COLOMBIA

SELECTED ISSUES

April 2020

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COLOMBIA

SELECTED ISSUES

April 2, 2020

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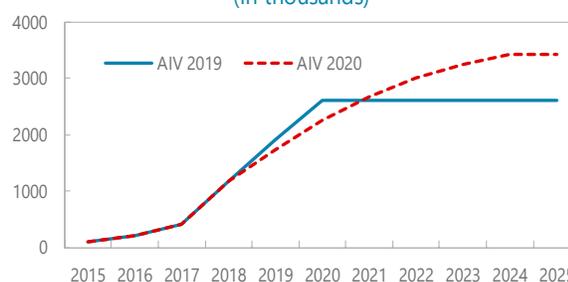
CONTENTS

VENEZUELAN MIGRATION AND THE LABOR MARKET

Over 2 million migrants have crossed the border from Venezuela and continue to join Colombia's labor market—which remains weak overall with rising unemployment and falling participation. There is so far little evidence of displacement effects on account of immigration, however, as the Colombian informal sector has capably absorbed most of the migrant inflow. In particular, a more granular view of Colombia's local labor markets does not show weaker employment outcomes in those that have received the most migrants. But with many of these workers being highly skilled and attached to the informal sector, evidence of labor misallocation highlights the need to continue integration policies.

A. The Magnitude and Composition of Venezuelan Migration

1.   Migration from Venezuela continues. Official estimates suggest that around 1.8 million Venezuelans were permanently residing in Colombia by end-2019.[1] Including another 500,000 returning Colombians, the total migrant population is only slightly lower than assumed at the time of 2019 Article IV.[2] Staff have revised migration projections to 2025. These projections are driven by push factors in Venezuela - namely a continued contraction of GDP and hyperinflation with a further deterioration of social indicators as well as a continued deterioration of key infrastructure, including the health care

Stock of Venezuelan Migrants Permanently Residing in Colombia
(in thousands)

Source: National authorities and IMF staff estimates.

system. Staff envisage up to 10 million Venezuelans living abroad by 2025, with around 35 percent of the total settling in Colombia.

2.   New waves of migrants continue to be more educated and younger than locals. The share of migrants with at least a high school degree increased from 30 to 45 percent between 2016 and 2018 and has remained broadly unchanged since. As of 2019 the percent share of migrants with a high school degree is 4 points higher than the share of locals with the same level of education (46 vs 42 percent), while the share of migrants with some tertiary education is slightly lower (18 vs 20 percent). Migrants continue to be younger with an average age of 28 compared to the average of 32 for Colombians, a demographic difference that partially explains migrant's higher labor force participation rates. We look at their labor market behavior and outcomes next.

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[1] Migración Colombia figures as of end-2019.

[2] The lower projections are partly explained by the closure of the Venezuelan border during 2019Q1, as monthly migration flows from 2019Q2 were broadly in line with staff's earlier projections.

B.   Informal Job Opportunities but with Misallocation

3.   **Migrants participate more in the economy and are mostly abosrbed by the informal sector.** About 74 percent of Venezuelans (vs 63 percent of locals) are actively seeking a job and thus form part of the economically active labor force. Of these, around 16 percent have not found jobs and remain unemployed, a significantly higher rate than the 10 percent unemployment rate faced by Colombians. When looking at the type of employment, 67 percent of migrants (vs 56 percent of locals) who find jobs do so in the informal sector either through (mostly) small informal firms or through self-employment. A similar percentage of Venezuelans do not have access to the social security system[3], while the great majority of Colombians do. Overall, this means that out of every 100 Venezuelans, about 74 are seeking employment, around 62 find a job, and over two-thirds of those jobs are in the informal sector.
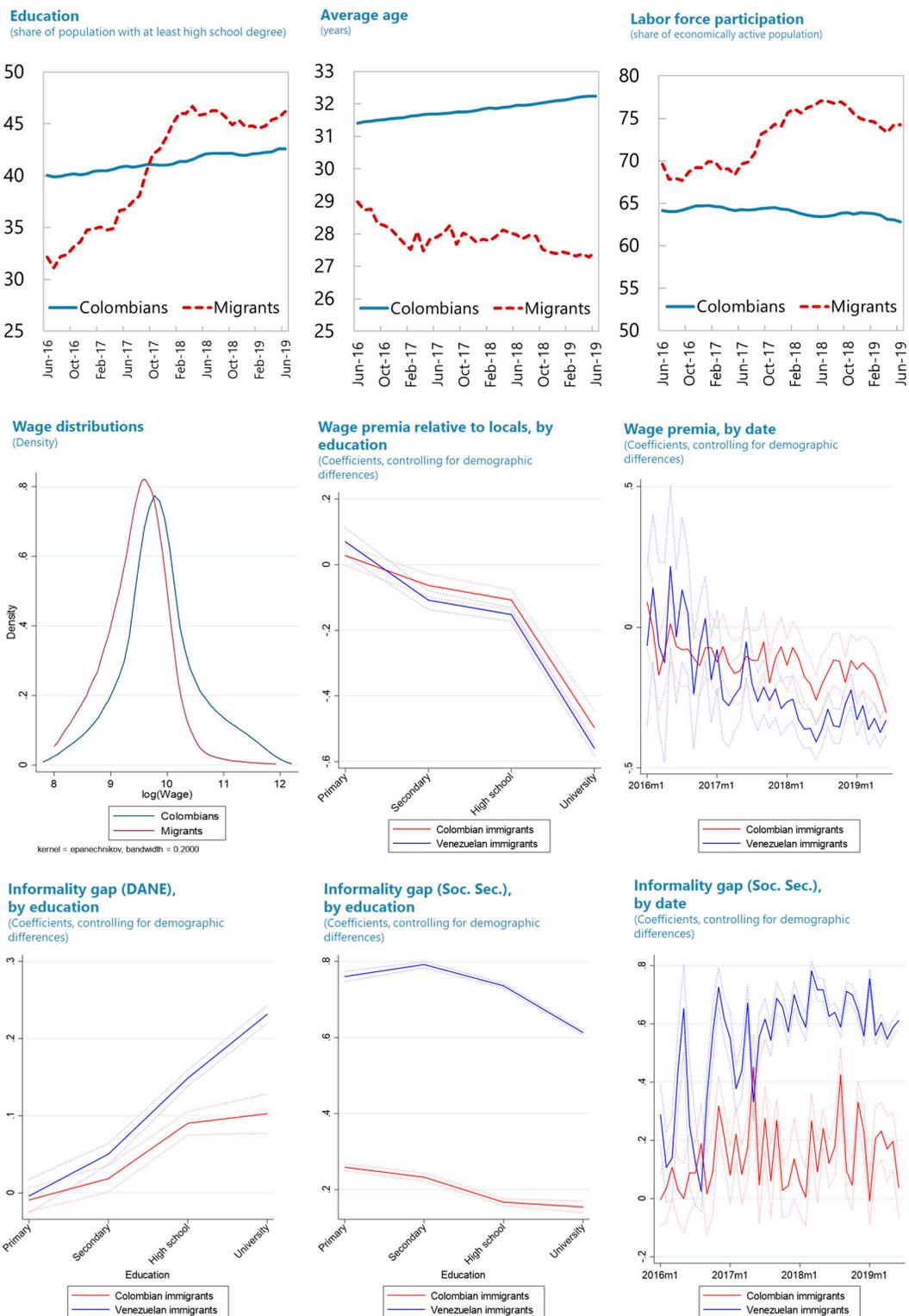
4.   **Both unconditionally and conditionally on their age and education, migrants earn less.** The average wage gap between migrants and locals is around 35 percent. As discussed above, this is in part due to the demographics as well as differences in migrant intensity across labor markets. When controlling for differences in demographics and location, the average wage gap is reduced to 28 percent (see wage premia relative to locals in figure 1, middle row). Remarkably, this gap is not as large when looking at migrants before the 2017-2019 wave, it was reduced during the period when special permits were issued, and it widened slightly in the second half of 2019 after permit issuances stopped. This somewhat mirrors trends in informality rates between migrants and locals as discussed below. Without integration policies, new migrants are likely to face worse outcomes given their education and demographics as suggested by previous studies of migration episodes.

5.   **There is evidence of human capital misallocation, as gaps in wages are greater for workers with high school and tertiary education relative to comparable local workers.** In part because of their high share of employment in the informal sector, migrants with tertiary education earn over 50 percent less than locals. This gap affects migrants holding both Colombian and Venezuelan citizenship, which is suggestive of bottlenecks in validation of Venezuelan degrees and overall integration channels. Larger gaps among the highly educated indicate that, although Colombia is facing a rise in human capital stock form Venezuelan migration, the new human capital inflow remains broadly underutilized.

6.   **Misallocation is largely due to highly educated migrants being driven to the informal sector.** Figure 1 (third row) shows gaps in informality levels of migrants, relative to locals, controlling for worker and location characteristics. A Venezuelan migrant with tertiary education is 20 percent more likely to work at a small informal firm, under the DANE's informality definition, than a similarly educated local worker. This gap is even larger if we define informality as those covered by the social security system. Differences in informality rates between Colombian and Venezuelan workers account, on average, for about a third of the overall wage gap observed.

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[3] Share of the labor force responding whether they are affiliated, contribute, or benefit from a social security entity.

# Figure 1. Migrant Characteristics and Labor Market Outcomes

Education
(share of population with at least high school degree)

Average age
(years)

Labor force participation
(share of economically active population)

Wage distributions
(Density)

kernel = epanechnikov, bandwidth = 0.2000

Wage premia relative to locals, by education
(Coefficients, controlling for demographic differences)

Wage premia, by date
(Coefficients, controlling for demographic differences)

Informality gap (DANE), by education
(Coefficients, controlling for demographic differences)

Informality gap (Soc. Sec.), by education
(Coefficients, controlling for demographic differences)

Informality gap (Soc. Sec.), by date
(Coefficients, controlling for demographic differences)

Sources: Household surveys (GEIH); and staff calculations.

C. The Role of Migrants in Explaining Aggregate Labor Market Dynamics

7.   The surge in migrant inflows *coincided* with an increase in aggregate unemployment and decline in labor force participation. Between 2018 and 2019, job creation and the labor market weakened as nation-wide unemployment rose from 9.8 to 10.5 percent in 2019 and labor force participation fell from 64.0 to 63.3 percent. The recent worsening trends, however, were largely driven by underperforming sectors—especially in agriculture—in regions were migrant inflows were relatively minor (see 2020 Article IV Staff Report).

Unemployment and Labor Force Participation
(Percentage of population; 3-month average)
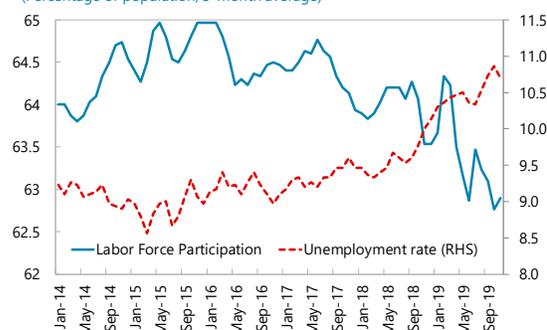
Sources: DANE; and staff calculations.

8.   Migrants did *not* mechanically drive most of the recent increase in aggregate unemployment or decrease in labor force participation. Although migrants have higher unemployment rates compared to locals (16 vs 10 percent), this mechanically has a small effect on overall unemployment. Since they only represent less than five percent of the population, they account for less than 0.2 percent of the unemployment increase observed in aggregate statistics. Similarly, both because of their relatively small number and because of their overall greater participation rates, they did not contribute to the fall in aggregate labor force participation seen in Colombia between 2018 and 2019. These mechanical effects notwithstanding, migrants could still have indirect displacement effects on locals. We explore this potential channel next.

9.   Assessing the indirect effects of migration on equilibrium labor market outcomes is challenging, but the evidence does not indicate significant displacement effects. We explore the relationship between migration inflows and labor market outcomes using variation in inflows across regional labor markets. In Figure 2, we document the raw correlation of migrant inflows and changes in unemployment, labor force participation, and informality during the 2016-2019 migration period. To control for systematic compositional changes across regions, we also report simple difference-in-difference regressions[4] of the form:

$$\Delta Labor\ Market\ Outcome_i = \alpha * \Delta Migration\ rate_i + \beta * \Delta X_i + \epsilon_i$$

where the independent variable of interest is the change in migration inflows by region *i*, X_i is a vector of region-level controls, and the dependent variable is the change in aggregate labor market characteristic of interest (wages, unemployment, informality rates). To attempt to address problems of endogeneity, we instrument the independent variable with variation in driving distance between

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[4] We have also run standard worker-level fixed-effect regressions with region-time clustered standard errors. Results are broadly similar.

each region and Caracas, Venezuela.[5] The instrument has a strong first stage as variation in driving distance explains over 80 percent of variation in migration flows during this period.[6] There is also a plausible argument for exogeneity as long as the driving distance did not affect migration changes during this period through any other channel other than through migration flows.[7]

10.   From a cross-sectional perspective, regions with greater migration inflows did _not_ experience greater systematic declines in (male or female) participation rates nor increases in unemployment. Unemployment did increase at the aggregate level in Colombia from 9.7 to 10.5 percent between 2018 and 2019, but this was a broad-based pattern affecting most regions, regardless of whether they experienced migrant inflows or not. Departments with the greatest migrant inflows such as Norte de Santander (which includes Cucuta) and Magdalena, did not experience above average unemployment increases. In terms of participation, we find no negative relationship in the raw data. If anything, there is a slight _positive_ relationship with participation decreasing less than average in regions with greater migrant inflows such as Norte de Santander. This evidence, based on correlations, does not rule out negative causal effects from migration inflows. However, they do indicate that, even if that channel is present, migration is not likely the main driver of the recent decline in aggregate labor force participation and increase in unemployment. To complement this, the evidence from the regression analysis supporting a causal relationship between migration and labor force participation and unemployment is mixed, at best. Throughout the specifications summarized in Table 1 and Figure 3, we do not find statistically significant adverse effects on participation or unemployment.

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[5] Driving time from Caracas to regional capitals from Google Maps.

[6] This high correlation is present even when excluding the neighboring Norte de Santander region which includes Cucuta.

[7] Because any identification of aggregate labor market equilibrium effects relies on relatively few regions, and due to potential weakness of the exogeneity restriction, we caution the reader to interpret this only as strong evidence of causality. We present the raw correlations and regression coefficients to portray the available evidence. Broadly similar results are obtained in worker-level fixed effects regressions without the use of the instrument.

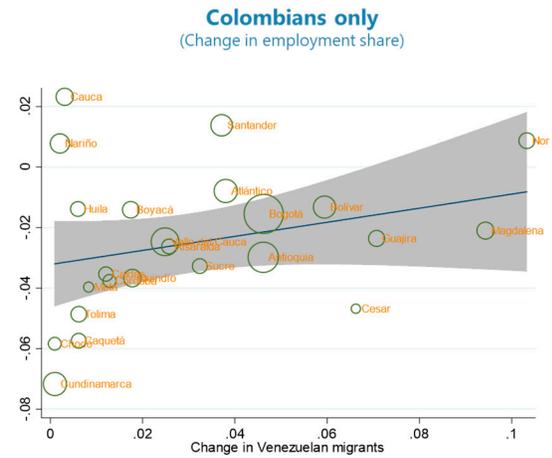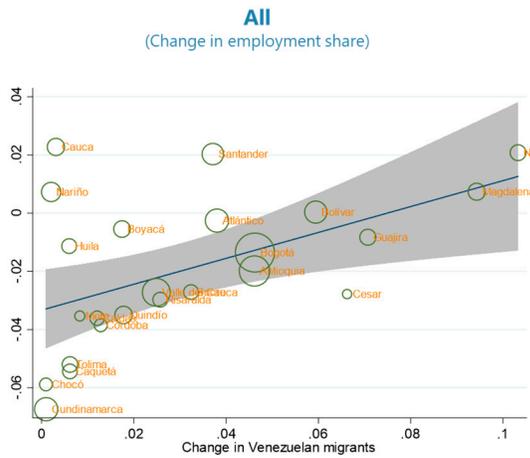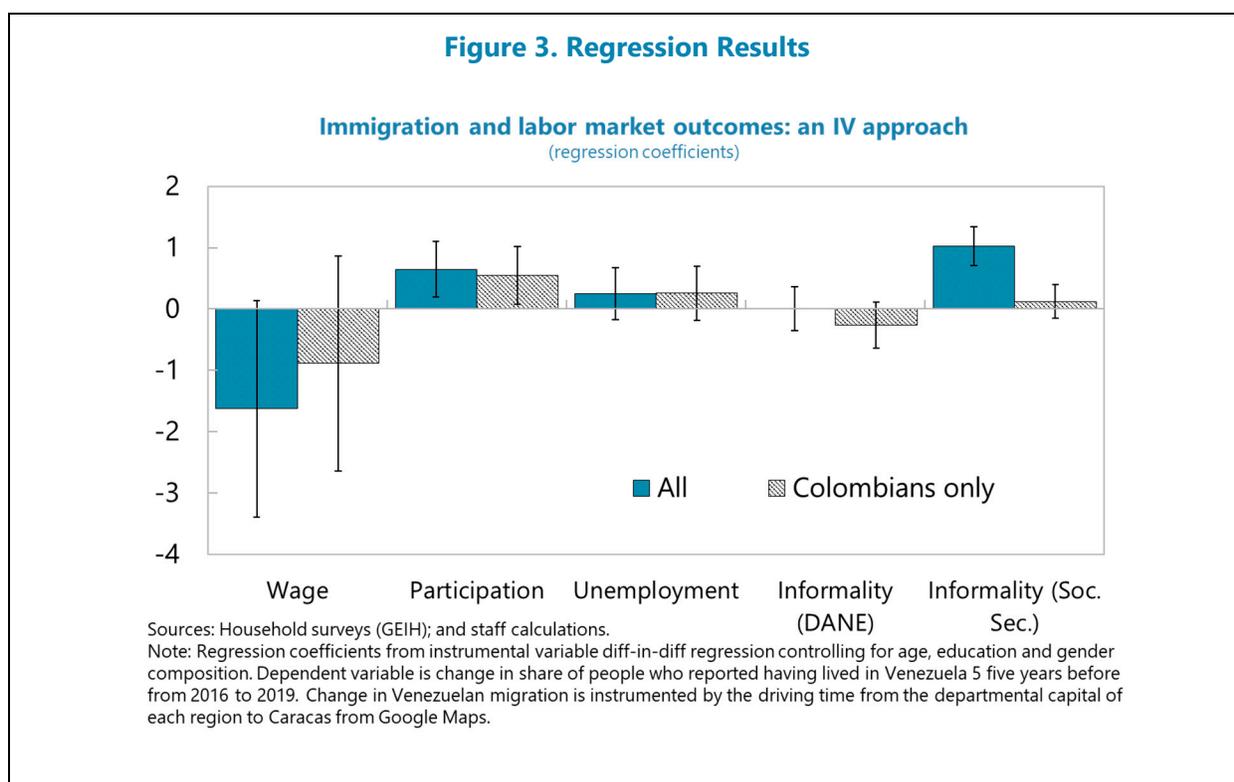**Figure 2. Migration and Equilibrium Labor Market Outcomes**
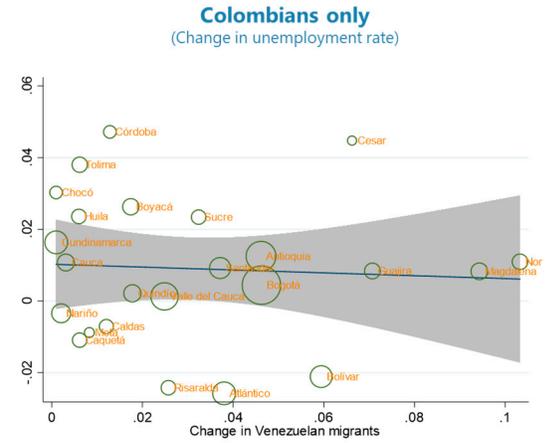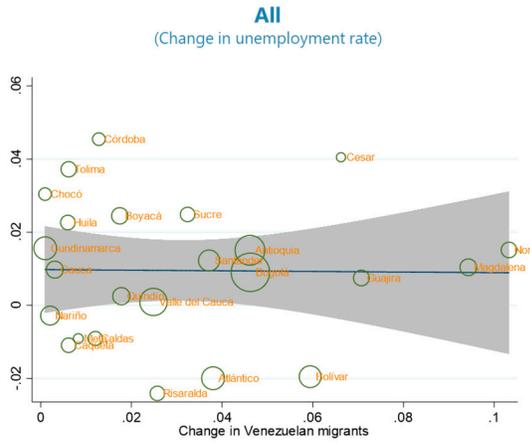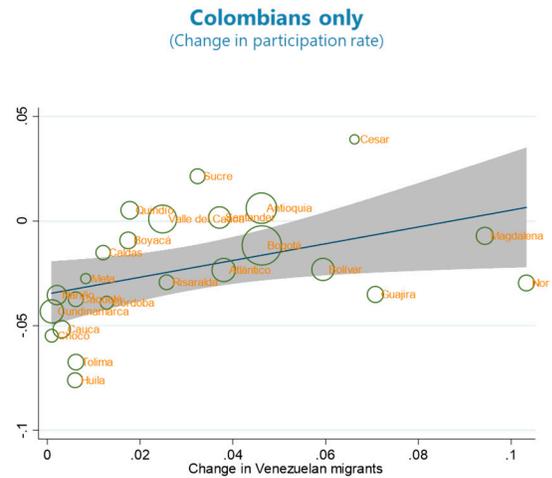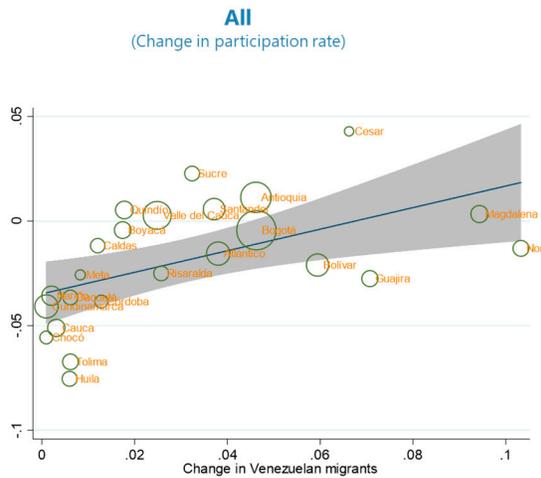
Sources: Household surveys (GEIH); and staff calculations.

Table 1. Colombia: Migration and Equilibrium Labor Market Outcomes

	Log(Wages)					
	All			Colombians		
Migration inflow	-1.385**	-0.997	-1.627*	-0.688	-0.265	-0.886
	(0.616)	(0.731)	(0.899)	(0.611)	(0.725)	(0.893)
Controls	No	Yes	Yes	No	Yes	Yes
IV	No	No	Yes	No	No	Yes
R-squared	0.187	0.287	0.267	0.054	0.171	0.132

	Labor Force Participation					
	All			Colombians		
Migration inflow	0.516***	0.619***	0.647***	0.401**	0.507**	0.544**
	(0.172)	(0.188)	(0.232)	(0.177)	(0.195)	(0.240)
Controls	No	Yes	Yes	No	Yes	Yes
IV	No	No	Yes	No	No	Yes
R-squared	0.289	0.472	0.452	0.190	0.383	0.367

	Unemployment rate					
	All			Colombians		
Migration inflow	-0.00848	-0.0422	0.249	-0.0400	-0.0594	0.259
	(0.137)	(0.172)	(0.217)	(0.144)	(0.180)	(0.226)
Controls	No	Yes	Yes	No	Yes	Yes
IV	No	No	Yes	No	No	Yes
R-squared	0.000	0.023	0.001	0.000	0.028	0.001

	Informality (DANE)					
	All			Colombians		
Migration inflow	0.445***	0.186	0.00531	0.233	-0.0370	-0.265
	(0.157)	(0.151)	(0.180)	(0.162)	(0.157)	(0.191)
Controls	No	Yes	Yes	No	Yes	Yes
IV	No	No	Yes	No	No	Yes
R-squared	0.267	0.582	0.608	0.085	0.470	0.479

	Informality (Soc. Sec.)					
	All			Colombians		
Migration inflow	0.906***	0.889***	1.025***	0.0244	-0.00259	0.123
	(0.122)	(0.131)	(0.161)	(0.108)	(0.112)	(0.138)
Controls	No	Yes	Yes	No	Yes	Yes
IV	No	No	Yes	No	No	Yes
R-squared	0.715	0.797	0.790	0.002	0.327	0.268

Note: Regression coefficients from panel regression, controlling for reginal-level means in worker demographics (age, education, gender). Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Figure 3. Regression Results

Immigration and labor market outcomes: an IV approach
(regression coefficients)

Sources: Household surveys (GEIH); and staff calculations.
Note: Regression coefficients from instrumental variable diff-in-diff regression controlling for age, education and gender composition. Dependent variable is change in share of people who reported having lived in Venezuela 5 five years before from 2016 to 2019. Change in Venezuelan migration is instrumented by the driving time from the departmental capital of each region to Caracas from Google Maps.

11.   Migration did appear to increase informality levels, particularly when measured as those covered by social security. Formalization has improved overall in Colombia since 2012, but regions with greater migrant inflows experienced a slower improvement (see Figure 2, third row, and Table 1). The relationship is particularly strong when measuring informality as the share of employed who are not covered by social security. This is likely because irregular migrants are not allowed to be fully enrolled as contributing formal workers. Under the definition of informality used by DANE, which emphasizes the size of firms, the relationship is weaker as shown in Figure 3. As discussed earlier, Venezuelans do work at a diverse set of firms in Colombia but appear to do so in informal contractual arrangements. There are no discernible significant effects on the informality rates of Colombians.

12.   There is some evidence that migration placed downward pressure on wages, particularly in the lower-paying informal sector. There is a negative non-significant correlation between mean wages (both for Colombians only and overall) and migration inflows, with a stronger negative association in informal sector wages (See Table 1 and Figure 3). This is present both in the raw data as well as when controlling for changes in worker composition. Although it is hard to establish a causal connection, this is consistent with migrant inflows placing some downward pressure on lower-skill informal sector wages given migrant employment has been concentrated in this sector.

Changes in average wages vs migration inflows

(2016-19 nominal change)
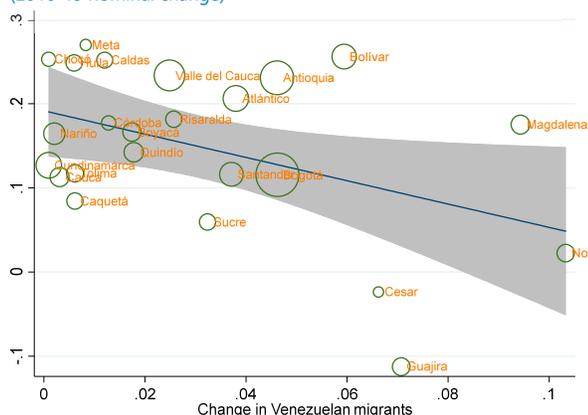
Sources: Household surveys (GEIH); and staff calculations.

D.   Policy Discussion: The Case for Deepening Integration Efforts

13.   Migration has had broadly a positive effect on the Colombian economy. A majority of migrants from Venezuela have quickly entered the Colombian workforce and found employment in the informal sector. The flexibility of the informal sector seems to have limited the adverse unemployment and participation effects for local workers, but migration may have moderately dampened wages among low-paying informal jobs in regions that experienced the greatest migration inflows. From an aggregate perspective, migrants continue to provide a significant positive labor supply shock for Colombia, while likely contributing to the boom in domestic demand from the consumption channel. With the increase in labor supply, returns on domestic investment may also be higher in terms of further boosting aggregate demand.

14.   However, the high wage gaps and informality rates for migrants highlight the need to further integrate these workers—particularly the highly-educated ones—into the formal sector to reap the full economic benefits for Colombia. There is evidence of human capital misallocation in the economy with high-skilled workers migrating from Venezuela earning significantly less than their local peers. This represents underutilized human capital, which limits current growth benefits for the economy from migration through lower labor productivity than otherwise. Conversely, Colombia can obtain larger future productivity growth effects from both current migrants and future migrants as long as they improve their integration into Colombia's formal labor market.

15.   Thus, there is a strong case for extending temporal work permit programs and speeding the accreditation of Venezuelan degrees. Previous studies have shown that passive policies related to intake and settlement are often not enough, especially for refugees who typically integrate more slowly into their host countries. Instead, *active* policies in terms of labor market and employment measures are often needed to improve labor mobility and integration prospects and,

ultimately, economic and social outcomes for migrants.[8] In Colombia, authorities have conducted several efforts to integrate Venezuelan migrants into the country:

- During 2017, 2018 and the first half of 2019, the government issued temporary permits (PEP), which allowed migrants to acquire formal jobs and allow access to services. Authorities have recently re-started this program in January 2020, to cover the estimated 58 percent (over a million) migrants who are in the country irregularly (without formal legal status).

- In 2020, the government has added a new work permit that allows similar access to formal employment and services for other migrants (PEPFF). This will be accessible to workers under irregular migratory status and will require sponsorship from a formal employer.

- In addition, the government is conducting efforts to accelerate the validation of Venezuelan degrees for easing the integration of professional migrants and high-school educated migrants who wish to continue their university studies in Colombia.
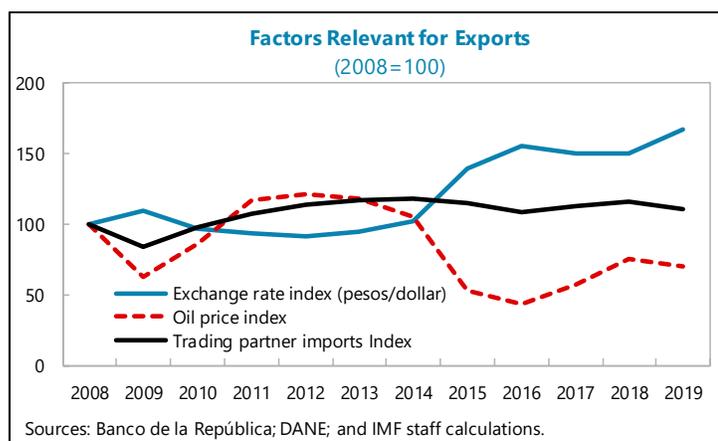
These initiatives are highly commendable and should be promptly implemented to fully obtain the economic benefits of migration. If successful, Colombia's efforts should serve as a model of integration for other countries experiencing similar migrant inflows elsewhere in the region.

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[8] For a literature summary on integration policies see "Dynamics between Integration Policies and Outcomes: a Synthesis of the Literature" from Bilgili et al., Migration Policy Group, 2015.

COLOMBIA'S EXPORT PERFORMANCE FOLLOWING THE 2014-15 OIL SHOCK AND PESO DEPRECIATION

In the wake of a collapse in oil prices, export performance following the 2014-6 depreciation of the peso has been hindered by external headwinds. The sizable currency depreciation cushioned commodity price shocks in peso terms, but export volume responses were sluggish. Potential explanations for low export volume responses include sticky prices in U.S. dollars as well as domestic trade costs. Depreciations can affect the trade balance via volumes and prices for both exports and imports. Following a depreciation, trade balance gains in Colombia measured in pesos occur mainly through higher export prices, while gains measured in dollars occur mainly through weaker import volumes.
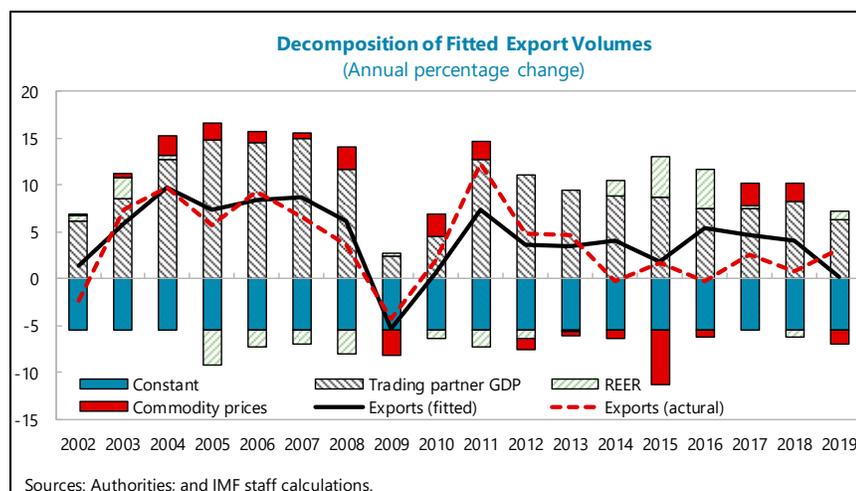
1.   Colombia's exchange rate depreciated sharply following a large shock to oil prices in 2014-5 while trading partner demand declined. The Colombian peso is a commodity currency as

its value exhibits a strong negative correlation with its terms of trade (Casas and others, 2017). The peso has typically mirrored the oil price historically, as illustrated by a sharp depreciation against the U.S. dollar following the collapse of the oil price in 2014-5. In real effective terms, the peso depreciated by approximately 25 percent between 2014 and 2019. However, trading partners' imports have decreased over the same period.

Factors Relevant for Exports
(2008=100)

Exchange rate index (pesos/dollar)
Oil price index
Trading partner imports Index

Sources: Banco de la República; DANE; and IMF staff calculations.

2.   These oil price and currency dynamics have repeated in early 2020. As a result of the Covid-19 pandemic, the outlook for regional and global growth is being substantially downgraded. Commodity prices weakened and the peso followed. In particular, in the week following the surprise breakup of the OPEC+ alliance in early March, crude oil prices fell sharply by close to 50 percent and the peso depreciated by 11 percent against the dollar, bringing the cumulative depreciation above 20 percent for 2020. To the extent that these price movements persist, examining previous episodes with similar dynamics can provide a useful guide on the likely trade responses Colombia may see going forward from a weaker peso.

3.   Export volume responses materialized after the 2014-16 depreciation, but modestly and with a lag as there were offsetting effects from slowing trading partner GDP growth. Export volumes grew by 7 percent since 2016, indicating a lagged response to the depreciation. However, consistent with the view that export performance has been disappointing, there was no acceleration relative to earlier in the decade. One explanation is unfavorable trading partner growth.

In particular, the estimated[1] decline in cumulative contributions from trading partner growth between 2010-2014 and 2015-2019 is approximately equal to the contribution from exchange rate changes in the latter period. Moreover, export volumes did not perform as well as predicted by the model's fitted values in 2016-18. This was also the case following a depreciation in the late 1990s, although two earlier episodes produced higher-than-predicted export volumes.
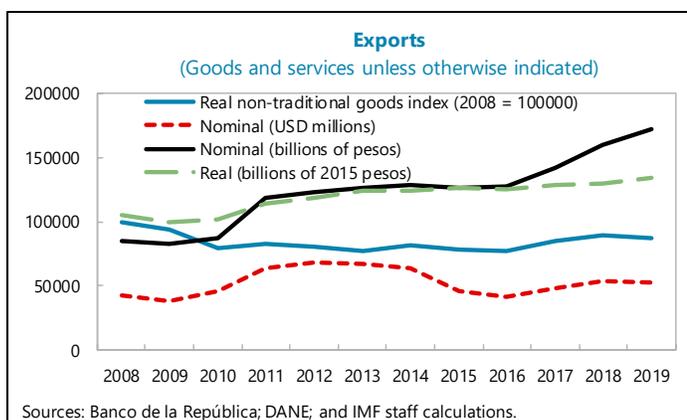
Decomposition of Fitted Export Volumes
(Annual percentage change)

Sources: Authorities; and IMF staff calculations.

4.   Real depreciation may have helped non-traditional exports reverse their decline, in volume terms, albeit with a lag. Between 2008 and 2015, non-traditional goods exports declined by about 3 percent per year. Export growth in these goods has subsequently averaged 3 percent per year. Thus, although the volume pick-up was modest, the depreciation may have helped reverse a trend decline. Non-traditional exports have also been held back by weak regional demand.

5.   In contrast, Colombia's import volumes declined substantially. Following strong growth, import volumes contracted in 2015, 2016, and 2017 by a cumulative 12 percent before rebounding in 2018. This is consistent with the depreciation reducing imports, potentially through expenditure switching and income effects. However, there was likely a sizeable contribution from declining aggregate demand since Colombia's GDP growth slowed considerably following the oil price shock. In nominal US dollar terms, imports declined by one-third cumulatively in 2015-6 as prices also declined.

6.   On balance, the shock absorber role of the exchange rate for Colombia operated mainly through rises in nominal peso values of exports. Between 2014 and 2019, goods and

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[1] See Lanau & Toscani (2018). Results shown here are based on a Colombia-only regression using the full sample of annual data (1980-2019). Similar results are found using a panel of countries. The negative constant implies negative trend growth for Colombian exports, which could be interpreted as declining global market share.

services export values measured in dollars fell by 19 percent owing to the fall in commodity prices. However, in pesos, exports rose by 33 percent since 2014. This illustrates an important part of the shock-absorber role paid by a flexible exchange rate in Colombia. For example, it cushioned negative shocks to domestic profitability and fiscal receipts in domestic currency terms from the oil price decline.

Exports
(Goods and services unless otherwise indicated)

- Real non-traditional goods index (2008 = 100000)
- Nominal (USD millions)
- Nominal (billions of pesos)
- Real (billions of 2015 pesos)

Sources: Banco de la República; DANE; and IMF staff calculations.

7.   Depreciation can affect the trade balance through price and volume channels. To further explore the relationship between the trade balance and exchange rate, the standard elasticity model provides a useful framework. The trade balance as a share of GDP can be expressed as GDP shares contributed by traditional exports, S_T, non-traditional exports, S_N, and imports, S_M. Formally, defining the exchange rate (E) as pesos per unit of foreign currency, the semi-elasticity for the trade balance in pesos after a depreciation is:

$$\frac{dTB/GDP}{dE/E} = S_T\big(\eta_T^v + \eta_T^p\big) + S_N\big(\eta_N^v + \eta_N^p\big) - S_M\big(\eta_M^v + \eta_M^p\big),$$

where η_k^v is the elasticity of volumes with respect the exchange rate for traditional exports (T), non-traditional exports (N) and imports (M) and η_k^p is the corresponding elasticity of prices in pesos to the exchange rate. The expression is evaluated at the initial value of GDP and initial GDP shares for each component of trade flows.[2] The approximate equivalent in U.S. dollars is $\frac{dTB/GDP}{\underline{dE}/E}\Big|_\$ = S_T\big(\eta_T^v + \eta_T^p - 1\big) + S_N\big(\eta_N^v + \eta_N^p - 1\big) - S_M\big(\eta_M^v + \eta_M^p - 1\big).$

8.   For Colombia, depreciation raises export volumes only minimally but raises export receipts in pesos. Using the framework, the implications of exchange rate depreciation are related to Colombia being a small open economy exporter of commodities as well its manufacturers' pricing decisions. First, traditional exports comprise oil and other commodities that are priced in foreign currency. Colombia is a price taker in the global commodity market with fixed capacity at least over the medium run. Based on these pricing assumptions, a depreciation at home increases commodity exports in pesos but has *no* effect in volumes or dollar terms ($\eta_T^v = 0$ and $\eta_T^p = 1$) (Behar and Fouejieu, 2018). Second, for non-traditional exports including manufacturing, Colombian firms tend to respond by allowing prices in pesos to rise by about half the amount of depreciation i.e., $\eta_N^p = 0.5$ after about 2 years, and by more over a shorter period (Casas and others, 2017). Equivalently,

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[2] This approximation abstracts from the mechanical effects of depreciation on GDP measured in dollars or of changes in net exports on GDP.

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foreign buyers would experience a price decline in foreign currency (typically, dollar) terms of only half of the depreciation after 2 years and would experience an even smaller decline over a shorter horizon. Comparatively, η_N^p estimates are higher for Colombia than for other countries, who have more pass-through into lower foreign currency prices.[3] Incomplete price pass-through contributes to low responses in non-traditional export volumes $\eta_N^v = 0.1$.[4]

9.   Import volumes are quite responsive after a depreciation. The estimated value for Colombia's imports volumes (of $\eta_M^v = -0.6$) is in line with those for other countries. However, estimates of the offsetting pass-through to peso prices are of a similar magnitude (η_M^p =0.6) ([Bussiere and others, 2018](#)). Focusing on manufacturers, volume and price effects also broadly cancel, though both volume responses and pass-through to peso prices are closer to 1. Pass-through to peso prices is especially high over horizons shorter than 2 years ([Casas and others, 2017](#)), and import substitution typically exhibits lags. Thus, when the import bill is measured in pesos, there tends to be no decrease in the value of imports following a depreciation (and there may be a rise in the immediate aftermath). However, the partial decrease in dollar prices helps reduce the US dollar import bill. (See table for a summary of the import and export elasticities.)

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[3] See [Li and others, 2015](#); [Chatterjee and others, 2013](#); [Chen and Juvenal, 2016](#); [Amiti and others, 2014](#); and [Berman and others, 2012](#).

[4] See [Lanau & Toscani (2018)](#), although this is for all goods and services exports. For manufactures, the coefficient is estimated to be insignificantly different from zero or even negative. Possible reasons include more expensive imported intermediate inputs and a depreciation in non-US destinations relative to the US dollar ([Casas and others, 2017](#)).

Colombia: Volume and Price Elasticities with Respect to the Exchange Rate		
	Volumes	Prices in pesos
Traditional exports	$\eta_T^v = 0$	$\eta_T^p = 1$
Non-traditional exports	$\eta_N^v = 0.1$	$\eta_N^p = 0.5$
Imports	$\eta_M^v = -0.6$	$\eta_M^p = 0.6$

Sources: Lanau & Toscani (2018), Casas and others (2017), Bussiere and others (2018), Behar and Fouejieu (2018).

10.   The above values imply a moderate trade balance response or semi-elasticity with respect to the exchange rate. Based on the different responses summarized in the table, a depreciation of 10 percent would improve the trade balance by 1.3 percentage points of GDP (i.e., a semi-elasticity of 0.13), with limited contributions from export volumes. The estimated parameters above imply $\frac{dTB/GDP}{dE/E} \approx S_T + 0.6S_N$ with rises attributable mainly to peso export prices, since non-traditional exports are relatively small, and no contribution from peso import bills. Measured alternatively in dollars, $\frac{dTB/GDP}{dE/E}_{\$} \approx -0.4S_N + S_M$ and most of the trade balance gains come through import compression. Dollar export values contract because dollar price reductions outweigh volume increases.

11.   Colombia's high trade costs tend to blunt the export volume response to a depreciation. In terms of understanding these differential responses in Colombia's imports and exports to the exchange rate, the role of trade costs is an important consideration. Transport and distribution costs drive a wedge between exporter and buyer prices, reducing the buyer's perceived price response and incentivizing exporters to respond to depreciations with higher prices/margins rather than quantities (Li and others, 2015; Chatterjee and others, 2013). Therefore, Colombia's non-tariff barriers (e.g., inspections and permits), high transportation costs (owing to unfavorable geography, infrastructure gaps, inefficient trucks, and insufficient competition), and slow customs procedures are reducing both the level of exports (Lanau & Toscani 2018; Consejo Privado de Competitividad, 2019) and their exchange rate responsiveness.

12.   Invoicing in dollars may be reducing Colombia's export volume responsiveness to depreciations. Another set of considerations revolve around pricing behavior for Colombia's traded goods. On the export side, almost all of Colombia's exports, including manufacturing, are invoiced in dollars. Colombia could thus present an especially pertinent case of dominant currency pricing, where prices in US dollars are sticky for both imports and exports, especially in the short run (Gopinath and others, 2020; IMF, 2019). Pricing

Sources: Casas and others, 2017b; and IMF staff calculations.

that was less sticky could facilitate a more dynamic export volume response. However, this would come at the cost of smaller price gains (in pesos) or bigger price reductions (in dollars).
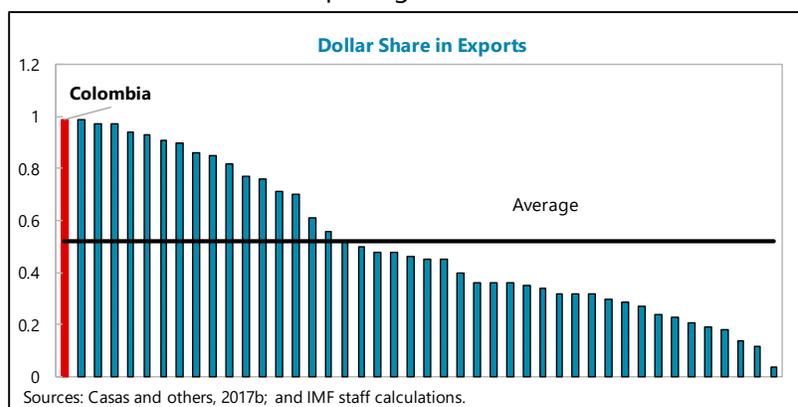
13. **The product mix and share of imported imports can also influence export responsiveness to depreciations.** Colombia's degree of export sophistication and product mix is not uncharacteristic for the region, but a shift towards goods with more elastic demand curves (higher η_N^v/η_N^p) (e.g., away from food towards manufactures) would raise the export volume response ([IMF, 2015](#); [IMF, 2017](#)). Exporters relying on imported intermediate goods in production experience cost increases, which limit gains in external competitiveness, following a depreciation and tend to respond to a larger extent by raising prices that limit the volume response ([Amiti and others, 2014](#)). However, foreign content accounts for only about one fifth of Colombia's manufacturing exports (and even less for total exports), placing Colombia well below Mexico but in line with other regional peers (Brazil, Chile, and Peru).

14. **In the current setting, Colombia's flexible exchange rate should help absorb some of the external shock from a deteriorating global environment in 2020, albeit not through export volumes.** Global commodity prices and growth in Colombia's trading partners are forecast to be substantially lower than in recent years, and Colombia's currency has weakened alongside commodity prices. Based on recent experience and estimated elasticities, a weaker peso would not substantially raise export volumes but should help cushion export receipts through higher prices measured in pesos. Import volume growth is expected to moderate as a result of the depreciation and slower domestic GDP growth.

15. **Colombia's wider current account deficit highlights the importance of structural reforms to aid diversification and competitiveness.** Efforts to lower transports costs, streamline non-tariff barriers, and shift the product mix away from commodities should increase the dynamism of export volumes, including following a depreciation. In terms of external balance adjustment, this would increase the relative role of export volumes and reduce reliance on imports, including through domestic demand compression, as the channel for adjustment to negative external shocks. Independent of exchange rate channels, such efforts are also important for enhancing global competitiveness and reducing Colombia's structural current account deficit over the medium term.