Chapter 4

What impacts does migration have on development in the Dominican Republic?

Migration – both emigration and immigration – is a significant feature of the Dominican Republic. Yet the links among the various dimensions of migration and development are not very well understood. This chapter uses the data from the IPPMD surveys to untangle some of the complex links between emigration, remittances, return migration and immigration and five key development sectors: the labour market, agriculture, education, investment and financial services, and social protection and health. The significant immigration flows into the country represent an analytical opportunity to better understand the dynamics of immigration and its links to job availability and use of government services and resources. The chapter concludes by assessing the extent to which the full development potential of migration and remittances is being realised in the Dominican Republic.

The Dominican economy has become one of the fastest-growing economies in the Latin American and Caribbean (LAC) region in recent decades (World Bank, 2016a). However, despite sustained growth and improved living conditions, people are continuing to emigrate, and an estimated 12% of the Dominican population is now living abroad. This has led to a significant increase in remittances to the country in recent decades. Growth in remittances to Latin America and the Caribbean was the most rapid among all geographical regions in 2015, at 4.8% compared to the average remittance growth rate to developing countries of 0.4%. The growing economy has also attracted a steady flow of immigrants, particularly from Haiti. Immigrants constitute an important part of the labour force, especially in low-skilled occupations.

Previous research has shown that migration and remittance have positive impacts on key development outcomes such as poverty reduction, growth and investments in human and physical capital in many Latin American countries (Fajnzylber and López, 2007). However, migration does not come without costs, and may generate losses in human capital, household income and cause social disruptions. The link between the various dimensions of migration and development in the Dominican Republic is relatively understudied (Chapter 2).

This chapter analyses how migration affects development the Dominican Republic in five policy sectors: the labour market; agriculture; education; investment and financial services; and social protection and health. The chapter presents findings from data analysis exploring the impact of four dimensions of migration: emigration, remittances, return migration and immigration.

Migration and the labour market

How does migration affect the labour market in the Dominican Republic? According to data from the Central Bank, in 2014, the country's labour force participation was 57.3%, with a higher rate for men (69%) than for women (50%). Likewise, the employment rate was higher for men than women, at 63% versus 35%, with a national employment rate of 49%. The unemployment rate was 14.5% at the national level and much higher for women (23.1%) than for men (8.7%) (BCRD, 2014). Youth unemployment (people between 15 and 24 years old) was 28.7%. The service sector was the biggest employer (68%), followed by industry (17%) and agriculture (15%). One of the country's main employment

challenges is the large informal sector. In 2014, informal employment was 55.5%, two percentage points lower than in 2012. This decrease was because of a reduction in informality in manufacturing and some services; while agriculture, construction and transportation remain highly informal (BCRD, 2015).

The IPPMD survey data (see Chapter 3) mostly echo these national patterns. For instance, the labour force participation rate among the survey sample (for people aged 15-64) was about 59%: 73% for men and 44% for women. The rate is higher in urban areas (61%) than in rural areas (51%). The employment rate is 49%: 66% for men and 31% for women, and is higher in urban areas (50%) than in rural areas (44%). The unemployment rate in the IPPMD sample is however significantly higher than national statistics, at 17%: 10% for men and 30% for women. Around 35% of the working population (aged 15 to 64) reported not being engaged in paid employment and not looking for work.

Remittances reduce the supply of labour

Emigration reduces labour supply if the migrants had been participating in the labour market before leaving. About 95% of all current emigrants in the Dominican Republic IPPMD survey are of working age (15 to 64). Among them, around 60% had been participating in the labour market before leaving. What does this loss of labour mean for households? The effects are complicated by whether emigrants send home remittances once they find employment abroad. Without remittances, the remaining household members may need to seek work; receiving remittances on the other hand can reduce their need to work. These patterns are well identified in various contexts and parts of the world (Acosta, 2007; Amuedo-Dorantes and Pozo, 2006; Funkhouser, 2006; Kim, 2007; Osaki, 2003).

How do the IPPMD data shed light on this complex situation? Figure 4.1 compares the average share of working household members in non-migrant households with the share in emigrant households *not* receiving remittances and in households that *are* receiving remittances. These descriptive statistics show that overall, remittance-receiving households have the lowest share of working adults, while households with an emigrant but not receiving remittances have the highest. This suggests a negative link between receiving international remittances and the need for those left behind to seek work. It also shows that emigrant households that are not receiving remittances have the highest share of working adults. There is a gender-differentiated pattern, however. Women in emigrant households not receiving remittances are much more likely to be working, while the difference for men in these two types of households is marginal. Remittance-receiving households also have a much lower share of men working than the other types of households compared.

Figure 4.1. **Households receiving remittances have fewer working members**

Share of household members aged 15-64 who are working
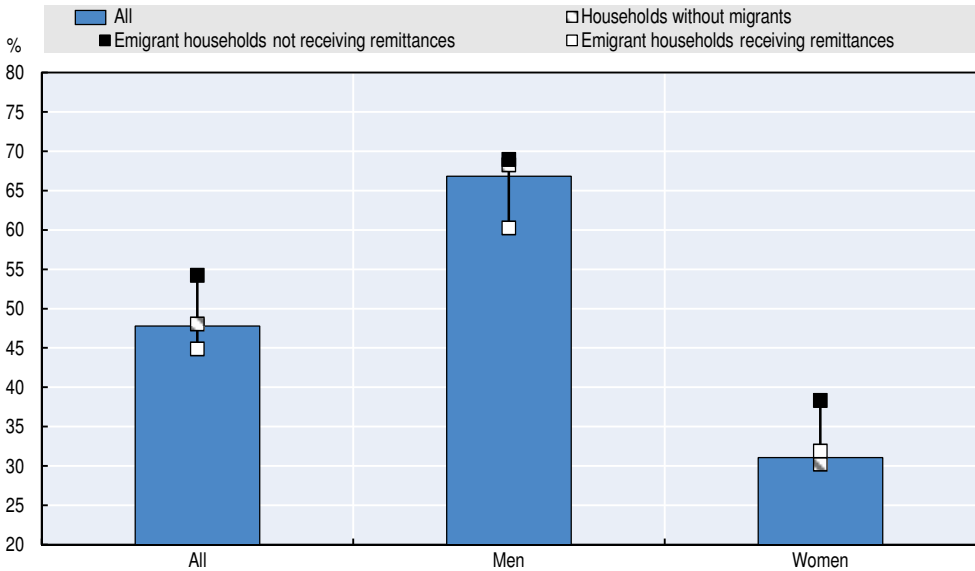
Note: The sample excludes households with return migrants only and those with immigrants only.

Source: Authors' own work based on IPPMD data.

This link was investigated further using a regression framework that controlled for other factors that may affect households' labour decisions (see Chapter 3 for methodological background). The analysis in Box 4.1 seems to confirm that household members withdraw from the labour market when they receive remittances (Table 4.1). Unlike the descriptive statistics shown above, the receipt of remittances appears to play a stronger role in women's employment than for men. There seems to be no clear link between the emigration of a household member and a households' labour decisions, however.

Immigrants constitute an important source of labour

Apart from being a country of emigration, the Dominican Republic is also a destination country for immigrants (Chapter 2). There has been a high demand for Haitian labour, particularly for low-skilled labour in urban construction and agriculture (Lozano, 2013). Despite the commonly perceived negative impacts of immigration on native populations' employment and wages, the literature generally finds little impact of immigration (Basso and Peri, 2015; Dustmann et al., 2013; Facchini et al., 2013; Gindling, 2008) with a slightly negative impact on the low-skilled native workers' wage level (Camarota, 1998; Orrenius and Zavodny, 2003).

Box 4.1. **The links between migration and employment**

To investigate the link between migration and households' labour decisions, the following regression models were used:

$$share\_working_{hh} = \beta_0 + \beta_1 emig_{hh} + \beta_2 remit_{hh} + \gamma_1 controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (1)$$

$$m\_share\_working_{hh} = \beta_0 + \beta_1 emig_{hh} + \beta_2 remit_{hh} + \gamma_1 controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (2)$$

$$f\_share\_working_{hh} = \beta_0 + \beta_1 emig_{hh} + \beta_2 remit_{hh} + \gamma_1 controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (3)$$

where $share\_working_{hh}$ signifies households' labour supply, measured as the share of household members aged 15-64 who are working; $m\_share\_working_{hh}$ is the share of male household members that are working among men; and $f\_share\_working_{hh}$ for female household members. $emig_{hh}$ represents a variable with the value of 1 where a household has at least one emigrant, and $remit_{hh}$ denotes a household that receives remittances. $controls_{hh}$ stands for a set of control variables at the household level.[a] δ_r implies regional fixed effects and ε_{hh} is the randomly distributed error term. The coefficients of variables of interest are shown in Table 4.1.

Table 4.1. **Remittances and migration seem to reduce labour market participation**

Dependent variable: Share of the employed among household members aged 15-64
Main variables of interest: Having an emigrant/receiving remittances
Type of model: ordinary least squares (OLS)
Sample: All households with at least one member working

Variables of interest	Share of the employed household members among:		
	(1) All	(2) Men	(3) Women
Household has at least one emigrant	-0.007	-0.034	0.029
	(0.027)	(0.037)	(0.035)
Household receives remittances	-0.050**	-0.045	-0.060**
	(0.023)	(0.033)	(0.031)
Number of observations	1 297	1 037	1 202

Note: Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Standard errors in parentheses. The sample excludes households with return migrants only and those with immigrants only.

a. Control variables include the household's size and its squared value, the dependency ratio (number of children 0-15 and elderly 65+ divided by the total of other members), the male-to-female adult ratio, family members' mean education level, its wealth estimated by an indicator (Chapter 3) and its squared value.

According to the IPPMD data, about 90% of all immigrants surveyed in the Dominican Republic are of working age (15 to 64), while the corresponding share is 60% for native-born populations. Furthermore, young people (aged 15 to 34) account for 78% of all immigrants, but make up only 43% of the native

population. Immigrants are also more likely to be working than native-born people. Among adults aged 15 and above, the share of employed people is much higher for immigrants (58%) than for native people (43%). Likewise, the economically non-active population (those who are not working and not looking for jobs) is twice as large for native populations (42%) than immigrants (21%).

Immigrants constitute 21% of the total labour force surveyed. The labour brought by immigrants to the country can benefit specific sectors. The IPPMD research explored this for four key sectors – agriculture, construction, education and health – by comparing the share of immigrants in the total number of workers in each sector. The agriculture and construction sectors have larger shares of immigrants than the education and health sectors (Figure 4.2, left-hand chart). This is related to the skills level of immigrants in the Dominican Republic, who are more likely than native-born workers to have low-skilled occupations (Figure 4.2, right-hand chart).

Figure 4.2. **Immigrant workers are more likely to have low-skilled occupations in agriculture and construction**
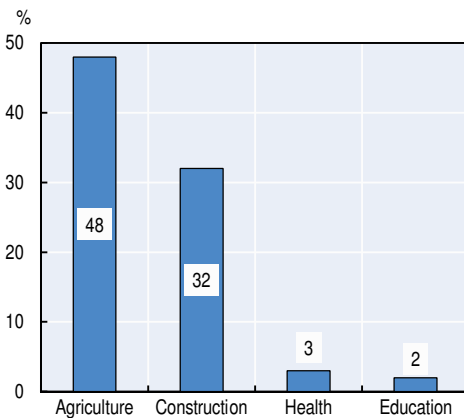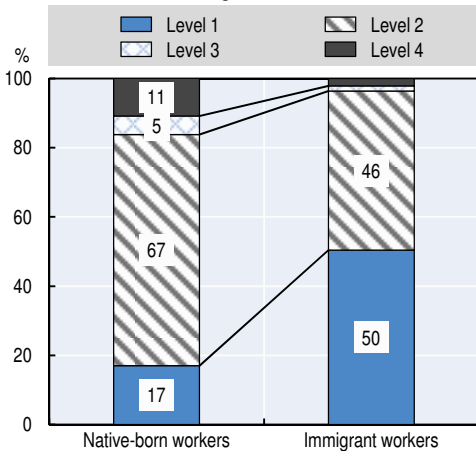
Note: The skills level of occupations has been categorised using the International Standard Classification of Occupations (ISCO) provided by the International Labour Organization (ILO, 2012). Skills level 1: occupations which involve simple and routine physical or manual tasks (includes elementary occupations and some armed forces occupations). Skills level 2: clerical support workers; services and sales workers; skilled agricultural, forestry and fishery workers; craft and related trade workers; plan and machine operators and assemblers. Skills level 3: technicians and associate professionals and hospitality, retail and other services managers. Skills level 4: Other types of managers and professionals.

Source: Authors' own work based on IPPMD data.

Migration and agriculture

While agriculture plays an important role in the Dominican Republic, its weight in gross domestic product (GDP) is relatively small compared to other IPPMD countries. Most of the structural transformation in the sector happened in the 1990s, when value-added in agriculture as a share of GDP shrank from 15% to 8% between 1990 and 1999 (World Bank, 2017). Agriculture also employs a smaller share of the country's labour force than in most other IPPMD countries (OECD, 2017). In 2013, 14% of the employed population worked in the agricultural sector (FAO, 2016a) – the ninth lowest rate amongst IPPMD partner countries (Costa Rica is lowest at 13%). The third lowest rate is in the Philippines – at 31%. Productivity in the sector is good, however. An agricultural production per capita index measured at 100 in 2004-2006 had increased to 120 by 2013, the fourth biggest increase amongst IPPMD partner countries over that period (FAO, 2016b).

Few households in the Dominican IPPMD sample are involved in agricultural activities.[1] Of the 2 037 households interviewed, only 402 (20%) were agricultural at the time of the survey. This is largely a reflection of the low share of rural households in the sample (23%), and in the country as a whole (22%, United Nations, 2014). Of the agricultural households in the IPPMD data, 74 households or 18% exclusively grow crops, 185 households or 46% exclusively rear livestock, while 143 households or 36% do both. This section looks at these households to see whether emigration and remittances are helping to modernise and increase productivity in the agricultural sector.

### *Emigration contributes to revitalising the agricultural labour market*

Studies of other countries have shown that emigration decreases labour availability within the household and can lead to agricultural labour shortages (Tacoli, 2002) and food insecurity in certain communities (Skeldon, 2009; Cotula and Toulmin, 2004; Cissé and Daum, 2010; Tsiko, 2009). As we have seen above, the impact of emigration and remittances on household labour decisions is complex. There are few empirical studies which explore this for agricultural households specifically, however.

What do the IPPMD data tell us about the impact of labour lost to emigration on rural households in the Dominican Republic? 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. Figure 4.3 suggests that emigrants are being replaced by hired-in labour. Compared to households without emigrants, households with emigrants draw on slightly less household labour (1.3 vs. 1.1 household members). However, emigrant households are more likely to hire in external workers (75% vs. 56%) and in larger numbers than non-emigrant households (11.8 vs. 5.4 external workers). This would suggest that emigration is causing

households to draw on the external labour market, relieving congestion in the agricultural labour market and perhaps even improving productivity (though data on productivity was not collected).

Figure 4.3. **Agricultural households with emigrants are more likely to hire in external workers and in higher numbers than non-emigrant households**

Use of labour in agricultural activities, by whether the household has an emigrant
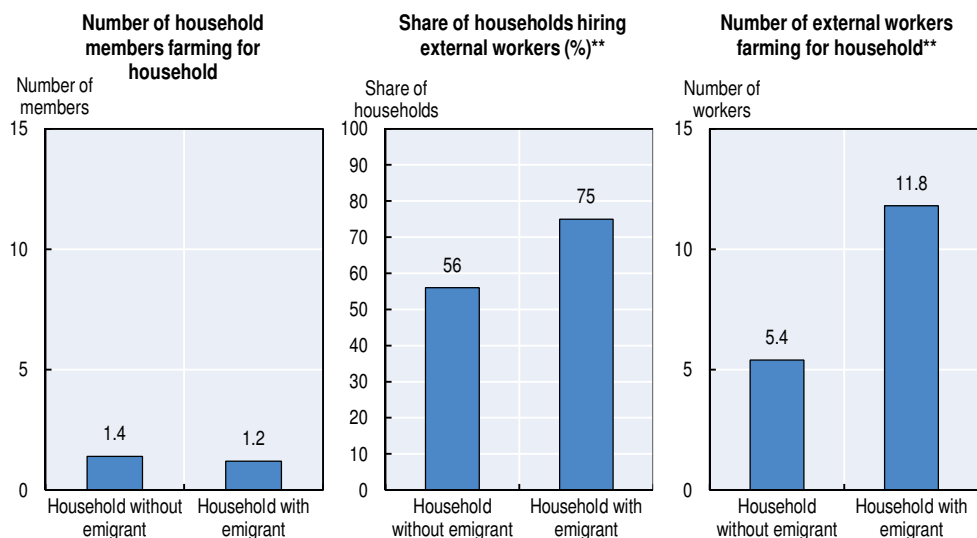
Note: Statistical significance calculated using a t-test (1st and 3rd graphs) and chi-squared test (middle graph) is indicated as follows: ***: 99%, **: 95%, *: 90%.

Source: Authors' own work based on IPPMD data.

Regression analysis controlling for a number of factors that may also affect use of farm labour was used to explore these links more fully (Box 4.2). To help isolate the effects of emigration and remittances (which may also affect the labour behaviour of the household), an initial model excluded remittance-receiving households. The results (shown in Table 4.2, top rows) suggest that there are no statistically significant links between emigration and the number of household members working on the farm, the probability of hiring external workers, or the number hired.

However, as remittances can reduce the need to hire more labour, either because they allow the household to live on lower agricultural outputs or because remittances are used in other productive ways, a second model includes remittance-receiving households and controls for the fact that a household may receive remittances (Table 4.2, bottom rows). The results confirm the lack of a link between emigrant households and use of household labour in agricultural activities, and also confirm that they are more likely to hire in more labour, unless they receive remittances. There does not seem to be a link between emigration and the number of external workers hired, however.

Box 4.2. **The links between emigration and farm labour**

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:

$$number\_workers_{hh} = \beta_0 + \beta_1 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (4)$$

where the unit of observation is the household hh and the dependent continuous variable *number_workers* in equation (4) represents the number of people working in the fields; $emig_{hh}$ represents the whether the household has a former member who has emigrated or not; $control_{hh}$ stands for a set of household-level regressors;[a] while δ_r represents regional-level fixed effects. Standard errors, ε_{hh}, are robust to heteroskedasticity.

In addition, the following probit model was estimated:

$$Prob(hire\_external)_{hh} = \beta_0 + \beta_1 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (5)$$

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 (4).

Table 4.2. **Emigrant households draw on more agricultural labour**

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

Variables of interest	Dependent variables		
	(1) Number of household members working for the household (equation 4)	(2) Household has hired external labour (equation 5)	(3) Number of external workers hired by household[1] (equation 4)
Sample: Agricultural households excluding remittance-receiving households			
Household has an emigrant	-0.331 (0.248)	0.118 (0.180)	-0.515 (1.728)
Number of observations	146	146	86
Sample: Agricultural households including remittances-receiving households			
Household has an emigrant	0.077 (0.156)	0.301*** (0.103)	3.778 (3.301)
Household receives remittances	-0.215 (0.145)	-0.244* (0.129)	5.052 (5.370)
Number of observations	191	192	113

Notes: Statistical significance is indicated as follows: ***: 99%, **: 95%, *: 90%. Coefficients resulting from probit model estimations reflect marginal effects. Standard errors are in parentheses and robust to heteroskedasticity.
1. This regression model is estimated only for those households that hired at least one external worker.

Results are presented in Table 4.2. Column (1) presents results on the number of household members working in agricultural activities for the household, column

Box 4.2. **The links between emigration and farm labour** *(cont.)*

(2) presents results on whether the household hired external labour 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 remittance-receiving migrant households and show coefficient results related to both emigration and remittances.

a. Control variables for all regression model estimations related to agriculture 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 administrative region.

The finding that emigrant households are more likely to hire external workers provides some evidence that emigration is helping to revitalise the labour market by shifting labour demand outside of the household. Remittances, on the other hand, seem to reduce the need to hire labour from outside the household.

Migration and education

Migration and education are closely linked, and migration can play an important role in enhancing educational outcomes at national and individual levels. People emigrate to obtain quality education abroad for themselves or their children, or to earn money to pay for schooling for children left in the country of origin. Emigration and immigration can also change the skills composition of the population in a country, and access to education is crucial for immigrant integration.

The Dominican Republic has seen significant gains in access to education at all levels in the past 15 years, with a closing gap in educational achievement between the bottom 40% and the top 60% (World Bank, 2016a). Net primary education enrolment rates reached 84% in 2014 (World Bank, 2016b). The mean years of schooling of the adult population is 7.8 years, and about 12% have finished post-secondary education (UNESCO, 2016). However, the Dominican Republic, like many other countries in the region, is facing high school dropout and low completion rates. In the age group 15-29, 27% have dropped out of school without competing secondary education. Youth educational attainment is slightly lagging behind the average for the region, with 54% of youth (aged 25-29) completing secondary education and 12% completing tertiary education, compared to the LAC average of 55% and 15% respectively (OECD/ECLAC/CAF, 2016).

Children in immigrant households are less likely to attend school

Research has shown that remittances can ease financial constraints and allow households to invest in human capital (see for example Cox Edwards and Ureta, 2003; Hanson and Woodruff, 2003; Yang, 2008). On the other hand, the departure of a household member may have disruptive effects on child and youth schooling due to emotional stress or the need to take on more housework, farm work or work outside the household to compensate for the loss of a household member (Amuedo-Dorantes and Pozo, 2010; Save the Children, 2006).

Evidence from various Latin American countries shows that children in remittance-receiving households tend to be less likely to drop out of school (Acosta et al., 2008; Calero et al., 2009; Cox-Edwards and Ureta, 2003; Hanson and Woodruff, 2003). However, evidence from Mexico also points to the fact that migration can have a negative impact on educational attainment of children in secondary school (López-Córdoba 2005; McKenzie and Rapoport, 2006). There is little research into the link between migration and school outcomes in the Dominican Republic, however. The evidence that does exist shows limited links between migration and remittances and school attendance. For example, one study finds that remittances have a positive impact on secondary school attendance, while the emigration of a household member negatively affects children's school attendance, thereby tempering or even eliminating the positive effects of remittances in households that both have an emigrant and receive remittances (Amuedo-Dorantes and Pozo, 2010). Another study finds that though remittances raise educational attainment in several Latin American countries, this is not the case in the Dominican Republic (Fajnzylber and López, 2007).

What do the IPPMD data tell us about these links? The descriptive data show that among children of primary school age (6-14 years), school attendance is almost universal, at 97%. Primary school age children living in immigrant households are slightly less likely to attend school, however, at 90%.[2] Among youth in the age 15-22, 47% attend school. Youth in households that receive remittances or have a return migrant are more likely to attend school (at 50% and 52% respectively) than those in households not receiving remittances or without a return migrant (46% and 47% respectively). However, these differences are not statistically significant. Youth in immigrant households are significantly less likely to attend school than youth in non-immigrant households: only 24% of youth living in an immigrant household attend school (Figure 4.4).

More in-depth analysis, controlling for household characteristics, shows no statistically significant link between youth school attendance and emigrant households and those receiving remittances (Box 4.3, column 3). In line with the descriptive statistics in Figure 4.4, children living in immigrant households are however significantly less likely to attend school, and this link is statistically significant. Failure to provide education to first and second generation immigrants may negatively affect their integration and future

employability, as well as constituting a lost opportunity for the country when it comes to long-term human capital accumulation.

Figure 4.4. **Immigrants are less likely to attend school**
Share of youth (aged 15-22) attending school
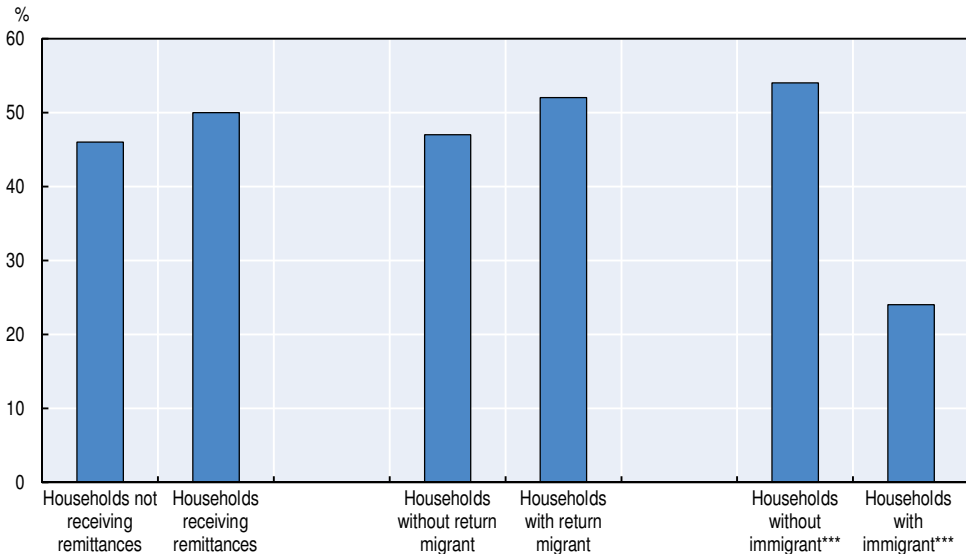
Note: Statistical significance calculated (using a chi-squared test) is indicated as follows: ***: 99%, **: 95%, *: 90%.
Source: Authors' own work based on IPPMD data.

As well as affecting school attendance, migration and remittances may also affect educational expenditures. Students in developing countries are often required to pay for books, education supplies or tutoring fees (Amuedo-Dorantes and Pozo, 2010). Remittances or funds brought back by return migrants can help finance these additional educational expenditures, or allow households to send their children to better schools. The results in Box 4.3 (Table 4.3, column 1 and 2) show no statistically significant association between households receiving remittances and educational expenditures. However, having an emigrant in the household is positively associated with the amount that the household spends on education, as is having a return migrant in the household. The findings suggest that it is the decision to emigrate and return rather than the income increase from remittances that links migration to higher educational expenditures. This could be due to changing preferences for schooling due to migration, or perhaps emigrant and return migrant households have unobservable characteristics such as a strong preference for child schooling. Another explanation that has been put forward in previous studies is that households separate migrant income from remittance income. Migrant income may be considered to be "life-cycle" income by the household, to be used for investment that would generate greater opportunity for children in the future, while remittances are seen more as more

"targeted earnings" that are used to overcome income shocks (Jakob, 2015). Finally, the results show no statistically significant link – either positive or negative – between immigration and educational expenditures (Table 4.3, lower part).

Box 4.3. The links between migration and education

A regression framework was developed to estimate the effect of migration and remittances on education expenditures using the following equation:

$$Prob(education_i) = \beta_0 + \beta_1 remit_{hh} + \beta_2 emig_{hh} + \gamma controls_{hh} + \gamma controls_i + \delta_r + \varepsilon_i \quad (6)$$

$$Ln(edu\_exp_{hh}) = \beta_0 + \beta_1 remit_{hh} + \beta_2 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (7)$$

$$\frac{edu\ exp_{hh}}{total\ exp_{hh}} = \beta_0 + \beta_1 remit_{hh} + \beta_2 emig_{hh} + \gamma controls_{hh} + \delta_r + \varepsilon_{hh} \quad (8)$$

where $Prob(education_i)$ in equation (6) represents a binary variable for whether an individual is attending education or not. The dependent variables $Ln(edu\_exp_{hh})$ in equation (7) and $\frac{edu\ exp_{hh}}{total\ exp_{hh}}$ in equation (8) represent household educational expenditures measured in absolute (logged) values or as share of total household yearly budget respectively; $remit_{hh}$ represents a binary variable for households receiving remittances, where "1" denotes a household receiving remittances and "0" if not, while $emig_{hh}$ takes on value "1" if the household has at least one emigrant and "0" if not. $controls_{hh}$ and $controls_i$ are two sets of observed household characteristics influencing the outcome.[a] δ_r represents regional-level fixed effects, standard errors, ε_{hh}, are robust to heteroskedasticity.

Table 4.3. Emigration and return migration are linked to educational expenditures

Dependent variable: Educational expenditures (values and share of household budget), school attendance
Main variables of interest: Receiving remittances/having an emigrant/return migrant/immigrant
Type of model: OLS, Probit
Sample: All households (column 1 and 2), youth aged 15-22 (column 3)

Variables of interest	Dependent variable		
	(1) Educational expenditure (amount)	(2) Educational expenditure (share)	(3) School attendance (age 15-22)
Household receives remittances	-0.038	0.002	-0.032
	(0.095)	(0.003)	(0.041)
Household has at least one emigrant	0.197*	0.000	-0.003
	(0.108)	(0.003)	(0.041)
Number of observations	841	1 820	1 117
Household has a return migrant	0.471**	0.002	0.109
	(0.206)	(0.006)	(0.108)
Number of observations	841	1 820	1 117
Household has an immigrant	0.166	-0.001	-0.213***
	(0.107)	(0.002)	(0.050)
Number of observations	841	1 820	1 117

Notes: Results that are statistically significant are indicated as follows: ***: 99%, **: 95%, *: 90%. Standard errors are in parentheses.

Box 4.3. **The links between migration and education** *(cont.)*

The middle part of the table analyses the association between return migration and educational spending and attendance. The remittance variables are replaced by a binary variable indicating if the youth is living in a return migrant household.

The lower part of the table analyses the association between immigration and educational attendance and spending. The migration and remittance variables are replaced by a binary variable for an individual living in an immigrant household, or an individual being an immigrant him/herself.

a. The set of household and individual explanatory variables included in the model are the following: household size and household size squared, household dependency ratio (defined as the number of children and elderly in the household as a share of the total adult population), mean education level of the members in the household, number of children and youth in the household, binary variables for urban location, and finally an asset index (based on principal component analysis) that aims to capture the wealth of the household (for all three equations), in addition the model for school attendance also includes a control for age and gender of the youth and the male to female ratio in the household. Regressions related to emigration and return migration control for household having an immigrant and regressions related to immigration controls for household having an emigrant.

Return migration encourages investments in private schooling

Migration and remittances may also create a demand for better quality schooling, such as private schooling, which is often more costly but may offer higher quality education. Previous research has shown that children in remittance-receiving households in Latin America are more likely to attend private schools (Medina and Cardona, 2010; Jakob, 2015). The IPPMD descriptive statistics also show that children in households that receive remittances are more likely to attend private schools (20%) than children in households that do not receive remittances (16%). However, an even bigger difference is found among children in return migrant households: 43% of children living in return migrant households attend private school, compared to 17% for children in households without return migrants (Figure 4.5).[3] This indicates that parts of the increase in education investments due to migration may be directed towards private schools, especially among households with return migrants.

Emigrants often return with additional skills

Whether or not migrants acquire education and skills in the destination country affects the economic payoff of migration (Dustmann and Glitz, 2011). Migrants who acquire education abroad and return with new skills can help increase human capital back home. The extent to which this will happen

depends on the degree to which emigrants improve their skills during their migration period, and whether migrants return to their origin countries or not. The Dominican emigrants in the IPPMD sample are relatively well educated compared to individuals without migration experience. Among emigrants, 23% have completed post-secondary education, compared to 16% of return migrants and individuals without migration experience (Table 3.5, Chapter 3). Comparing the sample of emigrants and return migrants in more detail shows that male return migrants are the most likely to have acquired training in the country of destination (31%) (Figure 4.6). Women – both current emigrants and returnees – are more likely to have completed post-secondary education than men, but less likely to have acquired education in the country of destination. Even so, 23% of female return migrants state that they acquired training abroad. The results further indicate that although the Dominican Republic is losing some of its highly educated workforce to emigration, return migration is contributing to human capital to a certain extent.

Figure 4.5. **Children in return migrant households are more likely to attend private school**

Share of children (aged 6-15) attending private school (%)
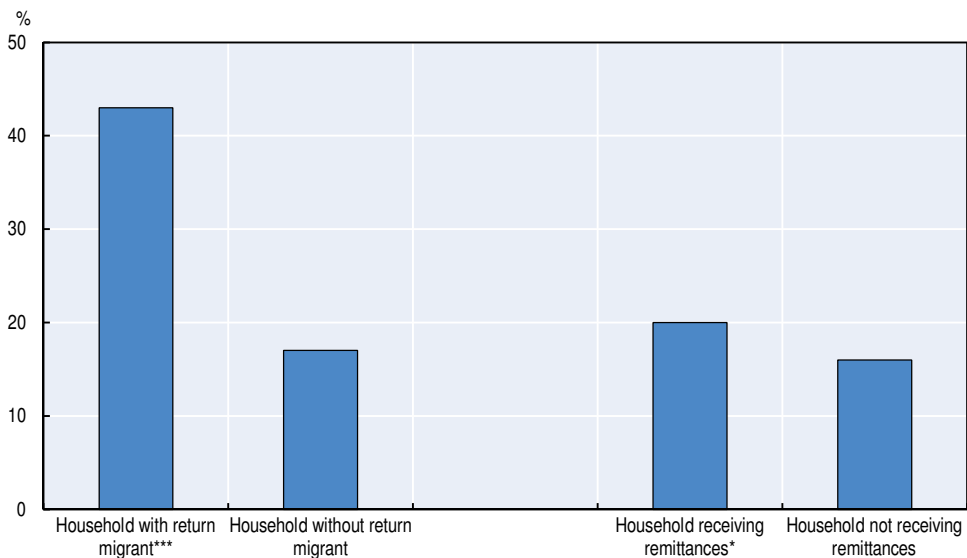
Note: Statistical significance calculated (using a chi-squared test) is indicated as follows: ***: 99%, **: 95%, *: 90%.
Source: Authors' own work based on IPPMD data.

Figure 4.6. **One in three male return migrants come back with new qualifications acquired overseas**

Education and skills levels of emigrants and return migrants (%)
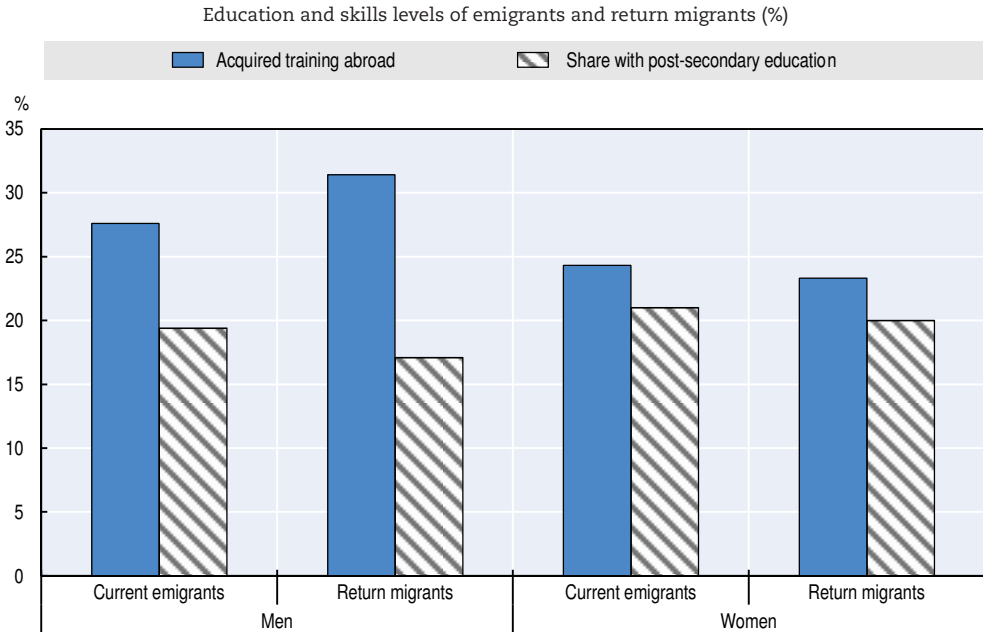
Note: Post-secondary education includes vocational post-secondary education and tertiary education.
Source: Authors' own work based on IPPMD data.

Migration, investments and financial services

Migration can ease credit constraints and positively contribute to capital investments and entrepreneurial activities, such as financing the opening or expansion of small businesses, in the emigrants' country of origin. There are three main ways in which migration can achieve this:

- Remittances can be invested in productive capital in the form of business and real estate.
- Return migrants can bring funds, entrepreneurial skills and valuable networks back to their country of origin.
- Immigrants can contribute to entrepreneurial activity and employment creation in their host countries.

Studies from other countries have found that remittances are linked to higher self-employment (Funkhouser, 1992) and business investments (Yang, 2008; Woodruff and Zenteno, 2007), and that return migrants are likely to engage in entrepreneurial activities (McCormick and Wahba, 2001; Dustmann and Kirchkamp, 2002). These patterns may be linked to both the human and financial capital stemming from migration (Amuedo-Dorantes and Pozo, 2006). In addition, immigrant entrepreneurs can maintain and develop economic

activities and revitalise the economy of host countries by developing innovative forms of businesses and building on their transnational linkages. In many OECD countries, immigrants exhibit higher rates of self-employment than the native-born population. Part of the explanation may be limited employment opportunities for immigrants in the host country, especially among low-skilled immigrants. Immigrants may also face particular barriers when it comes to starting and running a business, including limited knowledge of laws and regulations in the country of destination, lack of language skills and barriers to accessing credit (OECD, 2010).

A majority of the self-employed in the Dominican Republic are own-account workers rather than employers, and few define themselves as entrepreneurs. The barriers to entrepreneurship in the Dominican Republic are similar to the LAC average (OECD, 2016). The country is ranked 14 out of 33 LAC countries on the World Bank doing business index, and 103 out of 190 countries worldwide (World Bank, 2016c).

Remittances are linked to higher business ownership in urban areas

Remittances sent back by emigrants in the United States to home communities in Latin America have been shown to positively affect local development if they are invested productively (Woodruff and Zenteno, 2007). However, other studies show that remittances are not always used to accumulate productive capital, but rather used to support daily consumption (Adams and Cuechuecha, 2010). For example, a study cited in Chapter 2 showed that Dominican emigrants tend to use remittances mainly for consumption purposes (60%), with only a small share invested in entrepreneurial activities (5%; Suki, 2004).

The IPPMD data presented in Chapter 3 show that the most common financial activities for households receiving remittances from former members are savings (8%), taking out a bank loan (7%) and paying for health treatment (5%) (Figure 3.6). However, the vast majority of remittance-receiving households claimed not having undertaken any financial activity since a member left the household.

Overall, 22% of the households in the IPPMD sample own a business. Business ownership is higher among households in urban areas (23%) than in rural areas (17%). Households receiving remittances and households with return migrants are more likely to own businesses than those with no migration experience. Immigrant households are just as likely to own a business as households without immigrants (Figure 4.7).

The findings of other research into the link between migration and entrepreneurship in the Dominican Republic are mixed. A study examining the link between remittance receipt and business ownership found that while remittances do not increase the likelihood that the household owns a business,

business owners are more likely to receive remittances (Amuedo-Dorantes and Pozo, 2006). However, another study found that remittances are significantly and positively associated with self-employment (Fajnzylber and López, 2007).

Figure 4.7. **Households receiving remittances and with a return migrant are the most likely to own a business**

Share of households owning business, by migration experience
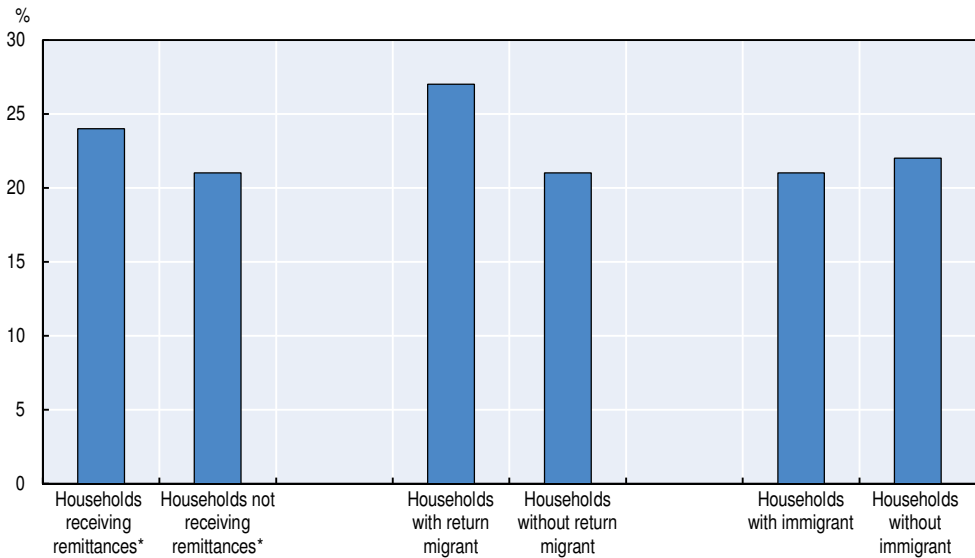
Note: Results that are statistically significant (calculated using a chi-squared test) are indicated as follows: ***: 99%, **: 95%, *: 90%.
Source: Authors' own work based on IPPMD data.

Box 4.4 probes more deeply the link between migration experience (emigration, remittances, return migration and immigration) and investments in business ownership, controlling for the characteristics and location of the household.

The results show that remittances are positively associated with business ownership, but only in urban areas (Table 4.4). Having an emigrant is on the other hand negatively associated with business ownership, although this link is not statistically significant. Return migration is not found to be linked to business ownership in either rural or urban areas.

The same analysis was also carried out for the link between immigration and business ownership. No statistically significant results were found. All in all, the results indicate that the link between migration and business investments in the Dominican Republic is weak.

Box 4.4. **The links between migration, remittances and business ownership**

To analyse the link between migration and business ownership, two probit model regression were run taking the following forms:

$$Prob(investment)_{hh} = \beta_0 + \beta_1 remit_{hh} + \beta_2 emig_{hh} + \beta_3 controls_{hh} + \varepsilon_{hh} \tag{9}$$

$$Prob(investment)_{hh} = \beta_0 + \beta_1 return_{hh} + \beta_2 emig_{hh} + \beta_3 controls_{hh} + \varepsilon_{hh} \tag{10}$$

where $investment_{hh}$ takes on value "1" if a household owns at least one business and "0" otherwise; $remit_{hh}$ in equation (9) represents a binary remittance variable with value "1" for households that receive remittances and "0" otherwise; $emig_{hh}$ represents a binary variable for whether the household has a migrant or not; and $controls_{hh}$ are a set of observed household and individual characteristics that are believed to influence the outcome. ε_i is a randomly distributed error term indicating, in part, the unobservable factors affecting the outcome variable.[a] In equation (10) $return_{hh}$ is a binary variable taking on value "1" if the household has at least one return migrant, and "0" for households without return migrants.

Table 4.4. **Remittances are linked to higher business ownership in urban areas**

Dependent variable: Household runs a business
Main variables of interest: Household has an emigrant/return migrant/immigrant, household receives remittances
Type of model: Probit
Sample: All households

Variables of interest	Dependent variable	
	(1) Business (urban)	(2) Business (rural)
Household receives remittances	0.058**	-0.062
	(0.029)	(0.060)
Household has at least one emigrant	-0.019	0.053
	(0.033)	(0.070)
Number of observations	1 490	423
Return migration		
Household has a return migrant	0.085	n/a
	(0.059)	
Number of observations	1 490	
Immigration		
Household has an immigrant	0.025	-0.026
	(0.029)	(0.051)
Number of observations	1 490	423

Note: Statistical significance is indicated as follows: ***: 99%, **: 95%, *: 90%. Analysis for return migration in rural areas is not included due to the small sample size of return migrants owning a business in rural areas. Excluding emigrant households from the analysis on the impact of immigration does not affect the results.

a. The set of household and individual explanatory variables included in the models are the following: household size and household size squared, household dependency ratio (defined as the number of children and elderly in the household as a share of the total adult population), mean education level of the members in the household, number of children in the household, binary variables for urban location and for household head being a female, and finally an asset index (based on principal component analysis) that aims to capture the wealth of the household (for all three equations). Regressions related to emigration and return migration control for household having an immigrant and regressions related to immigration controls for household having an emigrant.

Migration, social protection and health

Adequate social protection and health coverage in a country is essential for social cohesion, ensuring happier lives and improving productivity. In the Dominican Republic, however, the share of GDP spent on health has fallen substantially, from 5.9% in 2000 to 4.4% in 2014 (World Bank, 2017).[4] Social expenditures are also lower in the Dominican Republic than in other IPPMD countries. In 2010-11, public social expenditures amounted to 4.8% of GDP in the Dominican Republic. Although this was up from 3.4% in 2000, Costa Rica's social expenditures, in comparison, were much higher at 15.5% of its GDP in 2010-11 (ILO, 2014). The Dominican Republic's 2010-30 National Development Strategy describes the gap in the provision of health services and insufficient growth in decent employment as major shortcomings in the country's socioeconomic context. One of the strategy's four axes is to guarantee health and comprehensive social security for everyone within a framework of territorial cohesion (MEPyD, 2009).

One of the major issues surrounding migration is whether migration is allowing individuals to contribute more to the social protection and health system than they are taking out. Immigrants, for instance, can help finance such systems by paying taxes. However, they are often targeted as being net users of health and social protection services. Indeed a report showed that immigrants in the Dominican Republic were associated with a rise in malaria and tuberculosis cases. Around 20% of the reported cases of malaria in the Dominican Republic in 2006 were among Haitians (PAHO, 2012). This section compares the degree to which immigrants and native-born individuals benefit from government support and use health services.

Immigrants are less likely to receive government transfers and use health services

The IPPMD survey included questions on whether households had received government transfers for social services, and whether individuals had visited a health-related facility and if so, how often in the past 12 months. Data on government transfers were collected at the household level and questions on the use of health facilities were asked to every individual aged 15 years and older.

The analysis finds that immigrant households in the Dominican Republic tend to be less likely than other households to receive social transfers from the government (Figure 4.8). In the 12 months preceding the survey, 24% of non-immigrant households had received public transfers, compared to only 6% of households with immigrants, a statistically significant fourfold difference. Immigrants, in general, do not seem to be accessing public social funds more than households without immigrants, therefore. One might think that this is linked to the fact that immigrant households are more likely to be in rural

areas, where access to government services is more difficult and where work is often done informally. Indeed, 31% of immigrant households are located in rural areas, according to the IPPMD sample, compared to 20% of households without immigrants. However, this had no bearing on access to government transfers. Immigrant households in rural areas received a much lower share of government transfers than rural non-immigrant households (4% vs. 33%). It is notable, in fact, that the gap in rural areas is much wider than in urban areas, where it is 7% vs. 21%.

How do immigrants fare in terms of access to health services? Overall, 59% of the native-born population had visited a health centre in the 12 months prior to the survey, compared to 55% of the immigrant sample (Figure 4.8). However, the picture varies by gender. First, women tend to go to health centres much more than men in general (69% vs. 47%). Second, while immigrant men tend to be less likely to visit a health centre compared to native-born men (44% vs. 48%, statistically significant), this is not the case for women. In fact, immigrant women are more likely to visit a health centre than native-born women (73% vs. 69%, statistically significant). This may reflect Haitian women crossing the border for antenatal and maternity services[5], but may also be due to the lower quality living standards and the precarious conditions in the *bateyes*, the sugar plantations where many immigrant women work in the Dominican Republic. In addition, immigrants in both rural and urban areas were less likely, statistically speaking, to have visited a health centre than native-born individuals. In rural areas, 61% of immigrants had visited a health care centre compared to 66% of native-born individuals, whereas in urban areas this split was 53% vs. 57%, although only the result in urban regions was statistically significant (Figure 4.8).

How do immigrants compare with native-born individuals in the frequency with which they use health services? Overall, individuals who visited a health centre did so 5.5 times in the previous 12 months on average. Immigrants, however, had visited a health centre 4.9 times in the previous 12 months compared to 5.6 times for native-born individuals, a statistically significant difference (Figure 4.8). How do these results vary by gender? For women, the difference is not substantial. Immigrant women had visited health centres 6.2 times compared to 6.5 times for native-born women. Male immigrants had visited fewer times than native-born men, but the difference was also not statistically significant (3.6 vs. 4.3 visits). There was also very little difference between immigrants and native-born individuals in urban regions (5.2 vs. 5.5 visits). However, the difference between immigrants' use of health centres is significantly lower than native-born individuals in rural areas (4.3 vs. 6.2 visits). The difference between immigrants and native-born individuals in rural areas is strong statistically significant (Figure 4.8).

Figure 4.8. **Households with immigrants are less likely to receive governmental transfers than households without immigrants**
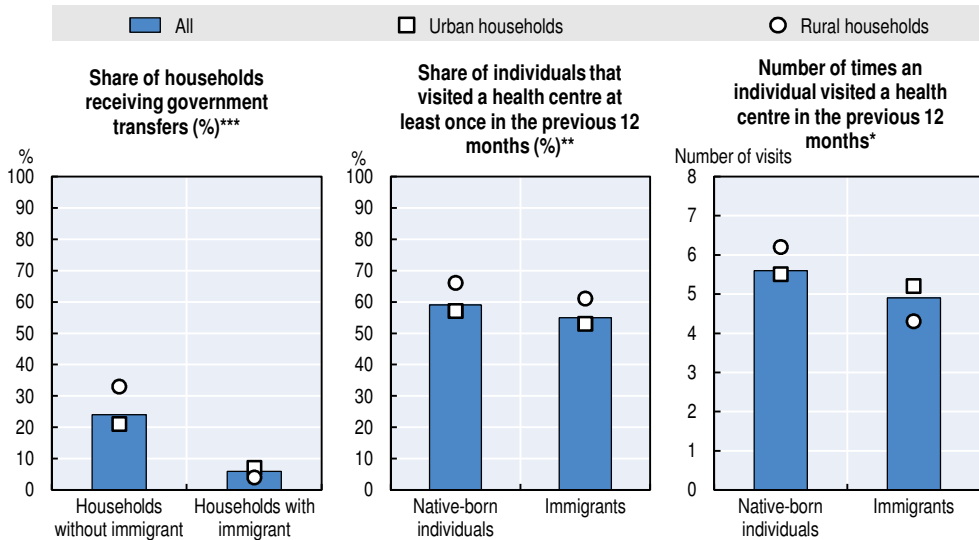
Note: Results that are statistically significant (calculated using a chi-squared test) are indicated as follows: ***: 99%, **: 95%, *: 90%. Statistical significance was tested on the basis of all households (and all individuals), and not on differences based on household location.

Source: Authors' own work based on IPPMD data

This provides more evidence that immigrants generally do not use health services more than native-born individuals – in fact in some cases they use them less. As mentioned earlier, part of the issue is likely due to difficulty of access in areas inhabited by immigrants, particularly in rural areas, their rights of residence in the country and the informal and temporary nature of their work. The IPPMD data, for instance, show that immigrants are substantially less likely than native-born individuals to have a formal labour contract (Chapter 5).

The overall descriptive statistics shown in Figure 4.8 do not account for the fact that older individuals in general are more prone to access health centres. In fact, the age of an individual is likely to be the most important determining factor for health demand, as immigrants are younger than the average native-born population and therefore tend to have less need for health services. Receiving public transfers and visiting a health centre are also related to other factors, apart from merely having or being an immigrant, such as one's individual education level and the household's wealth. Regression analysis explored these relationships more closely, controlling for a number of factors that may have a bearing on whether a household

receives public transfers and an individual visits a health centre (Box 4.5). The results suggest that households with immigrants indeed are less likely to receive public transfers than households without immigrants, for both rural and urban households, and that the amplitude in the relationship is larger in rural areas (Table 4.5, column 1).

Box 4.5. **The links between immigration, public transfers and use of health centres**

To estimate the probability that a household with an immigrant is more or less likely than a household without immigrants to receive public transfers, the following probit regression model was developed:

$$\text{Prob}(rec\_transfers)_{hh} = \beta_0 + \beta_1 immig_{hh} + \gamma\, controls_{hh} + \delta_r + \varepsilon_{hh} \qquad (11)$$

Similarly, to estimate the probability that an immigrant is more or less likely than a native-born individual to visit a health centre, the following probit regression model was also developed:

$$\text{Prob}(visited\_centre)_i = \beta_0 + \beta_1 immig_i + \gamma_1 controls_i + \gamma_2 controls_{hh} + \delta_r + \varepsilon_i \qquad (12)$$

where the unit of observation in equation (11) is the household *hh* and the individual *i* in equation (12), and the dependent binary variable is adapted to the outcome of interest (either receiving transfers (*hh*) or visiting health centre at least once (*i*)) and takes on the value of 1 if the household or individual outcome is true and 0 otherwise; $immig_{hh,i}$ represents whether the household has an immigrant or the individual is an immigrant or not; $controls_{hh,i}$ stands for a set of individual and household-level regressors;[a] while δ_r represents regional-level fixed effects. Standard errors, $\varepsilon_{hh,i}$, are robust to heteroskedasticity.

In addition, the following OLS model was estimated:

$$\text{Number}\_visits_i = \beta_0 + \beta_1 immig_i + \gamma\, controls_i + \delta_r + \varepsilon_i \qquad (13)$$

where *Number visits* reflects the number of times an individual visited a health centre in the 12 months prior to the survey, amongst individuals who visited one at least once. The other variables are defined as in equation (12).

Results are presented in Table 4.5. Column (1) presents results on whether a household received public transfers in the previous 12 months, column (2) presents results on whether individuals visited a health centre and column (3) presents results on the number of times an individual has visited a health centre. Results are also divided into two sections. The top rows present results based on the entire sample, while the bottom rows present results based on individual regressions limited to samples of only men, women, rural households and urban households.

Box 4.5. **The links between immigration, public transfers and use of health centres** (*cont.*)

Table 4.5. **Immigrants are less likely to receive public transfers**

Dependent variable: Household received a governmental transfer\Individual visited a health centre
Main variables of interest: Household has an immigrant\Individual is an immigrant
Type of model: Probit/OLS
Sample: All households (for governmental transfers)\Individuals aged 15 and older (for health visits)

Variables of interest	Dependent variables		
	(1) Household receives government transfers (equation 11)	(2) Individual visited a health centre at least once in the past 12 months (equation 12)	(3) Number of times individual visited a health centre (equation 13)
Household has an immigrant (col 1)	-0.182***	0.014	-0.178
Individual is an immigrant (col 2 and 3)	(0.015)	(0.020)	(0.352)
Number of observations	2 037	5 275	3 065
Samples based on gender and household location			
Sub-sample of men only	n/a	-0.014	0.114
		(0.028)	(0.349)
Sub-sample of women only	n/a	0.048*	-0.342
		(0.028)	(0.594)
Sub-sample of rural households only	-0.266***	0.024	-0.062
	(0.040)	(0.042)	(0.879)
Sub-sample of urban households only	-0.150***	0.012	0.124
	(0.017)	(0.024)	(0.372)

Note: Statistical significance is indicated as follows: ***: 99%, **: 95%, *: 90%. Regression results for the sub-sample of men and women are indicated as n/a in the first column because the regression is at the household and not the individual level.
a. Control variables for all regression model estimations include the individual's age, gender, education level, household size, whether the household is rural or urban, the household's wealth estimated by an indicator (Chapter 3) and a fixed effect for its geographic region.

The results also show that in terms of likelihood of visiting a health centre and frequency of visits, immigrants do not behave much differently from native-born individuals (Table 4.5, columns 2 and 3). Despite the descriptive statistics suggesting that overall immigrants are less likely to visit a health centre, regression analysis does not corroborate this claim. Regression analysis also does not support the fact that immigrant men and immigrants living in urban households are less likely to visit a health centre than their native-born counterparts. For men, this is rather due to age, smaller households and living in a rural setting. In urban settings, health visits are determined by age, being a woman and also living in a smaller household. This is not to say that immigrants are less likely to be visiting a health centre, but rather that the probability of doing so is not because they are immigrants, but rather due to other factors. On the other hand, the descriptive statistics also suggested that on average immigrant women are indeed more likely to visit a health centre, and this is

confirmed by regression analysis results, which is a trend that policy makers will need to monitor going forward, as resources may need to be mobilised.

The descriptive statistics also suggested that immigrants visit health centres less frequently than native-born individuals in rural areas, and that immigrant men visit less frequently than native-born men. Controlling for other factors that can lead to such visits in rural areas, the regression results suggest that health visits in rural areas are not linked to being an immigrant, but rather to being a woman and being older. For men as well, being an immigrant is not a statistically significant determinant to the frequency of health visits. Instead, health visits by men are determined by higher age and education levels and lower household wealth.

The overall findings do not support the notion that immigrants are net users of the public system, and in fact, they often are less likely to be receiving assistance or accessing services. As suggested earlier, their contributions to the labour market are therefore a great addition to the country, without it seeming to bear a high cost. The notable exception is that of women visiting health centres, where the government may want to monitor the situation and mobilise resources to avoid the system being overburdened.

Conclusions

This chapter has explored how migration affects five sectors in the Dominican Republic: the labour market, agriculture, education, investment and financial services, and social protection and health. The results indicate that different dimensions of migration have both positive and negative social and economic impacts on Dominican households and more generally on the country as a whole.

The results confirm previous research showing that migration encourages investments in human capital: households with emigrants and return migrants spend more on education, and return migration seems to encourage a switch from public to private education institutions. Migration also seems to contribute to human capital through the return of emigrants with new skills acquired abroad. In addition, emigration stimulates the hiring of external workers in the agriculture sector, which may help revitalise the agriculture labour market.

However, there are indications that the full development potential of migration and remittances is not yet being realised in the Dominican Republic. Remittances and return migration have limited impact on investments in businesses, and receiving remittances appears to reduce the incentives for the remaining household members to seek work, especially women.

The findings shed some new light on the dynamics of immigration in the Dominican Republic. It seems that immigrants help counter the labour lost to emigration by bringing in new labour, and are more likely than other

individuals to be working in low-skilled occupations. Due to their demographic characteristics, immigrants make an important contribution to the country's labour supply, especially in low-skilled sectors such as construction and agriculture. The IPPMD data show that most immigrants are of working age, and their labour market participation rate is considerably higher than that of the native population. However, the analysis also indicates that immigrants are less likely to receive public transfers and access health services. Youth in immigrant households are also considerably less likely to stay in school, which may have negative impacts on their integration and also on future national and individual human capital accumulation.

Notes

1. Any household declaring an involvement in arable farming or livestock rearing is considered to be an agricultural household.

2. The sample of immigrant children not attending school is however too small to carry out any in-depth regression analysis for children in this age group.

3. The number of children living in return migrant households is however quite low in the sample (34), resulting from the low number of return migrant households in the sample. Hence, no further in-depth analysis was carried out.

4. Health expenditure here includes both public and private health expenditures.

5. Gilger, Lauren, "Women Leaving Haiti to Give Birth," *The Washington Post*, 23 August 2011.

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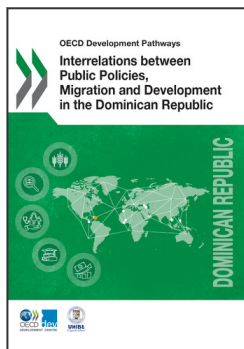
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