take these guaranteed jobs. Also important is the fact that the act specifies that work must be provided within a 5-kilometer radius of villages; if work takes place at sites that are further away, transportation costs must be added to the workers' wages.

In addition to job creation, the act also seeks to increase productivity in agriculture, improve the management of the environment, and facilitate access to markets. The act specifies that work made available must fall within the following categories: (1) water conservation and water harvesting; (2) drought proofing, including plantation and afforestation; (3) irrigation canals, including micro and minor irrigation works; (4) flood control and levees; (5) land development and; (6) rural connectivity. Seeking to ensure that projects intensively create jobs, the act stipulates that projects must allocate at least 60 percent of their total budget to wages and forbids the use of contractors. The act is not a rural development program and does not contemplate building complex development projects.

Social inclusion and gender equality rank high among the act's objectives, under which a minimum of one-third of the jobs should be made available to women. It also aims to reach deprived groups, such as the scheduled castes and scheduled tribes. However, the act does not specify a target rate for the participation of these groups. Instead, it takes two action paths: It promotes wide dissemination of information and transparency in its implementation, and it requires that the participation of these groups in the program be regularly reported. Furthermore, it specifies that minor irrigation, horticulture, and land development projects can be undertaken on the lands of deprived population groups.[9]

Empowering the poor and halting corruption are two closely interlinked actions that lead to the alleviation of poverty. Drawing from India's extensive experience, the act takes a step forward to empower the poor and aims to halt the corruption that has plagued the country's social policies. The act and its accompanying guidelines make elaborate provisions to give the poor control over decisions regarding public works carried out under the act. A key provision places the selection and monitoring of works in communities, namely in the hands of the *gram sabhas* and *panchayats*.[10] Also key among its anticorruption and empowering provisions are those related to job cards, which rural dwellers must request to become beneficiaries. Job cards are granted after verifying that the name and address of the person are correct and that the applicant exceeds the minimum legal age to work. With a job card,

rural dwellers can make a submission for the number of days of work of their choice. Thus, job cards open the route to the collection of relevant data on the implementation of the program—they allow tracking submissions for work, the number of days worked, and the wages that are received. To avoid forgery, the act specifies that the job card must stay with the worker and that the program administration must keep a copy. In addition to these measures, the program promotes transparency by mandating that "muster rolls," records of work undertaken and wages paid, are all publicly available at the work site. The act also provides for periodic social audits and the setting up of vigilance committees in villages.

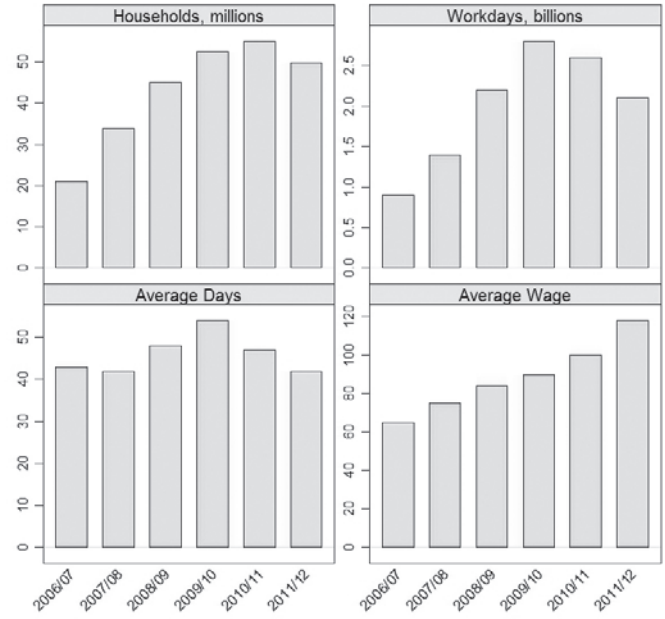
The costs of the act's program are shared between the federal and state governments. The central government finances the entire wage payroll of the unskilled workers, 75 percent of the materials costs, and 75 percent of the wage bill of the skilled workers. State governments cover the remaining 25 percent of the materials costs and the skilled workers' wage bill, and also 100 percent of unemployment allowance in case of failure to provide the requested job.[11]

THE UNFOLDING OF THE PROGRAM

The Rural Employment Act began to be implemented on February 2, 2006. In its first phase, it covered the 200 most backward rural districts; in its second phase, it covered 330 districts. All rural districts were reached during the third phase of implementation (figure 2.1). In terms of jobs, during the first year of operation the program created 1 billion person-days of work that benefited 21 million households. By 2009–2010 the program was giving 2.6 billion person-days of work to the benefit of 55 million households, more than double the initial figure. The act also increased the average number of days of work it provides to households, from 43 person-days per household in its initial year to 50 person-days of work per household in 2009–2010. The size and scope of the program is unprecedented in the history of India's social programs. In the last two years, the program has decreased in size. It will be important to watch closely to see whether this is indeed a new trend or simply a temporary slump.

The participation of women in the Rural Employment Act's program has been remarkable. From the beginning, females' involvement in the program has been well above the minimum prescribed quota of one-third and participation has increased over time. In 2006–2007, females already accounted for 38 percent of the workdays, and by 2008–2009 their participation had increased to 48 percent and has remained there since then (figure 2. 2). Conversely, the program's delivery on its inclusion commitments to deprived population groups is less encouraging. Although the participation of SC households has increased for the most part, that of the ST households started at a high proportion but decreased during the first three years of its implementation. Note that there was a large decline in the share represented by SCs in 2011–2012.

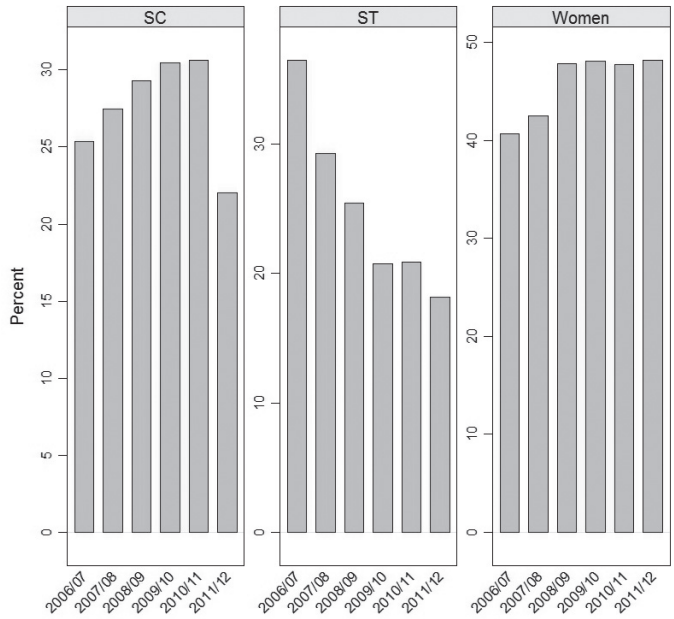
FIGURE 2.1 THE RURAL EMPLOYMENT ACT'S JOB CREATION AND HOUSEHOLD COVERAGE, 2006–2011



Source: Authors' construction based on Rural Employment Act official data.

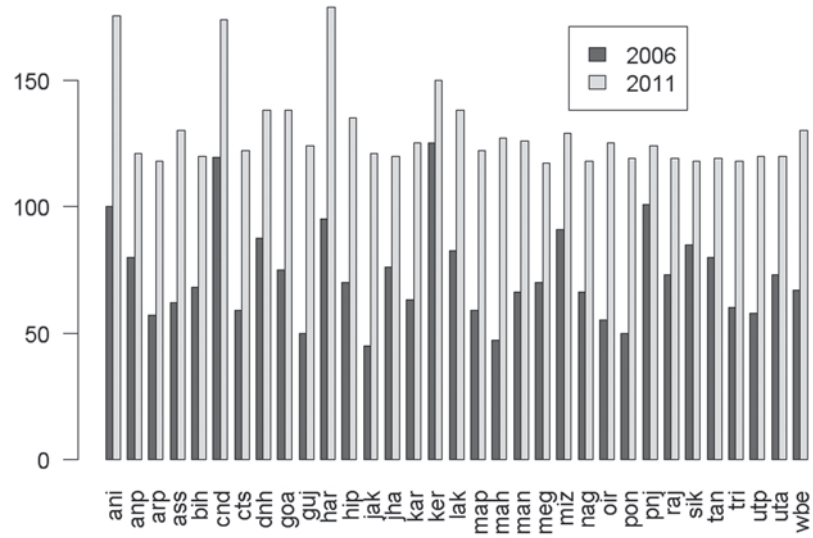
FIGURE 2.2 THE RURAL EMPLOYMENT ACT'S JOB CREATION AND SOCIAL INCLUSION

Share of women, and SC and ST households in the total number of person-days worked



Source: Authors' construction based on Rural Employment Act official data.

FIGURE 2.3 STATE MINIMUM WAGES IN 2006 AND 2011 (RUPEES)



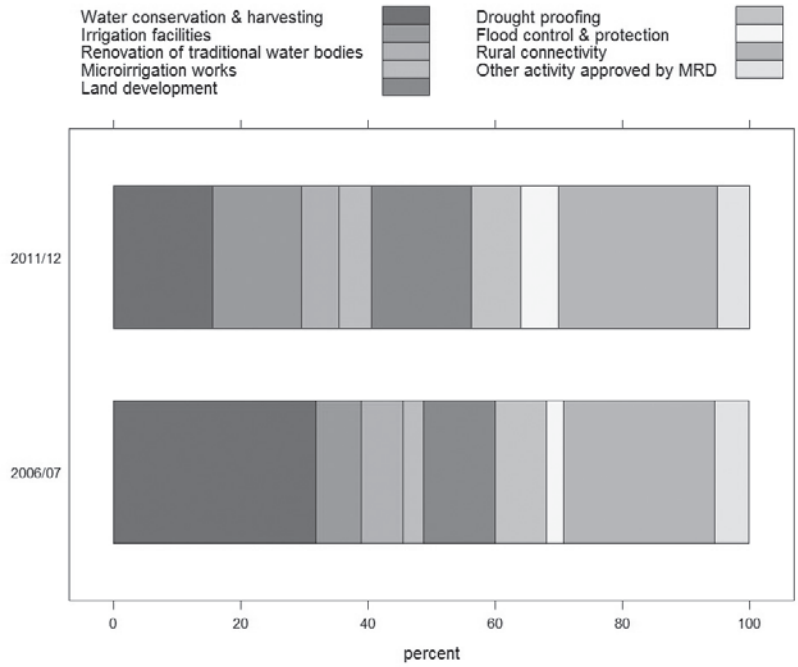
Source: Authors' construction based on data from official data.

An act that gives a right to work and promotes social inclusion should aim to pay the same wage everywhere (once differences in living costs are taken into account). In parallel to the implementation of the Rural Employment Act, the national government has embarked on the equalization of states' minimum wages across the country. If in 2006 states' minimum wages ranged between 40 and 90 rupees, with few exceptions, in 2010 most state minimum wages ranged between 120 and 140 rupees—a significant reduction in the spread (figure 2.3). Effectively equalizing regional wages is not an easy task, for there are regional differences in the cost of living that should be taken into account. Nevertheless, the aligning of nominal state minimum wages to the top is likely to have contributed to social inclusion.[12]

To increase productivity in agriculture and improve the management of the environment, the Rural Employment Act has concentrated its efforts on water and land management projects. Since its implementation, these two types of projects have represented more than two-thirds of the works officially reported as completed, but the importance of land management has increased from 20 to 30 percent (figure 2.4). Prominent among water management projects are those oriented toward conservation, harvesting, and irrigation.

The budget program increased as employment creation expanded, but the burden on the economy only increased in the first three years; measured by the ratio of the program budget to GDP, the program reached a peak budget of 0.6 percent of GDP in 2009–2010 (figure 2.5). The fall in the proportion it represents in GDP after that year is due to both the relative stagnation of the program budget and continued economic growth. If the

FIGURE 2.4 DISTRIBUTION OF RURAL EMPLOYMENT ACT WORKS BY PROJECT, 2006–2007 AND 2011–2012 (PERCENT)



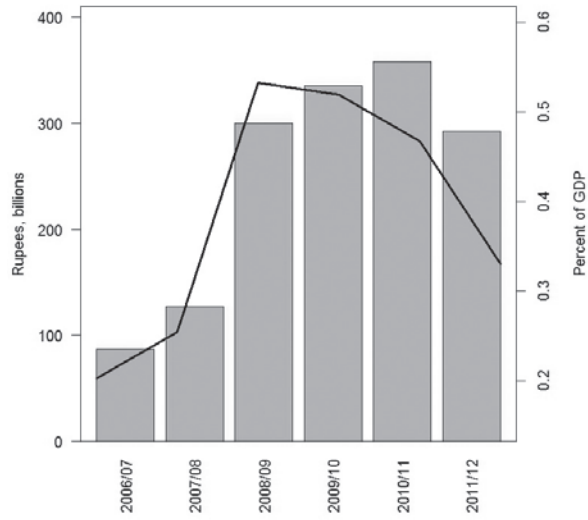
Source: Authors' construction based on Rural Employment Act official data.

current slowdown in economic growth continues, it is possible that the burden of the program will rise back to its earlier 2008–2009 level.[13]

THE IMPACT OF THE PROGRAM

Although there are no systematic, nationally representative data independent of the program (and hence there has been no comprehensive evaluation of the program under the Rural Employment Act) there is evidence indicating that the program is succeeding in reducing poverty; but the data also indicate that the effectiveness of the program varies widely. Evidence includes the administrative records of the program, independent studies by academic institutions, the act's social audits, and the 2009–2010 National Household Survey. In general, the evidence tends to suggest that the program is having a significant impact on the lives of the poor but also that its performance varies significantly according to the specific feature under scrutiny and the geographical location. Independent studies and social audits detail weaknesses and failures, which in many cases raise serious concerns, but they also suggest that on the whole the program is significantly contributing to poverty reduction. The 2009–2010 National Household Survey data confirm that the program is reaching the poor and is making progress in increasing social inclusion, with

FIGURE 2.5 CENTRAL GOVERNMENT EXPENDITURES ON THE RURAL EMPLOYMENT ACT, 2006–2007 TO 2011–2012



Note: The data given here correspond to released expenditures.
Source: Authors' construction based on data from the Union Budget and Economic Survey, 2011–2012.

regard to the participation of both deprived social groups and women, and also confirms the strong variance in the degree to which the program accomplishes some of its objectives across states.[14]

Independent studies and social audits suggest that income in villages has increased since the inception of the program, with the increases varying from the very small to the significant, on the order of 20 percent of annual income. Expectedly, studies report that added income has been used for food consumption, but also to cover education and health expenses as well as the repayment of household debt. Of particular importance, the rise in income earned locally has also curbed distress migration. Again, estimates vary widely, between those finding no visible reduction and those finding a complete elimination of this form of migration.[15]

The high participation rate of women in the Rural Employment Act is perhaps one of its most important achievements. Since women's participation in paid labor is particularly low, a 50 percent average participation in the act is a remarkable accomplishment. Similarly important is the provision equating women's and men's wages, given that women's wages tend to be significantly lower than those of males. Thus, as more women join the paid labor market and do so under significantly improved wage conditions, household income and women's status in the household and the community might have improved. Studies and social audits confirm these trends, but also suggest that the journey toward women's empowerment will be a long one. There are studies reporting that women have

gained power, have made the decision to work on their own, and have improved their livelihood options, but studies also found that women still hand their wages to their husbands and that husbands arrange to directly receive the wages earned by their wives.[16]

As important as a 50 percent women's labor force participation rate might be, there are still obstacles preventing women from joining the program. The decision to take a job under the Rural Employment Act, as any other job, implies costs. The act's program deals with some of these costs when it specifies that work facilities should be made available and that a wage premium should be added when work sites are far from villages. Some of these costs are particularly sensitive for women. A case in point is the availability of child care facilities. According to most studies, though the program has been relatively successful in providing drinking water and sheds, it has been much less successful in providing first aid and child care facilities.[17] This is an area where much still needs to be done.

An important aspect of the poverty reduction impact of the Rural Employment Act is its ability to raise the payment that poor workers receive for their work. Three important wage effects have followed the implementation of the act. The first is the degree to which the wage under the act has raised the local market wage for casual labor in agriculture. Related to this, a second point is whether the act is abiding to the provision of paying the minimum wage, a point further reinforced by the parallel increase in minimum wages. In the case that it has, the issue is whether the guaranteeing of a job is effective so that the act's wage has become the de facto wage floor, meaning that poor workers not working under the act's program also benefit from the higher wage provision of the program.

This is an area where evidence is more difficult to obtain. Studies report that the act has increased the wages workers receive when working for the program and this is a very important effect. It does not necessarily mean, however, that the act is effectively paying the stipulated minimum wage. According to studies, the act does not always abide by the requirement to pay a state's minimum wage to its workers. Conversely, studies and evidence from the 2009–2010 national survey suggest that the act's employment creation is not meeting the demand for this type of job under it. However, some studies indicate that local wages have increased since the inception of the act.[18] So even if not fully guaranteeing employment, the act might be helping improve the lives of the poor even when workers do not directly engage in the program.

The ability of the program to sustainably reduce poverty largely rests on the adequacy and quality of the assets it creates. Building higher-quality assets ensures a stronger and longer-lasting impact on agricultural productivity, which might increase poor people's consumption of food and also raise their living standards. The rapid expansion and sheer size of the program has surely exerted pressures on building and coordinating capacities, so one should not be surprised to learn that asset quality is in need of improvement.

Official figures state that in 2010–2011 only 50 percent of projects initiated under the Rural Employment Act during the last fiscal year were actually concluded, suggesting that even by this crude indicator, this is an area in need of improvement.

Village studies also indicate that asset creation is an aspect that needs more attention. Studies indicate that assets under the act are often built with a short-term perspective, do not last long, are of low quality, and are not properly maintained. But studies also indicate instances in which assets are considered valuable by villagers, improve crop yields, and have long-term positive environmental effects. Some observers blame asset quality problems under the act on the rule specifying that the program should only use manual work and that 60 percent of the program expenditures should go to direct labor. Others disagree, arguing that much can still be done to improve asset quality within the stipulated 60/40 ratio. Jean Dreze and Reethika Khera, for example, suggest that asset quality can be enhanced by a modest use of science and technology coupled with participatory planning so that the right assets are selected and the proper technologies are adopted.[19]

Assessing the Economy-Wide Impact of the Rural Employment Act

GIVEN THE POTENTIALLY FAR-REACHING EFFECTS of employment generation programs, economy-wide modeling is a particularly useful tool to analyze the impact of such policy initiatives. The section below discusses three selected studies of employment generation programs in India that have used economy-wide modeling followed by our own model and simulations.

THE MODELING OF INDIA'S EMPLOYMENT PROGRAMS

The first of the studies looks at an employment program similar to the one proposed in India's Seventh Five-Year Plan.[20] The main conclusion of the study is that, if well designed and executed, a large public works program can significantly reduce poverty and do so at a moderate cost. The second study looks at Maharashtra's employment guarantee scheme (EGS) in several villages using social accounting matrix (SAM) multiplier analysis.[21] The study concludes that Maharashtra's EGS had positive income distributional and welfare effects, although these effects are sensibly reduced by program leaks and forgone income. The study suggests that the program only becomes attractive when it effectively creates productive assets. The third study analyzes the impact of six works sponsored under the Rural Employment Act in the village of Kotda Nana using an SAM constructed for the village. The study finds a significant impact on employment and income, but also finds the program's multiplier effects to be very small.

N. S. S. Narayana, Kirit Parikh, and T. N. Srinivasan run a computable general equilibrium model to assess the impact of a rural public works (PW) program on growth, welfare, and the poor's income.[22] The program simulates the creation of 200 person-days of work per year per rural household in the bottom 40 percent of the distribution during the agricultural lean season. It uses a recursive dynamic model that groups activities into ten sectors. We highlight two conclusions: (1) A PW program is an effective policy to eliminate hunger; and (2) it does so at a modest cost to growth. Narayana, Parikh, and Srinivasan ran seven simulations that varied the way the program is financed: by taxes or through a reduction in investment; the wage rate—50 or 100 kilograms of wheat per person; the effectiveness of public works' investments—total failure, as efficient as the mean of investments in the economy, and half as efficient; the leaking of benefits to groups other than the target population—all benefits accrue to the bottom two rural quintiles, half the benefits leak to the upper three rural quintiles.

Their results indicate that an employment generation program could increase the energy intake of the poorest 20 percent by 70 percent and that of the poor in the second quintile by 10 percent, and even increase the economy's growth rate by 0.22 percentage points. These results correspond to the simulation in which the program is financed by taxes, investments carry average efficiency, and transfers do not leak. Relaxing these assumptions gives interesting results. First, the method of financing is very important. If instead of using taxes, the program is financed with the resources freed by the reduction of investment, the program reduces the average growth rate by –0.25 percentage points. Ensuring that PW investments are efficient is crucial for keeping costs low. If in the latest scenario the efficiency of PW investments falls to half the average efficiency or zero, the growth rate decreases by –0.47 and –0.73 percentage points. Leakages to the upper 60 percent of the rural population have two effects. First, the impact on the economy is more positive, for leaks reallocate income back to population groups that save more and pay taxes. Second, the program loses capacity to reduce hunger, as the benefits accruing to the poor shrink. Finally, the authors also experiment with different wages; for example, cutting the wage rate by half proportionally reduces the program's impact on the rural poor.

Katsushi Imai analyses the impact of Maharashtra's EGS in three villages in the state of Maharashtra using a six-sector village SAM.[23] To investigate the effects of the program on the economy, Imai looks at the effect of EGS jobs and simulates the program's creation of assets by "converting" land from dry to irrigated parcels. To investigate the employment effects of the program, Imai makes two alternative assumptions: (1) People taking EGS were all previously unemployed—or inactive; (2) people taking EGS are a mix of previously unemployed people and people leaving other jobs to join the EGS. In the first case, the EGS increases household income by the full amount of the program's

wage bill; in the second case, income benefits are reduced by the sum of forgone wages due to workers switching jobs.[24]

Imai's results indicate that Maharashtra's EGS directly increases village household income by 2.6 percent. Allowing for positive asset creation augments the size of the gains in household income, village output, and savings by 0.5, 0.7, and 0.7 percent, respectively. Imai notes that these gains extend beyond one period. Now, bringing forgone income into the analysis results in weaker gains. For example, the full EGS wage bill increases household income by only 1.6 percent, that is, a loss of almost one-third of the potential gain.

The most recent of the three studies looks at six works under the Rural Employment Act implemented in 2006 that lasted over a period of eighteen months. The works took place in the village of Nana Kotda in Gujrat, a small impoverished settlement with a rudimentary agriculture-based economy and an average per capita income of Rs. 9,846, which is just below the Rs. 10,000 poverty line. Most of the agricultural activity is rain-fed, despite experiencing a two- to three-year drought cycle every five years. Other than agriculture, villagers can work in a 410-member milk cooperative generating small revenues (Rs. 285 per member per year) and at a cotton ginning factory that has few local linkages. Villagers engage in seasonal migration to complement income, particularly during years of little or no rain.

In 2006, the Rural Employment Act started building six check dams, hiring 9,812 person-days of employment and paying Rs. 586.061 thousands in wages. A total of 161 households (about 40 percent of the village's households) participated in the works at an average rate of 53.6 days per household over eighteen months. Women participated very actively in the works, accounting for 56 percent of the jobs. Vulnerable groups were major beneficiaries. Households with incomes around the poverty line, landless households, and marginal farmers participated most actively in the works. Marginally, there were also rich households benefiting from the works. Regrettably, the participation of the poorest households was very small. Only 2.5 percent of the poorest households participated in works built under the act.[25] The study's authors argue that the poor could not afford to leave a sure job for what they perceived as an uncertain job promised under the act, even if it might be better paid.

The study finds that the act's aggregate impact was significant but nuanced. The act directly increased the village person-workdays base by 16.4 percent, while multiplier effects added 1.6 percent more. Wage payments under the act amounted to a 3.5 percent increase in the total village income base while indirect income effects added another 1.2 percent. Overall, employment increased by 18.0 percent and income by 4.7 percent.

MODELING THE ECONOMIC IMPACT OF THE RURAL EMPLOYMENT ACT

We use the SAM based economy-wide STAGE model to probe the potential economic impact of an employment program like the Rural Employment Act. We implement the model in its comparative, static mode. We choose not to use the recursive, dynamic mode because of three varied considerations: First, the time path of the implementation of the act's program was not a subject for investigation, given that it was set by the act. Second, the development of a business-as-usual baseline for the recursive dynamics requires the imposition of a large number of additional assumptions. Third, the magnitude of the effects of the act's program are sufficiently small that they will be dwarfed by the underlying growth and factor productivity changes in the Indian economy. Hence we focus on the "short-term" distributional implications of the act, the key policy objective, rather than on the "longer-term" growth implications, a secondary policy objective.

We begin the discussion of our method by presenting the main features of the data used. We then discuss the model closures, grouping them in two categories: (1) macroeconomic rules, and (2) labor and other factor market closures. Then we describe how we simulate the act, and we close by presenting the array of simulations.

The Social Accounting Matrix and Data

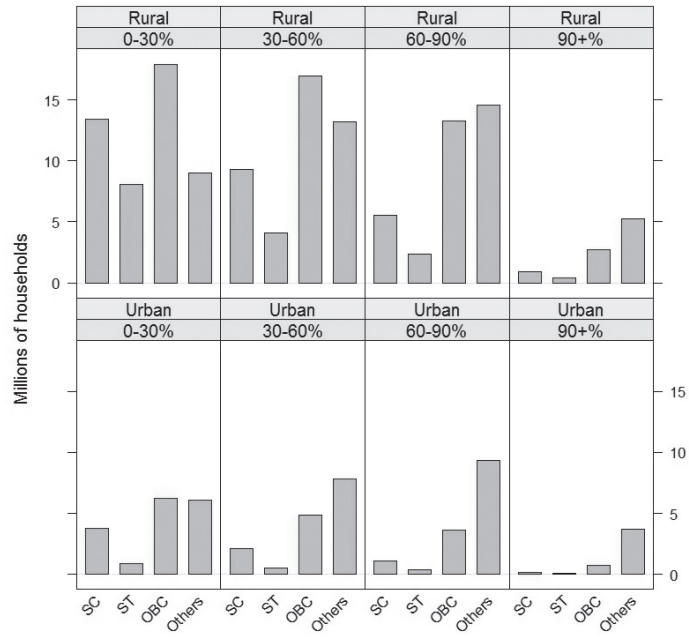
A social accounting matrix is an assemblage of data that reports all the economic transactions or flows of receipts and expenditures incurred by all the agents in the economy for a particular year. These agents are the production sectors, social groups (households), firms, government, and foreign agents. The flows of receipts take place through commodity transactions (buying and selling) between the agents for purposes of consumption, intermediate use, investment, inter alia, and through interagent transfers.

We choose a SAM with data preceding the inception of the Rural Employment Act over a more recent SAM to more clearly simulate the implementation of the act. The SAM incorporates detailed information on sources of incomes and patterns of expenditures at the household level. Other SAMs include extensive information on consumption expenditures but are less satisfactory regarding sources of household income (see appendix B for a description of the SAM).

Our data reflect the role of SCs and STs in the Indian distribution of household income. In particular, it confirms that SCs and STs tend to be prominent among poor households and rare among rich households (figure 3.1).

The SAM data report that household savings rates in India follow idiosyncratic patterns. First, saving rates of the urban and, particularly, the rural poor are negative (figure 3.2).

FIGURE 3.1 DISTRIBUTION OF HOUSEHOLDS BY AREA, INCOME, CASTE, AND NUMBER OF HOUSEHOLDS

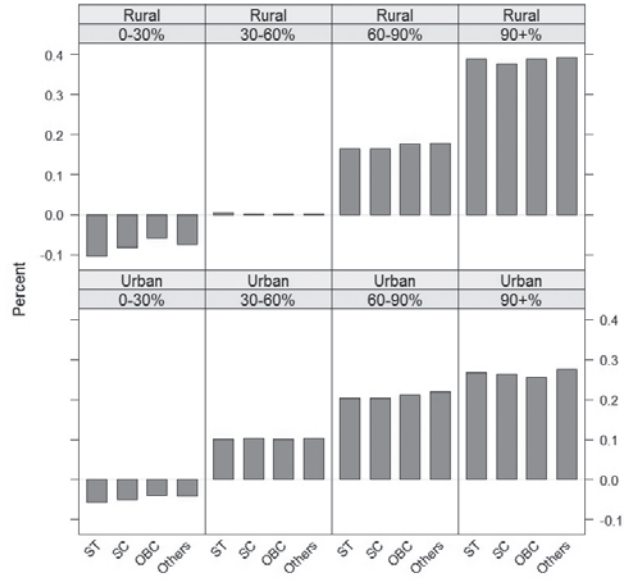


Source: SAM.

Second, savings rates of the urban low-income households are higher than savings rates of the same group in rural areas. Third, savings rates of rural rich households are higher than those urban rich households. This pattern of savings rates will influence how the economy adjusts to the simulated policy shocks. However, negative savings rates are not sustainable in the long run. It is also typically the case that households, especially poor households, are likely to adjust savings rates in response to year-to-year fluctuations in real incomes. The selected macroeconomic closure rules for clearing the savings-investment account (see below) minimize the effects of the observed savings rates on the results.

The structure of government revenue is always a key consideration in the analysis of public policies. According to the SAM data, almost half of India's tax revenue comes from sales taxes (46 percent). The other comes from import (28 percent) and direct taxes (26 percent). According to our data, sales taxes on household consumption, which include subsidies, are small. On the whole, net sales taxes only represent 2.4 percent of total expenditures in consumption. However, the rates are progressive. For example, net sales taxes on the poorest rural households are negative, between –0.5 and –1.0 percent, while the highest rate on rich households barely surpasses the 4 percent mark. Direct taxes are paid by enterprises (12 percent) and households (15 percent), but in our data only urban households in the upper 40 percent of the distribution appear as paying direct taxes.

FIGURE 3.2 HOUSEHOLD SAVINGS RATES BY INCOME BRACKET AND AREA (PERCENT)



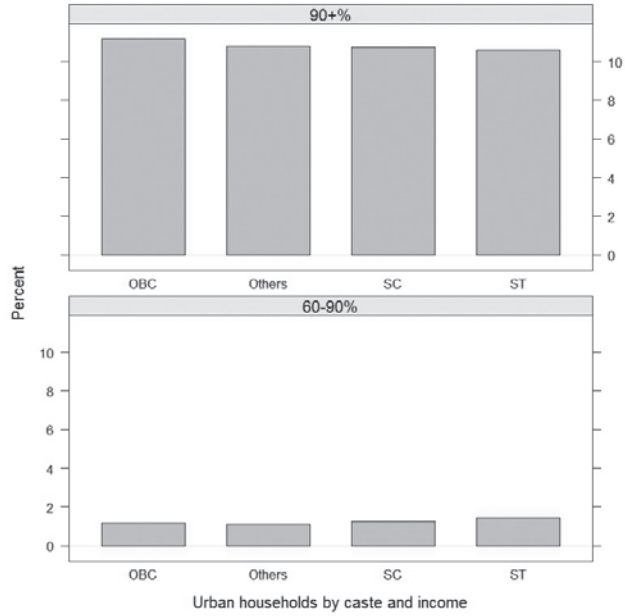
Source: SAM.

Broadly speaking, households effectively pay two tax rates: Households in the upper 60 percent to 90 percent of the distribution pay an effective rate of about 1 percent, while households in the top 10 percent of the urban distribution pay taxes at a rate of about 10 percent (figure 3.3).

The SAM includes 48 labor groups: area (rural/urban), sex, caste, and tribe, and three education/skill categories. Most of the labor income accrues to workers with some schooling and to college graduates of the others population group. Such concentration of labor incomes underlies the strong concentration of household income (figure 3.4). The data feature unemployment rates ranging from 2 percent to 6 percent (figure 3.5). Rates tend to be higher in rural than urban areas, and higher for females than males.

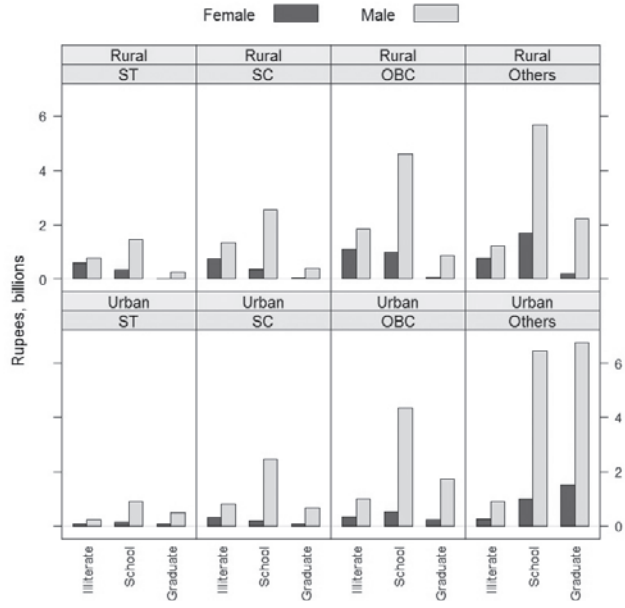
Our data only allow distinguishing between households' labor and nonlabor income; household income from land and capital are lumped together. The distribution of nonlabor income, land and capital, is severely skewed in the Indian economy. The top 10 percent of rural households receive more than 40 percent of the joint income from land and capital, while the top 10 percent urban households receive 20 percent (figure 3.6). This high concentration in the income from land and capital follows the concentration of capital and land ownership, and also incorporates the concentration of high-quality land in rich households and the effects of the land tenure system.

FIGURE 3.3 INCOME TAX RATES PAID BY URBAN HOUSEHOLDS AND INCOME BRACKET (PERCENT)



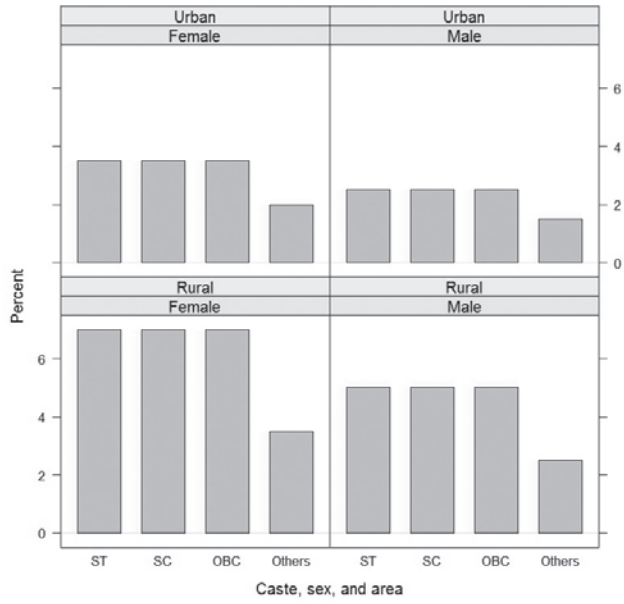
Source: SAM.

FIGURE 3.4 LABOR INCOME BY CATEGORY OF WORKER (MILLIONS OF RUPEES)



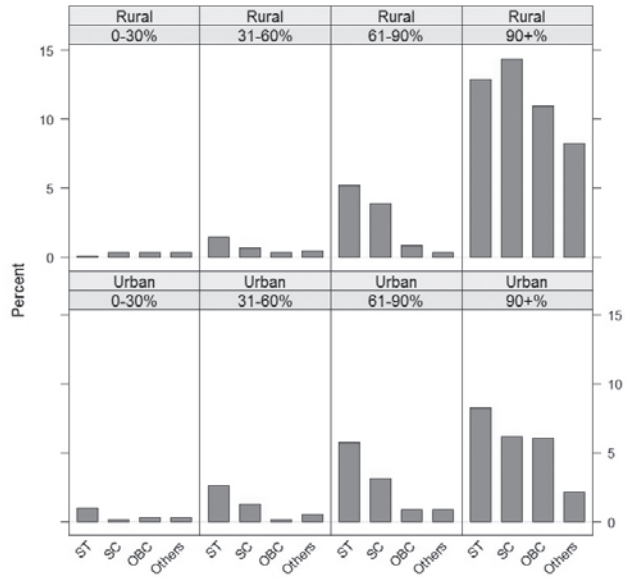
Source: SAM.

FIGURE 3.5 UNEMPLOYMENT RATES OF ILLITERATE WORKERS (PERCENT)



Source: SAM.

FIGURE 3.6 LAND AND CAPITAL INCOME BY HOUSEHOLD INCOME, CASTE, AND AREA (PERCENT SHARE)



Source: SAM.

Model Closures

In the model the external balance in foreign currency units is fixed, which means that changes in the (nominal) exchange rate ensure that external accounts reach equilibrium after the simulated shock.[26] It also fixes the volume of final demand of enterprises and the real value of net transfers from enterprises to households, thereby assuming that there are no endogenous interactions between households and enterprises. The model assumes that investment is fixed in real terms, meaning that any effect that the Rural Employment Act might have on the economy will involve the necessary adjustment of savings rates to ensure that real investment consistently remains fixed. Furthermore, the model assumes that households and enterprises carry the full burden of the change in savings rates.[27]

We also assume that technology is fixed, thereby ruling out the possibility of welfare changing due to better technologies, which suits well the purpose of analyzing the welfare effects of an employment creation program. Because the Rural Employment Act also includes the objective of increasing productivity in agriculture, we probe this aspect by designing a separate simulation in which we assume an increase in the productivity of land.

In our exercise, the implementation of the employment creation program prompts an increase in government expenditures. For this reason, we recognize the importance of adopting government closures that restrict the ability of public policy interventions to postpone facing the costs of policies and making them appear as "free gifts." The increase in government expenditures is thus accompanied by an increase in taxes. The idea of fully funding the increase in expenditures with taxes also ensures that the logic of the comparative, static method is maintained by imposing all adjustments within the solution period of the model. Operationally, in the model we fixed the real values of net transfers to households and enterprises, the share of government consumption in domestic final demand ("absorption" in economists' jargon), government savings rates, and government's absolute real borrowing. The government can thus only clear its accounts by proportionally adjusting at least one tax rate; in this case, we allow the income tax rates to change additively because income taxes are the instrument in the model that is nearest to a lump sum tax and thereby introduces the least amount of additional distortions and has the smallest impact on the pattern of results realized.[28]

The aim of avoiding social policies appearing as free gifts could, of course, be also achieved by reducing other social programs or by increasing sales taxes. Choosing either of these two alternatives over the increase in income taxes might, however, introduce unnecessary complications into the analysis and take the discussion away from the central issue of probing the impact of the simulated employment creation program. The alternative of reducing the budgets of other public programs would involve choosing the programs and deciding the proportions by which their budgets would be reduced. Furthermore, the analysis of results will have to distinguish between the effects of employment creation and

the effects of the budget reductions of other programs. Choosing to clear public balances with sales taxes will in turn introduce the difficult discussion of how much taxes and subsidies will have to change, given that the rationale behind the imposition of the different tax and subsidy rates is complex. But even if we apply a uniform rule to the change of sales taxes, the analysis will need to distinguish between the effects of employment creation and the change in commodity prices.

The option of increasing income tax rates of course also has its own problems. The main problem is perhaps that by choosing the direct income tax as the unique instrument to keep the public budget in balance, we are in effect enhancing the distributive impact of the program, for income taxes are only paid by the urban rich. The simulation of the program thus taxes the urban rich to finance wage payments to the rural poor.[29]

Labor and Other Factor Market Closures

The model treats the labor market in detail. It assumes that labor, as a production factor, functions in two distinct markets. Part of the work is assumed to take place in a competitive labor market operating at full employment. In this market, changes in the demand for labor are fully accommodated by changes in wage rates. As sector wages change, workers shift from one sector to another until wages are equalized across all sectors of the economy, but retaining sector-specific wage premiums. The other market corresponds to conditions where labor is abundant, with high unemployment and underemployment rates. In this market, changes in the demand for labor are accommodated by changes in the volume of workers employed at a constant wage rate. Since a key objective of the Rural Employment Act's program is to provide employment during the "lean" season when rates of underemployment, if not unemployment, are high, this latter market is the relevant market for the analysis of the program.

The model features 48 labor groups. We distinguish workers by area of residence (rural/urban), sex, three education/skill categories (illiterate, some school, and college graduates), and four tribe/caste groups. Participation in the two featured labor markets is initially determined only by education/skill. We assume that all workers in the school or college category operate in full-employment labor markets. Correspondingly, all illiterate workers participate in the other high under/unemployment market. Place of residence, sex, tribe, or caste do not define the type of market, but have a say in how people participate in their respective markets and react to changes in the economic environment. The two labor markets function separately, although workers can migrate from one market to the other. The unemployment/underemployment pools of workers are not unlimited; if the demand for labor in a pool increases sufficiently to exhaust that pool of unemployed labor then the market changes its mode of operation.

It may be speculated that the operation of the Rural Employment Act may have an impact on both the quantity of employment and the wage rates of workers and do so in varying ways, depending on education, sex, area, and sector. This argument would imply the existence of a range of "unemployment" rates above which wage rates must rise if more labor is to be forthcoming; this option is not implemented in this variant of the model. The reason behind the decision not to include this variant is the lack of data.[30] We therefore opt for assuming that the economy operates only under the two labor markets as defined above.

The behavior of the other factors of production is as follows. The allocation of land within agriculture is flexible, but the total supply of land is fixed. The total supply of capital is also fixed, and it can be flexibly allocated across all sectors in the economy.

Simulating an Employment Creation Program

To operate the simulation of job creation under the Rural Employment Act, we add a Rural Employment Act sector to the economy. This sector produces no output and employs no people in the baseline scenario. The simulation of this sector thus consists of imputing the employment of workers and purchases of materials and services by this sector, according to the approximate actual figures of the act's program in fiscal year 2005–2006. The simulation draws workers from the pool of rural illiterate workers to this sector. Because these workers pertain, by construction, to the labor-abundant sector of the economy, their wages remain constant even if employment increases. The implementation of the program, thus, increases employment but does not directly affect wage rates. There is one case in which the implementation of the program will result in a direct change in wages, namely, when the program's hiring is so large that it exhausts a given pool of illiterate workers and, hence, starts drawing workers from the pool of more skilled workers. The program's inception can, of course, indirectly change wages. As the program modifies total and sector-specific rates of activity, wage rates and employment adjust to meet the changes in the demand for labor. The indirect effect on wages and employment will depend, inter alia, on the sector mix of illiterate and more educated workers.

THE SIMULATION STRATEGY

To probe the short- and long-term effects of the Rural Employment Act on the Indian economy, we ran a number of simulations. Here we concentrate on two distinct core simulations and discuss the effects of varying some of their features. The first core simulation mimics the implementation of employment program features under the act, to the extent that this is possible. The second core simulation concentrates exclusively on the increase in the productivity of land as a result of the act, leaving aside the employment generation features of the program. More specifically, the simulation consists of an increase of 1.5

percent in the productivity of land. We also discuss the results of a set of scenarios that look into the effects caused by varying important features of the two core simulations. We look into the effects of changing the efficacy of the employment program to reach the target population, and we also look into the effects of varying the size of simulated policy shocks. Thus we vary the size of the budget of the employment program and we vary the assumed size of the increase in land productivity.

The Rural Employment Act as an Employment Creation Program

The first core simulation models an employment generation program with a program budget equivalent to 0.65 percent of GDP, which approximately corresponds to the actual size of the Rural Employment Act in fiscal year 2009–2010, the year in which it represented the highest proportion of GDP. The simulation consists of an increase in public expenditures equivalent to 0.65 percent of GDP to hire workers to the act's sector, pay for the necessary materials for construction, and pay the wages of the administrative and few technical staff members required by the projects. The composition of the increase in public expenditures also closely follows the actual budget mix for 2009–2010. The payment of wages to workers under the act is equivalent to 0.43 percent of GDP, expenditures in intermediate inputs are equal to 0.19 percent of GDP, and the payment for government services is equivalent to 0.03 percent of GDP. In proportional terms, 66 percent of program expenditures go directly to the payment of wages to beneficiaries, 5 percent to administration expenses, and 29 percent to the purchase of inputs for the implementation of projects (figure 3.7).

The model has the Rural Employment Act drawing labor from rural households in proportions approximating the participation of rural residents, both male and female, in the act during the years 2009–2010 (figure 3.8). We assume that labor under the act is divided in equal parts between male and female illiterate workers and that these workers belong to the 60 percent poorest rural households of the SCs and STs and to the 30 percent poorest households of the OBCs and others groups. The payment of wages to these workers feeds the income of the households from which workers are drawn.

Although the cost of intermediate input materials represents a good proportion of construction goods, it is not limited to these. This cost also includes expenses for government services corresponding to the "public administration, defense, health, and education" item in our data; 75 percent of these payments are purchases of labor services, which are assumed to be supplied by school- and college-educated workers.

The Increase in Productivity Under the Act

This second core simulation was designed to assess the possible legacy of the Rural Employment Act through its impact on rural productivity. The simulation increases land

FIGURE 3.7 RURAL EMPLOYMENT ACT CORE SIMULATIONS

The Act's employment creation	
Budget as percent of GDP	0.65
Budget for direct payment of wages	0.43
Beneficiary household groups	6 rural
Male-Female workers mix	50%-50%
Taxpayers funding the program	Top 40% urban
NREGA's land productivity increase	
Percent increase in productivity	1.5

productivity by 1.5 percent, applying the increase uniformly across all lands. The shock thus does not take into account any impact that the act might have on the pattern of land distribution. It could have been interesting to simulate some differentiated increases in land productivity according to the income and population group of the owner of the land, to address the act's explicit aim of increasing productivity in the lands of, for example, marginal landholders. However, there is no sufficient information to justify differential increases in productivity according to landholding patterns. Thus, the increase in income to the owners of land that results from the simulated increase in productivity is distributed according to the preshock pattern of land earnings (see figure 3.5 above).

Addressing the Effects of Size and Targeting Efficacy

To probe the effects of program size, we present results for two alternative scales: one that is conservative and another that is ambitious. In the first case, the program has a bud-

FIGURE 3.8 DISTRIBUTION OF THE SIMULATED EMPLOYMENT CREATION BY INCOME AND CASTE OF HOUSEHOLDS (PERCENT SHARE)

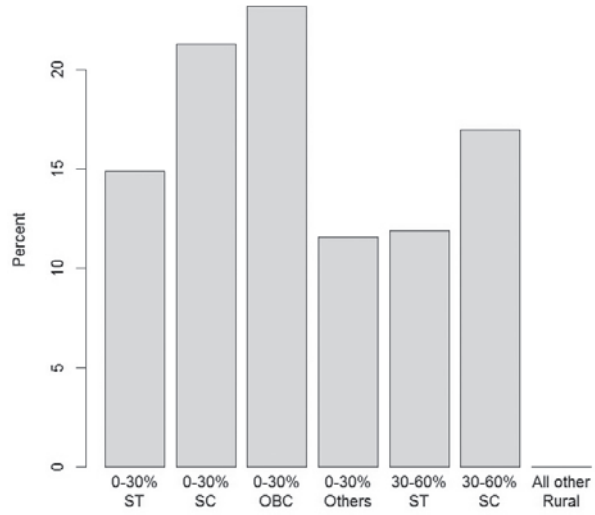
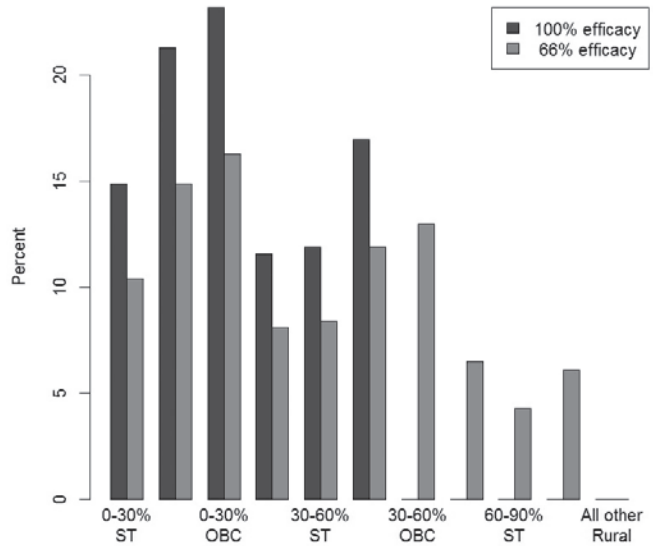


FIGURE 3.9 SCHEME OF SIMULATIONS FOR BUDGET AND TARGETING VARIATIONS

The Act's employment creation			
Type of simulation		Size	
The Act at full targeting efficacy	Core	Conservative	Expansionary
Budget as percent of GDP	0.65	0.33	0.98
Budget for direct payment of wages	0.43	0.22	0.65
Beneficiary household groups	6 rural	6 rural	6 rural
Male-Female workers mix	50%-50%	50%-50%	50%-50%
Taxpayers funding the program	Top 40% urban	Top 40% urban	Top 40% urban
LAND PRODUCTIVITY INCREASE	Core	Conservative	More ambitious
Percent increase in productivity	1.5	1.0	2.0
Targetting Efficacy equal to 2/3 (leaks)	Core	Conservative	Expansionary
Budget as percent of GDP	0.65	0.33	0.98
Budget for direct payment of wages	0.43	0.22	0.65
Beneficiary household groups	10 rural	10 rural	10 rural
Male-Female workers mix	50%-50%	50%-50%	50%-50%
Taxpayers funding the program	Top 40% urban	Top 40% urban	Top 40% urban

get equal to 50 percent of the core simulation budget, whereas the ambitious case has a budget that is 50 percent higher. The corresponding exercise for the productivity shock increases productivity by 1.0 percent in the conservative scenario and by 2.0 percent in the ambitious scenario (figure 3.9). Everything else in these simulations remains the same.

FIGURE 3.10 CORE AND ALTERNATIVE DISTRIBUTIONS OF BENEFITS ACROSS HOUSEHOLDS



We also look into the effects of changes in the efficacy with which job creation under the Rural Employment Act reaches the target population. The core act-related employment simulation assumes that benefits exclusively accrue to the poorest 40 percent of the rural population. The alternative simulations assume the presence of leaks, that is, only two-thirds of the benefits accrue to the poorest 40 percent and assign the remaining one-third to the "next up the ladder" four income-caste households—that is, leaking to households that are in the 31 percent to 60 percent income bracket of the OBCs and others and households that are in the 61 percent to 90 percent bracket of the income distribution of the SCs and STs (figure 3.10).

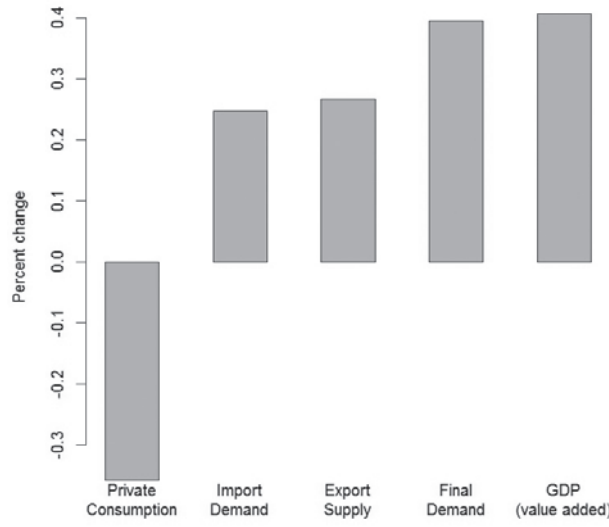
The Economic and Distributional Effects of the Rural Employment Act

NOW WE TURN TO a discussion of the results of the first core simulation exercises—the Rural Employment Act employment creation program. We begin with two broad results: the macroeconomic and the distributional effects of the program. In the first case, we look at several standard macroeconomic indicators; in the second, we look at welfare, a consumption-based measure that incorporates all changes in prices and incomes.[31] We then detail the mechanism whereby the act changes the distribution of income. For this purpose, we look at the changes in prices and quantities in sectors and discuss how these changes feed changes in household income and consumption expenditures. Next we look at changes in the cost of living and go back to the change in welfare. We then briefly discuss how changes in household indicators interact with macroeconomic changes to enhance or mute the impact of the program. We end the chapter by presenting the results of varying the effectiveness of the program to reach the rural poor and the results of varying the size of the program budget.

THE OVERALL IMPACT OF EMPLOYMENT CREATION

Simulation results indicate that running an employment generation program such as the one under the Rural Employment Act has a positive macroeconomic impact. Implementing a program under the act budgeted at 0.65 percent of GDP increases GDP and final demand by about 0.40 percent and trade by about 0.26 percent (figure 4.1). The overall

FIGURE 4.1 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON MACROECONOMIC AGGREGATES (PERCENT CHANGE)



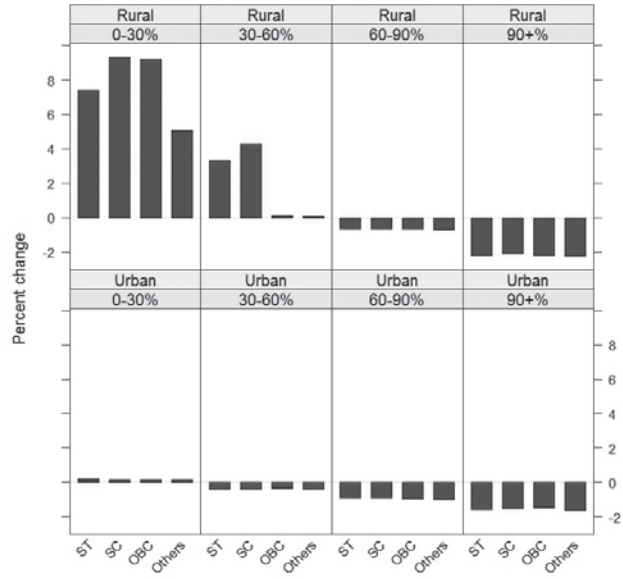
Source: Simulation results.

expansionary effect of the program is in accordance with the basic notion of the balanced budget (Keynesian) multiplier, and with the added push that comes from shifting purchasing power from population groups that save more and consume less to groups that save little and consume most, if not all, of their income—notably, from the urban rich to the rural poor.

The distributional impact of the program is also positive. Simulation results indicate an increase in welfare among poor rural households and a marginal increase among poor urban households (figure 4.2). The increase in welfare of the urban poor owes primarily to the direct effect of enrolling in the program and receiving a wage payment. However, as is shown below, it is also related to the effects the program has on the economy as a whole. These overall changes indirectly result in further welfare increases for the rural poor. The same indirect effects, which are detailed below, explain the increase in the welfare of the urban poor. The implementation of the program carries a cost, which comes in the form of a decline in welfare for both the urban and rural rich. For the urban rich, this decline is explained by the fact that the program is financed with income taxes and it is only the urban rich who pay these taxes. But it is also due to the economic changes triggered by the implementation of the program, as are detailed below, which indirectly result in welfare reductions. The decline in the rural rich's welfare is due entirely to indirect effects.

In sum, the implementation of the Rural Employment Act has an expansionary macroeconomic effect and a significant and progressive redistributive effect. The main effects are

FIGURE 4.2 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON RURAL AND URBAN HOUSEHOLD WELFARE (PERCENT CHANGE)



Note: The change in welfare is the Slutski equivalent variation relative to initial consumption expenditures.
Source: Simulation results.

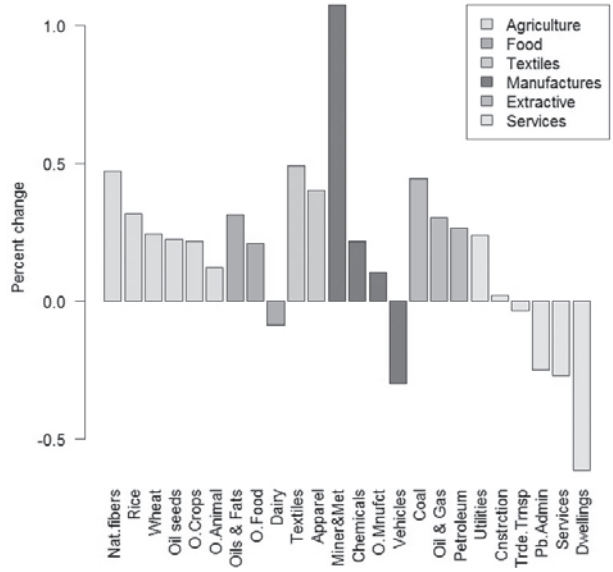
a sizable redistribution from the urban and rural rich to the rural poor, a marginal redistribution from the same groups to the urban poor, and an overall redistribution from urban to rural areas.

THE ACT'S IMPACT ON THE ECONOMY

As the Rural Employment Act is implemented and wages are paid to workers, the demand for goods and services consumed by the rural poor rises. Simultaneously, the increase in taxes that is necessary to finance the act reduces the demand for goods consumed by rich urban households. The demand for goods and services shifts, thus, toward the goods and services most demanded by low-income households in rural areas. This, in turn, induces changes in sectors that boost prices and economic activity in agriculture and light manufacturing and inhibit them in other manufacturing and service sectors. At a greater level of detail, economic activity increases in the production of rice, the other processed food sectors, textiles, and apparel; conversely, it decreases in vehicle manufacturing and in most services (figure 4.3). Interestingly, the implementation of the act results in a small increase in activity in the construction sector.

The changes described above translate into changes in the sectors' demand for primary factors of production—labor, land and capital, and the demand for inputs. The demand for labor, as well as land and capital, will increase wherever there is an increase in eco-

FIGURE 4.3 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON SECTORS' VALUE ADDED (PERCENT CHANGE)



Source: Simulation results.

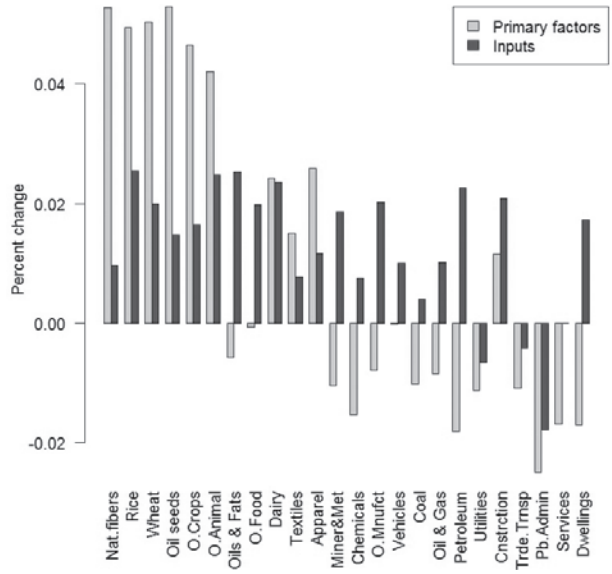
nomic activity. But as sectors expand, they also demand inputs from other sectors. Some of these intermediate inputs might substitute for labor, land, and/or capital.[32] Our results suggest that labor, land, and capital become more intensively used, as reflected by the change in the relative price of primary to intermediate inputs, in agriculture and light manufacturing, and less intensively demanded in heavy manufacturing, extractive activity, and services (figure 4.4).

THE IMPACT ON THE RELATION OF INCOME TO FACTORS OF PRODUCTION

According to our results, the implementation of the Rural Employment Act increases labor income and income from land, but decreases income from capital. Proportionally, the largest change is that of income from land, but the largest absolute income variation is the change in labor income (figure 4.5). We focus on the change in labor income.

The impact of the Rural Employment Act on the economy triggers a wide array of changes in labor income, varying by area, sex, education, and caste/tribe.[33] The above described changes in sector activity translate into increases in the demand for workers with basic skills over the demand for workers with higher skills. Accordingly, the act tends to, first, increase labor income among illiterate rural workers and, second, among rural school-

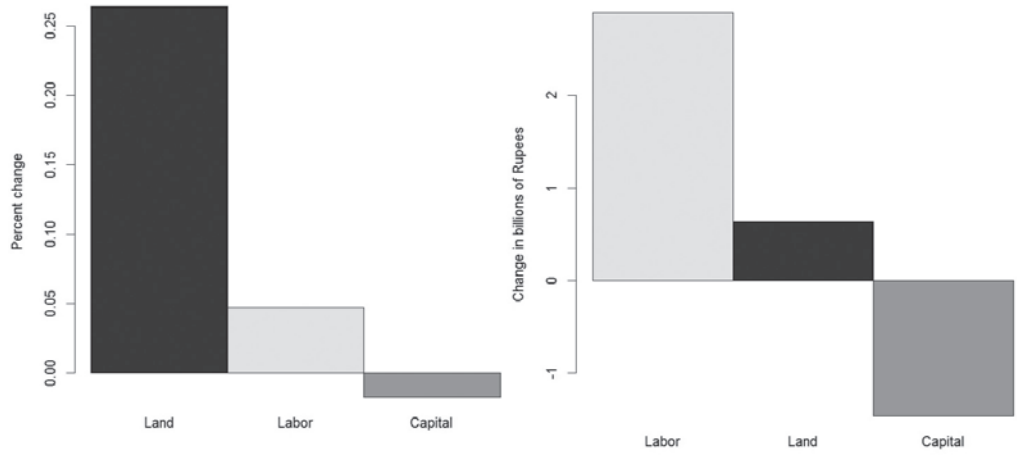
FIGURE 4.4 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON PRICES OF PRIMARY PRODUCTION FACTORS AND INTERMEDIATE INPUTS (PERCENT CHANGE)



Source: Simulation results.

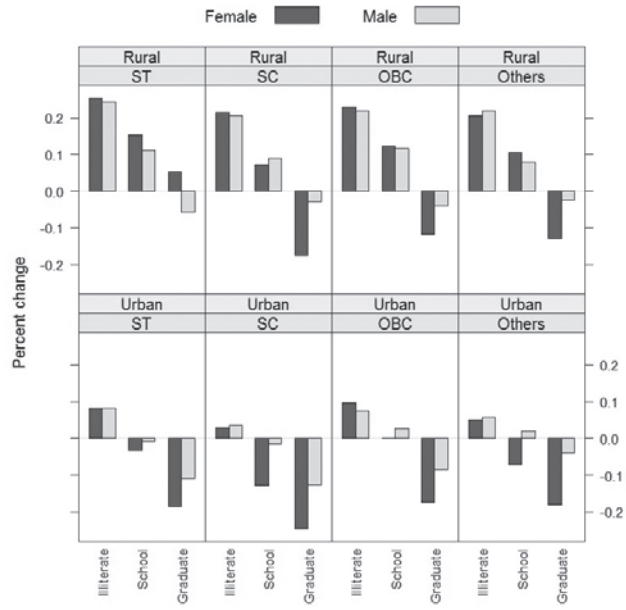
educated workers (figure 4.6). These are the winning segments of the labor force. Within these segments, females fare slightly better than males; by population group, STs' income increases more than for any other group. In contrast, the most affected groups are urban and rural graduate workers. Within these graduate groups, the labor income of females

FIGURE 4.5 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON LABOR, LAND, AND CAPITAL INCOME



Source: Simulation results.

FIGURE 4.6 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON LABOR INCOME BY SEX, EDUCATION, CASTE, AND AREA (PERCENT CHANGE)



Source: Simulation results.

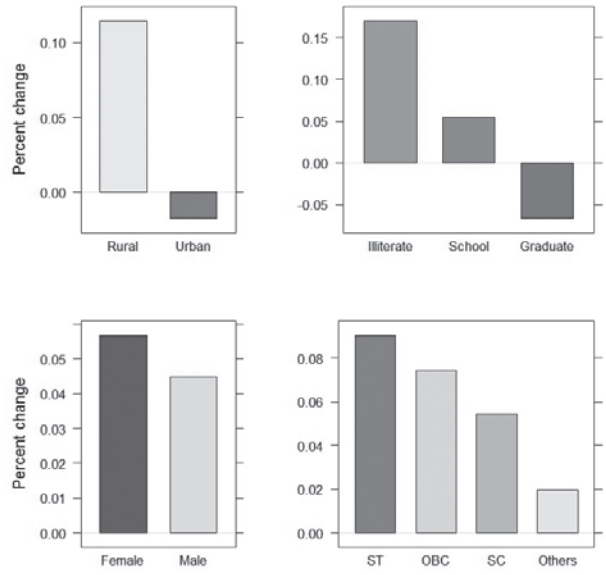
falls more than that of males; by caste/tribe, income of the SCs tends to fall the most. The act thus has a positive and a progressive, yet nuanced, impact on labor income.

Because some of these changes point in opposite directions, it is useful to aggregate them according to labor characteristics. Aggregation makes apparent that changes in labor income favor workers in rural over urban areas, less educated workers over more educated ones, females over males, and, less clearly, deprived over better-off population groups (figure 4.7). Note that the increase in labor income triggered by the program, that is, the indirect rise in labor income, is to the order of 0.11 percent. The small size of this effect is in good part due to the fact that as impressive as the program's size is, as per the model data, the direct wage payments of the program represent no more than 8 percent illiterate labor income and 2 percent of the total annual income of the rural labor factor.

THE IMPACT ON HOUSEHOLDS

The changes described above in income to factors suggest that income in the upper part of the household distribution should decrease—because the joint income from land and capital as well as the labor income of highly educated workers decreased. Income in the lower sectors should increase—because the labor income of the illiterate and school-educated workers increased. Our results confirm that the Rural Employment Act redistributes

FIGURE 4.7 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON LABOR INCOME BY AREA, SEX, EDUCATION, AND CASTE (AGGREGATED PERCENT CHANGE)

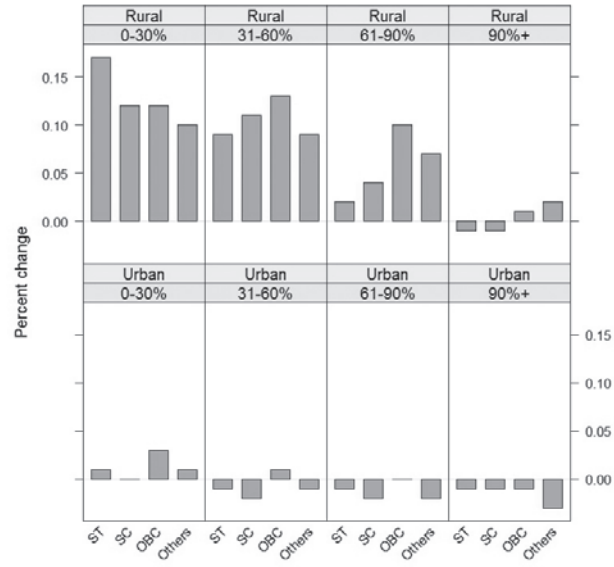


Source: Simulation results.

income from high- to low-income households and from urban to rural areas.[34] Whereas income in rural areas rises for most household groups, income in urban areas tends to decrease (figure 4.8). Within rural areas, the rise in income is stronger the lower the income bracket. Albeit less clearly, income changes within urban areas are also progressive. The clearest case is the rise in income among the poorest households, in contrast to the overall reduction in urban incomes. Castes and tribes benefit differently depending on the type of area and their income bracket. Among the poorest rural households, the increase in income is stronger for the most deprived castes and tribes. A similar pattern of change is apparent among the urban poorest; albeit the scale of change is smaller. Aside from the poorest rural and urban households, income changes by caste and tribe vary without any apparent systematic pattern.

The pattern of changes in income suggests that employment generation programs like the Rural Employment Act might enjoy widespread support among the population. Poor rural households might benefit from employment opportunities directly through the program as well as from employment opportunities that are generated indirectly by the program's implementation. Although the direct effects are constrained to the beneficiary groups of the population, the positive, indirect effects spread widely among households. These positive effects extend to 90 percent of the rural population and 30 percent of

FIGURE 4.8 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON HOUSEHOLD FACTOR INCOME (PERCENT CHANGE)



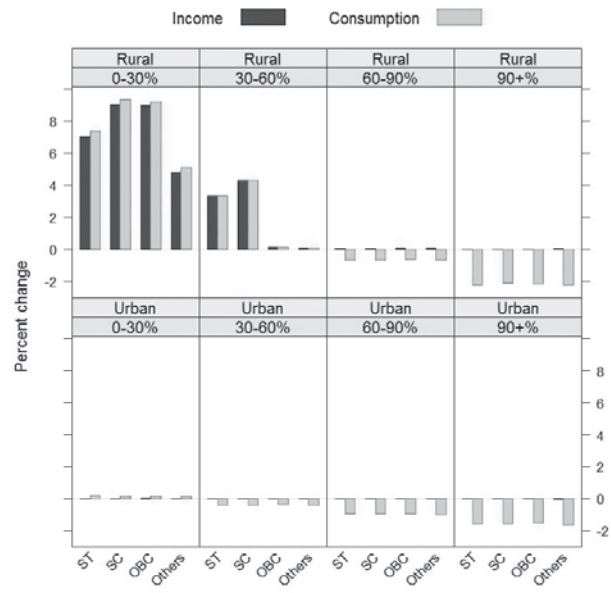
Note: Factor income excludes the Rural Employment Act's direct wage payments.
Source: Simulation results.

the urban population. Although the effects are small, partly due to the small size of the program relative to size of the Indian labor market, they are likely to be noticeable and generate support for the program.

As a household's incomes changes, so too will its use. Given the selected closure rules, the key changes are that of household disposable income and the subsequent change in consumption expenditures. The Rural Employment Act's impact on consumption results from the program's direct payment of wages (see figure 3.8 above), from its indirect impact on income (figure 4.8), and from the changes in taxes and savings induced by the implementation of the program.

Our results suggest a strong positive effect on the consumption expenditures of poor rural households (figure 4.9). This positive impact is primarily explained by the effect of the direct payment of wages to workers under the Rural Employment Act and secondarily by the indirect income effects of the program. Note that the poor's consumption expenditures rise more than income (compare the corresponding bars in figure 4.9). This difference arises from the program-induced changes in savings. Since poor rural households have negative saving rates, the increase in savings dictated by the need to balance the economy means, in this case, that consumption expenditures increase beyond the change in income.[35] At a much lower scale, this same effect applies to the urban poor.

FIGURE 4.9 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON TOTAL INCOME AND CONSUMPTION EXPENDITURES (PERCENT CHANGE)



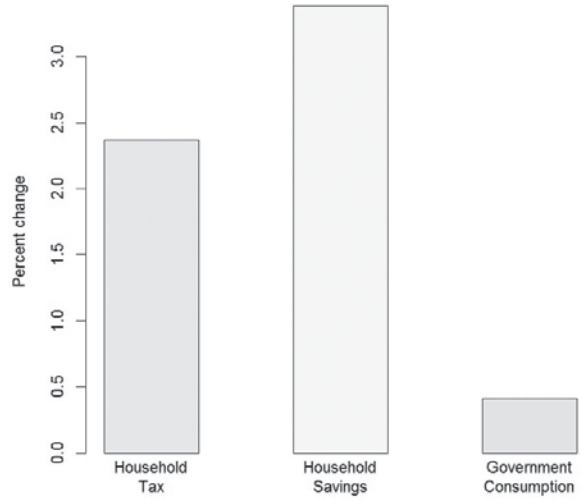
Note: Income changes include the direct the Rural Employment Act's wage payment and indirect factor income changes.
Source: Simulation results.

Conversely, the Rural Employment Act induces negative changes in consumption expenditures in rich rural and urban households that are significantly stronger than the induced changes in income. The difference here is due to the changes in savings needed to bring the economy back to equilibrium and by the changes in taxes needed to finance the program, both of which reduce disposable income.

MACROECONOMIC–HOUSEHOLD INTERACTIONS

This change in consumption suggests that the largest burden of financing the program falls first on rural rich households and second on their urban counterparts. This result seems at odds with the fact that only urban rich households pay taxes, as per the underlying data. However, this might be explained by the fact that in monetary terms the required increase in forced savings is larger than the increase in taxes. The required increase in saving rates, 3.5 percent, is 1.4 times the required increase in tax rates, 2.5 percent (figure 4.10). In comparison, the volume of money involved in the rise of forced savings is several times larger than that of the increase in taxes, suggesting that the Rural Employment Act's induced hike in the poor's consumption is importantly sourced by the increase in "forced" savings of rural and urban households and, perhaps less importantly, by the rise in taxes paid by the urban rich.[36]

FIGURE 4.10 THE RURAL EMPLOYMENT ACT–INDUCED ADJUSTMENT IN TAXES, SAVINGS, AND GOVERNMENT CONSUMPTION (PERCENT CHANGE)



Note: Figures refer to the household income tax scaling factor, the household savings rate scaling factor, and the government consumption demand scaling factor, respectively.
Source: Simulation results.

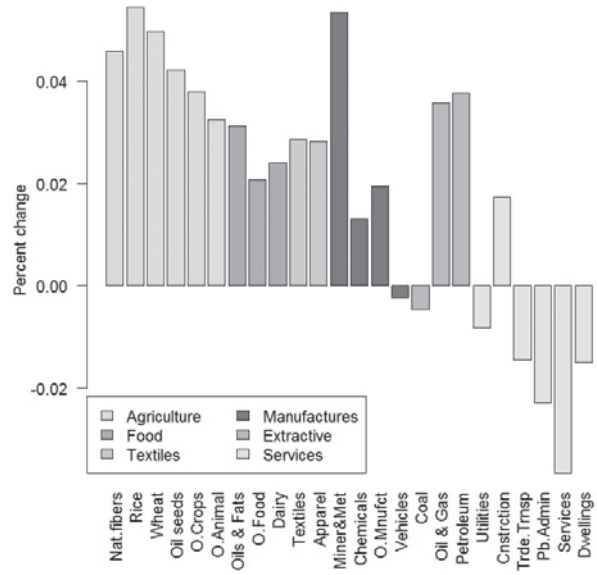
IMPACT ON THE PRICES OF COMMODITIES

The implementation of the Rural Employment Act is likely to prompt changes in the prices of commodities, and these can affect the cost of living of various population groups. According to our results, the act increases the prices of most goods while it reduces the prices of services (figure 4.11). As income shifts to the poor and their demand for goods increases, the prices of the goods they consume also go up. So, parallel to the increase in the income, there is an increase in the poor's cost of living. This should not be a matter of concern, given that the implied increase in the cost of living is small.

In the modeling world, all rural poor households benefit from the program. In the real world, however, this is not necessarily the case. All those poor households not significantly benefiting from the program, direct or indirectly, might feel the bite of the rise in the cost of living, even if the rise is small.

Because the effect on commodity prices is small, there are no significant changes in the purchasing power of households. Thus, the change in consumption expenditures and welfare is very similar (figure 4.12). In other words, although the increase in the price of food items does reduce the poor's well-being, this is not visible at the scale of changes in income consumption expenditures and welfare. The same applies for the welfare benefit that rich households enjoy from the fall in the price of services.

FIGURE 4.11 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON THE PRICE OF CONSUMPTION COMMODITIES (PERCENT CHANGE)



Source: Simulation results.

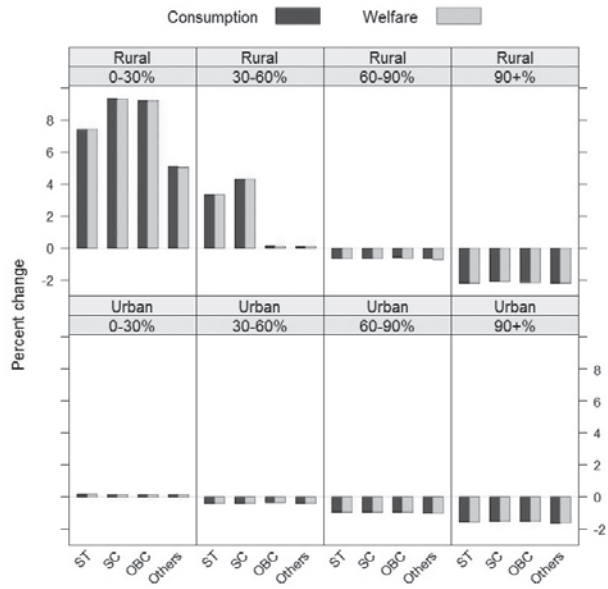
VARYING THE BUDGET AND TARGETING EFFICACY

Now we turn to a discussion of some of the results of varying two main assumptions in the core simulation. First we focus on relaxing the assumption that the direct benefits of the Rural Employment Act accrue exclusively to the poorest 40 percent of the rural population. We then present the results of scenarios that vary the size of the employment program and the increase in land productivity.

The Rural Employment Act With Leaks

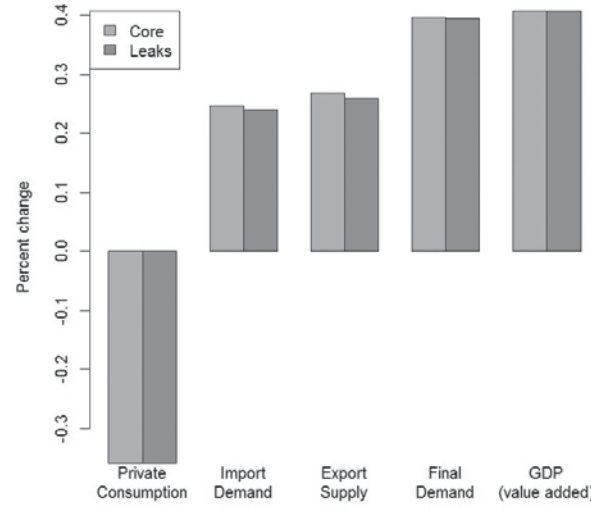
This scenario analyzes the situation in which efficacy falls and part of the benefits leak to population groups other than the intended beneficiaries. More specifically, the simulation assigns one-third of the total direct wage payments under the Rural Employment Act to four household groups that can be considered to be just above the level of the 40 percent rural poor (figure 3.1 above). Our results indicate that the introduction of leaks does not visibly modify the program's macroeconomic impact, given that the induced changes in trade, final demand, and GDP of the two program versions are quite similar (figure 4.13). This suggests that varying the distribution of benefits has few consequences on households' demand for goods and services and hence carries little aggregate effect, at least within the range implied by the size of the simulated leaks, which is significant.

FIGURE 4.12 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON CONSUMPTION EXPENDITURES AND WELFARE (PERCENT CHANGE)



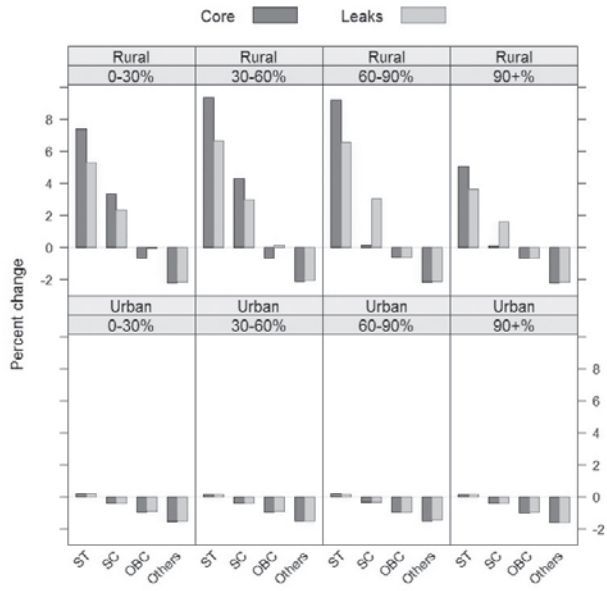
Source: Simulation results.

FIGURE 4.13 THE IMPACT OF THE RURAL EMPLOYMENT ACT, WITH AND WITHOUT LEAKS, ON MACROECONOMIC AGGREGATES (PERCENT CHANGE)



Source: Simulation results.

FIGURE 4.14 THE IMPACT OF THE RURAL EMPLOYMENT ACT, WITH AND WITHOUT LEAKS, ON HOUSEHOLD WELFARE (PERCENT CHANGE)



Note: The change in welfare is the change in Slutski adjusted consumption relative to initial consumption.
Source: Simulation results.

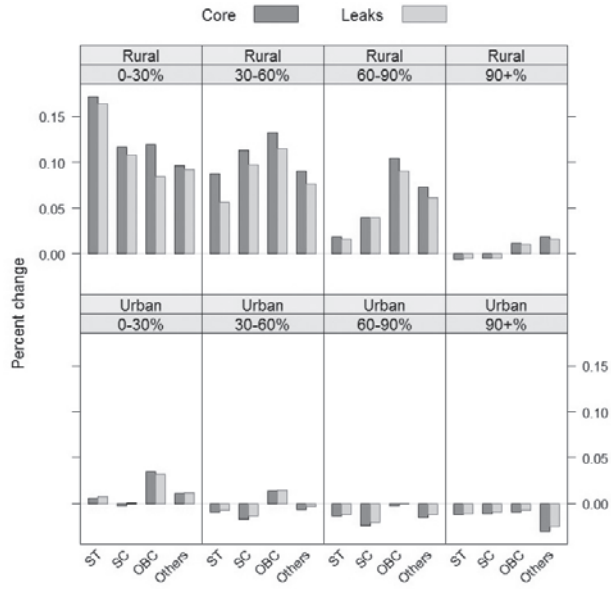
The main effect of allowing leaks in the program is the softening of its redistributive impact. The increase in welfare among the poorest rural households is now smaller. Two of the four groups of beneficiaries now have a visible increase in welfare, while the other two basically avoid the welfare reduction that was observed above. The welfare impact on the rural rich and urban households is, however, only slightly softer in the leaks version of the program (figure 4.14).

A program with leaks has similar effects on the sectors' activity levels, prices, and factor use than a program with no leaks. Accordingly, the changes in household income from factors, excluding direct wage payments under the Rural Employment Act, are also quite similar, albeit smaller (figure 4.15).

Because the required taxes and savings of the two program versions are similar, the impact of the introduction of leaks on household consumption is again quite similar, albeit softer. The largest differences correspond to population groups that are not direct beneficiaries in the core simulation but become beneficiaries in the version with leaks (figure 4.16).

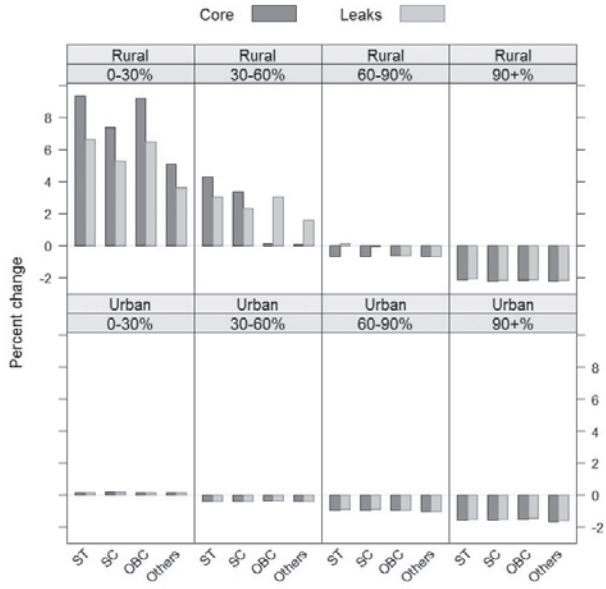
Finally, the impact of leaks on commodity prices is very small, so there are no significant differences in the impact on the cost of living between the two versions of the program.

FIGURE 4.15 THE IMPACT OF THE RURAL EMPLOYMENT ACT, AND LEAKS, ON HOUSEHOLD FACTOR INCOME (PERCENT CHANGE)



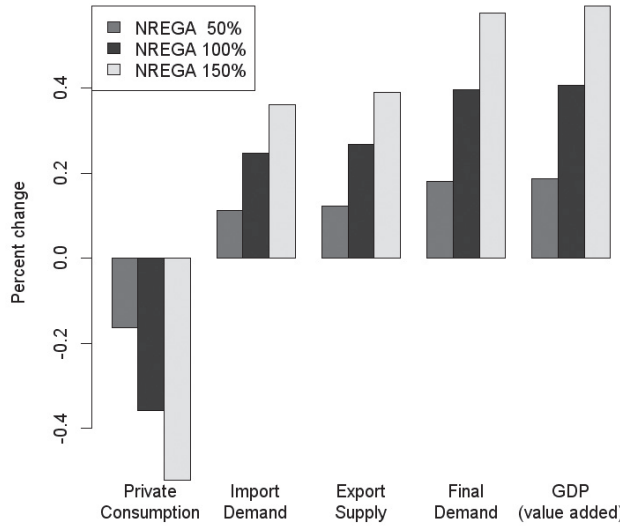
Note: Factor income excludes the Rural Employment Act's direct wage payments.
Source: Simulation results.

FIGURE 4.16 THE IMPACT OF LEAKS ON HOUSEHOLD CONSUMPTION (PERCENT CHANGE)



Source: Simulation results.

FIGURE 4.17 THE IMPACT OF VARYING THE BUDGET'S SIZE ON MACROECONOMIC AGGREGATES (PERCENT CHANGE)



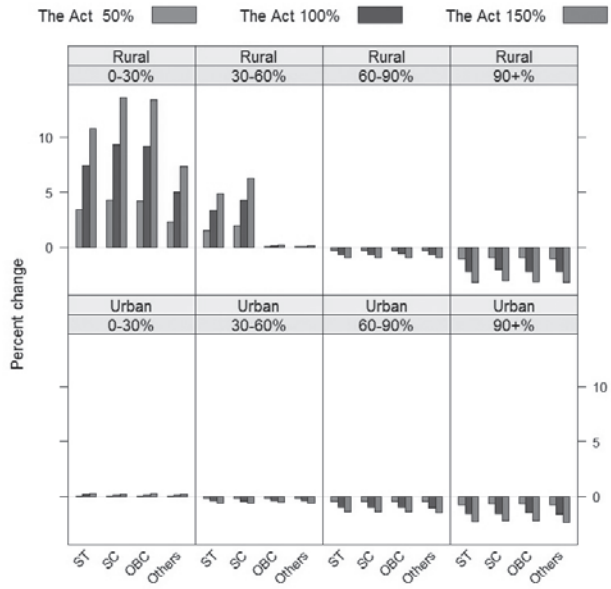
Source: Simulation results.

The Magnitude of the Budget

The Rural Employment Act's program expanded rapidly from its inception to reach a large size by international standards. It is thus interesting to look into the effects of varying the size of the program, first, from its initial small size to the current dimension and, second, from its current dimension to an even larger size. To probe the effects of significant changes in the size of the program, we discuss the results of varying the budget by plus or minus 50 percent. Our results suggest that a 50 percent reduction or increase of the budget in the core simulation yields macroeconomic changes that are proportional to the variation of the budget (figure 4.17).

Mainly, varying the program size amplifies or shrinks the distributional effects of the core simulated program (figure 4.18). The macroeconomic and distributional results thus suggest that varying the size of the program does not qualitatively change results, at least within the range of changes that were considered.

FIGURE 4.18 THE IMPACT OF THE RURAL EMPLOYMENT ACT ON WELFARE BY BUDGET SIZE (PERCENT CHANGE)



Note: The change in welfare is the change in Slutski adjusted consumption relative to initial consumption.
Source: Simulation results.

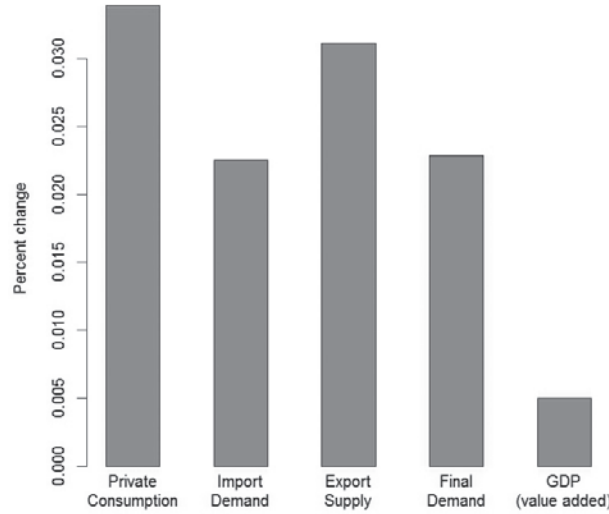
The Economic and Distributional Effects of Rising Agricultural Productivity

NEXT WE CONSIDER THE RESULTS of the second core simulation exercise: the increase in land productivity that the Rural Employment Act might have. The simulation consists of an exogenous increase in the factor productivity of the land. The simulated increase is equal to 1.5 percent. The exercise assumes the preexisting pattern of land ownership remains in place; that is, productivity increases uniformly across all lands. This simulation is implemented separately from the employment generation simulation just presented. We begin by looking at the broad macroeconomic and distributional results. We then discuss the mechanism driving the changes in the distribution of income. Next we look at changes in the cost of living and revisit the change in welfare. We briefly turn to discuss how changes in household indicators interact with macroeconomic changes to enhance or mute the impact of the program. We finish the chapter by discussing the effect of varying the size of the simulated increase in productivity.

THE OVERALL IMPACT OF INCREASING AGRICULTURAL PRODUCTIVITY

Increasing the productivity of land has the expected effect of expanding economic activity. The simulated 1.5 percent increase in land productivity produces an appreciable rise

FIGURE 5.1 THE IMPACT OF RISING LAND PRODUCTIVITY ON MACROECONOMIC AGGREGATES (PERCENT CHANGE)



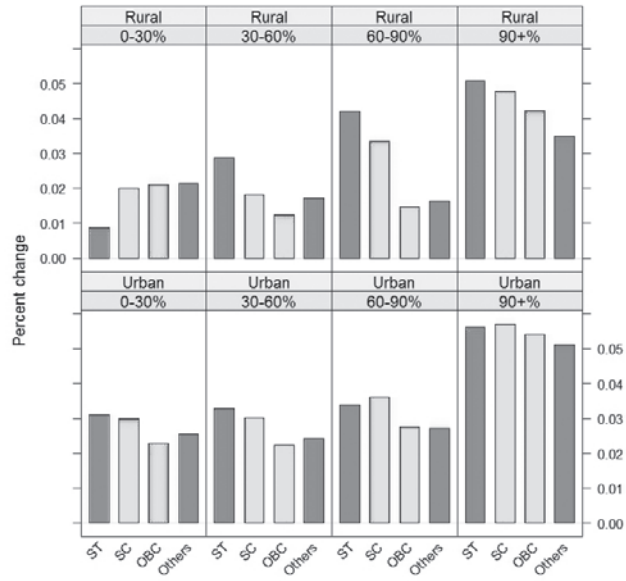
Source: Simulation results.

in GDP, final demand, and trade, ranging between 0.02 percent and 0.03 percent (figure 5.1). The increase in agricultural productivity has a less positive impact on income distribution. Although the rise in productivity increases welfare across all household groups, the increase is larger for the rich than for the poor and larger in urban than in rural areas. The differences are considerable, particularly in rural areas. In cities, the rich gain 3 to 5 times more than the poor; but in rural settings, the rich gain 10 to 20 times more than the poor (figure 5.2). Even if undesirable, these results are to be expected. First, the concentration of benefits by the rich mainly follows India's high concentration of land. Second, measured at constant prices, there is an initial negative impact on labor markets populated by the rural poor.

THE IMPACT ON THE ECONOMY

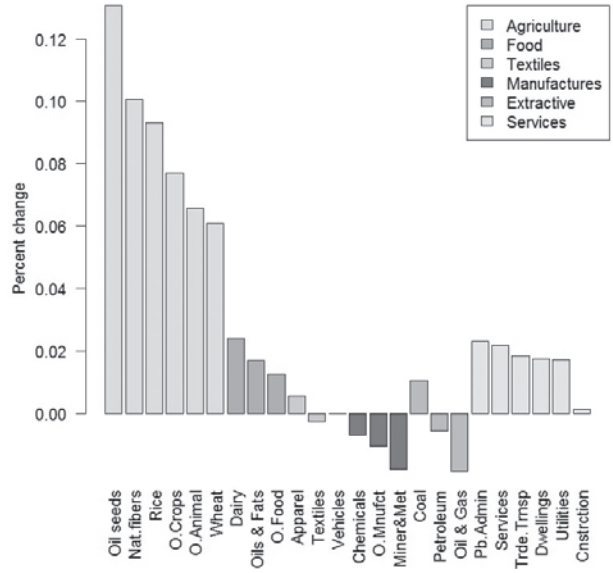
The increase in productivity means that the same quantity of agricultural products can be generated with fewer quantities of labor, land, capital, and inputs from other sectors. But as the production in agriculture expands, more labor ends up being used, along with more capital and land (figure 5.3). The increase in factor use owes to the downward effect of higher productivity on factor prices, which allows producers to buy more labor, capital, and land. A more productive agricultural sector has an expansionary effect on other sectors; albeit the changes are smaller. Accordingly, the use of more labor and capital extends to sectors such as food manufacturing, textiles, and services. Not all sectors experience an expansion in activity; the change in relative prices leads to less activity in heavy manufac-

FIGURE 5.2 THE IMPACT OF RISING LAND PRODUCTIVITY ON HOUSEHOLD WELFARE (PERCENT CHANGE)



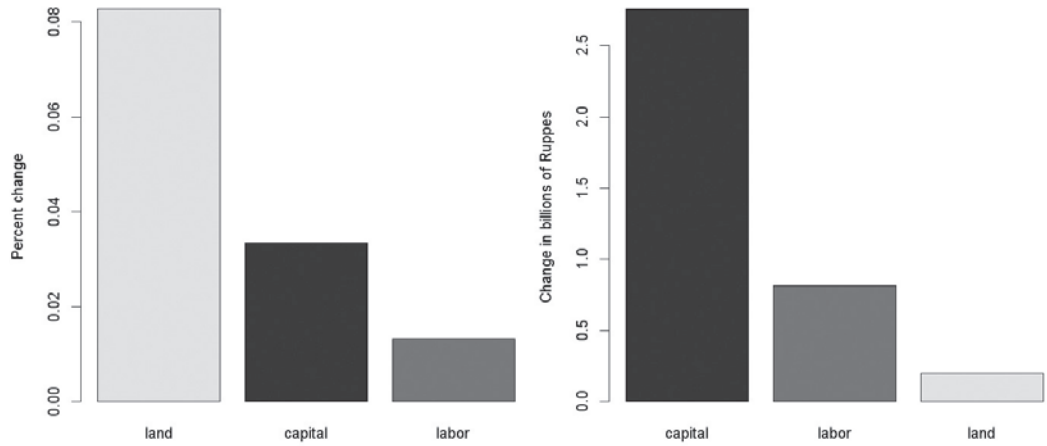
Note: The change in welfare is the change in Slutski adjusted consumption relative to initial consumption.
Source: Simulation results.

FIGURE 5.3 THE IMPACT OF RISING LAND PRODUCTIVITY ON SECTORS' VALUED ADDED (PERCENT CHANGE)



Source: Simulation results.

FIGURE 5.4 THE IMPACT OF RISING LAND PRODUCTIVITY ON LABOR, LAND, AND CAPITAL INCOME



Source: Simulation results.

turing and extractive activities. On the whole, production shifts toward sectors that tend to hire low-skill workers, that is, workers from poor, particularly rural, households.

The expansionary effect of the rise in land productivity is strong enough to increase the income accruing to all three factors of production. Proportionally, the change is greatest for labor, then for capital, and finally for land (figure 5.4). However, expressed in rupees, the largest change is in capital, then labor, and last in land. Thus, the main drivers of change in household income refer to capital and labor.

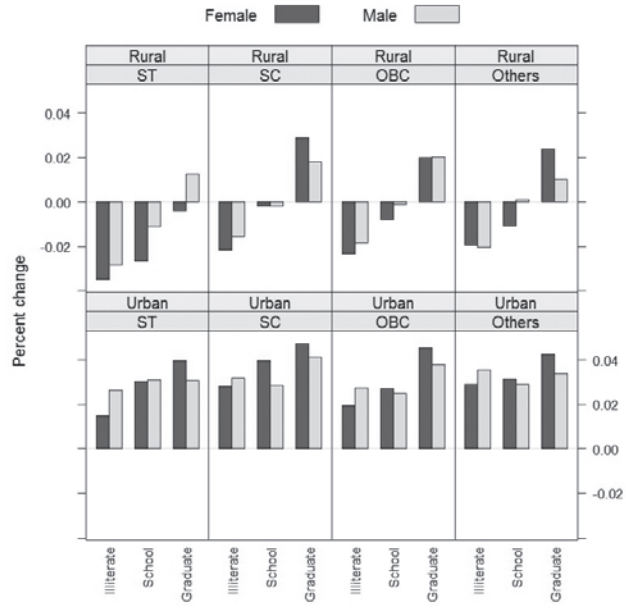
As the ratio of aggregate income to labor clearly increases, detailed changes by labor group differ widely. Although labor income increases for all urban groups, many rural groups actually experience a decline in labor income (figure 5.5). The increase in land productivity tends to concentrate income on more educated and better paid workers. In urban areas, increases are clearly higher the more educated workers are. In rural areas, the contrast is sharper: Income falls for illiterate and school-educated workers but increases for graduates.

Aggregating our findings using the labor dimension provides a broad and useful picture: The increase in productivity favors workers in urban over rural areas, more educated over less educated workers, males over females, and better-off over deprived population groups (figure 5.6). Thus, from any angle, the relative distributive effect is regressive.

THE IMPACT ON HOUSEHOLDS

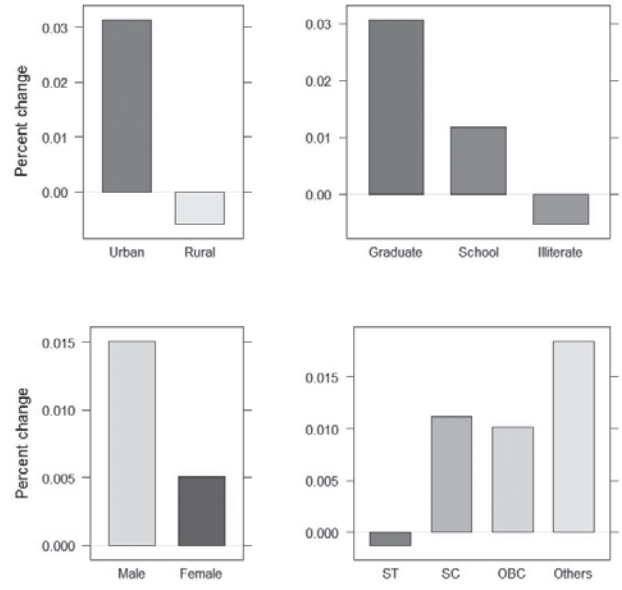
Given the pattern induced upon factors of production, the impact on household income could only worsen income distribution. Although the income of the poorest 60 percent

FIGURE 5.5 THE IMPACT OF RISING LAND PRODUCTIVITY ON LABOR INCOME (DETAILED PERCENT CHANGE)



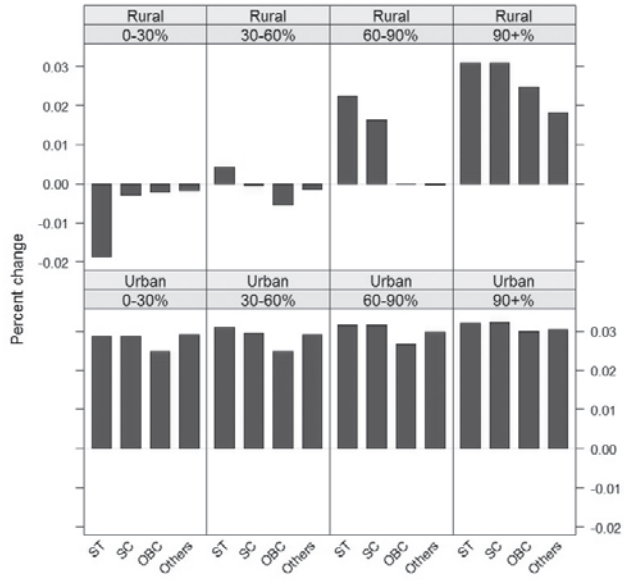
Source: Simulation results.

FIGURE 5.6 THE IMPACT OF RISING LAND PRODUCTIVITY ON LABOR INCOME (AGGREGATED PERCENT CHANGE)



Source: Simulation results.

FIGURE 5.7 THE IMPACT OF RISING LAND PRODUCTIVITY ON HOUSEHOLD INCOME (PERCENT CHANGE)



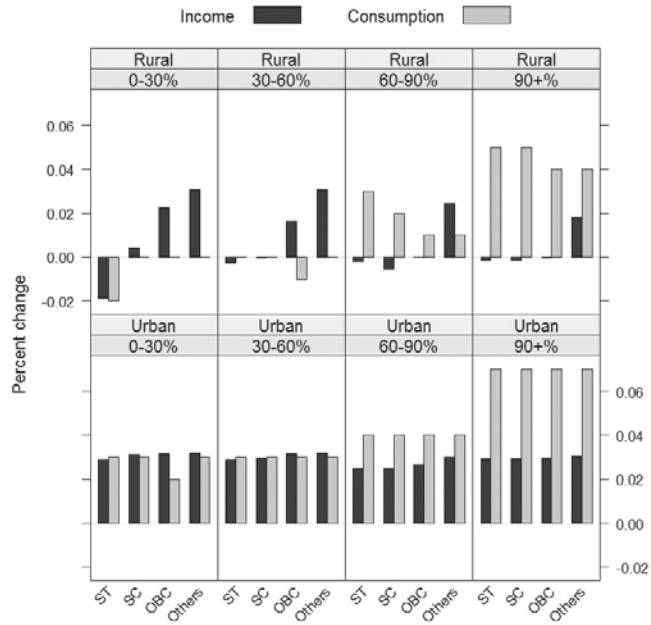
Source: Simulation results.

of rural households falls, the income of rich rural households and all urban households increases (figure 5.7). Thus, not only does the distribution of income within rural areas worsen but income also concentrates in urban areas.

The impact on the distribution of consumption expenditures is negative—even more negative than the impact on income (figure 5.8). Consumption expenditures fall among the poor while increasing among the rich, and do so in a more accentuated form than income. The main drivers of the reinforced negative impact on consumption are the change in savings rates and taxes. As is discussed below, the increase in productivity reduces the need for savings and taxes. In the case of rich households, this means that more income is left for consumption; but in the case of poor households, this means that fewer resources are left for spending because their savings rates are negative. Poor households and rural rich households do not benefit from the reduction in income taxes because they appear in the data as not paying taxes.

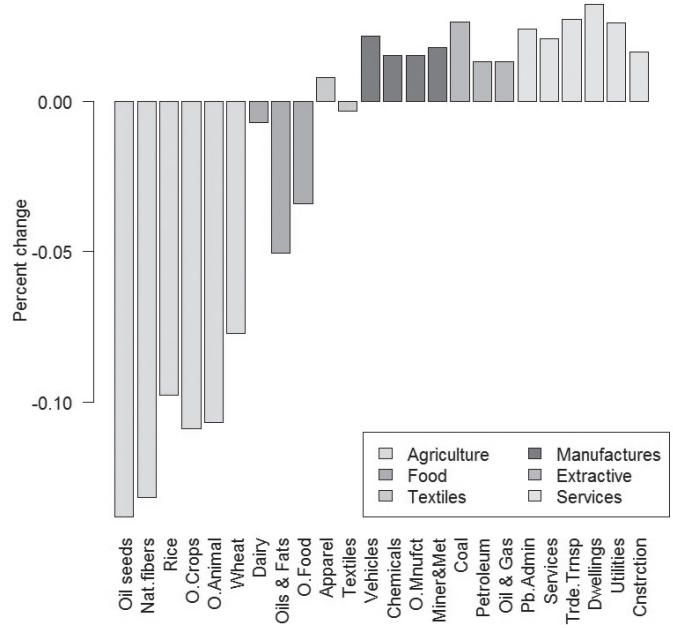
The productivity hike significantly pushes down the relative prices of agricultural commodities and manufactured food (figure 5.9). Because food represents a large proportion of the poor's consumption basket, the change in commodity prices reduces their cost of living. Our results also indicate that the relative prices of services and heavy manufacturing goods increase.[37] And given that these figure more visibly in the rich's consumption basket, the cost of living for these households goes up.

FIGURE 5.8 THE IMPACT OF RISING LAND PRODUCTIVITY ON HOUSEHOLD FACTOR INCOME AND CONSUMPTION EXPENDITURES (PERCENT CHANGE)



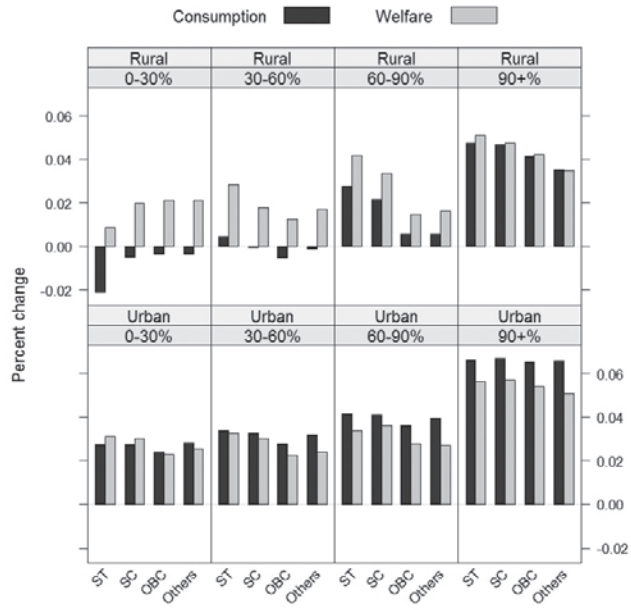
Source: Simulation results.

FIGURE 5.9 THE IMPACT OF RISING LAND PRODUCTIVITY ON COMMODITY PRICES (PERCENT CHANGE)



Source: Simulation results.

FIGURE 5.10 THE IMPACT OF RISING LAND PRODUCTIVITY ON CONSUMPTION EXPENDITURES AND WELFARE (PERCENT CHANGE)



Source: Simulation results.

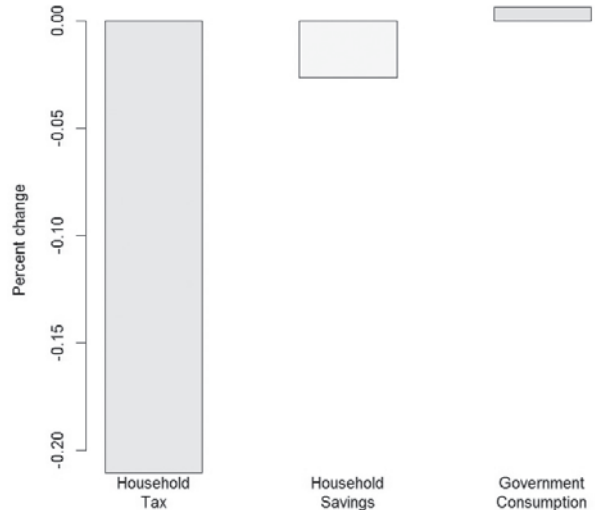
The effect on prices is so strong that even if the productivity hike decreases the poor's income and, hence, consumption expenditures, the fall in the price of food implies such a strong rise in purchasing power that the poor end up better off than before (figure 5.10). After the increase in productivity, poor people can simply buy more food and perhaps even increase purchases of other goods. It is important to note that the difference between the two measures is wider for the rural poor and the urban rich, suggesting that these two groups might experience stronger changes in purchasing power than other groups.

MACROECONOMIC–HOUSEHOLD INTERACTIONS

The positive effect of improving land productivity on GDP opens the opportunity to reduce income tax rates and still maintain the budget in a balanced position (figure 5.11). If, instead of reducing income taxes, the government decides to reduce value-added taxes, it can reduce the negative distributive effects that follow the rise in productivity while keeping the budget in balance. Because value-added taxes place a disproportionally higher toll on the less well-off, low-income households will benefit more than high-income households. Although the changes in taxes are small, over time, they may provide useful financing for complementary policies seeking to reduce poverty.

A similar adjustment might arise from savings rates. The increase in land productivity, as shown above, allows a slight decrease in the savings rate that is needed to maintain current

FIGURE 5.11 THE LAND PRODUCTIVITY–INDUCED ADJUSTMENT IN TAXES, SAVINGS, AND GOVERNMENT CONSUMPTION (PERCENT CHANGE)



Source: Simulation results.

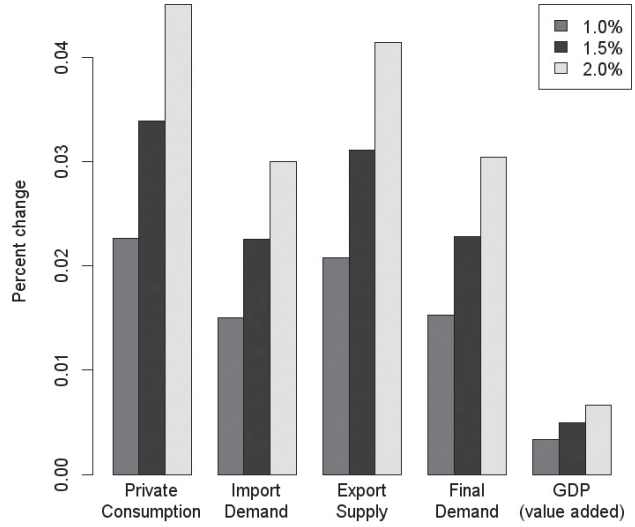
investments. Again, instead of accepting the reduction in savings, the government might choose to keep private savings rates at pre–policy shock levels and raise government expenditures. If the added government expenditures create enough incentives for investment to rise, the improvement in land productivity can lead to a virtuous circle with even larger welfare gains.

VARYING THE MAGNITUDE OF THE INCREASE IN PRODUCTIVITY

Our exercise recognized that there is not sufficient information to know with some degree of approximation how successful the Rural Employment Act is in increasing agricultural productivity. To probe the effects of different magnitudes of land productivity increases, we discuss the results of simulations rising productivity by 1 percent and 2 percent. The main result is that varying the size of the increase in productivity does not qualitatively change the results. First, the macroeconomic impact of increasing the productivity of land between 1 percent and 2 percent is proportionate to the change in the size of the budget (figure 5.12).

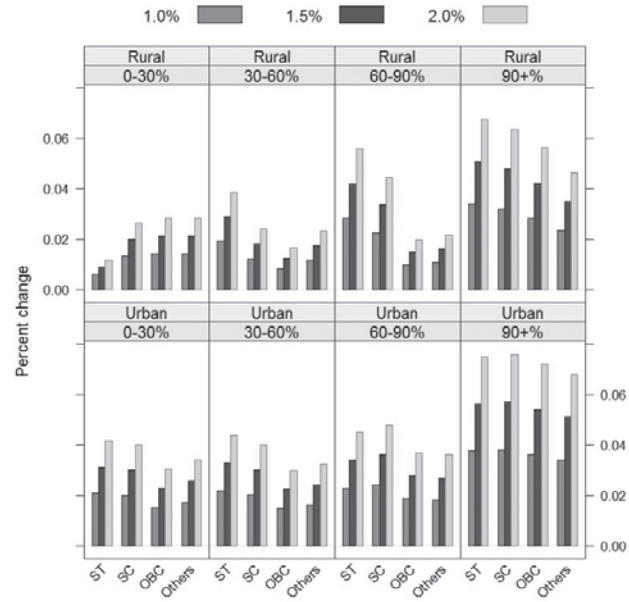
Second, varying the magnitude of the increase in land productivity results in proportional welfare changes across all households, suggesting that the distributional impact remains the same. Thus, the distributional impact of the three alternative increases in land productivity does not appear to depend on the size of the increase (figure 5.13). Also, no qualitative change emerges from varying the increase in productivity between 1 percent and 2 percent.

FIGURE 5.12 THE IMPACT OF RISING LAND PRODUCTIVITY ON MACROECONOMIC AGGREGATES BY SIZE OF RISE (PERCENT CHANGE)



Source: Simulation results.

FIGURE 5.13 THE IMPACT OF RISING LAND PRODUCTIVITY ON WELFARE BY THE MAGNITUDE OF THE RISE (PERCENT CHANGE)



Note: The change in welfare is the change in Slutski adjusted consumption relative to initial consumption.
Source: Simulation results.

Concluding Thoughts

The ambition and detailed procedures of the Mahatma Gandhi National Rural Employment Guarantee Act, paired with the weak institutional setting in which it must operate, make its implementation an exercise that goes beyond program management, bordering on the realm of creating a new social process. The required institutions to make available information in a transparent manner need to be developed and solidified. Communities need to be organized to decide on, implement, and monitor projects. The operation of the act's program and its projects need to be evaluated; the act is a work in progress that needs ongoing evaluation to fully succeed. The corruption affecting the act's implementation, which has been reported by both program critics and promoters, needs to be held in check.

Local markets are changing, and local employers, accustomed to a cheap and a defenseless workforce, are confronting a situation in which workers might have an alternative job during the lean season. This has surely resulted in an increase in wages that would not have happened otherwise. The power structure and institutional setting of local economies are undergoing changes, and the hope is that these changes are for the better. An evaluation of the program using the nationally representative household sample suggests that wages have increased and that the program does reach the poor.

In seeking to add to those studies assessing the Rural Employment Act, this paper has examined its economic implications. We have used an economy-wide model to probe the macroeconomic and income distributional effects of running a public works program like the act. Our modeling has looked at the results of increasing public expenditures to pay for projects under the act—that is, to pay the wages of rural household members joining the program, to pay for the materials used to build projects, and to pay for the administrative overhead. The increase in public expenditures and their composition mirror the

actual program outlays of the years 2009–2010. To concentrate attention on the implications of the employment creation program, the simulation assumes that the increase in expenditures is fully financed by an increase in income taxes. Our results indicate that implementing the act has a positive macroeconomic impact. Such expansionary effects conform to the basic notion of the balanced budget multiplier, but are also related to the positive effects of redistributing income from high- to low-income households.

The act's implementation program itself is a redistributive intervention. To some extent, the simulation results simply confirm this fact. But of particular importance, the exercise undertaken in this paper shows that the program has additional indirect redistribute effects. As income shifts from high- to low-income households and the structure of demand changes, economic activity in agriculture, processed food, and light manufacturing increases. In turn, economic activity in heavy manufacturing and services declines. These changes in economic activity increase the demand for unskilled labor in urban and, particularly, rural areas, and decrease it for skilled labor, mainly urban. Thus, poor households benefit from the added employment opportunities, while high-income households might suffer from a weaker demand for their labor power. The program triggers redistributive welfare effects beyond the direct payment of wages. An example of this is the increase in the welfare of the urban poor.

Our simulation mechanics add to the program's inherently distributive nature. It taxes the income of the urban rich to finance the program in full. The formula is thus an extreme version of the strategy of taxing the rich to give jobs to the poor. But the taxing of the rich barely scratches their welfare; in fact, the rural rich, who do not pay income taxes in the data, experience a larger welfare reduction than the urban rich. Welfare decreases by about 1 percent to 2 percent among the urban and rural rich, while the welfare of the poorest rural households increases by up to 8 percent.

The now-visible difficulties of the Indian economy to continue growth at high rates in the face of a rising public deficit might question the feasibility of assuming that the act can be financed with income taxes. If income taxes prove difficult to implement due to reasons of political economy, our results suggest that using sales taxes to finance the program outlays will not substantially modify its distributive effects. A sales tax on nonbasic food items, for example, might redistribute the burden of the program further to rural households, but such a shift would be unlikely to become too big. Even if the increase in sales taxes includes basic food items, the reduction in the benefits to the rural poor is unlikely to be sizable. However, in such a scenario, the marginal gains of the urban poor might be wiped out.

The exercise shows that the implementation of the program increases the price of food, which results in a rise in the cost of living, with particularly potential pernicious effects

on the poor. However, the rise is small. For the poor enrolled in the program, the effect might even go undetected. But for the poor not covered by the program or only marginally receiving some of its indirect benefits, the increase in the cost of living might be a source of concern; inevitably, some poor households, particularly the extremely poor, might not participate in the program or do so in a very limited way. There are many reasons why poor households might be left out of the program. This may be due to limited capacities to make effective the right to work or simply because their ability to exert work is limited by illness, age, or having a large number of children, among other things. It might be appropriate to complement the implementation of the program with policies supporting nonable poor households.

Our simulation increasing land productivity has the expected result of expanding economic activity and enhancing aggregate welfare. It increases welfare and consumption expenditures across all households, both rural and particularly urban ones, and it amplifies activity in the agriculture, food-processing, and service sectors. To the extent that the welfare and consumption of all households improve, poverty is reduced. By expanding economic activity, particularly by reducing the cost of food, the increase in land productivity greatly contributes to the improvement of living standards. This suggests that the Rural Employment Act's emphasis on projects that increase land productivity should be accompanied by efforts to expand and perfect it.

The simulation results show that the distributional impact of enhancing land productivity is not as positive. The increase in welfare in rich households is larger than in poor households. This is an inevitable result of the increase in land productivity, for the productivity hike also has the immediate effect of reducing the need for low-skilled labor. This in turn will tend to decrease poor households' income. In the case of India, the negative effect on distribution is accentuated by the high concentration of land in the hands of the rich. This negative distributive effect, however, does not militate against programs aiming to increase productivity in agriculture such as the Rural Employment Act. Instead, our results reinforce the importance of targeting investments under the act in the landholdings of poor households, which can potentially bring large welfare benefits.[38]

The simulation results conform to the well-known effects of the green revolution, which greatly reduced the cost of producing food and made food reliably available to vast sectors of the population, thereby contributing to the reduction of poverty. Accordingly, many studies have identified the reduction in food prices as its most important contribution. Similarly, studies have also pointed to its depressing effect on agricultural wages. Our simulation clearly shows that the latter outweigh the former, resulting in a reduction of poverty.

Poorly designed or inefficiently implemented employment programs run the risk of missing the poor and attracting population groups different from the intended target popula-

tions. Our analysis suggests that the effects of leaks do not visibly change the macroeconomic impact of the program. The major difference between a program with and without leaks lies in the distributional impact. But even here, the change is small. Beyond the obvious difference in income flows resulting from spreading the same amount of resources over a larger population, the distributional impact is not very different. Allowing for leaks has no significant implications for how the program affects sectors, factor markets, and commodity prices. The results analyzed above thus suggest that the presence of leaks in the implementation of a program like the Rural Employment Act should not be a major concern for policymakers considering its macroeconomic and distributive effects.

Testing for the effects of expanding or contracting the size of the program or modifying the assumed increase in land productivity suggests that size changes do not qualitatively affect the impact of the program. Reducing or increasing the budget of the employment program by 50 percent mainly results in an amplification or deflation of the impact on macroeconomic variables and its distributional effects. The same effect is obtained from varying the 1.5 percent increase in land productivity to 1 percent or 2 percent. This suggests that policymakers do not need to worry about the possibility that further expansions of the program could trigger deleterious economic consequences. Likewise, no qualitative gain should be expected from reducing the size of the program, and hence from cutting down the benefits the program brings to the poor.

This study has shown that the act's employment program has positive economic effects. This suggests that the act's immediate poverty reduction effect takes place at no cost to the economy more broadly or to the country's GDP in particular. The act generates a virtuous redistributive effect, since the program benefits accruing to the poor are not limited to the wages directly paid by the act's jobs. Through the changes the program generates in the economy, the implementation of the act results in further job creation in rural and urban areas—jobs that are likely to be taken by the poor, reinforcing the benefits to the rural poor and extending them to the urban poor. The increase in labor income that the newly added jobs induced by the program is small, but the small size of the induced changes is due to the comparatively small size of the program.

The cost of the program is manageable. In our simulations, while government expenditures of the program are funded by an increase in income taxes, only paid by the urban rich, its implementation ends up imposing, at most, small reductions in consumption and welfare among the urban and the rural rich. The study also finds a potential cost of concern to the poor. As the economy expands and the poor improve their lot, the price of the commodities they consume is likely to increase. This increase in the cost of living of the poor is small and should not be a matter of concern as the benefits that the program provides more than compensate for the increase in prices. However, in the instances in which the poor are unable to benefit from the program, even this small rise in the cost of

living might be felt. This suggests the need to complement the act with programs aiming to provide support to poor households unable to join the program.

The economic impact and the indirect distributive effects of the program are not significantly affected if the act fails to reach the rural poor at 100 percent efficacy. Beyond the immediate and undesirable effect of reducing the amount of resources received by the poor, there are no other significant negative effects from a moderate loss in efficacy. The impact on the country's GDP and other macroeconomic indicators remains the same, as does the impact on labor markets, which, to a large degree, is the main determinant of the indirect redistributive effects. Even if the size of the program has no precedent in the Indian context and elsewhere, our findings show that the program has positive macroeconomic and distributive effects that are proportional to the budget of the program. It thus suggests that although it represents a significant administrative challenge, the rapid expansion of past and future enlargements do not carry negative macroeconomic or distributive effects, at least within the range of changes analyzed.

If a reasonable increase in land productivity is assumed to happen after the implementation of the act, the short-term benefits of the act's employment creation are coupled by long-term benefits that decrease poverty and enhance the economy. However, the benefits of higher land productivity do not accrue first and in the largest amounts to the poor. This is not an argument against the act, for it is significantly determined by the strong concentration of land. This finding suggests the need to reinforce those act's provisions aiming to improve land productivity in the lands of the poor. The act's employment creation and land productivity actions complement each other well, as in the case of offsetting effects on the price of food, rendering the act a potentially powerful tool to decrease poverty in the immediate and long term.

Notes

1. "An Act to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto." National Rural Employment Guarantee Act, 2005; no. 4, 2O F2 005, September 5, 2005.

2. Poverty estimates and hence the change in poverty have been the subject of intense debate in India. The cited figures only intend help to illustrate the point. For additional data and methodologies supporting this study see the online supplemental material at http://carnegieendowment.org/files/india_rural_empl_appendix.pdf.

3. The coefficient of variation of state income per capita increased from about 0.33 during the first half of the 1990s to about 0.35 in the second half of the same decade and further to about 0.39 in 2004–2005.

4. These figures come from Government of India, *Employment and Unemployment Situation Among Social Groups in India 2004–05*, NSS 61st Round, Report no. 516 (New Delhi: National Sample Survey Organization, 2006). Figures for population by social group come from p. 21, for land possessions from p. 25, and for consumption from p. 27. These figures understate inequalities as land possession does not say anything about the quality of possessed land.

5. Note that this employment rate has the total population as reference and not only the working age population. Data correspond to 2004–2005 and come from Government of India, *Employment and Unemployment Situation Among Social Groups in India 2004–05*, 35. The employed population refers to the usually employed population, that is, those that worked for the longer part of the 365 days preceding the survey or worked a minimum of 30 days during the reference period of 365 days preceding the survey (SIC): "The workforce according to the usual status (*ps* + *ss*) includes persons who (1) either worked for a relatively longer part of the 365 days preceding the date of survey and (2) also those persons from among the remaining population who had worked at least for 30 days during the reference period of 365 days preceding the date of survey." (p. 34). The 2009–1010 Government of India/NSSO survey portrays a similar picture (note, however, that the corresponding data, table S8, p. 35, refers now to the population aged 15–59 years).

6. Figures are the average wage received by regular wage/salary employees. In 2004–2005 the ratio of male urban to female rural wage was 2.4 and remained the same in 2009–2010 (for casual workers, the ratio was 1.9 in this later year). See NSSO, *Employment and Unemployment Situation Among Social*

Groups in India 2004–05, 92 and Government of India, *Key Indicators of Employment and Unemployment in India, 2009–10* (New Delhi: National Sample Survey Organization, 2011), 92–96.

7. See T. S. Papola, *Employment Trends in India* (New Delhi: Institute for Studies in Industrial Development, 2006), http://isid.org.in/pdf/EmployTrenz.PDF.

8. Three other employment programs have been started or revamped after the inception of the Rural Employment Act: the rural self-employment program, Swarnajayanti Gram Swarozgar Yojana; the urban self-employment and salaried employment program, Swarna Jyanti Shaharri Rozgar Yojana; and the subsidized credit program to create employment in rural and urban areas, the Prime Minister's Employment Generation Programme. See Government of India, *Annual Report to the People on Employment* (New Delhi: Ministry of Labour and Employment, July 2010), 22–25.

9. Mainly, on the lands of secluded classes and tribes (SCs and STs), of households registered as below the poverty line, and of deprived households whose needs have already been recognized by making them beneficiaries of the Indra Awas Yojana housing program and the land reform, and more generally on the lands of small and marginal farmers, who constitute the majority of the holdings in most states.

10. *Gram sabhas* and *panchayats* are village meetings and institutions that constitute the local self-government of villages and small towns—*grams*—with at least 500 people of voting age.

11. Government of India, *The National Rural Employment Act, 2005* (New Delhi: Gazette of India, Ministry of Law and Justice, 2005), 10–11.

12. The coefficient of variation of state minimum wages halved between these two years, from about 20 to 10.

13. Recall that the central government accounts for most of the cost of the program, but not for the entire bill.

14. See, for example, Puja Dutta, Rinku Murgai, Martin Ravallion, and Dominique van de Walle, "Does India's Employment Guarantee Scheme Guarantee Employment?" Policy Research Working Paper no. 6003 (Washington, D.C.: World Bank, 2012).

15. See, for example, Navjyoti Jandu, *A Study on Socio-Economic Empowerment of Women Under NREGA,* Professional Institutional Network (New Delhi: Ministry of Rural Development, 2008), www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/NREGA%20NFIW.doc. B. Panda, A. K. Dutta, and S. Prusty, *An Appraisal of NREGA in the States of Meghalaya and Sikkim,* Professional Institutional Network (New Delhi: Ministry of Rural Development, 2009), www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/NREGA-IIMShillong-Final%20Report.pdf.2009; Indian School of Women's Studies Development, *Impact of NREGA on the Living and Working Conditions of Women in Rural India* (New Delhi: Ministry of Rural Development, 2008), www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/NREGA%20ISWSD.doc; Indira Hirway and Harpeet Singh, *Concurrent Monitoring of NREGA: Feedback From the Field* (New Delhi: Ministry of Rural Development, 2006), www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/CFDA-NREGA%20MONITORING%20AND%20EVALUATION%20REPORT.doc; S. P. Singh and D. K. Nauriyal, *System and Process Review and Impact Assessment of NREGS in the State of Uttarkhand* (New Delhi: Ministry of Rural Development, 2009), www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/IIT%20Roorkee%20Report.pdf.

16. See, for example, Rajalaxmi Kamath, Rajlaxmi Murthy, and Trilochan Sastry, "NREGA Surveys in Anantapur, Adilabad, Raichur and Gulbarga (2007–08)," Ministry of Rural Development, 2008, www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/IIMB%20-%20NREGA%20-MONITORING%20AND%20EVALUATION%20REPORT%20FINAL.doc; Jean Dreze and Reethika Khera, "The Battle for Employment Guarantees," *Hindu Frontline* 26, issue 1, 2008.

17. See, for example, Singh and Nauriyal, "System and Process Review and Impact Assessment of NREGS in the State of Uttarkhand"; Ashok Pankaj and Alakh Sharma, "Issues in Implementation and

Impact of NREGS: Bihar and Jharkhand Experiences," in *The National Rural Employment Guarantee Act (NREGA): Design, Process and Impact* (New Delhi: United Nations Development Program, 2008), 190–210.

18. See, for example, Dreze and Khera, "The Battle for Employment Guarantees"; Center for Food and Agribusiness Management, *Quick Appraisal of 5 Districts Under NREGA in Uttar Pradesh*, report submitted to Ministry of Rural Development, Government of India (Lucknow: Indian Institute of Management 2009); Kamath, Murthy, and Sastry 2008.

19. Dreze and Khera argue that the economic return of the assets that the Rural Employment Act builds might not be very different from the return on other investments, including those of many industrial projects. See "The Battle for Employment Guarantees," 12.

20. N. S. S. Narayana, Kirit Parikh, and T. N. Srinivasan, "Rural Works Programmes in India: Costs and Benefits," *Journal of Development Economics* vol. 29(1988): 131–56.

21. Katsushi Imai, "Targeting Versus Universalisms: An Evaluation of Indirect Effects of the Employment Guarantee Scheme in India," *Journal of Policy Modeling* 29(2007): 99–113.

22. Narayana et al., "Rural Works Programs in India: Costs and Benefits."

23. Imai, "Targeting Versus Universalisms."

24. The inputted forgone income is based on Gaurav Datt and Martin Ravallion, "Transfer Benefits from Public Works Employment: Evidence From Rural India," *Economic Journal* 104 (1994): 1346–1369.

25. The study reports that some of the poorest households did not take Rural Employment Act jobs because they would not want to give up a stable job for work that looked uncertain to them.

26. The model makes the standard assumption that India's trade is so small relative to the world that the country has no capacity to set or modify the prices of any of its exports or imports.

27. Savings rates are adjusted by changing the absolute amount of savings in an additive and uniform manner; this minimizes the effects of the observed pattern of exchange rates on the results.

28. This also ensures that the logic of the comparative static method is maintained by imposing all adjustments within the solution period of the model.

29. We will later show that the effect of the increase in taxes can easily be disentangled from the effects of job creation.

30. The definition of unemployment in the poor rural villages of India is somewhat nebulous. In many such villages, the issue is more that of cyclical patterns of "employment" interspersed with periods of underemployment; this distinction appears to have been key in the designing of the Rural Employment Act.

31. Welfare is the consumption expenditure based on the Slutski equivalent variation.

32. The extent to which intermediate substitute for primary inputs depends, among other things, on how the prices of primary inputs change relative to the change in prices of intermediate inputs. If the prices of primary inputs—labor, land, and capital—decline relative to intermediate inputs, then primary inputs will be used intensively in the sector; a change in the opposite direction indicates that more intermediate inputs will be used.

33. Note that these changes in labor income do not include the jobs created and wages paid by the Rural Employment Act.

34. Note that the effect of the payment of taxes by the urban rich does not surface in the household income indicator because this is an income pretax measure.

35. Alternative adjustment methods—for example, simple uniform or scaled additive changes in income tax and savings rates—can easily be devised to circumvent this problem, but they have a disadvantage in that they do not permit such a simple breakdown of the distribution of the burden of the Rural Employment Act between tax changes to fund government and savings changes to fund the act. If the act is assumed to be funded directly through increases in government savings to fund the "investment" and government consumption was a fixed share of domestic absorption, then the entire program effects would be funded via income, or other, tax increases. The effects on household consumption incomes would then be concentrated on the limited number of households paying income taxes, if a multiplicative

rule was adopted, or on those households contributing to an additive income tax. The range of possible funding arrangements is virtually limitless and depends on too many different potential views to be definable. Hence the choice of a simple but clear rule, despite the slight drawback of negative savings rates. The seemingly odd result of an increase in consumption expenditure larger than the change in income might have some intuition. The Rural Employment Act field studies have identified the reduction of debt among poor households as an important effect of the program. As debt falls and with the sizable costs associated with those debts, consumption-deprived households might react by increasing consumption with more vigor than expected.

36. It is not certain that these "forced" savings will emerge in the real economy; if they fail to emerge, future growth might be adversely affected.

37. The model's numéraire is the Consumer Price Index (CPI). As one set of relative prices rise, so must another set decline; however, the CPI weights are drawn from the average consumption bundle, and hence the implications vary by household according to the consumption bundle of households.

38. As such, the alleviation of relative poverty through such targeting would be via second "law" of welfare economics effects.

References

Angelucci, Manuela, and Giacomo de Giorgi. 2006. *Indirect Effects of an Aid Program: The Case of PROGRESA and Consumption*. IZA Discussion Paper 1955. Bonn: IZA.

Assad, Ragui. 1997. "The Effects of Public Sector Hiring and Compensation Policies on the Egyptian Labor Market." *World Bank Economic Review* 11, no. 1: 85–118.

Armington, Paul. 1969. A Theory of Demand for Products Distinguished by Place of Production. IMF Staff Papers, XVI. Washington, D.C.: International Monetary Fund.

Bastagle, Francesca. 2009. "From Social Safety Net to Social Policy? The Role of Conditional Cash Transfers in Welfare State Development in Latin America." Working Paper 60. Brasília: International Policy Centre for Inclusive Growth.

Basu, Arnab, Nancy H. Chau, and Ravi Kanbur. 2008. "A Theory of Employment Guarantees: Contestability, Credibility and Distributional Concerns." IZA Discussion Paper 3002. Bonn: IZA.

Blanchflower, David, and Andrew Oswald. 1995. "Estimating a Wage Curve for Britain 1973–1990." NBER Working Paper 4770. Cambridge: National Bureau of Economic Research.

Center for Food and Agribusiness Management. 2009. *Quick Appraisal of 5 Districts Under NREGA in Uttar Pradesh.* Lucknow: Indian Institute of Management. Report submitted to Ministry of Rural Development, Government of India.

Datt, Gaurav, and Martin Ravallion. 1994. "Transfer Benefits From Public Works Employment: Evidence from Rural India." *Economic Journal* 104: 1346–1369.

Devereux, S., and C. Solomon. 2006. "Employment Creation Programs: The International Evidence." Issues in Employment and Poverty Discussion Paper 24. Geneva: International Labor Office.

Dervis Kemal, Jaime de Melo, and Sherman Robinson. 1982. *General Equilibrium Models for Development Policy*. New York: Cambridge University Press.

Dreze, Jean, and Reethika Khera. 2008. "The Battle for Employment Guarantees." *Hindu Frontline* 26, issue 1.

Dreze, Jean, and Amartya Sen. 1989. *Hunger and Public Action*. Wider Studies in Development Economics. Oxford: Clarendon Press.

Dutta, Puja, Rinku Murgai, Martin Ravallion, and Dominique van de Walle. 2012. *Does India's Employment Guarantee Scheme Guarantee Employment?* Policy Research Working Paper 6003. Washington, D.C.: World Bank.

Fieszbein, Ariel, and Norbert Schady. 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. Washington, D.C.: World Bank.

Galaso, Emmanuela, and Martin Ravallion. 2003. *Social Protection in a Crisis: Argentina's Plan Jefas y Jefes*. Policy Research Working Paper 3165. Washington, D.C.: World Bank.

Government of India. 2005. "The National Rural Employment Act, 2005," *Gazette of India*. New Delhi: Ministry of Law and Justice.

Government of India. 2006. *Employment and Unemployment Situation Among Social Groups in India 2004-05*. NSS 61st Round (Report No. 516). New Delhi: National Sample Survey Organization.

Government of India. 2010. *Annual Report to the People on Employment*. Ministry of Labour and Employment. New Delhi. July.

Government of India. 2011. *Key Indicators of Employment and Unemployment in India, 2009–10*. New Delhi: National Sample Survey Organization.

Hailu, Degol, and Fabio Soares. 2008. "Cash Transfers: Lessons From Africa and Latin America." *Poverty in Focus* 15. Brasília: International Policy Centre for Inclusive Growth.

Hanlon, Joseph, Armando Barrientos, and David Hulme. 2010. *Just Give Money to the Poor: The Development Revolution From the Global South*. Sterling, Va.: Kumarian Press.

Hirway, Indira, and Harpeet Singh. 2006. *Concurrent Monitoring of NREGA: Feedback From the Field.* Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/CFDA-NREGA%20MONITORING%20AND%20EVALUATION%20REPORT.doc.

Imai, Katsushi. 2007. "Targeting Versus Universalisms: An Evaluation of Indirect Effects of the Employment Guarantee Scheme in India." *Journal of Policy Modeling* 29, no. 1: 99–113.

Indian School of Women's Studies Development. 2008. *Impact of NREGA on the Living and Working Conditions of Women in Rural India*. Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/NREGA%20ISWSD.doc.

Jandu, Navjyoti. 2008. *A Study on Socio-Economic Empowerment of Women Under NREGA*. Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/NREGA%20NFIW.doc.

Kamath, Rajalaxmi, Rajlaxmi Murthy, and Trilochan Sastry. 2008. *NREGA Surveys in Anantapur, Adilabad, Raichur and Gulbarga* (2007–08). Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/report-fy-06-08/IIMB%20-%20NREGA%20-MONITORING%20AND%20EVALUATION%20REPORT%20FINAL.doc.

Lal, Radhika, Steve Miller, Maikel Lieuw-Kie-Song, and Daniel Kostzer. 2010. *Public Works and Employment Programmes: Towards a Long-Term Development Approach*. Working Paper 66. Brasília: International Policy Centre for Inclusive Growth.

Levy, Santiago. 2009. *Good Intentions, Bad Outcomes: Social Policy, Informality, and Economic Growth in Mexico*. Washington, D.C.: Brookings Institution Press.

Manning, Alan. 2005. *Monopsony in Motion: Imperfect Competition in Labor Markets*. Princeton, N.J.: Princeton University Press.

McCord, Anna. 2009. *Cash Transfers: Affordability and Sustainability*. Project Briefing 30. London: Overseas Development Institute.

McCord, Anna, and Rachel Slater. 2009. *Overview of Public Works Programmes in Sub-Saharan Africa*. London: Overseas Development Institute.

McDonald, S. and K. Thierfelder. 2009. *Globe v2: A SAM Based Global CGE Model Using GTAP Data*. mimeo. www.cgemod.org.uk.

Mukherjee, Anindita. 1997. "Public Works Programmes: Some Issues." *Indian Journal of Labour Economics* 40, no. 2: 289–306.

Murguia, Rinku, and Martin Ravallion. 2005. "Is a Guaranteed Living Wage a Good Anti-Poverty Policy?" Policy Research Working Paper 3640. Washington, D.C.: World Bank.

Narayana N. S. S., Kirit Parikh, and T. N. Srinivasan. 1988. "Rural Works Programmes in India: Costs and Benefits." *Journal of Development Economics* 29: 131–56.

Nino, Carlo del, Kalanidhi Subbarao, and Annamaria Milazzo. 2009. "How to Make Public Works Work: A Review of the Experiences." Social Protection Discussion Paper 905. Washington, D.C.: World Bank.

Oya, Carlos. 2010. "Rural Inequality, Wage Employment and Labour Market Formation in Africa: Historical and Micro-Level Evidence." Integration Policy Department Working Paper 97. Geneva: International Labor Organization.

Panda, B., A. K. Dutta, and S. Prusty. 2009. *An Appraisal of NREGA in the States of Meghalaya and Sikkim*. Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/NREGA-IIMShillong-Final%20Report.pdf.

Pankaj, Ashok, and Alakh Sharma. 2008. "Issues in Implementation and Impact of NREGA: Bihar and Jharkhand Experiences." In *The National Rural Employment Guarantee Act (NREGA): Design, Process and Impact*. New Delhi: United Nations Development Program (UNDP), 190–210.

Papola, T. S. 2006. *Employment Trends in India.* New Delhi: Institute for Studies in Industrial Development. http://isid.org.in/pdf/EmployTrenz.PDF.

Perroni, Carlo, and Rutherford, Thomas. 1995. "A Comparison of the Performance of Flexible Functional Forms for Use in Applied General Equilibrium Analysis." Warwick Economics Research Paper Series (TWERPS) 441. University of Warwick, Department of Economics.

Pradhan, B. K., and P. K. Roy. 2003. *The Well Being of Indian Households: MIMAP-India Survey Report*. New Delhi: Tata-McGraw Hill.

Pradhan, B. K., M. R. Saluja, and S. K. Singh. 2006. *Social Accounting Matrix for India: Concepts, Construction and Application*. New Delhi: Sage Publications

Ravallion, Martin, and Gaurav, Datt. 1995. Transfer Benefits From Public Works Employment: Evidence From Rural India. *Public Spending and the Poor: Theory and Evidence.* 413–14. Washington, D.C.: World Bank.

Sharma, Amita. 2010. "Rights-Based Legal Guarantee as Development Policy: The Mahatma Gandhi National Rural Employment Guarantee Act." NREGA-UNDP Discussion Paper no. 2.

Singh, S. P., and D. K. Nauriyal. 2009. *System and Process Review and Impact Assessment of NREGA in the State of Uttarkhand*. Professional Institutional Network. New Delhi: Ministry of Rural Development. www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/IIT%20Roorkee%20Report.pdf.

Soares, Fabio. 2010. *Do CCTs Minimize the Impact of the Current Economic Crisis?* One Pager 96. Brasília: International Policy Centre for Inclusive Growth.

Sojo, Ana, ed. 2009. *El financiamiento de la proteccion social en paises pobres y desguales*. Santiago: CEPAL.

Subbarao, Kalanidhi et al. 1997. "Safety Net Programs and Poverty Reduction: Lessons from Cross-Country Experience." Directions of Development. Washington, D.C.: World Bank.

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