TARGETED CASH TRANSFERS, CREDIT CONSTRAINTS, AND ETHNIC MIGRATION IN THE PEOPLE'S REPUBLIC OF CHINA

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Notes:
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ABSTRACT

This paper relies on recent proprietary data from the People's Republic of China's (PRC) poor rural minority areas to examine the importance of credit constraints on internal labor migration. Specifically, a liquidity shock via the PRC's minimum living standard assistance (MLSA) program is decomposed into its direct and indirect parts. The institutional features of the MLSA program permit an identification strategy that relies on a set of verifiable assumptions and an instrument variable framework. The results reveal that the direct effect on migration of MLSA is negative, although the net effect is positive driven by the large indirect effects, which are twice as large for ethnic minorities compared to the Han majority. Subsequent evidence further suggests that the main mechanism behind the indirect effect is informal interpersonal lending fostered by risk-sharing strategies. The findings imply that once liquidity is injected into a village it gets circulated in the community, stimulating migration particularly within credit-constrained minority communities.

I. INTRODUCTION

Internal (rural-to-urban) migration has led to a significant reduction in rural poverty in the People's Republic of China (PRC) (Ravallion and Chen 2007, Knight 2013) and across the developing world. A number of benefits exist for individuals and households that engage in migration. Most notable are the remittances that get sent or brought back to the rural origins, which have for a long time been the largest contributor to rural household income growth in the PRC (De Brauw et al. 2002). Beyond remittances, the skills that migrants acquire in the destination and bring back to their rural origins are also important, as return migrants are more likely to engage in higher profit-driven entrepreneurial activities (Démurger and Xu 2011).

Various barriers to migration exist, however, that prevent would-be migrant households from leaving their rural origins in search of employment in the city. Credit constraints is one important such barrier that affects poorer households, in particular (McKenzie and Rapoport 2010). A number of recent studies test whether credit constraints exist by examining how a liquidity shock from some type of program intervention affects the migration decision (Bryan et al. 2014, Angelucci 2015). In the PRC, a small but growing number of recent studies is understanding how migration is affected by the removal of credit constraints (Eggleston et al. 2016, Cai 2015) and other migration barriers (Pan 2016, De Brauw and Giles 2017).

Relying on a simple theoretical model of migration with liquidity constraints, I examine the importance of credit constraints by estimating the impact of a liquidity shock via targeted cash transfers on the decision to migrate in the PRC. The intervention of interest is the minimum living standard assistance (MLSA) or *Dibao*, the largest antipoverty program in the PRC, and perhaps the world. The MLSA program provides unconditional cash transfers to participants who are subject to eligibility rules and must meet both income and assets criteria set by local governments. The program has absolutely no rule regarding migration or repayment.

The main objective of this study is to not only study the direct effect of the MLSA program through the individual decision of program beneficiaries to migrate, but also to study the indirect effects that get promoted throughout the entire community. In this case, the direct effect measures the individual response of households to the program benefit. By contrast, the indirect effect results from the interaction of individual responses and shows the impact that the program has on the whole community.

It is important to study the indirect effects because program interventions, especially in poor rural villages, are likely to have an effect on the entire community, not just eligible households. This is because the extra liquidity that gets injected into communities can again be transferred from recipient households to ineligible households in the community. Such interpersonal exchanges between neighbors, friends, and relatives provide an important informal channel for households to obtain credit, especially in the absence of well-functioning financial markets (Besley and Levenson 1996, Fafchamps 2011).

Most of the existing studies, however, examine only the direct effect of a liquidity shock but do not consider the potential indirect effects of a liquidity shock on the entire community. Angelucci and Giorgi (2009), for instance, study both direct and indirect effects of a large social program on consumption, yet the authors' definition of the direct effect is equivalent to the 'effect on the treated.' It is important to consider that 'treated' households are also subject to spillover effects, since externalities may arise even if all households participate in the social program.

Moreover, it remains not very well understood how the direct and indirect effects of a liquidity shock on migration vary across different types of households. In the PRC, for instance, ethnicity is likely to play an important role that conditions the effects (direct and indirect) of a liquidity shock on migration. Relative to the Han majority, the PRC's ethnic minorities tend to have lower rates of migration (Howell, Gustafsson, and Ding 2017), receive fewer remittances that get sent back to the rural origins (Howell 2017), and exhibit significantly higher rates of poverty (Gustafsson and Ding 2009).

A natural question that arises is whether ethnic minorities' lower mobility is due, at least in part, to facing comparatively higher credit constraints that preclude them from engaging in migration. Extant literature from the United States contends that ethnic minorities tend to face larger binding credit constraints due to a moral hazard problem, precluding them from having the same opportunities as the ethnic majority to interact with formal financial institutions (Bond and Townsend 1996). If a similar situation exists in the PRC, then ethnic minorities may be more strongly affected by a liquidity shock via either direct or indirect effects.

To account for questions about ethnicity and migration, I compare the direct and indirect effects of the MLSA program on the migration decision for Han and ethnic minority households. To do this, I rely on proprietary household data obtained from the China Household Ethnic Survey (CHES) project.[1] The CHES data offers the first and only source of detailed socioeconomic, employment, and demographic information for Han and ethnic minorities and is nationally representative of the PRC's ethnic minority areas. Over 7,000 households are included in the sample, half of which are from ethnic minority groups, including Hui, Tibetan, Uyghur, Miao, Zhuang, Dong, and many others.

The obvious drawback of the CHES data is that the data are observational rather than being obtained from a random controlled trial—the gold standard for impact evaluations like the one studied in this paper. Moreover, the CHES project contains only one wave of information from 2011, presenting additional estimation difficulties in identifying program effects. One key identification issue, for instance, is that the assignment of participants into the MLSA program is not random. Nevertheless, the total program effect can be identified by comparing program coverage across villages, but not comparing individuals in the same village.

Identification of the total effect is based on the institutional features of the MLSA program. That is, coverage is strongly driven by observables meaning that program coverage at the village level is likely to be independent of unobserved social conditions once differences in economic development across village conditions and location fixed effects are controlled for. As a robustness check, the instrumental variable (IV) approach is used to verify the independence assumption. Next, the total program effect can be broken down into its indirect effect based on a set of verifiable assumptions, and the direct effect can be estimated as the difference between the total and indirect parts.

This paper attempts to help advance a rapidly evolving body of literature that studies the role of credit constraints on migration. The main contribution to the literature is the attempt to study the direct and indirect effects of targeted cash transfers on rural-to-urban migration in the PRC and comparing the effects across different ethnic groups. This study also potentially provides important guidance for policy makers in the PRC. Understanding how targeted cash transfer programs help reduce credit constraints and spur migration could prove to be vital in helping to alleviate, at least

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[1] See the appendix section in Gustafsson et al. (2018) (in Chinese) for detailed discussion about the CHES project and data-collection process.

partially, the current labor shortage problems facing the PRC's urban cities. Second, reducing poverty in ethnic minority regions remains the most crucial and challenging part of the PRC's poverty alleviation programs. Policies that spur migration of ethnic minorities, in particular, will help boost their household incomes, and in aggregate, increase the economic well-being of ethnic minority communities.

The structure of this paper is as follows. The subsequent section presents a brief discussion about the PRC's MLSA program. Section 3 introduces the data followed by the model setup in Section 4. Sections 5 and 6 present the main results. Section 7 concludes.

II. MINIMUM LIVING STANDARD ASSISTANCE PROGRAM BACKGROUND

In the PRC, MLSA is the country's primary social protection program. Initially, MLSA was implemented as a temporary program to help those adversely affected by economic reforms and, in particular, large-scale dismantling of state-owned enterprises in the 1990s. MLSA eventually became a core component of the PRC's antipoverty program, adopted nationwide in 2007, helping to lift millions of households out of poverty.

A key feature of the central MLSA policy regulation is that it is decentralized, meaning that program coverage varies quite considerably across different localities. This spatial variation in program coverage gets determined at the county level and is strongly driven by the preexisting levels of poverty and other development conditions (World Bank 2011). To determine eligibility within villages, local officials use a range of information about the household, including income, assets, housing conditions, as well as whether the household includes members that cannot work or have an illness or disability (Poverty Alleviation Office of the State Council 2010). Relying on their local knowledge and close proximity, village leaders are generally appointed to help identify and screen potential beneficiaries.

In general, the transfer amount that eligible households receive depends on both the household income as well as the level of the local MLSA threshold. The MLSA transfer amount is intended to increase the income of the recipients to meet the local MLSA threshold. However, due to the difficulties in estimating household income, the 2007 national policy allowed local officials to classify households into one of three different tiers according to their apparent level of poverty and to set fixed benefit amounts associated with each tier (World Bank Social Protection Group 2010).

The official statistics presented in Table 1 show that transfers to rural individuals provided by the rural MLSA program increased from 36 million in 2007 (4.9% of the rural population) to 53 million individuals by 2012 (8% of the rural population). In terms of coverage, the MLSA program alone far outnumbers the 17.9 million participants covered by all other rural poverty relief programs (Ministry of Civil Affairs 2012). Government spending also grew rapidly with the average transfer amount increasing from CNY466 per recipient in 2007 (CNY11 billion total) to CNY1,344 per recipient in 2012 (CNY72 billion total).

Table 1: Official Statistics for the Rural Minimum Living Standard Assistance Program of the People's Republic of China

	Rural MLSA Recipients (million)	Rural MLSA Transfers (CNY million)	National Average Rural MLSA threshold (CNY per person per year)	National Average Rural MLSA Transfer (CNY per recipient per year)
2007	35.66	10,910	840	466
2008	43.06	22,873	6,269	605
2009	47.60	36,300	1,210	816
2010	52.14	44,500	1,404	888
2011	53.06	66,770	1,718	1,273
2012	53.45	71,820	2,003	1,344

MLSA = minimum living standard assistance.
Notes: MLSA transfers include transfers from all levels of government. The average transfer is calculated as total rural MLSA transfers divided by the number of recipients.
Sources: National Bureau of Statistics of China (2012) and Ministry of Civil Affairs (various years).

Coinciding with its expansion, recent reports highlight a number of program challenges that exist, including targeting error and other irregularities (World Bank 2011). Despite these issues, expanding MLSA coverage has played an important role in helping the PRC to achieve its unprecedented success in reducing poverty levels. Several studies, for instance, find that the MLSA program led to significant reductions in the poverty level in both rural and urban areas (World Bank 2011, Luo and Sicular 2013, Ravallion 2009).

III. DATA

The main data source comes from the 2012 wave of the CHES data, which was collected by the Chinese Academy of Social Sciences and implemented under the auspices of the National Bureau of Statistics. The CHES sample represents the first large-scale attempt to collect nationally representative data for the PRC's ethnic minority areas with the main objective to investigate the economic and social conditions of people in minority areas.

Included in the CHES data is detailed socioeconomic, income, and employment information for more than 30,000 individuals in over 7,000 households across seven provinces and autonomous regions with high minority populations. See Figure 1 for the CHES sampling locations and Table A1 in Appendix 1 for a list of the household and village characteristics. The ethnic composition of the CHES data is approximately 50% Han and 50% minority households. Besides the Han majority, the CHES sample includes information on the following main large ethnic minority groups: Hui, Tibetan, Uyghur, Miao, Dong, Zhang, and an 'Other' category that includes 27 smaller ethnic minority groups.

Figure 1: 2012 China Household Ethnic Survey Rural Sampling Locations
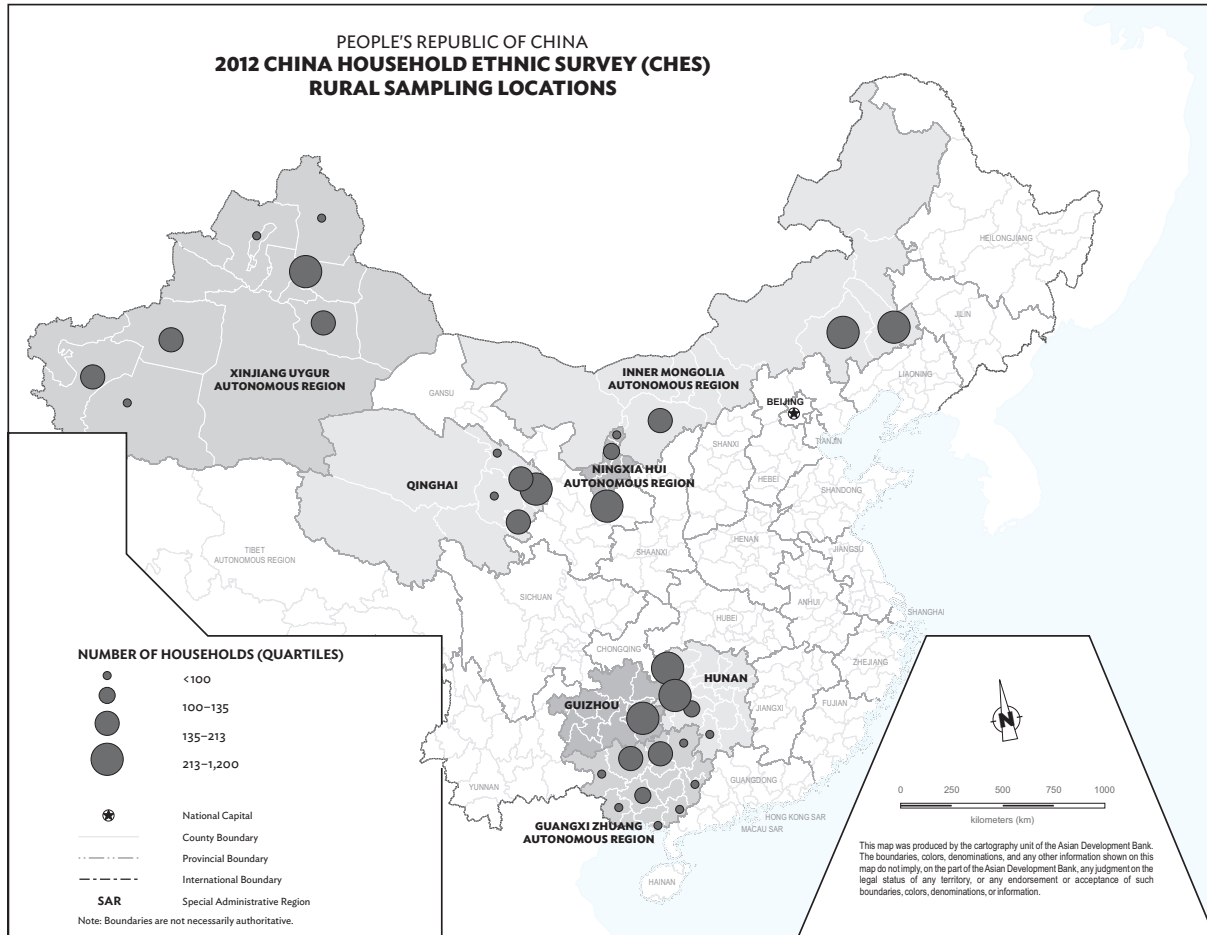
Source: China Household Ethnic Survey. 2012.

Table 2 shows that participation in the MLSA program varies substantially among local villages. On average, 9% of households in villages located in Inner Mongolia Autonomous Region participate in the MLSA program compared to 21% of households in villages located in Guizhou. Within each province there are some villages where no households receive MLSA assistance and, in other cases, more than half of the households receive MLSA assistance. Note that the average percentage within each province is higher than the national rural average of 8%. This is due to the sampling design that targets minority areas, which tend to be in poor regions of the PRC with a higher number of households that qualify for MLSA assistance.

Table 2: Minimum Living Standard Assistance Coverage by Geographical Location

	Villages	CHES Sample (No. of Individuals)				Prop. of MLSA Participants			
	(No.)	Mean	SD	Min	Max	Mean	SD	Min	Max
Inner Mongolia Autonomous Region	50	115.8	70.4	21	283	0.091	0.108	0	0.455
Hunan	59	101.6	65.3	23	294	0.113	0.102	0	0.423
Guangxi	74	97.9	69.5	33	323	0.101	0.106	0	0.385
Guizhou	61	125.6	72.2	37	323	0.210	0.182	0	0.795
Qinghai	60	114.4	58.4	20	323	0.142	0.105	0	0.491
Ningxia	50	119.2	62.9	25	323	0.186	0.175	0	0.765
Xinjiang	52	114.0	62.4	30	283	0.145	0.153	0	0.812

CHES = China Household Ethnic Survey, MLSA = minimum living standard assistance, SD = standard deviation.
Source: CHES project.

Table 3 reports information on household participation in the MLSA program, migration and human capital attainment across different ethnic groupings. On average, participation in MLSA is nearly twice as high for ethnic minority households (17%) versus Han households (9%). Table 3 also shows that ethnic minority households are less likely to migrate than their Han counterparts, where a migrant household is defined as any household with at least one family member who left the hometown for the purposes of work for a duration of at least 6 months. Considerable heterogeneity exists across minority groupings. Zhuang households, for instance, have the lowest MLSA participation rates (7.8%), are among the most mobile (50.4%), and have the highest Mandarin fluency (23.6%). This is a stark contrast to Uyghurs who have the highest MLSA participation rates (21.2%), are the least mobile (7.8%), and have the lowest Mandarin fluency (3.8%).

Table 3: Minimum Living Standard Assistance Coverage, Migration and Human Capital by Ethnicity

	Households (No.)	Participation in MLSA	Migrant Household	Education (Years)	Mandarin Fluency
Han	3,145	0.086	0.460	7.194	0.354
All minorities	4,622	0.169	0.338	6.700	0.168
- Hui	616	0.195	0.337	5.919	0.200
- Tibetan	329	0.169	0.094	6.186	0.135
- Uyghur	513	0.212	0.078	6.916	0.038
- Miao	1,070	0.235	0.543	6.663	0.152
- Dong	589	0.182	0.478	7.182	0.197
- Zhuang	421	0.078	0.504	7.072	0.216
- Other minority	1,046	0.112	0.335	6.963	0.238

MLSA = minimum living standard assistance.
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

IV.   EMPIRICAL FRAMEWORK

Taken from the view that migration is an investment (Sjastaad 1962), the decision to migrate occurs when the benefits exceed the costs and is a function of the difference between home wages and expected wages in the destination (Harris and Todaro 1970). Even when the expected wages in the destination outweigh the wages at home, credit constraints may prevent some households from sending a migrant if they are unable to finance the upfront costs necessary to finance the migration trip. In particular, poor households are typically unable to save or borrow from formal institutions due to lack of collateral and can face binding credit constraints that will restrict their participation in migration. Under these conditions, a liquidity shock from the MLSA program could increase migration at the extensive margin by reducing credit constraints among poorer households that otherwise would not possess sufficient resources to finance the upfront migration costs. Yet, it is noted that poverty alleviation policies improve the local conditions in the rural origins, and may therefore reduce the incentives to migrate (Harris and Todaro 1970, Clemens 2014).

To obtain the total program effects, suppose the migration decision is modeled in the following linear way:

$$m_{iv} = \beta_0 + \beta_1 d_{iv} + \beta_2 \bar{d}_v + \beta_3 X_{iv} + u_{iv},$$ (1)

where m_{iv} is the decision of household i located in village v to engage in migration   (0 = No, 1 = Yes). In accordance with the legal definition of migration in the PRC, the migrant household is defined as any household that has at least one member that left the hometown for at least 6 months in 2011 for the purposes of work. d_{iv} is the individual treatment indicator for receiving MLSA benefits where a 1 is assigned for MLSA beneficiaries and 0 otherwise. $\bar{d}_v$ is the treatment coverage in village v, calculated as the share of households that receive MLSA in the village. u_{iv} is the zero mean disturbance term. Following equation (1), the coefficient on β_1 is the direct effect of the MLSA intervention on individuals, the coefficient on β_2 is the indirect effect of the intervention on individuals.

Finally, X_{iv} is a set of household characteristics and village conditions that are expected to be correlated with the decision to migrate based on the existing literature. Household characteristics include household ethnicity, proportion of females, average size, average age, average educational attainment, proportion with language skills, all of which serve as proxies for human capital. Dependence rate and available per capita arable land take into account family structure and physical capital. Communist party membership indicates better political connections, which could improve chances of being selected as a program beneficiary.

In addition, village characteristics are also included. Numerous proxies for physical endowment, pubic investments, natural disasters, and political connections are included to further take into account differences in economic development across villages. See Table A1 in Appendix 1 for a list of all the household and village controls, along with their summary statistics. Finally, since decisions about targeting of MLSA generally take place at the county level, county-level fixed effects are included to control for unobservables that could simultaneously influence MLSA coverage and participation in migration.

It could be argued that the location fixed effects do not eliminate concerns about potential bias as a result of within and between village targeting. Including a diverse set of village controls that proxy for level of development help reduce endogeneity concerns that arise from omitted variable bias.

Once controlling for county-level fixed effects and differences in economic development at the village level, program coverage is likely to be independent of unobserved social conditions and can be estimated using ordinary least squares (OLS).

This assumption is violated, however, if the distribution of benefits within villages is systematically correlated to unobservables, meaning some households are more likely to receive program benefits than others. This is because the assignment of benefits at the village level can still be self-selective even though the program coverage is defined at the local level. To deal with this issue, an IV framework is employed. For identification, it is required to find an appropriate instrument that influences program coverage but is conditionally independent of the disturbance term. In this case, historical data for the 1992 real per capita income of each village is used to serve as an instrument (See Table A2 in Appendix 2 for additional details).

Heterogeneous Credit Constraints across Ethnic Households

Differences in ethnicity can result in differences in the propensity to migrate in the PRC (Gustafsson and Yang 2015; Howell, Gustafsson, and Ding 2017). There are potentially many channels through which this can occur, but for the present context focus is placed on the degree of access to credit. Developing countries suffer from weak financial institutions. This creates a problem of moral hazard in credit transactions particularly when lenders and borrowers are from different ethnic groups. Differences in access to credit can arise when lenders believe certain groups (e.g., ethnic minorities) are less productive (e.g., lower credit quality), which in turn, threatens to reduce lenders' profits.

Note that the assumption of no access to credit is plausible for MLSA beneficiaries who are concentrated at the bottom of the income distribution and lack sufficient collateral necessary for borrowing. However, the assumption of no-borrowing is violated for the large proportion of households, especially those located along the middle and upper ends of the distribution. Identification of the indirect effects for Han and minority households can potentially reveal differences in credit constraints as stated by the following proposition.

As noted in Bond and Townsend (1996), the frequency and quantity of credit transactions between potential lenders, in this case Han-dominated institutions, and ethnic minorities can become very limited. As a risk-sharing strategy, ethnic minorities may therefore become more dependent on interpersonal lending within their own ethnic community as a way to cover the costs associated with migration. In this case, the coefficient on the indirect effects of the MLSA program on ethnic minorities will be larger than the one for their Han counterparts.

V.   RESULTS

Table 4 presents the results of the total effect of increasing local coverage of MLSA on the probability that the household engages in migration. Controlling for household characteristics, Column (1) shows that the relationship between MLSA coverage and migration is negative and statistically significant. Despite including household-level controls, including human and physical capital, the results are biased due to the program targeting the poorest villages. After including county-level fixed effects starting in Column (2), the estimated relationship becomes positive in all other models.

While adding county-level fixed effects controls any unobserved social conditions that may simultaneously influence program coverage at the county level and the migration decision, they do not eliminate concerns about within and between village targeting. In Column (3), an extensive set of village-level controls are included into the model that take into account differences in development conditions across villages. The coefficient on MLSA in Column (3) increases only slightly in size suggesting that the results are not biased by unobservable social conditions at the village level. A 10 percentage point increase in local coverage raises the probability of migration level by 0.34 percentage points.

Table 4: Total Effect of Minimum Living Standard Assistance Cash Transfer on Migration

| | Migrant Household (1 = Yes, 0 = No) | | | | | |
| | OLS | | | IV | | |
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
MLSA coverage	−0.043	0.032	0.034	0.037	0.039	
	(0.007)	(0.009)	(0.010)	(0.017)	(0.018)	
MLSA participant						0.036
						(0.015)
Household Characteristics						
Ethnic minority	−0.014	−0.023	−0.020	−0.025	−0.022	−0.026
	(0.006)	(0.008)	(0.009)	(0.013)	(0.013)	(0.014)
Prop. of females	−0.039	−0.015	−0.007	−0.019	−0.012	−0.022
	(0.019)	(0.019)	(0.025)	(0.019)	(0.027)	(0.040)
Number of working adults	0.135	0.118	0.093	0.119	0.093	0.101
	(0.010)	(0.010)	(0.013)	(0.010)	(0.013)	(0.021)
Average age	−0.126	−0.158	−0.171	−0.157	−0.173	−0.158
	(0.017)	(0.017)	(0.022)	(0.017)	(0.022)	(0.037)
Average education	0.002	0.004	0.005	0.007	0.008	0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
Prop. fluent in mandarin	−0.017	−0.014	−0.024	−0.016	−0.026	−0.032
	(0.008)	(0.008)	(0.011)	(0.008)	(0.011)	(0.020)
Prop. household members with disability	−0.206	−0.193	−0.156	−0.156	0.107	−0.116
	(0.138)	(0.112)	(0.103)	(0.109)	(0.092)	(0.078)
Dependency rate	−0.201	−0.197	−0.187	−0.194	−0.184	−0.152
	(0.010)	(0.010)	(0.013)	(0.011)	(0.014)	(0.071)
Political connection	−0.014	−0.005	0.008	−0.002	0.012	0.019
	(0.007)	(0.007)	(0.009)	(0.008)	(0.011)	(0.024)
Per capita arable land (mu)	−0.002	−0.001	−0.001	−0.001	−0.001	−0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of durable goods	0.009	0.012	0.010	0.021	0.017	0.024
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.010)
Local Village Conditions						
Per capita income (CNY)			0.048		0.069	0.054
			(0.016)		(0.028)	(0.013)
Prop. households with poor sanitation			0.096		0.071	0.042
			(0.029)		(0.023)	(0.017)
Village per capita arable land (mu)			−0.006		−0.006	−0.006
			(0.002)		(0.002)	(0.002)

continued on next page

Table 4 *continued*

Dependent Variable	Migrant Household (1 = Yes, 0 = No)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Prop. farm production			0.001		0.001	0.001
			(0.000)		(0.000)	(0.000)
Infrastructure investment			0.014		0.011	0.010
			(0.008)		(0.010)	(0.011)
Primary education investment			0.036		0.038	0.030
			(0.011)		(0.011)	(0.017)
Village political connection			0.006		0.006	0.009
			(0.008)		(0.008)	(0.010)
Natural disaster			0.006		0.010	0.022
			(0.010)		(0.012)	(0.034)
Mountainous area			0.055		0.070	0.091
			(0.020)		(0.032)	(0.075)
Distance to primary school (km)			0.003		0.001	0.001
			(0.004)		(0.006)	(0.006)
Distance to transportation center			−0.001		0.001	0.005
(km)			(0.004)		(0.005)	(0.013)
County-level fixed effect	No	Yes	Yes	No	Yes	Yes
Adjusted R-squared	0.045	0.290	0.328	0.309	0.332	0.349
No. of households	7,767	7,767	7,767	7,767	7,767	7,767

IV = instrumental variable, km = kilometer, MLSA = minimum living standard assistance, OLS = ordinary least squares.
Notes: Standard errors are reported between parentheses and are clustered by village. Column (1) presents the regression coefficients obtained by OLS. Column (2) adds county-level fixed effect. Columns (3)–(5) present the coefficients from the IV regression with 'MLSA coverage' and 'MLSA participant' instrumented by village per capita income in 1992; mu = 0.16474 acres or 666.67 square meters.
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

Column (4) relaxes Assumption 1 by instrumenting MLSA coverage with historical county income information. As predicted by Proposition 1 (e.g., selection bias does not affect the estimates for the total effect of program coverage), the coefficient on MLSA coverage is not significantly different from the one in Column (3), albeit slightly larger in magnitude. Column (5) replaces the local MLSA coverage variable with the dummy of individual benefit using the same IV approach as in Column (4). As expected from Proposition 1, the estimated coefficient barely changes because the local-level IV makes observations be compared between villages and not within villages. Therefore, the coefficients of local coverage may be interpreted as the total effect of the program on eligible individuals in case they receive the benefit.

Checks for Confounding Factors and Robustness

Table 5 takes into account the possibility that confounding factors could be driving the results above. One key concern is that the MLSA program coverage may be strongly correlated to other social programs.[2] In order to test whether the results are driven by other antipoverty efforts, Columns (1) and (2) present the OLS and IV estimates after removing from the sample the households that received cash transfers from the five-guarantees (*Wubao*) program, the PRC's second-largest antipoverty program.

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[2]   Note that Columns (4)–(5) in Table 4 above add several village characteristics that help to control, in part, for other social programs, although their coverage is not directly taken into account.

The size of the coefficients are very similar to above, thus indicating that the estimated results do not seem to be a consequence of other targeted cash transfers like *Wubao*.

Table 5: Checks for Confounding Factors and Robustness

	Migrant Household (1 = Yes, 0 = No)					
	Confounding Factors				Falsification	
					Test Only Older and Higher Educated Sample	
	Wubao Program		Emigration			
	OLS	IV	OLS	IV	OLS	IV
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
MLSA coverage	0.034	0.036	0.037	0.040	0.028	0.032
	(0.011)	(0.016)	(0.013)	(0.020)	(0.021)	(0.034)
County-level fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.213	0.198	0.211	0.209	0.351	0.344
No. of households	6,412	6,412	6,941	6,941	1,546	1,546

IV = instrumental variable, MLSA = minimum living standard assistance, OLS = ordinary least squares.
Notes: Standard errors are reported between parentheses and are clustered by village. Columns (1) and (2) present the OLS and IV estimates after removing from the sample the households that received cash transfers from the five-guarantees (*Wubao*) program, the People's Republic of China's second-largest antipoverty program. Columns (3) and (4) present the OLS and IV estimates after removing all households that had changed their local *hukou* (household registration system) status within the previous 5 years. Columns (5) and (6) present the OLS and IV estimates after including only the sample of households where the household head has at least a high school degree and is at least 30 years of age.
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

Another potential confounding factor is that rather than encouraging households to migrate, the MLSA program might have promoted households to relocate to highly covered areas, who may in turn be more likely to send a household member(s) to work back in the original location or some other place. Columns (3) and (4) present the OLS and IV estimates after removing all households that had changed their local *hukou* (household registration system) status within the previous 5 years. The results are similar to the ones presented above, indicating that the estimated effects are not likely to be due to changes in the composition of workers in the labor force, but rather to changes in their decisions.

Next, a 'falsification test' is offered by examining populations that should not be directly affected by the MLSA program coverage. Columns (5) and (6) present the OLS and IV estimates after including only the sample of households where the household head has at least a high school degree and is at least 30 years of age. The results return statistically insignificant coefficients, helping to confirm that the findings are driven by the decisions of households in which the program is intended to affect.

VI. COMPARING THE DIRECT AND INDIRECT PROGRAM EFFECTS ON MIGRATION

Table 6 reports the results for the direct and indirect effects of the MLSA program on migration. As outlined in Proposition 2, in order to estimate the indirect effect it is first necessary to verify that it is homogenous. If the total effect of the program is linear, then the indirect effect is homogenous for the chosen sample. The first column shows that the quadratic term for the total effect of local MLSA coverage is nearly zero and not statistically significant.

Table 6: Nonlinear, Indirect, and Direct Minimum Living Standard Assistance Effects on Migration

| Dependent Variable | Migrant Household (1 = Yes, 0 = No) | | | | |
| | All Sample | Non-MLSA Participants Only | | All Sample | |
	OLS (1)	OLS (2)	IV (3)	OLS (4)	IV (5)
MLSA coverage	0.085	0.066	0.071	0.065	0.069
	(0.041)	(0.020)	(0.031)	(0.025)	(0.033)
Squared MLSA coverage	0.031				
	(0.088)				
MLSA participant				−0.029	−0.034
				(0.009)	(0.015)
R-squared	0.212	0.216	0.196	0.206	0.199
County-level fixed effect	Yes	Yes	Yes	Yes	Yes
No. of households	7,767	6,269	6,269	7,767	7,767

IV = instrumental variable, MLSA = minimum living standard assistance, OLS = ordinary least squares.
Notes: Standard errors are reported between parentheses and are clustered by village. Column (1) presents the OLS model with quadratic effect of MLSA coverage. Columns (2) and (3) present the OLS and IV estimates for the indirect effect on individuals who do not participate in the MLSA program. Columns (4) and (5) present the OLS and IV estimates for the indirect effect (MLSA coverage) and direct effect (MLSA participation).
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

As a result of not rejecting the linear total effect assumption, the indirect effect of the program can be estimated using only the sample of individuals who are not in the program. Columns (2) and (3) show the results. The indirect effect is positive and statistically significant. The size of the coefficients indicate that the indirect effect is greater than the total effect discussed above, suggesting that the direct effect should be negative.

Negative direct effects are indeed revealed in Columns (4) and (5), where the model estimations include program intervention at both the local (indirect effect) and individual level (direct effect). In Column (5), the coefficient on the direct effect is negative and statistically significant, indicating that cash transfers from MLSA program reduces the probability of beneficiaries to engage in migration by 0.34 percentage points. By contrast, the amount of cash transfers to poor villages seems to stimulate outmigration, with a 10 percentage point increase in program coverage increasing the rate of migration of the eligible population by 0.69 percentage points.

A.   Potential Mechanisms

The existing literature contends that the indirect effects of welfare programs are driven by the existence of risk-sharing strategies within communities (Angelucci and Giorgi 2009). Applied to the current context, the MLSA program increases liquidity in the community by stimulating informal credit and private transfers between households. These private transfers, in turn, serve an important liquidity shock to raise migration despite the fact that migrant households do not receive cash transfers directly from the MLSA program.

Information on households' lending and borrowing behavior can be used to help confirm empirically whether or not indirect effects of MLSA result from an increase in interpersonal lending.

Figure 2 shows the probability of MLSA participant households to lend money to another household across the income distribution. The results show that MLSA beneficiaries are indeed more likely to transfer money to another household at each decile except for the top one.

Figure 2: Probability of Transferring or Lending Money to Another Household

MSLA = minimum living standard assistance.
Source: Author's calculations based on China Household Ethnic Survey 2012 data. See the appendix section in Gustafsson, Hasmath, and Sai (2018) (in Chinese) for detailed discussion about the CHES project and data-collection process.
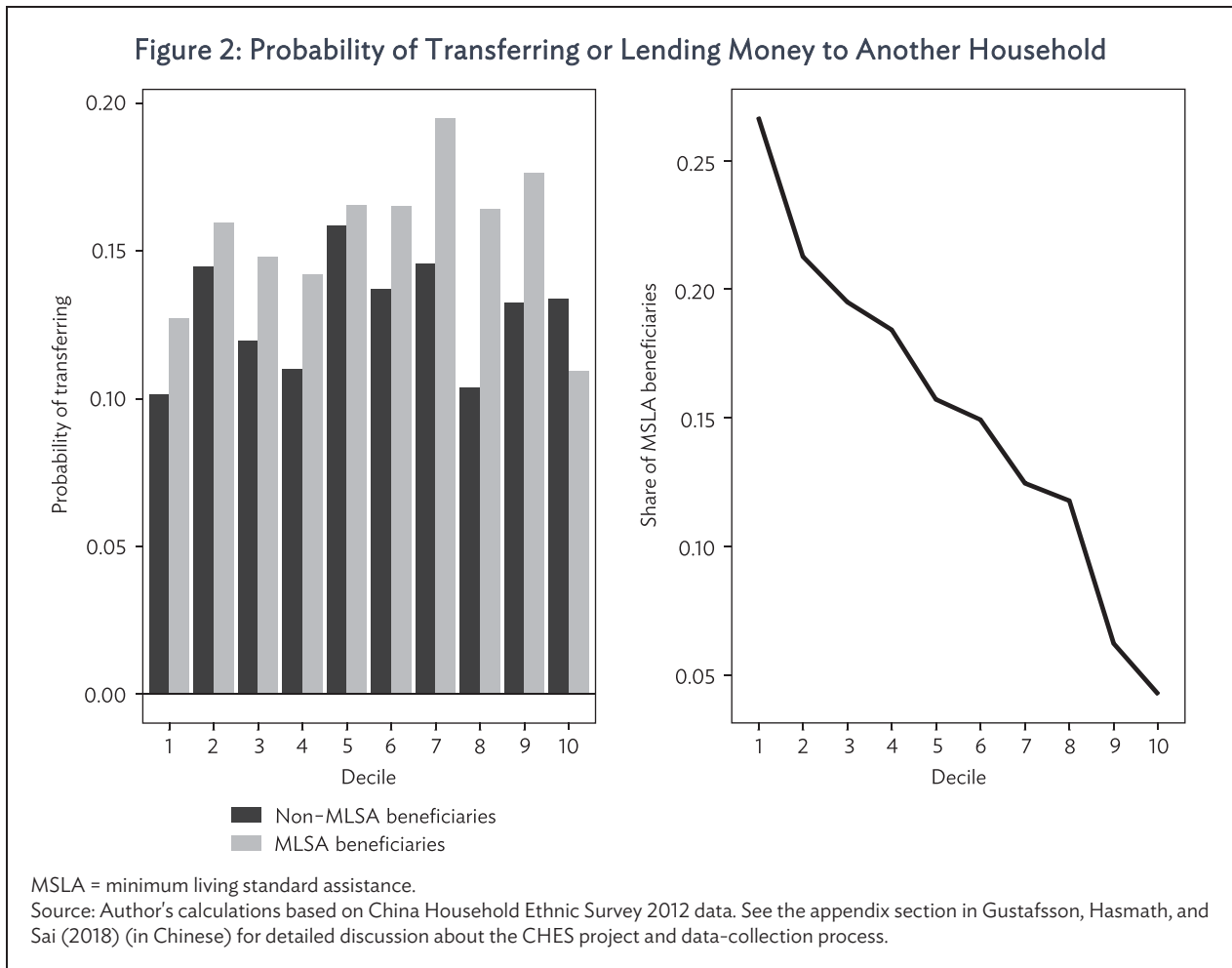
Columns (1) and (2) in Table 7 help confirm the descriptive findings, mainly that MLSA beneficiaries are more likely to become lenders. In Columns (3) and (4), the estimated effect of MLSA coverage on the probability of borrowing for individuals out of the program is positive and significant. A 10 percentage point increase in local coverages raises the probability of borrowing money between 1.42 and 1.55 percentage points. The results suggest that the higher proportion of MLSA beneficiaries in the village, the higher the probability of being financially helped by another household.

Table 7: Direct and Indirect Effects of Minimum Living Standard Assistance
on Private Transfers and Migration

	Migrant Household (1 = Yes, 0 = No)					
	Lender		Indirect Effect (Non-MLSA Participants Only)			
			Borrower		Migration	
	OLS	IV	OLS	IV	OLS	IV
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
MLSA participant	0.074	0.081				
	(0.014)	(0.032)				
MLSA coverage			0.142	0.155	0.146	0.165
			(0.050)	(0.068)	(0.051)	(0.069)
Borrower residual					0.135	0.161
					(0.045)	(0.064)
MLSA coverage × Borrower residual					0.271	0.295
					(0.091)	(0.121)
County-level fixed effect	Yes	Yes	Yes	Yes	Yes	
R-squared	0.212	0.216	0.196	0.206	0.199	
No. of households	7,767	6,269	6,269	7,767	7,767	

IV = instrumental variable, MLSA = minimum living standard assistance, OLS = ordinary least squares.
Notes: Standard errors are reported between parentheses and are clustered by village. In Columns (1) and (2), the outcome is the probability that MLSA participants become a lender. In Columns (3) and (4), the outcome is the probability of borrowing for individuals out of the MLSA program. The columns present the OLS and IV estimates for the indirect effect on individuals who do not participate in the MLSA program. In Columns (5) and (6), the outcome is the probability of migrating. 'Residual transfers' are predicted based on the estimated parameters obtained in Columns (3) and (4). The interaction term between 'residual transfers' and 'MLSA coverage' shows how much the effect of MLSA on migration increases given an unexpected rise in private transfers.
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

The parameters estimated in Columns (3) and (4) are used to first predict a residual term for household borrowing. Then, an interaction term is included between the borrowing residual proxy and MLSA coverage in Columns (5) and (6). The results show that the indirect effect on migration is larger where private transfers have increased. While not providing a causal mechanism, the findings support the hypothesis that the indirect effect is stimulated by informal credit through private transfers.

B.   Heterogeneous Credit Constraints across Ethnic Groups

Table 8 compares the size of the direct and indirect effects of the MLSA program on migration for Han and ethnic minorities. Ethnic minorities may face larger credit constraints forcing them to rely more heavily on informal ethnic lending to cover the costs associated with migration. Thus, the parameter coefficient on the indirect effects should be larger for ethnic minority households relative to their Han counterparts. Note that separate regressions are first carried out for each regression to verify that the total effect is linear for each ethnic subgrouping.

The results in Columns (1) and (2) confirm expectations. The size of the coefficient on ethnic minorities is twice as large as the one for Han households irrespective of whether OLS or IV is used. The indirect effect is largest for Miao, yet fails to have any statistically significant effect for Tibetans and Uyghurs. Thus, while ethnic minorities appear to generally rely more on interpersonal lending to

finance their migration trips, the strength of those informal networks depends significantly on the particular minority group.

Table 8: Direct and Indirect Effects of Minimum Living Standard Assistance on Migration by Ethnic Groups

	Migrant Household (1 = Yes, 0 = No)								
Dependent Variable	Han	All Minority	Hui	Tibetan	Uyghur	Miao	Dong	Zhuang	Other Minority
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS									
MLSA coverage	0.044	0.087	0.113	0.040	0.077	0.162	0.079	0.104	0.125
	(0.012)	(0.022)	(0.027)	(0.029)	(0.051)	(0.019)	(0.023)	(0.039)	(0.054)
MLSA participant	0.011	−0.034	−0.024	−0.014	−0.016	−0.104	0.037	0.021	−0.178
	(0.012)	(0.010)	(0.018)	(0.006)	(0.007)	(0.055)	(0.023)	(0.019)	(0.019)
County-level fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.089	0.062	0.067	0.044	0.040	0.034	0.104	0.149	0.078
No. of households	3,145	4,622	616	329	513	1,070	589	421	1,046
Panel B: IV									
MLSA coverage	0.048	0.094	0.117	0.052	0.084	0.171	0.084	0.110	0.131
	(0.020)	(0.034)	(0.047)	(0.062)	(0.072)	(0.056)	(0.041)	(0.045)	(0.061)
MLSA participant	0.015	−0.032	−0.022	−0.011	−0.010	−0.980	0.042	0.028	−0.067
	(0.021)	(0.016)	(0.021)	(0.006)	(0.006)	(0.067)	(0.064)	(0.027)	(0.024)
County-level fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.086	0.029	0.067	0.042	0.040	0.034	0.105	0.147	0.042
No. of households	3,145	4,622	616	329	513	1,070	589	421	1,046

IV = instrumental variable, MLSA = minimum living standard assistance, OLS = ordinary least squares.
Notes: Standard errors are reported between parentheses and are clustered by village. Column (1) includes only the Han subsample, while Column (2) includes only ethnic minorities. Columns (3)–(9) include the specific ethnic minority groups. Panel A reports the estimated coefficients from OLS, while Panel B reports the IV coefficients.
Source: Author's calculations based on China Household Ethnic Survey 2012 data.

It appears that the negative direct effect on migration is driven by the incorporation of a large amount of ethnic minorities into the sample. With the exception of Dong, receiving MLSA benefits for the other ethnic minority groups reduces their likelihood of migrating. It is unlikely that these results are due to differences in credit constraints, since all households that receive MLSA are assumed to be unable to borrow due to insufficient collateral.

Why does directly participating in MLSA reduce migration for most ethnic minority groups, but not the Han majority? An alternative explanation is that poorer ethnic minorities face additional obstacles to migration, such as lacking access to information and insufficient language skills. Another reason is cultural or religious preferences that make poorer ethnic minorities less likely to migrate even after credit constraints are reduced. A third plausible explanation, and supported empirically, is that poorer ethnic minority households that receive MLSA assistance prefer to lend through informal ethnic channels to more capable or willing members of their community.

VII. CONCLUSION

Low mobility among poor households and increasing ethnic inequality in rural areas, combined with labor shortages in urban areas, present a complex set of challenges that the PRC faces. Boosting migration via reducing credit constraints highlight the potential role that targeted cash transfer programs can have on helping to mitigate, at least partially, some of these social challenges. This paper investigated the impact of MLSA, the largest antipoverty program in the PRC, on the migration decision. Focus is placed on comparing both the direct and indirect program effects across Han and ethnic minority households.

The main results are as follows. Despite a negative direct effect, the total net effect of the MLSA program is positive. As the MLSA program grows 10 percentage points, the migration rate increases between 0.28 and 0.35 percentage points on average. The positive net effect is driven almost entirely by the indirect effects, where the liquidity injected into poor rural villages via the MLSA program helps to spur migration.

As suggested by Angelucci and Giorgi (2009), a plausible explanation for the positive indirect effect is due to the existence of risk-sharing strategies between households within the same community that help to promote an informal credit market once the program arrives. In line with this explanation, the supporting evidence presented in this paper shows that beneficiary households are more likely to become informal lenders, and nonbeneficiaries are more likely to receive private transfers in areas with higher program coverage. In addition, the indirect effect on migration is larger in villages with a higher increase in private transfers. Importantly, credit constraints are heterogeneous across different households.

The indirect effects, for instance, of the MLSA program on labor migration are more than twice as large for ethnic minority versus Han households. In line with the extant literature in the United States (Bond and Townsend 1996), this finding helps to confirm that ethnic minority households face larger credit constraints, which limits the frequency and quantity of credit transactions between potential (Han-dominated) lenders and ethnic minorities. Ethnic minority communities must depend more heavily on interpersonal lending within their own ethnic community as a way to finance their migration trip.

While this paper reveals a number of important insights into the impacts of targeted cash transfer programs on migration and economic development more broadly, there are several ways to extend this research. Subsequent studies may wish to compare the direct and indirect effects of other types of programs, including conditional cash transfers and microfinance programs, on migration as well as other household decisions and whether those effects vary across different subpopulations. It is also important to develop further the ethnicity angle and better understand the different types of risk-sharing strategies for ethnic minorities in the PRC, as well as the reason why ethnic minorities tend to be less likely to migrate compared to Han even after credit constraints are relaxed.

APPENDIX 1: SUMMARY INFORMATION

Table A1: Summary Statistics

Statistic	Mean	SD	Min	Max
Household Characteristics				
Migrant household (1 = yes, 0 = no)	0.365	0.481	0	1
MLSA recipient	0.147	0.354	0	1
Ethnic minority	0.629	0.483	0	1
Prop. of females	0.485	0.144	0	1
Number of working adults	4.888	1.684	1	27
Average age of working adults	37.461	6.834	17	64
Average education	6.920	3.405	0	16
Prop. fluent in Mandarin	0.250	0.377	0	1
Prop. household members with disability	0.039	0.048	0	0.518
Dependency rate	0.478	0.510	0	5
Political connection (CPC member = 1, Non-CPC member = 0)	0.173	0.378	0	1
Per capita arable land	14.055	19.719	0	130
Number of durable goods	12.175	15.264	0	70
Local Village Conditions				
Per capita income (CNY)	2,693.765	1,407.619	190	9,800
Prop. households with poor sanitation	0.872	0.231	0	1
Per capita arable land (mu)	2.912	4.169	0	42.326
Prop. farm production	63.881	23.079	0	100
Infrastructure investment (1 = yes, 0 = no)	0.559	0.496	0	1
Primary education investment (1 = yes, 0 = no)	0.814	0.389	0	1
Political connection (Higher level official from village = 1, otherwise 0)	0.565	0.496	0	1
Natural disaster (1 = yes, 0 = no)	0.639	0.480	0	1
Mountainous area (1 = yes, 0 = no)	0.604	0.489	0	1
Distance to primary school (km)	0.816	0.991	0	7.601
Distance to transportation center (km)	1.787	1.089	0	4.875

CPC = Communist Party of China, km = kilometer, MLSA = minimum living standard assistance, SD = standard deviation.
Note: 1 mu is equal to 666.67 square meters.
Source: Author's calculations.

APPENDIX 2. INSTRUMENTAL VARIABLE STRATEGY

In the instrumental variable (IV) model, the village 1992 income is used to instrument for program coverage, $\bar{d}_v$:

$$\bar{d}_v = \gamma_0 + \gamma_1 Inc_{1992} + \theta_v + e_{iv} \tag{2}$$

Table A2 reports the results from the first-stage regression. The instrument is useful for identification since it is highly correlated to program coverage. The partial R-squared of a regression of program coverage on historical village income, controlling for the other covariates, is 0.609, and the first-stage F-statistic is 66. This strong correlation suggests that weak IV should not be a problem in this case.

Table A2: First-Stage Regression Results

Dependent Variable	MLSA Coverage			
	(1)	(2)	(3)	(4)
1992 County-level per capita income	−0.102***	−0.077***	−0.088***	−0.058***
	(0.002)	(0.003)	(0.005)	(0.006)
Village characteristics	No	Yes	Yes	Yes
County-level fixed effect	No	No	Yes	Yes
Household characteristics	No	No	No	Yes
Adjusted R-squared	0.386	0.424	0.596	0.609
F-statistic	294.229	150.069	117.861	66.099

MLSA = minimum living standard assistance.
Notes: *** denotes 1% level of significance. Standard errors in parentheses.
Source: Author's calculations.

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Targeted Cash Transfers, Credit Constraints, and Ethnic Migration in the People's Republic of China

This paper studies the effects of targeted cash transfers on rural–urban migration of Han and ethnic minority households in the People's Republic of China. It examines the Dibao antipoverty program using an instrumental variable framework. The findings imply that once liquidity is injected into a village it is circulated informally, which stimulates migration–particularly among credit-constrained minority communities. Overall, the cash transfer program spurs migration through these indirect or spillover effects, which are twice as large for ethnic minorities as for the Han majority.

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