

Seasonal Poverty and Seasonal Migration in Asia

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Four in five poor people in the Asia and Pacific region live in rural areas. Crop cycles in agrarian areas create periods of seasonal deprivation, or preharvest “lean seasons,” when work is scarce and skipped meals become frequent. In this paper, we document this phenomenon of seasonal poverty and discuss existing formal mechanisms for coping with it. We then focus on seasonal migration from rural to urban areas as a potential coping strategy and review the evidence on the effects of encouraging seasonal migration through transport subsidies. Over the past 10 years, we have conducted a series of randomized control trials in Bangladesh and Indonesia that provided rural agricultural workers with small migration subsidies to pay for the cost of round-trip travel to nearby areas in search of work. This paper summarizes the lessons learned from this multicountry, multiyear series of seasonal migration trials, the implications of these results for spatial misallocation, urbanization, and growth, and the replicability and relevance of this and other policies encouraging domestic migration more broadly for other areas in the Asia and Pacific region.

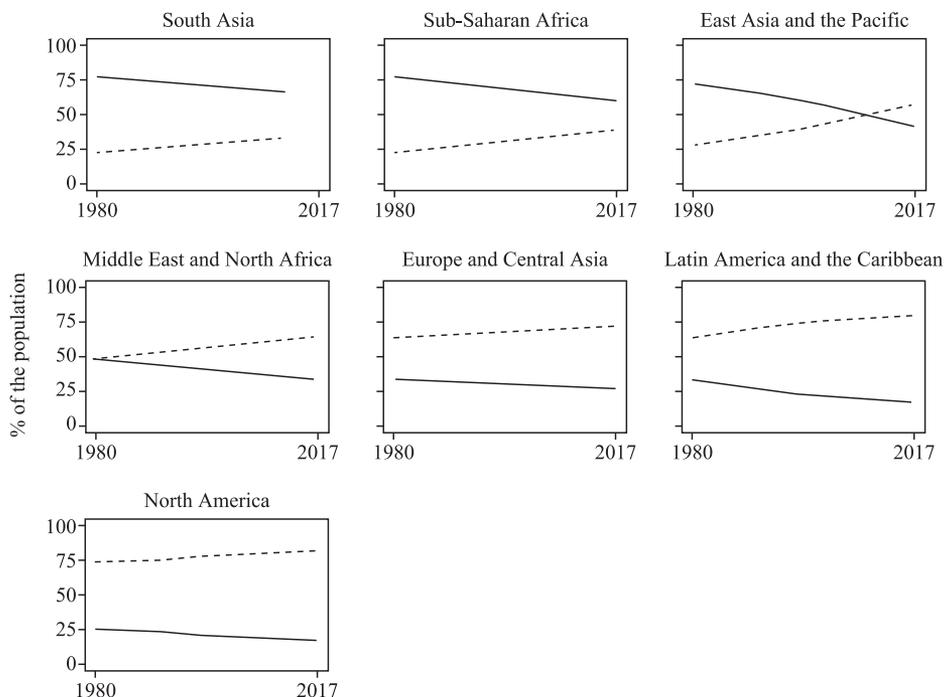
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I. An Introduction to Seasonal Poverty and Domestic Seasonal Migration

In the Asia and Pacific region, poverty is highly concentrated in rural areas. Four out of every five poor people in Asia live in rural areas (Asian Development Bank 2007), and the rural concentration of poverty is even starker within some countries. In Viet Nam and Cambodia, for instance, rural areas account for 90% of all poor people (Balisacan, Edillon, and Piza 2005). In Bangladesh, 35% of rural households are poor, compared to 21% in urban areas. In Pakistan, these figures are 36% and 18%, respectively, and in the Lao People’s Democratic Republic, 29% of

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Figure 1. Trends in Rural and Urban Population Distributions by Region



Source: Authors' calculations using World Bank, World Development Indicators data. <https://datacatalog.worldbank.org/dataset/world-development-indicators> (accessed 7 May 2019).

rural households are poor, almost three times the share for urban residents (10%) (World Bank 2018).¹

As a subregion, South Asia is the most rural in the world and the only one besides sub-Saharan Africa in which the share of the population living in rural areas still exceeds that for urban areas (Figure 1). A majority of the population in rural areas, coupled with a concentration of poverty in these same places, translates into a large number of poor rural households in relative and absolute terms. Most of these households are engaged in agriculture and are vulnerable to more severe and frequent shocks compared to urban households. In this paper, we discuss the seasonal variation in poverty within rural, agrarian areas and summarize findings from 10 years of research on a strategy many poor rural households use as a way to cope with seasonal deprivation: temporary, within-country seasonal migration. Both pilot and larger-scale interventions conducted in Bangladesh and Indonesia reveal

¹Based on the national poverty lines.

that policies that encourage seasonal migration by providing transport subsidies and lowering migration costs can, under certain conditions, help poor families mitigate the adverse effects of seasonal poverty by expanding their access to urban labor markets.

A. Internal Migration

Internal migration—permanent, temporary, seasonal, or cyclical—is a common coping strategy among rural households and has played a key role in accelerating urbanization in the region. There are 282 million internal migrants in Asia, which account for over one-third of all internal migrants globally (UN DESA 2013).² In the region, a lot of internal migration has historically been of a more permanent nature—such as relocation to urban or manufacturing areas—but this pattern has slowed down in several countries since the late 1990s. In Indonesia, Malaysia, and Viet Nam, this deceleration is likely related to an aging population (who are less likely to migrate), economic growth, and a reduction in interregional wage gaps. The People’s Republic of China (PRC) is an exception to this trend, as within-province migration actually increased by well over 100% between 1990 and 2000, likely due to the loosening of restrictions on migration to its large cities (Bell and Charles-Edwards 2014).

In contrast to the deceleration in permanent migration, temporary, seasonal, and circular migration have increased in Asia over the last few decades as temporary employment opportunities in urban and manufacturing centers expanded. Given crowding and limited access to housing in urban areas, a lot of the recent rural–urban movement has been temporary and reversible in nature (Deshingkar 2006). Beyond the draw of better employment opportunities in cities, there are also a couple of push factors that drive rural people into internal, seasonal migration: predictable preharvest lean periods in agricultural crop cycles during which labor demand is low in rural areas, and high levels of vulnerability to unanticipated shocks, which further exacerbate income fluctuations.

B. Risk and Vulnerability in Rural Areas as Drivers of Internal Migration

The 2014 *World Development Report* on risk and opportunity analyzed the incidence of adverse shocks using household survey responses and found a much higher prevalence of shocks in rural areas compared to urban ones (World Bank 2013). In India, 62% of rural households reported experiencing at least one negative shock within the previous 12 months and 24% reported two or more. In the Lao

²This figure, based on data from individual countries, generally does not include seasonal migrants or those who have relocated for less than a year.

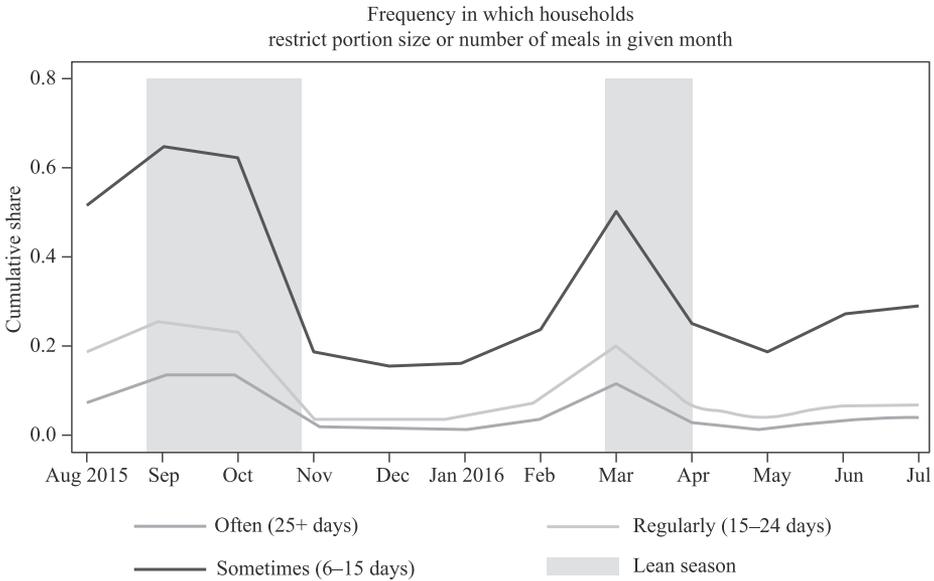
People's Democratic Republic, 36% of rural residents reported a negative shock compared to 12% of urban residents. Economic activity in rural areas is much more weather dependent and less diverse than in urban areas, and rural residents report facing both aggregate shocks such as natural disasters (e.g., droughts and floods) and idiosyncratic health shocks. While health shocks are also common in urban areas, natural disasters do not appear to be as big a concern for urban households when compared to rural ones (World Bank 2013).

Acute shocks in rural areas such as droughts and floods certainly contribute to the heavy flux of temporary migration observed in Asia. In 2010, for instance, 14 million people were temporarily displaced in Pakistan because of floods (Lucas 2015). And in 2001, almost two-thirds of all people in Bolangir, a district in the Indian state of Odisha, migrated during a drought (Deshingkar 2006). It is estimated that between 2011 and 2050, as many as 26 million people in Bangladesh may have to migrate because of floods, storms, riverbank erosion, and sea-level rise (Siddiqui et al. 2014).

Alongside these dramatic responses, a lot of temporary migration is recurring in nature, as people move not only because of unanticipated shocks but also to cope with predictable seasonal variation in employment opportunities in rural areas. In northern Bangladesh, every year, one-third of poor households in rural areas send a migrant to work elsewhere in the country for an average of 2–3 months (Khandker and Mahmud 2012). This massive movement of people that occurs at a predictable time of the year is the result of seasonal fluctuations in income and work opportunities in areas of origin due to the agricultural crop cycle and not because of unexpected natural disasters.

In areas with little crop diversification and distinct cycles, there is a lean season between planting and harvest periods, a time when agricultural jobs are scarce, harvest income is yet to come in, and poor households regularly skip meals and suppress expenditures. Though food insecurity is a nonnegligible issue for poor households throughout the year, there is a stark increase in extreme levels of deprivation during this period. In 2006 (a typical year in terms of agriculture), 47% of poor households in northern Bangladesh experienced hunger during the agricultural lean season (Khandker and Mahmud 2012). In contrast, only 9% of households went hungry outside the lean season that same year.

More recent data we have collected in the region show spikes in hunger in two different lean periods within the course of a year: from August to October and briefly around March (Figure 2). The main rice crop (*aman*) is typically harvested from November to January, and the secondary rice harvest (*boro*) is in April. The periods before each of these harvests are marked by heightened food insecurity among landless rural households: whereas over half of poor households reported at least sometimes skipping meals during the main lean season (from August to October), fewer than 25% reported doing the same once the *aman* harvest was underway or after the *boro* harvest.

Figure 2. **Seasonal Hunger in Northern Bangladesh**

Source: Authors' calculations using the 2016 Household Follow-Up Survey for the 2014 randomized control trial round (control group only). Shading denotes historical lean seasons (Food and Agriculture Organization of the United Nations 2008).

C. The Effects of Seasonal Poverty

Income fluctuations, even when seasonal and expected, can have dramatic consequences for the poor who live close to subsistence and are unable to accumulate savings and smooth consumption. In rural areas in the PRC, for instance, households in the bottom 10th percentile in wealth respond to a drop of 100 yuan (CNY) in income with a decrease in food and nonfood expenditure of CNY40 on average. In contrast, for the top-third of households considered “nonpoor,” the same drop in income results in just a CNY10 decrease in expenditures (World Bank 2013).

Such consumption drops among the poor have serious implications for health and well-being, especially for pregnant women and young children. Skipping meals and decreasing food intake leads to stunting, nutrient deficiencies, and other health issues, with potential repercussions for future cognitive capacity and earnings. Given the concentration of poverty—and vulnerability to agricultural cycles—in rural areas, it is perhaps not surprising then that Bangladesh has the fourth-highest prevalence of stunting among poor households around the world, and South Asia remains the region with the largest number of stunted children under the age of 5 (World Bank 2018). Increases in population per hectare of crop land in several Asian countries forebodes further competition for the few tasks that are available in rural

agrarian areas during the preharvest period. As is, there is a danger of potentially worsening health outcomes for the rural poor over the next few decades (Deshingkar 2006).

D. Seasonal Migration as a Policy Tool to Counter Seasonal Poverty

The limited set of tools readily used by the rural poor to cope with seasonal income fluctuations include starting a nonagricultural business, engaging in nonfarm employment, or temporarily migrating. Business creation and nonfarm employment are strategies most commonly used in sub-Saharan Africa (World Bank 2012) and can help households diversify away from agricultural income and its cycles. At the same time, these are reliable coping tools only if there are profitable opportunities within rural areas, which appear not to be the case in large parts of rural Asia (World Bank 2012). Social or cultural constraints may further restrict households' ability to engage in nonfarm employment. Poor rural households in Bangladesh, where women are less likely to work outside the home due to cultural norms, have even less diversified income sources than in neighboring India, for example (World Bank 2013).

In contrast to rural-based livelihood diversification strategies, seasonal migration may be profitable even when local rural areas are poor and offer sparse employment opportunities. If travel between villages of origin in rural areas and urban destinations is manageable and not too expensive, then spatial wage gaps may create an arbitrage opportunity. Migrants can take advantage of employment opportunities in urban areas and send remittances or bring money back home at the end of their period of employment to help their family cope during the lean period. One study estimates that migrants in Dhaka send as much as 60% of their income back home (Deshingkar 2006), while another shows that a quarter of rural Indonesian households have a migrant, with 85% of urban migrants sending money home (Lu 2013).

Benefits from seasonal migration and its role in smoothing consumption may extend beyond averted hunger alone and into other gains in human capital. In rural Bangladesh, school attendance is higher among children in households with temporary migrants than in those without; and in Bangladesh, India, and Nepal, households with seasonal migrants report higher expenditures on education than nonmigrant households (Srivastava et al. 2014).

Our research, as described in detail in section III, employs a series of randomized control trials (RCT) to explore whether encouraging more seasonal migration from rural areas helps poor households mitigate the adverse effects of seasonal deprivation. Since 2008, we have been testing the effects of small migration subsidies (\$8.5–\$19) in rural Bangladesh and have found that this low-cost intervention increases consumption and income among treated households relative to a control group. The main economic results are reported in studies by

Bryan, Chowdhury, and Mobarak (BCM) (2014); Akram, Chowdhury, and Mobarak (ACM) (2017); and Lagakos, Mobarak, and Waugh (LMW) (2018). BCM (2014) and ACM (2017) show that the impact of a one-time subsidy also carries over to subsequent years, as treated households are more likely to send a migrant up to 3 years after the initial treatment. However, LMW (2018) show that the financial benefits of migration are tempered by the disutility associated with bad living conditions experienced in destination areas, particularly urban slums. We are continuing to develop further evidence on this program with each new year of implementation and asking new questions as the program scales.

Over the last 10 years, through multiple phases of testing this intervention, we gradually moved from the original RCT covering 1,900 households to testing a program called “No Lean Season,” which was run by a separate entity and disbursed zero-interest migration loans to over 80,000 households in the 2018–2019 lean season alone.³ This scale-up required more local engagement and resources and adjustments to the delivery system, moving from an intervention carefully monitored by researchers at each step of the way to one with greater autonomy for implementing partners and a slightly more hands-off approach to test scalability.

At the same time, the shift from RCT to the program demanded attention to effects that might not be relevant to an initial study but that come into play as the target population and area expands. With this transition as motivation, ACM (2017) focused on general equilibrium effects on nonmigrant households in villages of origin, considering the effects of offering migration subsidies to some households on the consumption levels and incomes of other poor households in the same village. Other papers have explored the noneconomic effects of encouraging migration, such as those on beliefs, attitudes, and social norms (Mobarak, Reimão, and Thachil 2018), effects on intimate partner violence (Mobarak and Ramos 2018), pressures toward urbanization in the long run (Chowdhury, Mobarak, and Reimão 2018), effects on informal insurance networks (Meghir et al. 2017), and the relevance of the intervention to other settings, such as in rural eastern Indonesia (Bryan et al. 2018). We are also preparing to study (i) whether seasonally timed consumption loans (as opposed to seasonal migration subsidies) is the right policy response in a different setting, with a new experimental design in Nepal; (ii) the effects of the scaled-up version of the program on urban labor markets in Bangladesh; and (iii) the role of implementation changes on targeting and migration outcomes.

³“No Lean Season” was a program run by the Beta division of Evidence Action and implemented in Bangladesh through its partner RDRS Bangladesh. One of the authors of this document was a postdoctoral fellow with Evidence Action, and the entire research team engaged with Evidence Action on a regular basis to provide input for program decisions. No Lean Season, as funded by Evidence Action, was discontinued after the 2018 lean season, but RDRS Bangladesh has continued to offer migration loans. The research team has not been involved in these subsequent activities.

E. Other Policy Options to Counter Seasonal Poverty

Explicit support for seasonal migration through transportation subsidies is only one option in a suite of potential policies to address seasonal deprivation in rural areas. In Japan; the Republic of Korea; and Taipei, China, for example, increased crop diversity—which makes seasonal variations in agricultural employment opportunities less acute—and investments in transportation infrastructure to improve access to other regions played key roles in the national development trajectory (UNFPA 2016). With improved and expanded transport networks, rural households could both commute and temporarily migrate to cities, better allocating their labor between local agriculture and other employment options—between members as well as over time. On a related note, Asher and Novosad (2018) show that a rural road construction program in India allowed connected villages to reduce their reliance on agricultural income earned inside the village.

Likewise, Bangladesh (and other countries in South Asia and Southeast Asia) could benefit from investments in deeper and safer transportation networks and in better housing options for the poor in urban areas. This strategic funding could transform temporary migration from a coping strategy to a predictable and desirable yearly pattern for rural residents, while enabling local governments and employers to better manage and respond to the influx. Improved transportation can also expand commuting opportunities, which would counter people’s need to migrate and live in destination areas for long periods. However, for the foreseeable future (until transportation networks vastly improve or rural residents have better access to local jobs year round, or both), explicit support for seasonal migration will likely continue to play a role in helping the poor cope with seasonal deprivation.

In the next section, we discuss a broader range of policies that governments and development organizations typically employ to help the rural poor deal with employment and income shocks, including guaranteed work schemes, universal basic income, crop insurance, and microfinance, and we point to the gap that can be filled by seasonal migration subsidies. In section III, we discuss in greater depth the design and results of the seasonal migration support programs we have implemented and tested over the last 10 years. We discuss the implications of our research for other countries in the Asia and Pacific region in section IV and subsequently conclude.

II. Rural Development Policies to Address Seasonal Poverty

One of the largest and best known seasonal income support programs in the world is India’s National Rural Employment Guarantee Act (NREGA). Under this program, all rural workers in the country are in theory entitled to 100 days

Table 1. **Some Policies for Addressing Economic Shocks in Rural Areas**

Policy	Design Strengths	Caveats
Guaranteed work	Self-targeted Supports local infrastructure development by design	Discourages migration in search of jobs elsewhere Costly
Basic cash or food guarantee	Universal targeting ensures even those who cannot work receive benefits	Costly, with leakage to nonpoor households Implementation costs also very high for food distribution
Crop or agricultural insurance	Transfers tied to actual agricultural shocks May encourage risk-taking and investment by softening downside of shocks	Does not address seasonality of agricultural employment and outputs, only shocks to it Does not address idiosyncratic shocks Documented low take-up rates Possible abuse of subsidized system by nonagricultural households (as documented in Mexico; World Bank 2013)
Microcredit and savings for agriculture	Supports investment in agricultural enterprise (versus subsistence)	Less relevant for landless poor Documented low take-up rates in general
Microcredit for nonfarm enterprises	Supports diversification of income away from agriculture in rural areas	Relies on profitable business opportunities in rural areas Assumes entrepreneurial skill; training is costly and results mixed
Support for seasonal migration	Self-targeted	Relies on having temporary employment opportunities within reasonable traveling distance

Source: Authors' compilation.

of guaranteed employment per year and are primarily hired for projects that support local community development, such as irrigation and road construction. Other common rural poverty programs include promoting financial services such as microfinance (a concept that also originated in South Asia), crop insurance, and support for savings (Table 1). Many governments around the world have also experimented with cash transfers—either unconditional or conditional on a specified activity like school attendance—and transfers in the form of food subsidies or free food distribution have been deployed in acute situations around the world for decades.

Besides these formal policies, poor households have long used informal coping systems as well. In times of distress, they rely on their social networks for gifts and transfers, on informal loan providers, on temporary or permanent migration, or on invoking the very costly strategy of cutting back on consumption, or a combination of these. In this section, we provide an overview of commonly employed antipoverty policies for rural areas and discuss the evidence of impact of

such programs, drawing on data from Asian countries whenever possible. We close the section by explaining how subsidies for seasonal migration can fill a gap left by these programs.

A. Guaranteed Work Schemes

NREGA, enacted in 2006, is an ambitious program to address rural seasonal poverty in India. It is a cash-for-work program that provides guaranteed employment during the lean season for rural households across the country. Within 6 years of inception, this program had provided over 12 billion person-days of employment for the rural poor. In the 2017–2018 fiscal year, almost 80 million individuals worked under the scheme (NREGA 2018).

NREGA relies on “self-targeting,” in that offered wages are deliberately low relative to the market, to ensure that only those facing weak employment opportunities will seek out the program. Despite this, no state has been able to provide all of the employment that rural workers have demanded and are entitled to (World Bank 2012, Dutta et al. 2012). In fact, in the 2017–2018 fiscal year, the average number of days worked per participant household was 46 days, well below the guarantee of 100 days per person (NREGA 2018). Nevertheless, there is evidence that the opportunities offered by NREGA have had a spillover effect on the private sector, pushing up market wages and benefiting the poor more broadly (Imbert and Papp 2015; Muralidharan, Niehaus, and Sukhtankar 2018). Studies report other positive effects of NREGA, including on consumption, assets, nutrition, education expenditures, and women’s empowerment (Das and Singh 2013, Dasgupta 2017, Deininger and Liu 2013), but since the program rollout was not designed with research in mind, it has been difficult to establish some of the evidence very rigorously. In contrast, a similar rural employment guarantee scheme in Malawi was evaluated using an RCT, and it found no meaningful benefits in terms of agricultural investment, food security, or labor market opportunities for beneficiaries (Beegle, Galasso, and Goldberg 2017). This study even reported a negative spillover effect on untreated households operating in the same labor markets as the beneficiaries of the cash-for-work program.

Guaranteed work schemes, even when they are effective, are very costly to operate because they must force job creation in a rural area where the structure of the agricultural economy is such that it is difficult to generate employment. This is likely related to crop cycles. Lean seasons often appear in agrarian areas during the period between planting and harvest, where cultivators must patiently wait for the crop to grow. There is relatively little to do on the farm, as weeding and other land management tasks do not require as many workers as during planting and harvest. These preharvest lean periods constitute expected seasonal downturns marked by job scarcity and are known as “*monga*” in Bangladesh, “*musim paceklik*” in Indonesia, or simply “hungry seasons” in Malawi, Mozambique, Senegal, and

Zambia. The private sector does not generate sufficient employment during this period in rural areas, but it is not clear whether this is due to a market failure or is the natural result of economic conditions given the concentration of poor people with little buying power during the lean season. Nevertheless, government-led guaranteed employment programs expend vast amounts of resources to go against this tide and create local jobs each year during the lean season.

Even setting aside their debatable potential as efficiency-enhancing programs that address a market failure, and instead looking at them as a social safety net for the extreme poor, food- and cash-for-work programs are difficult to design to meet local needs. The wages offered through the program need to achieve a balance between being low enough to properly target the poor and needy who should self-select into the program, but high enough to actually address seasonal poverty and be of use to those poor households (who may also face higher prices during the lean season). NREGA participants in India receive an average of 175 rupees (\$2.50) per day, and there are indications that the program is well targeted for the poor (Imbert and Papp 2019). In contrast, the wages offered in the Malawi government program are apparently so low relative to outside options that only 50% of households offered employment through the system actually accepted (Beegle, Galasso, and Goldberg 2017).

A job guarantee program in Bangladesh called Food for Assets (FFA) is also reportedly well targeted to the poorest households, because the nature of the work is physically demanding and the program offers low pay. Of FFA participants, 72% come from the lowest decile of the income distribution (Ahmed et al. 2009). Job availability also generally overlaps—though not perfectly—with the lean season, as most of the work is provided between December and May. There is some evidence, however, that this program crowds out other income, as participants are required to work full days, thereby foregoing labor opportunities in private markets. As such, every 100 taka (Tk) paid through the FFA program increases household income by an average of only Tk32 (Ahmed et al. 2009).

Rural workfare programs also discourage labor migration to urban areas, as one must be present in the rural area to take advantage of the job guarantee scheme. Since these programs are more common during the lean season (both to address seasonality and because construction projects are challenging to implement during monsoon periods), they also directly compete with seasonal migration-based coping strategies that those households may have otherwise employed. Research in India reveals that districts that were early implementers of NREGA experienced a 50% decrease in seasonal out-migration relative to a comparison group of districts where the program was not yet implemented at the time (Imbert and Papp 2019). In our own research in Bangladesh, we find that displacement of migration limits the positive effect of work programs on household welfare. Simulations reported in LMW (2018) show that introducing a rural workfare program in northern Bangladesh would decrease the seasonal emigration rate of the poorest quintile

by 4–6 percentage points and produce lower household welfare gains, on average, relative to migration subsidies or an alternate program providing unconditional cash transfers without imposing a requirement to remain in the rural area (LMW 2018).

B. Unconditional Transfers

Unconditional cash transfers (UCTs) have gained popularity in recent years as a benchmark against which to measure the impact and cost-effectiveness of other poverty alleviation programs. In LMW (2018), we directly compare the effects of seasonal migration subsidies on household welfare to the welfare that would be generated under an untargeted UCT program. The overall welfare gain across the population produced by an untargeted UCT is by definition greater than that of a transfer conditional on migration, because a migration conditionality imposes a constraint on people, and constraints can only make rational people (weakly) worse off. However, the migration transfer generates some targeting benefits relative to the UCT, since it tends to induce only the people who actually need the support to participate, as opposed to the universal coverage of the UCT, which ends up benefiting many people who are not as poor or who did not face an acute adverse seasonal shock during the year. Therefore, when we conduct a budget-neutral comparison between migration subsidies and UCTs, we see that the migration subsidies improve the welfare of the poorest quintile by about 14% more than a UCT program (LMW 2018). These results highlight a feature of UCTs that is both their strength and their weakness: the lack of any conditionality means that anyone can receive a UCT, which includes both the nonpoor (who are not intended beneficiaries of pro-poor programs) and households who may be so poor and so constrained that they may have difficulty complying with the conditions required by a conditional cash transfer (CCT) program.

A study by Baird, McIntosh, and Özler (2011) highlights this particular benefit of UCTs by directly comparing a UCT program against a CCT in which transfers for adolescent girls are conditioned on school attendance. This RCT-based study shows that while the CCT produces larger effects on the schooling outcomes on which transfers are explicitly conditioned, it does not decrease marriage and pregnancy rates among young girls by as much as the UCT. This is because there is a subgroup of extremely vulnerable households who cannot comply with the conditionality and therefore do not receive benefits under the CCT program. These types of households are still helped in the UCT. This logic implies that, relative to seasonal migration support programs or rural workfare programs, a basic income transfer might better reach households that may not have a working member who is able to migrate or even work in the rural area. A substantial part of the transfers, however, would also go to those who may not be in as dire a situation as the target population.

Of relevance to this difference in coverage, we also implemented an RCT in West Timor, Indonesia, designed to empirically compare the relative effects of UCTs and migration transfers directly (Bryan et al. 2018). Not surprisingly, take-up among eligible households is over 90% in the UCT arm, compared to 52%–59% in the CCT arm. The conditional transfer increases migration by about 30 percentage points relative to the UCT, and average gains in household income are larger for the CCT group compared to the UCT. Nevertheless, the difference in take-up rates is composed of both households that are too wealthy to be interested in migrating and households that may have been unable to migrate or find a job in destination areas. A CCT such as a seasonal migration support program cannot directly reach the latter group, a disadvantage relative to UCT programs or other unconditional safety nets.

Seasonal migration—and programs supporting it—is not and cannot be a substitute for basic income, particularly for households that do not have a working member. It is also important to acknowledge that cash and food transfers for the poorest households are relevant in several circumstances besides seasonal drops in income. That said, these programs are relatively costly to implement and also vulnerable to elite capture. Ahmed et al. (2009) evaluate transfer programs targeting the ultra poor in Bangladesh, including Income Generation for Vulnerable Group Development (IGVGD), a food transfer and credit program, and Food Security Vulnerable Group Development (FSGVD), a combined food and cash transfer program. The study finds that 10% of IGVGD-beneficiary households were actually in the top three deciles of the income distribution. Only 43% and 38% of beneficiaries for IGVGD and FSGVD, respectively, were in the bottom decile; in contrast, the respective share was 72% for the FFA guaranteed workfare program (Ahmed et al. 2009).

On the other hand, the same study also reports that the food-for-work program is the most expensive way to increase household consumption, with the FFA requiring Tk440 per beneficiary per month to increase daily consumption per capita by 100 calories. IGVGD requires Tk249, while FSGVD, the combined food and cash transfer program, requires Tk156 per month. The workfare program is likely even more costly in ways that are not measured, since participation in workfare generally requires beneficiaries to forego other labor market opportunities.

The coverage of these transfer programs is also precarious, as only 6%–7% of the Bangladeshi poor are actually covered by any food or cash transfer or workfare program (Ahmed et al. 2009), a statistic likely related to the high cost of implementing such schemes. These programs are therefore inadequate in their present form to address the recurrent seasonal poverty that afflicts well over one-third of the rural population in northern Bangladesh each year. Seasonal migration support may therefore serve as a useful policy complement to these existing social safety net programs in this setting—and similar ones with low safety net coverage and high seasonal vulnerability.

C. Agricultural Insurance

Agricultural insurance programs are designed to mitigate losses associated with extreme events and unexpected weather shocks, rather than predictable and recurrent seasonality. Index-based insurance programs circumvent the adverse selection and moral hazard problems that undermine traditional crop insurance by tying payouts to verifiable weather events or other aggregate outcomes such as average losses at the regional level. By design, then, agricultural insurance is not meant to address seasonal deprivation that arises on a cyclical basis through the regular agricultural calendar, as payouts are made based on deviations from expected patterns.

A more sophisticated tool ties agricultural insurance to a safety net, as is done in Mongolia. Under this particular program, Mongolian herders fully absorb losses of up to 6% (indexed on the average mortality of adult livestock in each county); losses between 6% and 30% are covered by index insurance; and participants are automatically enrolled in a safety net program if losses surpass 30% (World Bank 2013).

Though crop (livestock) insurance is traditionally aimed at landowners (livestock owners), payouts are not tied to individual output, so it is possible to expand the target population for crop (livestock) insurance from landed to landless (livestock-less) households, who are also vulnerable to extreme shocks through decreased farm (herding) employment opportunities. In fact, in an RCT in India where landless laborers were offered rainfall insurance, their take-up rate was only 4% lower than that of landowning households (Mobarak and Rosenzweig 2013). However, selling crop or weather insurance to the landless poor necessarily requires the use of index insurance, where payments are not tied to individual outcomes but to a measurement along the lines of a weather index or an aggregate outcome. This in turn implies that the policy can only insure against aggregate risks (such as weather, pest, or price shocks) and not idiosyncratic risks that poor rural households may face, such as consumption drops due to a mortality or morbidity event in the household.

Empirical research on agricultural insurance also reveals that take-up is relatively low in some contexts even at actuarially fair prices, and its use has not necessarily led to higher levels of investment and technology adoption (Lybbert and Carter 2015; Carter, Cheng, and Sarris 2016). In a study offering insurance to landless households, roughly 40% of all households purchased insurance—a fairly low rate considering that subsidies of 0%, 10%, 50%, or 75% on the insurance product were randomized across households (Mobarak and Rosenzweig 2013).

A new tool combining index insurance and loans, in the form of emergency loans that are made available to farmers in the event of flooding, has been recently designed and implemented in Bangladesh. The key innovation of this intervention is that, unlike other insurance forms, it does not require any upfront payment by

farmers; only eligibility is determined before the crop cycle. Preliminary findings are generally positive, indicating that these emergency loans not only provide relief as expected in the case of floods, but also lead prequalified farmers to plant 15% more rice once they know they will be eligible for the loan in the event of major flooding (Lane 2018). This can generate spillover benefits for the landless poor in terms of greater labor market opportunities when the weather cooperates, particularly during the planting period (Mobarak and Rosenzweig 2013), but still cannot fully address the regular decrease in employment opportunities during the lean season.

D. Microcredit and Savings

Microcredit and savings consist of a broad array of programs that provide small loans for the creation or expansion of nonfarm enterprises, credit for agricultural inputs, programs encouraging savings for farm or nonfarm businesses, and any combination of these.

Small loans for nonfarm enterprises became a hugely popular idea in international development in the 1990s, and South Asia is the birthplace of large microfinance institutions, including Grameen Bank and BRAC. But recent meta-analyses of RCTs on microfinance generally find modest impacts at best from this type of intervention. A review of six microfinance studies, two of which were implemented in Asia (India and Mongolia), notes that take-up rates of microloans are relatively low and the impact on family income or consumption was not statistically significant in any of the six settings (Banerjee, Karlan, and Zinman 2015). Limited take-up is to be expected even before considering loan characteristics, as not all individuals aspire to be entrepreneurs or have a promising business idea, but half of the studies also found no impact on the ownership, start, or closure of a business, while the other half only found effects in one of these outcomes. The evaluation in India found significant increases in expenditures on durable goods but not on consumption (Banerjee et al. 2015). And the evaluation in Mongolia shows positive impacts on household food consumption but not income for a group liability loan, while individual liability loans generally had no impact across the board (Atanasio et al. 2015).

A Bayesian hierarchical analysis of an overlapping set of seven microfinance studies (Meager 2019) echoes the limited power of microfinance, showing that its impact on consumption is at best small and unlikely to be transformative, with relatively little heterogeneity across beneficiaries. Notably, this study also shows that, for households with no previous business experience, as would likely be the case for most primarily agricultural households in rural areas, microfinance also has zero impact on household profits. It is clear, then, that microfinance for entrepreneurship, though potentially beneficial to some households—mainly those with existing enterprises—cannot reliably serve as an avenue for income

diversification or consumption smoothing for a large number of poor agricultural households.

The seasonal migration support program we have evaluated in Bangladesh is in essence a version of a microcredit program with some crucial differences from how microfinance has traditionally been conceptualized.⁴ First, these loans are explicitly conditioned on migration rather than a business plan or business ownership. Second, the loans are meant to encourage job search rather than require beneficiaries to set up a business. This difference expands the relevance of the loan and removes undue pressure toward business creation, as there are likely many more “employees” than “entrepreneurs” in the world; many more would prefer a job with a stable income rather than take on the risk of starting a business. Third, our seasonal migration support was in some cases a grant rather than a loan, and in others, a loan with zero interest rate. While microfinance institutions require profitability to be sustainable, our intervention is designed to subsidize migration for the poorest households rather than turn a profit. Fourth, the repayment period for our loans has been set at the end of the lean season, typically 3–4 months after loans are disbursed. In contrast, microcredit programs typically require biweekly repayment or other short intervals (Field, Holland, and Pande 2014), which may in itself distort household decisions away from seasonal migration. In fact, data from Bangladesh indicate that clients of microfinance organizations are less likely to migrate than nonclients (Khandker and Mahmud 2012).

Agricultural loan programs tailored to rural areas (to encourage investment in agricultural inputs) also move away from short repayment periods and instead offer credit at the start of the planting season and collect repayment at harvest. However, take-up of such loans is also low: a study in Mali found that just 22% of women who were offered an agricultural loan accepted it, and only the more productive farmers self-selected into taking out these loans (Beaman et al. 2015).

Savings programs, including agricultural savings accounts, have been studied more extensively in Africa. An RCT in Malawi that encouraged savings after harvest to invest in inputs next season (Brune et al. 2016) found that, on average, only one-quarter of the original deposit was still in a savings account 2 weeks later. When an Abdul Latif Jameel Poverty Action Lab research team tried introducing new savings products through banks in Chile, Malawi, and Uganda, the programs generally failed, presumably because banks found it too costly to administer products in which poor people deposited very small amounts of savings each month.⁵

Our data from Bangladesh indicate that the landless poor, who are most vulnerable to seasonal hunger, typically do not have anything to save, especially

⁴The main implementing partner in northern Bangladesh, RDRS Bangladesh, was originally a microcredit organization.

⁵A related research paper by Dupas et al. (2018) concludes that traditional bank accounts are unappealing to the majority of the currently unbanked rural households in all three settings.

during the lean season. Both ACM (2017) and BCM (2014) report significant treatment effects on income and consumption from the migration subsidies introduced, but the studies do not observe any increase in savings in any of the multiple years in which the program was evaluated. The marginal propensity to consume extra income during the lean season is very high for the landless poor. The evidence suggests that it will likely be difficult to induce savings among the poor as a way to address seasonal deprivation.

Fink, Jack, and Masiye (2018) identify a more promising option: a well-timed loan during the lean season can reduce farmers' desperation to suboptimally supply labor to other farms at low wages to address their short-run cash needs for meeting their family's subsistence requirements. In this treatment, loans of either cash or grains are not envisioned as encouraging leaps in productivity or business creation; rather, they are disbursed to farmers during the lean season to discourage the use of more costly coping mechanisms, particularly working in other farms. The authors find that these loans, which are also to be repaid after the lean season (effectively at a 4%–5% interest rate), do in fact encourage subsistence farmers to work on their own land during the lean season rather than in other farms, with positive repercussions for their subsequent harvest.

Landless rural households may also benefit from seasonally timed consumption loans, disbursed at the beginning of the lean season and repaid at the end with no conditionality. This may be a particularly sensible solution in countries where migration already occurs at high rates and usually over greater distances and for longer periods, but where seasonal poverty remains. Our initial exploration in Nepal indicates that seasonal consumption loans may be relevant there and calls for further research on this type of consumption loan, with a closer look at repayment rates. In Zambia, repayment rates on lean-season loans dropped between the first and second years of treatment even though the harvested output increased for treated households (Fink, Jack, and Masiye 2018). Ensuring high repayment rates year after year is critical for the sustainability of such a program in the long run, and future experiments will be useful for illuminating that path.

E. Temporary Migration

In addition to the formal markets and mechanisms described above (employment guarantee schemes, transfers, insurance, credit, and savings programs), the poor use a variety of informal tools to cope with seasonal volatility. They may draw on support from friends and relatives, secure loans from informal money lenders, or attempt to diversify their income by engaging in informal business enterprises or by entering the labor market outside the village—or a combination of these approaches. Multiple years of data from northern rural Bangladesh show that, in any given year, about a third of poor households in the area send a family member to labor markets elsewhere in the country to cope with the

seasonal shock through temporary, circular migration. This reliance on migration is not limited to Bangladesh and is common across the region. It is estimated that two-thirds of the 740 million internal migrants in the world reside in Asia (World Bank 2013), and that India alone is home to an estimated 30 million temporary internal migrants (Deshingkar 2006).

Our research focuses on seasonal migration, a type of temporary migration that occurs at a predictable time in the year (often—but not always—during the lean season) and lasts a few weeks to a few months. As a policy intervention, encouraging seasonal migration involves supporting the movement of people to where there are jobs and allowing the market to provide employment and income, which may be more efficient and easier than bringing jobs to local areas (as in a workfare program). Seasonal migration is a form of spatial arbitrage in which people move from areas where there are few jobs during a given season (e.g., due to lean periods in the agricultural crop cycle) and into areas with better employment opportunities during the same period.

Seasonal migration not only diversifies income but may also have an indirect effect on other informal coping mechanisms. For example, the temporary migration of a subset of members in a risk-sharing network may have a spillover effect on others in the network through a system of gifts and transfers (Meghir et al. 2017). Lowering the cost of migration via grants or loans, as we do in our intervention-based research, may also make it easier for others to migrate because they can travel together with grant recipients as they share costs and risks. In the next section, we will delve into the details of the research methods and lessons from our multiyear, multisite research program on encouraging seasonal migration.

III. Evidence on Seasonal Migration

While our research program encourages more migration, one-third of poor households in rural areas of northern Bangladesh (in particular, the Rangpur region) already rely on internal seasonal migration as a coping strategy to deal with deprivation during the lean season. Those households send a migrant for weeks or months at a time for employment in urban areas or other rural areas within the country where wages are higher or employment opportunities are more broadly available or both. Data from 2017, for instance, reveal that the median daily wage among individuals in our study was Tk200 at home (\$2.4) during the lean period, but Tk333 (\$4) for those who migrated domestically.

The starting point for our research was that the prevailing seasonal migration rate of one-third actually seemed puzzlingly low: given the lack of jobs in rural areas during the lean season, the relatively ample availability of jobs in urban areas during the same period, higher average wages offered to low-skilled workers in common

destination areas, and the evident feasibility of temporary travel in this context, economic theory would predict a higher seasonal migration rate in the absence of market failures (and as long as individuals were not already sorted according to their comparative advantage). Our research was therefore designed to examine market failures that might prevent poor households in northern Bangladesh from temporarily moving to where there are jobs and to explore whether an external intervention could help overcome those hurdles.

Rangpur is one of the poorest regions in Bangladesh, and its rural residents are more reliant on agricultural income than residents of other regions. Rural Rangpur households, on average, derive 50% of their income from farming, compared to 28% for rural households elsewhere in Bangladesh (Khandker and Mahmud 2012). This heavy reliance on agriculture leaves poor households more vulnerable to seasonal fluctuations from crop cycles (predominantly rice in this setting), making seasonal emigration a sensible strategy during periods when agricultural jobs are scarce. International remittance receipts are also relatively low in Rangpur compared to other regions in Bangladesh, as it often takes a fair amount of money to migrate internationally. And while 32% of households in Rangpur participate in some type of social safety net (mainly food transfers), the benefit amounts are too low to adequately address seasonal deprivation (Khandker and Mahmud 2012).

With high poverty rates, savings constraints, and low safety net transfer amounts, fluctuations in employment opportunities and income translate into substantial drops in consumption during the preharvest period. Using data from our research, Figure 2 shows that up to 20% of poor households in this setting regularly miss meals during the lean season, and fewer than 40% never face food insecurity. Unaddressed, this can have disastrous consequences for those already living close to subsistence, especially families with pregnant women and young children. Reduced consumption for up to 3 months of the year can adversely affect the physical and cognitive development of children, with attendant effects on learning, productivity, and future earnings.

Since 2008, we have tested whether transport subsidies can facilitate out-migration and help poor rural households avoid drastic drops in consumption during the lean season, specifically by taking advantage of employment opportunities elsewhere in the country. And since 2013, we have partnered with Evidence Action, a nongovernmental organization (NGO) supporting and implementing evidence-based programs, to explore the viability and impact of a scaled-up version of this intervention. Working with Evidence Action's "No Lean Season" project, we went beyond the first step of measuring the direct effects of seasonal migration subsidies on targeted beneficiaries to exploring the potential effects of a large intervention under the same framework, such as the effects on destination workers, permanent migration, and beliefs and social norms.

A. Direct Effects of Seasonal Migration Support on Beneficiaries

In 2008, we implemented an RCT covering 1,900 households across 100 villages in Rangpur (discussed in further detail in BCM [2014]). First, each village was randomly assigned into one of four arms: (i) villages offered a grant for seasonal migration, (ii) villages offered a zero-interest loan for seasonal migration, (iii) villages given information about migration and job opportunities and wages at the destination, or (iv) a control group. Next, within each village, 19 poor households were randomly selected for the study, so that each of the 19 households living in the same village was assigned into the same RCT arm.⁶ In August 2008, those in the first treatment arm were given information on popular migration destinations and their prevailing low-skill wages and offered a grant of Tk800 (\$8.5) conditional on the temporary migration of at least one household member in the upcoming lean season. This amount was intended to cover the cost of a bus ticket and a few days of food, and in our data, we find that migrants spent on average Tk450 on migration transport in that round and Tk529 when including food and incidentals related to the journey (BCM 2014).⁷

There were no further restrictions to the grant, and beneficiaries could choose the specific member(s) who would travel, the destination, the length of stay, and the nature of their job search. For the majority of the sample, we also did not impose any restriction on destination or the identity of travel companions. The second treatment arm was similar to the first, except that the disbursement was offered in August 2008 as a zero-interest loan rather than a grant. Repayment was expected upon return, but forgiven in the case of failure to find a job, though this latter feature was not disclosed upfront. The third arm only received information on popular destinations and prevailing wages using the same script as the first two arms, while the control group did not receive anything.

This RCT design helped us evaluate whether the treatments were successful in encouraging more migration, which in turn allowed us to learn about the constraints limiting seasonal migration. We found that the small subsidy significantly increased the migration rate from 36% in the control group to 59% for those receiving the grant and 57% for those receiving the loan. The difference between the latter two is not statistically significant, while the average migration rate remained at 36% in villages with the information-only treatment. From these results, it appears that the relatively low rate of seasonal migration in the region,

⁶Eligibility was defined as having less than 50 decimals (half an acre) of land and having skipped meals in the previous lean season. Of the households in these 100 villages, 70% were considered eligible (BCM 2014).

⁷Migrants may have taken more than one trip or households may have sent more than one migrant, but the transfer amount is limited to Tk800 per household regardless of the number of trips. Calculating the overall cost of living at destination is problematic, as over half of migrants in our study receive housing and/or meals from their employer as part of compensation, or, in the case of rickshaw drivers, may be given housing above the garage. The monetary value assigned to these benefits differ by migrant, the quality of housing and food, and also from employers' perspectives on the value of the benefits they provide.

despite the availability of jobs in urban areas, was not due to a lack of information about jobs—poor households either already know about the availability of jobs and prevailing wages in urban areas, or this piece of information is not relevant to the decision to migrate.

To study the effect of the program in subsequent lean seasons, we tracked migration rates 1 and 3 years later, without repeating the intervention itself in those villages. During the lean season a year later (2009), 47% of households in villages where conditional subsidies (loans or grants) had been offered in 2008 sent a seasonal migrant, which was significantly higher than the migration rate in the control and information groups. The migration rate in the grant and loan villages was still significantly higher (by 7 percentage points) than the control group even in 2011, the next year we collected data on this sample.

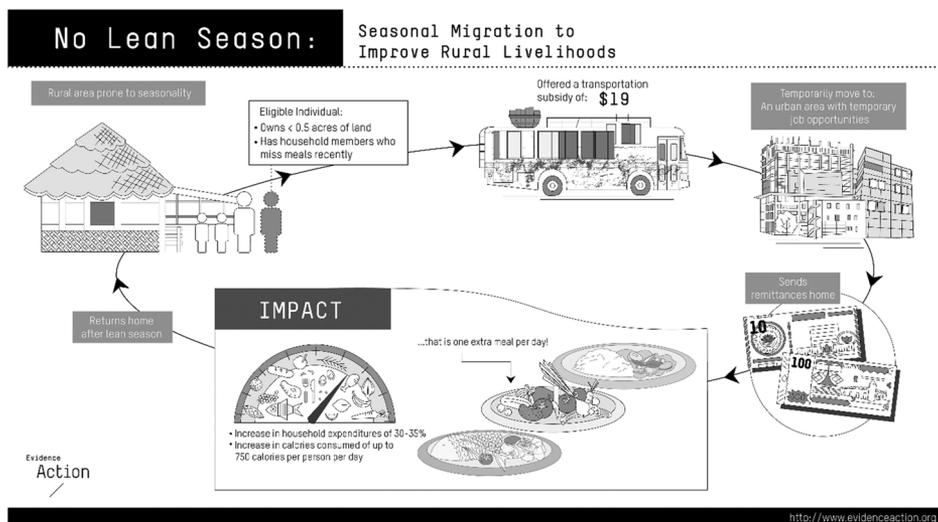
Using the randomized treatment as an instrument, we find that households that were induced to migrate through this program increased both food and nonfood expenditures by 30%–35% relative to the control group, and consumed 550–700 more calories per person per day. This is equivalent to each person in the house eating one additional meal per day, during a period when food is scarce and meals are commonly skipped. Compared to the Tk800 transfer, households that sent a migrant in response to the subsidy increased their consumption by Tk350–Tk400 per person per month (BCM 2014). In a context where migration lasts 2–3 months and households have between four and five members, this represents a large rate of return on the initial subsidy. Figure 3 illustrates how the subsidies work, enabling households to send a migrant for temporary employment elsewhere in the country and using the additional earnings to raise consumption and calorie intake.

Further analysis of our data indicates that poor families close to subsistence were hesitant to invest in the uncertain returns to migration partly because they were too risk averse. Even though seasonal migration is profitable on average—as indicated by the average gains in expenditures and consumption for households that responded to the subsidy by migrating—any chance of migration failure (e.g., spending the money for transport but failing to find a job, or at least one that is worth the travel) can have devastating consequences for households living at the edge of subsistence. As a result, even with knowledge about average benefits, poor households may be unwilling to risk spending the little money they have on migration. The migration subsidy acts as insurance against this downside risk, protecting households from having to use their own money upfront to pay for migration.

B. Further Exploration for Scale-Up

Results from the initial RCT show that providing financial support for seasonal migration has potential as a tool for addressing seasonal poverty. It is certainly cheaper to implement than work guarantee programs (which require

Figure 3. Seasonal Migration Subsidies in Practice



Note: The subsidy amount has varied across rounds, from 800 taka to 1,500 taka (\$8.5–\$19, with variation in the exchange rate over the years) to respond to rising costs in migration as well as improved knowledge on the actual costs associated with migrating, which may include pre-purchasing food for the family before migration.

Source: Figure was directly provided by Evidence Action.

paying beneficiaries for each day of work), owing to the fact that a one-time transport subsidy allows beneficiaries to earn market wages on their own at the destination. It is also more easily scalable considering the complexities of program implementation: the number of potential direct beneficiaries depends on the capacity of an institution to make subsidy disbursements but does not require the creation and management of jobs and payments. The upper bound of scalability may be constrained by the capacity of potential destination areas to absorb temporary laborers.

But before declaring that support for seasonal migration should be scaled up and implemented as a policy for addressing seasonal poverty in Rangpur or other agrarian areas of Asia, the potential indirect effects and spillover effects of this intervention demand some attention. To move from an RCT to a policy, it is not sufficient for an RCT to simply demonstrate positive effects on its treated sample, particularly for a complex program that can in theory have repercussions for other parts of the population. When considering implementing an intervention as a large-scale policy, we must also look at the effect of the intervention on, say, other poor households who are operating in the same labor markets and competing for the same jobs. It is also important to understand any unintended noneconomic consequences on social norms, political beliefs, or intrahousehold decision-making. In contemplating a move from pilot-scale research to an

at-scale program, programmatic issues also arise or gain more importance, such as the incentives and constraints faced by funders and implementers and the cost-effectiveness of the intervention. In the following subsections, we discuss these additional areas we have studied, providing information on the potential of this particular intervention as a scalable policy while also illustrating some issues that come into play in the move from RCT to at-scale program.

1. Targeting and Welfare

The research described above focuses on the economic returns to migration, but there is also the question of whether migration raises welfare more broadly. If the extra income and consumption from migration comes at the cost of temporary family separation, worse living conditions for the migrant in urban slums, or any other negative experience stemming from migration, the effect of the subsidies on the welfare of targeted households cannot be represented simply by their income or consumption gain. Much of this “disutility” is difficult to directly observe or collect through survey questions. LMW (2018) use a simulated method of moments approach to implement a model that allows for unobserved disutility and matches this model to experimental moments generated from the same RCT reported in BCM (2014). In the initial RCT described above (implemented in 2008), roughly 80% of migrants experienced success at the destination in economic terms, but at most 50% chose to remigrate in subsequent years. This gap between “success” (in terms of employment, income, and consumption) and the revealed preference of remigration choices is informative about how large the unmeasured disutility must have been, as a sizable portion of migrants who experienced success according to our economic metrics nonetheless choose not to migrate again in a subsequent year. The quantitative model in LMW (2018) matches these moments in the data to infer the disutility and the net welfare gains from migration.

Through this method, LMW (2018) deduce that migration comes with substantial disutility, and that the actual welfare gains from the subsidies are smaller than the 30%–35% consumption increase observed through the experiment. We validate this inference with discrete choice experiments on the same BCM (2014) experimental sample, asking potential migrants to choose between migration and stay-at-home options that vary in the (hypothetical) conditions associated with the migration experience such as wages, the likelihood of finding work, living conditions at the destination, and the length of family separation. We learn that, of these dimensions, the quality of living conditions in the city is the component of welfare that matters most to migrants. In this context, toilet type and access serve as realistic proxies for living conditions, and we find that having housing with an indoor latrine (as opposed to public options) at the destination leads to a 17 percentage point increase in the reported propensity to migrate. This large effect is equivalent to increasing destination wages by 21%, or increasing the likelihood

of finding work threefold. The clear policy implication is that governments should invest in urban living conditions and improve housing and sanitation in slum areas, as this would be valuable not only with respect to human rights and dignity but also for its economic draw. In a survey of migrants working in construction jobs in Dhaka, 71% report worse housing conditions at the destination compared to their own homes in rural areas (Srivastava et al. 2014).

Given the disutility from worse living conditions, this model suggests that potential migrants would only choose to leave when they are sufficiently economically desperate and the situation at home is precarious. The LMW (2018) modeling exercise allows us to learn about the types of households that are most likely to respond to the migration support intervention and the conditions under which they would choose to migrate in any given year. Understanding who exactly this migration support program manages to target is an important component of understanding the economic growth or welfare generated by this program.

It could have been the case that there are many rural workers who would fare well in the city but who are “spatially misallocated” in rural Bangladesh because they are not sure about their prospects in the city and do not travel as a result. The financial incentive for migration would allow them to try out the urban labor market, and those who then learn that they have a comparative advantage in the city become repeat cyclical migrants or even permanent migrants. The results derived through the LMW (2018) model suggest that this is not the case, likely because those with a strong comparative advantage in the city are for the most part already there.

Instead, it is those who have experienced recent bad shocks but are hesitant to draw down their small savings to make another trip (that may fail) that are induced to migrate by the financial incentive. The migrants from these households are not necessarily a lot more productive in the city compared to the village, but the migration support program allows them to weather unexpectedly bad periods by accessing jobs in urban areas. As such, this program does not generate much economic growth, as workers are not generally spatially misallocated and moving them does not create substantial changes to aggregate productivity. Rather, the value of the program lies elsewhere: it offers a safety net to extremely poor households, enabling them to cope with cyclical and idiosyncratic shocks.

This is also an efficient mechanism for targeting support to such households. The migration requirement acts as an ordeal that, in effect, aids in the selection of households who really need to travel that year, due to dire circumstances or an adverse shock they experienced at home. It is precisely through the disutility of migration that the program is able to better target those who can benefit from migration but are unable to afford its risk, compared to other possible programs we have discussed in this paper: (i) UCTs, which target participants much more broadly—often based on fixed assets—are vulnerable to leaks to the nonpoor and cannot easily identify those who have faced recent shocks; (ii) agricultural insurance, which typically targets richer, landed households; and (iii) weather index

insurance for landless households (Mobarak and Rosenzweig 2013), which can only indemnify aggregate shocks and not protect households from uniquely harsh idiosyncratic shocks.

2. Labor Market Spillover Effects in Sending Communities

As a migration support program is scaled up, with offers made to more and more poor households, it may start indirectly affecting other poor households who live in the same communities as program participants, but who may themselves not receive the transfer or may not be able to send a migrant. In other papers, we investigate such “general equilibrium effects” of the migration support program through labor market channels and risk-sharing channels in villages where the program is implemented.

ACM (2017) report on an expanded trial implemented in 2014 that randomized 133 study villages into three arms: (i) a high-intensity treatment in which around 70% of eligible households were offered the migration subsidy simultaneously (47 villages), (ii) a low-intensity treatment in which around 14% of eligible households were offered the migration subsidy (48 villages), or (iii) a control group (38 villages).⁸ This setup creates five types of study households: (1) offered a subsidy in villages where many others were also offered the subsidy; (2) offered a subsidy but residing in a village where few others were offered the same subsidy, (3) not offered the subsidy but in a village where many others were offered the subsidy, (4) not offered a subsidy and in a village where few others were offered a subsidy, and (5) not offered a subsidy and in a village where no one was offered the subsidy either.

The ACM (2017) analysis reveals strong network effects in migration decisions: while households in low-intensity villages who were offered the subsidy are 25 percentage points more likely to migrate than the control group, those in high-intensity villages who were offered the subsidy are 40 percentage points more likely to migrate. The difference between these groups is statistically significant, and both represent a very large jump in migration rates from a mean of 34% for the control group (type 5 households). Notably, even those who were not offered the subsidy directly but who reside in high-intensity villages (type 3 households) are 10 percentage points more likely to send a migrant relative to households in control villages.

Migration decisions therefore appear to be strategic complements, as one is more likely to migrate if others within one’s network are also migrating. Further analysis reveals that connections matter, as migrants frequently travel in groups with others from the same village. An operational implication of this finding is that

⁸Eligibility criteria remained the same as in the previous RCT rounds: households who own less than 0.5 acres of land and reported hunger (i.e., at least one member skipped meals) in the previous year’s lean season.

a program offering migration subsidies in this context will be more cost-effective by targeting many people concentrated in fewer villages rather than few people spread out across many villages, taking advantage of the positive spillovers within villages and networks in migration decisions.⁹

ACM (2017) also document a positive spillover on households residing in the same village who do not send a migrant. For every 10 percentage point increase in the emigration rate, agricultural wages in the village rise by an average of 2.2%. This benefits agricultural workers who do not migrate as well as migrants during the weeks of the lean season when they are home. The real effects of the program are, however, slightly smaller, as food prices also increase by 0.9% for that same 10 percentage point increase in the emigration rate. This rise in the food price index is largely driven by a rise in the local price of fish, as families with (successful) migrants increase their protein consumption, particularly by consuming more fish (BCM 2014).

3. Risk-Sharing Spillover Effects in Sending Communities

While ACM (2017) focuses on spillover effects through labor market channels, in a separate study (Meghir et al. 2017), we look at how a migration support program may affect local risk-sharing networks, particularly for households that are members of the same informal risk-sharing network as program beneficiaries and reside in the same villages. In theory, migration could erode these informal risk-sharing networks, as migrants who are exposed to a new labor market opportunity may choose to self-insure instead and exit the network. More generally, even if the drastic outcome of network exit does not happen, other members may need to offer migrants a larger share of the risk-sharing pie to keep them interested in participating in the network. In this sense, migration subsidies could have a negative spillover effect on nonbeneficiaries. Conversely, the new migration opportunity may improve risk sharing in the aggregate across the network, by providing some members of the network a new income stream that is less correlated with the village income stream. The network's sources of income as a whole become more diversified, and aggregate risk sharing improves.

Using a structural model on our panel data of migrants across four rounds, the paper by Meghir et al. (2017) finds that the latter effect dominates: migration opportunities not only weaken the link between own income and own consumption for those who migrate, but they do so for others in the village as well. That is, program villages exhibit higher levels of risk sharing after the treatment compared to control villages. Household consumption levels for both migrant and nonmigrant

⁹To optimize cost-effectiveness, this consideration can be balanced against coverage of inframarginal households who would migrate because neighbors receive a subsidy and do not really need a subsidy themselves to be induced.

households in program villages become less volatile and less dependent on the household's own income. Households evidently diversify their income through migration and choose to remain in the network, consequently sharing the benefits of this diversification with other households in the village. This is a positive spillover: both direct beneficiaries and other village residents are better able to smooth their consumption through migration opportunities.

4. Noneconomic Effects of Migration: Changes to Social Norms

It has been documented that the permanent movement of people over long distances changes social or behavioral norms—or both—among both migrants and their host communities through pressures such as assimilation, adoption, and backlash (World Bank 2011). In northern Bangladesh, seasonal migration is generally characterized by the migration of just one member while the rest of the family stays home. Most of these temporary migrants are male heads of households (over 80% of all migrants in our sample) who are away for 2–3 months at a time, and the majority of households are nuclear, with only two adult members. During their absence, migrants may be exposed to different lifestyles, norms, ideas, and ideals, which could in turn transform their beliefs and actions once they return home. At the same time, during this period, women in nuclear households may take on more decision-making roles with respect to the family and the home, a shift that can also in theory have a persistent effect on the way the household is managed even once the migrant is back.

We explore these possible changes in a study by Mobarak, Reimão, and Thachil (2018) and find that migrants do become more progressive in their beliefs: individuals offered migration subsidies in treated villages become 2 percentage points more likely to recognize that women are capable of managing a household on their own, an effect best attributed to wives (or other female household members) effectively taking on that role during a male migrant's absence (as opposed to migrants simply observing other women outside the family doing so, either in destination areas or in one's village with heightened male out-migration). When migrants are away, there is also a substantial shift in decision-making roles. While men clearly dominate decision-making when they are at home, the proportion of women reporting that they participate (alone or jointly) in decisions regarding household expenses triples for periods in which the migrant has traveled away. These changes in beliefs and experiences are statistically significant even after adjusting for multiple hypothesis testing. Individuals in treated households also tend to take on some other more progressive views with respect to society, such as agreeing with the notion that governments should address income inequality and rejecting vote buying by political parties.

These changes, however, do not appear to translate into a difference in actions when migrants return home. Even though women take on additional responsibilities

during the male migration period and migrants are more likely to recognize women's capabilities upon their return, there are no significant differences between treatment and control villages with respect to women's participation in household decisions—including those regarding their own physical mobility outside the house—once migrants return. We also see no difference in the use of social services or in civic participation, or in behaviors tied to gender norms, such as female labor force participation or expenditure allocations. It appears that, in this setting, the (perceived) social costs for deviating from the social norm are so high that migrants do not change their behavior even after adopting more progressive beliefs (Mobarak, Reimão, and Thachil 2018).

While it is disappointing that we do not see any positive effect of seasonal migration toward more progressive and inclusive behaviors, it is also reassuring that we do not detect any negative effects, such as the deterioration of norms or a backlash. We observe these (non) effects in the short run (a few months to 2 years after offering migration subsidies), and it remains to be seen whether the observed changes in beliefs translate into broader changes in social norms regarding women's role in society as momentum builds and individuals learn about each other's (transformed) beliefs (Bursztyn, Gonzalez, and Yanagizawa-Drott 2018; Dhar, Jain, and Jayachandran 2019).

5. Effects on Intimate Partner Violence

In 2015, the Bangladesh Bureau of Statistics carried out a survey on violence against women, uncovering that 75% of women in rural Bangladesh have experienced some form of intimate partner violence (IPV) in their lifetime, and 28% experienced physical or sexual violence in the 6 months prior to the survey (Bangladesh Bureau of Statistics 2016). Mobarak and Ramos (2018) explore how subsidies to seasonal migration affect the likelihood of IPV in practice, particularly in light of the various forces through which seasonal migration can influence IPV in theory.

There are three competing forces shaping the potential effect of migration on IPV. First, limited resources can raise conflict within the family, especially in contexts with traditional gender roles, where men are expected to provide most of the financial support for their family and failure to do so can be seen as failure in a broader social role. Poor households facing seasonal fluctuations in income may be particularly vulnerable to this type of conflict. A positive income shock through migration (and its subsidy) may reduce these poverty stressors and, with it, decrease the incidence of violence.

Alternatively, increases in male income can strengthen their bargaining position, increasing female relative vulnerability and, potentially, susceptibility to violence. Lastly, reducing the time a woman spends with her potential perpetrator can itself decrease the risk of victimization. Since migrants are overwhelmingly

male in Bangladesh, subsidies that encourage migration can effectively decrease women's exposure to their spouses—and potential abusers—mechanically leading to less overall IPV experienced by women in treated households.

Using data from the 2017 RCT and focusing on the effect of the migration of married male heads of households, Mobarak and Ramos (2018) find evidence that subsidies to migration may decrease IPV, particularly by reducing women's exposure to their male heads of households. Relative to the control group, women in households who are offered the migration subsidies are 3.5 percentage points less likely to say they have experienced physical or sexual violence in the 6 months prior to the survey (a 10% decrease in incidence). The results are most consistent with the idea that seasonal migration has an additional mechanical benefit, giving women some temporary relief by physically separating them from their perpetrators. Whether this produces any persistent reductions in violence beyond the period of migration, including perhaps through a shift in gender norms over time, is still an open question.

6. Long-Term Effects on Permanent Migration

In Chowdhury, Mobarak, and Reimão (2018), we explore whether seasonal migration leads to permanent migration—as migrants build networks in and gain familiarity with the city—or instead makes rural living more viable and permanent moves into the city less likely. For this analysis, we use a follow-up survey of all households included in the 2008 study, gathering information on the whereabouts of each member 8 years after the initial treatment. Household members or, in their absence, their neighbors were interviewed, producing a dataset with very low attrition—we do not know the migration status of less than 1% of households.

Overall, we find relatively low levels of permanent out-migration from rural Rangpur in general. Over an 8-year period (2008–2016), only 5% of households in the BCM (2014) sample (aggregating across treatment and control villages) permanently migrated away from their home village. This is consistent with other district-level data that document comparatively low levels of out-migration from the northern part of Bangladesh, particularly relative to the southeast (UNFPA 2016).¹⁰

Moreover, it is no more difficult for us to find the original 2008 sample households from the treatment villages than it is to find those from the control villages, or to learn of their whereabouts. There is also no significant difference in the likelihood in permanent migration of the household or one of its members between treated and control villages. The data are precise enough to rule out large effects: the seasonal migration subsidies induced at most one in 200 households to permanently migrate over an 8-year period after the offer.

¹⁰Compare, for example, a lifetime net migration (in-migration minus out-migration) of -39.49 per 1,000 people in Rangpur to -167.22 per 1,000 people in Barisal (UNFPA 2016).

For the subsample of households that were primarily engaged in agriculture at baseline, the subsidies actually decreased their likelihood of permanent migration relative to the control group, with households in treated villages 3.8 percentage points less likely to permanently leave the area than those in control villages.¹¹ This indicates that, rather than serving as a gateway to permanent migration, seasonal migration actually makes living in rural areas more viable in the long run, particularly for households whose skills and experience are in agriculture. For households with a comparative advantage in agriculture, a one-time support for seasonal migration helps them draw on it as a coping strategy in subsequent years and thereby avoid the more costly and drastic coping strategy of permanent migration. For policy makers in Bangladesh concerned about overcrowding and congestion in Dhaka and other populated urban areas, this finding implies that supports for seasonal migration may be a tool for easing urban pressures that come from permanent rural-to-urban population influxes.

7. Other Open Questions

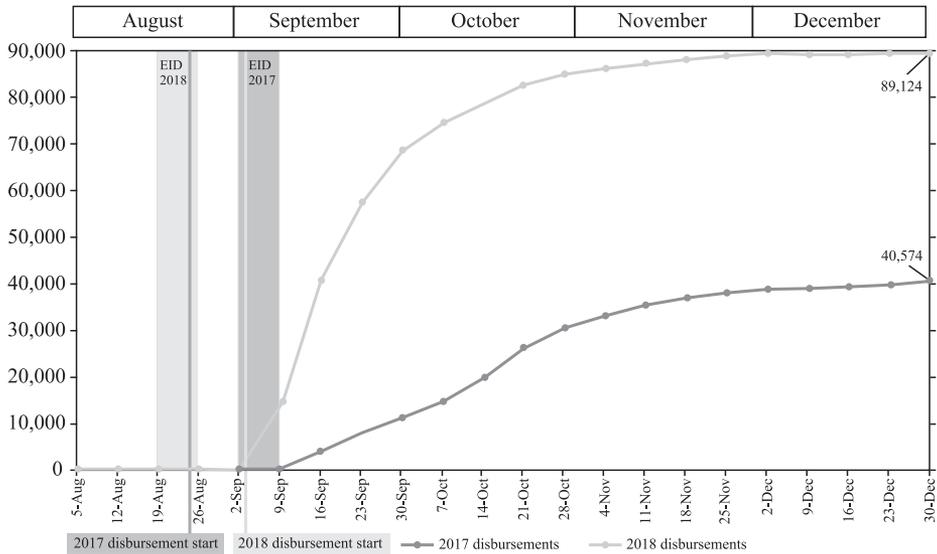
In contemplating the implementation of a migration support program at this scale or larger, one must also be aware of the spillover effects on poor households in destination areas—and potentially other rural villages. We designed the most recent implementation rounds (2017 and 2018) to capture these economic and noneconomic spillover effects, as loan offers are made to well over 100,000 households in each season (compared to fewer than 1,500 in the 2008 study).

We initially expected the 2017 results to provide some information on general equilibrium effects, revealing the effect of seasonal migration subsidies on the employment prospects and earnings for would-be construction workers and rickshaw drivers (two of the most popular jobs for seasonal migrants in our research rounds when they reach urban areas) already living in destination areas. Unfortunately, however, the 2017 intervention did not lead to a statistically significant effect on migration, contrary to all previous rounds. This was likely due to a confluence of factors—both avoidable and unavoidable—such as having disbursement targets for each migration officer set too low, heavy workloads, and the worst flooding in the region in over 40 years (for more information, see Levy and Sri Raman 2018).¹² To better understand these results and to learn about the effect of seasonal migration subsidies on poor households outside target villages, the 2018 round was implemented with a very similar design as the previous year—though of course addressing some of the weaknesses encountered in 2017.

¹¹Defined as having a plurality of workers within the household indicating agriculture as their sector of employment.

¹²Migration officers are the local implementers who make loan offers, disburse the loan, check on migration, and collect repayment.

Figure 4. Cumulative Weekly Disbursements in 2017 and 2018



EID = Eid al-Adha.

Note: Training was completed, and eligibility screening and applications were processed in some villages before the Eid al-Adha holiday. No activities were planned around the holiday, and disbursements were scheduled to start immediately after.

Source: Figure was directly provided by Evidence Action.

The administrative data reflects these changes: while the implementing organization (Rangpur Dinajpur Rural Service [RDRS] Bangladesh) disbursed just over 40,000 migration loans during the 2017 lean season, this figure was close to 90,000 loans in 2018 (Figure 4).

Although we do not yet know the effect of the 2018 intervention on the seasonal migration of those in treated villages, we do expect the impact of these subsidies, even at over 85,000 direct beneficiary households, to be relatively small on residents of popular destination areas, particularly Dhaka. In the past rounds, migration destinations were quite varied, with less than 25% of all migrants traveling to Dhaka, even though it is the single most popular destination for migrants from Rangpur (and elsewhere in the country).

Dhaka is home to 14 million people, so even if one-quarter of all loan recipient households send a migrant to the megacity, this would amount to less than 0.2% of its regular population. Nevertheless, it is possible that while this influx is negligible for the general population in Dhaka, individuals engaged in particular sectors popular with migrants—namely, construction and rickshaw pulling—do feel an effect, positive or negative (depending on whether seasonal migrants' labor are complements or substitutes to local labor). We expect the results from the 2018 intervention to provide more information on this potential spillover effect

on destination workers, which becomes relevant as we move from pilot to at-scale program.

Another consideration relates to the effect of seasonal migration on agricultural employers. We have found that, in the short run, inducing temporary migration out of rural areas increases local agricultural wages (ACM 2017). While this is beneficial to poor rural workers who do not migrate (as well as those who do migrate on the weeks they are home), it also imposes a cost on agricultural employers in the same villages, who must now offer higher wages to secure the labor they need. In the short run, this results in a pecuniary transfer from comparatively richer employers to poorer employees, reducing inequality in treated areas. However, landed employers are also more likely to be a politically powerful group, so that their losses can potentially pose a risk to the sustained implementation of this intervention. They may also choose to shift toward more labor-saving technology, with both theoretically positive and negative consequences for local residents. In Nepal, we are planning to test a way to guard against negative political risk, by designing an RCT that offers agricultural employers subsidized access to a labor-saving technology in the same villages where migration subsidies are provided. By conducting an intervention that deals with demand and supply simultaneously, we expect to learn about labor market interactions as general equilibrium effects come into play in response to the subsidies.

8. Comparisons to Other Programs

A program offering seasonal migration subsidies is one among several potential antipoverty interventions, and a part of our research agenda has been designed to study its merits and effects relative to other interventions in this group. Through an RCT in Indonesia (Bryan et al. 2018), we directly compare the effects of migration subsidies to a UCT of an equivalent amount. The results from this RCT implemented in West Timor (Nusa Tenggara Timur province) in 2017 reveal that only 13% of households who are offered the UCT migrate in the 6 months following disbursements, compared to 42%–46% when the transfer is made conditional on migration. The lower effect on migration from the UCT is not in itself surprising, but highlights the fact that lack of funds is not the only (or even main) factor limiting households' migration decisions.

LMW (2018) take a completely different route for comparing effects between subsidies for seasonal migration and UCTs, combining data from the 2008–2011 interventions with a structural model to simulate effects. The simulations indicate that a UCT of the same amount as the migration subsidies would increase migration by less than 1% among poor households in Rangpur, and its welfare benefits for the poorest quintile of households would also be slightly lower. The simulations indicate that a one-time migration subsidy improves welfare (measured as consumption over a lifetime) of the poorest quintile by 1%, whereas a

budget-neutral UCT program would improve it by 0.9%. This difference is driven by the fact that migration subsidies rely on self-targeting: only households who have faced negative shocks and are desperate for money take up the CCT and migrate, while the UCT transfers are applied uniformly to all households. In contrast to these two policies, a rural workfare scheme increases welfare of the poorest quintile by only two-thirds as much, or 0.6%, as it discourages households from migrating to locations that offer better wages.

We have also directly compared the cost-effectiveness of seasonal migration subsidies to other existing transfer programs in Bangladesh using secondary information, as discussed in subsection II.B. As with seasonal migration subsidies, the majority of beneficiaries for each of the three existing pro-poor programs (food transfer, food and cash transfer, and guaranteed work) are in the bottom three income deciles. Ahmed et al. (2009) estimate that the food transfer (IGVGD) and the food and cash transfer (FSVGD) programs each increase consumption by five times as much as the workfare program per dollar spent. By our calculations, the seasonal migration support program is even more cost-effective, increasing consumption on a per-dollar-spent basis by almost twice as much as the food and cash transfer program, which is the most cost-effective of the three (Mobarak and Akram 2016). And disbursing the offers as zero-interest loans rather than grants (which can be recovered and reused for the program in subsequent years) makes seasonal migration subsidies three times as cost-effective as the food and cash transfer program.

IV. Implications for Asia

For the last 10 years, our research on seasonal migration has been primarily—though not exclusively—in Rangpur, the most rural division in Bangladesh (UNFPA 2016). The potential for this intervention to improve the welfare of poor rural households vulnerable to seasonal fluctuations in agricultural income and employment opportunities, however, evidently extends well beyond the area, into other parts of Bangladesh and the Asia and Pacific region more broadly. In this section, we discuss requirements and adaptations for seasonal migration subsidies as a concept and as a program, as well as the importance of context—in terms of both time and place—for its viability.

A. Applicability and Adaptability

Subsidies for seasonal migration may be relevant to many subnational areas throughout the Asia and Pacific region. In general, for such an intervention to have potential as a tool for addressing seasonal poverty, target settings must have three minimum characteristics:

- (i) **An agricultural lean season.** Recurring and predictable periods of hunger indicate that there are constraints that keep consumption and income tied too closely together and that existing coping mechanisms and support systems are not adequate for weathering drops in income.
- (ii) **Households that find spending on migration risky.** Supporting seasonal migration makes sense if there is a large rural population living close to subsistence and for whom spending money on migration but failing to earn enough to offset costs could be catastrophic. Seasonal migration subsidies lower the cost of failure to find a job in destination areas and enable would-be migrants to set aside money or goods as a cushion for their families prior to migration.
- (iii) **Jobs available in nearby areas.** Ideal conditions include the availability of employment opportunities in several urban areas 4–8 hours away. For any distance closer than this, rural residents can commute and probably do so, and larger distances may require much higher subsidies. The existence of multiple destination areas also makes it more likely that an increased influx of migrants can be absorbed without large impacts on the target labor market(s).

Many rural areas around the world match these conditions, though not all. We conducted exploratory work for a potential replication in Malawi and Zambia, for example, but decided not to test the program further in either setting because we were not convinced that they met the third condition. It is not clear that either country has vibrant urban labor markets with labor demand that can absorb many domestic migrants.

Instead, we chose to pilot and test a version of this intervention in West Timor, Indonesia, a setting where most poor households in rural areas are not landless (as is the case in Rangpur). This changed one fundamental aspect of the program design. During the preharvest period, poor rural household members in West Timor generally have to stay home and work on weeding and land management of their own farm and are not interested in migrating at that time—even though, like in Bangladesh, that is the period of seasonal deprivation. In response to this, we adapted the intervention to allow for migration in other periods. Although poor households have relatively more cash after a harvest, this period tends to also be best for migration among landowning poor households since there is little agricultural work to be done. In this study site, landowning migrants traveled after the harvest, aiming to save money in anticipation of the next lean season.

When considering the implementation of migration subsidies in a new context, there may be other norms and processes that need to be accounted for as well, such as the prevailing labor migration arrangement. For example, a survey of construction workers found that in Bangladesh, only 10% of workers that secured

a job through a contractor received any payment in advance, whereas 52%–80% of workers in India received advance payments. These advances facilitate migration, helping migrant households purchase goods to be left at home and guarantee some consumption during migration (Srivastava et al. 2014), and may change the role of transfers or the amount required for migration subsidies. A migration support program in India may also affect welfare along a different margin: wages for workers who secure jobs at destination areas tend to be higher than for those who are recruited and receive advances from contractors, so that a migration subsidy may serve as an alternative to the use of contractors, enabling individuals to arrange their travel first and search for a higher-paying job upon arrival at their destination.

Nevertheless, it is clear from our experience in Indonesia that subsidies for seasonal migration are viable solutions outside of Rangpur and that the program can be adapted to a certain extent to local conditions. Dimensions over which seasonal migration subsidies could be modified to account for circumstances include—but are certainly not limited to—transfer amounts, timing, modality (e.g., loans, grants, or even transport tickets), number of members to whom subsidies are made, and even the extent to which the program works with employers or contractors and facilitates hiring in advance. Some of these modifications are more drastic than others, and a few might require piloting and further testing, but none alter the fundamental nature of the concept, which is to support and subsidize the temporary movement of people from rural areas to destinations where there are more job prospects for low-skilled workers.

B. Limitations

Drawing a distinction between subsidies for seasonal migration (the concept) and “No Lean Season” (the program), we recognize that while the former has a broader potential and applicability than the latter, neither is implementable everywhere. Not only are seasonal migration subsidies likely not a worthwhile investment in settings where one of the three requirements above are not met, but the extent to which subsidies can induce migration is highly context dependent.

In 2013, we attempted to implement the first version of “No Lean Season” after the positive results of the initial RCT on seasonal migration. That same year, however, mass political strikes (*hartals*) “designed to disrupt the county’s transportation network” and that involved the burning of buses (the main mode of transportation used by migrants from Rangpur) took place throughout Bangladesh (Ahsan and Iqbal 2016). As one of the main goals of this form of protest was to “restrict vehicular movement in key urban areas,” it naturally led to longer transport times and higher costs during that period, not to mention fear among the population in and outside the cities (Ahsan and Iqbal 2016). While the lack of take-up in response to our migration subsidy offers under these conditions might not be surprising in hindsight, it also points to an implementation challenge for such

a program. As strikes are often unpredictable more than a few weeks in advance, implementation of the program—from contracting to loan offers—may already be underway when it becomes clear that circumstances will limit take-up.

We witnessed a similarly low take-up in 2017 and suspect that extreme flooding in northern Bangladesh—the likes of which had not been seen in 40 years—contributed to this pattern. In Rangpur, the yearly swelling of rivers can lead to houses or entire villages being swept away, but that year’s uniquely severe flooding made implementation of the program especially difficult and may have also discouraged seasonal migration, as potential migrants cannot abandon their families under likely disastrous weather conditions, and transport may be more limited or precarious.

External shocks such as extreme weather conditions and violence impose limitations on the applicability of seasonal migration subsidies as a concept, indicating that even in settings where the intervention would normally work, it might not work in certain years, no matter the design. This is distinct from—and in addition to—programmatically related to implementation capacity and delivery.

In the transition from a closely delivered and monitored RCT during 2008–2011 to “No Lean Season,” the implementation of the program was handed over to a local partner, RDRS Bangladesh, a microfinance institution. We have learned that its decades of experience in microfinance and in the region are both a benefit and a hurdle, as its managers and officers are used to thinking in terms of loan disbursement and repayment and its institutional measurements are tailored around that model. But if one were to implement “No Lean Season” as a pure microcredit program, it would make sense to focus efforts on individuals most interested in migrating and most likely to repay—not necessarily those who recently experienced a drastic negative shock. While we believe that flooding played a role in the 2017 migration rates, we suspect that part of this dampened result also stemmed from targeting issues, as migration officers were given disbursement goals by their managers and may have concentrated their efforts on households most likely to migrate anyway. In response to these findings, RDRS Bangladesh changed the goals set for its officers in 2018. Most recent loan disbursements show a promising change, with twice as many loans made per branch compared to the previous year (Figure 4).

It is also worth noting that, while the intervention in Bangladesh has been transformed into “No Lean Season,” migration subsidies can in theory be implemented not only outside this program but also without an NGO or microfinance institution entirely. The concept could be taken on by national or subnational governments for whom cost–benefit calculations may weigh differently. A program that might not be feasible from the perspective of an NGO, which typically requires a minimum impact per dollar, may nevertheless be worthwhile to a government for its benefit to the rural poor in addressing seasonal deprivation.

V. Conclusion

The last 10 years of research on seasonal migration has shown that an intervention that supports this strategy by subsidizing travel can have large positive impacts on poor rural households. In several study rounds conducted in northern Bangladesh, households that were offered a small migration subsidy were 22–40 percentage points more likely to migrate over a given lean season compared to control households. Households that responded by sending a migrant also recorded on average higher levels of consumption, income, and expenditures during the lean season than those not offered the subsidy. Villages in which a large share of poor households were offered the migration subsidies also experienced an increase in wages during this period, which is usually characterized by low employment opportunities and pay. A one-time migration transfer continued to have a positive effect on migration rates up to 3 years later.

We believe that this type of intervention may be an appropriate tool for poverty alleviation—particularly seasonal poverty—in rural areas where a large part of the population (both in relative and absolute terms) is engaged in agriculture and lives close to subsistence for at least part of the year and where potential destinations with ample low-skill temporary employment opportunities are within a reasonable travel time (4–8 hours). The complete lack of seasonal migration is not a required element, as exemplified in Rangpur, and potential beneficiaries are not restricted to traveling to destinations 4–8 hours away. Among migrants in our study in northern Bangladesh, for example, migration is already fairly common (but still lower than expected given the availability of jobs elsewhere in the country), and Dhaka is a popular destination despite being a day’s travel away. In India, temporary migrants are just as likely to migrate to urban centers within their state as to other states, and they are actually less likely to migrate within their district (Imbert and Papp 2019).

There are other programmatic requirements for the success of a migration subsidy intervention, a topic that we have not covered in depth here. Local implementation capacity and political support are likely crucial. In Rangpur, our intervention has been implemented through RDRS Bangladesh, a local institution with a strong presence and long history in the northern part of the country since 2014. In Indonesia, we have experimented with collaborating with local government agencies. In general, the nature of the implementing partner (e.g., local NGO, international organization, or government) may be less important than its capacity, will, and presence in rural areas, as the design of the intervention offers some flexibility to adapt to an implementer’s priorities and requirements.

Our research results also highlight the importance of removing other types of barriers to temporary migration. The PRC, for example, imposes many explicit restrictions on the movement and employment of rural workers. Other countries in the region also have policies that implicitly deter poor rural households from taking

advantage of urban labor markets. In India and Viet Nam, for example, full access to social safety nets is given only to individuals at their permanent residence area (Deshingkar 2006), which limits poor households' willingness to send a migrant away in search of jobs elsewhere lest they lose benefits at home.

Encouraging seasonal migration is a complex intervention that may produce a range of indirect effects and unintended consequences beyond the direct economic effects on treated households. Over the last 10 years, our research agenda has expanded from considering the effect of these subsidies on the migration, consumption, and income of targeted households to exploring the secondary effects on both beneficiaries and nonbeneficiaries, with scaling up always in mind. Results from the initial RCT in Bangladesh with 1,900 households only indicated that this intervention was "promising." The path from a successful RCT to an implementable program called for a greater understanding of potential general equilibrium, noneconomic, and long-term effects.

The majority of the population in Asia remains rural and agrarian. Support for seasonal migration can play a valuable role in helping poor rural families cope with drops in employment opportunities and income during lean periods in the agricultural cycle. The Asia and Pacific region has a uniquely large concentration of poor households in rural areas, but it is also peppered with large urban areas and manufacturing zones that have attracted both domestic and regional migrants. While the applicability of seasonal migration subsidies may vary across and within countries—depending on the dominance of the agricultural cycle, proximity of poor households to potential destination areas, and the ability of an area to absorb temporary migrants—the basic elements of demand for this intervention exist in many parts of the region today.

Lowering the barriers to temporary migration—through changes in policies (either explicit or implicit), investment in transportation networks, or subsidies, or a combination of these—can expand poor rural households' access to labor markets elsewhere in their countries. And while encouraging seasonal migration might not be a path to growth in contexts where migration is already common and rural residents are unlikely to be spatially misallocated, facilitating the free movement of people within their own countries—enabling them to take advantage of labor opportunities elsewhere and to avoid resorting to hunger—is a desirable pursuit in its own right.

Poverty reduction in Asia has been associated with diversification away from farm activities—of which employment opportunities in urban areas is one possibility—as opposed to increasing farm productivity (World Bank 2012). Policies that support seasonal migration can help steer countries down that path, encouraging poor rural households to diversify their income sources and increasing labor supply for sectors with higher-productivity potential than agriculture. In fact, seasonal migration may be a valuable but temporary tool. As countries develop, transportation networks improve, and nonagricultural employment opportunities for

rural residents expand at home, the need for seasonal migration as a coping strategy might decrease. Until then, supporting seasonal migration—through direct policies or interventions such as “No Lean Season,” or both—can help address seasonal poverty and hunger in various parts of the region.

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Wage Differential between Rural Migrant and Urban Workers in the People's Republic of China

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Using a recently constructed dataset that draws on the China Employer–Employee Survey, this paper provides new evidence on the earnings gap between rural migrant and urban manufacturing workers in the People's Republic of China. When we only control for province fixed effects, we find that rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. We find that the gap in hourly earnings is larger than the gap in monthly earnings because rural migrant workers tend to work an average of 5.6% more hours per month than urban workers. Using these data, we also find that 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap can be attributed to differences in the individual characteristics and human capital levels of rural migrant and urban workers. Furthermore, we find that this unexplained earnings gap varies among different groups of workers. The earnings gap is much larger (i) for workers in state-owned enterprises than in nonstate-owned enterprises, (ii) for college-educated workers than workers with lower levels of educational attainment, and (iii) in Guangdong province than in Hubei province.

Keywords: China Employer–Employee Survey, rural migrant workers, wage gap
JEL codes: O15, J01, J31

I. Introduction

The large-scale movement of rural migrant workers from the low-productivity agriculture sector to higher-productivity sectors has been an important force behind the development of the economy of the People's Republic of China (PRC) (Li et al. 2017). According to the National Bureau of Statistics of China (NBSC), the total number of rural migrant workers reached 286.5 million and accounted for 37% of the total labor force in the PRC in 2017. The labor of rural

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migrant workers has been particularly important in the PRC's manufacturing sector, which relies heavily on cheap, unskilled labor.

However, there is a large body of evidence indicating that rural migrant workers are paid significantly less than urban workers (Meng and Zhang 2001, Démurger et al. 2009, Zhang et al. 2016, Ge 2017, Ma 2018). Recent research has sought to understand the reasons why this earnings gap exists between rural migrant and urban workers. Some studies have found that a large portion of the gap can be explained by differences in individual characteristics, human capital levels, occupations, and industries (Démurger et al. 2009, Zhang et al. 2016), while others have found that most of the gap cannot be explained by observable factors (Meng and Zhang 2001, Ma 2018).

In this paper, we will use a new dataset, the China Employer–Employee Survey (CEES), to reexamine whether there is an earnings gap between rural migrant and urban workers in the PRC, and to determine how much of the gap can be explained by the individual characteristics and human capital levels of workers. To do so, we will first measure the earnings gap between rural migrant and urban workers in terms of both monthly and hourly wages. Next, we will examine how much of this gap can and cannot be explained by differences in the individual characteristics and human capital levels of workers after controlling for province fixed effects. Finally, we will investigate whether the size of the earnings gap and the amount left unexplained vary by firm ownership type, educational attainment, and region.

The CEES is a new longitudinal study on manufacturing firms and workers in the PRC. The CEES data offer several advantages to our research. First, the data provide detailed information on the *hukou* (household registration) status of each worker, which allows us to identify rural migrant and urban workers. The CEES also asks workers to provide the number of hours they work on a weekly basis, which allows us to calculate the hourly wages of workers. Furthermore, this dataset matches rich firm-level information with worker-level information, which helps us examine whether the wage differential between rural migrant and urban workers varies between different types of firms.

From our analysis, we find that, controlling for province fixed effects, rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. The gap in hourly wages is larger than that for monthly wages because rural migrants work an average of 5.6% more hours per month than their urban counterparts. As migrants and local workers are both selected groups of workers with different human capital attributes, such as age and education, we need to control for these attributes to partially address the potential concern of sample selection. Indeed, we find that the majority of the earnings gap can be explained by differences in individual characteristics and human capital levels. Specifically, 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap can be explained by differences in these observable factors between rural migrant

and urban workers, suggesting that selection based on human capital attributes is important for the earnings gap. When taking all these observable factors into consideration, we find that rural migrant workers earn 2.8% less per month and 8.4% less per hour than urban workers.

We also find that the earnings gap between rural migrant and urban workers varies substantially between workers who (i) are employed in firms under different types of ownership, (ii) have different levels of educational attainment, and (iii) live in different provinces. Specifically, we find that the hourly earnings gap between rural migrant and urban workers is 14 percentage points larger in state-owned enterprises (SOEs) than in other firms. This may suggest that SOEs favor local urban workers as a means of supporting the government's pursuit of social stability. In terms of educational attainment levels, we find that the hourly earnings gap is 10.9 percentage points larger between rural migrant and urban workers who have at least a college education compared to workers with lower levels of educational attainment. Last, we find that the hourly earnings gap is 5 percentage points larger in Guangdong province than in Hubei province.

This paper sheds light on the debate in the literature regarding the allocation of labor in different sectors. It is widely documented that large gaps in productivity and wages exist between rural and urban areas, and between agriculture and nonagriculture sectors (Young 2013; Gollin, Lagakos, and Waugh 2013). The underlying reasons for this trend have been thoroughly discussed in the literature of development economics. One strand of these studies argues that these gaps are the manifestation of the spatial misallocation of labor. Thus, some institutional barriers or labor mobility friction should be removed to encourage workers to move out of less productive rural areas or agriculture sectors to achieve productivity and welfare gains (Gollin, Lagakos, and Waugh 2013; Bryan, Chowdhury, and Mobarak 2014).

An alternative theory argues that the spatial distribution of labor may already be efficient and that such gaps could simply reflect differences in human capital and unobserved skills (Young 2013; Lagakos and Waugh 2013; Hicks et al. 2017; Herrendorf and Schoellman 2018; Lagakos, Mobarak, and Waugh 2018). Specifically, this line of thought argues that workers are geographically sorted into urban and rural areas based on their human capital and skills in response to the regional demand for skills. Generally, urban industries are more skill intensive and have a higher relative demand for skilled workers. Therefore, workers in urban areas may be more educated and have higher intrinsic ability.

Despite the fact that we cannot directly observe the differences between rural and urban workers in human capital or skills, our study's finding that a majority of the earnings gap between rural migrant and urban workers can be explained by their differences in educational attainment still informs this debate. To some extent, we can infer indirectly that rural workers may have much less human capital than urban workers, and this may account for much of the rural–urban gap in both productivity and wages. This result also suggests that in order to reduce such

rural–urban gaps, more government programs need to be provided for rural workers to accumulate human capital.

The remainder of this paper is organized as follow. Section II describes the institutional background of the *hukou* system and labor migration in the PRC. Section III describes our survey and data. Section IV presents our descriptive and regression results. Section V concludes.

II. Institutional Background

Following a series of economic reforms that began in the mid-1980s, the PRC’s labor market experienced a set of remarkable transformations. One particularly important transformation has been the migration of labor from the agriculture sector to the urban manufacturing sector. Despite the importance of this labor migration, it was not always allowed in the PRC due to the *hukou* system.

The *hukou* system was first implemented in 1958 and assigned individuals either a “rural” or “urban” *hukou* classification based on where they were born. Under this system, individuals were not permitted to migrate from rural to urban areas, and it effectively established separate urban and rural economies as a result (Lardy 1983, Chan 1994, Chan 2015). Individuals with a rural *hukou* faced a series of institutional barriers to working in urban areas because converting one’s *hukou* status was strictly regulated and subject to official quotas. For a rural individual to obtain an urban *hukou*, he or she needed to obtain a document demonstrating employment by an urban unit, admission to an urban school, or approval from urban authorities to migrate to the city.

However, there was an impetus to loosen *hukou* restrictions starting in the mid-1980s when the rapid development of township and village enterprises and the surge of foreign direct investment in the PRC’s coastal areas created tremendous demand for the low-skilled labor residing in rural areas. As a result, workers in rural areas were provided opportunities to earn higher wages in the urban manufacturing sector and incentivized to migrate to urban areas in search of work. To satisfy the rising demand for low-skilled labor in the urban labor market, the *hukou* system was gradually relaxed by the government. The loosening of *hukou* restrictions significantly lowered the costs of migration and released excess labor from rural areas into the urban labor market. According to the NBSC, the total number of rural migrant workers reached 286.5 million and accounted for 37% of the total labor force in the PRC in 2017.

Even though rural migrant workers have contributed substantially to the PRC’s economic growth in recent decades, a large body of evidence indicates that they face worse treatment than their urban counterparts in the urban labor market. For example, there appears to be a large gap between rural migrant and urban workers in terms of earnings, although the size of the gap has decreased

over time (Meng and Zhang 2001, Démurger et al. 2009, Zhang et al. 2016, Ge 2017, Ma 2018). It is not clear to what extent the gap can be explained by the observable differences between rural migrant and urban workers, such as individual characteristics and human capital levels. Some studies have found that the earnings gap can largely be explained by these factors (Démurger et al. 2009, Zhang et al. 2016), while other research finds that these factors cannot fully explain the earnings gap (Meng and Zhang 2001, Ma 2018).

III. Survey and Data

A. China Employer–Employee Survey

The CEES is a new longitudinal study on manufacturing firms and workers in the PRC. CEES began in 2015 with a survey of firms and workers in the PRC's most important industrial province, Guangdong. In 2015, Guangdong accounted for 13.4% of all manufacturing firms (300,000 firms), 19.4% of all manufacturing workers (9.3 million workers), and 25.9% of international trade (imports and exports amounting to \$1.1 trillion) in the PRC. In 2016, we followed up with the firms and workers that were surveyed in Guangdong in 2015 and added new workers from the province to the employee sample. Then, to capture differences between firms in Guangdong and those in the PRC's emerging central region, another province, Hubei, was added. Hubei province produced \$708.3 billion in gross industrial output and employed 3.4 million manufacturing workers in 2015.

Lists of firms from the Third National Economic Census, which was conducted in early 2014, were used as the sampling frame for the survey. Sampling was conducted in two stages, each using probability proportionate-to-size sampling with size defined as the number of employees involved in manufacturing. Thus, the firm sample is representative of the employment size of firms in the PRC. In the first stage, 20 county-level districts were randomly sampled in each province, with probabilities proportionate to manufacturing employment size in each district. In the second stage, 50 firms were selected in each district as a target sample, again with probabilities proportionate to employment in each firm. Enumerators then visited the 50 firms sequentially and attempted to survey the first 36 eligible firms (that had production activities in the selected district). Employees were also randomly selected with stratification.

In total, we collected data from 573 firms in Guangdong in 2015 and from 1,122 firms in both Guangdong and Hubei provinces in 2016 (Appendix Table A.1). We achieved response rates of over 80% in both years. As an additional check of the representativeness of our sample, we present a comparison of our CEES sample against that of the Third National Economic Census and the *2016 China Statistical*

Yearbook in Appendix Table A.2. The numbers presented in the table suggest that our sample is generally representative of firms across the PRC.

The firm and worker questionnaires were designed by the authors together with a team of over 30 researchers. The 2016 firm questionnaire includes seven modules and 1,030 variables covering the basic situation of firms (including firm accounting data), firm head characteristics, management, production, sales, innovation, quality control, and human resources. In 2016, CEES questionnaires also included a management module that was designed for the World Management Survey (Bloom and Van Reenen 2007, Bloom et al. 2017).

There are several advantages to using CEES data to analyze the earnings differential between rural migrant and urban workers in the PRC. First, it is a newly constructed dataset, which can reflect the most recent conditions of rural migrant and urban workers. Second, it has detailed information on the *hukou* status of each worker, which can help us to differentiate between rural migrant and urban workers. For the purposes of our study, we define rural migrant workers as those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Third, the survey collects information on the working hours of survey respondents, which allows us to calculate the hourly wages of sampled workers. Finally, CEES has rich firm-level data that can be matched with worker data, which allows us to examine whether the earnings differential between rural migrant and urban workers varies between different types of firms.

B. Data Summary

Summary statistics are presented in Table 1, which shows that 59% of workers in our sample are rural migrant workers. This share is almost twice as large as the proportion of rural migrant workers in the manufacturing sector nationally (31%) (NBSC 2017). However, this is likely because there is variation in the share of migrant workers in the manufacturing sector across provinces. As reported in Table 2, there is even considerable variation in the share of rural migrant workers employed in the manufacturing sector between our two sample provinces. Specifically, we find that 69.4% of sample workers in Guangdong province are rural migrant workers, while rural migrant workers only account for 47.3% of the sample workers in Hubei province.

In our paper, we evaluate the earnings of workers using two measures: monthly earnings (including both wages and bonuses) and hourly earnings (measured by dividing the monthly earnings measure by average hours worked per month).¹ As can be seen in Table 1, we find that the average monthly earnings of workers in our sample is about CNY4,997, which is 8.4% more than the national

¹Average hours worked per month is measured by multiplying the average hours worked per week for each worker by 4.3.

Table 1. Summary Statistics

Variables	Number	Mean	Standard Deviation	Minimum	Maximum
Rural migrant	7,799	0.59	0.49	0	1
Monthly earnings in 2015 (CNY)	7,799	4,997	4,328	1,000	86,667
Hourly earnings in 2015 (CNY)	7,799	24.27	22.68	3.32	388.52
Weekly working hours	7,799	51	11.58	6	112
Male	7,799	0.56	0.50	0	1
Age	7,799	37.09	9.44	17	72
Years of schooling	7,799	11.80	2.99	0	22
Junior high school or below	7,799	0.34	0.47	0	1
High school or vocational high school	7,799	0.37	0.48	0	1
Vocational college or above	7,799	0.29	0.45	0	1
State-owned enterprises	7,799	0.09	0.28	0	1
Hubei	7,799	0.47	0.50	0	1

CNY = Chinese yuan.

Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Monthly earnings include both wages and bonuses; hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month.

Source: Authors' calculations.

Table 2. Percentage of Rural Migrants among Different Types of Firm Ownership and Provinces

	Rural Migrant	
	Number	%
Ownership		
Non-SOEs	4,432	62.3
SOEs	175	25.4
Province		
Guangdong	2,883	69.4
Hubei	1,724	47.3
Total	4,607	59.1

SOE = state-owned enterprise.

Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*.

Source: Authors' calculations.

average of CNY4,610 (NBSC 2017).² Additionally, we find that the average hourly earnings is about CNY24. We also find that workers in our sample worked an average of 51 hours per week.³

In terms of the individual characteristics of workers, we find that 56% of workers in our sample are male, which is 5 percentage points higher than the national average in 2015 (51%) (NBSC 2017). On average, workers in our sample are 37 years old and have completed 11.8 years of schooling. When we examine the

²The national average for monthly earnings is based on the annual average wages in urban manufacturing units in 2015.

³Weekly working hours is calculated by multiplying the weekly working days and daily working hours of each sample worker.

educational outcomes of workers by the highest level of educational attainment, we find that 34% of sample workers have a junior high school education or less, 37% have completed high school, and 29% have completed college.

In this paper, we also examine how the earnings gap varies between workers in firms under different forms of ownership and between workers from different provinces. Summary statistics for these two variables are also reported in Table 1. We evaluate two types of firms: SOEs and other types of firms (non-SOEs). As can be seen in the table, 9% of our sample are SOEs and 91% are non-SOEs. In terms of provinces, 47% of workers in our sample are from Hubei province and 53% are from Guangdong province.

Table 2 also presents the percentage of rural migrant workers employed in firms under different forms of ownership. As shown, 62.3% of workers in non-SOEs are rural migrant workers, but only about a quarter (25.4%) of sample workers in SOEs are rural migrant workers.

IV. Empirical Results

A. Descriptive Results

Table 3 presents the mean differences in earnings, working hours, individual characteristics, and human capital levels between rural migrant and urban workers in our sample. This table shows that, on average, rural migrant workers earn less and work longer hours than urban workers. Specifically, rural migrant workers earn about CNY4,421 per month, which is 31.8% less than the monthly earnings of urban workers (significant at the 1% level). In addition, rural migrant workers earn about CNY20.4 per hour, which is 47% less than the hourly earnings of urban workers (significant at the 1% level). Furthermore, we find that the difference in hourly wages is larger than the difference in monthly wages because rural migrants work an average of 5.2 hours, or 10.8%, more per week than urban workers (53 hours versus 48 hours per week).

We also find that rural migrant and urban workers tend to differ significantly in terms of individual characteristics. For example, more urban workers than rural migrant workers are male (60% of urban workers versus 54% of rural migrant workers) (significant at the 1% level). Urban workers also appear to be older than rural migrant workers; the average age of urban workers is about 39 years old, while the average age of rural migrant workers is about 36 years old (significant at the 1% level).

When examining years of schooling, we find that rural migrant workers have received an average of 10.9 years of schooling, while urban workers have received an average of 13.2 years of schooling (significant at the 1% level). When looking at levels of educational attainment, we can see that there are significant differences

Table 3. Mean Difference between Rural Migrant and Urban Workers

	Urban Mean (SD) N = 3,192	Rural Migrant Mean (SD) N = 4,607	Mean Difference (3) = (2) - (1) (SE)
	(1)	(2)	(3)
Monthly earnings in 2015 (CNY)	5,828 (5,593)	4,421 (3,038)	-1,407*** (98)
Hourly earnings in 2015 (CNY)	29.92 (29.75)	20.36 (14.84)	-9.56*** (0.51)
Weekly working hours	48 (10)	53 (12)	5.2*** (0.3)
Male	0.60 (0.49)	0.54 (0.50)	-0.066*** (0.011)
Age	39.15 (9.22)	35.66 (9.33)	-3.49*** (0.21)
Years of schooling	13.18 (2.62)	10.85 (2.85)	-2.33*** (0.06)
Junior high school or below	0.15 (0.36)	0.47 (0.50)	0.317*** (0.010)
High school or vocational high school	0.38 (0.49)	0.36 (0.48)	-0.023** (0.011)
Vocational college or above	0.47 (0.50)	0.17 (0.38)	-0.294*** (0.010)

CNY = Chinese yuan, N = number of observations, SD = standard deviation, SE = standard error.

Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Monthly earnings include both wages and bonuses; hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month.

Source: Authors' calculations.

between urban and rural migrant workers. Specifically, we find that, by a difference of 29.4 percentage points, more urban workers have received a vocational college education or above (47%) than rural migrant workers (17%) (significant at the 1% level).

B. Baseline Regressions

The descriptive results of our study are very revealing. On the one hand, we find that rural migrant workers are paid significantly less than urban workers in terms of both monthly earnings and hourly wages. On the other hand, rural migrant workers also differ significantly from urban workers in many observable human capital attributes such as age, gender, and education. Among these attributes, education may play the most important role. As rural migrants tend to have a lower level of education, they are expected to be paid less as the returns to education are generally positive. In this paper, we resort to multivariate regressions to estimate the rural–urban worker wage gap by controlling for these human capital attributes. As a caveat, our approach cannot fully account for the sample selection issue; rather, our

Table 4. **Monthly Earnings Differential Between Rural Migrant and Urban Workers**

	Monthly Earnings in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	-0.223*** (0.014)	-0.206*** (0.013)	-0.206*** (0.013)	-0.028** (0.013)
Male		0.287*** (0.012)	0.305*** (0.012)	0.252*** (0.011)
Age			0.056** (0.004)	0.063*** (0.004)
Age squared			-0.001*** (0.000)	-0.001*** (0.000)
Years of schooling				0.069*** (0.002)
Hubei	-0.216*** (0.013)	-0.225*** (0.012)	-0.205*** (0.012)	-0.235*** (0.012)
R-squared	0.059	0.124	0.149	0.247
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Monthly earnings include both wages and bonuses. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.

Source: Authors' calculations.

analysis descriptively compares the wage gap between rural migrant workers and urban workers given that they have the same observable human capital attributes.

To further investigate the earnings differential between rural migrant and urban workers when controlling for relevant variables, we estimate several regression equations. First, we estimate ordinary least squares regression equations using log monthly earnings as the dependent variable and individual characteristics (*hukou* status, gender, age, and years of schooling) as independent variables. We also include province fixed effects to control for regional variations that could affect our regression estimates, such as economic development levels and average wages. Robust standard errors are calculated for all regressions to obtain unbiased standard error estimates under possible heteroscedasticity.

Consistent with the descriptive results, our regression results reveal a large gap in monthly earnings between urban and rural migrant workers. As can be seen in column 1 of Table 4, when only controlling for province fixed effects, rural migrant workers are paid 22.3% less per month than urban workers (significant at the 1% level). When we add a gender control variable in column 2, we find that the magnitude of the coefficient estimate decreases, but it still suggests that rural migrant workers are paid 20.6% less per month than urban workers (significant at the 1% level). When a control for the age of workers is added into the regression equation (column 3), we again find that rural migrant workers are paid 20.6% less than urban workers.

When we add a variable representing the average years of schooling, we find that the majority of the monthly earnings gap between rural migrant and urban workers can be explained by differences in individual characteristics and human capital levels. When we control for years of schooling in column 4, we find that rural migrant workers are only paid 2.8% per month less than urban workers (significant at the 5% level). Notably, this estimated earnings gap is 86.4% smaller than the estimate in column 3 (-0.206 versus -0.028). The coefficient on the years of schooling variable suggests that each additional year of schooling is associated with a 6.9% increase in monthly earnings (significant at the 1% level). Taken together, when comparing the coefficient estimates in column 1 and column 4, we find that 87.4% of the gap in monthly earnings between rural migrant and urban workers can be explained by differences in individual characteristics and human capital levels.

C. Working Hours

To investigate whether differences in earnings between rural migrant and urban workers are influenced by working hours, we also examine the differences in weekly working hours and hourly earnings between these two groups. We do so by estimating ordinary least squares regressions, similar to those described in the section above, that use weekly working hours and hourly earnings as dependent variables.

We find that rural migrant workers tend to work longer hours than their urban counterparts. In Table 5, we examine the difference in average weekly working hours between rural migrant and urban workers. When we only control for province fixed effects in column 1, we find that rural migrant workers typically work 9.9% more hours than urban workers on a weekly basis (significant at the 1% level). After adding controls for gender, age, and years of schooling, we find in column 4 that the estimated coefficient decreases, which suggests that rural migrant workers typically work 5.6% more hours per week than urban workers (significant at the 1% level).

In Table 6, we present the results of a series of regressions that examine the hourly earnings of workers. The earnings gap between rural migrant and urban workers appears to increase when we examine the hourly earnings of workers. This finding makes sense given that we have found that rural migrants work longer hours than urban workers. As is shown in column 1, the hourly earnings of rural migrant workers are 32.2% less than those of urban workers; this gap is 44.4% larger than that in column 1 of Table 4 (-0.223 versus -0.322). When we add controls for gender, age, and years of schooling in column 4, we find that urban workers earn 8.4% more on an hourly basis than rural migrant workers; this difference is over three times larger than that in column 4 of Table 4 (-0.028 versus -0.084).

Consistent with the baseline results presented in section IV.B, we find that, although there is still a significant difference in hourly earnings between rural migrant and urban workers, the majority of this gap can be explained by differences

Table 5. Weekly Working Hours Differential between Rural Migrant and Urban Workers

	Weekly Working Hours in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	0.099*** (0.005)	0.100*** (0.005)	0.102*** (0.005)	0.056*** (0.006)
Male		0.022*** (0.005)	0.020*** (0.005)	0.034*** (0.005)
Age			-0.002 (0.002)	-0.004** (0.002)
Age squared			0.000 (0.000)	0.000 (0.000)
Years of schooling				-0.018*** (0.001)
Hubei	-0.010** (0.005)	-0.011** (0.005)	-0.014*** (0.005)	-0.006 (0.005)
R-squared	0.048	0.051	0.052	0.091
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.

Source: Authors' calculations.

Table 6. Hourly Earnings Differential between Rural Migrant and Urban Workers

	Hourly Earnings in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	-0.322*** (0.015)	-0.307*** (0.014)	-0.308*** (0.014)	-0.084*** (0.014)
Male		0.265*** (0.013)	0.285*** (0.013)	0.218*** (0.012)
Age			0.058*** (0.005)	0.067*** (0.004)
Age squared			-0.001*** (0.000)	-0.001*** (0.000)
Years of schooling				0.086*** (0.002)
Hubei	-0.205*** (0.014)	-0.214*** (0.014)	-0.191*** (0.014)	-0.229*** (0.013)
R-squared	0.075	0.121	0.145	0.272
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.

Source: Authors' calculations.

in the individual characteristics and human capital levels of workers. After we add a control for years of schooling in Table 6, the magnitude of the coefficient estimate decreases from 0.308 in column 3 to 0.084 in column 4. Given that we also find that the coefficient on the years of schooling variable is positive and significant, the results appear to suggest that lower levels of educational attainment among rural migrant workers explain most of the hourly earnings gap. In addition, when we compare the coefficient estimates in column 1 (-0.322) and column 4 (-0.084), we find that 73.9% of the hourly earnings gap between rural migrant and urban workers can be explained by differences in individual characteristics and human capital.

D. Heterogenous Effects

In Table 7, we examine whether the earnings gap between rural migrant and urban workers varies based on the ownership type of firms, educational attainment level of workers, and the region where workers are employed. We find that the hourly earnings gap between rural migrant and urban workers is much larger among workers employed in SOEs than in non-SOEs. In column 1, when our SOE dummy is added, the coefficient on the rural migrant dummy variable is still negative and significant (compared with the result in column 4 of Table 6), but the magnitude becomes slightly smaller (-0.073 versus -0.084). In column 2, we add a variable interacting the SOE dummy variable and the rural migrant dummy variable. As shown, the coefficients on the rural migrant dummy variable and the interaction term are both negative and significant. These findings suggest that an earnings gap exists in both SOEs and non-SOEs, and that the two gaps are significantly different. Specifically, the hourly earnings gap is 6.4% in non-SOEs, which is 14 percentage points smaller than the 20.4% gap observed for SOEs (significant at the 1% level), suggesting that urban workers in SOEs are more protected by the government for certain political reasons (Lin, Cai, and Li 1998; Dong and Putterman 2003; Bai, Lu, and Tao 2006).

From Table 7, we also find that the earnings gap between rural migrant and urban workers is much larger among those who have higher levels of educational attainment. In column 4, we add an interaction term between the college and rural migrant dummy variables to the regression equation. The results show that the coefficient on the rural migrant dummy variable is still negative (significant at the 1% level); however, the coefficient on the interaction term is also negative (significant at the 1% level). These findings suggest that an earnings gap exists both for workers who have received at least a college education as well as for those with lower levels of educational attainment. Specifically, for those workers who have not received any sort of college education, we find that rural migrant workers are paid 12.4% less than urban workers. This gap is 10.9 percentage points larger (23.3%) for those who have received at least a college education (significant at the 1% level).

Table 7. **Hourly Earnings Differential between Rural Migrant and Urban Workers with Interactions**

	Hourly Earnings in Logarithm					
	(1)	(2)	(3)	(4)	(5)	(6)
Rural migrant	-0.073*** (0.014)	-0.064*** (0.015)	-0.157*** (0.014)	-0.124*** (0.016)	-0.084*** (0.014)	-0.109*** (0.020)
SOE	0.144*** (0.023)	0.183*** (0.029)				
Rural migrant × SOE		-0.140*** (0.045)				
College			0.454*** (0.016)	0.503*** (0.022)		
Rural migrant × college				-0.109*** (0.030)		
Hubei	-0.239*** (0.013)	-0.238*** (0.013)	-0.211*** (0.013)	-0.210*** (0.013)	-0.229*** (0.013)	-0.258*** (0.022)
Rural migrant × Hubei						0.050* (0.026)
Male	0.214*** (0.012)	0.215*** (0.012)	0.255*** (0.012)	0.255*** (0.012)	0.218*** (0.012)	0.219*** (0.012)
Age	0.066*** (0.004)	0.066*** (0.004)	0.066*** (0.005)	0.065*** (0.005)	0.067*** (0.004)	0.067*** (0.004)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Years of schooling	0.085*** (0.002)	0.084*** (0.002)			0.086*** (0.002)	0.086*** (0.002)
R-squared	0.276	0.277	0.237	0.238	0.272	0.273
Number of observations	7,799	7,799	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month. College is a dummy variable where 1 denotes vocational college and above and 0 denotes high school and vocational high school and below. SOE is a dummy variable where 1 denotes firms with state ownership and 0 denotes firms with nonstate ownership. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong.

Source: Authors' calculations.

Last, we find that the earnings gap between rural migrant and urban workers is larger in Guangdong province than in Hubei province. In column 6, we interact the province dummy variable with the rural migrant dummy variable and find that the coefficient estimated on the interaction term is positive and significant. Additionally, the coefficient on the rural migrant worker dummy variable remains negative and significant, suggesting that the hourly earnings gap exists in both Hubei and Guangdong provinces, but the earnings gaps are significantly different between the two provinces. Specifically, the results indicate that the hourly earnings gap between rural migrant and urban workers is 10.9% in Guangdong province and 5.9% in Hubei province (significant at the 10% level).

V. Conclusions

In this paper, we use a recent dataset derived from the CEES to examine the earnings gap between rural migrant and urban workers, and to determine how much of this gap can be explained by differences in the individual characteristics and human capital levels of sample workers. When we control for province fixed effects only, we find that rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. We find that the gap in hourly earnings is larger than in monthly earnings because rural migrant workers tend to work an average of 5.6% more hours per month than urban workers. After controlling for individual characteristics and human capital levels, we find that these factors account for 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap between rural migrant and urban workers. This means that most of the earnings gap between rural migrant and urban workers can be explained by the differences in individual characteristics and human capital levels, while only a small portion of the earnings gap is left unexplained after taking these factors into consideration.

Our research also shows that the size of the earnings gap between rural migrant and urban workers varies noticeably between (i) firms under different types of ownership, (ii) workers with different levels of educational attainment, and (iii) workers from our two sample provinces. Specifically, we find that the hourly earnings gap between rural migrant and urban workers is larger in SOEs than in non-SOEs, among workers with a college education compared to those with lower levels of educational attainment, and among workers in Guangdong province than in Hubei province.

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Appendix: China Employer–Employee Survey

Table A.1. **Sample Size and Response Rates of China Employer–Employee Survey in Hubei and Guangdong Provinces**

	Number of Observations	Response Rate (%)
Firms survey 2015 (Guangdong only)	573	82
Firms survey 2016	1,122	85
New sample (Hubei)	585	83
Follow-up sample (Guangdong)	487	85
New sample (Guangdong)	50	—
Workers survey 2015 (Guangdong only)	4,838	88
Workers survey 2016	9,103	80
New sample (Hubei)	4,114	89
Follow-up sample (Guangdong)	2,575	53
New sample (Guangdong)	2,414	94

Source: Authors' calculations.

Table A.2. **Characteristics of China Employer–Employee Survey versus the Census and Yearbook—Hubei and Guangdong Provinces**

	Third			
	National Economic Census	2016 Statistical Yearbook	2016 CEES (Weighted)	2016 CEES (Unweighted)
Number of firms (thousand)	361.13	56.45	1.12	1.12
Employment (persons)	69	307	62	827
Assets (CNY million)	30.5	197.7	52.1	769.9
Industrial output (CNY million)		281.1	50.3	803.0
Profit (CNY million)		15.9	3.0	46.7
Profit rate (profit/sales) (%)		5.5	6.5	6.2
Type of industry (%)				
Farm and sideline food processing	3	5	14	5
Food manufacturing	2	2	3	2
Wine, beverage, and refined tea manufacturing	1	1	4	2
Tobacco product manufacturing	0.01	0.03	0.2	0.3
Textiles	3	4	5	6
Clothing	7	6	4	7
Leather, fur, feathers, and footwear industry	4	4	2	4
Wood processing and wood product industry	2	1	1	1
Furniture manufacturing	3	3	1	2
Paper and paper products	3	2	2	1
Printing	4	2	2	3
Education, art, sports, and entertainment	4	3	1	2

Continued.

Table A.2. *Continued.*

	Third National Economic Census	2016 Statistical Yearbook	2016 CEES (Weighted)	2016 CEES (Unweighted)
Chemicals	0.2	0.2	0.0	0.2
Chemical materials and product manufacturing	4	6	2	3
Pharmaceuticals	1	1	1	2
Chemical fibers	0.1	0.1	0.03	0.2
Balata and plastic products	8	7	8	4
Nonmetallic mineral products	6	9	20	10
Ferrous metals	1	1	0.3	1
Nonferrous metals	1	1	1	2
Metal products	10	7	7	7
General equipment manufacturing	5	4	2	3
Special equipment manufacturing	6	4	4	4
Automobile manufacturing	2	4	5	6
Railway, ship, and other transportation equipment manufacturing	1	1	0.4	1
Electrical machinery and equipment	9	9	5	9
Computer, communications, and other electronic equipment	8	9	3	10
Instrument manufacturing	1	1	1	1
Others	1	1	0.2	0.5
Comprehensive utilization of waste resources	0.4	1	0.1	0.5
Metal products, machinery, and equipment repair	1	0.1	0.2	0.4

CEES = China Employer–Employee Survey, CNY = Chinese yuan.

Notes: Calculations from CEES data are weighted using both the firm-size weight in a county (the probability of a firm being in a sample is proportional to its employment size) and the employment weight within a firm in 2013. *Statistical Yearbook* tabulations are based on *The Annual Survey of Industrial Firms* conducted by the National Bureau of Statistics of China with state-owned enterprises and other firms having sales revenue exceeding CNY20 million (\$308,000). The Third National Economic Census (carried out in 2013) tabulations are from *The Statistical Bulletin for the Third National Economic Census*. Industries are classified according to the two-digit code of *The Industrial Classification for National Economic Activities* (GB/4754-2011). Calculations were also done using data from Guangdong Provincial Bureau of Statistics (2015, 2016) and Hubei Provincial Bureau of Statistics (2015, 2016). Source: Authors' calculations.