Does Immigration Produce a Public Backlash or Public Acceptance? Time-Series, Cross-Sectional Evidence from 27 European Democracies

Online Supplementary Material

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Further discussion of the research design and empirical strategy

Since the backlash effect may depend on the existing stock of immigrants, we allow stocks s to moderate the effects of flows f, i.e., we specify an interaction term between these variables:

$$y_{it} = \alpha + \beta_1 f_{it-1} + \beta_2 s_{it-1} + \beta_3 f_{it-1} s_{it} + \epsilon_{it}$$

We use a fully time-series, cross-sectional design, which allows us to: (1) model the transient short run, and enduring, long-run effects of immigration; (2) deal with the possibility of reverse causation; and (3) model the potential existence of country-specific confounding factors. We discuss each of these in more details below.

The long-run effects of immigration flows. We argue that the effects of immigration flows on public opinion likely takes some time to fully manifest. We use dynamic models to analyze these dynamic effects; in other words, we include lags of the opinion dependent variables in our model. This allows the effects of any independent variables to accumulate over time rather than exert only short run effects. Akaike information criterion tests indicate that two lags of immigration mood and concern are required. We also add first differences of our migration flow measures to the lagged levels included above. These first differences allow immigrant flows to exert immediate, but transient, effects on opinion as well as the delayed but more enduring effects which are captured by the lag of immigration flows (as well as the lag of the immigration opinions)

$$y_{it} = \alpha + \phi_1 y_{it-1} + \phi_2 y_{it-2} + \beta_1 f_{it-1} + \beta_2 \Delta f_{it} + \beta_3 s_{it-1} + \beta_4 f_{it-1} s_{it-1} + \beta_5 \Delta f_{it} s_{it-1} + \epsilon_{it}$$

Including two lags of each dependent variable has additional benefits: it removes the serial correlation present in both variables (p values from Wooldridge serial correlations tests are reported in our tables of results), and it helps us deal with possible reverse effects of opinion on numbers (see below). As these models report only the short run effects of each independent variable, we furthermore use simulations to graphically show how the effects of increases in immigration unfold

Figure S1. Causal Graph of Immigration and Opinion
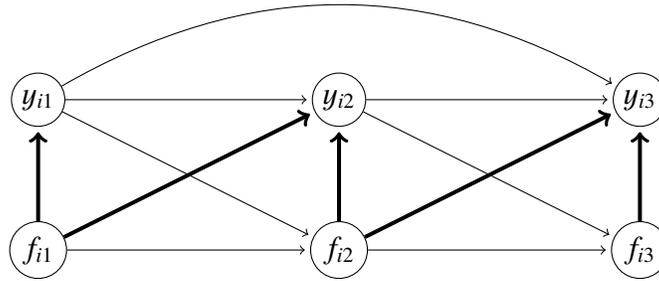
Causal graphs depicting a hypothetical data-generating processes whereby immigration flows f_{it} exerts both immediate and lagged causal effects on public opinion y_{it}. Bold arrows indicate the hypothesized causal effects of flows on opinion; arrows indicate assumed causal effects.

over the ensuing years (Claassen 2020; Williams and Whitten 2012).

The possibility of reverse causation. Our focus is on the effects of immigration flows on subsequent immigration opinion. Yet we must acknowledge the possibility that these variables affect each other in the reverse direction, i.e., that immigration opinions possibly influence subsequent immigration flows. For example, high levels of immigration concern creates political pressure (e.g., due to growing support for the far right) for a more restrictive immigration policy (e.g., Dennison and Geddes 2019). Our inclusion of two lags of immigration opinion allows us to identify the effect we are interested in – that of numbers on opinion – from the reverse. Using causal graphs (see Figure S1) helps illustrate this point.

As laid out in this causal graph, we assume that national opinion (whether immigration mood or concern) is an AR(2) process, and is also shaped both by the immediate flows of immigrants as well as the flows the previous year. We also assume that opinion, in turn, exerts an effect on subsequent (but not contemporaneous) flows of immigrants. Under these assumptions, two lags of opinion are required to identify the emboldened effects in Figure S1. With only one lag of opinion included, there still remains a backdoor reverse effect of immigration flows to opinion at two lags before the present (i.e., from f_{i1} to y_{i1} and then directly to y_{i3}).

The potential existence of country-specific confounds. Cross-sectional associations between immigration flows and immigration opinion are likely confounded by country-specific historical,

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cultural and institutional factors which determine the overall level of public opinion towards immigration, the broad contours of immigration policy, and therefore the level of immigration which is permitted. A simple solution to avoid such time-invariant confounds, available with TSCS data, is to use country fixed effects υ_i to focus the analysis on the within-country variance in all variables:

$$y_{it} = \phi_1 y_{it-1} + \phi_2 y_{it-2} + \beta_1 f_{it-1} + \beta_2 \Delta f_{it} + \beta_3 s_{it-1} + \beta_4 f_{it-1} s_{it-1} + \beta_5 \Delta f_{it} s_{it-1} + \upsilon_i + \epsilon_{it}$$

Table S1. Models of immigration inflows from Muslim-majority countries

|	Dependent variable:	
	Δ Immigration mood	Δ Immigration concern
	Model S1.1	Model S1.2
Diff Muslim immigration inflows, $_{t0}$	−.086 (.363)	1.168 (.224)*
Muslim immigration inflows, % of pop. $_{t-1}$	−.241 (.144)	.491 (.340)
Non-citizen stock, % of pop. $_{t-1}$	.004 (.010)	−.018 (.026)
Diff Muslim immigration × non-citizen stock	−.016 (.012)	−.003 (.015)
Lag Muslim immigration × non-citizen stock	.025 (.012)*	.004 (.016)
GDP growth per capita $_{t-1}$	1.395 (.272)*	−1.342 (.669)*
Unemployment rate $_{t-1}$	.951 (.556)	.413 (.906)
Far right seat share $_{t-1}$	−.052 (.136)	.274 (.162)
Immigrant integration policy index $_{t-1}$	.064 (.076)	−.035 (.050)
Immigrant entry policy index $_{t-1}$	−.080 (.035)*	−.033 (.047)
First lag of dependent variable	−.025 (.065)	.479 (.077)*
Second lag of dependent variable	−.143 (.065)*	−.724 (.122)*
Country fixed effects	✓	✓
N	431	271
N countries	27	25

*$p < .05$. Coefficient estimates from dynamic fixed effects models with Driscoll-Kraay robust standard errors in parentheses. The dependent variables are the annual change in national immigration mood (Model S1.1) and the annual change in national immigration concern (Model S1.2).

Table S2. Models of non-citizen stock accumulation

	Model S2.1	Model S2.2	Model S2.3	Model S2.4
Non-citizen stock % of pop. $_{t-1}$	.97 (.01)*	.96 (.01)*	.92 (.01)*	.91 (.02)*
Net migration, $_{t-1}$	.64 (.06)*	.61 (.08)*		
Integration policy index $_{t-1}$		.20 (.04)*		.14 (.06)*
Unemployment rate $_{t-1}$		−1.24 (.69)		−2.41 (.75)*
Immigration inflows $_{t-1}$			.86 (.08)*	.77 (.08)*
Country fixed effects	✓	✓	✓	✓
Adjusted R^2	.98	.97	.98	.97
Residual standard deviation	.33	.36	.34	.36
Num. obs.	740	550	704	543

$^*p < .05$. Coefficient estimates from dynamic fixed effects models with Driscoll-Kraay robust standard errors in parentheses. The dependent variable is the annual change in percentage of national residents who are not citizens. We use the models S2.1 and S2.3 in our simulations given their better model fit diagnostics.

Figure S2. Simulated effects of changes in net migration and immigration flows on long-run changes in immigration mood and concern, models with no controls
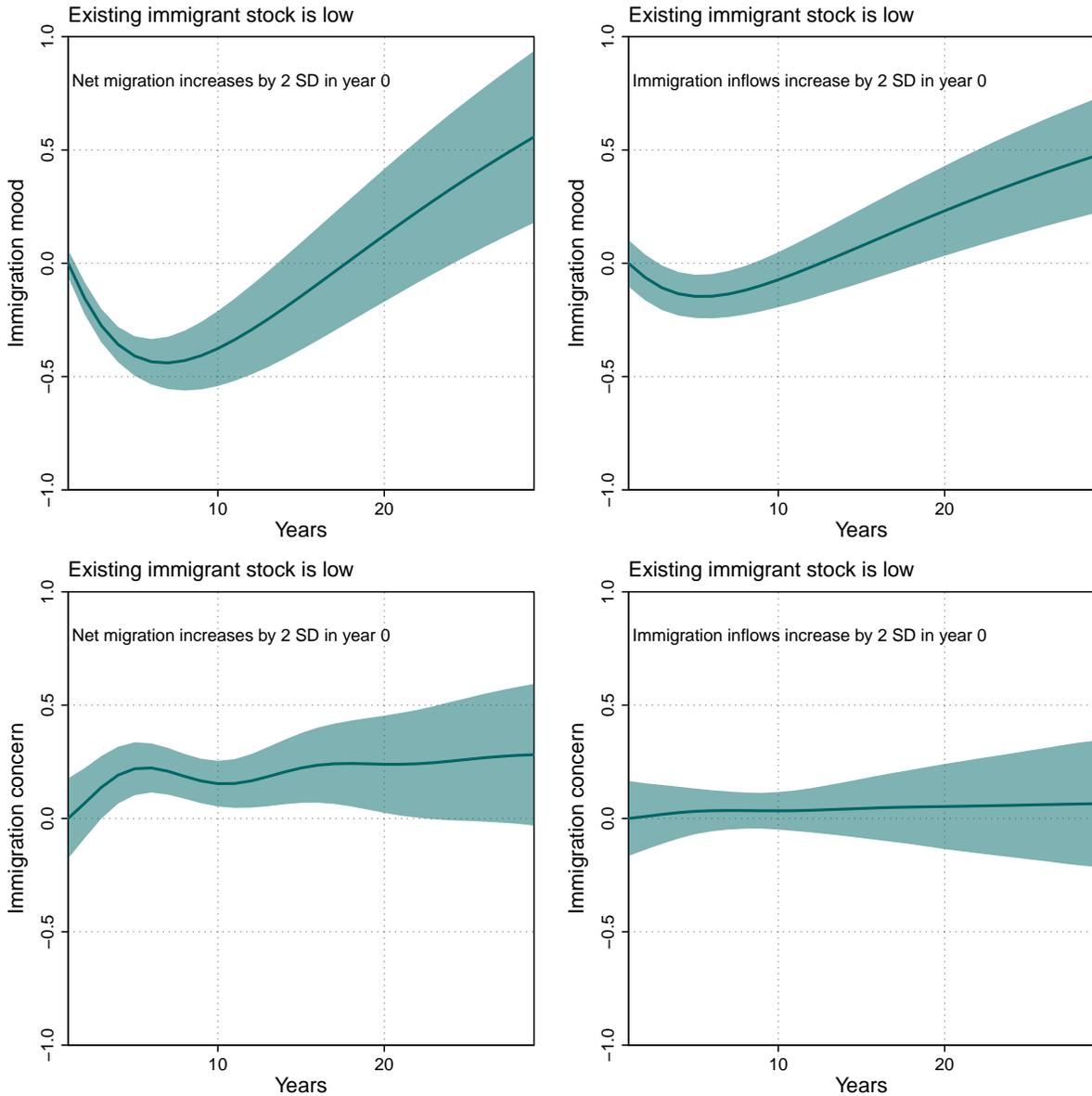
The plots show the simulated within-sample effects of permanent, within-country, two standard deviation increases in net migration (+/-0.8 percentage points; left plots) and immigration flows (+/-0.6 percentage points; right plots) when existing immigration stocks are low on either immigration mood (top row) or immigration concern (bottom row). These simulation rely on parameter and variance-covariance estimates obtained from dynamic fixed effects models without any time-varying controls included. The solid lines indicate the mean simulated effect; the shaded regions indicate the 95% confidence intervals of these effects.

References

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