

# **GUARANTEERING JOBS FOR THE RURAL POOR: AN ASSESSMENT OF INDIA'S MGNREGA PUBLIC WORKS PROGRAMME**

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## **INTRODUCTION**

On 25 August 2005 the Indian parliament enacted a law guaranteeing the right of rural households to a minimum of 100 days of paid work; this important piece of legislation was later renamed the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA).<sup>1</sup> In many ways, it represents a milestone in the history of employment generation programmes in India but perhaps also a point of reference for social policy in many other developing countries. Its rights-based approach, social inclusion features, reliance on local self-government and focus on livelihoods make it an important public endeavour. Its size has no precedent in India or in any other country, posing important design and management challenges.

The NREGA mandated the implementation of an ambitious, demand-driven employment creation programme aiming to benefit poor people in rural areas directly through the income provided by jobs paying a socially acceptable wage and indirectly through the execution of investment projects that improve productivity in agriculture and alleviate land degradation. The Act also set important social goals, including women's empowerment and improved opportunities for marginalized groups, and seeks to strengthen community decision-making bodies and fight corruption through transparent administration of the programme. This legislation came after several years of high economic growth—the 'India Shining' years—that, however, failed to

significantly improve the living conditions of many poor people. In this sense, it may provide a new learning experience for other countries that have failed to translate rapid economic growth into similarly strong poverty reduction.

The scale of implementation of this programme grew very fast; job creation accelerated from less than 1 billion workdays distributed among 20 million households in 2006–2007, the first year of operation, to 2.5 billion workdays among 50 million households in 2010–2011. Any initiative of such breadth and ambition is sure to face enormous implementation challenges that can only be addressed through a process of learning and adaptation. There are reports, by both critics and supporters, citing instances of resources being diverted to the pockets of local elites; of partial payments to beneficiaries, below the number of hours effectively worked; of women's wages paid to their husbands; and of inadequate projects due to a lack of maintenance or simply not being finished, with the result that there is no impact on agricultural productivity. It is interesting and encouraging that many of the 'failures' are reported in the programme's own auditing process. The fact that information on these failures is publicly available will most likely contribute to improving the programme's design and implementation and can be interpreted as a good signal in the interest of addressing its complexity.

The Act has clearly generated a number of very positive results. There is evidence of effective job creation (documented both by the programme's own audits and by independent studies); wages are being paid; females are actively participating in the programme and are receiving wage payments directly (rather than through their husbands or other male family members); projects undertaken by the programme are considered useful by their communities; general wage levels have increased; and living conditions have improved. A recent India-wide household survey offers evidence that the programme is in fact reaching and benefiting poor people, even though it has not yet been able to effectively guarantee jobs. Unfortunately, there has been no evaluation instrument proportional to the programme's magnitude that could provide a reliable picture of just how generally successful (or not) it has been.

This study seeks to shed light on issues that have not been addressed thus far by previous evaluations. It assumes an effective implementation of the programme under the NREGA—i.e. that the programme is effectively creating jobs for poor people in rural areas, that workers are being paid the official programme wage and that the nation's castes and tribes are being employed in proportions similar to those stated in the programme's official figures. With these assumptions, we address the macroeconomic and distributional implications of running an employment generation programme such as the NREGA, including the indirect employment effects it has through its secondary effects on other sectors. Second, we look at the programme's impact on prices and hence on the cost of living of rural households. Third, we consider the programme's economic and distributional effects when land productivity increases. Finally, we briefly discuss the extent to which leakages, in the form of hiring non-poor workers, would change the programme's economy-wide impact, as well as the impact of changing the size of NREGA through a contraction/expansion of its budget.

Overall, the modelling exercise reported in this chapter indicates that, since its inception, the programme has had a positive impact on economic activity beyond the immediate and direct impact of wage payments to the poor people who participate in it. It finds both that the economy as a whole benefits from the programme and also that each major population group does as well. Poor workers in rural areas benefit the most through direct employment creation. Secondary welfare impacts through the creation of demand in other sectors of the economy are larger for higher-income groups than for poor people. In that sense, the programme's distributional effects are not positive. The impacts are significant yet small due to the programme's relatively small size in relation to the Indian labour markets. This negative distributional impact, however, is very small and does not modify the programme's overall progressive redistribution of income in the Indian economy.

## ***INDIA: GROWTH, POVERTY AND INEQUALITY***

India has the second largest population in the world, about 1.2 billion people. It is also an emerging economic power, with a strong growth record over the last 30 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 into US dollars. Either way, India's economy clearly stands out among emerging and neighbouring economies. Yet, at market exchange rates, India's income per capita is only US\$1330, and the country has just migrated from 'low-income' to 'low-middle-income' status.

### ***Economic growth***

During the first three decades after independence in 1947, the Indian economy grew at the modest rate of 3.5 percent per year which, in the face of a rapidly growing population (at 2 percent per year), was insufficient to significantly reduce poverty. The 1980s, however, marked a turnaround in economic conditions: economic growth accelerated to a rate of 5.5 percent per year, producing an increase in per capita income of about 3.5 percent per year, which opened the door for significant poverty reduction. The removal of widespread government controls on trade and industry in the 1990s and the long-lasting and rapid expansion of international trade resulted in a further acceleration of growth. Most recently the economy has proven resilient to a variety of shocks; droughts, high international oil prices and the global recession did not prevent growth at above 8 percent between 2009 and 2011. The performance of the Indian economy, along with those of other emerging countries, slowed in 2011–2012, and the outlook is now not so bright. The growth forecast for the 2012–2013 fiscal year is 6.5 percent.

As the pace of growth has accelerated over the last 30 years, the nation's economic structure has become increasingly service-based. In 1960, services accounted for about 30 percent of gross domestic product (GDP), while in 2010 they constituted almost 60 percent. India is now widely recognized as a strong world competitor in skills-based services such as information technology. And while the importance of industry has also increased, from less than 20 percent

to about 30 percent, the share of agriculture has plummeted from slightly more than 50 percent in 1960 to less than 20 percent in 2010. The shift from agriculture to industry and services is the traditional route accompanying economic development. In India, however, the decline of agriculture has been aggravated by a lack of investment and negative incentives that retarded productivity growth in agriculture at the cost of lagging living standards in rural areas.

### ***Poverty and inequality***

Poverty in India has been falling since 1983 at a varying pace. While poverty reduction was fast during the years that preceded the passage of the NREGA, the country's subsequent success in reducing poverty did not match its increasing economic growth. 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, while GDP almost tripled. According to government figures, poverty continued to decrease between 2004–2005 and 2009–2010 at a faster pace.<sup>2</sup> Unfortunately, as in many other countries, faster growth was also 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 across states. Between the 1990s and the 2000s, the variation in income per capita across states increased substantially to accentuate differences in the living conditions of people based on where they lived.<sup>3</sup> By the mid-2000s, large differences in well-being across states were evident. The incidence of poverty in different states ranged from 3 percent of the total population in the richer states to 57 percent in some of the poorest. The four states with the lowest poverty incidence housed just 2 percent of all poor people in India, whereas the 14 poorest states accounted for 80 percent. In two states, Orissa and Bihar, more than half the population is poor.

Social disparity in India goes back to a history of discrimination against particular population groups. According to the Indian Constitution, the population is classified 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 NREGA, these groups accounted for 8, 20, 41 and 31 percent of the total population, respectively. Groups that are discriminated against have been and remain at the bottom of the social and economic pyramid and thus include large concentrations of poor people. In rural areas, about 49, 40 and 30 percent of the ST, SC and OBC households, respectively, had monthly per capita consumption expenditures lower than INR410.<sup>4</sup> In all other population groups, only 20 percent of households had an income below this level. Deprived population groups also have limited access to land, most notably in the case of the SCs; when the Act became law, about three quarters of ST households had land possessions smaller than 0.4 hectare, and only 1 percent had more than 4 hectares. By contrast, 6 percent of 'others' had more than 4 hectares, and 3 and 4 percent, respectively, of SCs and OBCs had that much.<sup>5</sup>

## ***Employment conditions and policies***

Living standards critically depend on employment opportunities. Open unemployment rates are low in India, at 2.5 percent in rural areas and 5.3 percent in urban areas. Low unemployment rates confirm the well-known dictum that poor people cannot afford to be unemployed; they further suggest that low labour force participation might also be a critical issue. India's employment rate—i.e. the proportion of the population that actually works—is indeed low. It is low among men (at a rate of 55 percent regardless of the area of residence) and particularly low among women at 33 and 17 percent in rural and urban areas, respectively.<sup>6</sup>

Having a job or a small plot of land does not guarantee freedom from poverty. Wages are low in many rural areas, particularly for women. As an extreme case, the mean wage of an illiterate female worker in rural areas is less than one tenth of the mean wage of a male worker with a university education living in a city.<sup>7</sup> 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 often low-quality landholdings.

Employment has been prominent in Indian policy discourse but less so in development plans. During the initial decades of development planning, the pursuit of growth was to be partially based on labour-intensive small enterprises, whose growth was expected to improve employment conditions. 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, which ultimately met with little success (Little et al., 1989), employment generation was effectively seen as a byproduct of policies promoting growth and the resulting changes in the structure of production.<sup>8</sup>

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 programmes, 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 a major objective, but the overall policy approach to job creation continued to see it as a largely residual effect of growth. Job creation policies supplementing the plan's emphasis on growth included the promotion of labour-intensive sectors and two major employment creation programmes, the Sampoorna Grameen Rozgar Yojana and the National Food for Work Programme. Compared with the NREGA, these two programmes were quite limited.<sup>9</sup>

## ***THE MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE ACT***

### ***The Act***

The 2005 NREGA guarantees a minimum of 100 days a year of paid employment to all rural households. Building on India's long-term experience with employment programmes, it adopted a self-targeting mechanism to reach poor people. The works sponsored by the programme are limited to manual, low-skilled tasks remunerated at the state's minimum wage. Thus, the universal right that the Act establishes reaches poor people through self-selection. Those not interested in working at the minimum wage do not participate.

Although the Act does not explicitly indicate a time of year when work should take place, the expectation is that job opportunities will be offered during the agricultural lean season when distressed migration and forced sales of valuable assets are highest due to the lack of local employment opportunities. The flexible employment generation projects offered can thus provide timely support to sustain poor people during this lean season, helping them to avoid actions that might undermine their capacity to sustain living conditions in the future and/or incur burdensome debts. Such projects can also help reduce the economic and social costs of migration.

For the work guarantee to be effective, the programme must ensure that jobs are made available such that 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 such amenities, even poor people might not find the jobs attractive. The Act also specifies that work must be provided within a 5km radius of villages; if work takes place at sites that are further away, transportation cost must be added to the workers' wages.

In addition to job creation, the Act also seeks to increase productivity in agriculture, improve environmental management and facilitate access to markets. It specifies that work made available must fall within the categories of:

- water conservation and water harvesting;
- drought proofing, including plantation and afforestation;
- irrigation canals, including micro and minor irrigation works;
- flood control and levees;
- land development; and
- rural connectivity.

Seeking to ensure that projects are labour-intensive, the Act stipulates that they must allocate at least 60 percent of their total budget to wages and forbids the use of contractors. The Act is not designed to be a rural development programme and does not contemplate building complex development projects.

Social inclusion and gender equality rank high among the Act's objectives; a minimum of one third of the jobs created should be made available to women. It also aims to reach deprived groups, such as the SCs and STs; although it does not specify a target rate for the participation of these groups, it promotes wide dissemination of information and transparency of implementation and requires that the participation of traditionally excluded groups in the programme be regularly reported. Furthermore, it specifies that minor irrigation, horticulture and land development projects can be undertaken on the lands of deprived population groups.<sup>10</sup>

India's history highlights the importance of empowering poor people and controlling corruption for poverty alleviation to succeed. The Act and subsequent operational guidelines make elaborate provisions to give poor people control over decisions regarding public works carried out under the Act. A key provision places the selection and monitoring of works within the communities, the *gram sabha* and *panchayat*.<sup>11</sup> Key anti-corruption and empowering provisions involve job cards needed to qualify for programme benefits; these are granted when a person can verify their name, address and age. With a job card, rural workers can make a submission for the number of days of work of their choice. Because they allow tracking of submissions for work, the number of days worked and the wages received, the cards also provide relevant data on the implementation of the programme. To avoid forgery, the Act specifies that the job card must stay with the worker and that the programme administration must keep a copy. In addition, the programme promotes transparency by mandating that 'muster rolls', records of work undertaken and wages paid, are made publicly available at the work site. The Act provides for periodic social audits and the setting up of vigilance committees within the villages.

The costs of the programmes sponsored by the Act 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 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 if they fail to provide the requested job (Government of India, 2005: 10–11).

## ***Evolution of the programme***

The Act was inaugurated on 2 February 2006. In its first phase it covered the 200 least developed rural districts, and in the second it covered 330 districts. All rural districts were reached during the third phase of implementation (Table 6.1). During the first year of operation the programme created 1 billion person-days of work that benefited 21 million households. By 2009–2010 this had more than doubled: 2.6 billion person-days of work to 55 million households. The average number of days of work provided rose from 43 person-days per household in its initial year to 50



person-days in 2009–2010. Its size and scope are unprecedented in the history of India's social programmes. In the last two years, the programme has decreased in size. It will be important to ascertain whether this is indeed a new trend or simply a temporary slump and in either case to identify the reasons behind it.

**Table 6.1: NREGA's Job Creation and Household Coverage, 2006–2011**

Year	Districts (number)	Households (millions)	Annual Work Person-days (billions)	Average Annual Days Per Household (number)	Average Daily Wage (Rupees–INR)
2006/07	200	21.0	0.9	43	65
2007/08	330	33.9	1.4	42	75
2008/09	615	45.1	2.2	48	84
2009/10	615	52.5	2.8	54	90
2010/11	615	55.0	2.6	47	100
2011/12	615	49.9	2.1	42	118
<i>Source: author's elaboration based on data from NREGA official data (www.nrega.nic.in).</i>					

The participation of women in the NREGA's programme has been remarkable. From the beginning, female involvement has been well above the minimum prescribed quota of one third, and it has increased over time, from 41 percent of all workdays in 2006–2007 to 48 percent by 2008–2009, since when it has remained about constant (Table 6.2). In contrast, the programme'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 implementation. Note also the large decline in the share represented by SCs in 2011–2012. It is beyond the scope of this study to try to explain the reasons for these changes.

**Table 6.2: Share in the Total Number of Person-days Worked on NREGA Projects (percentage) by Women, SCs and STs, 2006/07–2011/12**

Year	Women	SCs	STs
2006/07	40.6	25.4	36.4
2007/08	42.5	27.4	29.3
2008/09	47.9	29.3	25.4
2009/10	48.1	30.5	20.7
2010/11	47.7	30.6	20.9
2011/12	48.2	22.0	18.2
<i>Source: author's elaboration based on data from NREGA official data (www.nrega.nic.in).</i>			



It has been argued that an Act that gives a right to work and tries to promote social inclusion should aim to pay the same wage everywhere. In parallel with the implementation of the NREGA, the national government has embarked on the equalization of minimum wages across states in the country. In 2006 the minimum daily wage across states ranged from INR40 to INR90; by 2010 it ranged between INR120 and INR140—a significant reduction in the spread. Although equalizing wages across states with large differences in cost of living is not necessarily an optimal strategy, some reduction in the range is likely to make a positive contribution.<sup>12</sup>

To increase productivity in agriculture and improve environmental management, the Act has concentrated its efforts on water and land management projects. Since its implementation, these have between them represented more than two thirds of the projects officially reported as completed; the importance of land management has increased from 20 to 30 percent (Table 6.3). Prominent among water management projects are those oriented towards conservation, harvesting and irrigation.

**Table 6.3: Distribution of NREGA Works by Project, 2006/07 and 2011/12**

Category	Type	2006/07		2011/12	
		number	%	number	%
Water management	Water conservation and harvesting	121,921	31.8	232,809	15.6
	Irrigation facility	27,362	7.1	207,941	13.9
	Renovation of traditional water bodies	25,472	6.6	88,420	5.9
	Microirrigation works	12,151	3.2	76,621	5.1
Land management	Land development	43,370	11.3	234,767	15.7
	Drought proofing	30,989	8.1	117,785	7.9
	Flood control and Protection	10,206	2.7	87,238	5.8
Connectivity and others	Rural connectivity	91,244	23.8	374,481	25.0
	Other activity approved by MRD	20,776	5.4	75,911	5.1
<i>Source: author's elaboration based on data from NREGA official data (www.nrega.nic.in).</i>					

The budget available to fund the Act's programmes has increased as employment creation expanded, but the programme's 'burden' on the economy—measured by the size of its budget as a proportion of GDP—only increased in the first three years to a peak of 0.6 percent in 2009–2010 (Table 6.4) then declined due to the programme's slower growth and the country's continued rapid economic growth. If the current slowdown in economic growth continues, it is possible that the programme's burden will rise back to its earlier 2008–2009 level.<sup>13</sup>

**Table 6.4: Central Government Expenditures on NREGA Programmes, 2006/7–2011/12**

Fiscal year	Percentage of GDP		INR crore	
	NREGA budget estimate	NREGA budget release	NREGA budget estimate	NREGA budget release
2006–07	0.26	0.20	11,300	8,694
2007–08	0.24	0.25	12,000	12,661
2008–09	0.28	0.53	16,000	30,000
2009–10	0.61	0.52	39,100	33,539
2010–11	0.52	0.47	40,100	35,841
2011–12	0.45	0.33	40,100	29,215

*Notes: GDP at market prices (current prices with base year 2004–05); data for 2009–10 are provisional, for 2010–11 are based on quick estimates and for 2011–12 are based on advance estimates. Source: Reserve Bank of India ([www.rbi.org.in](http://www.rbi.org.in)). NREGA expenditure data are sourced from the Ministry of Rural Development ([www.rural.nic.in](http://www.rural.nic.in)).*

**Source:** author's elaboration based on data from Reserve Bank of India and Ministry of Rural Development.

### ***The impact of the programme***

Since there are no systematic, nationally representative and independent data on the programme, there are as yet no comprehensive evaluations of it. However, evidence from the programme's administrative records, independent studies by academic institutions, the Act's social audits and the 2009–2010 National Household Survey suggest that it is having a significant impact on the lives of poor people. Overall programme performance according to the various sources varies significantly according to the specific feature under scrutiny and the geographical location. Independent studies and social audits detail weaknesses and failures, which, although in many cases they raise concerns about the implementation of the programme, also suggest that on the whole it is lowering poverty. The 2009–2010 National Household Survey data confirm that the programme is reaching poor people and is contributing to social inclusion by increasing the participation of deprived social groups and women; it also confirms a strong variance across states in the degree to which the programme accomplishes its objectives.<sup>14</sup>

Independent studies and social audits suggest that income in villages has increased since the programme's inception, with the increases varying from very small to significant—around 20 percent of annual income. As expected, studies report that additional income has been used substantially for food consumption but also to cover education and health expenses and to repay household debt. Of particular importance, the rise in income earned locally has curbed distress migration; estimates of this effect vary widely though, with some finding no visible reduction, while others find a complete elimination of distressed migration.<sup>15</sup>

The high participation rate of women in the NREGA is perhaps one of its most important achievements. Since women's participation in other types of paid labour is particularly low,

a 50 percent average participation in the programmes sponsored by the Act is a remarkable achievement. Similarly important is the provision to equalize male and female wages. As more women join the paid labour market under significantly improved wage conditions, household income and women's status in the household and the community improves. Studies and social audits confirm these trends but also suggest that the journey toward women's empowerment will be a long one. Some studies report that women have gained power, have made the decision to work on their own and have improved their livelihood choices, but others have found that many women still hand their wages to their husbands or that husbands make arrangements to receive directly the wages earned by their wives.<sup>16</sup>

As important as a 50 percent women's labour force participation rate might be, there are still obstacles preventing women from joining the programme. The decision to take a job under the Act, as any other job, can have costs, which may become prohibitively high for poor people. Particularly relevant for women is the availability of child-care facilities; according to most studies, although the programme has been relatively successful in providing drinking water and shade, it has done much less well in providing health and child-care facilities for working women.<sup>17</sup> This is an area where much needs to be done to improve the programme's benefits for women.

An important aspect of the poverty reduction impact of the NREGA is the increase in the wages received by poor workers. Three important wage effects have followed the implementation of the Act:

- the degree to which the wage paid by the Act has raised the local market wage for casual labour in agriculture;
- whether the Act is abiding to its requirement to pay the minimum wage, a point further reinforced by the increase in minimum wages; and
- to the extent that the guaranteed jobs are effectively paying the legal minimum wage, the Act's wages have become the *de facto* wage floor—i.e. poor workers not working under the Act's programme also benefit from its higher wage provision.

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 programme, and this is a very important effect. It does not necessarily mean, however, that workers are effectively receiving the stipulated minimum wage. According to studies, the Act does not always abide by the requirement to pay the state's minimum wage to its workers. Other studies and evidence from the 2009–2010 National Household Survey suggest that employment creation by the programmes associated with the Act are not meeting the demand for jobs in the rural communities, although local wages have indeed increased since the Act's inception.<sup>18</sup> Therefore, even if not fully guaranteeing employment, the Act is most likely helping to improve the lives of poor people even when workers do not directly engage in the programme.

The programme's ability to sustainably reduce poverty largely rests on the adequacy and quality of the assets created. Building relevant and quality rural assets ensures a stronger and long-lasting impact on agricultural productivity, which would increase poor people's consumption

of food and raise their living standards. The programme's rapid expansion and sheer size has surely exerted pressures on local managerial capacities to coordinate asset-building projects, 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 NREGA during the previous fiscal year were actually concluded, suggesting that even by this crude indicator there is need for improvement.

Village studies also indicate that asset creation requires more attention. Studies indicate that assets sponsored under the Act are often built with a short-term perspective, do not last long, are of low quality and are not properly maintained. Other studies also indicate instances in which assets are considered valuable by villagers, improve crop yields and have long-term positive environmental effects. Some of the blame for the low quality of assets goes to the specification that projects must involve extensive use of manual work and that 60 percent of the programme expenditures should go directly to labour costs. But other observers disagree, arguing that much can still be done to improve asset quality within the stipulated criteria. Dreze and Khera (2009), 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 adopted.<sup>19</sup>

## ***ASSESSING THE NREGA'S ECONOMY-WIDE IMPACT***

Given the potentially far-reaching effects of employment generation programmes, economy-wide modelling is a particularly useful tool to analyse their impact in the economy at large. The section below presents the results obtained from an economy-wide model that replicates the characteristics of the NREGA. We identify the beneficiaries according to those defined by the programme, using the coverage and actual composition of workers identified by the programme in 2009–2011, and assuming that the programme only hires low-skilled workers. We also run a separate simulation to look at the impact of an increase in agricultural productivity associated with the implementation of the Act. The data used in this model correspond to a national Social Accounting Matrix (SAM) built for 2003, before the inception of the Act.<sup>20</sup>

Overall, we find that the employment programme in India has a positive impact on economic activity, as well as direct and indirect positive impacts on the income of poor households. The potential increase in agricultural productivity is found to have a positive economic effect with shared benefits to all population groups, even though its distributional impact is slightly negative to the extent that the welfare of higher income groups increases more than the increase in welfare for poor people.

### ***Assessing the NREGA's macro-economic impact***

We first model an employment generation programme with a budget equivalent to 0.65 percent of GDP, which approximately corresponds to the actual size of the NREGA in fiscal year 2009–2010. The simulation consists of an increase in public expenditures equivalent to

0.65 percent of GDP to hire workers and pay for the necessary materials for construction and the wages of the administrative and few technical staff required by the projects. The simulated increase in public expenditures closely follows the actual composition of the budget in 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 programme expenditures go directly to wages for beneficiaries, 5 percent to administration expenses and 29 percent to purchase inputs for the implementation of projects.

In the model we draw labour from rural households in proportions approximating those in the Act in 2009–2010. We assume that the labour hired is divided in equal parts between illiterate male and female workers and that these workers belong to the poorest 60 percent of rural households of SCs and STs and to the poorest 30 percent of households of OBCs and others. The payment of wages to these workers is further inputted into the income of the households from which workers are drawn. The cost of intermediate input materials and administrative expenses, which are assumed to include payments to school- and college-educated workers, represent about one third of the budget, in accordance with the actual budget reported by the programme in the period under consideration.

Results indicate that running an employment generation programme such as the one under the NREGA has a positive macroeconomic impact. An allocation of resources equivalent to 0.65 percent of GDP increases GDP by about 0.4 percent. The programme's overall expansionary effect is in accordance with the basic notion of a Keynesian balanced budget multiplier, plus the additional demand generated from the shift in income towards poor households with a high marginal propensity to consume.

The programme's distributional impact is also positive. Simulation results indicate an increase in welfare among poor rural households and a marginal increase among poor urban households. The implementation of the programme carries a cost, which comes in the form of a decline in welfare for rich people in both urban and rural areas, since the programme is financed through income taxes and 'forced' savings.

Overall the Act generates an expansion of activity and changes in the composition of production across sectors that result in a progressive redistribution of income towards poor people. The main effects are a sizable redistribution from rich people in urban and rural areas to poor people in rural areas, a marginal redistribution from the same groups to poor people in urban areas and an overall redistribution from urban to rural areas. These results are generated by a variety of factors, some of which are discussed in the sections below.

### ***Shift in consumption***

As the NREGA is implemented and wages are paid to workers, the demand for goods and services consumed by poor people in rural areas rises. Simultaneously, the increase in taxes to finance the projects sponsored by the Act reduces the demand for goods consumed by rich urban

households. Thus, the demand for goods and services shifts towards those consumed by low-income households in rural areas. This, in turn, induces changes that boost prices and economic activity in agriculture and light manufacturing and reduce the demand for other manufacturing and service sectors. At a greater level of detail, economic activity increases in the production of rice, the other processed food sector, textiles and apparel; conversely, it decreases in vehicle manufacturing and in most services.<sup>21</sup>

The pattern of changes in income suggests that employment generation programmes such as the NREGA are an effective instrument for poverty reduction. Poor rural households benefit from employment opportunities directly through the programme as well as from the employment opportunities generated indirectly by the implementation of the programme. Through indirect channels the benefits from the programme extend well beyond its direct beneficiaries. In our simulations, these positive effects extend to 90 percent of the rural population and 30 percent of the urban population. Although the effects are small, partly due to the small size of the programme relative to the size of the Indian labour market, they are nonetheless noticeable.

### ***Impact on the factors of production***

According to our results, the implementation of the NREGA increases labour income and income from land but decreases income from capital. The largest absolute income variation is the change in labour income; we focus on these changes below.

The Act's impact on the economy triggers a wide array of changes in labour income, varying by area, sex, education and caste/tribe.<sup>22</sup> The implementation of the programme increases the demand for workers with basic skills over the demand for workers with higher skills. Reinforcing the programme's objective of benefiting unskilled rural workers, the largest indirect increase in labour income occurs among illiterate rural workers, with a smaller increase for rural school-educated workers. Female workers fare slightly better than males, and the income of workers that belong to the ST increases more than for any other group. In contrast, urban workers and rural workers with higher education are negatively affected. Within these groups, the labour income of females falls more than male income. When one considers caste/tribe, income of the SCs tends to fall the most. Overall, the Act has a positive impact on labour income and has a progressive impact on the distribution of wages.

To the extent that changes in the income of different groups of workers move in different directions, it is useful to aggregate them according to labour characteristics. Aggregation shows that changes in labour income favour workers in rural over urban areas, less-educated workers gain more than better-educated workers, females workers fare better than males, and, although on a smaller scale, workers in deprived population groups fare better than all others. It is worth noting at this point that the increase in labour income triggered by the programme—i.e. the indirect rise in labour income—is in the order of 0.11 percent. The small size of this effect is mainly because the direct wage payments of the programme represent no more than 8 percent of the total income earned by illiterate workers and 2 percent of the total annual income of the

rural labour force. This result serves as a reminder that, as impressive as the NREGA programme is, it is still a small fraction of labour income in India.

### ***Price impacts***

Implementation of the NREGA is likely to prompt changes in consumption prices, which affect the cost of living of various population groups. According to our results, the Act increases the prices of most goods and reduces the prices of services. As income shifts to poor people, and their demand for goods increases, the prices of the goods they consume also go up. Therefore, parallel to the increase in the income of poor households, there is also an increase in the cost of living which counters the Act's initial welfare impact. The implied increase in the cost of living, however, is small. Poor rural households that do not benefit from the expansion of employment under the NREGA will be negatively affected by an increase in their cost of living. Albeit very small, this is still an issue that would require further thinking about ways to compensate, if needed, such negative effect.

### ***The economic and distributional effects of rising agricultural productivity***

Next we consider the results of the second core simulation exercise: the NREGA's potential increase in land productivity. The simulation consists of an exogenous 1.5 percent increase in the factor productivity of land. The exercise assumes that the pre-existing pattern of land ownership remains in place and that productivity increases uniformly across all lands.

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 in GDP, final demand and trade, ranging between 0.02 and 0.03 percent. 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 rich people and larger in urban than in rural areas. The differences are considerable, particularly in rural areas. In cities, rich people gain three to five times more than poor people; but in rural settings, rich people gain 10 to 20 times more than poor people. Even if undesirable, these results are to be expected, mainly due to the high concentration of land in rural India.

### ***The impact on the economy***

The increase in productivity means that the same quantity of agricultural products can be generated with fewer quantities of labour, land, capital and inputs from other sectors. But as the production in agriculture expands, more labour is used, along with more capital and land. The increase in factor use is due to the downward effect of higher productivity on factor prices, which allows producers to buy more labour, capital and land. A more productive agricultural sector has



an expansionary effect on other sectors, although the changes are smaller. Accordingly, the use of more labour 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 manufacturing and extractive activities. On the whole, production shifts toward sectors that tend to hire low-skill workers from poor, rural households. It should be noted that the labour impact of the increase in productivity has the opposite effect of the one resulting from employment generation features of the Act.

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 labour, then for capital and finally for land.

The productivity hike significantly pushes down the relative prices of agricultural commodities and manufactured food. Because food represents a large proportion of poor households' 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.<sup>23</sup> And given that these figure more visibly in rich households' consumption basket, the cost of living for these households goes up.

The effect on prices is so strong that even if the productivity hike decreases poor people's income and, hence, consumption expenditures, the fall in the price of food implies such a strong rise in purchasing power that they end up better off than before. After the increase in productivity, poor people can 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 poor people in rural areas and rich people in urban areas, suggesting that these two groups might experience stronger changes in purchasing power than others.

At the macroeconomic level, 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. 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 disproportionately higher toll on poorer people, 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.

The potential increase in agricultural productivity is found to have a positive economic effect with shared benefits to all population groups, even though its distributional impact is slightly negative to the extent that the welfare of higher income groups increases more than the increase in welfare for 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, 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 increasing productivity should be a main objective when making decisions about what type of works should be financed through the NREGA. Projects that increase land productivity generate the largest welfare benefits for poor people, even if they are not directly employed by the programme.

In the simulation results, however, increasing productivity also has a negative distributional impact due to a larger increase in the welfare of rich households. This result is driven by the high concentration of land in the hands of rich people. This result should not be interpreted as a criticism of the important objective of programmes such as the NREGA to increase productivity in agriculture. Instead, our results reinforce the importance of targeting investments on the landholdings of poor households, which can potentially bring larger welfare benefits.<sup>24</sup>

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 outweighs the former, resulting in a reduction of poverty.

### ***The effect of leakage***

Poverty reduction programmes run the risk of missing poor people and attracting population groups different from the intended target. Our analysis suggests that the effects of leaks do not visibly change the programme's macroeconomic impact. The major difference between a programme 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 programme affects sectors, factor markets and commodity prices. The results analysed above thus suggest that the presence of leakage in the implementation of a programme such as the NREGA should not be a major concern for policy makers considering its macroeconomic and distributive effects.

### ***Changing the size of the NREGA***

Testing for the effects of expanding or contracting the size of the programme or modifying the assumed increase in land productivity suggests that size changes do not qualitatively affect the impact of the programme. Reducing or increasing the employment programme's budget 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 or 2 percent. This suggests that policy makers do not need to

worry about the possibility that further expansions of the programme could trigger deleterious economic consequences. Likewise, no qualitative gain should be expected from reducing the size of the programme.

## **CONCLUSION**

This study has shown that the NREGA's employment programme has positive economic effects. This suggests that its 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 programme benefits accruing to poor people are not limited to the wages directly paid by jobs created by the programme. Through the changes the programme 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 poor people—reinforcing the benefits to poor people in rural areas and extending them to those in urban areas. The increase in labour income generated by the new jobs created by the programme is small, but the small size of the induced changes is largely due to the still comparatively small size of the programme. Furthermore, the cost of the programme is manageable. In our simulations, while government expenditures for the programme are funded by an increase in income taxes, only paid by rich people in urban areas, its implementation ends up imposing, at most, small reductions in consumption and welfare among rich people in both urban and rural areas. The study also finds a potential cost of concern to poor people. As the economy expands and poor people improve their lot, the price of the commodities they consume is likely to increase. This increase in poor households' cost of living is small and should not be a matter of concern, as the programme's benefits more than compensate for the increase in prices. However, for poor rural residents that do not benefit from the programme's jobs, even this small rise in the cost of living would be important. This suggests the need to complement the Act with programmes aiming to provide support to poor non-beneficiary households.

The programme's economic impact and indirect distributive effects are not significantly affected if it fails to reach poor people in rural areas at 100 percent efficacy. Even if the size of the programme has no precedent in India or elsewhere, our findings show that the programme has positive macroeconomic and distributive effects that are proportional to its budget. 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 analysed.

If a reasonable increase in land productivity is assumed 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 to poor people. This is not an argument against the Act, because it is significantly determined by the strong concentration of land. This finding suggests the need to reinforce the Act's provisions aiming to improve land productivity on the lands of poor populations. 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, 5 September 2005.
- 2 Poverty estimates and hence the change in poverty have been the subject of intense debate in India. The cited figures only intend to help illustrate the point.
- 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 As reference, India’s poverty line in 2006 has been estimated to be INR447 and INR579 per month in rural and urban areas, respectively (Government of India, 2009).
- 5 These figures come from NSSO (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.
- 6 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 NSSO (2006: 35). The employed population refers to the usually employed population – i.e. those who 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 2009–2010 NSSO survey portrays a similar picture (note, however, that the corresponding data, table S8, p. 35, refers now to the population aged 15 to 59 years).
- 7 Figures are the average wage received by regular waged/salaried 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 (2006: 92) and Government of India (2011: 92–96).
- 8 See Papola (2006).
- 9 Three other employment programmes have been started or revamped after the inception of the NREGA: the rural self-employment programme, Swarnajayanti Gram Swarozgar Yojana; the urban self-employment and salaried employment programme, Swarna Jyanti Shaharri Rozgar Yojana; and the subsidized credit programme to create employment in rural and urban areas, the Prime Minister’s Employment Generation Programme. See Government of India (2010: 22–25).
- 10 Mainly on the lands of SCs and STs, of households registered as below the poverty line, of deprived households whose needs have already been recognized by making them beneficiaries of the Indra Awas

Yojana housing programme and land reform and, more generally, on the lands of small and marginal farmers who constitute the majority of the holdings in most states.

- 11 *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.
- 12 The coefficient of variation halved between these two years, from about 20 to 10.
- 13 Recall that the central government accounts for most of the cost of the programme but not for the entire bill.
- 14 See, for example, Dutta, Murgai, Ravallion and van de Walle (2012).
- 15 See, for example, Jandu (2008), Panda, Dutta and Prusty (2009), Indian School of Women's Studies Development (2008), Hirway and Singh (2006) and Singh and Nauriyal (2009).
- 16 See, for example, Kamath, Murthy and Sastry (2008) and Dreze and Khera (2008).
- 17 See, for example, Singh and Nauriyal (2009) and Pankaj and Sharma (2008: 190–210).
- 18 See, for example, Dreze and Khera (2008), Centre for Food and Agribusiness Management (2009) and Kamath, Murthy and Sastry (2008).
- 19 Dreze and Khera (2009: 12) argue that the economic return of the assets that the NREGA builds might not be very different from the return on other investments, including those of many industrial projects.
- 20 We use the SAM-based economy-wide STAGE model to probe the potential economic impact of an employment programme such as the NREGA. 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 programme 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; and third, the magnitude of the effects of the Act's programme 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 Act's 'short-term' distributional implications, the key policy objective, rather than on the 'longer-term' growth implications, a secondary policy objective. For a full description of the methodology, see Zepeda et al. (2013).
- 21 For a full description of the multiple impact of the NREGA on the economy through the interrelation of economic activity and induced demand for labour, see Zepeda et al. (2013).
- 22 Note that these changes in labour income do not include the jobs created and wages paid directly by the NREGA.
- 23 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.
- 24 As such, the alleviation of relative poverty through such targeting would be via the second 'law' of welfare economics effects.

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