



AUSTRALIA

SELECTED ISSUES

January 2024

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SELECTED ISSUES

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**Asia and Pacific
Department**

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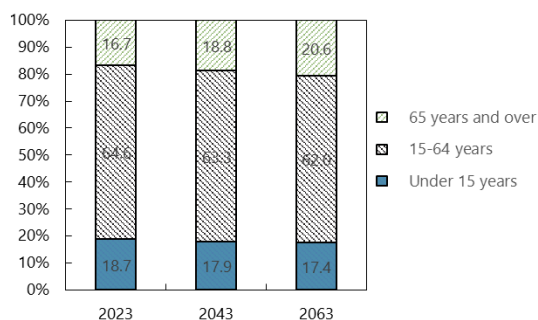
MACROECONOMIC IMPACT OF MIGRATION¹

Migration in Australia has historically been a significant source of population growth, with a third of the population born overseas. Migration is set to become even more important as the population natural growth rate declines. Australia attracts some of the best educated migrants to OECD countries who are mostly skilled workers and students, with high labor force participation rates and low unemployment. Disentangling macroeconomic effects of migration from drivers of migration is challenging, but within Australia, migration surges have historically been associated with higher growth and favorable labor market outcomes, with negligible price pressures except in the housing market. Cross-country analysis using instrumental variables confirms a positive impact of migration on macroeconomic outcomes—output, employment, and productivity—without significant inflationary impact. While housing affordability is impacted at the margin, this could represent structural supply shortages and would be best addressed by boosting supply.

A. Recent Trends in Migration

1. Australia has a population of 26 million, with close to 90 percent living in a handful of urban areas around the eastern and southern seabords. Average population density is therefore one of the lowest in the world, at 3.5 persons per square kilometer given the semi-arid and desert geography of much of the interior of the country. The median age of the population is 37.5 years with a high life expectancy of close to 84 years (the world's tenth highest in 2023²). The sex ratio is roughly balanced at 0.99 males per female and the old age dependency ratio – number of individuals aged 65 and over per 100 people of working age (20 to 64) stood at 30, lower than the OECD average of 33, but has been increasing fast reflecting Australia's increasing life expectancy and decreasing fertility rate (see below).

Projected Population Age Structure



2. Overseas migration has historically played an important role in Australia. It has been a significant source of population growth, with variability over time due to changing domestic and global factors. While several large increases were recorded before the global financial crisis and in the years before the COVID-19 pandemic, migrants inflows surged in the last year and a half. Roughly a third of the population aged 15 years and over is born overseas, with 23 percent arriving before 2010, while the rest represents more recent migration.

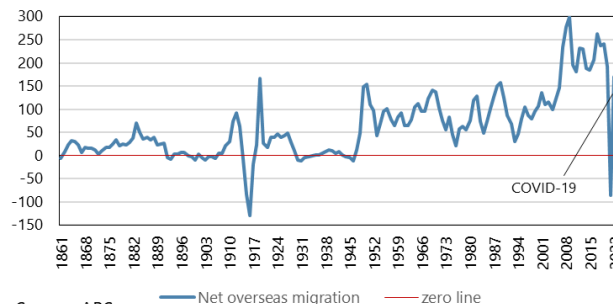
¹ Prepared by Abdullah Alnasser, Pragyam Deb, Nour Tawk (all APD). We thank the Australian authorities for their valuable comments and suggestions.

² [Life Expectancy by Country and in the World \(2023\) - Worldometer \(worldometers.info\)](https://www.worldometers.info/life-expectancy/)

3. Net overseas migration is set to play an even larger role going forward as the rate of natural increase diminishes. After peaking at 3.55 babies per woman in 1961, Australia’s total fertility rate (TFR) has fallen continuously,

reaching 1.66 in 2020-21, well below the replacement rate of 2.1 (the rate needed for a generation to replace itself). As a result, over the last decade, net overseas migration’s contributions to Australia’s population growth increased to roughly 60 percent. After stalling during the pandemic, which resulted in the first recorded quarterly population decline in Australia’s population, migration flows returned quickly after borders re-opened in

Net Overseas Migration
(Number of people, '000)



Source: ABS

2022. Net overseas migration was 152,000 people in the March 2023 quarter and 454,000 people over the year to March 2023, which drove most of the annual population growth and was the largest net inflow of migrants on record, with potentially important macroeconomic effects.

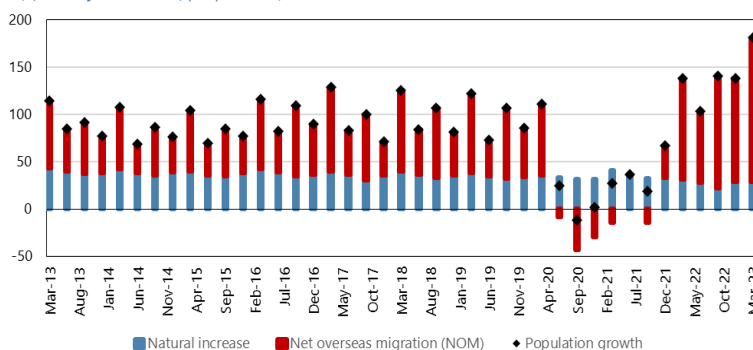
4. Recent trends in migration were driven by higher arrivals, particularly students from India and China.

There was a sharp increase in migrant arrivals in 2022 and in the first half of 2023, while departures remained subdued, in large part a consequence of fewer temporary migrants having arrived during the pandemic. The largest share of new migrants were students, as has historically been the case, followed

by skilled permanent and temporary migrants. The number of working holiday maker arrivals – a special visa that lets people 18 to 30 years old (35 years for some countries) have an extended holiday in Australia with the ability to work to help fund their trip – have also increased in 2022, reflecting eased travel restrictions in late 2021 and the seasonal

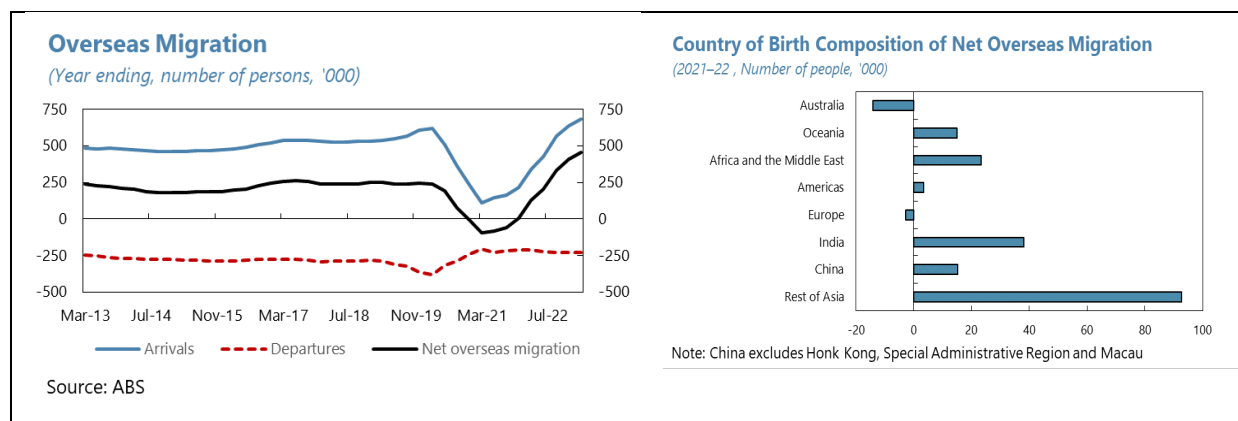
Population Growth and Components

(Quarterly, number of people, '000)

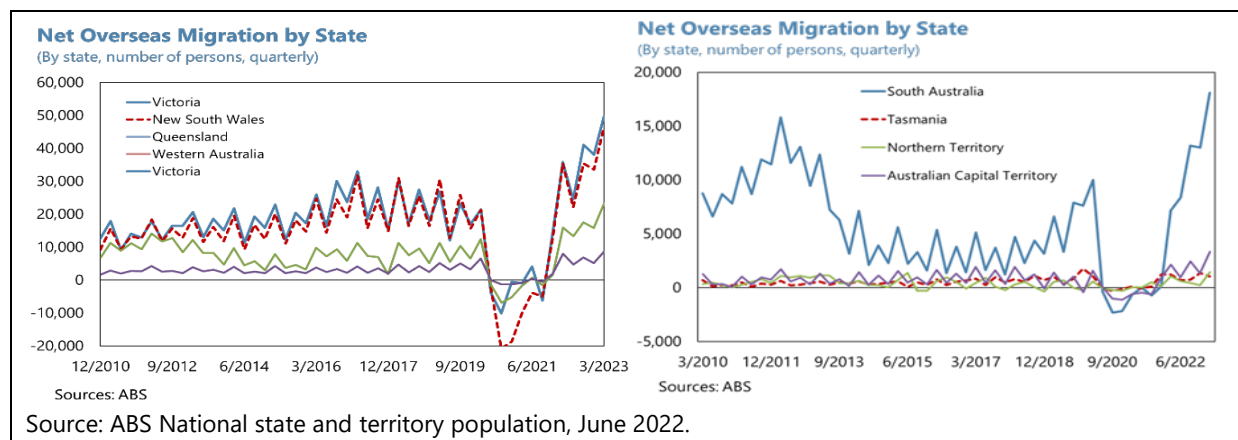


Source: ABS

migration patterns of individuals on holiday visa. These should ease labor market constraints, particularly in the services sector. In terms of country composition, recovery in net migration from migrants born in China and India was particularly strong. This reflects a return to the pre-pandemic trends where migrants from Asia made up the majority of net overseas migration.

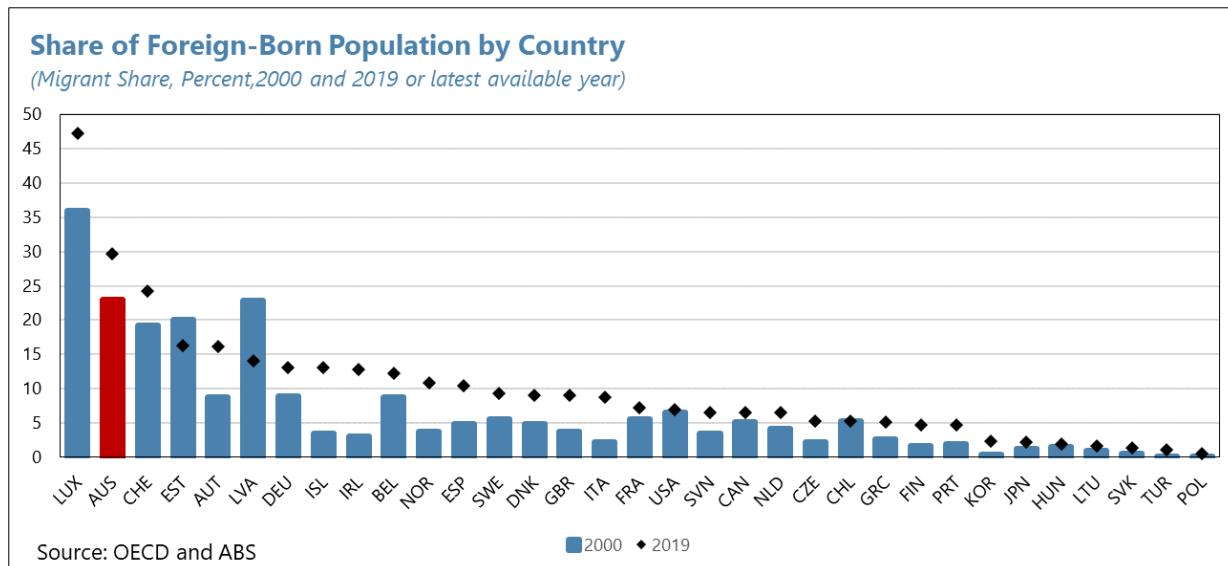


5. Net migration trends at the national level are distributed relatively equally across states and territories. Population growth at the territory level was also driven by high overseas migrant arrivals and subdued migrant departures. Largest share of migrant arrivals was in New South Wales (Sydney) and Victoria (Melbourne), but all states and territories recorded net gains, similar to the long-term trend before the pandemic, and reversing the net loss of population seen in 2020-21.



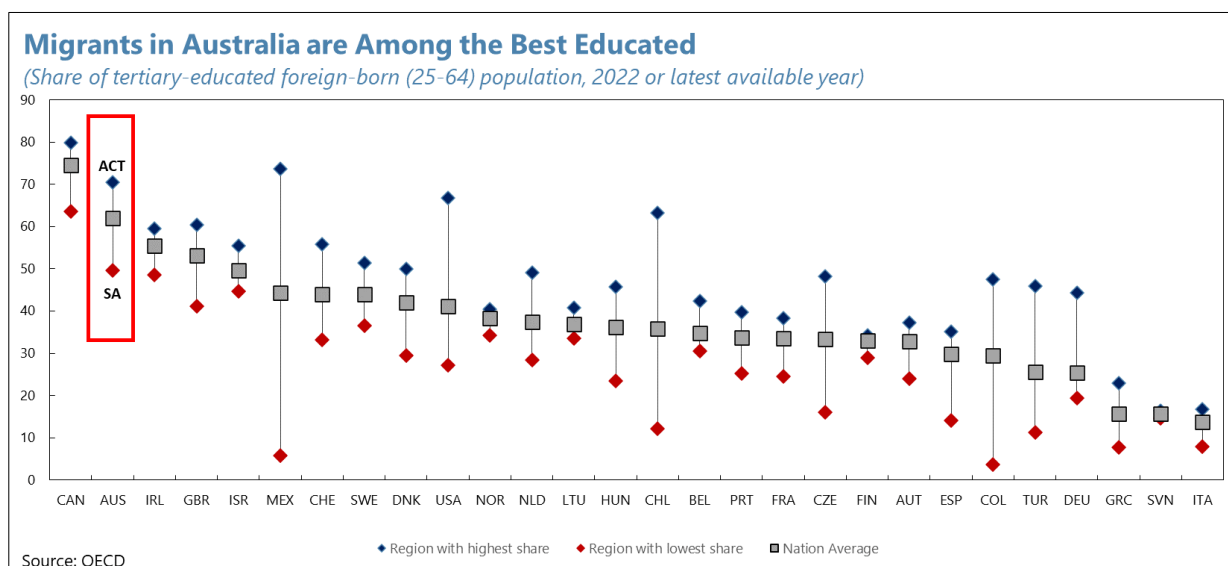
B. Migration in Australia in an International Context

6. Australia has a higher share of foreign-born population compared to the rest of the OECD. Around 30 percent of Australia's population was foreign-born in 2019, which is more than twice the OECD average of 14 percent and higher than other major migrant-receiving OECD countries such as Canada (21 percent), France (13 percent), Germany (16 percent), the UK (14 percent), and the US (14 percent). There has been an increase in the share of migrants in all OECD countries, including in Australia. Migrants tend to be concentrated in larger metropolitan areas, in cities or regions with dynamic economies that offer better employment opportunities (OECD, 2022, 2023). In Australia, migrants constitute 40 percent of the total population in large metropolitan regions, i.e., regions that contain a metropolitan area of more than 1.5 million inhabitants, such as greater areas of Brisbane, Melbourne, Perth, and Sydney.

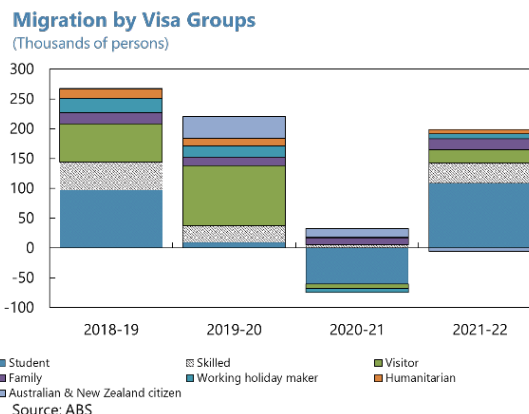


7. Australia has one of the highest educated migrant populations among OECD countries. Almost 60 percent of the migrant population in Australia has attained tertiary education, compared to around 40 percent of migrants in other OECD countries. In addition, an estimated 69 percent of recent migrants held a non-school qualification before arriving in Australia, of whom 79 percent had a bachelor’s degree or higher and 13 percent had a diploma. While there is regional variation amongst the skill level of migrants, with the highest being in ACT, all regions of Australia had high shares of tertiary educated migrants relative to other OECD countries.

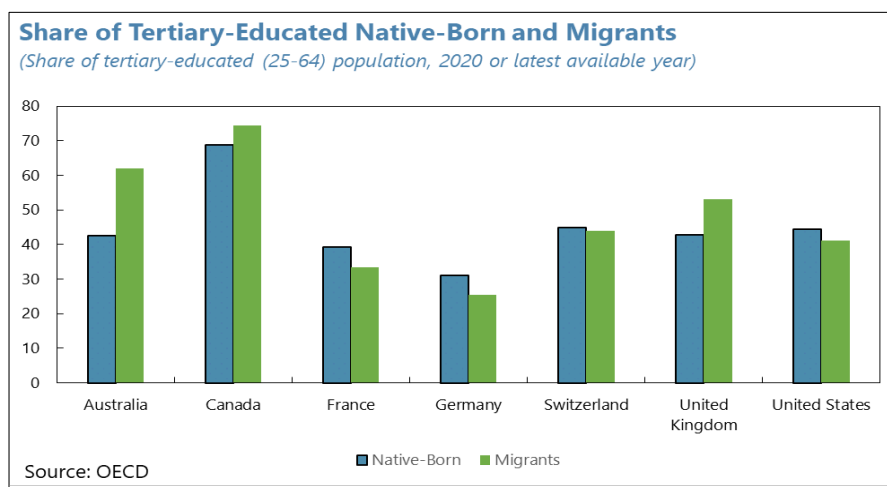
C. Migrant Characteristics and Labor Market Outcomes



8. Most migrants into Australia are skilled workers and students. Looking at VISA categories of recent migrants, the largest share of new arrivals were students, as has historically been the case, followed by skilled permanent and temporary migrants. The share of humanitarian migrants and refugees are relatively low. As a result, migrants have generally favorable labor market and economic outcomes.



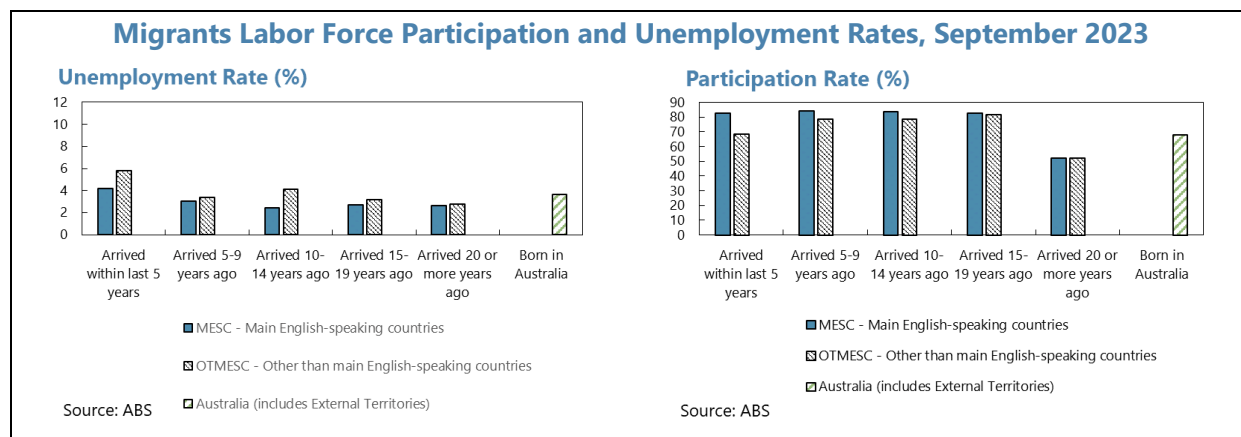
9. While immigrants are typically more educated than natives in many countries, the gap is larger in Australia. The share of tertiary-educated migrants substantially exceeds that of the native-born in Australia, Canada, and the United Kingdom. Moreover, the difference between the shares of tertiary-educated among the native-born and migrant populations is biggest in Australia, with a gap of 20 percentage points.



10. Migrants, particularly from main English-speaking countries, tend to have high labor force participation and employment outcomes.³ The chart below, derived from the Australia Bureau of Statistics (ABS) data, shows that participation rates amongst migrants are generally higher than for those born in Australia, except for those migrants that arrived more than 20 years ago. In addition, while recently arrived migrants have a higher unemployment rate on average than those who have lived in Australia for some years, overall outcomes, such as labor force participation and unemployment, are favorable, particularly amongst men and those with higher skills. The OECD found that relatively low labor force participation, rather than higher unemployment, explains the employment rate gap between female migrants in Australia and native-born individuals. Reasons explaining why migrant women’s outcomes are lower include the unpaid work undertaken by many migrant women. For migrants in the working age, in 2019-20 financial year, the proportion of

³ Main English-speaking countries are defined as Canada, Ireland, New Zealand, South Africa, the United Kingdom, and the United States.

migrants who received unemployment payments was 11 percent, compared with 13 percent of the total Australian population aged 15-64 years. Amongst this, the figure was only 8 percent for skilled migrants, jumping to 31 percent for humanitarian migrants.



D. Impact of Migration

11. Disentangling macroeconomic effects of migration from the drivers of migration is challenging. Non-humanitarian migration, particularly migration of students and skilled workers that is dominant in Australia, is often driven by search of better economic opportunities (Grogger and Hanson, 2011), which makes identifying causal effect difficult – is migration driving better economic opportunities or are better economic opportunities attracting migrants. We take 3 approaches to tackle this challenge. First, we look at the Australian migration data and explore the correlation with economic variables of interest. Next, we conduct an event study type analysis, where we focus on economic outcomes before and after peaks in migration episodes. Both these methods suffer from endogeneity concerns in varying degrees and Australia specific factors that might affect the relationship due to other structural issues (such as overall housing shortages).

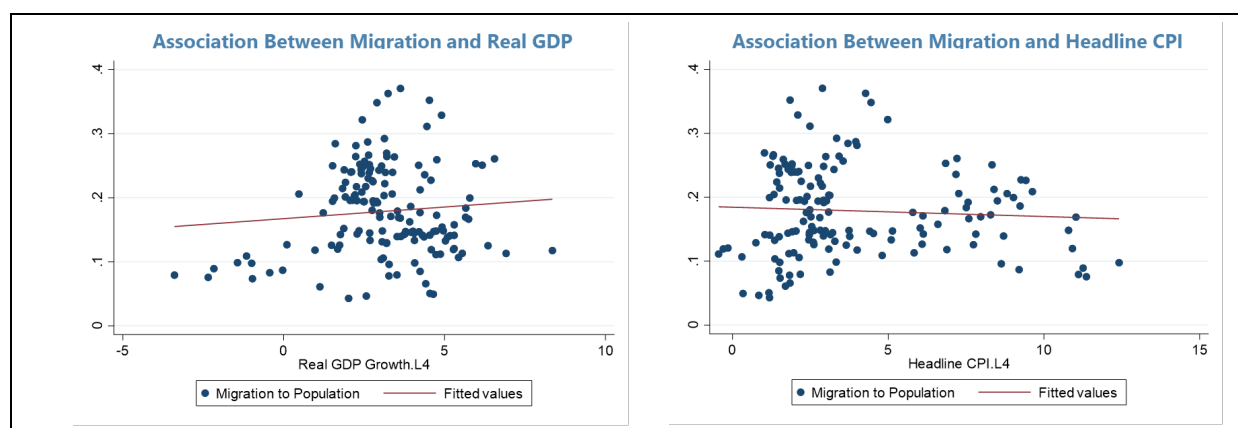
12. Cross-county instrumental variable analysis is employed to ascertain causal relationships. The idea is to focus on push factors of migration to avoid confounding the effects of pull factors on macroeconomic (dependent) variables that result in reverse causality. Following Engler et al. (Forthcoming), we focus on large immigration waves and construct an instrument variable that it is independent from economic conditions in the recipient country, allowing us to isolate the impact of the migration inflow episode. We use this method to assess the impact of migration on growth, productivity, prices, wages, and the housing market.

Economic Impact of Migration Within Australia

13. The analysis starts with the identification of co-movements between the Australian migration data and selected macroeconomic variables. To avoid seasonal volatility in migration, we look for correlation with the 4-quarter moving average of the share of migration to overall population. The selected macroeconomic indicators are real GDP growth, inflation, unemployment rate, employment growth, wage growth, and housing prices. The analysis excludes the data of 2020

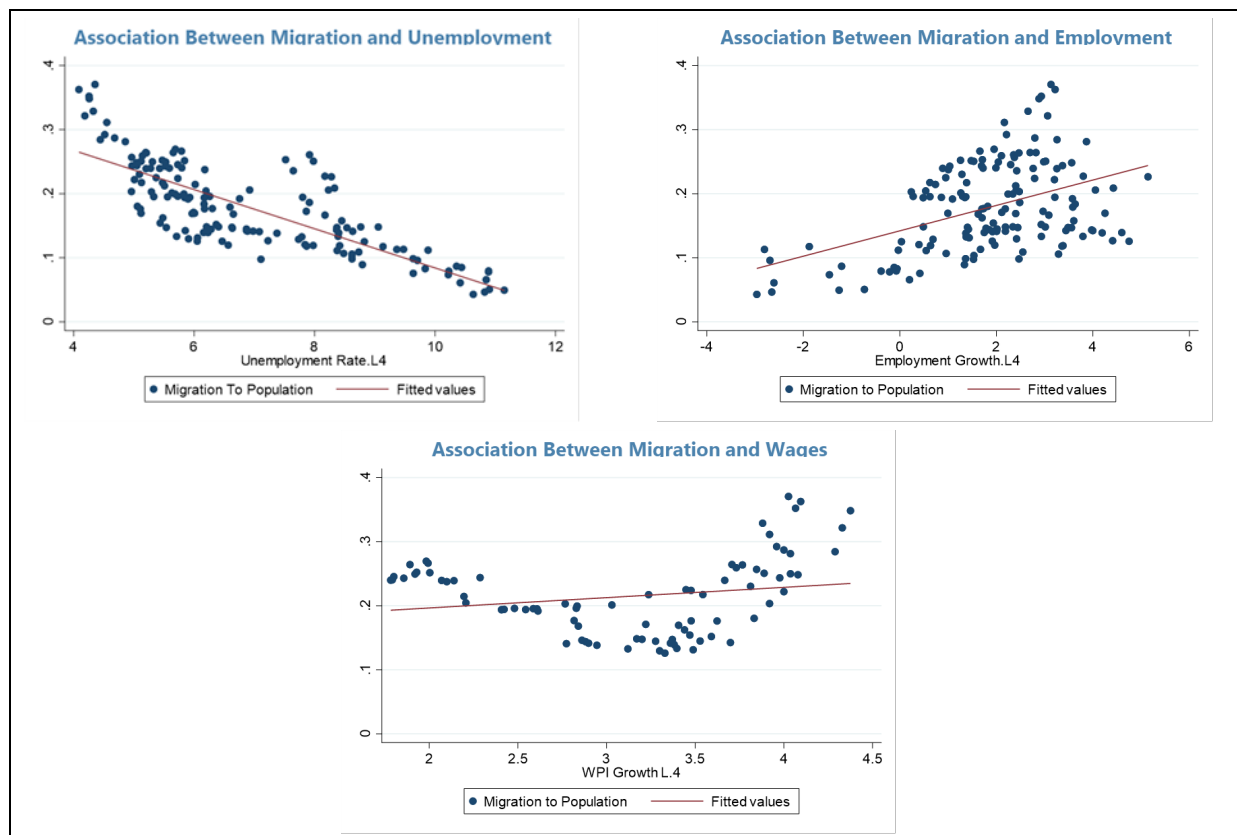
and afterwards to neutralize the impact of the pandemic outlier data points. However, the results presented are robust to including data from the pandemic episode.

14. The correlation of migration waves with real GDP suggests a positive relationship, but weak to no association with inflation. This simple analysis however reveals pronounced volatility, yielding a relatively small correlation between migration and GDP growth of 0.09. The results should be interpreted with caution due to various endogenous and exogenous dynamics. The relationship between migration and inflation, as observed in both the headline and core consumer price indices suggests that higher net migration is not typically associated with price pressures. Statistically, the association appears weak, with correlation around zero, measured by the slope of the flat line in the scatter plot.

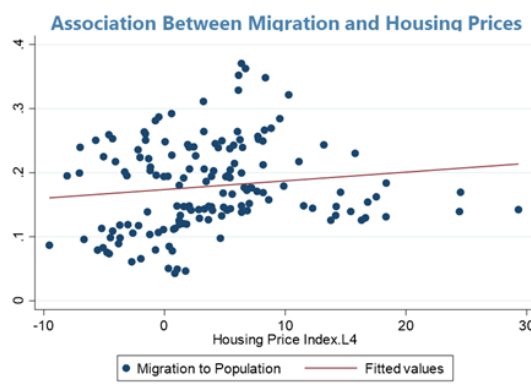


15. The positive association of migration with the labor market is more pronounced and consistent across various metrics. The co-movements between migration and the unemployment rate are robust with a high correlation of -0.80. Furthermore, the scatterplot of migration and employment growth echoes similar outcomes—migration increases with the employment growth rate, reflecting a large correlation of 0.45, despite few outliers. Turning to wage dynamics, the scatterplot indicates a positive, albeit modest, correlation between migration and wages. This relatively weaker relationship⁴ is partly explained by the design of the wage price index, which is more stable than some other measures of earnings because it seeks to control for compositional change in jobs. Having said that, the wage Phillips curve relationship is robust in Australia, particularly when augmented by the role of migration, with a statistically significant relationship between wage growth, unemployment and employment rates and migration.

⁴ A forthcoming OECD paper notes that in the Australian context, at an aggregate level, migrants do not affect native wages. Past RBA work (2019) also found no evidence that migration has harmed wages or labor market prospects of those living in Australia (while migration has tended to boost employment for incumbent's).

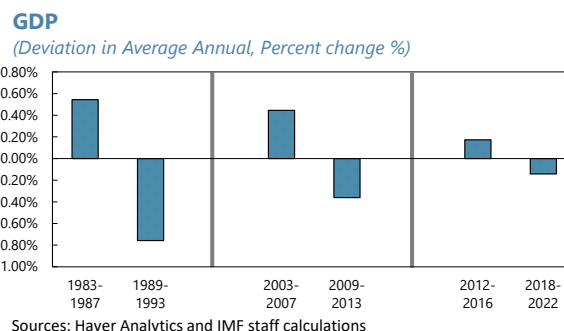


16. Housing prices are positively associated with migration, though probably less so than subsequent analysis suggests. With correlation of 0.13, the change in housing appears to be only marginally linked to migration, especially when not accounting for other variables. This contrasts with subsequent analysis of migration waves (see below) that shows consistent declines and rise in the housing prices preceding and succeeding migration peaks, respectively.

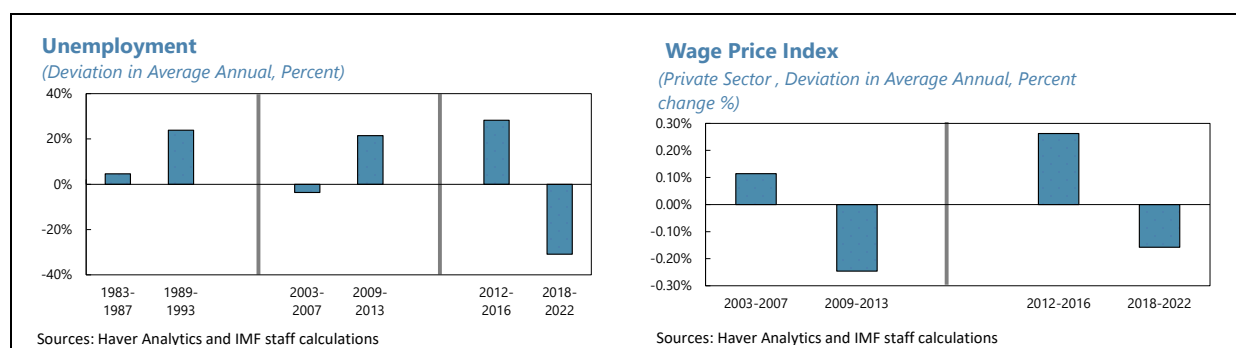
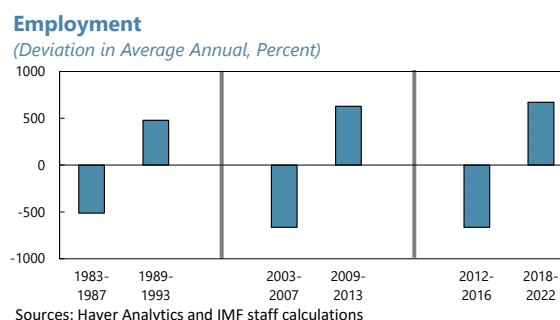


17. An event study analysis is used to associate selected macroeconomic indicators with three significant migration surges in Australia in 1988, 2008, and 2017. The goal is to investigate the dynamics of key macroeconomic indicators—real GDP growth and inflation; labor market variables such as the unemployment rate, employment growth, and wage growth; and housing prices. The migration surge is identified using the peaks in the 4-quarter MA of the growth in the share of migration to overall population. The influence of these migration surges is illustrated by bar charts, which depict deviations from the 10-year average for each indicator, averaged over the 5 years before and after each peak migration wave. Notably, this analysis does not control for other factors affecting the economy during this period beyond the average growth during the decade. One migration spike in 2008 coincided with the global financial crisis, while the event study of the wave in 2017 includes the pandemic effect between 2020-2022.

18. GDP growth tends to decline after migration surges. Consistent with the correlation plots above, real GDP growth (y/y) increases in the run up to the migration wave, the first five years of migration growth leading up to the peak wave. Thereafter, it declines, alongside an average drop in the migration rate. However, attributing these GDP growth patterns solely to migration waves is challenging due to various endogeneity effects and omitted variable concerns, particularly given the role of the financial crisis and COVID-19 pandemic that contaminate the post migration surge period. The results on inflation (year-on-year CPI growth) is less clear, with prices declining after the 1988 surge, but flat or increasing marginally after 2008 and 2017.

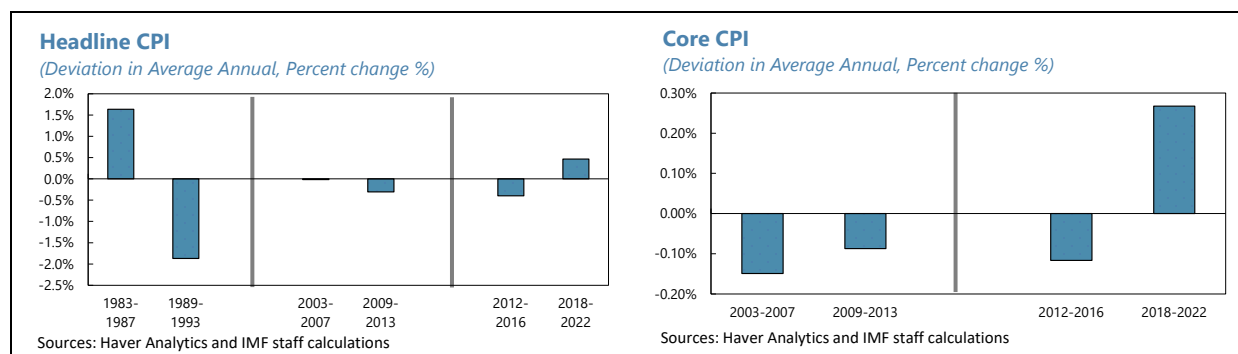


19. The evidence on the impact of migration surges on labor market dynamics is however weak and more nuanced.⁵ While the unemployment rate increases on average five years after a migration peak in two episodes, the underlying data is volatile. Specifically, the unemployment rate consistently drops for two years post-peak, then rises over the subsequent three years in most cases. The volatility is likely driven by factors specific to each event. For example, the 2008 episode coincided with the global financial crisis, which could account for the spike in unemployment. Similarly, the 2017 episode was influenced by the pandemic's aftermath in 2020 and beyond. The employment data in level terms suggests that employment rises two years after the peak, before stabilizing. Turning to price of labor, WPI data prior to 1998 is unavailable. However, the financial crisis and the pandemic both display a consistent decline in average wages five years after the migration peak.

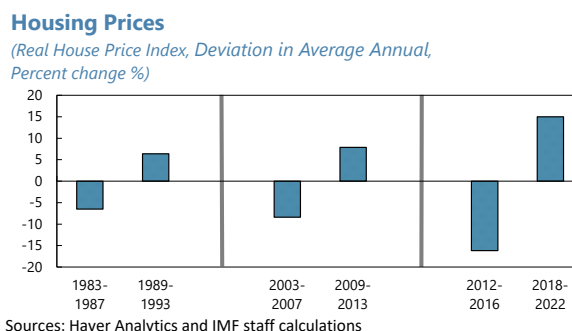


⁵ The recent literature leads also to inconclusive results. In line with our results, OECD (2023) found a positive correlation between migration and native employment in Australia. However, Özgüzel and Edo (2023) document short term negative impacts of immigration on employment in European regions.

20. The association between migration surges and inflation is inconsistent. This is true for both headline CPI and core CPI (the latter notably excludes the first episode in 1988 due to data availability starting from 1990). The event analysis indicates that migration peak waves are not significantly associated with changes in inflation overall. However, delving into the detailed data beyond averages reveals that these peaks often align with relatively high headline inflation, where inflation peaks simultaneously with migration surges. However, it subsequently declines given the lagged effects on the labor market.



21. The housing price index demonstrates a steady rise following migration peak. This trend can be interpreted in the context of a lagged migration effect on housing demand in the face of relatively inelastic housing supply. The housing price index remains stable between significant migration waves but rises slowly approximately five years before the next migration peak and accelerates further five years after the peak. As mentioned above in the analysis of the co-movement with GDP, this trend could reflect the role of factors beyond migration, including the GFC/pandemic (and the associated policy responses).

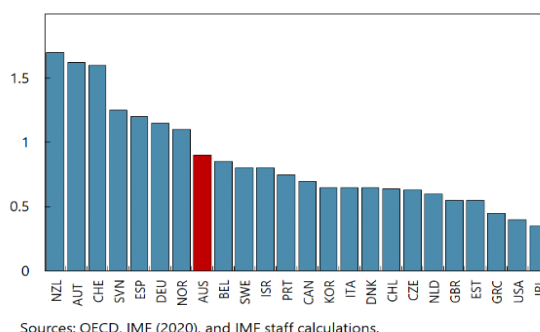


Evidence from a Cross-Country Panel

22. A cross country panel is used to assess the impact of migration on macroeconomic outcomes.

We follow Engler et al. (2023) who measure the dynamic economic effects of immigration on a destination country, combining episodes of large immigration waves with an instrumental variable (IV) technique. In the absence of a long Australia-specific database that can offer sufficient variation in migration flows, we rely on a panel database of 34 countries, with data from 1995 to 2018, including 11 episodes of large immigration waves. As a first step, the methodology

Average Size of Yearly Immigration Shocks Per Country
(Percent of population)



identifies large immigration waves⁶ for each of the countries in the database, given that large immigration episodes are historically more likely to be driven by external factors (such as negative events in source countries), rather than high economic prospects in recipient countries. As a second step, and to mitigate reverse causality (Card (2001), Peri and Sparber (2009)), an IV technique is used, based on the total immigration from other countries, and the share of immigrants already hosted in the destination country. The approach follows the literature (Beine, Docquier, and Ozden, (2011)), which documents that migrants from a given source country typically choose destination countries which already host large numbers of immigrants from their own source country.

23. Estimations using local projections methodology (Jordà, 2005) confirm a positive impact of migration shocks on macroeconomic outcomes. Specifically, we estimate the effect of migration shocks on macroeconomic variables using the following regression:

$$y_{i,t+h} - y_{i,t-1} = \alpha_i^h + \gamma_t^h + \beta_1^h \frac{\Delta IM_{it}}{E_{i,t-1}} + \Delta X_{i,t-1} + \varepsilon_t^h \quad (1)$$

Where $y_{i,t}$ are the macroeconomic outcome variable of interest: output, total employment, native-born employment, total labor force, labor productivity, total factor productivity, inflation, the capital-output ratio, the unemployment rate, and the housing price index. The shock (independent) variable represents immigrant flows (ΔIM_{it}) relative to the previous period's total employment level ($E_{i,t-1}$). The specification also includes country and time fixed effects, to account for time-invariant country-specific and global factors that could affect macroeconomic outcomes. $X_{i,t-1}$ is a vector of lagged control variables, including the dependent variable, GDP growth, and employment.

At a second stage, the change in migration inflows is instrumented with:

$$\widetilde{m}_{it} = \sum_j \frac{M_{j,t-5}}{M_{j,t-5}} * \Delta M_{jt} \quad (2)$$

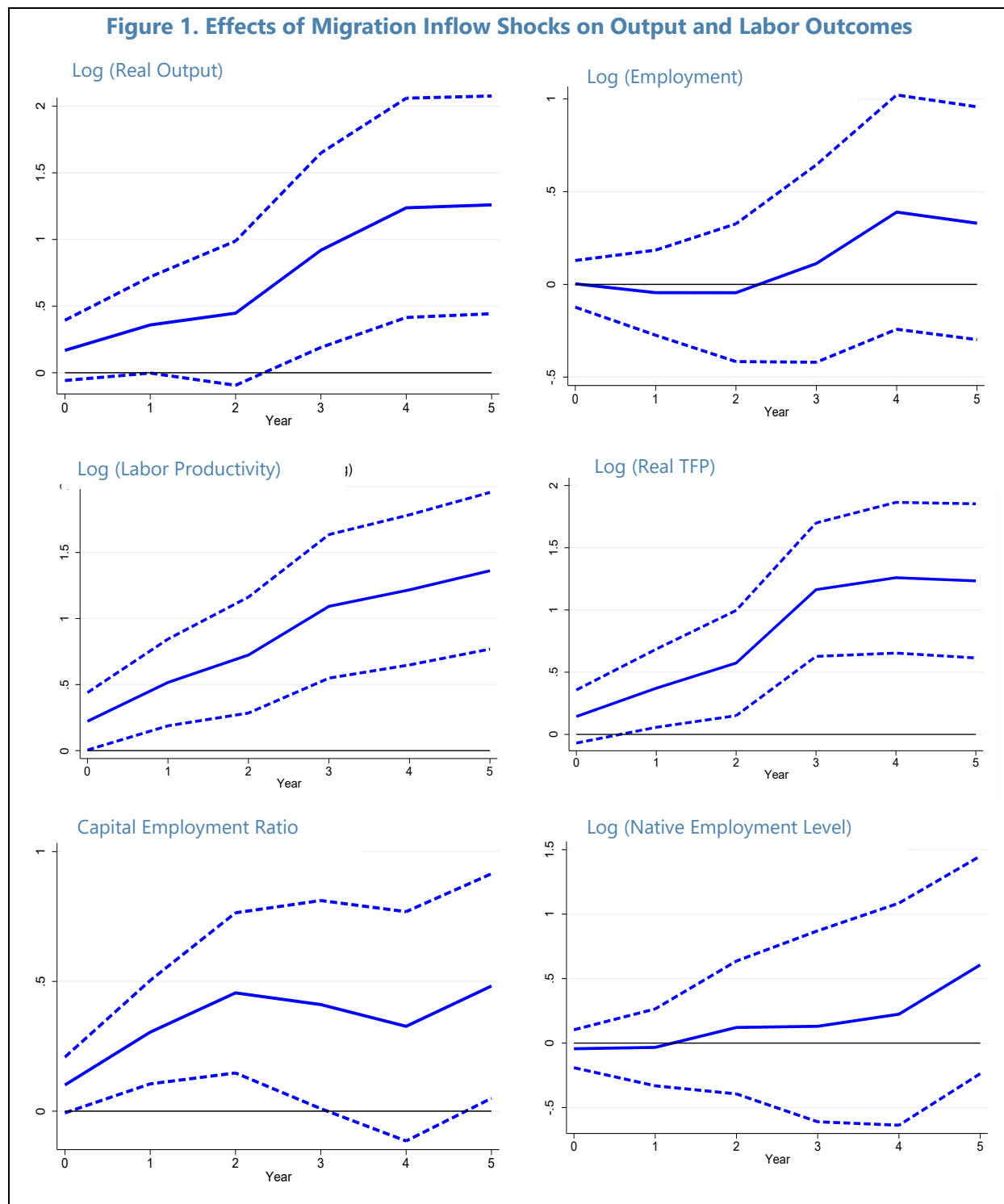
Where $\left(\frac{M_{j,t-5}}{M_{j,t-5}}\right)$ is the share of the stock of migrants from origin j in destination i over the past 5 to 10 years, depending on data availability⁷. ΔM_{jt} is the total outflow of migrants, from origin j in year t . Data for the IV is winsorized at the top one percent to account for extreme values.

24. Migration inflows have positive effects on output and employment. Results shown in Figure 1 suggests that economic output increases by 1.2 percent by the fifth year following a migration shock. The increase in output can be largely attributed to the increase in labor productivity, which rises by almost 1 percent five years following a large migration shock. The

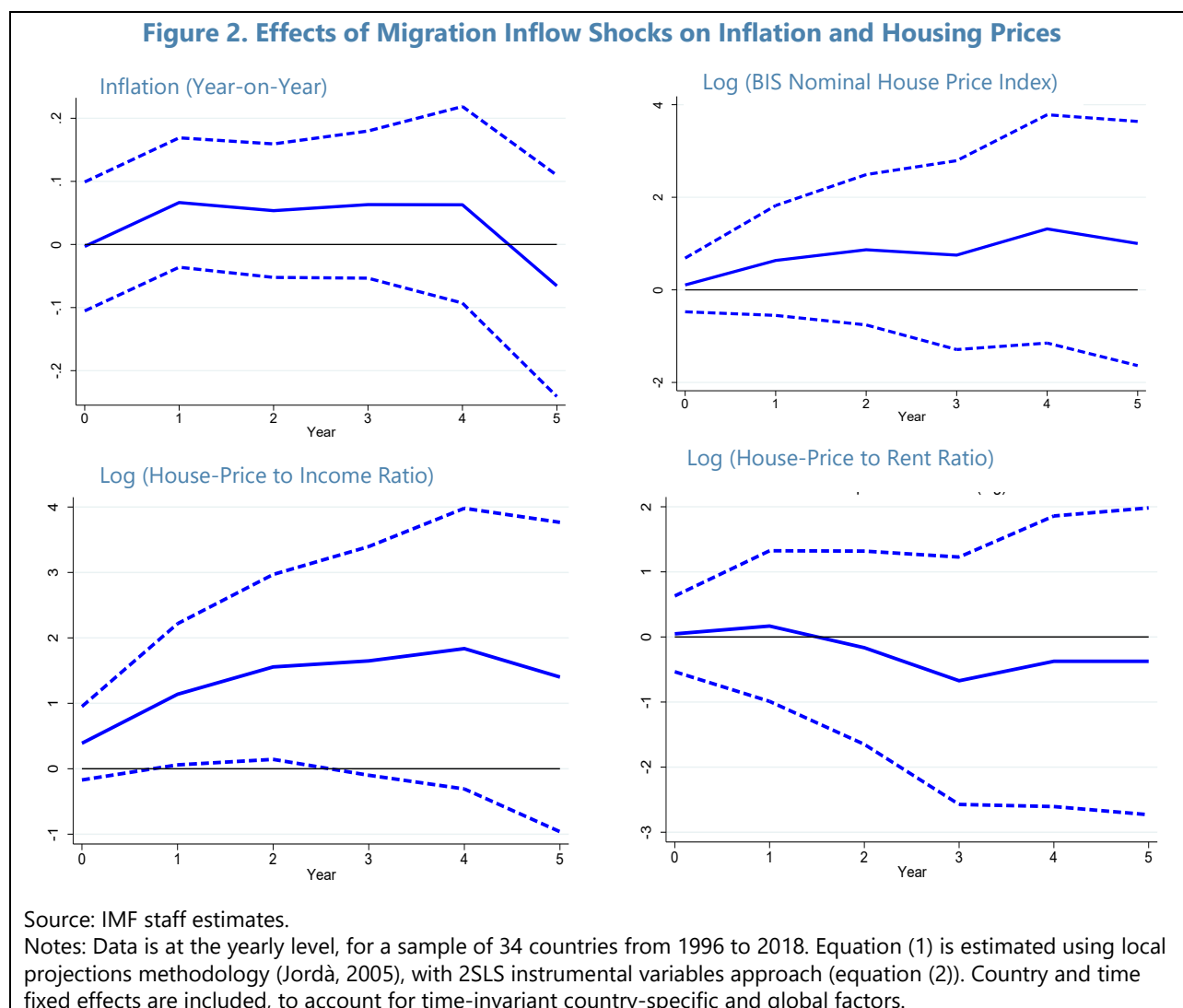
⁶ A large immigration episode is classified as such if the annual inflow of migrants in the host country (as a share of population) is greater than the host country's median inflow of migrants during the period 1980-2018 and is greater than the median inflow (as a share of population) experienced by all OECD countries during the previous five-year period and the following five-year period (Engler et al., forthcoming).

⁷ Migration stock data is only available at five-year intervals.

increase in employment, while not statistically significant, explains the rest. As total factor productivity (TFP) increases following the migration shock, the capital stock responds, and the capital-labor ratio also rises. Looking at employment growth in the native population, the results do not find adverse effects on native employment growth: employment in the native population rises modestly five years following the migration shock, but the increase is not statistically significant.



25. Significant inflationary pressures do not appear to materialize in response to large migration inflows. The results indicate that, while inflation increases following a migration shock, the impact is muted and not statistically significant. Meanwhile, house prices also respond to a migration shock: the BIS' nominal house price index increases by 1 percent within 2 years, but the effect is not statistically significant. Measures of housing affordability are also impacted at the margin: the house price-to-income ratio is lifted by about 2 percent within 4 years of a migration shock, reflecting the small increase in housing prices, but that effect is only marginally statistically significant, in the second year of the forecast horizon. However, the impact on the house price-to-rent ratio is not statistically significant.



26. Robustness checks show that the results remain robust to different specifications. As a first robustness check, we strip our baseline specification from all lagged controls (Annex Figure A1). As a second step, we include the lagged dependent variable alone as a control variable (Annex Figure A2). We also estimate the effects of migration shocks, restricting our database to only

advanced economies. The results (available upon request) are very similar and robust to the different specifications.

E. Conclusion

27. Migration is an important source of population growth and higher skilled labor force participation in Australia. Nearly a third of the working age population was born overseas and the importance of migration is set to increase further as the rate of natural increase declines with population ageing and falling fertility rates. Migrants coming into Australia are generally highly educated, often more than the native population, and comprise of mostly skilled workers and students. They typically have favorable labor market outcomes and high labor force participation rates.

28. Disentangling macroeconomic effects of migration from drivers of migration is challenging. Within Australia, migration surges have historically been associated with higher growth and favorable labor market outcomes, with negligible price pressures except in the housing market. This is confirmed by both simple correlation plots as well as event studies based on past migration surges. However, such an analysis is prone to endogeneity biases and is hard to disentangle pull factors—higher growth attracting more migrants—from the impact of migration on economic outcomes.

29. A cross-country analysis using instrument variables is used to isolate the effects of migration. This analysis confirms a positive impact of migration on macroeconomic outcomes—output, employment, and productivity—without significant inflationary impact. The key channel for this is via productivity gains, which becomes significant given subdued productivity growth in Australia over the recent years. While housing affordability is impacted at the margin, but this represents structural supply shortages and is best addressed by boosting supply.

Annex I. Effects of Migration Shocks on Selected Macroeconomic Outcomes—Robustness Checks

Figure AI.1. Effects of Migration Inflow Shocks on Macroeconomic Outcomes, No Controls

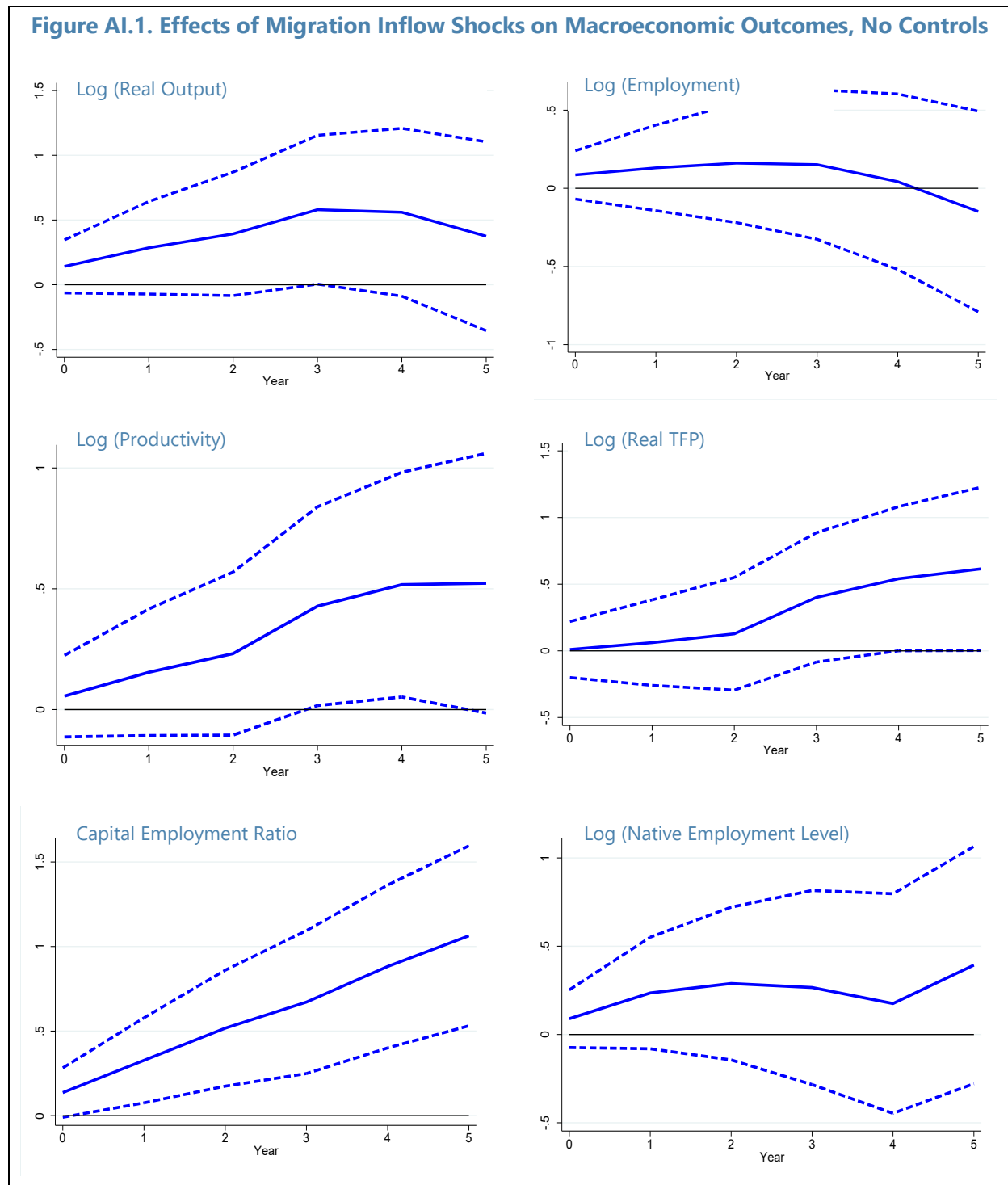
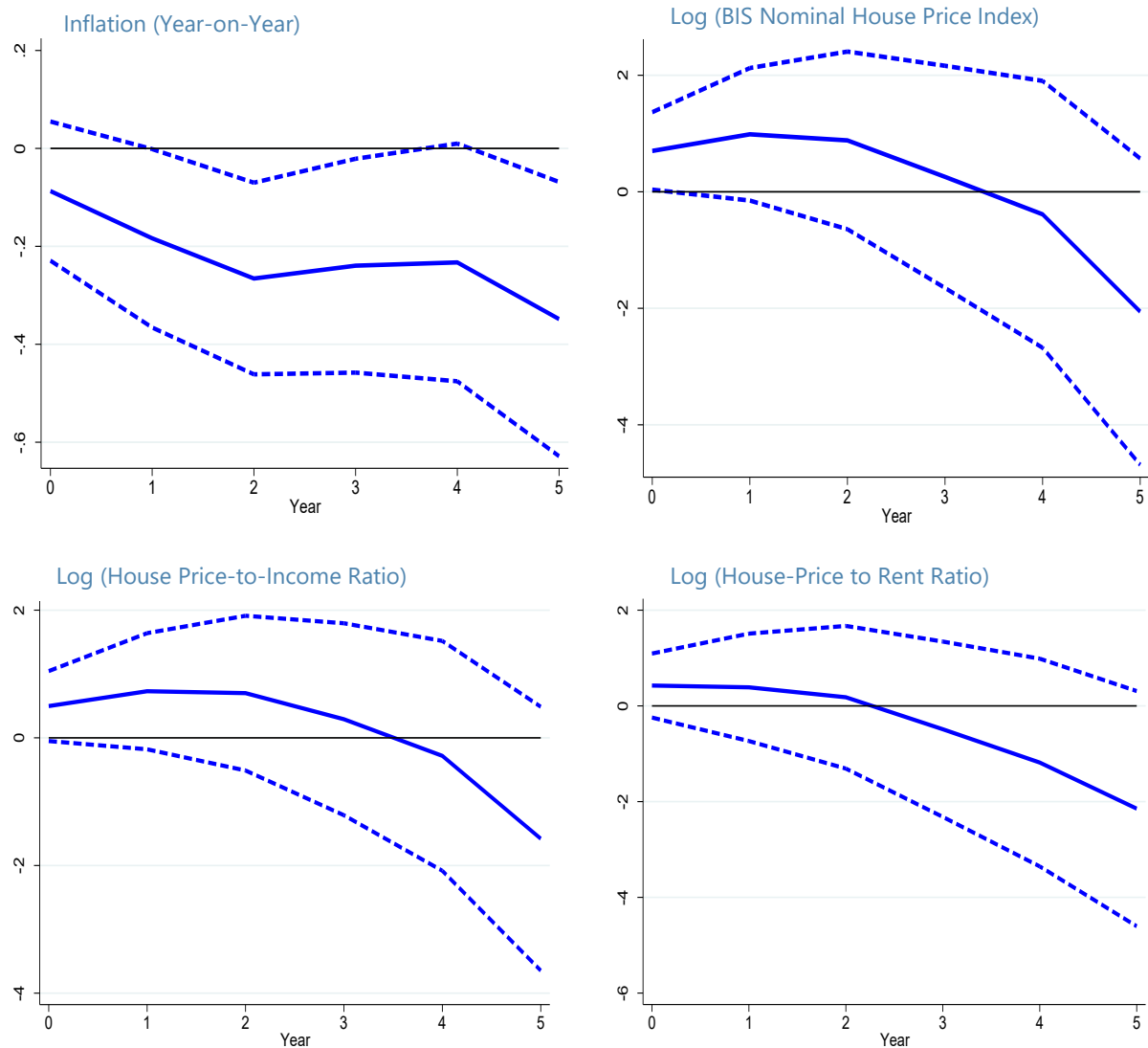


Figure AI.1. Effects of Migration Inflow Shocks on Macroeconomic Outcomes, No Controls



Source: IMF staff estimates.

Notes: Data is at the yearly level, for a sample of 34 countries from 1996 to 2018. Equation (1) is estimated using local projections methodology (Jordà, 2005), with 2SLS instrumental variables approach (equation (2)). Country and time fixed effects are included, to account for time-invariant country-specific and global factors.

Figure A1.2. Effects of Migration Inflow Shocks on Macroeconomic Outcomes, Lagged Dependent Variable

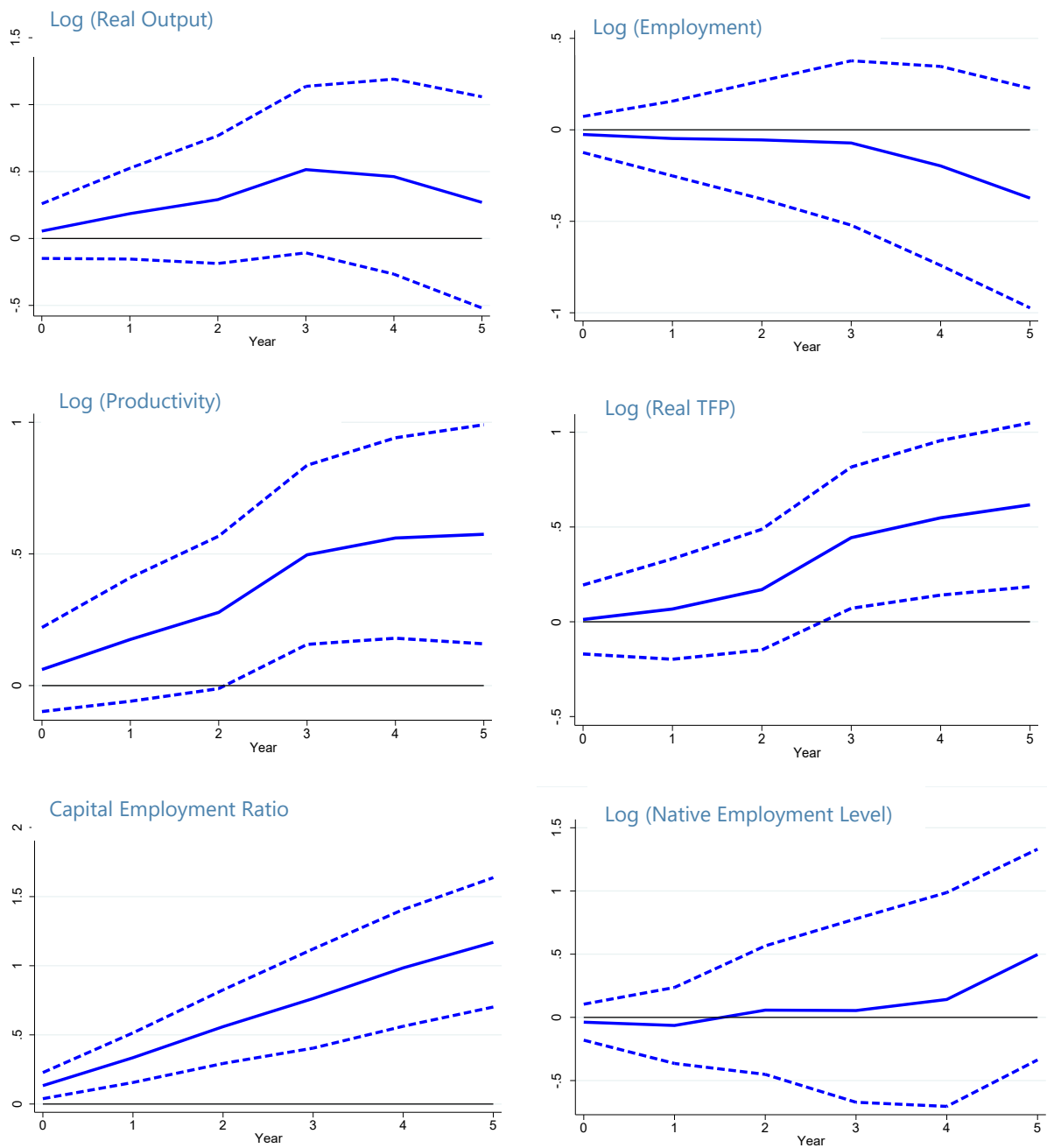
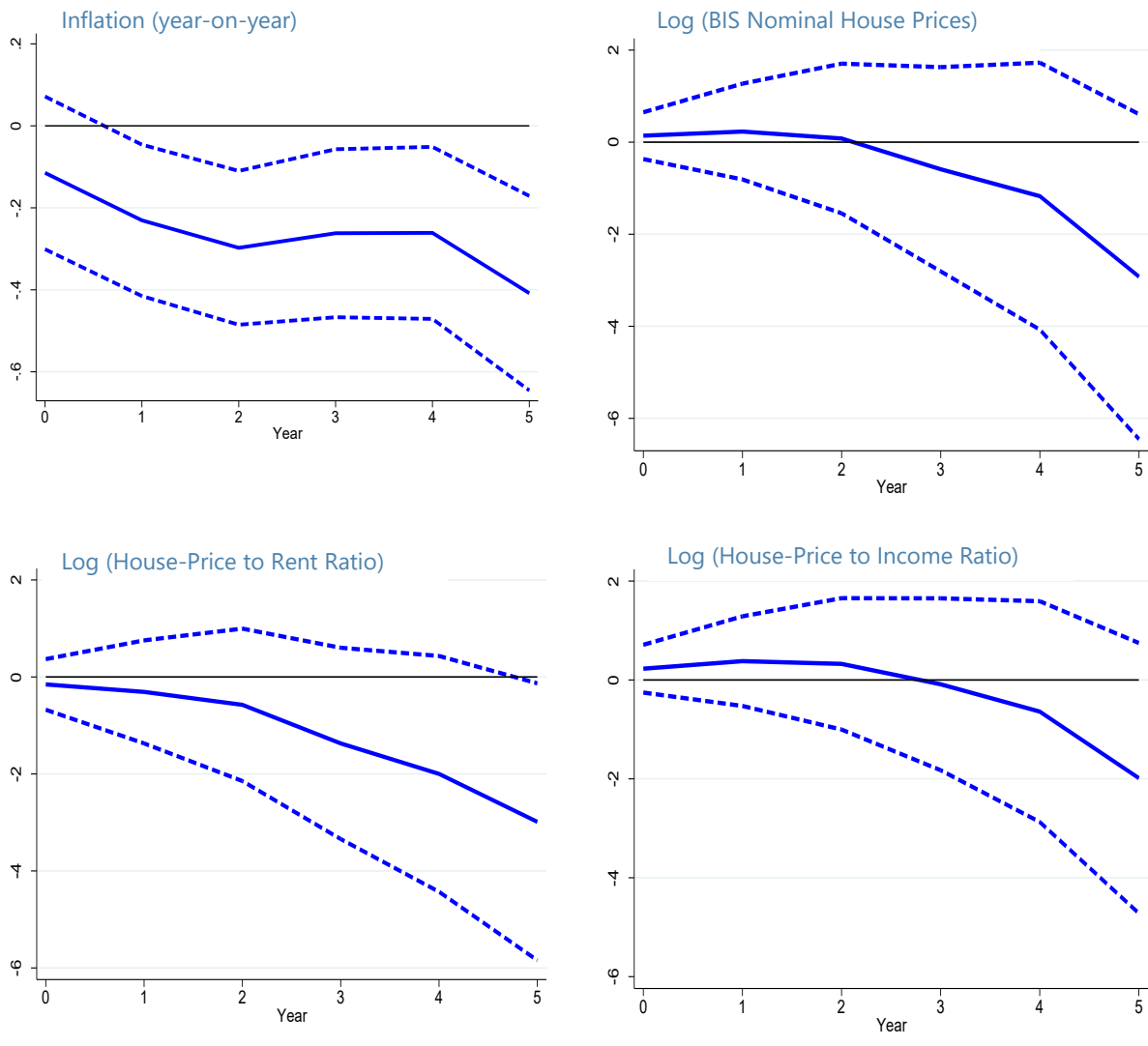


Figure AI.2. Effects of Migration Inflow Shocks on Macroeconomic Outcomes, Lagged Dependent Variable



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