PRELIMINARY

Immigration and Trade in Recent Australian History

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June 6, 2009

Abstract

The ethnic composition of Australia's immigrant stock evolved rapidly after the end of the 'white Australia' policy in the mid 1970s. This episode offers an opportunity to revisit the literature linking migrants with increased bilateral trade flows, for it allows us to exploit substantial within-source-country variation in Australian immigrant stocks. We adopt a generalized method of moments estimator that allows us to estimate the elasticity of trade to migration, while at the same time allowing country level fixed effects and persistence to affect the level of bilateral trade. We find no statistically significant evidence of a contemporaneous effect of migration on Australia's bilateral trade.

Introduction

Does international migration increase bilateral trade? The empirical trade literature offers considerable evidence in the affirmative[1]. One interpretation of these and other estimates is that migrants substantially reduce trade costs with their homelands[2]. If migrants indeed reduce such costs, then their effect on international trade might be considered an important input into assessments of migration policy.

The question of whether migrants increase trade flows is an especially important one for Australia, where more than one in five residents is foreign born[3]. For related reasons, Australia is especially well-suited for an investigation into the link between trade and migration. Australia has a long history as a sink country for migrants from multiple source countries. Because migration has been of such historical importance to Australia, high quality migration data is available over a substantial time period.

Perhaps most significantly for our purposes, Australia's migration policy generated an unusual situation that is helpful for identifying the effects of migration on trade. Until 1973, the 'white Australia policy' limited migration from Australia's near neighbors, while a related set of policies subsidized migration from Europe. As a result, migrant stocks in Australia were (and, to some degree, remain) overwhelmingly European, even though

[1]See Rauch (2001) for a survey of the topic. Applications in the literature include Gould (1994), Head and Ries (1998), Rauch and Trindade (2002), Combes et al. (2005) and Dolman (2008).

[2]Rauch (1999) finds evidence of differential effects of migration on trade in different types of goods. The effect of migration on trade in differentiated products is stronger than it is in other products. Rauch hypothesises that this is because migrants are better able to reduce bilateral trade costs in differentiated sectors.

[3]By contrast, the foreign-born share of U.S. residents is near its historical highs, and yet the foreign-born account for approximately one in ten U.S. residents.

most of Australia's major trading partners are, and have been, in Asia[4].

The end of the white Australia policy generated (relatively) rapid changes in Australia's immigrant stocks; Asian and South Pacific born populations rose quickly, while European-born populations fell. We believe that variation of this sort – that is, variation in the changes in migrant stocks – is critical to identifying any effect of migration on trade. Most studies rely on variation in the levels of trade and migrant stocks to identify the effect of migration on trade. Since levels of migration and trade are both endogenous variables driven by common factors, such estimates are potentially biased through correlation on unobservables. The large changes in migrant stocks in recent Australian history provide additional variation that can be used to isolate the causal effect of migration on trade from the unobservable determinants of both variables.

A key difficulty in this setting is that is that migrant stocks, and (to a lesser extent) trade flows, are highly persistent series. In relatively short panels like ours, persistence can be misattributed to time-invariant fixed effects, and vice versa. Our econometric technique is designed specifically to estimate the parameter of interest in the presence of both time invariant effects and considerable persistence in trade flows. Unlike standard methods, our approach allows the migrant stock variable to be correlated with unobservable determinants of the level of trade, thus avoiding a key source of bias that arises in other studies.

Our basic conclusion is that there is little or no convincing evidence that migration increased bilateral trade in this sample. Estimates from a naive regression suggest small, but significant effects. These effects disappear, however, once time-invariant determinants

[4]Australia was not unusual amongst European settler societies in following racially discriminatory immigration policies. Its geography was, however, unusual, as the policy tended to favor migrants from very distant locations, while substantially restricting migration from most of Australia's neighbors. Racially discriminatory migration policies in US and Canada, by contrast, did not constrain migration from as many nearby sources, and these migrant sink countries are, in any case, much closer to Europe than is Australia. What is notable for our investigation is that Australian trade policy lacked an equivalent pro-European bias, so trade and migrant stocks overlapped far less in Australia's case than in many other large migration sink countries.

of the trade levels are included in the regression. Accounting for persistence also mitigates the estimated effect of migration on trade. Our preferred specification, which accounts for both persistence and time-invariant effects in trade, finds no statistically significant contemporaneous effect of migration on trade. Based upon our sample and econometric technique, we are unable to reject the null hypothesis of no long-run effect of migration on trade.

Background and literature review

As did many European settler societies, Australia followed racially discriminatory immigration policies through much of the 20th century[5]. Restrictions on non-white immigration into Australia were accompanied by explicit subsidies to immigrants traveling from Europe. The white Australia policy governed Australian immigration flows through 1973[6].

Given Australia's geography, the combination of subsidies for immigration from Europe and restrictions on non-white immigration had a dramatic impact on the ethnic composition of Australia. Most empirical models of migration suggest that migrant flows are determined in large part by distance, population and per capita income variables. Put together, such models would suggest that most of Australia's migrants should come from large population, nearby countries in Asia. The white Australia policy, however, leaned against these 'natural' determinants of migrant flows, favoring immigrants from relatively low-population and distant Europe. Three decades after the end of the policy

[5]Canada had a racially discriminatory immigration policy through 1962. The United States fully eliminated such policies in 1975. See Knowles (2002).

[6]As policy changes of this sort go, the Australian policy change seems notably abrupt. Nonetheless, it is not clear that the complete policy change can be tied to 1973. A loosening of some restrictions (including patriation of Australian-educated students, and migration of non-white spouses of Australian citizens) occurred in earlier years. The new policy based on skilled immigration was adopted and implemented through the mid 1970s. We track the evolution of the migrant stock from 1981 onwards. Although the timing of the policy change is not critical to our identification strategy, we view the new policy as being firmly entrenched by the beginning of our sample.

change, European-born immigrants still account for 46 percent of Australia's foreign-born population.[7] Clearly the white Australia policy overwhelmed geography as the primary determinant of Australian immigration, and these effects are still visible today.

Migration and International Trade

A substantial literature links migration to international trade[8]. Gould (1994) and subsequent authors posit that migrants can increase bilateral trade flows through two channels. First, migrants might be expected to reduce information, search and/ or contracting costs associated with trade between their countries of origin and their countries of residence. Second, migrants may increase bilateral imports because their tastes for consumption favor goods made in their home countries.

Most of the empirical evidence supporting a causal link going from migrants to trade is based upon regressions that exploit cross-sectional variation in bilateral trade and source country immigrant stocks in one or more immigration sink countries. Typically, a 'gravity' model of bilateral trade linking predicted trade flows to bilateral distances and country sizes to is used to explain baseline trade. The role of migration as a determinant of trade is measured by adding a migrant stock variable to the baseline specification. The coefficient estimate associated with migrant stocks is then evaluated. This coefficient is typically positive and statistically significant.

This standard approach takes migration as an exogenous variable in the trade flow equation. Among the assumptions implicit in this treatment is that the migrant stock is uncorrelated with unobservable determinants of trade flows. We believe this to be a potentially important problem for this literature. Policy decisions in the origin countries and/or geography may lead countries to be more or less open to both trade and migration.

[7] Authors' calculations using 2006 Australian Census data.

[8] See Rauch (2001) for a survey of the topic. Applications in the literature include Gould (1994), Head and Ries (1998), Rauch and Trindade (2002),Combes et al. (2005) and Dolman (2008).

If such factors are not properly controlled in the trade equation, we should expect the coefficient on migration to be polluted by correlation on unobservables[9].

Fixed effects vs persistence in panel data

We utilize a generalised method of moments estimator that allows for correlation between source country variation in migrant stocks and a source-country fixed effect in the levels equation for trade. The estimated effect of migrants on trade is identified primarily in a difference equation that is estimated simultaneously with the levels equation. Estimators of this type were introduced by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998), helpfully summarized in Arrelano (2003) and Bond (2002)[10]. These estimators have been designed to identify parameters in a particularly problematic setting that applies to data like ours. In panel data, it can be difficult to separately identify individual fixed effects in the presence of persistence in the dependent variable. These estimators exploit regularities in the panel nature of the data to accomplish this task.

We adapt these methods to bilateral trade and immigration data from Australia. While the identification issues highlighted here have not, to our knowledge, appeared in the trade and migration literature, there is a related area of outstanding controversy with respect to the standard gravity model of trade. Eichengreen and Irwin (1998) estimate a high level of persistence in bilateral trade flows, and argue for the inclusion of lagged trade flows in any specification of the gravity model of trade. Cheng and Wall (2005) argue for a specification that includes bilateral fixed effects, arguing that unobservable relationships between countries should be specifically accounted for in the regression.

[9]Dolman (2008) addresses the correlation on unobservable issue, in part, by considering two-way migrant flows. In single (sink) country studies like Gould (1994), Head and Ries (1998) and ours, one component of the correlation on unobservables might be the migration movements in the other direction.

[10]We adopt a version of Blundell and Bond (1998). Our application has many similarities with Caselli et al. (1996) who estimate a cross-country model of convergence to conditional steady-states in per capita GDPs.

As Arrelano (2003) makes clear, these two approaches to identification are in tension, as high levels of persistence may be misattributed to an individual fixed effect, and vice versa. However, a series of estimators have been developed that allow persistence and fixed effects to be separately identified. A difference equation can be used to remove any individual (country) specific fixed effects, and these can be recovered by an analysis of the residuals from a fitted levels equation. The levels and differences equations can be estimated jointly with a generalised method of moments estimator, with roles of persistence and country fixed effects separately identified in the process.

We believe these methods are particularly relevant to the assessment of the trade and migration relationship. We are particularly concerned about the possibility that unobserved source-country characteristics lead to correlation between unobservable determinants of both trade and migration. We will specify the trade equation in a manner that specifically allows current migrant stocks to be correlated with unobservable components of the error term in the levels equation for trade, and we will isolate a country-level fixed effect for bilateral trade.

Econometrics

The standard approach to modelling the effects of migrant stocks on bilateral trade flows exploits cross-sectional variation. Take, for example a log-linear model of the sort:

$$x_{ij} = \beta_0 + \mathbf{Z_{ij}}'\beta + \gamma\, m_{ij} + \varepsilon_{ij} \tag{1}$$

where x_{ij} represents the (log) bilateral trade flow between regions i and j, $\mathbf{Z}$ represents a matrix of observable control variables, m_{ij} represents the natural logarithm of the stock of migrants in country j from country i, and ε_{ij} represents a random error term. The parameter of interest is γ, the elasticity of the trade flow with respect to the migrant

stock.[11]

The empirical difficulty with estimating (1) is that there are plausible reasons to expect that ε_{ij} is correlated with the migrant stock m_{ij}. It is likely that country j's propensity to trade with country i and their propensity to send migrants to country i are jointly determined. For example, we might expect that countries that are open to inward migration are also likely to be open to trade. Alternatively, it may be the case that there are unobserved (political, cultural, geographical or other) relationships that drive both trade and migration on a bilateral basis. For example, Australia has high levels of both trade with and migration with New Zealand and these do not appear to be fully explained by the standard variables in a gravity relationship. It may be that some difficult-to-observe relationships between New Zealand and Australia are generating high levels of both trade and migration.

If these unobservable determinants of trade flows are fixed over time, longitudinal data can be used to control for them, even if they are correlated with the migrant stock. A longitudinal specification that includes time variant effects generalizes (1) to:

$$x_{ijt} = \beta_0 + \mathbf{Z_{ijt}}'\beta + \gamma\, m_{ijt} + \delta_t + \eta_{ij} + \upsilon_{ijt} \tag{2}$$

where η_{ij} represents time-invariant unobservable factors determining the trade flow x_{ij}, and υ_{ijt} represents a time varying unobservable. The term η_{ij} might be correlated with the migrant stock (and other elements of the vector $\mathbf{Z}$). The difficulty with estimating (2) as a single cross-section or as a pooled cross-section arises from the correlation of the time-invariant country effects with the 'observable' determinants of trade flows, notably

[11] The trade literature treats all migrants as equivalent in their ability to generate bilateral trade. Obviously this is a simplification. Our purpose is to qualify the estimates in the existing literature, rather than to revisit the exact method by which migrant stocks influence the trade pattern. We leave the more subtle questions about which types of migrants (old, new, educated, temporary, etc) affect trade to other authors/further research.

m_{ijt}, country j's migrant stock in country i at time t.

Eichengreen and Irwin (1998) argue that that history plays an important role in shaping the pattern of international trade and estimate a high level of persistence in bilateral trade flows. To the extent that historical factors represent a persistent but not permanent determinant of bilateral trade flows, past bilateral trade flows represent an omitted variable in specification (2). Specifically, the presence of unobserved persistent historical factors imply the time-varying unobservable determinants of trade flows υ_{ijt} might be correlated with the migrant stock or other elements of $\mathbf{Z}$. In this case a high level of persistence in bilateral trade flows may be misattributed to a time-invariant bilateral effect leading to biased estimates of the parameters in the econometric model (2).

As a solution to this omitted variable bias it is tempting to include the lagged bilateral trade flow in (2):

$$x_{ijt} = \beta_0 + \alpha\, x_{ij,t-1} + \mathbf{Z_{ijt}}'\beta + \gamma\, m_{ijt} + \delta_t + \eta_{ij} + \upsilon_{ijt} \tag{3}$$

It is well known that the OLS estimator produces inconsistent estimates of the parameters in (3) since the lagged trade flow will be positively correlated with the composite error $(\eta_{ij} + \varepsilon_{ijt})$. Intuitively, the OLS estimator will have difficulty separately identifying 'true' persistence in the dependent variable from persistence induced by a time-invariant effect like η_{ij}. This is particularly a problem in large panels with a short time dimension as the inconsistency of the estimator does not vanish as the number of cross-sectional units becomes large. It is also well known that the 'within groups' estimator of (3), used to eliminate this source of inconsistency, induces a negative correlation between the transformed error and the transformed lagged dependent variable. Once again this inconsistency does not vanish as the number of cross-sectional units becomes large.

We utilize a consistent generalized method of moments (GMM) estimator in the

presence of both a lagged dependent variable and time-invariant bilateral effects. The estimated effect of migrants on trade is identified primarily in a difference equation that is estimated simultaneously with a levels equation. The identifying assumption is that observable determinants of trade (migrant stock and other gravity variables) may be correlated with the time-invariant country effect, but uncorrelated with the serially uncorrelated idiosyncratic error υ_{ijt}. Intuitively, the lagged dependent variable is assumed to fully absorb any serial correlation in υ_{ijt}. We utilize moment condtions of the form:

$$E\left[x_{ij,t-2}\,\Delta\,\upsilon_{ij,t}\right]=0 \qquad E\left[\Delta m_{ijt}\,\Delta\,\upsilon_{ij,t}\right]=0 \qquad E\left[\Delta \mathbf{Z}_{ijt}\,\Delta\,\upsilon_{ij,t}\right]=0$$

for the difference equation and moment conditions of the form:

$$E\left[\Delta\, x_{ij,t-1}\left(\eta_i+\upsilon_{ij,t}\right)\right]=0 \qquad E\left[\Delta\, m_{ij,t}\left(\eta_i+\upsilon_{ij,t}\right)\right]=0$$

$$E\left[\Delta\, \mathbf{Z}_{ij,t}\left(\eta_i+\upsilon_{ij,t}\right)\right]=0 \qquad E\left[\Delta\, \mathbf{Z}_{ij}\left(\eta_i+\upsilon_{ij,t}\right)\right]=0$$

for the levels equation. Identification in the levels equation requires a 'stationarity assumption' such that 'distance' from the steady state level of trade is uncorrelated with the fixed effects. This implies that high-trade countries are not systematically closer to their conditional steady state than low-trade countries.

Data

Our primary innovation, relative to the earlier literature, is to study the relationship between trade and migration over a longer time span. Australia is a useful area for study because a) it has had migrants from diffuse sources over a long period, b) it has fairly a good record of immigrant stocks, and these data are readily available, and c) it has experienced a dramatic shift in the composition of its migrant population that generates

an unusual amount of time series variation in observed migrant stocks. We include data on migration and bilateral trade, as well as source-country indicators such as distance from Australia, GDP, openness (the trade to GDP ratio), and membership in the British Commonwealth. We employ data for all Australian census years from 1981-2006.[12]

Our bilateral trade data are the UN COMTRADE data. Migration data are foreign born populations, as reported in the *Historical Population Statistics* as reported by the Australian Bureau of Statistics. Information on the nominal value (in US dollars) of GDP in each country is taken from the IMF's *World Economic Outlook*. We deflate these and other nominal data with a US GDP deflator from the FRED database at the Federal Reserve Bank of St Louis. The nominal value of aggregate trade flows, which are necessary for calculating the 'openness' of Australia's trading partners, are taken from the the IMF *Direction of Trade* Statistics, and GDP data from the IMF's *World Economic Outlook*. Bilateral distances are taken from the French research institute *CEPII*. The dummy variable indicating membership in the British Commonwealth was constructed from the Commonwealth's web page.

Summary Measures

Figure 1 shows a scatter-plot of data documenting logged imports and migrant stocks in Australia in 2006. Just a glimpse at the data show that a gravity-type model suits both variables. The countries in the upper right hand corner of the figure tend to be either large or close to Australia. Countries at the bottom left tend to be small and or distant. Membership in the British Commonwealth also appears to be important. Clearly, observable variables drive both migration and trade. What is also clear, however, is that

[12]There are a number of challenges in assembling such data over a time span. Changes in political boundaries are especially problematic (i.e. the unification of Germany, the dissolution of Czechoslovakia, Yugoslavia, and the former Soviet Union). It is also difficult to find time series of GDP data in certain circumstances. Our analysis includes only those countries for which we have a complete record on all the variables. This precludes some important migration countries such as Croatia or Ukraine, as well as some important trade countries like Taiwan.

there are many countries that are either high migration countries (i.e. Greece, Sri Lanka, Malta) or high trade countries (i.e. Mexico, Japan). Any empirical observation that trade and migration are linked has difficulty with these observations.

Figure 1 here

Figure 2 here

Figure 2 shows the data for Australian exports. The lessons are largely the same. The primary links between trade and migration occur because bilateral variation in both variables is driven by similar processes. This observation warrants some concern about correlation on unobservables. Second, Australia has a large number of prominent outliers that cast doubt on the idea of strong causal links from migration to trade.

Figure 3 here

Figure 4 here

As we have argued above, cross-sectional correlation may lead to incorrect inferences if unobservable factors are driving both trade and migration. We prefer estimates that exploit time-based variation in migrant stocks and trade. Figures 3 and 4 shows changes in log levels of the two variables from 1981-2006. There is no relationship visible to the eye that suggests that increased migrant stocks raise trade flows. The pair-wise correlation coefficient is 0.0592 for imports and 0.0527 for exports.

As an illustrative device, we have indicated the likely importance of the white Australia policy for subsequent development of the two variables. The 'constrained' countries in Figures 3 and 4 are those countries (in Asia, the south Pacific, Africa and Asia), with large shares of their populations that would have had their possibilities for migration limited by the policy. The non-constrained countries are those countries (in Europe, North America, and New Zealand) with populations that would have been largely unaffected by

the White Australia policy.

What these figures make clear is that most of the growth in Australian immigrant stocks since 1981 has occurred amongst populations that were once constrained by the policy. While we are not intending to test the idea that the policy is responsible for subsequent changes in Australia's migrant stocks, it seems a reasonable way to understand the data[13]. What the figure shows is that those formerly constrained countries had their migrant stocks grow quickly in the years after the policy changed, even though their trade flows grew at largely the same rate as the trade flows of unconstrained countries grew. these references are, of course, impressionistic. We now turn to a more formal treatment of the issues.

Results

Consider the estimating equation:

$$x_{it} = \beta_0 + \alpha\, x_{i,t-1} + \mathbf{Z_{it}}'\beta + \gamma\, m_{it} + \delta_t + \eta_i + \upsilon_{it} \tag{4}$$

The dependent variable x_{it} measures either the value of real imports to Australia, in $\$US$, from origin i or the value of real exports from Australia, in $\$US$, to destination i. These values are deflated using an appropriate GDP deflator[14]. The vector $\mathbf{Z}$ includes (log) distance betwen Australia and country i, (log) real gross domestic product of the origin (destination) at time t, (log) openness of the origin (destination) at time t, and a dummy variable indicating membership of the origin (destination) in the Commonwealth.

[13] A key difficulty for tests of such a proposition would be that many countries that were constrained by the policy had too few migrants prior to 1973 to be observed in the Australian data (these countries are often aggregated into larger groups in the pre-1973 Australian data, so we have no direct evidence on actual numbers of residents from each country). This is corroborating evidence that the policy affected migrant stocks, but it makes empirical testing of the proposition difficult.

[14] Series GDPCTPI from Federal Reserve of St.Louis is a chain-weighted price index with 2000 as as the base year.

This latter variable captures common institutions and approximately common language between Australia and the partner country i.

Table 1 here

Table 2 here

Table 1 provides estimation results for the econometric model when the dependent variable is (log) real imports. The first column labelled OLS provides 'naive' estimates from a simple pooled cross-section, ignoring any time-invariant country effects and any persistence in the value of real imports. Consistent with the existing literature, the estimated import elasticity of migrant stocks is (statistically) significantly positive. The point estimate of 0.1 associates a 10% increase in the stock of migrants with a 1% increase in the bilateral trade flow. This is a considerably lower import-trade elasticity than the estimates obtained by Head and Ries (1998) using Canadian data (of approximately 0.3). The results presented in Table 2 provide an estimated export elasticity of also approximately 0.1, broadly consistent with the results obtained by Head and Ries (1998).

The other estimated coefficients presented in Table 1 for real imports and Table 2 for real exports have the expected sign and are significantly different from zero. Distance reduces both imports and exports while trade flows are larger for partners with larger real gross domestic product and larger for partners with a larger ratio of total trade to GDP. Australian imports are approximately 87% higher for countries that are members of The Commonwealth and Australian exports are approximately 110% higher for countries that are members of The Commonwealth.

As suggested above, the 'naive' results presented Tables 1 and 2 are likely to be biased due to omitted time-invariant country level heterogeneity and\or omitted dynamics in trade flows. The second column in Tables 1 and 2 presents estimation results from a specification that provides estimates from a simple pooled cross-section, that allows

for persistence in trade flows but ignores any time-invariant bilateral country effects. Compared to the first column, including a lagged dependent variable generally lowers the magnitude of the estimated coefficients while maintaining their statistical significance. The exception is the Commonwealth dummy for real imports which becomes statistically insignificant. The long-run effect of migration on trade flows may be calculated as $\beta_M/(1-\alpha)$ where β_M is the instantaneous migration elasticity and α is the coefficient on the lagged trade flow. The estimated long-run migration elasticity for real imports is 0.345 and the estimated long-run elasticity for real exports is 0.074. Note that the estimated migration-export elasticity is statistically insignificant in the presence of a lagged dependent variable. Based upon the data, we are unable to reject the null hypothesis that migration has no effect upon the value of real exports. This suggests that, in the 'naive' regression (column 1), migrant stocks are positively correlated with lagged exports so that the significant migration-export elasticity reflects the persistence in real exports.

Allowing for a lagged dependent variable introduces important dynamics into the gravity equation and potentially eliminates a source of omitted variable bias. However, these naive specifications (columns 1 & 2 in Tables 1 & 2) do not include a role for time-invariant country factors that simultaneously account for trade and migration between between two trading partners. Allowing for these time-invariant bilateral effects produces an estimated migration-trade elasticity that is not statistically significant. This suggests that the estimated (significant) migration-trade elasticities reported in column 1 reflect time-invariant bilateral factors that simultaneously account for trade and migration between between two trading partners. For example, suppose these time-invariant bilateral factors were common legal institutions which both lowered the transactions costs associated with trade and the costs of migration such that both trade and migration would be higher for countries with common institutions. However, it is these common institutions that facilitate trade between these countries rather than the stock of migrants (which

proxy for the omitted variable).

As noted above, the random error υ_{it} in the econometric model () will not necessarily satisfy the required assumptions in the presence of omitted persistence in trade flows. Although simply including a lagged dependent variable and using a conventional 'within-groups' estimator will produce inconsistent results, it is somewhat useful to examine the results are presented in column 4 of Tables 1 & 2) for completeness.

The final column of Tables 1 & 2 presents estimation results using a system GMM estimator. Allowing for both time-invariant country effects and persistence in trade implies estimated import and export migrant stock elasticities that are not statistically significant from zero. This is consistent with our earlier discussion where a relatively larger proportion of the variation in trade and migration is accounted for by variation across countries and a relatively smaller proportion accounted for variation over time, within countries.

Conclusion

The last three decades have seen a substantial shift in the composition of Australia's immigrant stock. Among the important sources of this variation is the end of the White Australia policy, which had constrained migration from many of Australia's neighbours. This is notable for our purposes because many of the constrained populations were nearby to Australia, and maintained substantial trade links during the period when migration policy limited the flows of people.

We believe the substantial time variation in Australia's immigrant stocks as an excellent opportunity to revisit estimates linking immigrant stocks to increased trade flows. To date, most estimates of this relationship have relied heavily on cross-sectional variation for identification of key parameter. These estimates are vulnerable to correlation on

unobservable determinants of both trade and migration. We apply a generalised method of moments estimator that allows for correlation on unobservables, while at the same time exploiting information in the dynamic panel.

We find no statistically significant evidence that changes in Australia's immigrant stocks have driven changes in Australia's bilateral pattern of trade. This is despite the enormous growth in migrant stocks amongst nearby countries in Asia. If the migration trade link is unobservable amongst the sizable recent shifts in Australian migrant stocks, it seems that it would be difficult to observe elsewhere. It is our view that the conventional wisdom - that larger migrant stocks generate larger bilateral trade flows - should be revisited. It seems likely that it is overly reliant on an identifying strategy that posits orthogonality between unobservable determinants of trade and migrant stocks.

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	OLS	OLS	OLS-FE	OLS-FE	Sys. GMM
imports_{t-1}		0.7677^a		0.3790^a	0.5945^a
		(0.0273)		(0.0412)	(0.1344)
dist	-2.4918^a	-0.6542^a			-1.0027^b
	(0.1363)	(0.0999)			(0.4280)
rgdp	1.4210^a	0.2935^a	0.9226^a	0.5899^a	0.5182^a
	(0.0379)	(0.0440)	(0.1397)	(0.1229)	(0.1940)
open	1.3893^a	0.2974^a	1.2729^a	0.7258^a	0.6400^a
	(0.0970)	(0.0647)	(0.1402)	(0.1323)	(0.2250)
migr	0.1012^b	0.0802^a	0.0443	-0.0028	0.1350
	(0.0448)	(0.0250)	(0.1114)	(0.1085)	(0.1342)
cwlth	0.6301^a	-0.1105			-0.1202
	(0.1551)	(0.0868)			(0.1594)
time effects	yes	yes	yes	yes	yes
country effects	no	no	yes	yes	yes
No. obs.	384	320	384	320	320
J Statistic					13.7900
df					12
p-value					0.3140

Notes: Standard errors in parentheses. a, b, c denote statistical significance in a two-tail test at the 1%, 5%, and 10% levels respectively

Table 1: Australian Real Imports: 1981–2006: Estimation Results

	OLS	OLS	OLS-FE	OLS-FE	Sys. GMM
exports_{t-1}		0.6737^{b}		0.2758^{a}	0.4539^{a}
		(0.0350)		(0.0521)	(0.1759)
dist	-2.8086^{a}	-0.9309^{a}			-2.1627^{b}
	(0.1084)	(0.1243)			(0.6055)
rgdp	1.0798^{a}	0.3804^{a}	0.9830^{a}	0.8720^{a}	0.9016^{a}
	(0.0306)	(0.0425)	(0.1235)	(0.1378)	(0.2322)
open	0.7721^{a}	0.3277^{a}	0.9374^{a}	0.8888^{a}	0.8087^{a}
	(0.0970)	(0.0647)	(0.1402)	(0.1323)	(0.2250)
migr	0.1000^{c}	0.0242	0.0110	-0.0027	0.1466
	(0.0353)	(0.0257)	(0.0983)	(0.1232)	(0.1491)
cwlth	0.7469^{a}	0.2070^{b}			0.6611^{b}
	(0.1221)	(0.0898)			(0.3177)
time effects	yes	yes	yes	yes	yes
country effects	no	no	yes	yes	yes
No. obs.	378	315	378	315	315
J Statistic					16.0300
df					12
p-value					0.1900

Notes: Standard errors in parentheses. a, b, c denote statistical significance in a two-tail test at the 1%, 5%, and 10% levels respectively

Table 2: Australian Real Exports: 1981–2006: Estimation Results

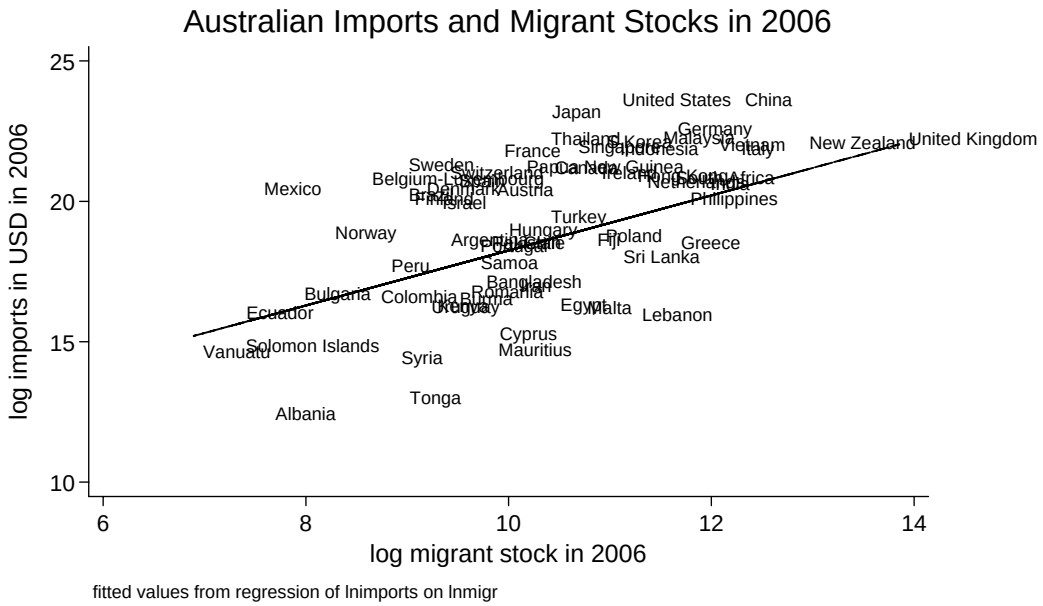
Australian Imports and Migrant Stocks in 2006
log imports in USD in 2006
25
20
15
10
6
8
10
12
14
log migrant stock in 2006
United States
China
Japan
Germany
Thailand
Malaysia
France
Vietnam
Italy
New Zealand
United Kingdom
Sweden
Mexico
Belgium
Austria
Philippines
Turkey
Norway
Hungary
Fiji
Poland
Greece
Sri Lanka
Peru
Samoa
Bangladesh
Bulgaria
Colombia
Ecuador
Egypt
Malta
Lebanon
Cyprus
Vanuatu
Solomon Islands
Mauritius
Syria
Tonga
Albania
fitted values from regression of lnimports on lnmigr

Figure 1:

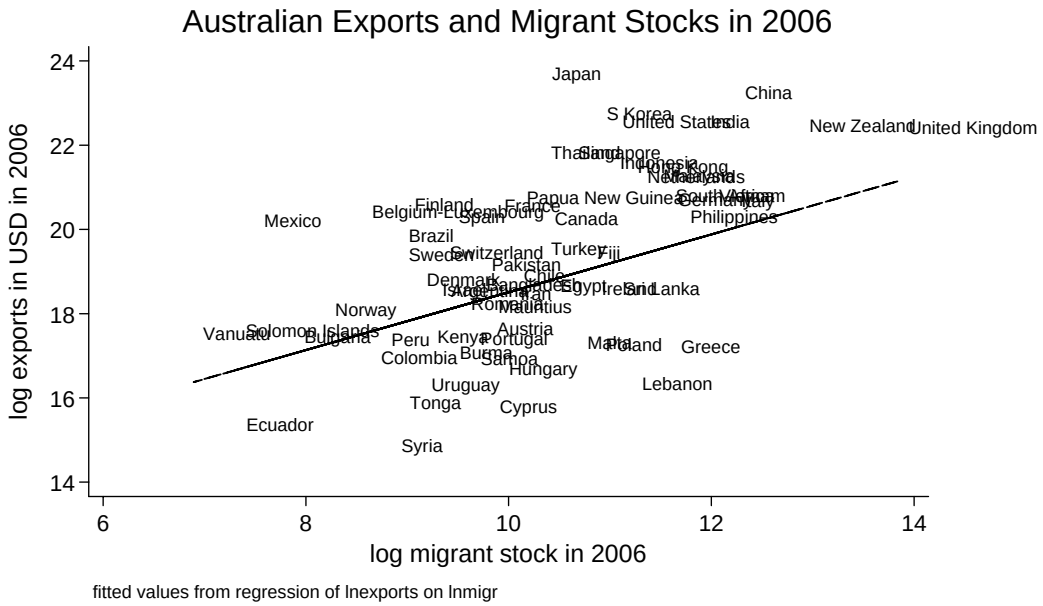

Figure 2:

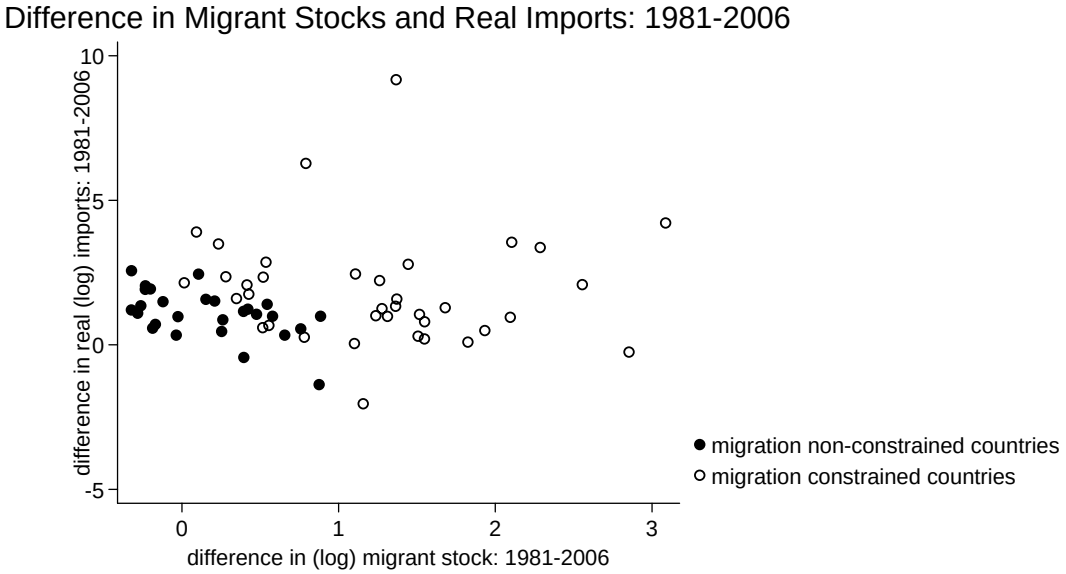

Figure 3:

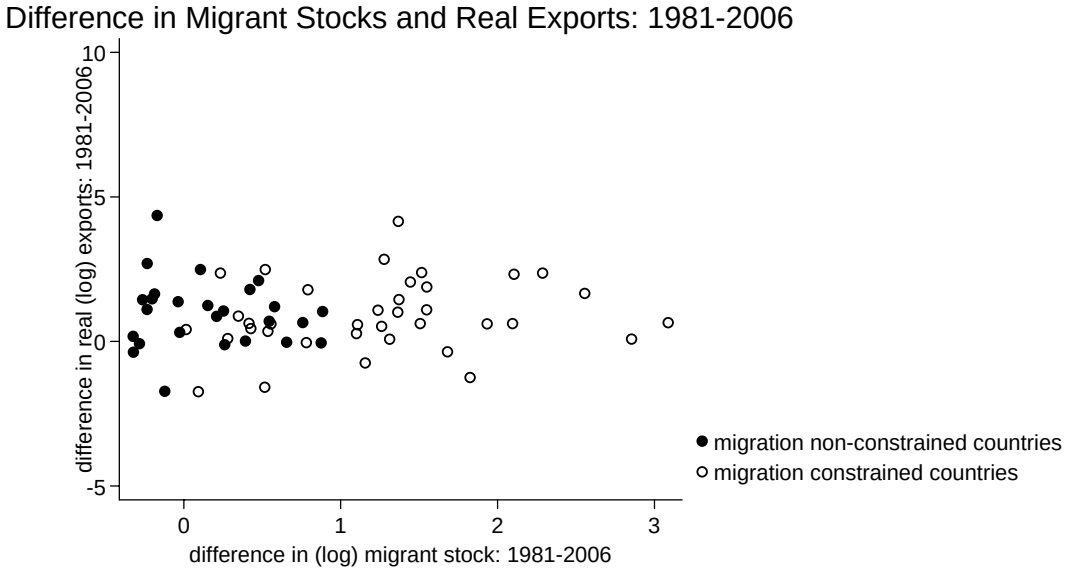
Difference in Migrant Stocks and Real Exports: 1981-2006
difference in real (log) exports: 1981-2006
10
5
0
-5
0
1
2
3
difference in (log) migrant stock: 1981-2006
migration non-constrained countries
migration constrained countries

Figure 4: