Chapter 4

Leveraging migration for development in the agricultural sector

Many developing countries are substantially focused on agriculture, which forms the basis of many households' livelihoods. This chapter looks at the impact of international migration on the agricultural sector in the ten IPPMD partner countries. It specifically investigates whether emigration affects household labour, due to the departure of a working member, whether capital from remittances and return migration are being channelled in or out, and in what ways immigrant households contribute to the sector. It also examines whether agricultural policies – such as subsidies, training and insurance programmes – are linked to migration outcomes, such as emigration, the decision to remit and return and the integration prospects of immigrants.

Many developing economies are based substantially on agriculture, which comprises an essential component of most people's livelihoods. This fact has been recognised through Sustainable Development Goal (SDG) 2, which aims to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture". Agriculture figured prominently in the 2015 Addis Ababa Action Agenda on Financing for Development (United Nations, 2015), particularly regarding the efforts needed to end hunger and malnutrition. Climate change has also put agriculture at the centre of many development concerns. Forecasts on the impact of climate change on migration vary, with 200 million people displaced being the most widely cited estimate (including internal migrants) (IOM, 2009), many from rural areas and dependent on agriculture.

Several of the IPPMD countries are also experiencing fast economic and social development, which history suggests is often accompanied by a general depopulation of rural areas and a move away from agricultural activities, meaning a declining ratio of food producers to food consumers. While in many cases this movement tends to be internal, from rural to urban areas, international migration is also frequent. Because the agricultural sector is vital for jobs and labour income and to a country's development and poverty reduction, it is important to understand its links with migration and investigate whether and how migration can be part of the solution in making the sector more productive and sustainable to counter the decrease in available labour. This chapter looks at what impact international migration has on the agriculture sector. Is it constraining farming activities or enhancing them? It also examines whether agricultural policies – such as subsidies, training and insurance programmes – are contributing to or stemming the flow of emigrants, remittances and return migrants, as well as the integration of immigrants.

The chapter is divided into four sections. The first section provides a contextual overview of the agricultural sector across the 10 countries of the IPPMD project and the data collected in 2014. The second section discusses the impact migration may have on the agricultural sector across four dimensions: emigration, remittances, return migration and immigration. The third section explores the impact agricultural policies may have on agricultural household members' decisions to leave, remit and return from migration or on immigrants' experience in integrating into their host society. The final section discusses policy implications.

Table 4.1. **Migration and agriculture: Key findings**

How does migration affect agriculture?	How do agricultural policies affect migration?
● Emigration revitalises the agricultural labour market,as emigrants are replaced by workers from outside of the emigrant's household.	● While agricultural subsidies tend to increase emigration in primarily agrarian economies, they tend to decrease it in more diversified ones.
● Remittances and return migration increase investment in agricultural activities, but also in other types of activities in agricultural households, creating opportunities for diversification.	● Agricultural subsidies are positively correlated with the level of remittances in certain countries.
● Agricultural households with immigrants are more likely than other agricultural households to hire-in labour and sell their produce.	● Immigrants are less likely to benefit from agricultural programmes.

Note: These findings do not apply to all countries. More country-specific findings can be found in the IPPMD country reports.

Overview of the agricultural sector in the ten partner countries

The agricultural sector is essential to society for several reasons. It provides food security for the population. It creates linkages and inputs and forms part of a value chain, which provides revenue and jobs. The jobs sustain livelihoods, sometimes for the very poorest segments of the population and in rural areas with few other opportunities.

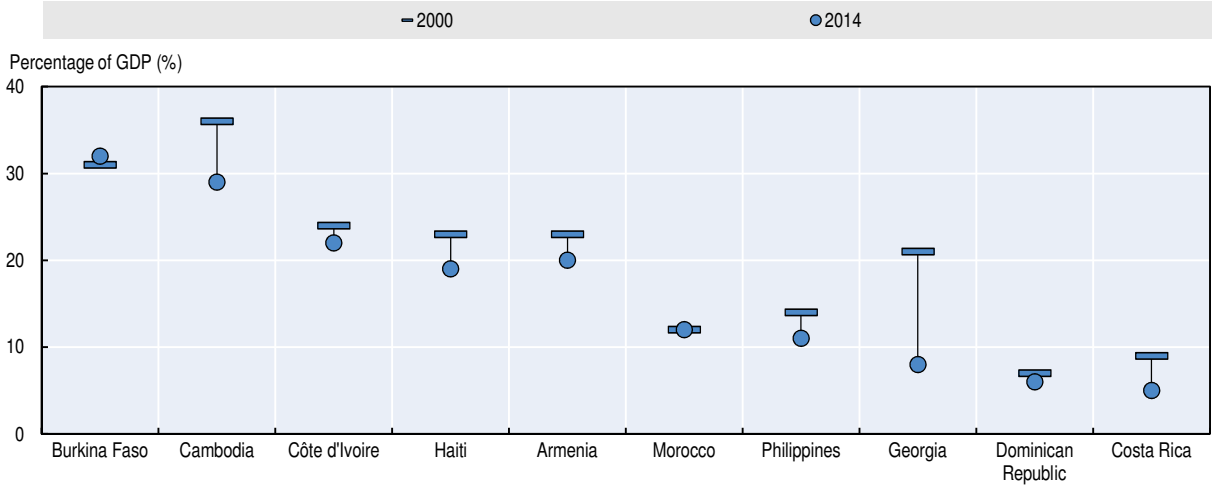
Emigration from the sector often goes hand in hand with structural change and the gradual move towards a more industrialised or service-oriented and capital-intensive economy (Lewis, 1954; Harris and Todaro, 1970). As pointed out in Chapter 3, the share of employment in agriculture has generally decreased in all IPPMD partner countries in the last decade, while the share in services has increased. In the process, the sector loses its most important asset: human capital. Keeping the rural – and sometimes urban – parts of the agricultural economy healthy is therefore vital for avoiding inequality, extreme poverty and a general breakup of social cohesion.

The size of the agricultural sector varies across the countries studied

The countries involved in the IPPMD project reflect the different points at which developing countries may find themselves in their transition from a primarily agrarian society towards a more diversified one. Figure 4.1 illustrates this by painting a dynamic picture of the trends in value added in agriculture as a percentage of gross domestic product (GDP) in 2000 and 2014.

Figure 4.1. **The weight of agriculture in the economy varies by country**

Value added in agriculture as a percentage of GDP (%), 2000 and 2014



Note: Figures also include value added from forestry and fishing.

Source: FAO, FAOSTAT database, *http://faostat.fao.org/*.

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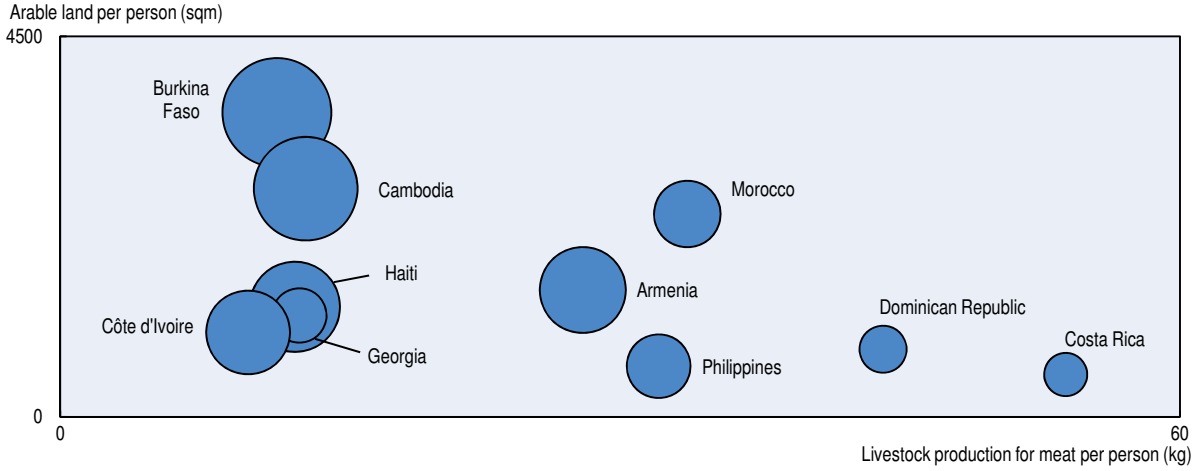
The first striking feature is the range across countries, from more than 30% in Burkina Faso in 2014 to around 5% in Costa Rica. The second is the change in the weight of agriculture in GDP over time. From 2000 to 2014, the weight of agriculture in GDP has gradually decreased in all but two countries: Burkina Faso, where there was a slight increase and Morocco, where there was no change. Nowhere is the decrease more evident

than in Georgia, which experienced a spike in agriculture's contribution to GDP in the late 1990s and a dramatic fall from 2000 to 2014 due to reforms following transition, a return to peace after a period of conflict and a diversification of its economy. Georgia now has among the lowest rates of agriculture of the countries studied, along with Costa Rica, the Dominican Republic, Morocco and the Philippines. Cambodia has also experienced a quick reduction in the weight of agriculture, following reforms and a diversification and opening of its economy, although the weight of agriculture in the economy has remained relatively high.

Countries also differ in their types of agricultural activities, and this seems to be correlated with the weight of agriculture described above. This division between countries is summarised in Figure 4.2, using a scatterplot between arable land per person and livestock production for meat per person, where the size of the circles reflects the share of agricultural value added in GDP. The figure suggests that in relative terms the Philippines, Costa Rica and the Dominican Republic rear more livestock, whereas arable farming is more common in Burkina Faso and Cambodia. Armenia, Côte d'Ivoire, Georgia, Haiti and Morocco stand somewhere in the middle, although Côte d'Ivoire, Georgia and Haiti are smaller producers overall, relatively speaking. The figure also suggests that countries that have diversified and have a lower share of agricultural value-added are also those that engage relatively more in animal rearing, whereas those where agriculture plays a large role are also those where arable farming is relatively more important.

Figure 4.2. **Emphasis on arable farming versus livestock production varies by country**

Arable land (sqm) and livestock production (kg) per person



Note: Data are from 2013. Arable land (in hectares) includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow. Land abandoned as a result of shifting cultivation is excluded. The livestock categorisation is based on data on the total primary livestock production for meat in each country. The size of the circles reflects the share of value added in agriculture as a percentage of the country's GDP.

Source: World Bank, *World Development Indicators* (WDI) database, *http://data.worldbank.org/products/wdi*; FAO, FAOSTAT database, *http://faostat.fao.org/*.

StatLink *http://dx.doi.org/10.1787/888933417712*

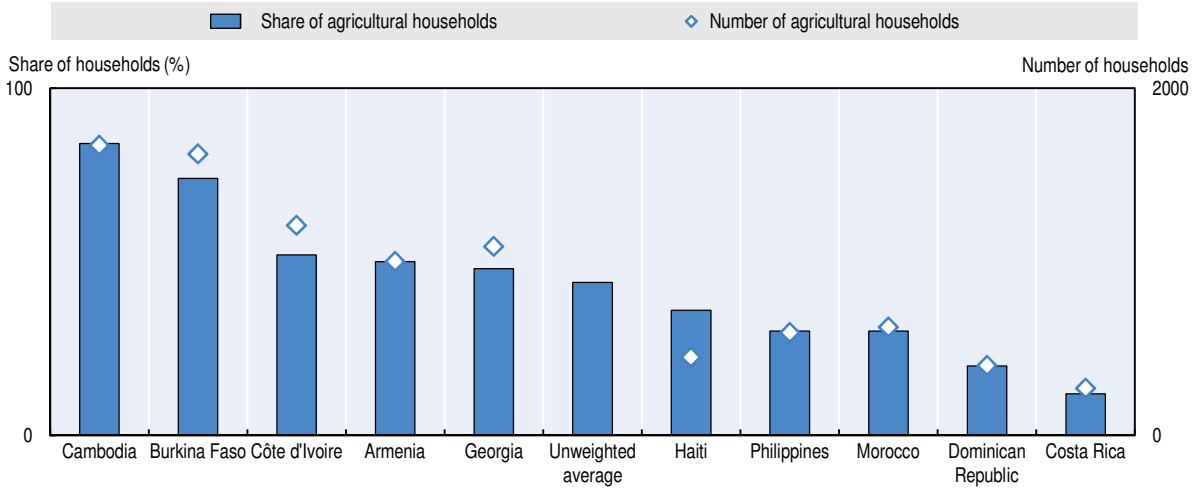
The level and type of agricultural activity varies across countries in the IPPMD data

The IPPMD survey includes a specific module on household agricultural activity (Chapter 2). The module is divided into three strands: 1) activities related to arable farming; 2) those related to animal husbandry; and 3) specific agricultural policies from which households may have benefited. Any household declaring an involvement in arable farming or livestock rearing is considered to be an agricultural household and the questions on agricultural policies were only put to these households.[1]

Less than half of the households in the sample are involved in agriculture. Of the 20 549 households interviewed overall, 8 932 (43%) were involved in agriculture at the time of the interview, partly reflecting the nature of the sampling framework, which was stratified along rural and urban areas in some countries (Chapter 2). However, the share of households undertaking agricultural activity varied greatly across countries (Figure 4.3). In Cambodia (84%) and Burkina Faso (74%), the share of sampled agricultural households was high, while it was much smaller in Costa Rica (12%) and the Dominican Republic (20%). In Cambodia, the high rate is explained by the fact that there was an oversample of rural households (80%). In Burkina Faso, although 60% of the sample is urban, many households deemed "urban" have agricultural activities (57%).

Figure 4.3. **The share and number of agricultural households sampled varies by country**

Share and number of agricultural households sampled (%), by country



Source: Authors' own work based on IPPMD data.

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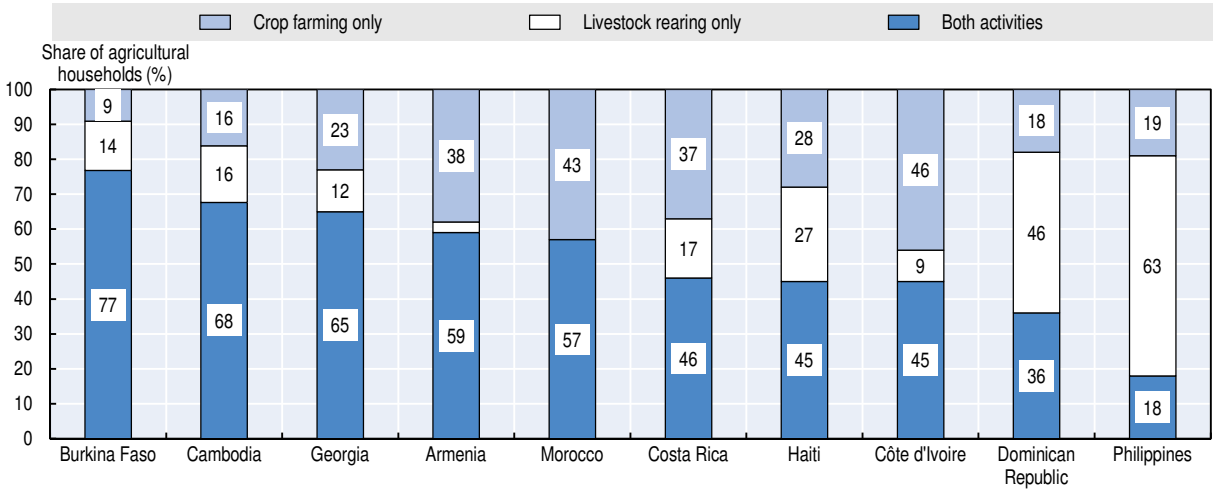
Countries also differ in terms of the types of farming activity in which households engage. Households in countries like the Philippines and the Dominican Republic were more engaged in livestock rearing than in other countries (as expected from the macroeconomic data presented in Figure 4.2), whereas Armenia and Costa Rica had more households engaged in arable farming (Figure 4.4). The IPPMD data for Costa Rica are at odds with the macroeconomic data. This is a reflection of the fact that much data was collected from the province of Alajuela, which has a large arable farming area. Households in countries like Burkina Faso, Cambodia and Georgia were involved in both types of activity. In the former two, mainly backyard farming[2] rather than commercial farming dominates.

Figure 4.4. **Household farming activity mostly reflects the macroeconomic picture**

Relative share of agricultural households (%), by activity



Source: Authors' own work based on IPPMD data.

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How does migration affect agriculture?

The agricultural sector relies heavily on manual labour, especially in countries which lack investment in the sector. As such, the departure, arrival and return of workers as well as the remittances migrants send back or return with can potentially alter the activities of households and more generally the sector as a whole. There are two main views on how migration affects the agricultural sector, which are not mutually exclusive and can be summarised as follows (FAO and IFAD, 2008; Lucas, 1987):

- The first paints a **negative picture**, highlighting the loss in labour and the potential for that loss to affect food security and economic growth in rural areas. The departure of a member decreases labour availability within the household and potentially in the community from which the person leaves, which may affect how the household manages its agricultural activities. As a result, **emigration is often presented as posing a challenge** for the sustainability of the agricultural sector and to rural development in general through its linkages with the rest of the economy.
- The second highlights the **positive effect** garnered from leaving an overcrowded labour market, remittances and return migration. Migration can be a source of investment and innovation for the sector as emigrants send remittances and return migrants bring back social and financial capital. At the same time, migration can also be the catalyst for diversification or a move out away from the sector as remittances and the various forms of capital repatriated by returned migrants can be used to invest in activities outside of the agricultural sector. **Migration is therefore presented as an opportunity** for households to escape poor living conditions, reduce pressure on resources in the places they leave behind and add resources by sending remittances and eventually returning back home.

In addition to emigration remittances and return migration, international immigrants can also be a source of investment and economic contribution to the sector.

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

Emigration revitalises the agricultural labour market

The agricultural sector is one of the most affected by emigration; in 5 of 8 IPPMD countries with available data (Armenia, Burkina Faso, Cambodia, Costa Rica and Haiti), it figures as the sector with the highest emigration rate, vis-à-vis the number of people employed in the country. This has implications for the sector but also for households that make a living in the sector. The emigration of one or more household members has important consequences in terms of labour allocation and the division of labour within the household. The departure of a household member may lead to adjustments in labour supply by remaining family members, including directly contributing to the household's farming activities. According to research, households in central Mali consider the loss of a young man's agricultural contribution greater than the gain from remittances (McDowell and de Haan, 1997). When less productive workers are left behind, the drop in productivity may even lead to labour shortages (Tacoli, 2002) and food insecurity in certain communities (Skeldon, 2003; Cotula and Toulmin, 2004), evidence of which has been documented in Mali (Cissé and Daum, 2010) and Zimbabwe (Tsiko, 2009).

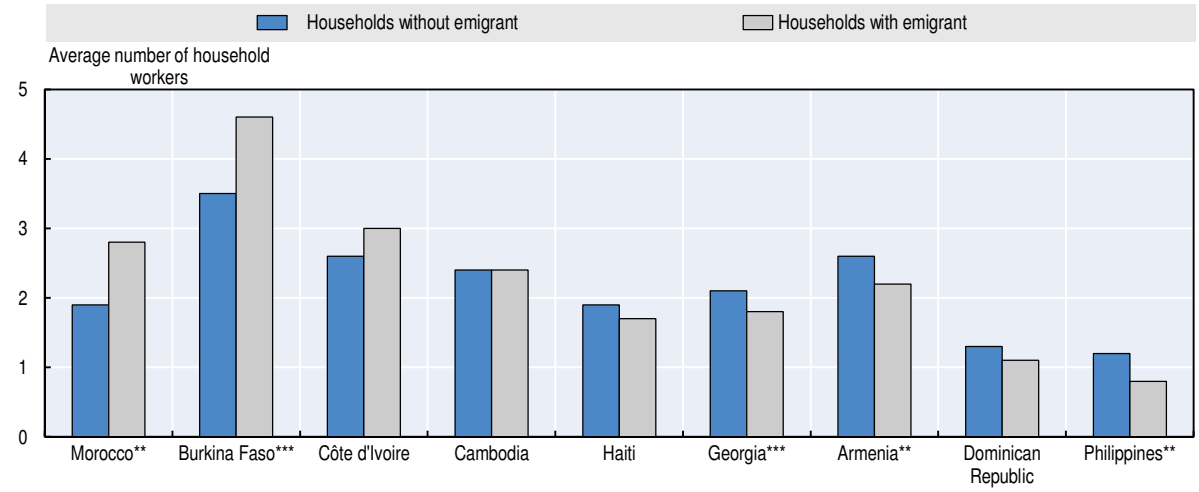
This section explores the link between emigration and the use of labour in agricultural activities. There are two ways agricultural households can satisfy an increase in their demand for labour. First is by requiring more household members to work (or work more) their fields. Second is by turning to the external labour market to hire workers. When a household member emigrates, households may need to look for more labour, either by drawing more on the labour of other household members or by hiring external workers. This is in line with the discussions in Chapter 3 on the impact of emigration on household labour, although empirical studies confirming this specifically for agricultural households are rather scarce. Emigration likely reduces the labour supply overall, and particularly the availability of labour in emigrant communities (FAO and IFAD, 2008).

Comparing emigrant and non-emigrant agricultural households with respect to the number of household members working in the household's farming activities reveals a mixed picture. In Burkina Faso, Côte d'Ivoire and Morocco, emigrant households draw on more household members to work the farm than those without emigrants (Figure 4.5). This relationship is statistically significant according to regression analysis for Burkina Faso and Morocco (Table 4.2). However, there are more countries in which agricultural households with emigrated members had fewer, not more, household members working in the fields, although the difference between emigrant and non-emigrant households is relatively smaller. These are Armenia, the Dominican Republic, Georgia, Haiti and the Philippines. In these countries, emigrant labour could either not have been replaced, or alternatively may have been replaced in other ways than drawing on internal resources. In fact, if households lack the internal capacity to fill labour shortages following the emigration of a member and if labour markets are more developed and accessible, they can turn to hiring external labour.

The IPPMD project collected data on the extent to which households hired external labour. In several cases – notably in Côte d'Ivoire, the Dominican Republic, Georgia, Haiti, Morocco and the Philippines – emigrant households were more likely to have done so than non-emigrant households (Figure 4.6). The relationship is robust for all of these countries, with the exception of Georgia (Table 4.2). This is perhaps related to the fact that Georgia has rather quickly moved away from an economy dependent on agriculture to a more diversified one, meaning households are less in need of agriculture labour there (Figure 4.1).

Figure 4.5. **In some countries, agricultural households with emigrants draw on more household labour**

Average number of household members working in agricultural activities, by whether the household has an emigrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of households with emigrants over those without. Costa Rica is not included due to its small sample size.

Source: Authors' own work based on IPPMD data.

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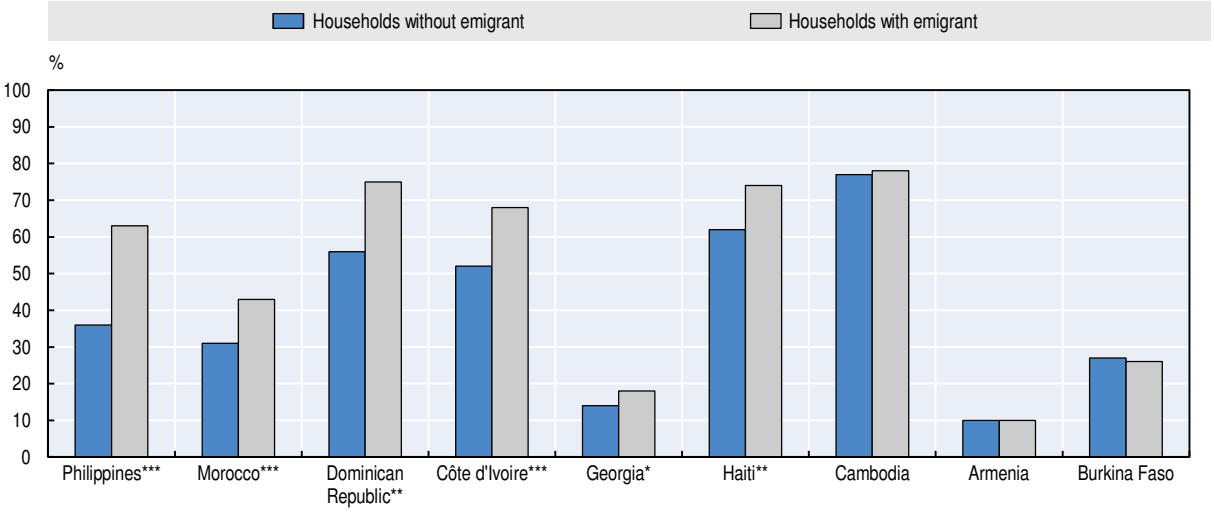
Figure 4.6. **Households with emigrants are more likely to hire external agricultural labour**

Share of households hiring external agricultural labour (%), by whether they have an emigrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of share of households with emigrants over those without. Costa Rica is not included due to its small sample size.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933417752

Overall this paints a picture that households with emigrants are indeed using more labour, which provides further evidence that the labour market is not as tight when workers emigrate, although productivity likely decreases given emigrants are generally younger and more productive than those staying behind.

In the partner country where agriculture plays the biggest role in terms of GDP (and even increasing), Burkina Faso (Figure 4.1), emigrant households draw on more household labour, but not on external labour. It could be a sign that labour markets are underdeveloped in the regions that are affected, and households struggle to hire labour from outside. Morocco, on the other hand, has a considerably lower agricultural value-added per GDP compared to Burkina Faso. This could be because Morocco has urbanised rather rapidly in the last years, from a 48% urbanised population in 1990 to one projected to be 60% in 2015 (United Nations, 2014), creating a similar decrease in labour supply as with international emigration. At the same time, Morocco is also transitioning to a country less dependent on its agricultural output; emigration seems to be acting as a way for the market to be revitalised – which also explains why households are also hiring in labour than outside of the household (although this relationship is not as robust).

It is equally notable that many of the countries in which emigrant households hire more external labour are some of the wealthier countries of the project and also countries for which agriculture plays a smaller part in the economy (for example, the Dominican Republic, Georgia, Morocco and the Philippines). This likely reflects that labour markets in these countries are more efficient than in poorer countries, meaning that it is easier to find and hire labour.

In the case of Côte d'Ivoire, emigrant households are also more likely to hire external labour. Although Côte d'Ivoire has relatively low production according to Figure 4.2, agriculture's importance in GDP there is high, meaning many workers still likely rely on the sector for employment. The country is also coming out of a violent crisis, in which many rural areas were not spared. Many people may have left following the crisis, and when stability returned to agricultural areas, demand for labour may have spiked. A similar argument can be made for Haiti in the aftermath of the 2010 earthquake.

Table 4.2. **The links between emigration and agricultural activities**

Dependent variables: Number of household members farming for the household and household hired external farming labour
Main variable of interest: Household has an emigrant
Type of model: Ordinary least squares (OLS) (column 1) and probit (column 2)
Sample: Agricultural households

Dependent variable:	Number of household members farming for the household	Household hired external farming labour
Armenia		
Burkina Faso	↑	
Cambodia		
Côte d'Ivoire		↑
Dominican Republic		↑
Georgia	↓	
Haiti		↑
Morocco	↑	↑
Philippines		↑

Note: The arrows indicate a statistically significant positive (upwards arrow) or negative (downwards arrow) relation between the dependent variable and main independent variable of interest. Costa Rica is not included due to its small sample size. The model was tested for robustness by excluding households with only return migrants, only immigrants or both, but this did not alter the results much.[3]

In sum, in households with emigrants there is some tendency to draw on more labour, sometimes from the household and often from outside of it.

Remittances and return migrants' financial and human capital are used to invest in productive activities

As urbanisation intensifies, particularly in Africa, the growing urban centres are being viewed as potential sources of investment for agriculture, especially through tools like agricultural investment funds (McNeils et al., 2010). International migration can also play a role in generating much needed financing. Many households receive money and goods from friends and family living in other countries and as agricultural households are mostly located in rural areas with poor credit and labour markets, remittances may be especially important. Given the transition away from agriculture and the emigration of productive labour, countries need to ensure that the sector remains viable, by increasing productivity for instance.

An inherent issue, however, is that the cost of transferring remittances to rural areas is also high and problematic given the shortage of banking facilities, compared to urban areas. While little is known about the remitting rate of migrants to rural or urban areas, research suggests that 40% of remittances go to rural areas (FAO, 2016), a rate that is lower than the share of the world living in rural areas (46%), and much lower than the rural share of the world living in less-developed countries (52%), least-developed countries (69) and low-income countries (70%) (United Nations, 2014).

Return migration can also potentially affect the agricultural sector in many of the same ways as remittances, since migrants may bring back financial savings, as well as their direct labour contribution and experience learned abroad.

Remittances and savings from return migrants can be invested in agricultural productive assets. Households might invest in productive assets such as machinery, barns, fencing, feeding mechanisms, irrigation systems and tractors. There are several examples of remittances being invested in agricultural assets. International migration allowed emigrant households to increase agricultural production in general in Bangladesh (Mendola, 2005) and in Ghana (Tsegai, 2004). They help counter the loss of labour induced by emigration. In fact, lost labour due to internal migration in China has been found to have a negative impact on maize production in the sending household, but remittances partially offset some of this loss (Rozelle et al., 1999).

Investment can also take several forms. Remittances can for instance stimulate shifts in agricultural activity but exactly in what remains debated. For example, the productive investment of remittances can help households move from labour-intensive to capital-intensive activities. In Botswana, Malawi and Mozambique, remittances from South Africa have enhanced both crop productivity and cattle accumulation (Lucas, 1987). Remittances help rural households shift away from producing low-yielding crops to commercial crops and animal husbandry, evidence of which has been documented in Albania (Carletto et al., 2009) and Burkina Faso (Taylor and Wouterse, 2008). Evidence for Mexico suggests that remittances are used to invest in agricultural assets, although not for investments in livestock (Böhme, 2015). A study on the Philippines found that remittances increase the share of households that produce high-value commercial crops and increase the use of mechanical tools, but they decrease the share of households that engage in crop diversification (Gonzalez-Velosa, 2011).

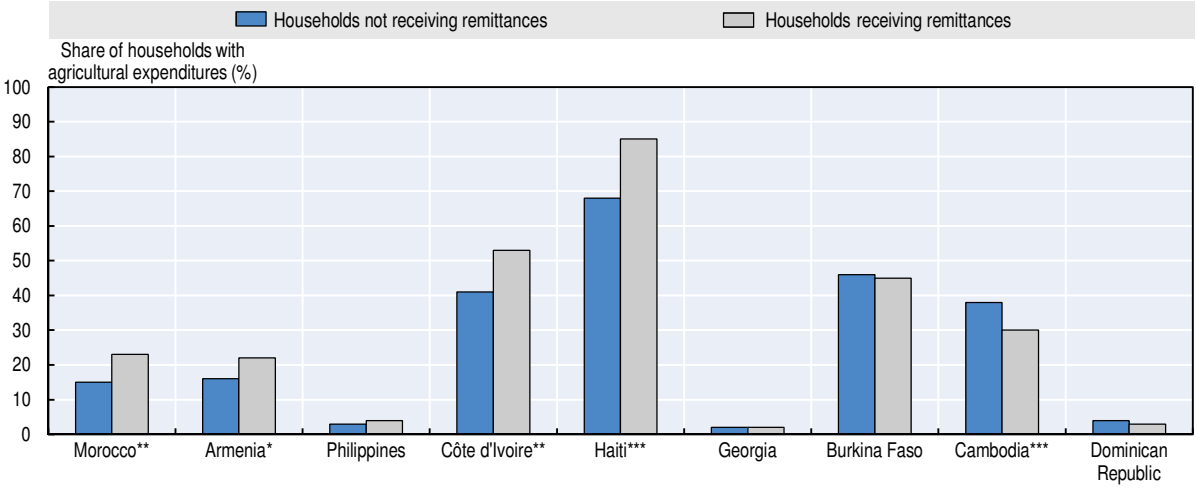
Remittances also permit agricultural households to resist and insure against hardships. Remittances sent to Botswana, for instance, allowed rural households to overcome the hardships brought on by droughts (Lucas and Stark, 1985).

This is the theory of how remittances and the savings and knowledge accrued by return migrants might be used. But what do the IPPMD data say about what is happening in the partner countries? While data on efficiency and productivity were not collected, the IPPMD research explores whether farming households use remittances to invest in agricultural assets using collected data on whether households have spent money on agricultural assets.[4]

The rate at which households invested in agricultural assets varies by country. In Haiti, it is highest, followed by Côte d'Ivoire, Burkina Faso and Cambodia. These are notably four of the poorest partner countries in the project, where productive investment in agriculture has been low in the past, and where, in the case of Côte d'Ivoire (civil unrest) and Haiti (earthquake), partly destroyed. They are also amongst the countries with the highest levels of value added in agriculture as a share of GDP amongst the IPPMD partner countries. Indeed, in Côte d'Ivoire and Haiti – and also Armenia and Morocco – there is a positive correlation between remittance receipts and agricultural assets expenditures (Figure 4.7).[5] Remittances in these countries are fuelling investment in a sector that needs it and where the returns on investment are probably high, compared to countries where the investment in agriculture was already high in the past and where dependence on agriculture in the economy is lower, such as the Dominican Republic, Georgia and the Philippines. In Armenia and Haiti, these relationships are confirmed by a probit regression analysis (Table 4.3). In Cambodia, remittance-receiving households are less as likely to spend on agricultural assets.

Figure 4.7. **Households in several countries invest remittances into agricultural assets**

Share of households with agricultural asset expenditures in the past 12 months (%), by whether they receive remittances



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered by the ratio of households receiving remittances over those not receiving any. Costa Rica is not included due to its small sample size.

Source: Authors' own work based on IPPMD data.

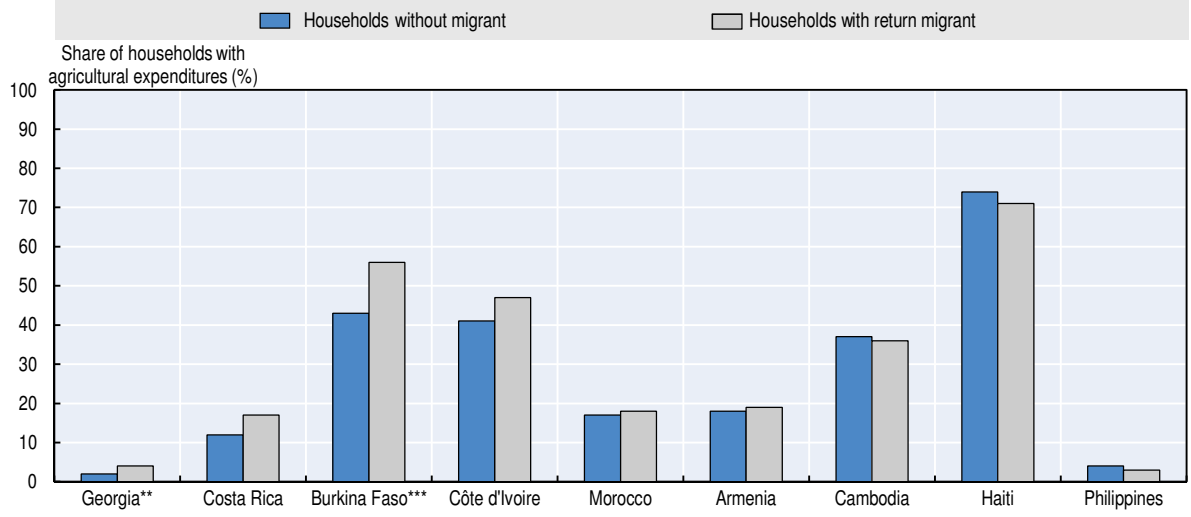
StatLink http://dx.doi.org/10.1787/888933417761

Just as for remittances, households with return migrants may positively affect the sector in terms of investments. However, the IPPMD data suggest that it is rather limited compared to the effect of remittances. Only in Burkina Faso, for instance, are return migrant households more commonly to have made agricultural asset expenditures in the past 12 months, compared to households without any returned migrant (Figure 4.8). A probit regression model confirms this positive relationship (Table 4.3). There is little literature on this subject and therefore it is difficult to understand why there is such a limited effect. In the

case of Burkina Faso, many migrants were forced back during the civil strife in Côte d'Ivoire and many of them were in the midst of their productive life, with money and skills gained in agriculture. As such, it is not so surprising that those households are also investing in agriculture in their home country. For the other countries, return migrants, particularly those that return with investment plans, may go to cities or invest in non-agricultural projects. Migration may be part of a strategy to move away from agricultural activities.

Figure 4.8. **Only in Burkina Faso are return migrant households more likely to have had agricultural expenditures**

Share of households with agricultural expenditures in the previous 12 months (%), by whether they have a return migrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered by the ratio of households with at least one return migrant over those without any. The Dominican Republic is excluded due to its small sample size.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933417776

Table 4.3. **The role of remittances and return migration in agricultural investment**

Dependent variable: Household has had agricultural asset expenditures
Main variables of interest: Household has received remittances in the past 12 months and household has a return migrant
Type of model: Probit
Sample: Agricultural households

Variables of interest:	Household has received remittances in the past 12 months	Household has a return migrant
Armenia	⬆	
Burkina Faso		⬆
Cambodia	⬇	
Costa Rica	n/a	
Côte d'Ivoire		
Dominican Republic		n/a
Georgia		
Haiti	⬆	
Morocco		
Philippines		

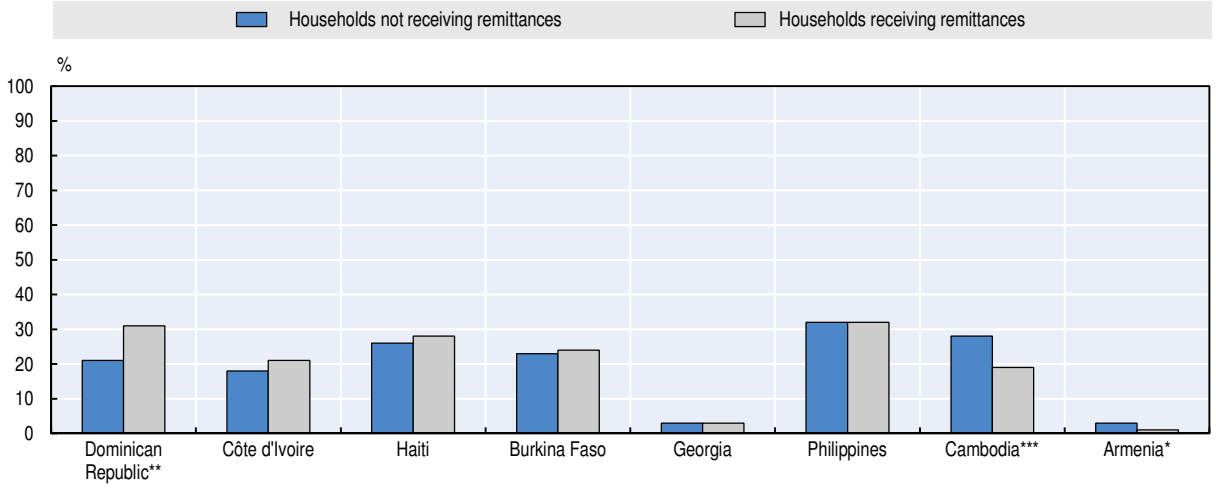
Note: The arrows indicate a statistically significant positive or negative relation between the dependent variable and main independent variable of interest. The model was tested for robustness by excluding households with only return migrants or only immigrants, but this did not alter the results much.[6]

Households that receive remittances and return migrant households may also choose to spend their additional income on entrepreneurial non-farm activities (FAO-IFAD, 2008). Such a point of view would be consistent with development and the gradual move away from agricultural dependence. 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). Indeed, Carletto et al. (2009) also find that emigration from Albania contributed towards a downward pressure on agricultural labour per capita.

The IPPMD survey included a question on whether households operated a non-agricultural business. Looking at the countries, there seems to be little evidence that remittances to agricultural households are being used to finance such businesses. Only in the Dominican Republic do the descriptive statistics point in this direction, and in fact in Cambodia, remittances are correlated with fewer non-agricultural businesses. Controlling for other factors that could affect having such a business, a probit regression analysis further confirms that not only are remittances correlated negatively with non-agricultural businesses in Cambodia, but it is also the case in Armenia and the Philippines. This may possibly be because remittances are used mostly for consumption, particularly in a poor country like Cambodia. The positive correlation found in the Dominican Republic in Figure 4.9 is not confirmed by regression analysis in Table 4.4.

Figure 4.9. **Only in the Dominican Republic are remittance-receiving agricultural households more likely to own a non-agricultural business**

Share of agricultural households operating a non-agricultural business (%), by whether they receive remittances



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of households receiving remittances over those not receiving any. Costa Rica and Morocco are excluded due to their small sample sizes.

Source: Authors' own work based on IPPMD data.

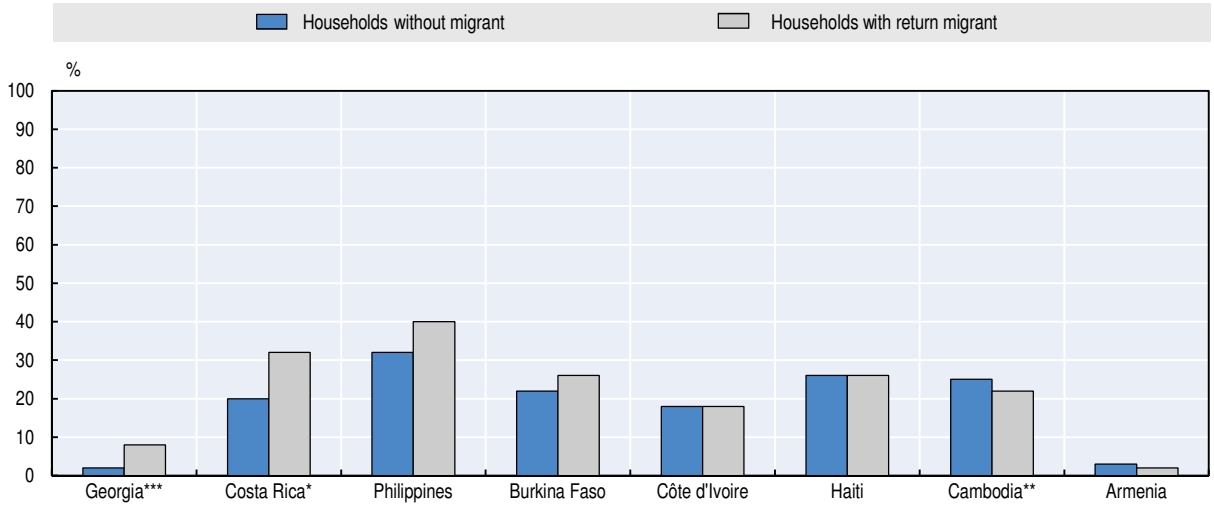
StatLink http://dx.doi.org/10.1787/888933417787

Alternatively, households with return migrants do indeed seem to channel the savings and knowledge brought back from abroad towards non-agricultural businesses. In Burkina Faso, Costa Rica, Georgia and the Philippines, agricultural households with return migrants were more likely to own a non-agricultural business (Figure 4.10). This was confirmed by a probit regression analysis in Costa Rica and Georgia. Compared to receiving remittances, having a return migrant is a much more powerful vehicle towards business ownership for agricultural households. This may be because, in addition to financial capital, businesses

need know-how, which they get from return migrants, who accumulate experience abroad. In fact, in Burkina Faso, the return of migrants from Côte d'Ivoire following conflict there has been a boon for the country, since return migrants invest in the agricultural sector (Figure 4.8) but also non-agricultural businesses as well, as shown in Table 4.4.

Figure 4.10. **In some countries, agricultural households with return migrants are more likely to own a non-agricultural business**

Share of agricultural households operating a non-agricultural business (%), by whether they have a return migrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered by the ratio of households with at least one return migrant over those without any. The Dominican Republic and Morocco are not included due to their small sample sizes.

Source: Authors' own work based on IPPMD data.

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Table 4.4. **The role of remittances and return migration in non-agricultural investment**

Dependent variable: Household operates a non-agricultural business
Main variables of interest: Household has received remittances in past 12 months and household has a return migrant
Type of model: Probit
Sample: Agricultural households

Variable of interest:	Household has received remittances in the past 12 months	Household has a return migrant
Armenia	⬇	
Burkina Faso		
Cambodia	⬇	
Costa Rica	n/a	⬆
Côte d'Ivoire		
Dominican Republic		
Georgia		⬆
Haiti		
Morocco	n/a	
Philippines	⬇	

Note: The arrows indicate a statistically significant positive or negative relation between the dependent variable and main independent variable of interest. Results denoted "n/a" refer to countries for which sample size was too small.[7]

Households with immigrants can be more likely to generate jobs and goods for the market compared to households without them

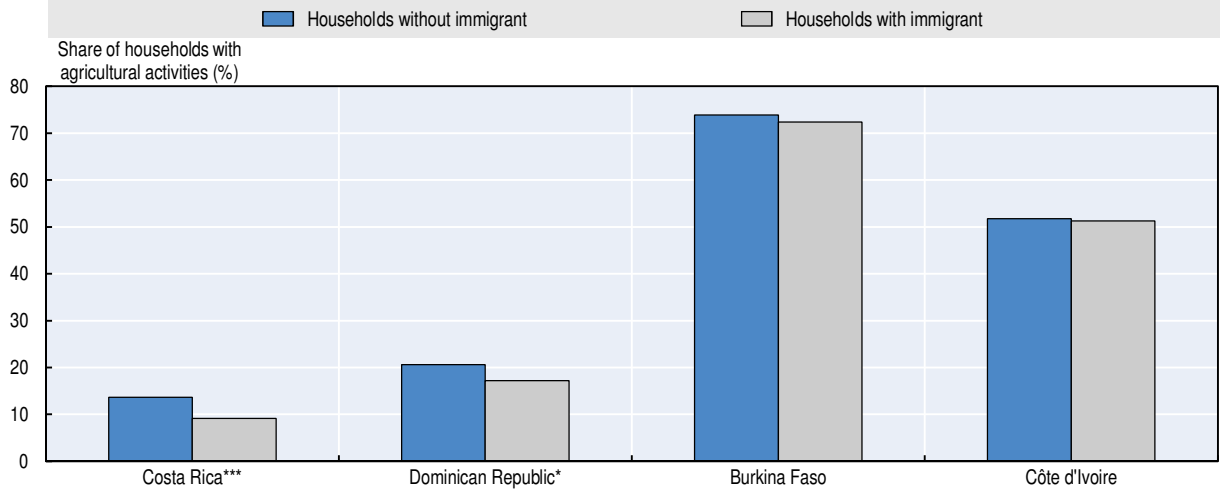
Immigrants provide labour but also the social, financial and human capital required to keep agriculture growing – often in a context in which local residents are no longer willing to work in the sector. In many countries, immigrants help fill shortages, particularly during planting and harvesting seasons. For example, emigration of rural workers from the Senegalese region of Bakel was followed by the immigration of Malian workers into Senegal (Cotula and Toulmin, 2004).

Immigrants may also bring with them new ideas and methods, as well as capital accumulated in their home countries. Moreover, jobs and investment in the agricultural sector often generate additional jobs as markets develop due to the inputs needed by farmers to produce and the transition of this production to the markets. This section explores whether immigrants play these roles in the agricultural sector in the four countries where sufficient immigrant data was collected: Burkina Faso, Costa Rica, Côte d'Ivoire and the Dominican Republic.

According to the IPPMD data collected, households with immigrants were less likely to be involved in their own agricultural activities, although the differences were significant only in Costa Rica and the Dominican Republic (Figure 4.11). This is in contrast to the fact that immigrants often work in the agricultural sector (Chapter 3). One possible explanation is that immigrants do not have the necessary capital to invest in agricultural activities. Although immigrants bring capital with them to their host country, it may not be enough to invest in their own agricultural activities. This is credible given that the data show that households with immigrants are on average poorer than households without any, with the exception of Burkina Faso. Therefore, despite being underrepresented in the agricultural sector, immigrant households can still contribute to it through, for instance, their labour (Chapter 3).

Figure 4.11. **Households with immigrants are less likely to have their own agricultural activities**

Share of households with agricultural activities (%), by whether they have an immigrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of households without immigrants over those with immigrants. Armenia, Cambodia, Georgia, Haiti, Morocco and the Philippines are excluded due to the fact that immigrant data was not collected in these countries, or the immigrant sample is too small.

Source: Authors' own work based on IPPMD data.

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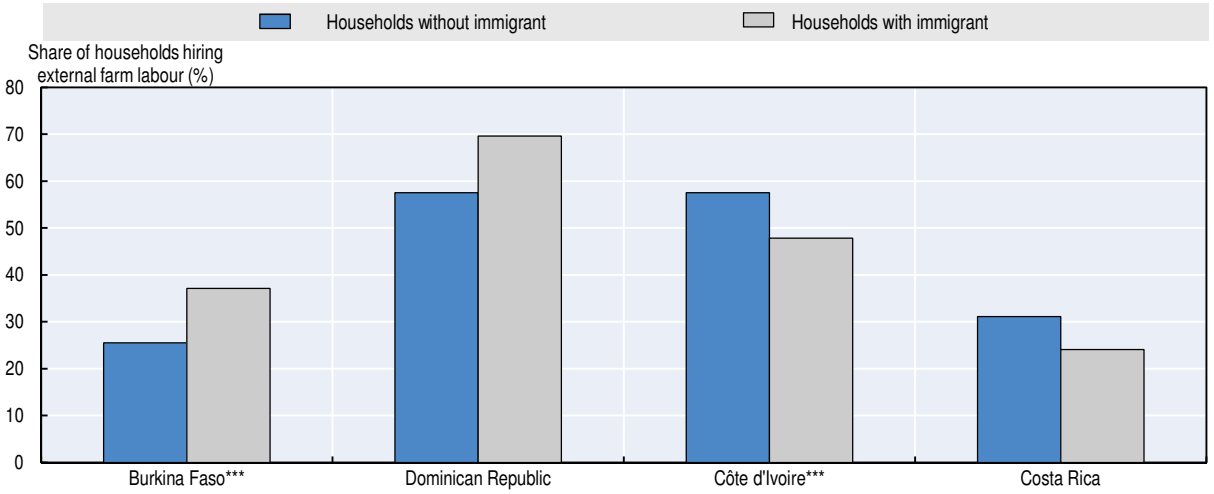
In addition, in the Dominican Republic, agricultural households with immigrants were more likely than households without immigrants to sell their produce from the last harvest on the market (90% vs. 74%), thus benefiting the economy as a whole. Immigrants also tend to hire more workers from outside the household in Burkina Faso and the Dominican Republic (Figure 4.12). These findings are further confirmed for Burkina Faso by regression analysis (Table 4.5).

Figure 4.12. **Households with immigrants can contribute to the creation of jobs**

Share of households hiring external farm labour (%), by whether they have an immigrant



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Armenia, Cambodia, Georgia, Haiti, Morocco and the Philippines are excluded due to the fact that immigrant data was not collected in these countries, or the immigrant sample is too small.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933417819

Table 4.5. **The role of immigrants in the agricultural sector**

Dependent variable: Household hired external farming labour
Main variable of interest: Household has an immigrant member
Type of model: Probit
Sample: Agricultural households

Dependent variable:	Household hired external farming labour
Burkina Faso	↑
Costa Rica	
Côte d'Ivoire	
Dominican Republic	

Note: The arrows indicate a statistically significant positive or negative relation between the dependent variable and the main independent variable of interest. Armenia, Cambodia, Georgia, Haiti, Morocco and the Philippines are excluded due to the fact that immigrant data was not collected in these countries, or the immigrant sample is too small.[8]

As a conclusion to this section, migration would seem to imply a labour cost for households that lose a productive member, but it generally benefits the countries of origin. Households with emigrants draw on more labour – either internal or external, helping to revitalise the labour market. Consequently, there is likely to be less underemployment in the sector and in rural areas in general. In addition, in certain countries remittances and also return migration fuel investment both within and outside the agricultural sector, spurring

diversification. This may be a sign that the country is edging its way out of an agricultural dependence. For countries of destination, there is sparse evidence that immigrants generate positive spillovers in the economy.

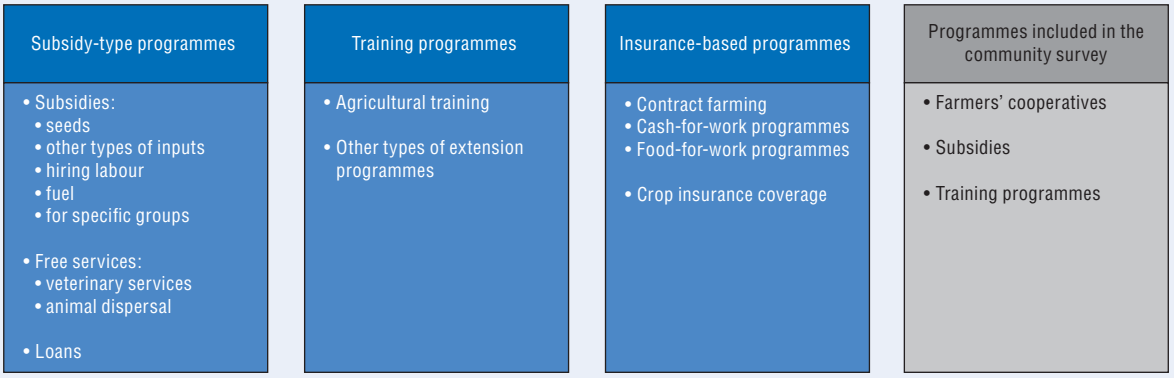
How do agricultural policies affect migration?

The previous section looks at how migration affects the agricultural sector. But the opposite is also true: agricultural policies can affect migration outcomes. The IPPMD project collected data on certain policies and programmes directly targeting farmers. These are described below and categorised into three separate groups: those that relieve cash constraints, those that are training-based and those that offer some sort of risk-reducing or insurance mechanism (Box 4.1).

Box 4.1. **Agricultural policies and programmes covered in the IPPMD project**

The IPPMD household survey asked household adult members whether they benefited from certain agricultural policies and programmes.[9] Agricultural policies include 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 4.13). Annex 4.A1 contains a full list of the programmes in place in each of the 10 countries. In addition, the community survey collected information on whether the communities have farmer's cooperatives. It also asked if certain types of subsidies and training programmes were implemented in the communities.

Figure 4.13. **Agricultural policies explored in the IPPMD surveys**



It is not always clear whether the agricultural policies introduced in Box 4.1 have a net positive or negative effect on migration flows.

By increasing the household's income flow, **agricultural subsidies** reduce financial constraints. In doing so, they may reduce the household's need to seek income elsewhere, and thus reduce emigration pressure. On the other hand, they may provide enough additional income to enable emigration. Indeed, the empirical literature is mixed. The evidence surrounding the Mexican *Procampo* subsidy programme, which mainly consists of *unconditional* cash transfers to farmers, is debated. On one hand, one study argues that it has reduced flows (Cuecuecha and Scott, 2009), while another one observes an increase of flows to the United States (Cortina, 2014). Agricultural subsidies may also provide the incentive for households to invest and channel funds towards agricultural activities, thus increasing remittances, or they may make them less necessary, thereby reducing their flow. Similarly,

they may reduce the need for a member to remain abroad and therefore the incentive for emigrants to return and – more importantly – to stay.

Improving the skills of workers is a taken strategy in many developing countries, as pointed out in Chapter 3. **Agricultural training** can provide the skills needed to increase efficiency and improve yields on their own farm or find a job on another one, thereby reducing the need to emigrate. On the other hand, by making workers more efficient and perhaps more employable, training may actually make workers more attractive to employers in other countries. Remittances can complement new skills, by providing the income necessary to invest in mechanisation for instance. Similarly, the availability of training could provide emigrants with an incentive to return if they feel the training would lead to better yields, and can increase their probability of staying in the home country. But again, if training makes workers more employable 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. Risk plays a key role in migration decisions, in two ways. First, migration may be an answer to the general level of risk in the living conditions. The New Economics of Labour Migration (NELM) theory suggests that migration is a risk diversification strategy (Stark, 1991). It posits that in high-risk environments, where credit and insurance markets are weak, migration represents an alternative route in reducing household risk, by diversifying income sources. In other words, migration is viewed as a means to escape from environments with high income variability. Second, as migration is a risky decision, individual and household-level attitudes towards risk will also play a role in encouraging or discouraging emigration. Empirical evidence suggests that risk-averse individuals are less likely to engage in migration. For instance, a study on rural Mexico indicates that highly risk-averse women have a higher probability of migrating away from places with high variability in climatic conditions, while such variability does not affect the incidence of migration for men (Conroy, 2009). Another study on rural-urban migration in China, Akgüç et al. (2015) finds that migrants and their family members are substantially less risk-averse than their counterparts staying behind.

Individuals therefore often emigrate in search of more stable income or to overcome a shock. Data collected for the IPPMD project are therefore more adapted to investigating the first link, as information on attitudes towards risk was not collected. Exposure to risk, through a lack of land or land title for instance, can push households to search for alternatives such as migration. Without land, for example, rural workers in poor agricultural economies see few alternatives other than migration. Reducing that risk should decrease the need to emigrate. However, on some occasions, it may increase it for risk-taking individuals, who see the reduced risk as an opportunity to exploit. Risk is also a main determinant for sending remittances, helping households smooth consumption and survive financial stress. Mechanisms which reduce risk – such as crop insurance protection and government contract farming programmes which guarantee incomes even when harvests are poor – may therefore also reduce the need to send remittances. On the other hand, measures which reduce risk may also make investments more secure and thus increase the flow of remittances. Similarly, reduced risk may provide the incentive to return, especially if the reason to emigrate in the first place was to avoid risk. It may also increase the potential to stay once the individual has returned.

In addition to these links, access to such policies may provide the impetus for immigrants to invest in the sector and economically integrate into society.

In sum, the potential links between agricultural policies and migration are complex. The IPPMD research has attempted to tease out some patterns through empirical analysis. The findings are presented below.

Overall, subsidies were the most common among the 10 countries surveyed. Of all the households surveyed, 9% had benefitted from subsidies and similar policies, compared to 5% for training and 1% for insurance/risk-reduction policies (Table 4.6). There are a few reasons for this. First, subsidies are often easier to administer. By deciding to subsidise seeds or pay for veterinary services, the government can provide a nudge to households to use certain products or invest in services. This is unlike training programmes, where households must play an active part in attending the course. Subsidies are also much more universal; all targeted households can access the programmes, no matter their previous training or knowledge. In a training programme, the ability to read and write, as well as a certain level of knowledge, is often required for the training to be of interest. In addition, it is not always clear for the household that it benefits from an insurance-related programme.

Table 4.6. **Subsidy-type programmes were the most common among IPPMD households**

Number and share of households benefiting from agricultural programmes

Country	Subsidy-type programmes (%)	Training (%)	Insurance (%)
Armenia	229 (23)	5 (1)	31 (3)
Burkina Faso	217 (13)	61 (4)	22 (1)
Cambodia	136 (8)	322 (19)	9 (1)
Costa Rica	24 (9)	27 (10)	13 (5)
Côte d'Ivoire	51 (4)	26 (2)	1 (<1)
Dominican Republic	10 (2)	11 (3)	4 (1)
Georgia	124 (11)	19 (2)	26 (2)
Haiti	49 (11)	20 (4)	8 (2)
Morocco	35 (6)	0 (0)	0 (0)
Philippines	33 (6)	11 (2)	2 (<1)
Unweighted average	9%	5%	1%

Note: Numbers in parentheses represent the share amongst total agricultural households interviewed.
Source: Authors' own work based on IPPMD data.

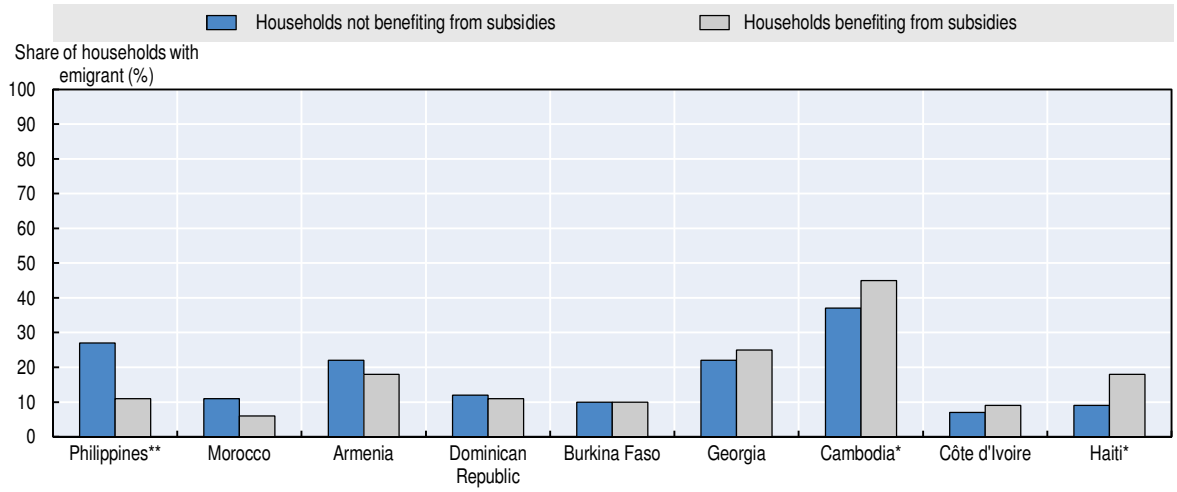
Agricultural subsidies can decrease emigration in richer countries, but increase it in poorer ones

Overall, agricultural subsidies seem to play a role in certain countries (Figure 4.14). For instance, IPPMD results show that households with an emigrant that left in the past 5 years were more likely to benefit in Cambodia (43% vs. 37%) and Haiti (18% vs. 9%), while the opposite is true for Morocco (6% vs. 11%) and the Philippines (11% vs. 27%). These differences are confirmed by regression analysis for Cambodia, Morocco and the Philippines (Table 4.7).

Benefiting households were also more likely to have a member planning to emigrate specifically within the next 12 months in Cambodia (18% vs. 12% for non-benefitting households) and Haiti (12% vs. 6%), as well to plan to emigrate at an undetermined timeframe in Burkina Faso (18% vs. 13%) and Côte d'Ivoire (41% vs. 25%). In these countries, agricultural subsidies seem to weaken the barriers to emigration – real or imagined – in the immediate term. This is confirmed by regression analysis for Burkina Faso, Cambodia and Côte d'Ivoire, as the probability of having a member planning to emigrate is higher in households benefiting from subsidies. It is the opposite for Armenia, where subsidies tend to reduce the probability of having a member plan to emigrate (Table 4.7, column 2).

Figure 4.14. **The influence of agricultural subsidies depends on the extent of structural transformation of the economy**

Share of households with emigrant (%), by whether they have benefited from agricultural subsidies



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of non-benefiting households over benefiting ones. Costa Rica is excluded due to its small sample size.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933417829

Table 4.7. **The links between agricultural subsidies and migration outcomes**

Dependent variables: Migration outcome
Main variable of interest: Household has benefited from an agricultural subsidy in the past five years
Type of model: Probit
Sample: Agricultural households

Dependent variable:	Household has an emigrant that left within the past 5 years	Household has a member planning to emigrate	Household has received remittances in the past 12 months	Return migrant household has a return migrant not planning to migrate again	Household has an immigrant
Armenia		⬇			n/a
Burkina Faso		⬆			⬇
Cambodia	⬆	⬆[1]	⬆		n/a
Costa Rica	n/a	n/a		n/a	⬇
Côte d'Ivoire		⬆			⬇
Dominican Republic				n/a	n/a
Georgia					n/a
Haiti		[10]		n/a	n/a
Morocco	⬇		⬇		n/a
Philippines	⬇				n/a

Note: The arrows indicate a statistically significant positive or negative relation between the policy and the migration outcome in question. An additional fixed effect for geographic regions was included for regressions on emigration and remittance-based outcomes. "n/a" refers to countries for which the sample was too small to carry out accurate analysis.

1. The positive estimated link between plans to emigrate and agricultural subsidies are only valid for those planning to emigrate within the next 12 months in Cambodia.[11]

What might explain these differences? In Cambodia, the government plans to expand the farming sector, partly by subsidising and financially helping households invest and diversify their activities. But is this increase in subsidies encouraging greater emigration from the sector? It is also likely that subsidy programmes in countries like Burkina Faso, Cambodia, Côte d'Ivoire and Haiti aim at helping subsistence farmers make ends meet. In Morocco and the Philippines, the subsidies have seemed to encourage people to stay in the country – perhaps even in a productive manner. Scaling them up could therefore yield

benefits to the agricultural sector in these countries. Such subsidies may, for instance, be aimed at helping the transition towards more commercial and post-harvesting activities.

Regression analysis confirms that agricultural subsidies likely crowd out remittances in Morocco, despite descriptive statistics suggesting little difference in remitting rate between those benefiting from subsidies and those not benefiting from them (24% each). This is because remittances are strongly correlated with being rural and the dependency ratio and negatively correlated with the male-to-female adult ratio in Morocco, all of which are controlled for in regression analysis. For instance, remittances may be sent to compensate for the loss of men working in the fields, or for the lack of available credit in rural areas; remittances help fill the void. On the other hand, in Cambodia the data confirm a positive link between remittances and agricultural subsidies (49% for benefiting households, 40% for non-benefiting households), signalling they may provide the incentive to invest more in agricultural activities there (Table 4.7). As is the case with emigration, Morocco and Cambodia are on opposite sides of the agricultural development spectrum. Although agriculture plays an important role in Morocco, its weight in the country's GDP is lower than in Cambodia, where agriculture is the main sector of activity. Starting from a lower level of (agricultural) development, emigrants may be more keen to keep sending remittances in Cambodia, relative to a more developed economy like Morocco.

On the flipside, there is generally no link between return migration and agricultural subsidies, with the exception of Armenia, where 69% of benefiting households had a return migrant compared to 65% of households that did not benefit. Agricultural subsidies there seem to provide the incentive for migrants to return. However, they do not seem to provide incentives to stay in the country, as regression analysis shows no link between agricultural subsidies and the sustainability of return migration. Although in 73% of benefiting households in Morocco for instance, return migrants had no plans to migrate again, whereas this rate was 60% in non-benefiting households, regression analysis does not confirm such link. Due to the very small samples, these results have to be interpreted with caution however.

In terms of immigration, it is difficult to pinpoint whether immigrants have come to work in the country because of the existence of agricultural subsidies using the data collected for the project. However, analysis using the IPPMD data confirms that immigrant households are underrepresented in Burkina Faso, Costa Rica and Côte d'Ivoire – three of the four countries for which immigration was analysed in the IPPMD project (Figure 4.15). This is more likely a sign that households with immigrants have less access to these types of programmes than households without any. Regression analysis confirms the negative link in all three countries (Table 4.7).

Agricultural training has little influence on migration outcomes

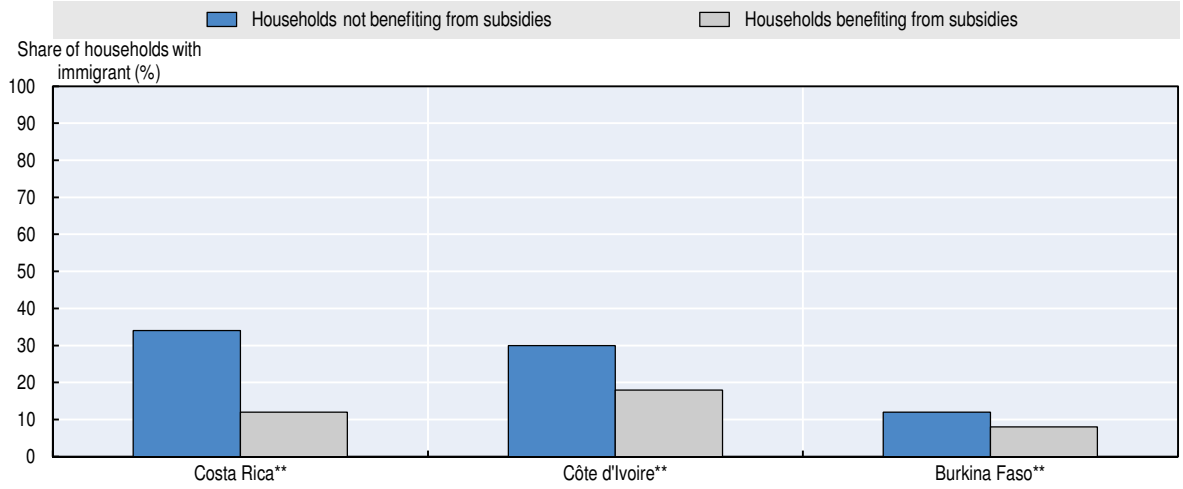
Agricultural training programmes seem to have little effect on migration outcomes. This may be because they take time to bear fruit. It may also be because they benefit individuals, while this analysis is focused on households and the links between one household member's training and another's emigration decision may not always be clear-cut.

Looking at the link between emigration and agricultural training, data from several countries – notably Burkina Faso, Côte d'Ivoire and Georgia – suggest that emigration is higher in benefiting households (Figure 4.16). However, the lone country in which there is a robust correlation between agricultural training and emigration according to regression analysis is Georgia (Table 4.8). The agricultural sector's weight in the economy has diminished quickly and manufacturing and services are fast expanding. As a result, agricultural training may be

precipitating a move out of the sector. Moreover, looking at plans to emigrate, Cambodian households that had a member benefit from training also were more likely to have a member plan to emigrate in the next 12 months, compared to households not benefiting. This also suggests that training may either be inadequate for the local labour market or that demand in nearby countries, in this case Thailand, is so strong and jobs better paid that the pull factor wins out.

Figure 4.15. **Immigrants have less access to agricultural subsidies**

Share of households with immigrant (%), by whether they have benefited from agricultural subsidies



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of non-benefiting households over benefiting ones. Armenia, Cambodia, Georgia, Haiti, Morocco and the Philippines are excluded due to the fact that immigrant data was not collected in these countries, or the immigrant sample is too small. The Dominican Republic is not included due to its small sample size.

Source: Authors' own work based on IPPMD data.

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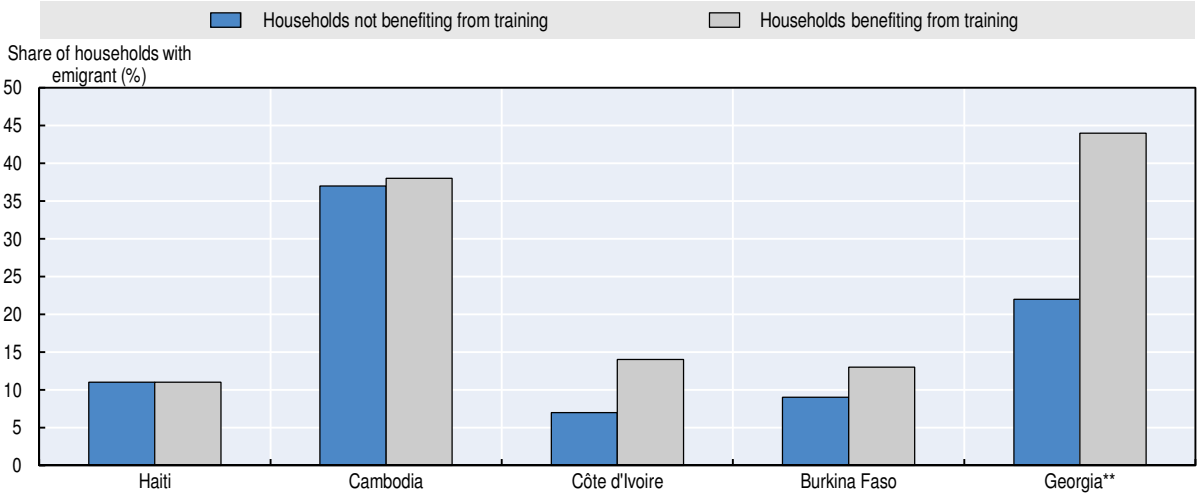
Figure 4.16. **In some countries, emigration is linked to agricultural training**

Share of households with emigrant (%), by whether they have benefited from agricultural training



Note: Statistical significance calculated using a chi-squared test is indicated as follows: ***: 99%, **: 95%, *: 90%. Countries are ordered according to the ratio of non-benefiting households over benefiting ones. Armenia, Costa Rica, the Dominican Republic, Morocco and the Philippines are excluded due to the fact that their sample is too small.

Source: Authors' own work based on IPPMD data.

StatLink http://dx.doi.org/10.1787/888933417848

It is notable that households benefiting from training were less likely to have immigrants in Côte d'Ivoire (Table 4.8); 30% of households not benefiting had an immigrant, whereas only 19% of households benefiting did. This does not suggest that the presence of such training is a pull factor for immigrants, but it may be immigrants are either targeted by such programmes or may be particularly interested in participating given they may lack knowledge of local agricultural activities. In fact, as noted earlier, immigrant households are underrepresented among households with their own agricultural activities.

Table 4.8. **The links between agricultural training programmes and migration outcomes**

Dependent variables: Migration outcome
Main variable of interest: Household has benefited from an agricultural training
Type of model: Probit
Sample: Agricultural households

Dependent variable:	Household has an emigrant	Household has a member planning to emigrate	Household has an immigrant
Burkina Faso			
Cambodia		⬆	n/a
Costa Rica	n/a	n/a	
Côte d'Ivoire			⬇
Georgia	⬆		n/a
Haiti			n/a

Note: The arrows indicate a statistically significant positive or negative relation between the policy and the migration outcome in question. Due to the general small sample sizes, a geographic regional fixed effect was not included. Armenia, the Dominican Republic, Morocco and the Philippines are not included due to their small sample sizes. "n/a" refers to countries for which the sample was too small to analyse adequately.[12]

The effect of insurance and risk-reducing programmes varies

Few robust relationships between insurance programmes and migration outcomes are found. The effect of insurance-based mechanisms is more varied. This could be because of the varied nature of the programmes, which range from government contracts based on households' agricultural output to compensation in case of a natural shock. There are also substantially fewer countries for which sufficient data were collected for a thorough analysis.

The one country where such programmes tends to have an effect is in Georgia. For example, households generally covered by such insurance mechanisms in Georgia tend to have an emigrant, while they also have a lower probability of having a return migrant (Table 4.9). This may be related to the recent path taken by Georgia in terms of agriculture's weight in its GDP. Since 2000, the share of value-added in agriculture in GDP in Georgia has decreased tremendously over the last decade. It is therefore possible that these types of programmes, much like for training programmes, are increasing the likelihood of Georgian farmers or their household members leaving this low-growth sector.

Agricultural insurance mechanisms have no link with remittances in the four countries in which data was collected, meaning the policy does not seem to crowd out remittances. In terms of immigrants, there does not seem to be a difference in access in households with immigrants or not in Burkina Faso and Costa Rica.

Table 4.9. **The links between agricultural insurance programmes and migration outcomes**

Dependent variables: Migration outcome
Main variable of interest: Household has benefited from an agricultural insurance mechanism
Type of model: Probit
Sample: Agricultural households

Dependent variable:	Household has an emigrant	Household has a member planning to emigrate	Household has received remittances in the past 12 months	Migrant household has a return migrant	Household has an immigrant
Armenia					n/a
Burkina Faso					
Costa Rica	n/a	n/a		n/a	
Georgia	⬆			⬇	n/a

Note: The arrows indicate a statistically significant positive or negative relation between the policy and the migration outcome in question. Cambodia, Côte d'Ivoire, the Dominican Republic, Haiti, Morocco and the Philippines are not included due to their small sample sizes. "n/a" refers to countries for which the sample was too small to be analysed adequately.[13]

Policy recommendations

Agriculture figures as an important sector in all development strategies of the IPPMD project countries. They all aim to diversify, expand, and export and invest more, despite the fact that agricultural value added is decreasing as a share of GDP. This chapter provides some evidence that migration can help reach these goals.

Evidence points to emigrant households drawing on more internal household labour but also hiring more outside labour. While this may put more pressure on emigrant households, it also points to a better allocation of labour in countries where the agricultural sector is characterised by underemployment and low productivity. Migration has also benefited the sector through remittances and to a lesser extent, return migration, which are linked to greater investment in agricultural assets. In addition, return migration is particularly linked with investment in non-agricultural businesses, which may reflect a transition away from the sector. Households with immigrants are less likely to run their own household activities in agriculture than households without them, possibly due to the financial constraints. However, there is some evidence that immigrant households do contribute to the agricultural economy. For example, they are more likely to sell their produce on the market in the Dominican Republic and hire in external workers for their agricultural activities in Burkina Faso.

Policies in the agricultural sector have an impact on migration decisions, which in turn affect how much migration can help the sector grow. The effect of agricultural subsidies depends on the level of development and agricultural value added in the country's GDP. In countries that have a diversified economy, they are related to less emigration, perhaps by allowing households to invest in or diversify their activities. In poorer countries, where agriculture plays an important role in the economy and where many agricultural activities are linked with subsistence, agricultural subsidies seem to increase emigration, likely by helping to lift financial constraints. This may be because subsidies in diversified economies aim at transition towards commercial and post-harvesting activities, whereas those in primarily poor and agrarian-based economies aim at reducing poverty for subsistence farmers. If reducing emigration is an objective of the policies in these countries, conditionality should be included or tightened, preferably to a direct output in the home country like agricultural yields or investment. In addition, agricultural subsidies may interact with the decision to remit. There is some evidence that training programmes increase emigration, suggesting that the skills learned through such programmes may be useful to work elsewhere. Agricultural insurance mechanisms are linked with emigration in Georgia, where the programmes are

diversified and offer stability and secured income through cash-for-work programmes and contract farming. In addition, such programmes decrease the rate of return migration back to Georgia. On the other hand, they seem to reduce emigration in Armenia, where insurance mechanisms focus primarily on compensation from natural shocks. An explanation is that in Armenia, the compensation programme happens ex-post and therefore still requires high labour input from the agricultural household, which may count on this output as their only source of financing, whereas in Georgia, the stability and guaranteed part of the mechanisms may allow the financing of the emigration of a household member. In addition, immigrants are typically not covered by agricultural subsidy and insurance programmes, which may limit their contribution to the sector, including investment in (and out) of the sector.

Individual agricultural programmes should not be treated as silos however. Agricultural subisidies that enable transition towards more post-harvesting activities need other adequate programmes that facilitate such transition, such as infrastructure, skilled labour and easier access to inputs, like land.

Table 4.10. **Leveraging migration for development in the agricultural sector**

	Policy recommendations
Emigration	• Ensure labour market mechanisms such as job centres are extended to rural areas, so that emigrant agricultural households can more easily replace lost labour if needed. • Include, enforce and increase the conditionality of agricultural aid programmes, such as subsidies and agricultural training programmes, towards practices that are more sustainable and commercial, to reduce their use to enable emigration. • Tie insurance mechanisms to in-kind benefits for the next harvest season rather than cash-based and contingent on agricultural output in quality and quantity, to ensure that they are not used to finance the emigration of a household member.
Remittances and return migration	• Support the investment of remittances in agricultural expansion and small-scale agri-businesses by developing household financial and entrepreneurial skills to enable more informed investment decisions. • Provide financial incentives for return migrants seeking to invest in agriculture to register with tax authorities, such as access to loans and tax credits, and entrepreneurial skills. • Ensure that there are adequate credit markets and money transfer operators in rural areas by supporting agricultural cooperatives and rural credit unions, to enable remittances to be channelled easily to agricultural activities. • Build appropriate agricultural infrastructure, such as irrigation and facilitate access to land and markets to make the sector more attractive for investors.
Immigration	• Reduce *de facto* barriers toinvestment byimmigrants in the agricultural sector, such as lack of access to land and markets;as well as in the non-agricultural sector, such as lack of building and land rights. • Make agricultural aid, such as subsidies and training, accessible to settled immigrants through residential registration permits for instance, to encourage their productivity and investment.

Notes

1. This chapter focuses its analysis on households, which distinguishes it from the focus on individual agricultural workers in Chapter 3.
2. Backyard farming consists of small-scale agricultural activities, within the confines of one's home, similar in comparison to the cottage industry in the non-agricultural sector.
3. Control variables in these regressions include household size, a household wealth indicator adjusted for agricultural households, the adult male-to-female household ratio and the household's dependency ratio, as well as whether the household receives international remittances and was in a rural area and a fixed effect for its geographic region. Standard errors are robust to heteroskedasticity.
4. The question posed to households was whether they had incurred expenditures for agricultural productive assets, such as farming equipment. It is important to note that in most cases, the timeframe provided was six months. This was not the case in Armenia and Georgia, where the timeframe was one year. In Burkina Faso and Côte d'Ivoire, the respondent provided the timeframe, which in most cases was one year (80% and 91% of the cases respectively).

5. Although there is a correlation between remittances and agricultural expenditures in Morocco, it is not confirmed by regression analysis.
6. Control variables in the regressions include household size, a household wealth indicator adjusted for agricultural households, the adult male-to-female household ratio and the household's dependency ratio, whether the household lives in a rural area as well as a fixed effect for its geographic region. Standard errors are robust to heteroskedasticity.
7. Control variables in the regressions include household size, a household wealth indicator adjusted for agricultural households, the adult male-to-female household ratio and the household's dependency ratio, whether the household lives in a rural area as well as a fixed effect for its geographic region. Standard errors are robust to heteroskedasticity.
8. Control variables in the regressions include household size, a household wealth indicator adjusted for agricultural households, the adult male-to-female household ratio and the household's dependency ratio, whether the household was in a rural region as well as a fixed effect for its geographic region. Standard errors are robust to heteroskedasticity.
9. The question on participation in agricultural-related programmes was stated as the following: "In the past five years, did anyone in this household participate in the following programme?".
10. This correlation is only valid when looking at households with members planning to emigrate within the next 12 months.
11. Estimations on whether the household has had an emigrant in the past 5 years do not include households with emigrants that left more than five years prior to the survey or with only return migrants. Control variables include household size, household's dependency ratio, household adult male-to-female ratio, a household wealth indicator as well as a rural dummy variable. Due to the small sample sizes, a fixed effect for regions was not included. Standard errors are robust to heteroskedasticity.
12. Control variables include household size, a household's dependency ratio, the household adult male-to-female ratio, a household wealth indicator as well as a rural dummy variable. Due to the small sample sizes, a fixed effect for regions was not included. Standard errors are robust to heteroskedasticity.
13. Control variables include household size, the household's dependency ratio, the household adult male-to-female ratio, a household wealth indicator, as well as a rural dummy variable. Due to the small sample sizes, a fixed effect for regions was not included. Standard errors are robust to heteroskedasticity.

References

Akgüç, M., X.Liu, M.Tani and K.Zimmermann (2015), "Risk Attitudes and Migration", China Economic Review, Vol.37 (C), pp.166-176.

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, C., B.Davis, N.McCarthy and T.Kilic (2009) "Assessing the Impact of Massive Out-Migration on Albanian Agriculture," The European Journal of Development Research, Palgrave Macmillan; European Association of Development Research and Training Institutes (EADI), Vol. 21(3), pp.448-470.

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, Vol. 46(1), pp. 140-161, *http://www.tandfonline.com/doi/abs/10.1080/00220380903197978*.

Cissé, P. and C. Daum (2010), "*Migrations internationales maliennes, recomposition des territoires migratoires et impacts sur les sociétés d'origine*", in *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.

Conroy, H. (2009), "Risk Aversion, Income Variability, and Migration in Rural Mexico," California Center for Population Research, UCLA, mimeo.

Cortina, J. (2014), "Subsidizing Migration? Mexican Agricultural Policies and Migration to the United States", Policy Studies Journal, Vol.42 (1), pp.101-121.

Cotula, L. and C. Toulmin (2004), *Migrations internationales et droits fonciers locaux en Afrique de l'Ouest, Dossier 132*, International Institute for Environment and Development (IIED), London; Food and Agriculture Organization (FAO), Rome; Swedish International Development Cooperation, Stockholm.

Cuecuecha, A. and J. Scott (2009), "The Effect of Agricultural Subsidies on Migration and Agricultural Employment", *Centro de Investigación y Docencia Económicas* (CIDE). *Documento de trabajo* No. 474.

FAO and IFAD (2008), "International migration, remittances and rural development", International Fund for Agricultural Development, Rome, 80 pp.

FAO (2016), "Migration, Agriculture and Rural Development: Addressing the root causes of migration and harnessing its potential for development," Food and Agriculture Organization of the United Nations, Rome, *http://www.fao.org/3/a-i6064e.pdf*.

Gonzalez-Velosa, G. (2011), "The Effects of Emigration and Remittances on Agriculture: Evidence from the Philippines", University of Maryland, Mimeo.

Harris, J. R. and M. P. Todaro (1970), "Migration, Unemployment and Development: A Two-Sector Analysis," American Economic Review 60 (1), pp. 126–142.

IOM (2009), "Migration, Environment and Climate Change: Assessing the evidence," International Organization for Migration, Geneva.

Lewis, W. A. (1954), "Economic Development with Unlimited Supplies of Labor", *The Manchester School* of Economic and Social Studies, Vol.22, pp. 139–191.

Lucas, R.E.B. (1987), "Emigration to South Africa's mines", American Economic Review 77, no. 3.

Lucas, R.E.B. and O. Stark (1985), "Motivations to remit: Evidence from Botswana", Journal of Political Economy 93, no. 5.

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.

McNeils, P., C.Miller, N.Mhlanga and S.Richter (2010), "Agricultural Investment Funds for Developing Countries," Food and Agriculture Organization of the United Nations, Rome.

Mendola, M. (2005), *Migration and technological change in rural households: Complements or substitutes?* Working paper, Dipartimento di Scienze Economiche, Aziendali e Statistiche, Università degli Studi di Milano, Milan.

Rozelle, S., J.E.Taylor and A.de Brauw (1999), "Migration, Remittances, and Agricultural Productivity in China," The American Economic Review, Vol.89, No. 2,pp. 287-292.

Skeldon, R. (2003), "Migration and migration policy in Asia: A synthesis of selected cases", Department for International Development (DFID), London.

Stark, O. (1991), "The Migration of Labor," Blackwell Publishing, Oxford.

Tacoli, C. (2002), *Les transformations dans les rapports entre villes et campagne en Afrique sub-Saharienne et leur impact sur les modes de vie*, Briefing Paper Series on Rural-Urban Interactions and Livelihood Strategies, Briefing Paper 6, International Institute for Environment and Development (IIED), London.

Taylor, J.E. and F.Wouterse (2008), "Migration and Income Diversification: Evidence from Burkina Faso," World Development, Vol. 36(4), pp. 625-640.

Tsiko (2009), "Impact of Migration on Food Security in Chiredzi, Zimbabwe", Volens Africa, *www.volensafrica.org/Impact-of-Migration-on-Food,html?lang=en*.

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.

UN (2015), *Addis Ababa Action Agenda of the Third International Conference on Financing for Development*, United Nations, New York, *https://sustainabledevelopment.un.org/content/documents/2051AAAA_Outcome.pdf*.

UN (2014), World Urbanization Prospects: The 2014 Revision, United Nations Department of Economic and Social Affairs, New York.

ANNEX 4.A1

List of agricultural programmes included in the IPPMD household survey, by country

	Armenia	Burkina Faso	Cambodia	Costa Rica	Côte d'Ivoire	Dominican Republic	Georgia	Haiti	Morocco	Philippines
Subsidies for seeds	√	√	√	√	√	√	√	√	√	√
Subsidies for other inputs	√	√	√	√	√	√	√	√	√	√
Subsidies to hire labour	√	√	√	√	√	√	√	√	√	√
Subsidies for fuel	√									
Subsidies for specific groups	√									
Subsidised veterinary services	√									
Free animal dispersal programme										√
Subsidised loans	√									
Agricultural voucher programme							√			
Agricultural training programme	√	√	√	√	√	√	√	√	√	√
Other extension programme			√	√		√				√
Contract farming	√		√	√		√	√	√		√
Crop insurance	√	√	√	√	√	√	√	√	√	√
Cash-for-work programme	√	√			√		√	√	√	
Input-for-work programme	√	√			√		√		√	
Food-for-work programme		√								
Post-disaster financial aid	√	√	√	√	√	√	√	√	√	√
Land reform	√	√	√	√	√	√	√	√	√	√