Chapter 5

Migration and agriculture in Georgia

While the importance of agriculture to Georgia's GDP has declined, the sector continues to play an important role – contributing to the livelihoods of around half the population. Despite being one of the government's top priority sectors for development, agriculture suffers from a lack of access to finance, infrastructure, inputs and entrepreneurial skills. Many individuals have emigrated from agricultural households in Georgia to seek work in neighbouring countries. This chapter assesses the role played by migration in Georgia's farming sector, as well as the influence of agricultural policies on migration. The chapter presents analysis of data gathered from the IPPMD survey of 1 089 farming households across the country. The findings have policy relevance in terms of the role of government support to the labour market to fill shortages opened up by rural emigration, how remittances can be harnessed more productively, and the value of return migration.

Economic and social development in many countries has historically been accompanied by a move away from rural areas, and thus from agricultural activities. In many cases this movement tends to be internal, from rural to urban. However, rural areas have also been the source of emigration to international destinations in Georgia. Reflecting this trend, agriculture once played a vital role in the Georgian economy, but has decreased in importance since independence. While part of the decline can be attributed to a diversification of the economy, the sector is also held back by poor infrastructure, insufficient access to inputs and finance, and a lack of post-harvesting activities. Many individuals have thus emigrated from agricultural households in Georgia to seek work in neighbouring countries, although exact numbers are unknown. This – plus the links they have maintained with their households and home country – has brought change to the agricultural sector.

There are several components to this change. First, the departure of a member decreases the availability of labour within the household. Second, emigrated members may remit part of their earnings, which can ease household financial constraints and encourage productive investment: remittances can represent a vital life source for rural regions. Third, emigrants may return with new ideas, key contacts, and financial capital, which they can put to productive use, providing a general boost to the sector.

This chapter is divided into four parts. The first part provides a contextual overview of the agricultural sector in Georgia and the data collected for the IPPMD project in 2014. The second part discusses the impact of migration on Georgia's agricultural sector, drawing on the IPPMD survey analysis. The third part reviews the links between agricultural policies and migration outcomes, such as the decision to leave, remit and return. The chapter concludes with a discussion of the policy recommendations.

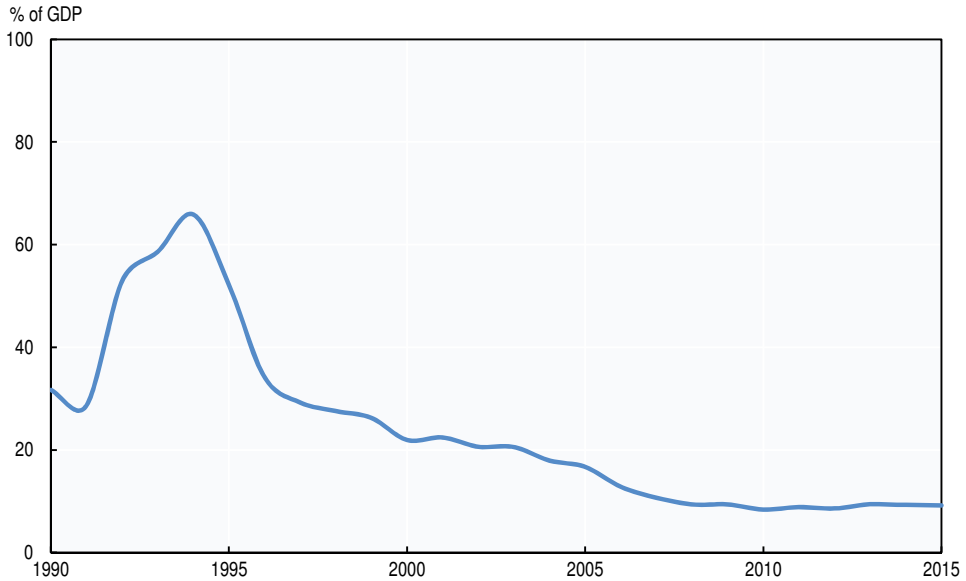
A brief overview of agriculture in Georgia

During the Soviet years, Georgia's agricultural sector was the subject of much attention, as the Soviet administration invested heavily in irrigating the country's arable land (FAO, 2009). Following its break with the USSR in April 1991 and subsequent regional conflicts, economic stagnation saw a crumbling of Georgia's non-agricultural sectors. Partly as a result, value-added in agriculture as a share of GDP ballooned to more than 60% (Figure 5.1), although agricultural irrigation systems were also largely destroyed by the conflict between 1991

and 1994 (FAO, 1997). In addition, the trade embargo imposed by Russia in 2006 diminished agricultural exports (AGM, 2012); since 2007 and as of 2015, the sector's contribution to gross domestic product (GDP) has settled down to about 9% (Figure 5.1). The value of agricultural production in 2013 was estimated at USD 862 million (FAO, 2016a), and a production per capita index measured at 100 in 2004-06 had fallen to 89 in 2013 (FAO, 2016b). Both these statistics are the lowest of all the IPPMD partner countries.

Today, the agricultural sector in Georgia lacks access to finance, infrastructure, inputs (e.g. fertilisers and pesticides) and entrepreneurial skills, such as post-harvest marketing. More than 90% of farmers in Georgia own plots of 1.25 hectares or less (AGM, 2012). In 2012, the government declared agriculture to be a priority sector (MOAG, 2015).

Figure 5.1. **The weight of agriculture in Georgia's economy has fallen sharply**
Valued-added in agriculture (% of GDP), 1990-2015



Source: World Bank, *World Development Indicators*, *http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS*.
StatLink *http://dx.doi.org/10.1787/888933457906*

While the share of agriculture in the country's GDP has declined, the sector continues to play an important role in people's livelihoods. In 2011, over 50% of the population worked in the sector, and agricultural exports contributed to about 25% of all exports (AGM, 2012). Such a high rate of employment in a context of low value-added in GDP reflects the sector's low productivity. A study of the labour market in Georgia found that wages for agricultural workers are 34% on average of those earned by people employed in the financial sector,

and that 14% of the highly educated workers in the country are employed in agriculture (World Bank, 2013).

The IPPMD survey includes a specific module on household agricultural activity (Chapter 3). The module is divided into three strands: i) activities related to arable farming; ii) those related to animal husbandry; and iii) specific agricultural policies from which households may have benefited. Any household declaring an involvement in arable farming or livestock rearing was considered to be an agricultural household and the questions on agricultural policies were only put to these households.[1]

Approximately half of the households in the sample are involved in agricultural activities (Table 5.1). Of the 2 260 households interviewed, 1 089 (48%) were involved in agriculture at the time of the interview. These include arable farming (252 households, 23%), animal husbandry (128 households, 12%), or both (709 households, 65%) (Table 5.1).

Table 5.1. **Number and share of agricultural households, by type of activity**

Type of agricultural activity	Number of households	Share of households (%)	Total share (%)
Non-agricultural households	1 171	52%	100%
Agricultural households	1 089	48%	
of which:			
Arable farming only	252	23%	100%
Livestock rearing only	128	12%	
Arable farming and livestock rearing	709	65%	

In terms of geographical location, 82% of the agricultural households surveyed are in rural areas, and 90% of rural households have agricultural activities. However, some regions have a high share of urban households involved in agriculture. This is the case in the northeast, for instance, where 45% of urban households have such activities. Most agricultural households in the sample (66%) come from the rural parts of the northeast and northwest of the country, reflecting the large samples selected in those areas. In the northwest, 92% of households are involved in agriculture.

How does migration affect agriculture in Georgia?

How does migration affect labour in the agricultural sector? Agriculture relies heavily on manual labour, especially in countries that lack investment in the sector, such as Georgia. As such, the departure, arrival and return of workers as well as the remittances migrants send back can potentially alter the activities of households, and more generally the sector as a whole.

The global literature offers two main views on how migration affects the agricultural sector. The first paints a negative picture, highlighting the loss of labour and the potential for that loss to affect food security and economic growth in rural areas. The second highlights the positive effect garnered from remittances and return migration (FAO and IFAD, 2008). The two views are not mutually exclusive and can be summarised as follows:

- Emigration decreases labour availability within the household and potentially in the wider community. For example, households in central Mali consider the loss of a young man's agricultural contribution to be greater than any gain from remittances (McDowell and de Haan, 1997). The departure of the most productive workers may even lead to labour shortages (Tacoli, 2002) and food insecurity in certain communities (Skeldon, 2009; Cotula and Toulmin, 2004; Cissé and Daum, 2010; Tsiko, 2009).
- Migration can be a source of investment and innovation for the sector through remittances and social and financial capital brought home by return migrants. These can be invested in productive assets such as machinery, barns, fencing, feeding mechanisms, irrigation systems and tractors (Mendola, 2008; Tsegai, 2004). The productive investment of remittances can also help households move from labour-intensive to capital-intensive activities (Lucas, 1987; Taylor and Wouterse, 2008; Gonzalez-Velosa, 2011), or into specialisation (Böhme, 2013; Gonzalez-Velosa, 2011). Remittances also permit agricultural households to resist and insure against hardships (Lucas and Stark, 1985). At the same time, migration can also be the catalyst for a move out of the sector as remittances and the various forms of capital repatriated by return migrants can be used to invest in activities outside of the agricultural sector (Carletto et al., 2010).

This section explores these issues in Georgia, drawing on the empirical analysis of the IPPMD dataset.

Households with emigrants have less household labour for farming

The departure of a household member may lead to adjustments in labour supply by the remaining family members. The fact that emigration can affect household labour by increasing the probability of working for those remaining behind, or decreasing it in the presence of remittances, is in line with the discussions in Chapter 4, although empirical studies confirming this specifically for agricultural households are rather scarce. There are two ways agricultural households can fill the labour gap – they may either put more household members to work in their fields, or they may have to hire in workers.

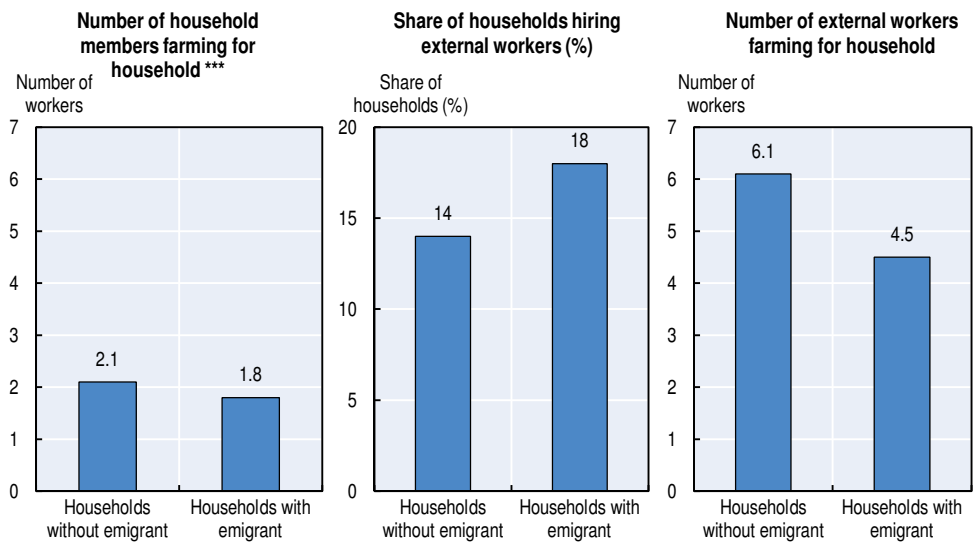
Nearly all arable farming households (98%)[2] in the survey had at least one household member working on the land during the last harvest season; 65% had at least two members, while only 22% had at least three members. Fifteen per cent of households hired in labour to work the land, and unsurprisingly

those same households had fewer household members involved in farming, on average. Most workers were hired on a seasonal basis. Of those households that hired in workers, the average per household was 5.5 workers.

What do the IPPMD data tell us about the effect of emigration on household labour in Georgia? Figure 5.2 suggests that emigrants are not necessarily replaced when they leave, as households with emigrants draw on slightly less household labour (1.8 vs. 2.1) and hire in fewer external workers (4.5 vs. 6.1) than households without emigrants. However, it also suggests that households with emigrants are more likely to hire in labour, perhaps because households with emigrants may not have been hiring external workers at all before, but are now forced to do so to replace the person who has left.

Figure 5.2. **Households with emigrants have fewer workers, but are more likely to hire in labour**

Use of labour in agricultural activities, for emigrant and non-emigrant households



Note: Statistical significance calculated using a t-test (1st and 3rd graph) and chi-squared test (middle graph) is indicated as follows: ***: 99%, **: 95%, *: 90%.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933457914

Regression analysis was used to probe these patterns further. To help isolate the effect of emigration, a first model was run that excluded remittance-receiving households. The results (shown in Table 5.2, top rows) suggest that there is no statistically significant link between emigration and drawing on more household or external labour, or the probability of hiring external labour.

However, as it is difficult to isolate the effect of emigration from that of receiving remittances, a second model included remittance-receiving households and also controlled for the fact that a household may receive remittances. The results suggest that emigrant households have *fewer* household members working on the land than non-emigrant households, but that those receiving remittances are *more* likely to have household members working (column 1, bottom rows). This shows that emigrant households are not replacing their departed household workers, except for remittance-receiving households, which *are* drawing on more household labour (but not hiring in any more external workers than non-remittance receiving households). This is possibly due to the fact that remittances are funding new activities for the household, which require more labour. The ways in which remittances can help households finance assets and activities is the focus of the next section. The second equation finds no significant difference between emigrant households and remittance-receiving households in terms of hiring in external workers or the numbers hired.

Box 5.1. **The links between emigration and labour in agricultural households**

To estimate the probability that an emigrant agricultural household draws on more household or external labour, the following ordinary least squares (OLS) regression model was developed:

$$\text{number\_workers}_{hh} = \beta_0 + \beta_1 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (1)$$

where the unit of observation is the household *hh* and the dependent continuous variable *number_workers* in equation (1) represents the number of people working in the fields, $emig_{hh}$ represents whether the household has a former member who has emigrated or not. $control_{hh}$ stands for a set of household-level regressors[1] while δ_r represents regional-level fixed effects. Standard errors, ε_{hh}, are robust to heteroskedasticity.

In addition, the following probit model was estimated:

$$\text{Prob(hire\_external)}_{hh} = \beta_0 + \beta_1 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (2)$$

where Prob(hire_external) takes on a value of 1 if the household has hired at least one external worker and 0 otherwise. The other variables are defined as in equation (1).

Results are presented in Table 5.2. Column (1) presents results on the number of household members working in agricultural activities for the household, column (2) presents results on whether the household hired external labour to work for their agricultural activities, while column (3) presents results on the number of external workers hired by the household. Results are also divided into two sections. The top rows present results based on a sample excluding non-migrant households receiving remittances, while the bottom rows present results based on a sample including

Box 5.1. **The links between emigration and labour in agricultural households** *(cont.)*

remittance-receiving migrant households and show coefficient results related to both emigration and remittances.

Table 5.2. **Emigrant households use less labour on the farm**

Dependent variable: Agricultural labour working for the household
Main variable of interest: Household has an emigrant
Type of model: Probit/OLS
Sample: Agricultural households

Variables of interest	Dependent variables		
	(1) Number of household members working in the fields (equation 1)	(2) Household hired external labour (equation 2)	(3) Number of external workers hired by household[a] (equation 1)
All agricultural households, excluding remittance-receiving ones			
Household has an emigrant	-0.093	0.007	-0.803
	(0.061)	(0.026)	(1.234)
Number of observations	801	803	116
All agricultural households, including remittance-receiving ones			
Household has an emigrant	-0.207***	0.011	-0.531
	(0.073)	(0.031)	(1.604)
Household receives remittances	0.145*	0.009	-0.449
	(0.081)	(0.033)	(1.591)
Number of observations	909	911	129

Note: a) This regression model is estimated only for those households that hired at least one external worker. Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Coefficients from probit model estimations reflect marginal effects.

1. Control variables for all regression model estimations presented in this chapter include the household's size, its dependency ratio (number of children 0-15 and elderly 65+ divided by the total of other members), the male-to-female adult ratio, its wealth estimated by an indicator (Chapter 3), whether it is in a rural or urban region and a fixed effect for its geographic region. In regression models related to policies, the regional fixed effect is omitted due to smaller sample sizes.

Agricultural households do not seem to invest remittances in agriculture

Many households receive money and goods from friends and family living in other countries; according to Chapter 2 the amount represented nearly 12% of GDP in 2014. As agricultural households are mostly located in rural areas with poor credit and labour markets, remittances may be especially important to these households. As argued earlier, they may provide the financial means to invest in agricultural assets or new activities.

Table 5.3 provides an overview of remittance data from the IPPMD project in Georgia. Compared to non-agricultural households, agricultural households are slightly more likely to be receiving remittances, and the difference is marginally statistically significant when considering remittances originating from any source. Looking specifically at households with current emigrants, the gap remains in favour of agricultural households – with 49% of agricultural households receiving remittances compared to only 46% for non-agricultural ones – although the difference is not statistically significant.

Table 5.3. **Agricultural households are slightly more likely to receive remittances**

Number and share of households receiving remittances

Household type	Households that receive international remittances from any source	Households that receive international remittances from a former member	Rate of remittance receipt (amongst emigrant households)
Agricultural household	309* (28% of agricultural households)	245 (23% of agricultural households)	245 (49% of emigrant agricultural households)
Non-agricultural household	*295 (25% of non-agricultural households)*	*256 (22% of non-agricultural households)*	*140 (46% of emigrant non-agricultural households)*

Note: Differences between agricultural and non-agricultural households are calculated based on a chi-squared test. Statistical significance is indicated as follows: ***: 99%, **: 95%, *: 90%.

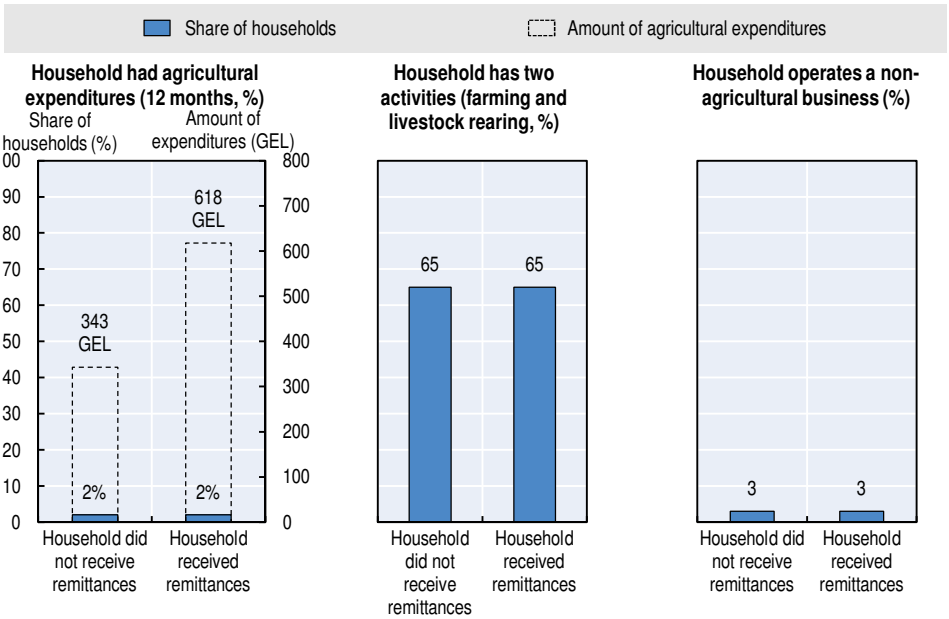
Source: Authors' own work based on IPPMD data.

What do these households use their remittances for? The IPPMD survey asked whether households had made agricultural expenditures[3] in the previous 12 months: only 22 households claimed to have done so. Looking closer at these 22 households, those receiving remittances were just as likely to make agricultural expenditures as those not receiving them. However, the former had spent more on average over the previous 12 months than the latter (GEL 618 vs. 343) (Figure 5.3).

Households that receive remittances may also choose to spend their additional income on either specialising in one activity, such as farming or animal rearing, or diversifying by doing both. The data suggests that no difference between the two types of household, however (Figure 5.3). Remittances might also be used to finance entrepreneurial non-farm activities that require capital, such as a retail business or transport services (FAO and IFAD, 2008). This would be consistent with the gradual move away from agricultural dependence occurring in many countries. This has been the case in Albania, for instance, where remittances have been negatively associated with both labour and non-labour inputs in agriculture (Carletto et al., 2010). The IPPMD survey

therefore asked whether households ran a non-agricultural business. The data suggest that households receiving remittances are just as likely as those not receiving remittances to own such a business (Figure 5.3).

Figure 5.3. **Households receiving remittances spend more on agriculture**
Household expenditures and business ownership, by whether household receives remittances



Note: Statistical significance calculated using a t-test (1st and 3rd graph) and chi-squared test (middle graph) is indicated as follows: ***: 99%, **: 95%, *: 90%.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933457927

Regression analysis explored these links more closely (Box 5.2). The results largely confirm the patterns suggested above: there was no link between a household receiving remittances and investing in agricultural assets (Table 5.4, column 1). However, based on the 22 households that did spend money on agricultural investments, the receipt of remittances seemed to be related to higher investments (Table 5.4, column 2). There does not seem to be any statistically significant link between the amount of remittances received by a household and the probability of a household investing in agriculture assets (Table 5.4, bottom rows). The sample was too small to test the relationship between the amount of remittances received and the amount spent.

In addition, remittance receipt does not seem to be related to households running activities in both arable farming and animal rearing. So what do remittance-receiving households do specifically then? Descriptive statistics

suggest that they are indeed specialising, in arable farming. Remittance-receiving households were statistically significantly more likely to have arable farming activities than households not receiving remittances (25% vs. 22%), whereas the reverse was true for animal rearing (10% vs. 13%). Neither of these differences was statistically significant however.

Equation (3) was also modified by replacing the probability of spending on agricultural assets with the probability of owning a non-agricultural business. The results shown in Table 5.4 suggest that there is no link between receiving remittances or the amount received, and owning a non-agricultural business.

Box 5.2. **The links between remittances and investing in farming**

To estimate the probability that an agricultural household has invested remittances in an asset or activity, the following regression models were developed:

$$\text{Prob}(\text{agri\_outcome}_{hh}) = \beta_0 + \beta_1 remit_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (3)$$

where the unit of observation is the household *hh* and the dependent binary variable *agri_exp* in equation (3) represents the probability that the household engaged in a particular agricultural outcome (e.g. making expenditures or having a specific activity) and takes on a value of 1 if the household did so and 0 otherwise, $remit_{hh}$ represents the fact that the household received remittances in the past 12 months, $control_{hh}$ stands for a set of household-level regressors while δ_r represents regional-level fixed effects. Standard errors, ε_{hh}, are robust to heteroskedasticity.

A second OLS model is also estimated:

$$\text{Ln}(\text{agri\_exp}_{hh}) = \beta_0 + \beta_1 remit_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (4)$$

where *agri_exp* represents the logged amount of the agricultural expenditures that were spent. All other variables are as defined in equation (3).

Table 5.4 presents the regression results. Column (1) presents results on whether the household has made agricultural asset expenditures, column (2) on the amount spent on agricultural assets in the past 12 months, column (3) on whether the household has activities in both farming and animal rearing and column (4) on whether the household operates a non-agricultural business. The table also presents results for two variables of interest. The top rows present results related to the fact that the household received remittances in the past 12 months, whereas the bottom rows present results related to the logged amount of remittances received by former members of the household in the past 12 months, limiting the sample to those that received remittances only.

Box 5.2. **The links between remittances and investing in farming** *(cont.)*

Table 5.4. **Remittance-receiving households spend more on agricultural assets**

Dependent variable: Investment outcomes
Main variables of interest: Household received remittances/amount of remittances received by household
Type of model: Probit/OLS
Sample: Agricultural households

Variables of interest	Dependent variables			
	(1) Household has made agricultural asset expenditures (equation 3)	(2) Logged amount spent on agricultural assets in the past 12 months (equation 4)	(3) Household has activities in both farming and animal rearing (equation 3)	(4) Household operates a non-agricultural business (equation 3)
Household received remittances in the past 12 months	-0.001 (0.008)	0.727* (0.357)	-0.038 (0.035)	0.002 (0.006)
Number of observations	1 066	22	1 079	1 076
Logged amount of remittances sent from former household members	-0.005 (0.004)	n/a	-0.021 (0.022)	0.006 (0.015)
Number of observations	184	-	185	184

Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Results denoted "n/a" refer to small sample sizes too small to adequately analyse. Coefficients from probit model estimations reflect marginal effects.

Return migration is linked to both agricultural and non-agricultural investments

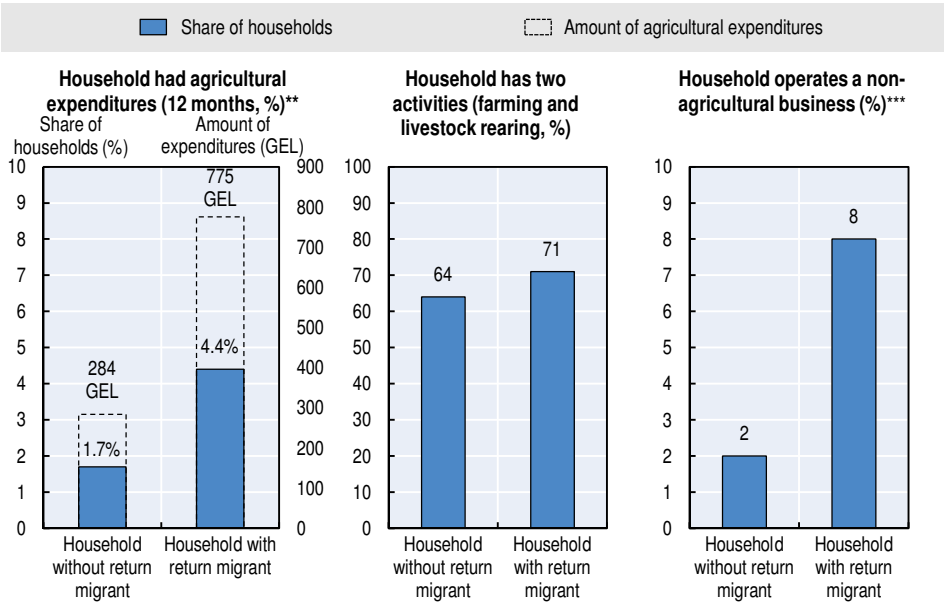
Return migration can also affect the agricultural sector in many of the same ways as remittances, since the migrants may return with savings, as well as their labour and new skills and contacts (human capital). Of the 258 households with return migrants, 137 (13%) were from farming households while 121 (10%) were from non-farming households, a statistically significant difference. Looking specifically only at migrant households (those with current emigrants or return migrants), the difference in rate between farming and non-farming households is even wider (29% vs. 24%).

Looking at the same outcomes as for the analysis on remittances above finds that households with return migrants perform better than households with no return migrant for several outcomes (making agricultural expenditures and investing in non-agricultural businesses; Figure 5.4). Moreover, the difference between return migrant and non-return migrant households was statistically significant for agricultural expenditures (4.4% vs. 1.7%), as well as for operating a non-agricultural business (8% vs. 2%). In addition, those households with return migrants that had made agricultural expenditures, had spent more in the previous 12 months than agricultural households without return migrants

(GEL 775 vs. 284). As was the case earlier, the results come with the caveat that the analysis was based on only 22 households.

Figure 5.4. **Households with return migrants are more likely to invest in agriculture and to own a non-agricultural business**

Household asset expenditures and business ownership, by whether household has a return migrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%.
Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933457931

A similar regression analysis as the one described in Box 5.2 was used to explore whether return migrant households invest their savings in agriculture. The probability of receiving remittances is replaced in the equation with the probability of having a return migrant in the household. The results found no relationship between having a return migrant in a household and making an agricultural expenditure. However, as for remittances, return migrant households that have made agricultural expenditures spend more than households without return migrants, and the link is strongly statistically significant (Table 5.5). While return migration is not statistically significantly linked with running activities in both arable farming and animal rearing, there was also no evidence that it is linked with specialising in one of the two activities in particular. In addition, return migrant households are also more likely to operate a non-agricultural business, suggesting that the human, financial and social capital brought back by return migrants is channelled towards productive use, but outside of the sector.

Table 5.5. **Return migration is positively linked with investing in agriculture and running a non-farming business**

Dependent variable: Investment outcomes
Main variables of interest: Household has a return migrant
Type of model: Probit/OLS
Sample: Agricultural households

Variables of interest	Dependent variables			
	(1) Household has made agricultural expenditures (equation 3)	(2) Logged amount spent on agricultural asset expenditures (equation 4)	(3) Household has activities in both farming and animal rearing (equation 3)	(4) Household operates a non-agricultural business (equation 3)
Household has a return migrant	0.020	1.78***	0.038	0.024*
	(0.016)	(0.219)	(0.047)	(0.013)
Number of observations	1 066	22	1 079	1 076

Note: Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Standard errors are in parentheses and robust to heteroskedasticity. Coefficients from probit model estimations reflect marginal effects.

Migration therefore seems to have a positive impact overall on the agricultural sector in Georgia, through emigration, remittances received by households and return migration. In addition, return migration seems to be a catalyst for a greater diversification of activities outside of the sector. On the other hand, public policies in the agricultural sector are also likely to have an impact on migration outcomes, such as the decision to emigrate, remit, return, and stay in the country. This dynamic is investigated in the next section.

How do agricultural policies affect migration?

In 2012, the Georgian government declared the agricultural sector to be a development priority (MOAG, 2015). Current Georgian agricultural policy is primarily concerned with the poverty of many agricultural households and the low productivity across the sector. The government vision for the sector is:

> *"[…] to create an environment that will increase competitiveness in the agro food sector, promote stable growth of high quality agricultural production, ensure food safety and security, and eliminate rural poverty through sustainable development of agriculture and rural areas." (MOAG, 2015).*

In particular, Georgia's 2020 national development strategy sets out the following priorities for agriculture: i) facilitating exports; ii) developing infrastructure; and iii) improving access to investments. This strategy has led to the enactment of a raft of agricultural policies, many of which have the potential to affect migration-related outcomes. This section investigates how current agricultural policies (described in Box 5.3) affect decisions to emigrate, to send remittances (and the amount remitted), as well as to return home and to stay permanently. Stakeholders interviewed as part of the project confirmed

that many public programmes have been developed following the government's declaration of the agricultural sector as a state priority. The programmes aim to assist small farmers with few opportunities to cultivate or exploit their small landholdings profitably. In addition, several non-public organisations seized the opportunity of the government's agricultural prioritisation to organise meetings with current emigrants, seasonal returnees and their households to inform them of the changes in the sector, and to discuss opportunities for a more permanent return and possible investment in the country.

Box 5.3. **Georgian agricultural policies and programmes covered in the IPPMD project**

The IPPMD household survey asked adult household members whether they benefited from agricultural policies and programmes such as subsidies or free services, agricultural training programmes and insurance mechanisms such as cash-for-work, input-for-work, food-for-work, crop insurance and contract farming (listed in Figure 5.5), over the past five years. Households were asked to state every year in which they had benefited from these programmes (between 2010 and 2014). In addition, the project collected information on households with land titles and beneficiaries of land reform, while the community survey collected information on whether the communities where the household surveys were conducted have farmers' co-operatives. It also asked whether subsidies and training programmes had been implemented in these communities.

Figure 5.5. **Agricultural policies explored in the IPPMD surveys**

Subsidy-type programmes	Training programmes	Insurance-based programmes	Programmes included in the community survey

• Subsidies:
  • seeds
  • other types of inputs
  • hiring labour
• Vouchers
	• Agricultural training
	• Other types of extension programmes
		• Contract farming
		• Cash-for-work programmes
		• Crop insurance coverage
		• Land reform
		• Land title certificate
			• Farmers' co-operatives
			• Subsidies
			• Training programmes

It is not immediately clear whether the agricultural policies introduced in Box 5.3 are likely to have a net positive or negative effect on migration flows. By increasing households' income, **agricultural subsidies** can reduce financial constraints and therefore have the potential to reduce emigration pressure. On the other hand, they may provide enough additional income to make emigration

affordable to a household. They may also provide the incentive for households to invest and channel funds towards agricultural activities, thus increasing the receipt of remittances, or they may make them less necessary, thereby reducing their flow. Similarly, they may provide the incentive for emigrants to return and – more importantly – to stay.

Agricultural training can provide the skills needed to increase efficiency and improve yields, thereby reducing the need to emigrate. On the other hand, by making workers more efficient and perhaps more employable, training may actually promote emigration by increasing people's chances of finding work overseas. Remittances can complement new skills – by providing the income necessary to invest in mechanisation, for instance. Similarly, the availability of training could encourage emigrants to return if they feel the training would lead to better yields. It can also increase their probability of staying in the home country. But, if training makes workers more employable and enables them to emigrate and work elsewhere they may be less likely to return as their employers may want to keep them longer.

Insurance and risk reduction are at the core of emigration. Individuals often emigrate in search of more stable income or to overcome a shock. Lack of land or land title, for instance, can push people to emigrate from poor agricultural economies. Mechanisms which reduce risk – such as crop insurance protection, cash-for-work programmes and government contract farming programmes which guarantee incomes even when harvests are poor – may therefore decrease the need to emigrate. In addition, policies that help households exploit their own land or use it as financial collateral, such as land reform or enforcement of land registration, can keep households from seeking to emigrate. However, on some occasions, such mechanisms may increase the probability of emigration: for example, financial stability gained from the lowered risk could be used to finance emigration. Risky circumstances back home are also a main reason for sending remittances – to help households smooth consumption and survive financial stress. Risk-reducing mechanisms may therefore reduce the need to send remittances. On the other hand, they may also make investments more secure and so increase the flow of remittances. Similarly, reduced risk may provide the incentive for emigrants to return and to stay – especially if they had left to avoid risk.

Vouchers have the widest coverage of all the policy programmes surveyed

Table 5.6 summarises the policy-related data collected from the surveys. Overall, 939 of the 1 089 (86%) agricultural households surveyed had benefited from agricultural programmes between 2010 and 2014. The vast majority had benefited from the agricultural voucher system (85%), a programme developed

by the Ministry of Agriculture intended to help farmers financially.[4] There are two strands to the programme: i) subsidised ploughing services; and ii) financial aid for agricultural raw materials and equipment.[5] About 600 000 farmers have benefited from the programme (World Bank, 2015). The value of the vouchers ranged but was on average GEL 300,[6] based mainly on the farm's total land size.

The next most popular policy was land reform – 195 households had acquired land through reform, representing 20% of all land-working households covered in the survey. In addition, 675 (72%) land-owning households were in possession of the title papers of their lands.

Table 5.6. **Policies and number of benefiting households in the IPPMD survey**

Type of policy programme	Number of benefiting households	% of agricultural households
Any type of agricultural programme	940	86
Subsidies	124	11
of which :		
for seeds	*42*	*4*
for other inputs	*99*	*9*
for labour	*12*	1
Vouchers	929	85
Training-related	19	2
Insurance-related	26	2
Land reform	195	20 (of arable farming households)
Possession of land title certificate	675	67 (of arable farming households)

Regression analysis was used to explore whether these policies were linked to migration-related decisions (Box 5.4). The results are discussed in the sections which follow.

Box 5.4. **The links between agricultural policies and migration**

To estimate the probability that an agricultural policy (or lack of) affected a migration-related outcome, the following probit regression model was estimated:

$$\Pr(migration\_outcome_{hh} = 1) = \beta_0 + \beta_1 benefited_{hh} + \gamma controls_{hh} + \varepsilon_{hh} \quad (5)$$

where the unit of observation is the household *hh* and the dependent binary variable $migration\_outcome_{hh}$) takes on a value of 1 if the household has experienced a migration event and 0 if not. $benefited_{hh}$ represents a dummy variable, taking the value of 1 if the household benefited from a certain agricultural policy. $control_{hh}$ stands for a set of household-level regressors.[1] Standard errors, ε_{hh}, are robust to heteroskedasticity.

Box 5.4. **The links between agricultural policies and migration** *(cont.)*

The results for five outcomes are presented in Table 5.7. Column (1) represents results for a binary variable equal to 1 if the household has at least one member that planned to emigrate, column (2) represents results for a binary variable equal to 1 if the household has at least one emigrated member, column (3) represents results for a binary variable equal to 1 if the household has received remittances from any source in the past 12 months, column (4) represents results for a binary variable equal to 1 if the household has a member who returned to the household from an emigration episode within the past 5 years, amongst households with either returned or currently emigrated members; and column (5) represents results for a binary variable equal to 1 if a household with a return migrant has at least one return migrant planning to migrate again.

Table 5.7. **Voucher schemes seem to be strongly linked to plans to emigrate**

Dependent variable: Migration outcomes
Main variables of interest: Household benefited from a policy
Type of model: Probit
Sample: Agricultural households

Variables of interest	Dependent variables				
	(1) Household has a member planning to emigrate	(2) Household has a member leave within 5 years	(3) Household received remittances in the past 12 months	(4) Household has had a member return in the past 5 years (amongst migrant households)	(5) Household has a return migrant planning to re-migrate
Benefited from an agricultural subsidy in the past 5 years	0.014 (0.026)	0.029 (0.045)	0.012 (0.044)	-0.020 (0.067)	-0.038 (0.107)
Benefited from an agricultural voucher in the past 5 years	0.046*** (0.015)	0.014 (0.040)	0.019 (0.041)	0.071 (0.063)	0.043 (0.114)
Benefited from an agricultural training in the past 5 years	-0.010 (0.059)	0.213* (0.125)	-0.030 (0.102)	-0.082 (0.132)	n/a
Benefited from an agricultural insurance mechanisms in the past 5 years	0.041 (0.061)	0.285** (0.110)	0.079 (0.097)	-0.159** (0.079)	n/a
Number of observations	1 089	910	1 089	474	112

Note: Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Standard errors are in parentheses and robust to heteroskedasticity. Results denoted "n/a" refer to small sample sizes too small to adequately analyse. Coefficients from probit model estimations reflect marginal effects.

1. Because of the small sample size in this section, a regional-level fixed effect is not included in the regression model.

Agricultural vouchers seem to increase the probability of emigrating

There appears to be a small difference in emigration plans between households benefiting or not benefiting from agricultural subsidies (9% vs. 7%, Figure 5.6). In addition, households that had benefited from agricultural subsidies at least once since 2010 were just as likely as non-benefitting households to have had an emigrant leave (36% vs. 35%).

The regression results suggest that general agricultural subsidies have little effect on any of the migration outcomes amongst the surveyed households (Table 5.7, row 1).[7] Agricultural subsidies therefore do not seem to loosen the constraints for emigrating, real or imagined, in the immediate term. The impact of subsidies may vary according to their objective. For instance, subsidies that help finance inputs such as seeds or fertiliser may have a different effect to those that help pay for hiring labour. However, regressions performed on the impacts of these individual subsidy types found no significant links with any of the migration outcomes.

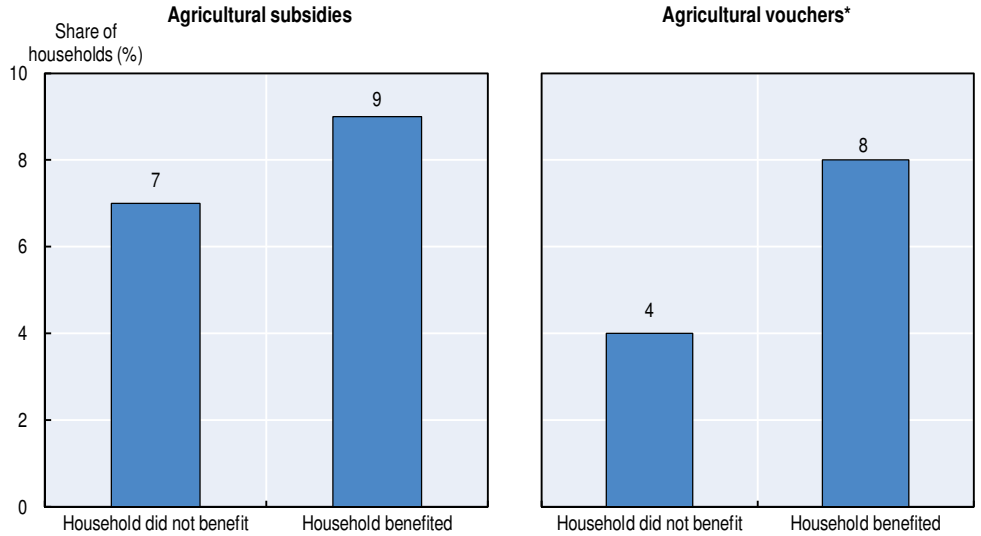
A large majority of households (85%) claim to have benefited from the agricultural voucher system, indicating that this government programme has good coverage. Households having benefited from the programme are more likely to have a member planning to emigrate than households who did not benefit (8% vs. 4%, Figure 5.6) – a finding confirmed by the regression analysis (Table 5.7). As the programme largely amounts to a subsidy, the money saved by the household is perhaps making emigration more affordable. Since the programme is for inputs or for services tied to activities prior to harvest, the household is not obliged to demonstrate the quality or quantity of its yield. This means they can choose to use the money saved to send a member abroad. The vouchers had no effect on any other migration outcome, however.

Agricultural training programmes appear to be linked to emigration

As only 19 households benefited from agricultural training in Georgia, robust regression analysis is difficult. However, benefiting households were more likely to have a current emigrant than households that had not benefited from training (44% vs. 22%), a relation confirmed by regression analysis (Table 5.4, column 2). This suggests that the training may have given people the skills required to find farm work in neighbouring countries. For example, many households have emigrants working seasonally on farms in Armenia or Turkey. However, there was no difference in the probability of having a member plan to emigrate in households that had benefited from training. Training programmes were also not a determinant for receiving remittances – although there is a link between training and receiving higher amounts of remittances, the difference is not statistically significant (GEL 863 vs. 670). Regression analysis found no

statistical link between benefiting from training and return migration. An analysis of the plans to re-migrate amongst return migrants was not possible given the small sample size.[8]

Figure 5.6. **Agricultural vouchers appear to be linked to plans to emigrate**
Share of households with a member planning to emigrate, by public policy



Note: Results that are statistically significant (calculated using a chi-squared test) are indicated as follows: ***: 99%, **: 95%, *: 90%.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933457945

Insurance-related programmes are linked to emigration, but not return migration

As for training programmes, the small number of households (26) benefiting from a diversity of agricultural insurance programmes – including contract farming, cash-for-work programmes and crop insurance – limited any substantial analysis. In addition, many households may not know that they are covered by crop insurance until they need to make a claim.

With this caveat in mind, the descriptive analysis indicates that benefiting households are more likely than non-benefiting households to have a member planning to emigrate within the next year (8% vs. 4%). They are also more likely to have an emigrant who had left within the past five years (50% vs. 22%). Regression analysis controlling for a number of household-level characteristics confirms this, as well as the fact that households benefiting from insurance programmes are significantly less likely to have a return migrant (Table 5.7). It

seems therefore that insurance mechanisms may indeed encourage households to emigrate and to stay in the host country for longer. This is perhaps because they allow households to survive the risk of losing a member to emigration. Insurance programmes had no effect on remitting behaviour, however.

A small amount of information was collected by the IPPMD project on agricultural aid following a shock.[9] This found that 51 households had benefited from government agricultural aid for crop loss. A regression analysis similar to the one in Box 5.4 found that these households are more likely to have a return migrant (results not shown), suggesting that such programmes could encourage people to return. However, there was no conclusive link found with permanent return (results not shown).

Land ownership and possession of titles are linked to migration outcomes

What about the links between migration and land-related policies (land reform and land titles)? In 1992 the Georgian government launched a reform of agricultural land in the country. From 1992 to 1995, the state transferred very small parcels of land to most of the population living in Georgia, including rural and urban regions, regardless of whether they had been engaged in agriculture before. Overall, 760 000 hectares of land was transferred, with up to 1.25 hectares provided to individuals engaged in agriculture and up to 5 hectares for those living in mountainous areas. Very small parcels were provided to those not already engaged in agriculture. The state then gradually opened the agricultural land market, although continued to lease land to households that were not able to obtain land during the reform[10] (EPRC, 2013).

There were 195 households that benefited from land reform in the survey. A similar regression model to the one presented in Box 5.4 was run, controlling for whether the household owns agricultural land or not (Table 5.8). This suggests that households that have benefited from land reform are less likely to receive remittances – perhaps acquiring agricultural land has helped increase income and reduced the need for remittances.

In 1999, the Georgian government began issuing land registrations and continued doing so until 2008, while a formal land cadastre system was developed. However, the issuance of certificates has been problematic, and a study finds that only 20 to 30% of agricultural land transferred under reform had been registered by 2013 (EPRC, 2013). Households that have the official titles to their land may find it easier to use it for financial leverage or to sell it, potentially affecting migration outcomes. In many developing countries, access to land is often contingent on its use. Research suggests that delinking land rights from land use can increase emigration, as household members do not have to use the land productively in order to retain ownership. They are free

to leave it fallow or rent it out without risking losing it. In Mexico, for example, households that had obtained certificates through the Mexican land certification programme, rolled out from 1993 to 2006, were found to be 28% more likely to have a migrant member (de Janvry et al., 2014). Regression analysis confirmed that households with land titles were more likely to have members planning to emigrate (Table 5.8).

Table 5.8. **Acquiring land through reform can reduce the need for remittances**
Results from regression estimations on land reform and titling

Dependent variable: Migration outcomes
Main variables of interest: Household acquired land through reform/household has the land title for their land
Type of model: Probit
Sample: Agricultural households

Variables of interest	Dependent variables				
	(1) Household has a member planning to emigrate	(2) Household has a member leave within 5 years	(3) Household received remittances in the past 12 months	(4) Household has had a member return in the past 5 years (amongst migrant households)	(5) Household has a return migrant planning to re-migrate
Household acquired land through reform	-0.010	-0.040	-0.097**	-0.017	-0.018
	(0.020)	(0.035)	(0.034)	(0.058)	(0.086)
Number of observations	953	791	953	417	104
Household has the land title for their land	0.038**	0.040	-0.005	0.018	0.096
	(0.017)	(0.033)	(0.034)	(0.054)	(0.083)
Number of observations	918	759	918	400	99

Note: Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Coefficients from probit model estimations reflect marginal effects.

Conclusions and policy recommendations

To conclude, this chapter has found that migration has an impact on Georgia's agricultural sector, and the effect is positive overall. While households with emigrants have less agricultural labour than non-migrant households, remittances seem to help them cope with the loss of labour. In addition, remittances allow households to spend more on agricultural assets than those not receiving remittances. But the real difference comes from return migration, which seems to be prompting a diversification of migrant household activity: households with return migrants are more likely to invest in agricultural assets and to have non-agricultural businesses.

On the other hand, a side effect of government agricultural policy programmes – such as subsidies and voucher schemes, training, and land titling – seems to be to encourage emigration. For instance, households benefiting from agricultural voucher schemes, and have land title certificates

tend to be more likely to have a member planning to emigrate, while those benefiting from training and insurance programmes tend to have a current emigrant. Those benefiting from insurance mechanisms are also less likely to have a return migrant. Insurance mechanisms can also include land ownership and can substitute for remittances. In fact, households acquiring land through land reform were less likely to receive remittances.

Chapter 2 highlighted that while Georgia's migration strategy integrates the suggestions of various development strategies enacted by the government across many sectors and domains, it does not account for its national agricultural strategy. The dynamics outlined above suggest that policy makers need to account for migration when planning and drafting agricultural policies, and for agricultural policies when planning migration strategies. The recommendations are as follows:

- Ensure that agricultural households can access agriculture labour when needed. Better coverage by labour market institutions in rural areas can help agricultural households replace labour lost to emigration. Without such institutions the agricultural sector, food security and poverty could all deteriorate further in areas where emigration rates are high.
- Make it easier for remittances to be channelled towards productive investment, such as ensuring money transfer operators are present and affordable in rural areas, households are sufficiently trained in investment and financial skills and adequate infrastructure is already in place. Bottlenecks that limit investments in specific sectors, particularly declining ones like agriculture, are a lost opportunity to harness the potential of remittances and return migration for revitalising these sectors. In addition, economic and administrative hurdles, such as the cost of remitting and the lack of programmes to reintegrate return migrants, can also limit the potential of these assets.
- Tie agricultural aid to *ex post* output rather than providing it *ex ante*. The analysis of Georgia's voucher programme suggests that agricultural subsidy programmes that are not contingent on some level of output or outcome or do not provide a non-transferable asset, such as land, may help spur more emigration. This may run counter to the objectives of the programme if its aims are to keep farmers in the country and in the sector.

Such actions will help to ensure that workers remain interested and invested in the agricultural sector. In tandem, policy makers should address rural and agricultural infrastructure, such as irrigation, to make the sector more attractive for investment and employment. At present more productive and higher paying jobs are to be found elsewhere, and return migrants may be returning from abroad to urban areas instead of their rural households of origin.

Notes

1. This chapter focuses on households, unlike Chapter 4, which analyses data for individuals.
2. Questions related to farm labour were only asked to arable farming households.
3. The question in the survey asked households how much they spend on average on agricultural productive assets (such as farming equipment) over the course of 1 year.
4. Although this large governmental programme was launched in 2013, there were other similar but smaller voucher programmes run in the years prior to that one (e.g. by USAid). For that reason, the questionnaire covered the voucher programme starting in 2010. The voucher programme ended in 2015.
5. Additional programmes were added for farmers with activities not requiring ploughing, such as vineyards, orchards and tea plantations.
6. This total is equivalent to USD 170, at the exchange rate on 1 July 2014.
7. These results could be related to the fact that households mixed their responses in with the agricultural voucher system, which includes agricultural subsidies, but the results were similarly not statistically significant when looking specifically, or in combination with the voucher system.
8. As for agricultural subsidies, it could be that households were unclear on whether they benefited from a voucher or from training, as the agricultural voucher system in Georgia includes training programmes. However, combining the voucher beneficiaries with those claiming to have benefited from training did not alter any of these results.
9. A more robust and accurate analysis would require a random assignment of coverage combined with the random assignment of a shock across households.
10. Such leasing continued until 2011.

References

AGM (2012), *Social Performance Code: Social Policy*, Alliance Group Microfinance Organization, Tbilisi, *http://agm.ge/uploads/AGM_Social%20Policy%20Doc_Oct2012.pdf*.

Böhme, M.H. (2015), "Does migration raise agricultural investment? An empirical analysis for rural Mexico", *Agricultural Economics*, International Association of Agricultural Economists, Vol. 46(2), pp. 211-225, 03.

Carletto, G., B. Davis, J. Miluka and Z. Zezza (2010), "The vanishing farms: The impact of international migration on Albanian family farming", Journal of Development Studies, 46(1): 140-161.

Cissé, P. and C. Daum (2010), "Migrations internationales maliennes, recomposition des territoires migratoires et impacts sur les sociétés d'origine", presentation at conference on *Dynamique migratoire, migration de retour et impacts sur les sociétés d'origine au Maghreb et en Afrique de l'Ouest*, Université Mohammed V-Agdal, Rabat, Morocco, 22-23 November, *www.ccme.org.ma/fr/medias-et-migration/7115*.

Cotula, L. and C. Toulmin (2004), "Till to tiller: International migration, remittances and land rights in West Africa", *Drylands Issues Paper* 312, International Institute for Environment and Development (IIED), London, *http://pubs.iied.org/9508IIED*.

de Janvry, A., K. Emerick, M. Gonzalez-Navarro and E. Sadoulet (2014), "Delinking land rights from land use: Certification and migration in Mexico", mimeo, *https://www.ocf.berkeley.edu/~kemerick/certification_and_migration.pdf*.

EPRC (2013), *Current State of Land Market in Georgia: Analysis and Recommendations*, Economic Policy Research Center, Tbilisi.

FAO (2016a), "Gross Production Value (constant 2004-2006 million US$)", FAOSTAT (database), *http://fenix.fao.org/faostat/beta/en/#data/QI*, (accessed 1 October 2016).

FAO (2016b), "Gross per capita Production Index Number (2004-2006 = 100)", FAOSTAT (database), *http://fenix.fao.org/faostat/beta/en/#data/QI*, (accessed 1 October 2016).

FAO (2009), *AQUATSTAT database*, FAO Water Report 34, Food and Agriculture Organisation, Rome, *www.fao.org/nr/water/aquastat/countries_regions/geo/index.stm*.

FAO (1997), "Irrigation in the countries of the former Soviet Union in figures", *Water Reports* 15 Food and Agriculture Organization, Rome, *www.fao.org/docrep/w6240e/w6240e00.htm*.

FAO and IFAD (2008), *International Migration, Remittances and Rural Development*, International Fund for Agricultural Development and Food and Agriculture Organization, Rome, *https://www.ifad.org/documents/10180/aea35048-5287-4d8d-92db-3fee60c1653d*.

Gonzalez-Velosa, G. (2011), "The effects of emigration and remittances on agriculture: evidence from the Philippines", mimeo, University of Maryland, ftp://ftp.cemfi.es/pdf/papers/wshop/JMP_Gonzalezvelosa_JAN.pdf.

Lucas, R.E.B. (1987), "Emigration to South Africa's mines", *American Economic Review* 77(3): 313-330, *www.jstor.org/stable/1804097*.

Lucas, R.E.B. and O. Stark (1985), "Motivations to remit: Evidence from Botswana", *Journal of Political Economy* 93(5): 901-918, *www.jstor.org/stable/1833062*.

McDowell, C. and A. de Haan (1997), "Migration and sustainable livelihoods: A critical review of the literature", *IDS Working Paper* 65, Institute of Development Studies, University of Sussex, Brighton, *www.ids.ac.uk/publication/migration-and-sustainable-livelihoods-a-critical-review-of-the-literature*.

Mendola, M. (2008), "Migration and technological change in rural households: Complements or substitutes?" *Journal of Development Economics*, 85(1–2), February 2008: 150-175, *http://dx.doi.org/10.1016/j.jdeveco.2006.07.003*.

MOAG (2015), *Strategy for Agricultural Development in Georgia 2015-2020*, Ministry of Agriculture of Georgia, Tbilisi, *www.moa.gov.ge/Download/Files/92*.

Skeldon, R. (2009), "Migration and migration policy in Asia: A synthesis of selected cases", in: Siddiqui, T. (ed.) *Migration and Development: Pro-Poor Policy Choices*, The University Press, Bangladesh, *http://sro.sussex.ac.uk/11398/*.

Tacoli, C. (2002), "Changing rural-urban interactions in sub-Saharan Africa and their impact on livelihoods: A summary", *Rural-Urban Briefing Papers* 6, International Institute for Environment and Development (IIED), London, *http://pubs.iied.org/pdfs/9153IIED.pdf*.

Taylor, J.E. and F.Wouterse (2008), "Migration and income diversification: Evidence from Burkina Faso" *World Development*, 36(4): 625-640.

Tsegai, D. (2004), "Effects of migration on the source communities in the Volta Basin of Ghana: Potential links of migration, remittances, farm and non-farm self-employment activities", Working paper, Economics and Technological Change, University of Bonn, Bonn.

Tsiko, S. (2009), "Impact of migration on food security in Chiredzi, Zimbabwe", Volens Africa.

World Bank (2015), "The World Bank Group – Georgia Partnership Program Snapshot", World Bank Group, Washington, DC, *http://www.worldbank.org/content/dam/Worldbank/document/Georgia-Snapshot.pdf*.

World Bank (2013), "Georgia skills mismatch and unemployment: labor market challenges", Report No. 72824-GE, Human Development Sector Unit, World Bank, Washington, DC, *http://documents.worldbank.org/curated/en/999371468242985088/pdf/728240ESW0Geor00Box377374B00PUBLIC0.pdf*.