RESEARCH INSIGHTS

What Are the Effects of Weather-Induced Rural-Urban Migration on Destinations' Labor and Housing Markets?

- Cities that received more migrants observed faster growth in employment and a slower increase in wages. The wage effects are stronger in the service sector, likely due to its higher degree of labor informality.
- The stock of precarious housing units increased in cities receiving more rural migrants, rents for this type of housing did not increase, suggesting that supply kept pace with migration-driven growth in demand.
- Non-precarious housing experienced faster growth in rents but slower growth in quantities in cities that received more rural migrants. This is consistent with cities having a limited supply of land for housing.

CONTEXT

Over 10.5 million people migrated to cities in Brazil between 2001 and 2010. Roughly one-third came from rural areas, and around 155 thousand were migrants from rural municipalities that experienced unusually extreme weather (e.g., droughts) during the three years prior to migration. As climate change is expected to increase the frequency and intensity of extreme weather events, we study the long-run effects of weather-induced rural migration to cities in Brazil. While much of the literature on economic effects of weather shocks has focused on local labor markets, we jointly consider both urban labor markets and urban housing markets.

PROJECT

For this analysis, we combined data from the 1991 and 2010 rounds of the Brazilian Census with weather data from the *Standardized Precipitation Evapotranspiration Index* (SPEI). Using these data, we defined a catchment area for each city—the rural areas that historically (1989-1990) sent migrants there—because people often move where they know people or have family, and past migration to a destination is a good predictor of future migration. We then use the weather conditions in each catchment area to predict how many rural migrants moved to each city and that migration's effects on cities' labor and housing markets.

RESULTS

The geographic distribution of our dryness measure in each rural municipality is shown in Figure 1, where an index of 1 indicates that the rural area was one standard deviation drier than its historic average. Using these data, we first checked if people living in those rural areas were more likely to emigrate, finding that one-standard deviation higher average dryness is associated with a 0.72 percentage points (8.4 percent) increase in the emigration rate of rural municipalities. A similar shock on cities' catchment areas increases the rural migration rate into cities by 2.5 percentage points.

Consistent with a positive labor supply shock, we find that a one-percentage point increase in the rural immigration rate led to 5 percent slower wage growth and 3.8 percent faster employment growth among city residents over two decades. We also find that, for the service sector, the negative effect on wages is more pronounced, and the effect on employment is weaker. The opposite is true for manufacturing. Because the service sector tends to have higher levels of informal employment, the minimum wage is less likely to bind, and downwards wage adjustments are more feasible.

With respect to the housing market, a one-percentage point increase in rural migrants led overall rents to grow 5.7 percent faster and the supply of houses to grow one percent faster, reflecting increased demand for housing. However, the effects are different for precarious housing (frequently located in slums and informal settlements) and non-precarious housing. Rural migrants demanded relatively more precarious housing, which did not increase rents because supply of this type of housing is more elastic and kept pace with demand. In turn, non-precarious housing displayed slower growth and increased rents because urban land is scarce, and an increase in precarious housing supply can limit the supply of better housing.

Key Concept

ELASTIC SUPPLY

The supply of a good is elastic when the quantity supplied easily expands with demand, so that demand growth has little effect on price.

POLICY IMPLICATIONS

Our results hold at least two main implications in regard to the causes and consequences of the migration under study. With respect to causes, we learned that rural areas in Brazil are still vulnerable to adverse weather conditions and that current infrastructure and social safety nets do not adequately protect those living there. The effects of adverse weather faced by the inhabitants of rural areas, moreover, are not confined to their immediate regions but are also felt in Brazil's urban centers. Therefore, both rural and urban areas could benefit from policies that mitigate the impact of adverse weather, such as water infrastructure, flood protection, or seasonal income stabilization policies. In addition, extreme weather is likely to increase with climate change, and our findings help amplify our understanding of the already-known benefits of environmental policy.

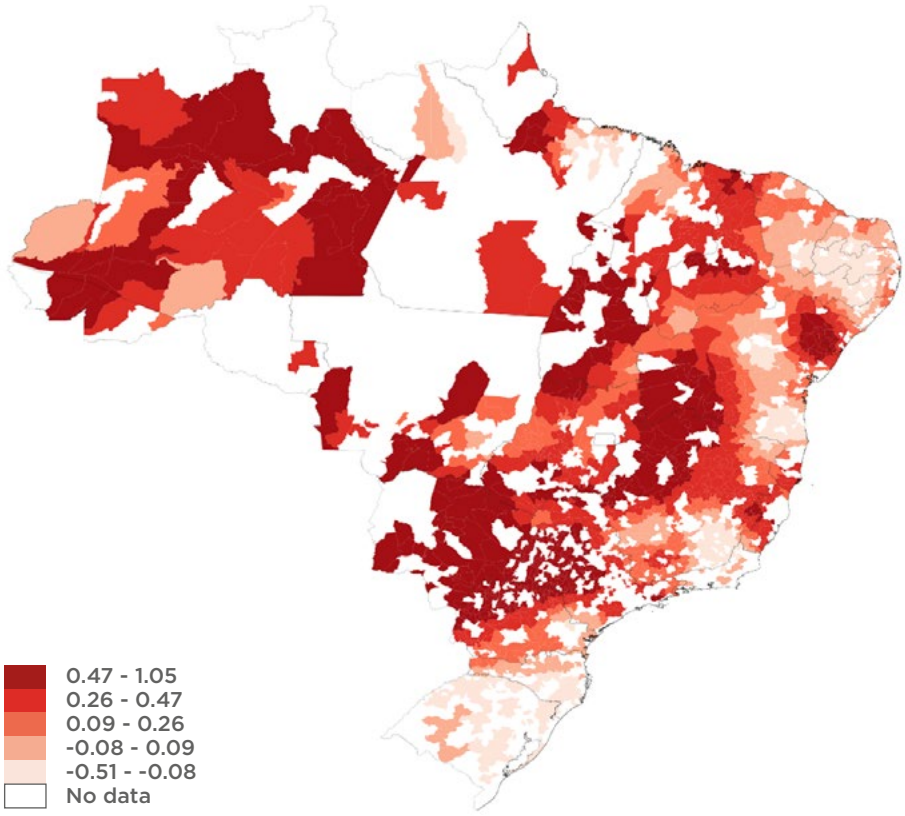
With respect to the consequences of rural migration into cities, our findings suggest that many displaced migrants end up living in precarious houses, which lack basic sanitary services, leaving residents vulnerable to disease and other risks. In addition, many informal neighborhoods are located far away from urban job centers, making it difficult for individuals living there to access better-paying jobs. At the same time, land occupied by precarious housing cannot be devoted to the development of higher-quality housing, which slows improvement in the overall quality of cities' housing stock. This suggest that policies to expand the housing options available to low-income migrants would benefit not only this vulnerable population, but also the rest of the local economy by integrating valuable human capital into the local economy and ensuring that scarce urban land is devoted to higher-value investments.

Key Concept

PRECARIOUS HOUSING

In this study we define precarious housing as housing that lacks access to four services according to the Brazilian census: (1) access to a sewage network, (2) access to a water network, (3) brick walls, and (4) trash collection.

Figure 1. Average Weather Index (SPEI), 2000-2009



Notes: This map shows the geographic distribution of our dryness measure, defined as the monthly average of -1×*SPEI* over the period 2000-2009. The areas in white with no data in the legend represent the urban metropolitan areas that we analyze as destinations of migrants.

Key Concept

STANDARDIZED PRECIPITATION EVAPOTRANSPIRATION INDEX (SPEI)

A measure of climatic water balance that captures excess dryness or wetness by comparing observed precipitation with the amount of water required to preserve surface moisture.

FULL STUDY

Busso, Matias, and Juan Pablo Chauvin "Long-term Effects of Weather-induced Migration on Urban Labor and Housing Markets."

DEPARTMENT OF RESEARCH AND CHIEF ECONOMIST

The Department of Research and Chief Economist generates new ideas to enrich the knowledge base that supports the policy agenda of the Inter-American Development Bank (IDB) and its member countries for achieving sustainable and equitable development in the region. To maximize the impact of its research, the Research Department carries out activities that serve as inputs to other IDB departments, governments, the academic community and public opinion in the region.

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