Immigration and Labor Market (Mis)Perceptions

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A growing body of literature documents that exposure to massive influxes of immigrants tends to trigger sentiments of hostility and backlash on the part of native populations, in some cases affecting political preferences and in turn, electoral outcomes (Mayda, Peri and Steingress, 2016; Steinmayr, 2020; Ajzenman, Aksoy and Guriev, 2020). The channels underlying these effects are related to socio-economic and cultural factors (Alesina and Tabellini, 2020). Typically ranked foremost among the main concerns in surveys, as well as appearing regularly both in the media and in the rhetoric of anti-immigration politicians, are crime and labor market conditions. As Alesina and Tabellini (2020) show, such native hostility is sometimes a product of misperceptions. Accordingly, even in contexts where immigration has not significantly affected objective socioeconomic outcomes (e.g., labor market conditions or crime rates), backlash can still arise where natives' perceptions of these issues are biased.

The recent immigration wave in Chile, a country that has become one of the most popular migrant destinations in Latin America, provides as an interesting opportunity to study this issue. Chile is currently near an all-time high in terms of the proportion of foreign-born residents. Over the course of the 2010s, the foreign-born population rose from less than 2% in 2010 to around 4.5% of the national population in 2017. In Ajzenman, Dominguez and

Undurraga (2020), we document that this considerable inflow of immigrants widened the gap between crime perceptions and actual crime. That is, individuals exposed to higher levels of immigration reported being systematically more concerned about crime, despite the fact that we find no indication that migrant arrival actually affected criminal activity.

In this paper, we examine a related issue: the relationship between the impact of immigration on labor market conditions and public concerns over unemployment. The evidence on the effect (sign and size) of immigration on employment is mixed (Becker and Ferrara, 2019). In contexts where immigration does affect natives' short-run labor market conditions, backlash might plausibly be explained by economic factors. Yet, even in settings where immigration does not trigger unemployment among natives, animosity may still emerge if natives have mistaken perceptions of the effects of immigration on unemployment.

Though the labor market in Chile has remained relatively stable over the last decade, descriptive evidence shows that one of the primary concerns over immigration is (as in many other places) its potential effect on natives' labor market conditions. A 2018 nationally representative survey (Espacio Público, 2018) found that employment ranked second among natives' top worries over the migrant presence, preceded only by crime (28 and 37% respectively). Citizens are not the only ones who express anxiety over the labor market effects of immigration; high-level politicians too have similarly conveyed concern. For instance, in 2019, the Chilean president publicly declared that "Immigration has triggered unemployment" and then promised to "establish order" relative to the influx of immigrants into Chile (refer, for example, to this article, [in Spanish]).

Table 1 describes the evolution of immigrant and native head of household populations during our period of analysis (2010-2017) using a nationally representative survey (*Encuesta de caracterización Socioeconómica*, CASEN). In 2009, the year before our study period begins, immigrants were more likely to be employed, younger, more concentrated in the Santiago metropolitan area, and had more years of formal education compared to Chileans. Most of the differences between natives and immigrants are more pronounced in 2017. This is especially true of the proportion of employed head of household. Interestingly, the native-immigrant difference in the proportion of female head of household reversed over time, primarily due to a positive secular trend among Chileans.

Table 1—: Immigrants *vs.* Natives

Year:	2009		2017	
	Native	Immigrant	Native	Immigrant
Female [0,1]	0.33	0.35	0.43	0.37
Lives in Santiago [0,1]	0.40	0.68	0.38	0.73
Schooling (Years)	9.73	13.18	10.61	13.49
Employed [0,1]	0.64	0.77	0.65	0.84
Age (Years)	52.38	45.87	54.09	37.20
HH Proportion [0,1]	0.986	0.014	0.949	0.051

Note: Descriptive statistics of immigrant and native head of household samples. Immigrant status distinguishes between Chilean and foreign born. Most variables are individual indicator variables ($\in \{0,1\}$), except schooling and age. *HH proportion* represents the size of the group relative to CASEN sample. All statistics are estimated using CASEN sample weights. Source: CASEN 2009 and 2017.

In what follows, we examine the impact of immigration on objective and subjective labor market outcomes by combining different sources of data at both the individual and the municipality levels. We look specifically at a period of remarkable increase in immigration to Chile (2010-2017) and combine two empirical strategies: a 2WFE model and a shift-share Bartik-like instrument. In short, we study the causal effect of immigration on unemployment and unemployment-related concerns, and test whether there is a gap between the two effects.

I. Data and Empirical Model

Our analysis relies on different sources of data. We first construct a 2010-2017 panel data set using ENE (*Encuesta Nacional de Empleo*), the official survey administered by the Chilean National Institute of Statistics (INE), to measure employment and unemployment at the municipality level. We then build a time-consistent immigration panel data set at the municipality level by combining census data with information reported by the Chilean Department of State (*Extranjería*). Finally, we create a municipality-level panel data set on labor perceptions using a national urban safety survey, ENUSC (*Encuesta Nacional Urbana de Seguridad Ciudadana*). This survey is also managed by the INE, and is representative of the national urban population. While the survey focuses primarily on crime issues, we take advantage of a question measuring employment status, as well as a module designed to capture respondents' subjective view of unemployment, i.e., their feelings or opinions on the degree of importance unemployment bears for societal and personal life. Overall, the ENUSC data set comprises almost 200,000 observations distributed across 101 municipalities throughout the 2010-2017 period.[1]

Our outcomes of interest are: a binary indicator equal to 1 if the individual is employed (and zero otherwise); the unemployment rate in her municipality of residence (i.e., for a given municipality, the number of job seekers divided by the sum of job seekers and employed individuals); and her unemployment-related concerns, for which we use two indicators. **"Unemployment as 1st or 2nd concern"** takes a value of one if the individual ranked "unemployment" first or second in response to the question *"Which of the following problems do you think is the most important nowadays?"* (in addition to unemployment, the list includes another 9 social concerns, among others: economic situation, health, education, crime, poverty, and inequality).

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[1] We drop from our analysis one municipality that appears in the ENUSC data (unemployment-related concerns) but not in the ENE data (unemployment).

The outcome **"Unemployment as 1st or 2nd factor affecting personal life"** takes a value of one if the individual ranked "unemployment" first or second in response to the question *"Which of the following problems personally affects you the most?"* (the list includes the same aforementioned options).

To estimate the causal effect of immigration on unemployment and unemployment-related concerns, we implement two empirical approaches: a two-way fixed effects (2WFE) model and an IV strategy that closely follows the approach employed in Bianchi, Buonanno and Pinotti (2012) and in Ajzenman, Dominguez and Undurraga (2020). For the 2WFE model, we combine information at the respondent-level with immigration data at the municipality-year level. Specifically, we estimate the following regression:

$$(1) \quad y_{imt} = \beta ln(mig)_{mt} + \gamma X_{imt} + \epsilon_{imt}$$

where y_{imt} are the different outcomes of an individual i residing in municipality m in year t, including employment and unemployment-related concerns. $ln(mig)_{mt}$ represents the log of the immigrant population stock ratio in municipality m for year t; X_{imt} is a set of control variables representing observed characteristics of individual i residing in municipality m during year t (e.g., gender, age). We also include a set of municipality and year fixed effects. To measure the effect of immigration on the unemployment rate, we conserve the 2WFE model structure but collapse the panel at the municipality-year level.

For the IV strategy, we build a shift-share, Bartik-like instrument that exploits the supply-push component of immigration by nationality as a plausibly exogenous variation driving "shifts" in the immigrant population across municipalities, and we interact this construct with the "share" of immigrants settled in each municipality in the initial period of analysis. The "shift" component exploits presumably exogeneous events in origin countries that increase the propensity to emigrate, i.e., events that

are potentially relevant for determining migration outflows from the origin country but are independent of across-municipality differences in immigration inflows within Chile. More precisely, our measure of exogenous supply-push factors is based on bilateral migration flows from several origin-to-destination countries other than Chile. The predicted change in the incoming flows of nationality-specific immigrants to a given municipality will thus not be triggered by changes in the local conditions of that particular municipality (demand-pull factors) but by variations in conditions outside of Chile (supply-push factors).

Specifically, we take within-municipality differences in equation 1 and decompose $\Delta mig_{mt} = mig_{m,2017} - mig_{m,2010}$ as:

$$(2) \quad \Delta mig_{mt} \approx \sum_n \theta^n_{m,2010} \times \Delta ln Mig^n_{mt} - \Delta pop_{mt}$$

where $\Delta ln Mig^n_{mt}$ is the log change of the stock of immigrants from country of origin n in municipality m between 2010 and 2017, Δpop_{mt} is the log change of municipality population between 2010 and 2017, and $\theta^n_{m,2010}$ is the share of immigrants from country of origin n over the total number of immigrants residing in municipality m in 2010, i.e.,

$$(3) \quad \theta^n_{m,2010} = \frac{\sum_n Mig^n_{m,2010}}{\sum_{n'} Mig^{n'}_{m,2010}}$$

where n' represents nationalities other than Chilean.

Note that the first term in equation 2 is the weighted sum of the log changes of immigrants of each nationality into each destination municipality m. These depend on both supply-push factors in each origin country (a common shock to all municipalities), as well as demand-pull factors corresponding to each particular municipality. Hence, we replace $\Delta ln Mig^n_{mt}$ with the log change of immigrants of nationality n in destination countries other than Chile, $\Delta ln Mig^n_t$, where the variation in this term is by construction orthogonal to demand-pull factors embedded in municipality m.

To this end, we use UN Population Division migration data, which include data on bilateral flows of international migrants for 45 countries. Though coverage is limited to the most relevant origin-destination cells, we are able to build the 2010-2017 (log) changes for 11 countries: Argentina, Bolivia, Brazil, China, Colombia, Ecuador, Haiti, Peru, Spain, USA, and Venezuela. Collectively, these cells represent around 90% of residence permits in 2010 and 2017.

Our shift-share instrument is defined as the predicted log change in the immigrant to population ratio in each municipality:

$$(4) \quad \widehat{\Delta mig_{mt}} = \sum_n \theta^n_{m,2010} \times \Delta ln Mig^n_t$$

Since demand-pull factors in destination countries other than Chile are plausibly exogenous to variation in unemployment across Chilean municipalities, the correlation between Δmig_{mt} and $\widehat{\Delta mig_{mt}}$ must be due solely to supply-push factors in origin countries and/or to demand-pull factors from locations outside Chile.

Note that our IV strategy is an "exposure" research design, where the shares of immigrants per municipality measure the differential exogenous exposure to a common shock (international migration). As Goldsmith-Pinkham, Sorkin and Swift (2020) show, the exogeneity of Bartik-type instruments like ours typically relies on the exogeneity of the (pre-shock) country shares by municipality. The main identification threat is thus that the shares predict our outcomes (for instance, unemployment-related concerns) through channels other than immigration. Accordingly, we closely follow the authors' recommendations and find that there are parallel trends in the relevant outcomes before the immigration shock began (results are available upon request).

II. Results

We display our main results in Table 2. Panels A and B report the 2WFE and 2SLS estimates of the effect of immigration on employment variables and unemployment-

related concerns, respectively. The sample is restricted to head of households. For the sake of comparability between the OLS and 2SLS estimates, the second column reports OLS estimates using the estimating equation in first differences, which are broadly consistent with the 2WFE estimates using all sample years. As control variables, all regressions include the average age and proportion of women in each municipality in 2017. For robustness purposes, in Panel C we replicate the analysis using all adult members within the household.

First, we find no significant effects of immigration on the employment status of household heads, and this is consistent across different identification strategies. As expected, the effect size of the 2SLS estimates are distinctively larger in magnitude relative to the 2WFE and OLS estimates, uncovering the potential downward bias embedded in non-causal estimates. The results on the unemployment rate follow a similar pattern across models, and we never reject the null hypothesis of no effects.[2] Overall, we find no evidence that immigration affected local employment.

Second, we observe that concern over unemployment substantially rises among residents living in municipalities where the immigrant population has increased, implying a large unemployment/perception of unemployment gap. Our estimates suggest that doubling the share of the immigrant population triggers a $5.06pp$ increase in the proportion of individuals whose 1st or 2nd most important concern is unemployment (relative to a mean of 13.32%), and a $4.94pp$ rise in the proportion of individuals who believe unemployment is affecting their personal lives (relative to a mean of roughly 17%). The magnitudes are naturally larger in the 2SLS estimates, meaning that, again, the OLS and 2WFE coefficients might be biased downwards. For instance, for the

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[2]Our results are broadly consistent when using the ENUSC data unemployment rate in that the rejection decision of the null hypothesis of no immigration effects remains the same across all specifications. Specifically, the effect size and standard errors are 0.65 (0.72), -0.45 (0.91), and -1.70 (3.99) for the 2WFE, OLS, and 2SLS specifications, respectively.

first and second outcome, the 2SLS estimates are 3 and 4 times larger than the 2WFE counterparts, respectively. Of particular note, our findings indicate that doubling the immigrant population share more than duplicates the proportion of individuals who rank unemployment as their 1st or 2nd most important concern or the 1st or 2nd most important factor impacting their personal life. The results remain unchanged when considering all adult residents within the household (Panel C). Hence, the effects are not driven by the perceptions of the member contributing most to the household's economy but seem to reflect a generalized perception of all the household members independent of their degree of participation in the labor market.

Third, as the labor market frictions faced by workers with high and low levels of education differ, unemployment/perception of unemployment gaps can vary accordingly. We examine this issue in Table 3, where we see that the effects of immigration on the unemployment rate are slightly positive for workers with lower levels of education (without a college or a technical degree), but negative for their counterparts with more advanced degrees.[3] Still, estimates in both sub-samples are statistically indistinguishable from zero. In contrast, while the immigration effects on unemployment-related concerns are close to zero among high-level education workers, they are extremely large among those with low levels of education, and this is consistent across the two perception outcomes. From an intergroup threat perspective, this result is not, perhaps, unsurprising. On the one hand, low-educated workers tend have more insecure jobs, and are thus more likely to perceive immigrants as a threat to job stability. On the other hand, both high- and low-educated workers may believe that immigrants have low education levels, and hence unemployment concerns are only activated among low-educated natives.

[3]The F-stat for the sample of high-level education workers is somewhat weak, meaning the 2SLS estimates in this group could be biased, and the statistical inference unreliable.

III. Concluding Remarks

Immigration represents one of today's most important policy challenges. Destination countries need not only grasp the effects of immigration on a multitude of dimensions but also that which shapes public perceptions around this issue. This is of utmost importance in countries such as Chile, where the annual influx of migrants rose from around 100,000 individuals in 2010 to more than 350,000 in 2017. This paper compares the actual effect of immigration on the labor market with natives' perceptions of the latter. We document that while immigration did not systematically impact levels of employment or unemployment, it did cause an increase in unemployment-related concerns, thus revealing a native (mis)perception of the true effect of immigration on labor outcomes. This finding corroborates that previously reported in terms of the impact of immigration on crime (mis)perceptions. There are, of course, several potential explanations for these gaps, including ethnic-related intergroup threats, immigrants' levels of education, or media effects. Future research might further explore this pattern as well as contribute to the design of policies that better integrate foreign groups and tackle (mis)perceptions among the native population.

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Table 2—: Immigration Effects

Panel A: Employment (HHs only)

	If Employed (ENUSC)			Unemployment Rate (ENE)		
	2WFE	OLS	2SLS	2WFE	OLS	2SLS
Log IR	0.15 (1.12) [0.892]			0.63 (0.56) [0.265]		
$\Delta migr_{mt}$		-0.89 (2.08) [0.671]	13.07 (12.17) [0.283]		0.51 (0.54) [0.341]	1.61 (2.12) [0.449]
Obs.	96,023	100	100	800	100	100
Mean DV	72.78	72.78	72.78	3.35	3.35	3.35
	First Stage Regressions					
$\widehat{\Delta migr_{mt}}$			4.29 (1.31)			4.29 (1.31)
F-Stat.			10.70			10.70

Panel B: Employment Concerns (HHs only)

	Unemployment as 1st or 2nd Concern (ENUSC)			Unemployment as 1st or 2nd Factor Impacting Pers. Life (ENUSC)		
	2WFE	OLS	2SLS	2WFE	OLS	2SLS
Log IR	5.06 (1.75) [0.005]			4.94 (2.34) [0.037]		
$\Delta migr_{mt}$		1.64 (1.88) [0.387]	14.57 (7.93) [0.066]		0.83 (2.03) [0.683]	20.86 (11.97) [0.082]
Obs.	95,260	100	100	91,159	100	100
Mean DV	13.32	13.32	13.32	16.96	16.96	16.96
	First Stage Regressions					
$\widehat{\Delta migr_{mt}}$			4.29 (1.31)			4.29 (1.31)
F-Stat.			10.70			10.70

Panel C: Robustness (All)

	Unemp. Rate (ENE)		Unemp. as 1st or 2nd Concern (ENUSC)		Unemp. as 1st or 2nd Factor Imp. Pers. Life (ENUSC)	
	2WFE	2SLS	2WFE	2SLS	2WFE	2SLS
Log IR	1.09 (0.86) [0.210]		5.26 (1.47) [0.001]		4.83 (2.08) [0.022]	
$\Delta migr_{mt}$		2.05 (2.53) [0.417]		17.00 (6.76) [0.012]		12.27 (8.18) [0.134]
Obs.	800	100	188,716	100	180,696	100
Mean DV	6.77	6.77	13.48	13.48	18.08	18.08
	First Stage Regressions					
$\widehat{\Delta migr_{mt}}$		4.29 (1.31)		4.29 (1.31)		4.29 (1.31)
F-Stat.		10.70		10.70		10.70

Note: Panels A and B restrict the sample to head of households, while Panel C includes all individuals. Results of the 2WFE model regression are at the respondent level across 100 municipalities surveyed over the period 2010-2017, and include individual-level controls (age and gender), and year and municipality fixed effects. Standard errors clustered at the municipality level appear in parentheses; *p*-values in brackets. Results of the OLS and 2SLS estimates on the cross section of differences between 2010 and 2017 across 100 municipalities surveyed. Robust standard errors in parenthesis; *p*-values in brackets. The dependent variable is the difference of the average outcome in a given municipality between 2010 and 2017. The variable $\Delta migr_{mt}$ is the log change of immigrants divided by the municipality population. $\widehat{\Delta migr_{mt}}$ is the instrument. The list of countries comprises Argentina, Bolivia, Brazil, China, Colombia, Ecuador, Haiti, Peru, Spain, USA, and Venezuela. All OLS and 2SLS regressions include the average age and the proportion of women in each municipality during 2017 as controls. Mean DV reports the across-years mean of each outcome for the period 2010-2017.

Table 3—: High vs. Low Education

	Unemp. Rate (ENE)		Unemp. as 1st or 2nd Concern (ENUSC)		Unemp. as 1st or 2nd Factor Imp. Pers. Life (ENUSC)	
	High	Low	High	Low	High	Low
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
$\Delta migr_{mt}$	-7.81	3.38	-1.30	15.00	1.59	20.27
	(5.33)	(2.65)	(4.92)	(6.86)	(5.99)	(9.25)
	[0.143]	[0.202]	[0.791]	[0.029]	[0.791]	[0.028]
Obs.	100	100	100	100	100	100
Mean DV	2.96	3.49	12.13	13.97	15.72	17.63
	First Stage Regressions					
$\widehat{\Delta migr_{mt}}$	3.85	4.30	3.85	4.30	3.85	4.30
	(1.42)	(1.34)	(1.42)	(1.34)	(1.42)	(1.34)
F-Stat.	7.29	10.36	7.29	10.36	7.29	10.36

Note: Results of 2SLS estimates on the cross section of differences between 2010 and 2017 across 100 municipalities surveyed, using head of households as relevant respondents. Low-education workers are heads of households without a college, or a technical degree, and represent 66% of our respondents in the ENUSC survey. The unemployment rate is built using ENE data, while the indicators of unemployment as a concern or factor impacting personal life are constructed using ENUSC data. Robust standard errors in parenthesis; p-values in brackets. The dependent variable is the difference of the average outcome in a given municipality between 2010 and 2017. The variable $\Delta migr_{mt}$ is the log change of immigrants divided by the municipality population. $\widehat{\Delta migr_{mt}}$ is the instrument. The list of countries comprises Argentina, Bolivia, Brazil, China, Colombia, Ecuador, Haiti, Peru, Spain, USA, and Venezuela. All 2SLS regressions include the average age and the proportion of women in each municipality during 2017 as controls. Mean DV reports the across-years mean of each outcome for the period 2010-2017.