Trust: The Role of Cultural Background, Social and Economic Conditions

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Abstract: The objective of this paper is to disentangle the role of cultural background, social and economic conditions in explaining individual levels of trust. Focusing on second generation immigrants in Australia and the United States, we use the variations in cultural backgrounds, as well as variations in social and economic conditions of the two host countries to identify how these components contribute to individual trust. The empirical analysis is based on data from the World Value Survey, the General Social Survey and the Household, Income and Labour Dynamics in Australia Survey. Our results indicate that trust in the country of origin is important in explaining trust of second generation immigrants in both host countries, but particularly so in the United States. Social and economic conditions in the host country also contribute to trust, especially reduced criminality in Australia and race inequality in the United States. Evidence for first generation immigrants confirms that the transmission of trust across generations is primarily important in the United States, while differences in trust levels between the two host countries increase with time through acculturation.

Keywords: Trust, Migration, Culture.

JEL Codes: J15, O15, Z10.

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1. Introduction

Economists have long seen trust as an important determinant of the development of market economies (Arrow, 1972; Williamson, 1978) since it facilitates cooperation and exchanges among anonymous individuals. Empirical research has also shown positive associations between trust and economic outcomes. More recently, the literature has begun to investigate causal mechanisms and has identified important positive effects of trust on countries' economic performance (growth, income, employment, financial development, entrepreneurship). At the individual level, trust is also associated with positive outcomes such as happiness and economic success (Delhey and Newton, 2003).

Investigating the origins of trust is thus very relevant. The theoretical literature emphasizes both the role of inherited traits and of the current environment in shaping social attitudes (Bisin and Verdier, 2001). Empirically, there is some evidence that culture matters for trust on the one hand[1] (Algan and Cahuc, 2010a; Dohmen et al., 2011) and that the environment matters on the other hand (Leigh, 2006; Rosthein and Uslaner, 2005). In addition, the relative importance of culture and environment appears to vary across countries. Specifically, while the country of origin still affects the trust of third generation immigrants in the United States (Tabellini, 2008), it only influences the trust of first generation immigrants in Europe (Dinesen and Hooghe, 2010), suggesting that the acculturation with natives' may be more important in the latter. However, there are very few empirical studies that investigate these different channels together (Dinesen, 2011 and 2012b).

This paper investigates the respective importance of culture and environment in shaping trust of second generation immigrants in the United States and Australia, two Anglo-Saxon countries which share a number of social and economic characteristics but exhibit very different levels of trust. More precisely, we address the following questions: is the transmission of trust to second generation immigrants from their country of origin different between the United States and Australia? Does trust of first generation immigrants to these two countries differ in the first place or does the transmission process differ? Does the level of trust of second generation immigrants differ between the United States and Australia? If so, what characteristics of the environment explain that second generation immigrants have different levels of trust in the two host countries?

Our first contribution to the economic literature is to develop our knowledge on the origins of trust by comparing the relative importance of culture and environment in the United States and Australia. To identify the effect of culture, we estimate how trust of second generation immigrants varies with trust from their country of origin. While there exists some evidence of cultural transmission for the United States (e.g. Tabellini, 2008), there is not for Australia. The effect of the environment is then given by unexplained differences in trust levels across the two host countries (once individual and origin characteristics are controlled for). This provides further insight on whether immigrants' preferences and beliefs adapt to their new environment. The literature analysing the respective contribution of culture and environment

[1] Following the economic literature, we refer to "culture" as the social preferences and beliefs that characterise a social group and are transferred from generation to generation. For a recent review of this literature, see Fernandez (2011).

focuses on European host countries (Dinesen 2011 and 2012b). As a result, the comparison between the United States and Australia is original and of particular interest since Anglo-Saxon countries differ from European countries in terms of immigration as well as economic and social characteristics. Also, while the United States and Australia are similar in a number of ways, they exhibit very different levels of trust.

The second contribution of this paper is to examine how different characteristics of the host country contribute to explaining different levels of trust between the United States and Australia. The literature has found a large number of correlations between trust and economic and social characteristics thus opening a large number of potential explanations for differences in trust across countries. However, only a few of these have been tested for Europe (Dinesen, 2011). We add evidence by testing a larger set of characteristics for the United States and Australia: economic conditions, criminality and perceived racial inequality.

The third contribution of this paper is to expand our understanding of why the transmission of trust across generations varies by host country. Specifically, we extend our analysis of the relation between individual trust and trust in the country of origin to first generation immigrants. If the effect of trust in the country of origin on trust of first generation immigrants is already different between the United States and Australia, this suggests that the choice of migrating to one of these two host countries may differ with relation to trust. In contrast, if the effect of trust in the country of origin is similar between the United States and Australia for first generations, this suggests that the transmission process differs between the two host countries.

Our results clearly indicate that both the country of origin and the host country matters. Specifically, cultural transmission is particularly important in explaining trust levels in the United States, although it is also present in Australia. Also, differences in the trust of second generation immigrants between the two host countries remain largely unexplained by individual and origin factors suggesting that the environment in the host country matters as well. While the low level of crime seem to account for the high level of trust in Australia, the perception of racial inequality could contribute to lower levels of trust in the United States. In both cases, economic conditions appear to have a minor effect on trust. Analysing first generation immigrants, we find that the influence of the country of origin is similar across immigrants to the United States and to Australia and that they do not show significantly different levels of trust by host country. This strengthens our findings that the transmission process is larger in the United States and that acculturation generates differences in the trust of immigrants in different host countries.

After presenting the literature and the empirical strategy in the next section, the third section describes the datasets used in the analysis and the fourth section gives some diagrammatical evidence on the relationships of interest. The empirical analysis is developed in sections 5 to 7: we first estimate the effects of country of origin and host country on trust for Australia and the United States; then, we investigate potential reasons for differences in trust levels and in its transmission between the United States and Australia. Section 8 concludes.

2. Related literature and empirical strategy

2.1 Related literature

The empirical research on individual trust has recently gained importance with trust questions being introduced in national and cross-country surveys in the 1980s. The early literature has shown that trust is positively related to a number of economic outcomes: government effectiveness (La Porta et al., 1997), income per capita and education (Knack and Keefer, 1997). More recently, the literature has begun to investigate causal mechanisms. A first set of papers uses historical values of variables such as religion or political institutions to measure exogenous variation in trust levels and finds that trust influences income per capita (Tabellini, 2009) and the probability of becoming an entrepreneur (Guiso et al., 2006). Using differences in trust levels of migrants from different countries/region as a proxy for exogenous differences in past levels of trust in their country/region of origin, another strand of the literature adds evidence that trust significantly impacts growth (Algan and Cahuc, 2010a), financial development (Guiso et al., 2004) and employment (Algan and Cahuc, 2007). The variation of trust across countries has also been interpreted as a crucial element for explaining the national success of some economic systems and their limited international applicability, as in the case of the "flexicurity" model in Denmark (Algan and Cahuc, 2006).

The question of the origins of trust is thus very relevant and has started to be studied in the literature. There is some unrelated evidence showing that trust is transmitted across generations on the one hand, and affected by the local environment on the other hand. Dohmen et al. (2011) provide some credible evidence of a strong, although not causal, link between parents' and children's levels of trust in Germany. Also, using the fact that trust levels of US immigrants vary by their country of origin, Algan and Cahuc (2010a) indirectly show that individual trust is partly transmitted from previous generations. For Europe, Ljunge (2012) also finds that trust of second generation immigrants depends on trust in their country of origin. There is also some evidence that trust levels vary with local social and economic conditions (Rosthein and Uslaner, 2005, Leigh, 2006, Algan and Cahuc 2010b, Aghion at al., 2010).

However, studies analysing together the influence of culture and environment on trust to assess their respective contribution are rather scarce. This constitutes an important aspect since the theoretical literature has shown that these different channels interact with each other (Bisin and Verdier, 2001). In a series of papers, Dinesen (2010 with Hooghe, 2011, 2012 and 2012b) addresses this issue for Europe and finds that both channels affect trust but that the experiential perspective seems more relevant than the cultural one, especially for second generation immigrants. However, this first evidence is limited in many ways. First, Dinesen's evidence is based on immigrants to Europe only and mainly on those immigrants from low-trust countries to high-trust countries. Second, he mostly focuses on first-generation immigrants (whose trust may also be affected by the economic and social conditions of their country of origin) and on the effect of corruption and of the perception of fairness of the institutions. Last, using cross-country datasets that contain small samples for each country, he cannot study how the different channels vary by host country.

This paper contributes to the literature by estimating how the country of origin and the host country respectively affect individual trust of second generation immigrants in the United States and Australia. While our paper is quite close in spirit to Dinesens', it departs from them in several ways. First, we provide the first evidence of this kind for the United States and Australia, two Anglo-Saxon countries which differ from those studied by Dinesen in terms of trust levels, social and economic conditions. Also, not restricting the set of countries of origin to low trusting countries, we produce more general results. Second, we focus on second-generation immigrants and thus minimise the risk of spurious correlation on our estimates of the cultural effect of trust (through other characteristics of the country of origin). Third, we study the effect of a set of economic conditions and criminality in the host country in addition to the effect of the perception of fairness of the institutions. Fourth, studying the United States and Australia is of particular interest because although they have quite similar immigration histories and share a number of social and economic characteristics, they exhibit very different levels of trust. It is therefore interesting to investigate the reasons for this difference by focusing on a few relevant differences between the two countries. Last, using separate US and Australian datasets, we are able to distinguish the effect of culture and the effect of the social and economic environment on trust separately for the two countries. This provides further insight into how these relationships vary by country.

2.2 Empirical strategy

In order to distinguish the effect of culture from the effect of the environment on trust, we study second generation immigrants in the United States and Australia. The identification of the effect of culture comes from the variation in immigrants' countries of origin while the effect of the environment comes from the variation in their host country. Specifically, to identify the cultural component, we follow the epidemiological approach which studies the variation in outcomes across different immigrant groups residing in the same country.[2] This method relies on the idea that immigrants have different cultures but share a common social and economic environment. The effect of culture on trust is identified by examining the effect of trust in the country of origin on trust of immigrants. Focusing on second generation immigrants rather than first generation immigrants has several advantages. Since second generation immigrants never lived in their country of origin, the value of trust in that country should capture the preferences and beliefs commonly held there and that are transmitted from one generation to the next. However, economic and institutional conditions (past or present) in the country of origin should not influence second generation immigrants. Focusing on second generation immigrants also eliminates confounding factors that specifically affect the first generation (ability to speak the host country language, impact of the migration). However, it is possible that effects estimated for second generation immigrants are underestimated if the influence of the country of origin has attenuated over time.

We estimate the following equation:

[2] This approach has been used to study the effect of culture on a variety of outcomes, including savings (Carroll et al., 1994), women's work and fertility (Fernandez and Fogli, 2009), political attitudes (Alesina and Giuliano, 2011), preferences for redistribution (Luttmer and Singhal, 2011) and trust among others.

$$T_{itor} = \alpha_0 + \alpha_1 T_o + \alpha_2 I_r{*}T_o + \alpha_3 I_r + \alpha_4 X_{rt'} + \alpha_5 I_r{*}X_{rt'}$$
$$+ \alpha_6 X_o + \alpha_7 I_r{*}X_o + \alpha_8 X_{it} + \alpha_9 I_r{*}X_{it} + \Sigma\, \alpha_n I_n + \varepsilon_{itor} \quad (1)$$

where T_{itor} is the trust level of individual i in time t from country of origin o living in country r; T_o is the trust level in the country of origin;[3] I_r is a dummy for the host country (1 for Australia); X_{rt} is a set of time-varying institutional characteristics of the host country; X_o is a set of characteristics from the country of origin; X_{it} is a set of individual controls and I_n are time controls.

The main coefficients of interest are α_1, α_2 and α_3. They respectively give the cultural effect for the United States, how this effect differs in Australia and the unexplained difference between trust levels in the United States and Australia. Note that $\alpha_1 + \alpha_2$ gives the cultural effect for Australia. In other words these three coefficients give us the respective contribution of culture and environment for immigrants in the United States and Australia. If trust is passed down from generation to generation, the level of trust in the country of origin is expected to affect individual trust and α_1 to be positive (as well as $\alpha_1 + \alpha_2$). If circumstances in the host country matter, α_3 is expected to be significant. Thus, the inter-country of origin variation gives the effect of culture while the inter-host country variation gives the effect of the current environment.

A spurious correlation between individual trust and trust in the country of origin could arise if apart from sharing trust levels, individuals from the same origin shared other characteristics (correlated with trust). To rule out possible indirect effects of culture, the econometric framework includes standard individual controls (age, gender, education level, marital status, number of children, labour force status, urban/rural residence, region of residence and indicators for whether both parents are born abroad from the same/different origins), as well as country of origin controls (GDP growth, GDP per capita, unemployment rate, level of democracy) and region of residence controls (GDP growth, unemployment rate, density of population, crime rate). Including these controls also reduces the potential spurious correlation affecting the estimation of the host country dummy if differences in trust levels between the United States and Australia are accounted for by differences in these individual, local or origin characteristics. The individual and regional controls are time-variant while trust in the country of origin and country of origin characteristics are invariant in time. To allow for all of the individual and country effects to vary by country of residence, I_r is interacted with all variables.

In addition, we include time controls specific to the two host countries. Specifically, we include decennial dummies for the 1980s and 1990s for the United States (periods which are

[3] As described in detail in the next sections we obtain these levels from the World Value Survey (WVS) and we use one time-invariant value for each country. We use trust levels of the countries of origin rather than dummies because we want to capture how much of immigrants' trust was inherited from their country of origin (not only how trust levels of immigrants differ by origin). This method is supported by Fernandez (2011) who argues that "although it is possible to simply use a country-of-ancestry dummy for this variable, a superior strategy is to use a variable that more directly reflects the cultural attitudes of interest". In our case, we also use the exact variable for trust beliefs in the country of origin rather than a proxy. This reduces the risk of biasing our estimates by capturing other differences in the countries of origin. This furthermore enables us to introduce controls at the country of origin level to test for the influence of possible confounding factors in the transmission of trust.

not in the Australian data). For Australia, we include a dummy for 2005, a year in which Australian respondents reported surprisingly low levels of trust.

The United States and Australia share a long and similar history of immigration as well as a number of social and economic characteristics, but exhibit different levels of trust (as estimated by α_3 in section 5). In section 7, we provide further insight into what may drive this difference in trust levels by testing the effects of different social and economic characteristics: GDP growth, unemployment rate, density of population, female labour force participation, crime rate and perceived racial inequality. Specifically, coefficients α_4 and α_5 shows how time variations in these variables correlate with variations in trust. Since changes in these characteristics may take time to have an effect on trust, we analyse the effect of these variables with both contemporaneous and lagged values (from 1 to 13 years before). In this framework, variations in α_3 show whether the effects of these host country characteristics are large enough to contribute to differences in trust in the United States and Australia.

There are a number of social characteristics of the environment for which clear relationships with trust have been identified in the literature. We test the effect of crime rates and perceived racial inequality.[4] Delhey and Newton (2003) and Uslaner (2002) find a clear negative association between trust and people's feeling of safety when walking alone at night. The degree of security that people experience influences their belief that most other people ought to be trusted or not. We further test this association at the country level using a more objective measure of safety: crime rates. The literature also contains clear evidence of a negative relation between trust and inequality (Rothstein and Uslaner, 2005) and trust and the perception of fairness of political institutions (Rothstein and Stolle, 2008). Individual's trust is partly determined by the way they perceive those who are given the responsibility of the public interest. Institutional fairness sets the tone both for what should be expected from fellow citizens and for one's own behaviour. The negative effect of corrupted institutions and lack of civicness of citizens on trust has been clearly established. Similarly, experiences of unfairness or inequality, for example through discrimination, can deteriorate individual's trust (Rothstein and Stolle, 2008). This feature of the environment seems particularly relevant in the case of immigrants. We test it using perceived racial inequality as a proxy. Also, we test the effect of economic conditions. While the literature has not identified a clear effect of contemporaneous economic measures on trust, we test whether this effect appears with a lag. These characteristics are added to the model and tested individually in addition to the baseline model. This is first because the degrees of freedom are very limited for Australia, due to the relatively short interval of time covered by the HILDA data. Also, since these variables are highly correlated with each other, we prefer to analyse their effect independently.

[4] For these variables, we were able to gather the required time variation. Unfortunately, the data we found on religion from the WVS (Uslaner, 2002), inequality from the Luxembourg Income Study and the ISSP (Rothstein and Uslaner, 2005), social mobility from the WVS (Rothstein and Uslaner, 2005), regulations and demand for regulation from the ISSP (Aghion et al. 2010), civicness from the WVS (Aghion et al. 2010) and segregation and fractionalisation from Alesina and Zhuravskaya (2011) were not showing enough time variation for Australia to be used in the analysis (which is only studied from 2005 to 2010).

3. Data

The individual data used in the analysis comes from the Household, Income and Labour Dynamics in Australia (HILDA) for Australia and the General Social Survey (GSS) for the United States. HILDA is a household-based panel study which began in 2001 with 7,682 responding households and 13,969 individuals. Interviews are conducted annually with all members of each sampled household aged 15 or more. In 2010, there were 7,317 responding households and 13,526 responding individuals. GSS is a US survey which began in 1972 and collects data on a randomly-selected sample of individuals aged 18 or more. The survey was conducted every year from 1972 to 1994 (except in 1979, 1981 and 1992) and every other year since then. The survey had 1600 respondents in 1972 and 2200 in 2010. While the GSS is a based on a repeated cross-section structure which covers a relatively long interval of time, the HILDA survey is a longitudinal dataset with a limited time dimension. In our empirical analysis, we cluster the standard errors at the individual level in all the regressions and include time controls. In addition, we assess the effects of these differences by producing different robustness checks. [5]

We select the waves of both surveys which include information on trust and enables us to identify the country of origin of second generation immigrants: HILDA 2005, 2006, 2008, 2010 and GSS 1978, 1980, 1983, 1984, 1986 to 1991, 1993, and then 1994 to 2010 every two years. HILDA and GSS include the following questions on trust:

- HILDA: To what extent do you agree or disagree with the following statements? Please indicate, by crossing a box on each line, how strongly you agree or disagree with each: Generally speaking, most people can be trusted.
  The answers vary between 1 and 7, where 1 means that the person strongly disagrees and 7 that she strongly agrees.
- GSS: Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?
  The answers vary between 1 and 3, where 1 stands for “Can trust”, 2 for “Cannot trust” and 3 for “Depends”.

Previous research, including large scale field experiments, has demonstrated the behavioural validity of these survey instruments: answers provided actually translate into reciprocity actions (Glaeser at al. 2000). To have comparable measurements of trust in the United States and Australia, we harmonise the coding of this variable by creating a dummy equal to 1 (trusting) if the value in the GSS equals 1, or if it is between 5 and 7 in HILDA; and, equal to 0 otherwise.[6]

We define second generation immigrants as individuals born in Australia or in the US with at least one parent born overseas. HILDA provides us with the country of birth of both parents and of the individual which enables us to select second generation immigrants and define the country of origin. In the GSS survey, each individual is asked to state whether any of his parents was born abroad and to specify a country of origin of the family. We identify second

[5] Keeping the whole period available for the US is necessary to have a large enough sample.
[6] The proportions of trusting individuals obtained with this recoding for the United States and Australia matches the ones obtained from the WVS, that is, from a survey using similar questions and coding for the two countries.

generation immigrants by combining the answers from these two questions. The country of origin is defined as the father's country of birth unless only the mother is born overseas, in which case the country of origin is the mothers'.[7] We then keep only individuals coming from countries for which we have at least 40 individuals.

The values of trust in the countries of origin are obtained from the World Value Surveys (WVS). The trust question reads: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" and is coded in two modalities: "Most people can be trusted" vs. "Need to be very careful". We select from the WVS all countries that appear as countries of origin for our HILDA and GSS samples.[8] The oldest measure of trust that can be obtained in the WVS is for 1981 (but even later for most countries). Since our sample consists of second generation immigrants, immigration occurred before the individual was born. We would thus preferably use measures of trust in the country of origin before the respondents was born. Unfortunately, 96% of the individuals in our sample are actually born before the second value is available for their country of origin (either before the first one or between the first and the second one). As a result, for this high majority the best proxy for the value of trust in their country of origin at the time of immigration is the first value available in the WVS. Trust in the country of origin is thus calculated as the average trust level in the country of origin the first time the trust question was asked in the WVS.[9]

Table A1 in the Appendix provides the final list of countries of origin and the distribution of observations for each country in the two datasets. In total, we observe individuals coming from 28 different countries, with 15 countries in the United States and 21 countries in Australia. For 8 countries, we observe second generation immigrants both in Australia and in the United States.

Both surveys also provide the individual characteristics to be introduced in the set of controls: the individual's gender, age, highest education level, labour force status, marital status, number of children, region of residence and density of the town of residence. Wherever the coding of these variables differed between the GSS and HILDA, it was harmonised. The economic environment of the country of origin is described by the GDP growth, the GDP per capita and the unemployment rate while the index of democracy summarises the level of

[7] The reason to use this comprehensive definition for immigrant status is to keep as many observations as possible. We thus expect to get to a lower bound for the effect of the country of origin since some individuals in our sample have been confronted to different cultures from their parents. We provide evidence in the result section that taking the mothers' country of birth instead does not alter the results (this changes the origin of individuals who have parents born abroad in different countries: 8% in HILDA and 39% in GSS).

[8] Lebanon, Sri Lanka and Papua New Guinea are further dropped from the Hilda sample since no data is available for these countries in the WVS. This leads to a loss of 87, 57 and 49 observations, respectively. Also, in line with Uslaner (2002), we drop China (for which the level of trust reported in the World Value Survey appears suspiciously high).

[9] We check that taking the average over all WVS waves containing the trust question or alternatively taking the last value before our individuals are born (which only changes the value for 4% of the people) does not significantly alter the results. We prefer to take the first value however, which is obviously as close to the immigration date as we can get. Under the assumption that trust is strongly embodied in countries and does not evolve erratically, it is possible to use future values for the cultural variable with respect to the outcome, i.e to explain individual trust by subsequent trust in the country of origin. Fernandez (2007) demonstrates that using past or future cultural variables yields similar results in the case of female labour force participation.

development of the political institutions. Variables are obtained from the Organization of Economic Cooperation and Development (OECD), the International Labour Office (ILO) and the Freedom House databases. For consistency, we consider the values of these variables evaluated at the same date as the trust variable (first WVS wave containing the trust question for each country). For example, an Italian immigrant surveyed in Australia in 2005 is allocated the values of 1981 (first year in which the WVS interviews were conducted in Italy) for the Italian variables (trust, democracy and economic conditions).

Variables characterising the country of residence are: GDP growth, unemployment rate, density of population, crime rate and a measure of perceived racial inequality. They come from the US Bureau of Statistics, the US Census Bureau, the US Department of Justice, the Australian Bureau of Statistics, the World Bank and the International Social Survey Programme on social inequalities. In particular, we use the ISSP question on whether one thinks that "race is important to get ahead" to build a measure of perceived racial inequality in the host country at different dates.[10] We test different versions of these variables: contemporaneous to GSS and HILDA waves and with 1 to 13 year lags (using 3-years moving averages).[11] For example, an Italian immigrant surveyed in Australia in 2005 is allocated the values of 1981 (first year in which the WVS interviews were conducted in Italy) for the Italian variables (trust, democracy and economic conditions). For example, for an Italian immigrant surveyed in Australia in 2005, we test using the 2005 values and all the lagged values we obtain from 2004 to 1992 for the Australian variables (crime, inequality and economic conditions).

4. Descriptive analysis

Table I gives some descriptive statistics on our sample of second generation immigrants in the United States and Australia. On average, US individuals are older and have a slightly higher number of children than the Australians. Consistently with their higher age, our US sample is also more often widowed or separated and more often out of the labour force. Most importantly, immigrants to the two countries differ in their level of trust: while 61% of Australian immigrants believe that most people can be trusted, only 41% of the US immigrants do. Interestingly, those levels of trust are very close to that of the general population which are respectively 60% in Australia and 39% in the United States. In terms, of country characteristics, the United States and Australia also show some large differences in terms of population density and crime rate. However, second generation immigrants to the United States and Australia come from countries that are quite similar in terms of trust levels: the average trust level of countries of origin is 33% in the United States and 39% in Australia.

[10] This variable takes values from 1 to 5, "essential" to "non important at all". We build a dummy variable by grouping together the first 3 values: "fairly important" to "essential" and then calculate the proportion who thinks that race is important to get ahead in each country at each survey wave (1987, 1992 and 2009). We then use linear approximations to calculate values for each year covered by the GSS and HILDA. For GSS and Hilda waves occurring before the first value is available, we take the first value available (which is only the case for the GSS before 1987); if the survey year is after the last value in the ISSP, we take the last ISSP value available (i.e. HILDA and GSS 2010).

[11] Data limitations prevented us from going further back.

Table I. — Descriptive Statistics

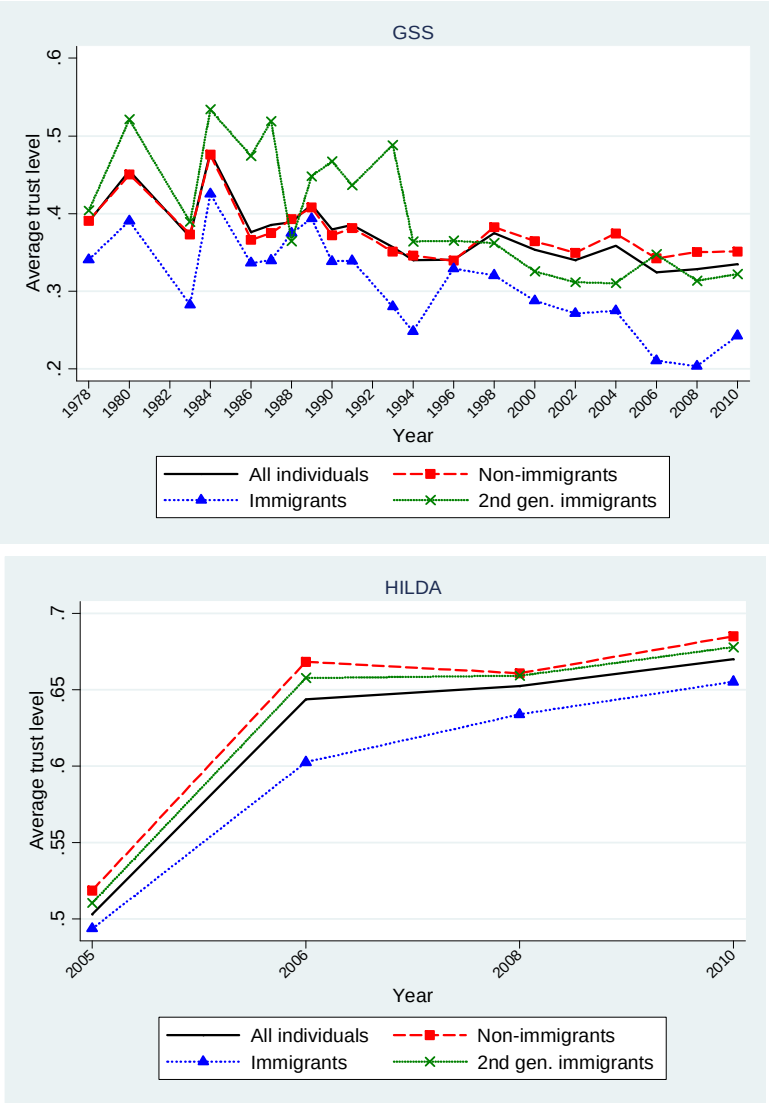
	USA				AUSTRALIA			
	Mean	**Std. Deviation**	**Min**	**Max**	**Mean**	**Std. Deviation**	**Min**	**Max**
Trust in the country of residence	0.406	0.491	0	1	0.609	0.488	0	1
Trust in the country of origin	0.329	0.118	0.06	0.609	0.387	0.089	0.055	0.491
Individual statistics								
Proportion of males	0.446	0.497	0	1	0.475	0.499	0	1
Age	54.32	19.55	18	89	41.04	18.22	15	93
Less than high school	0.264	0.441	0	1	0.326	0.468	0	1
High school	0.491	0.500	0	1	0.183	0.387	0	1
College	0.045	0.208	0	1	0.284	0.451	0	1
Bachelor	0.128	0.334	0	1	0.122	0.327	0	1
Postgraduate	0.073	0.259	0	1	0.084	0.277	0	1
Married	0.509	0.500	0	1	0.589	0.492	0	1
Widowed	0.184	0.388	0	1	0.045	0.208	0	1
Separated	0.115	0.319	0	1	0.057	0.232	0	1
Divorced	0.020	0.142	0	1	0.025	0.155	0	1
Never Married	0.171	0.377	0	1	0.283	0.450	0	1
Employed full-time	0.382	0.486	0	1	0.441	0.496	0	1
Employed part-time	0.088	0.283	0	1	0.230	0.421	0	1
Unemployed	0.052	0.221	0	1	0.036	0.185	0	1
Out of the labour force	0.478	0.499	0	1	0.294	0.455	0	1
One parent is immigrant	0.496	0.500	0	1	0.662	0.473	0	1
Both parents are immigrant, different origins	0.392	0.488	0	1	0.083	0.277	0	1
Both parents are immigrant, same origin	0.099	0.299	0	1	0.254	0.435	0	1
Number of children	2.077	1.819	0	8	1.500	1.566	0	8
Major urban areas	0.511	0.500	0	1	0.649	0.478	0	1
Other urban areas	0.303	0.459	0	1	0.208	0.406	0	1
Bounded localities	0.094	0.291	0	1	0.024	0.153	0	1
Rural areas	0.092	0.289	0	1	0.119	0.324	0	1
Country of residence statistics								
GDP growth	3.290	1.877	-3.369	7.186	3.015	0.561	2.257	3.832
Unemployment rate	6.100	1.400	4.000	9.600	4.846	0.359	4.279	5.237
Female labour force participation	56.71	3.162	50.00	59.90	57.99	0.729	56.99	58.74
Population density	28.20	2.793	24.25	33.77	2.745	0.085	2.648	2.865
Crime rate	7.764	1.630	4.80	10.20	2.491	0.312	2.000	2.800
Country of origin statistics								
GDP growth	1.871	4.578	-11.6	8.8	0.617	2.749	-2.90	7.80
Unemployment rate	6.897	3.396	1.50	13.7	9.495	2.494	1.50	13.20
Female labour force participation	42.71	10.25	29.7	63	40.34	8.822	20.20	70.00
Democracy levels	1.808	1.406	1	6	1.742	1.705	1	7

Sample: second generation immigrants residing in the United States or in Australia.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.
Sources for country statistics: World Bank, OECD, ILO, Freedom House, US Census Bureau, ABS, US Department of Justice.

Figure 1 shows the evolution of trust levels in the United States and in Australia for three subgroups of the population: non-immigrants, immigrants and second generation immigrants. It appears that trust is consistently higher in Australia. Also, in both countries second

generation immigrants have levels of trust that are very close to that of non-immigrants, while that of first generation is systematically lower than the rest of the population.

Figure 1. — Trust levels in the USA and Australia.

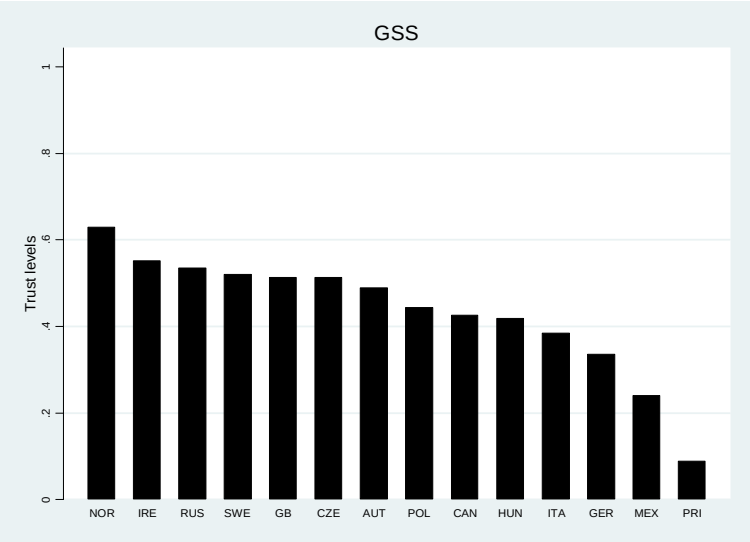


Sample: GSS 1978-2010 and HILDA 2005, 2006, 2008, 2010.

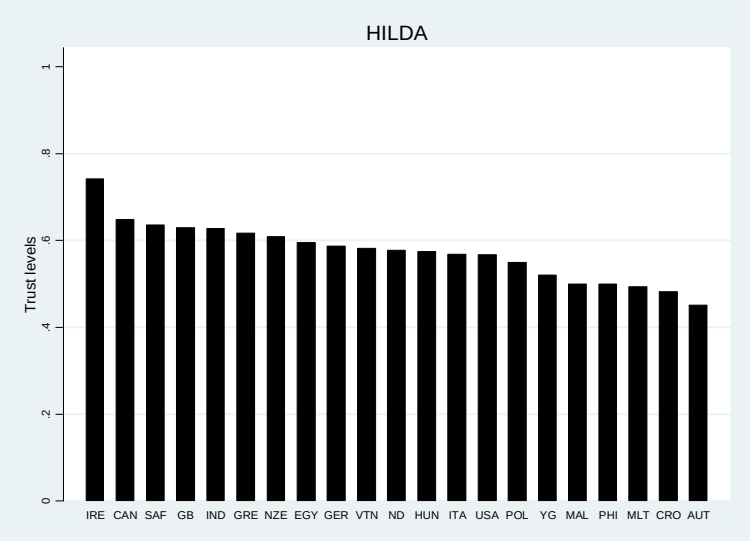
When distinguishing by country of origin (Figure 2), it appears that trust levels of US immigrants are quite heterogeneous, especially in comparison to that of Australian immigrants. It also appears that origin countries with high and low levels of trust can be identified. Focusing on common countries, immigrants from Ireland and Great Britain display high levels of trust, while immigrants from Canada and Hungary display medium levels and Italians report the lowest values. This could indicate that both in the United States and Australia, immigrants are influenced by their country of origin, with this influence playing a more important role in the United States. Some other countries rank very differently across the two countries of residence: while Austrian, Yugoslavian and Polish immigrants exhibit medium levels of trust in the United States, they report low levels in Australia. On the contrary, German immigrants display low average values in the United States and medium ones in Australia. These discrepancies could be due to different waves of immigration,

especially whether the immigration took place before or after the Second World War and before or after the fall of the Communist regimes.

Figure 2. — Trust levels of second generation immigrants by country of origin



Sample: second generation immigrants residing in the United States.Source: GSS 1978-2010.

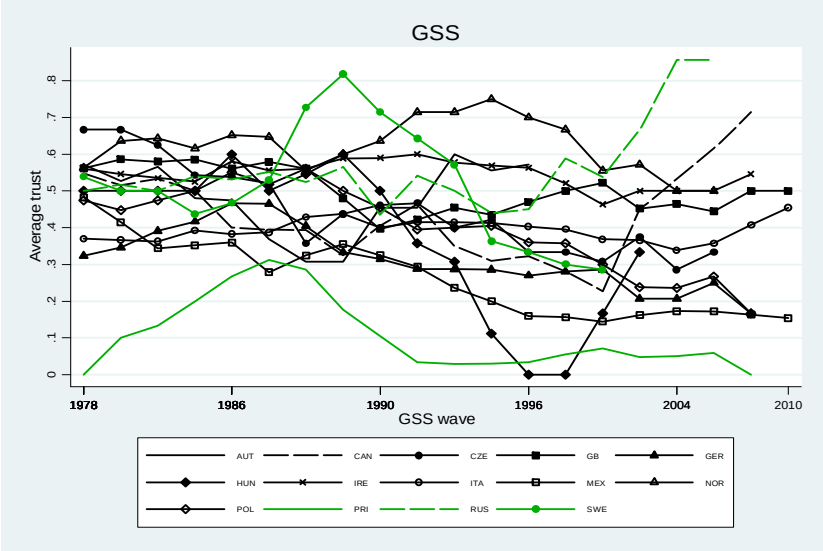


Sample: second generation immigrants residing in Australia.Source: HILDA 2005, 2006, 2008, 2010

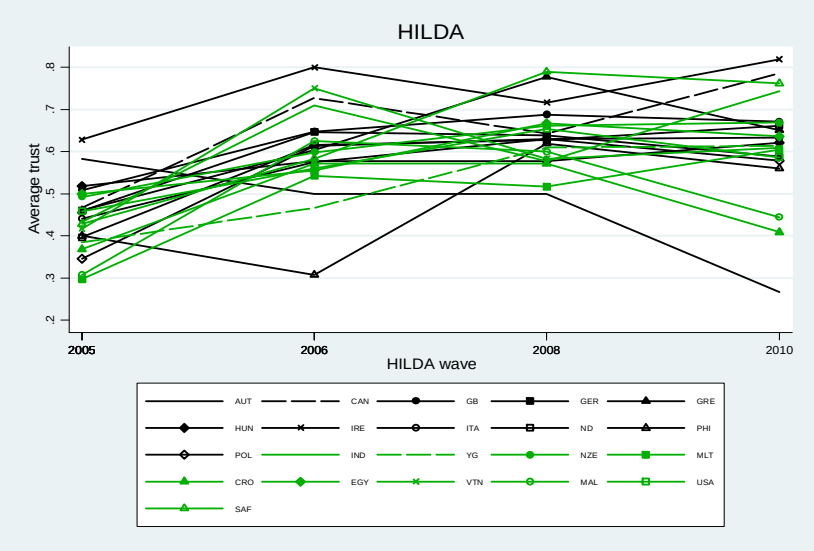
Looking at the evolution of trust for immigrants by country of origin (Figure 3),[12] there appears to be a common evolution of trust levels for immigrants in Australia, indicating that common factors in the host country may have exerted the same effects on individuals of different origin. Conversely, the evolution in the United States looks far less homogeneous (even if we only focus on period 2005-2010, the same investigated by the HILDA data). Also, these figures suggest that the level of trust in the country of origin affects the trust of second generation immigrants, with some origins exhibiting low / high levels of trust throughout the period.

[12] For the United States, so as to assure that we had enough observations to compute a measure for trust at each date and for each origin, we calculated 5 years moving averages and kept only the values when the number of observation was above 5.

Figure 3. — Evolution of trust levels of second generation immigrants by country of origin



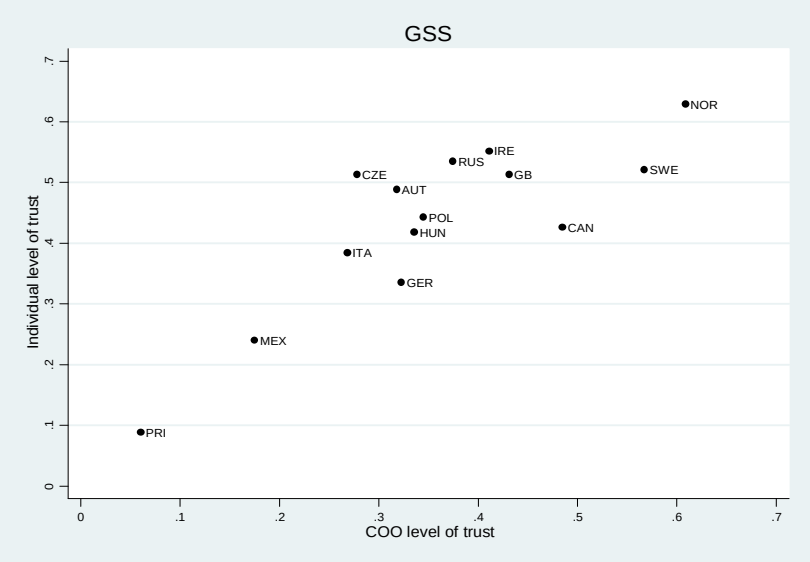
Sample: second generation immigrants residing in the United States.
Source: GSS 1978-2010.



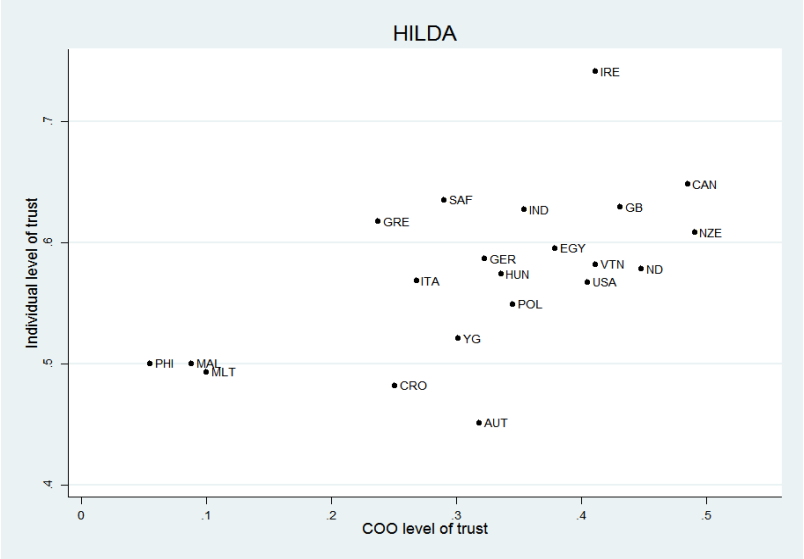
Sample: second generation immigrants residing in Australia.
Source: HILDA 2005, 2006, 2008, 2010.

Figure 5 shows that the trust level of second generation immigrants is highly and positively correlated with trust in their country of origin both in the United States and in Australia. The correlation coefficients are 0.83 in the United States and 0.6 in Australia, respectively.

Figure 5. — Trust levels of second generation immigrants and trust in their country of origin



Sample: second generation immigrants residing in the United States.
Source: GSS 1978-2010.



Sample: second generation immigrants residing in Australia.
Source: HILDA 2005, 2006, 2008, 2010.

5. Individual trust: between culture and environment

This section explores whether (i) the link between trust of second generation immigrants and trust in their country of origin is confirmed when analysed in a more complete framework; (ii) the difference in the levels of trust of American and Australian immigrants can be explained by individual and country characteristics.

5.1 Results

Table II presents the results from regressions of individual trust of second generation immigrants on trust in their country of origin as specified in equation (1). Four specifications

are shown progressively including controls at the individual, country of origin and host country level. Table II reports the coefficients related to trust in the country of origin (for the United States and the difference for Australia), an indicator for the host country and the country of origin characteristics (the complete set of results can be found in tables A2 in the Appendix). All four specifications control for age and time fixed effects so as to account for these important differences in the US and Australian data.

The first column of Table II indicates that the link between trust in the country of origin and trust of second generation immigrants is different in the two countries. Although the relation is significant in both countries, it is much larger in the United States. A 10 percentage point shift in the average trust in the country of origin implies a 7.1 percentage point increase in the linear probability that US second generation immigrants are trusting.[13] Conversely, the increase is only 1.7 percentage point in Australia (5.4 percentage points lower). Also, it suggests a very large difference between the level of trust in the US and in Australia, a finding in line with the descriptive statistics. In the latter, the probability to trust is higher by 60 percentage points than in the former.

These results may actually derive from a cultural transmission of characteristics related to trust rather than a direct transmission of trust. If for example education patterns are transmitted across generations and correlated with trust levels, results from the two first columns would capture a general effect of culture on trust. To test whether the intergenerational transmission of trust affects individual trust beyond its influence on other individual dimensions, we introduce a number of controls for individual characteristics (column 2). While the inclusion of these controls reduces the link between trust in the country of origin and individual trust in the United States, it increases it in Australia. Nevertheless, the relation is still clearly positive and significant for both countries and larger in the United States. A 10 percentage point increase in average trust in the country of origin still increases the probability to be trusting by 4.1 percentage points in the United States and 2.4 percentage points in Australia. Moreover, the inclusion of individual controls does not reduce the difference between the level of trust in the US and in Australia which remains large (73 percentage points higher in Australia).

Interestingly, most of the individual characteristics that are significantly related to individual trust are differently related to it in the United States and in Australia (Table A2 in the Appendix). First, while trust increases with age in the United States, it does not seem to vary with age in Australia. Neglecting to control for age could therefore create a spurious correlation between trust in the country of origin and individual trust in the United States. Effectively, older individuals, who are more trusting, also happen to come from countries with higher levels of trust.[14]

[13] Trust in countries of origin varies between 0.06 and 0.61, with a standard deviation of 0.12 for second generation immigrants to the US and between 0.055 and 0.49 with a standard deviation of 0.09 for second generation immigrants to Australia. See Table I.

[14] As the information for trust in the country of origin given by the WVS is fairly recent, the older the individuals are the less precise our proxy for trust in the country of origin at the time of migration is. To control for this potential bias, we tested including the difference between the year of birth of the respondents and the year in which we have the first information for trust in the country of origin (in the WVS). This variable did not

Table II — OLS Regressions

	(1)	(2)	(3)	(4)
Trust in the country of origin	0.709***	0.411***	0.568***	0.568***
	(0.0939)	(0.107)	(0.125)	(0.125)
Australia X trust in the country of origin	-0.540***	-0.167	-0.290*	-0.290*
	(0.125)	(0.136)	(0.158)	(0.158)
Country: 0=USA, 1=Australia	0.599***	0.728***	0.652***	0.476*
	(0.0921)	(0.133)	(0.172)	(0.253)
GDP growth in country of origin			-0.00121	-0.00123
			(0.00322)	(0.00322)
GDP per capita in country of origin			-0.0124***	-0.0124***
			(0.00420)	(0.00420)
Unemployment rate in country of origin			0.00103	0.00101
			(0.00380)	(0.00380)
Democracy level in country of origin			-0.0163	-0.0161
			(0.0133)	(0.0133)
Australia X GDP growth in country of origin			-0.00152	-0.00151
			(0.00559)	(0.00559)
Australia X GDP capita in country of origin			0.00796	0.00801
			(0.00489)	(0.00489)
Australia X unemployment rate in country of origin			-0.00274	-0.00271
			(0.00535)	(0.00536)
Australia X democracy level in country of origin			0.00679	0.00662
			(0.0165)	(0.0165)
R-squared	0.084	0.118	0.120	0.120
Observations	9965	9954	9954	9954
Time fixed effects	Yes	Yes	Yes	Yes
Age and age squared	Yes	Yes	Yes	Yes
Other individual controls	No	Yes	Yes	Yes
Country of origin characteristics	No	No	Yes	Yes
Region of residence characteristics	No	No	No	Yes

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional individual controls are: gender, education levels, marital status, number of children, labour force status, urban/rural residence, region of residence, an indicator for whether both parents are immigrants from different countries and an indicator for whether they are from the same country. Country of origin characteristics are GDP growth, GDP per capita, unemployment rate and democracy level. Region of residence characteristics are GDP growth, unemployment rate, population density, crime rate (these are time variant). All the controls are also interacted with an indicator for Australia.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

Second, while men are slightly more trusting than women in the United States, this is not the case in Australia. The lack of a clear relation between age / gender and trust in Australia is in line with what has been observed by Leigh (2006). Third, the level of education is very positively and consistently related to trust in the United States. Note that the causality could be two-way: getting more education could increase trust as well as being more trusting could

have any significant effect on trust and the other coefficients do not vary significantly when this new variable is introduced in the set of regressors.

make individuals get more education. In Australia, even if the level of education is overall positively related to trust, the link with trust is much lower than in the United States. Last, trust and unemployment do not seem to be related in the United States. On the contrary, in Australia, unemployed have a lower level of trust than those who are employed full-time.

Heterogeneity in economic conditions across the different countries of origin may also bias our estimates. For example, if the economic characteristics of immigrants' country of origin affect their socio-economic situation in the host country and thus their trust, our estimates could overstate the transmission of trust. To explore whether the differences in trust by country of origin are driven by economic conditions in the home country, we add the following controls to our regressions: GDP growth, GDP per capita, unemployment and democracy. The results remain fairly stable (Table II, column 3): trust in the country of origin is still positively related to individual trust, and more so in the United States. This suggests that trust is transmitted across generations beyond the transmission of circumstances, both in the United States and Australia. Again, the inclusion of additional controls does not reduce the difference between the level of trust in the US and in Australia which remains large.

Finally, we include controls for the local environment in the host country. Again, some spurious correlation between trust in the country of origin and individual trust could arise if immigrants were sorting themselves into locations in a way that is related to trust in their home country, and that the local conditions in the host country in turn affect individual trust. Controlling for regional time-varying characteristics does not change the results (Table II, column 4): A 10 percentage point increase in average trust in the country of origin increases the probability to be trusting by 5.7 percentage points in the United States and 2.8 percentage points in Australia. Also, the difference between the level of trust in the US and in Australia remains large with a probability to trust which is higher by 48 percentage points in the latter than in the former. All in all, our results are robust to the inclusion of a large variety of individual and country controls. It thus seems unlikely that our results are purely driven by omitted factors.

This analysis leads us to two main conclusions:

1) Second generation immigrants' trust is positively related to trust in their country of origin. This relation is systematically stronger for the US than for Australia.
2) The difference in the levels of trust of American and Australian immigrants remains largely unexplained by individual, country of origin and regional characteristics in the host country.

5.2 Robustness checks

The GSS and Hilda datasets have important differences both in terms of coverage and in terms of structure. We run different tests to account for these differences and check the stability of our results.

First, our US and Australian samples vary along two different characteristics: the countries of origins of the sample members and the period covered by the survey. We test the stability of our results to these two differences (Table III). When running the same regression as in Table

II, column 3 but only on the 8 countries that are common between the United States and Australia (column 1), we find qualitatively similar results. The effect of trust in the country of origin is still higher than in the United States even though the difference with Australia is now smaller. This rules out the possibility that results in Table II are driven by the presence in one of the two surveys of immigrants from countries that have particularly intense/low relation to their country of origin. In addition, the difference between trust levels in the United States and Australia is higher when restricting the sample to common countries (1.165). This further suggests a role for the environment in the host country.

Another difference in terms of origins of our samples is that immigrants of British origin represent more than 40% of the Australian sample against 11% of the United States sample (table A1). After dropping second generation immigrants from the United Kingdom (table III, column 4), estimates are extremely similar to those presented in Table II. Immigrants from the UK do not appear to have a particularly low link to their country of origin, such that our estimates for Australia would be biased downward.

Table III – Additional OLS regressions.

	Common countries	Common period	Excluding 2005	Excluding GB
Trust in the country of origin	0.497*	0.656***	0.568***	0.568***
	(0.256)	(0.241)	(0.125)	(0.125)
Australia X trust in the country of origin	-0.119	-0.375	-0.291*	-0.285*
	(0.359)	(0.260)	(0.164)	(0.162)
Country: 0=USA, 1=Australia	1.165***	0.572**	0.640***	0.709***
	(0.332)	(0.279)	(0.175)	(0.189)
R-squared	0.112	0.092	0.119	0.127
Observations	7122	8514	7994	5901

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional controls are as in Table II, column 3.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

To account for differences in the period covered, we repeated our main regression including only the GSS for the period 2002-2010.[15] Again, the results from the previous section are confirmed. The difference in the effect of trust in the country of origin between the United States and Australia is even larger (-0.375). Last, the levels of trust reported in the 2005 wave of HILDA appear systematically lower than those reported in the other waves. In the last column of Table III we report the results obtained when dropping 2005. Once again, previous results are largely confirmed.

Second, the structure of the two dataset is different, with GSS being based on repeated cross-sections and HILDA being a panel. Results presented in Table A3 assess the sensibility of the results to two different treatments of the panel dimension: by estimating a random effects model (column 3); and, by keeping only the first observation for each individual in the HILDA sample (2005 in 80% of cases, column 4). In both cases, results are not significantly different from those in table II. If anything, the fact that the impact of the country of origin is lower in Australia than in the United States is magnified. Finally, using a probit specification

[15] This leads to a sharp decrease in the number of observations for the GSS.

instead of linear regressions produces results in line with those presented in Table II (column 2).

We also test how changes in our measure of trust in the country of origin affect our results (Table A4). Using an average of trust over all waves available in the WVS instead of only values from the first wave yields identical results. Also, in all the results presented so far, we use the fathers' country of birth to define the country of origin when parents are born abroad in different countries. If we use the mothers' country of birth instead, results are very similar. If anything, the effect of trust in the country of origin appears even smaller in Australia (-0.328) but the difference is not significant.

5.3 Individual heterogeneity

This section analyses whether the differences in trust levels and in the transmission of trust between the United States and Australia vary across different segments of the population. In particular, we focus our attention on three dimensions: gender, age and number of foreign parents. Results for our main specification are reported in table IV. [16]

In the United States (first coefficient in all columns), men and women are equally affected by trust in their country of origin (0.650 and 0.501 respectively). Interestingly, this is not the case for second generation immigrants in Australia, where only men's trust is positively related to trust in the country of origin. As a result, while the difference in the impact of trust in the country of origin between the United States and Australia is negative but small for men (-0.095), it is very large for women (-0.498). This could suggest that in Australia, women adapt much faster to their environment.

Table IV— OLS Regressions - subsamples

	MALES	FEMALES	LESS THAN 45 YEARS OF AGE	45 YEARS OF AGE OR MORE	ONE PARENT BORN ABROAD	TWO PARENTS BORN ABROAD
Trust in the country of origin	0.650***	0.501***	0.504**	0.536***	0.682***	0.386**
	(0.190)	(0.168)	(0.215)	(0.167)	(0.174)	(0.189)
Australia X trust in the country of origin	-0.0947	-0.498**	-0.277	-0.181	-0.352	-0.222
	(0.230)	(0.218)	(0.242)	(0.272)	(0.223)	(0.240)
Country: 0=USA, 1=Australia	0.761***	0.572**	0.961**	-0.0917	0.424*	0.879***
	(0.255)	(0.233)	(0.423)	(0.598)	(0.251)	(0.253)
R-squared	0.116	0.134	0.106	0.144	0.117	0.135
Observations	4680	5274	5731	4062	6272	3658

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional controls are as in Table II, column 3.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

[16] Only the main coefficients of interest are reported but the complete sets of results from these regressions are available from the authors.

Since all the individuals in our sample are born in the United States or Australia, it may be expected that the older they get, the lower the influence of the characteristics inherited from their parents and thus from their country of origin. However, no major difference appears for any of the two countries. Independently from the age, trust in the country of origin increases individual trust and this effect is more pronounced in the United States.

Finally, both for Australia and the United States, the impact of the country of origin appears to be lower when the two parents are born abroad. This could be due to the fact that in families in which one parent is native, parents are more willing to transmit a foreign heritage, in the attempt to "compensate" for the constant exposure of their children to the culture of the native parent. Alternatively, in families in which the two parents are born abroad, two different cultures are transmitted when they are from different countries maybe lowering the effect of a particular one. Table I shows that in Australia, when two parents are born abroad, they are more often from the same origin suggesting that the first explanation may prevail. In the United States however, they are more often from diverse heritage suggesting that the transmission is split between two foreign cultures.

Turning to the effect of the country dummy, the results suggest that unexplained differences between trust levels of immigrants to the United States and Australia are larger for individuals who are less that 45 years old and who have two parents born abroad. Since the differences in origins are controlled for, these high differences in trust could come from a higher acculturation to the host country for these subpopulations.

6. Individual trust and the environment in the host country

This section explores further how differences in the economic and social environment of the United States and Australia could explain the differentials in trust levels of immigrants and in its transmission from their country of origin. The results in the previous section have shown that US and Australian immigrants have very different levels of trust (but very close to natives in their host country) and have inherited very differently from their country of origin. Can the economic and social environment in the host country explain these differences? In particular, we analyse the effects of growth, unemployment, female labour force participation, population density, crime and perceived inequality.[17] Using the same specification as in Table II column 3, we add controls for these characteristics and an interaction term that capture the different effect for Australia. More precisely, we estimate whether temporal changes in these characteristics are related to changes in trust in both host countries.

Because changes in the economic and social environment may not affect trust immediately, we introduce these controls with different lags. Also, in order to smooth the evolution of these characteristics, we use 3-years moving averages. For all of the above mentioned characteristics, we tested 14 different variables: the current value and all the lags from the

[17] As explained in section 2, a number of other characteristics have been considered but could not be studied because the time variation was missing for Australia (e.g. religiosity, regulation, preference for redistribution, segregation, civicness).

first moving average (based on values from *t* to *t-2*) up to the thirteenth moving average (based on values from *t-12* to *t-14*). Table A5 presents the results obtained using the first moving average and table V presents the results obtained using the thirteenth moving average.

Table V — OLS Regressions

	3 YEAR MOVING AVERAGE - 13 YEAR LAG					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Trust in the country of origin	0.563***	0.560***	0.570***	0.565***	0.566***	0.576***
	(0.125)	(0.124)	(0.125)	(0.125)	(0.125)	(0.125)
Australia X trust in the country of origin	-0.285*	-0.282*	-0.292*	-0.287*	-0.288*	-0.298*
	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)
Country: 0=USA, 1=Australia	0.638***	0.599***	0.313	1.311***	-0.415	-0.223
	(0.176)	(0.193)	(0.475)	(0.343)	(0.539)	(0.567)
GDP growth	0.0152**					
	(0.00726)					
Australia X GDP growth	0.00488					
	(0.0111)					
Unemployment rate		-0.0276**				
		(0.0117)				
Australia X unemployment rate		0.0155				
		(0.0129)				
Population density			0.00486			
			(0.0128)			
Australia X population density			0.197*			
			(0.114)			
Crime rate				-0.0125		
				(0.0102)		
Australia X crime rate				-0.191**		
				(0.0759)		
Female labour force participation					-0.00294	
					(0.00576)	
Australia X female labour force participation					0.0198**	
					(0.00933)	
Perceived racial inequality						-2.552*
						(1.306)
Australia X perceived racial inequality						2.202*
						(1.320)
R-squared	0.120	0.120	0.120	0.120	0.120	0.120
Observations	9954	9954	9954	9954	9954	9954

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional controls are as in Table II, column 3.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

The first important result is that in all specifications, trust in the country of origin remains an important determinant of individual trust. This is in line with Ljunge (2011) for several European countries and confirms the strength of the cultural link between second generation immigrants and their countries of origin. More precisely, it remains stable and much larger in

the United States (between 5.6 and 5.8) than in Australia (the difference with the US varying between -2.8 and -3.0). This suggests that the environment in the host country does not explain why the intergenerational transmission of trust is more important in the United States. We further investigate this issue in the next section.

The second result to be noted is that the environment in the host country affects trust and this effect increases with several years delay. When looking at variables with 1 year lag (table A4), only a few significant relationships are detected for Australia (unemployment, density and female labour market participation)[18]. On the contrary, a number of significant and larger relationships appear when turning to characteristics lagged by 13 years (table V). In particular, trust has increased with past growth in both the United States and Australia. Trust has also increased over time with reductions in the past unemployment rate and the perceived level of racial inequality in the United States. In Australia, trust has also increased in conjunction with past reductions in crime and past increases in density and female labour force participation. The different lags of these variables show a consistent pattern across time with effects becoming larger with time and starting to become significant with around 10 years lag. These results are also consistent with the literature showing negative effects of criminality (Delhey and Newton, 2003) and inequality (Uslaner, 2002) on trust. Consistently with Leigh (2006), who studies the effect of objective inequality (Gini coefficients), we also find that perceived racial inequality, while affecting trust in the United States, has no effect in Australia. Interestingly, this measure of perceived racial inequality is also consistent with previous results in the literature showing that trust increases with one's perception of fairness of the political institutions.[19]

The third result is that the introduction of some of these past host country characteristics alters the effect of the host country dummy.[20] This can occur either because of differences in characteristics or because of differences in the effects of these characteristics between the United States and Australia. Here, the United States and Australia mainly differ in terms of density and crime rates; but because the direct coefficients for these characteristics are fairly small (respectively 0.00486 and 0.0125), they are not responsible for variations of the host country dummy. However, the effect of density, crime, inequality and female labour force participation differs significantly between the United States and Australia (the interaction coefficient is significant). Specifically, while crime has a more negative effect in Australia than in the United States, density, female labour force participation and inequality have more positive (or less negative) effects. As a result, the host country dummy mechanically increases in the first case and decreases in the second case. For example, if crime rates were 0 in the United States and Australia, the difference in trust between the two countries would be much higher (1.035). The coefficient on the host country dummy has increased (compared to

[18] The country characteristics' coefficients give the correlation between the evolution of these characteristics over time (in the period 2000-2010) and that of trust for the United States and Australia separately.

[19] Whether one thinks that "race is important to get ahead" is very related to whether individuals perceive institutions as fair (Rothstein and Stolle, 2008).

[20] Note that here, the interpretation of the country dummy is slightly different from before. It is the difference in average trust between the United States and Australia that corresponds to values of 0 for the host country characteristic included in the regression. For example, 0 growth in the US and Australia corresponds to a difference in trust levels of 0.638.

the case with no controls) because when reducing crime rates to 0, trust increases especially in Australia, thus widening the gap between the two countries.

One interesting exercise is to calculate the values that these variables should take to annihilate completely the difference in trust between the two countries. Since inequality has a negative effect in the United States only, we expect a reduction in inequality to increase trust in the United States and thus to reduce the difference in trust between the two countries. This difference would be totally cancelled out if only 15% of second generation immigrants in the United States thought that race matters to get ahead (instead of 40%).[21] Similarly, since growth has a positive effect in the United States, higher values of growth than those actually observed would increase trust and reduce the difference in trust between the two countries. However, given that the coefficient related to growth is very small, it would require a 46% growth rate in order to increase trust in the United States up to the Australian level. The negative effect of unemployment is also too small to meaningfully foster trust in the United States. Last, reductions in crime rate and increases in density or female labour force participation would increase trust in Australia, thus widening the gap in trust between the two countries.[22]

All in all, while the low level of crime seems to be relevant to account for the high level of trust in Australia, the perception of racial inequality could contribute to lower levels of trust in the United States. However, these features do not explain the differences in cultural transmission of trust between the United States and Australia.

7. Differences in transmission between the US and Australia

We showed in section 5 that our results are robust to the inclusion of a large set of individual and country controls, alternative samples and specifications. The differences observed in the transmission of trust to second generation immigrants in the United States and Australia could still conceal an effect of endogenous migration. This could either happen if countries of origin differ in terms of trust by host country or if immigrants differ in terms of trust by host countries.

7.1 Endogenous migration at the country level?

It is possible that immigrants from certain countries select into a specific destination so that their trust and that in their host country and country of origin would be spuriously correlated. Specifically, if trusting countries tend to migrate to trusting countries, the effects of culture and environment could not be disentangled. The descriptive evidence presented in Figure 1, showing that second generation immigrants exhibit a fair amount of variation in their trust levels by origin in both countries of residence suggests that the issue of selection may not be too relevant. In order to address this aspect more precisely, we tested whether countries

[21] This is the value of inequality x such that: $-0.223 + 2.552x + (-2.552+2.202)*0.46=0$.

[22] An increase in the Australian crime rate from 4% to 7% would decrease trust in Australia such that it equals trust in the United States.

whose emigrants moved to the United States differ from those whose migrants moved to Australia in terms of trust. We regressed the average level of trust in countries of origin on the average trust in the host country (either the United States, Australia or both). Results are reported in Table A6. The coefficients are insignificant, suggesting that the average level of trust in the countries of origin does not differ across the individuals that migrate to the United States and those which migrate to Australia. Whether we use the average trust level in the first wave of the WVS or the average trust level over all waves available, results suggest no correlation between trust of migrating and immigrating countries.

7.1 Endogenous migration at the individual level?

It is also possible that the endogenous migration happens at the individual level: for example, if immigrants who have levels of trust that are close to their country of origin migrate to the United States while those who are more detached migrate to Australia. This would explain why we find higher relationships between trust of immigrants and trust in the country of origin in the United States than in Australia. Also, immigrants with initially higher levels of trust could migrate to Australia while those with lower levels of trust migrate to the United States, creating a spurious correlation between individual trust and the host country dummy. To test this hypothesis, we reproduce Table II for first generation immigrants (Table A7).

Results first show that the effect of trust in the country of origin is similar between the United States and Australia. As soon as individual controls are added to the model (specification 2), the interaction term between trust in the country of origin and Australia becomes not significant while the main effect of origins remain. It even becomes really small in magnitude in our baseline specification 3. This suggests that people who migrate to the United States versus Australia are not initially closer in terms of trust to their country of origin: they carry over the same amount of trust from their country of origin. The higher effect detected for the United States on second generation immigrants thus actually suggests a larger intergenerational transmission of trust in the United States.

Secondly, the effect of the host country dummy is much smaller and becomes insignificant as controls are added. This shows that first generation immigrants do not exhibit unexplained differences in trust by host country. This suggests that our host country dummy actually captures the acculturation process which takes time and appears significant for second generations only.[23]

8. Conclusions

The economic literature includes several theoretical and empirical contributions showing important positive impacts of trust on several economic outcomes. In this paper, we expand

[23] This test is obviously imperfect since the sample of first generations is not the parents of the second generations. They are thus from different countries and immigration waves. This could explain the lower main impact of trust in the country of origin. But it is useful to test differences between host countries (that appear in the interaction term and the host country dummy) at 2 different immigration time.

our knowledge on the origins of trust. In particular, we analyse the impact of cultural transmission and of the environment on trust. We disentangle the effects of the different factors by focusing on second generation immigrants who live in two different countries, the United States and Australia.

Our results clearly indicate that both the country of origin and the host country matters. Specifically, cultural transmission is particularly important in explaining trust levels in the United States, although a positive relation between trust in the country of origin and individual trust of second generation immigrants can also be detected in Australia. Also, large differences appear between the trust of second generation immigrants between the two host countries suggesting that the environment in the host country matters as well. These results are robust to including a large set of controls (individual, country of origin and regional characteristics in the host country), different samples and econometric specification.

Interestingly, differences in levels and in the transmission of trust across generations between the United States and Australia are not homogenous in the population. In particular, in Australia, women's trust is not affected by trust in their country of origin. In contrast, in the United States, women's trust is as affected by their origin as that of men. Also, the transmission of this foreign heritage appears particularly strong when only one parent is born abroad. The differences in trust levels of immigrants between the two host countries appear particularly large for individuals under 45 years old and with two parents born abroad suggesting a stronger influence of the host country for them.

We provide further insight on factors that could contribute to the differences in trust levels observed between the United States and Australia by analyzing how economic and social conditions of the host country are related to trust. While the low level of crime seems to account for the high level of trust in Australia, the perception of racial inequality could contribute to lower levels of trust in the United States. In both cases, economic conditions appear to have a minor effect on trust.

To expand our understanding of the differences in the transmission process of trust between the United States and Australia, we reproduce our main analysis for first generation of immigrants. Results show that, for them, the influence of the country of origin is similar across the United States and Australia, suggesting that immigrants arrive in their host country carrying the same amount from their country of origin. Furthermore, they do not show significantly different levels of trust by host country. This strengthens our results that the transmission process is larger in the United States and that trust levels of immigrants grow different with time as a result of an acculturation process.

The evidence provided in this paper showing that culture seems to matter more in the United States than in Australia opens interesting perspective for future research. In particular, the question of whether our findings are also valid for other behavioural traits would provide a better understanding of the how migrants build a mixed identity between the host country and the country of origin.

Appendix 1

Table A1 – Countries of origin in each dataset.

Country	GSS	HILDA	Total
AUSTRIA	45	51	96
CANADA	129	54	183
CROATIA	0	83	83
CZECH REPUBLIC	74	0	74
EGYPT	0	42	42
FORMER YUGOSLAVIA	0	169	169
GERMANY	262	382	644
GREECE	0	243	243
HUNGARY	43	108	151
INDIA	0	126	126
IRELAND	145	317	462
ITALY	338	695	1,033
MALAYSIA	0	62	62
MALTA	0	144	144
MEXICO	262	0	262
NETHERLANDS	0	500	500
NEW ZEALAND	0	549	549
NORWAY	54	0	54
PHILIPPINES	0	74	74
POLAND	167	122	289
PUERTO RICO	79	0	79
RUSSIA	86	0	86
SOUTH AFRICA	0	85	85
SPAIN	24	0	24
SWEDEN	48	0	48
UNITED KINGDOM	222	4,055	4,277
USA	0	104	104
VIETNAM	0	55	55
Total	1,954	8,020	9,974

Table A2 – OLS regressions

	(1)	(2)	(3)	(4)
Trust in the country of origin	0.709***	0.411***	0.568***	0.568***
	(0.0939)	(0.107)	(0.125)	(0.125)
Australia X trust in the country of origin	-0.540***	-0.167	-0.290*	-0.290*
	(0.125)	(0.136)	(0.158)	(0.158)
Country: 0=USA, 1=Australia	0.599***	0.728***	0.652***	0.476*
	(0.0921)	(0.133)	(0.172)	(0.253)
time== 1.0000	0.101***	0.159***	0.168***	0.200***
	(0.0272)	(0.0293)	(0.0293)	(0.0445)
time== 2.0000	0.0593**	0.0876***	0.0931***	0.113***
	(0.0285)	(0.0285)	(0.0285)	(0.0376)
time== 4.0000	-0.168***	-0.165***	-0.165***	-0.161***
	(0.0111)	(0.0111)	(0.0111)	(0.0122)
Age of respondent	0.0107***	0.00889**	0.00945**	0.00951**
	(0.00334)	(0.00385)	(0.00386)	(0.00387)
Age squared	-0.0000823***	-0.0000408	-0.0000448	-0.0000457
	(0.0000314)	(0.0000370)	(0.0000371)	(0.0000372)
Australia X age of respondent	-0.00701*	-0.0106**	-0.0108**	-0.0109**
	(0.00377)	(0.00453)	(0.00455)	(0.00455)
Australia X age squared	0.0000968***	0.000117***	0.000117***	0.000118***
	(0.0000362)	(0.0000444)	(0.0000445)	(0.0000445)
Respondents sex		0.0333	0.0337	0.0343
		(0.0226)	(0.0226)	(0.0226)
High school		0.0728***	0.0700***	0.0693***
		(0.0264)	(0.0265)	(0.0265)
Junior college		0.171***	0.172***	0.170***
		(0.0561)	(0.0564)	(0.0564)
Bachelor		0.257***	0.258***	0.258***
		(0.0395)	(0.0395)	(0.0395)
Graduate		0.272***	0.266***	0.266***
		(0.0474)	(0.0475)	(0.0475)
Widowed		-0.0254	-0.0243	-0.0244
		(0.0354)	(0.0355)	(0.0355)
Divorced		-0.0535	-0.0507	-0.0505
		(0.0352)	(0.0353)	(0.0353)
Separated		-0.0208	-0.0195	-0.0183
		(0.0695)	(0.0695)	(0.0696)
Never married		0.0326	0.0321	0.0306
		(0.0347)	(0.0345)	(0.0346)
Employed part-time		0.0585	0.0572	0.0563
		(0.0410)	(0.0408)	(0.0408)
Unemployed		0.00970	0.00603	0.00651
		(0.0473)	(0.0474)	(0.0474)
Not in the labour force		-0.0799***	-0.0802***	-0.0803***
		(0.0300)	(0.0300)	(0.0300)
Middle Atlantic		-0.0131	-0.0106	-0.239
		(0.0420)	(0.0422)	(0.218)
East North Central		0.0798*	0.0879**	0.132**

	(0.0428)	(0.0438)	(0.0625)
West North Central	0.136**	0.146**	0.376*
	(0.0590)	(0.0606)	(0.214)
South Atlantic	0.00825	0.00510	0.0546
	(0.0465)	(0.0467)	(0.0732)
East South Central	-0.0330	-0.0220	0.142
	(0.125)	(0.130)	(0.195)
West South Central	-0.0233	-0.0315	0.159
	(0.0515)	(0.0551)	(0.178)
Mountain	0.0855	0.0830	0.341
	(0.0582)	(0.0600)	(0.237)
Pacific	0.0570	0.0548	0.277
	(0.0436)	(0.0454)	(0.202)
NSW	0.00684	0.00769	0.498
	(0.0448)	(0.0451)	(0.427)
VIC	0.0590	0.0585	0.499
	(0.0442)	(0.0446)	(0.384)
QLD	-0.0341	-0.0332	0.476
	(0.0457)	(0.0461)	(0.446)
SA	-0.0208	-0.0199	0.495
	(0.0480)	(0.0484)	(0.448)
WA	0.0185	0.0193	0.527
	(0.0463)	(0.0467)	(0.451)
TAS	-0.0167	-0.0168	0.483
	(0.0655)	(0.0660)	(0.436)
NT	0.254***	0.248***	0.759*
	(0.0825)	(0.0823)	(0.452)
Parents are not American/Australian and from different countries	-0.00899	-0.00763	-0.00858
	(0.0241)	(0.0244)	(0.0245)
Parents are not American/Australian and from same country	-0.0504	-0.0486	-0.0447
	(0.0398)	(0.0401)	(0.0402)
Number of children	-0.00156	-0.00314	-0.00338
	(0.00681)	(0.00682)	(0.00682)
Other urban	-0.00304	-0.00162	-0.00226
	(0.0252)	(0.0251)	(0.0251)
Bounded locality	0.0146	0.0195	0.0215
	(0.0403)	(0.0405)	(0.0406)
Rural area	0.0716*	0.0774*	0.0780*
	(0.0418)	(0.0419)	(0.0418)
Australia X respondents sex	-0.0423	-0.0432	-0.0436
	(0.0273)	(0.0272)	(0.0272)
Australia X high school	-0.0140	-0.0110	-0.00996
	(0.0334)	(0.0335)	(0.0336)
Australia X junior college	-0.164***	-0.164***	-0.163***
	(0.0595)	(0.0597)	(0.0598)
Australia X bachelor	-0.138***	-0.138***	-0.138***
	(0.0463)	(0.0463)	(0.0463)
Australia X graduate	-0.114**	-0.108*	-0.107*
	(0.0550)	(0.0550)	(0.0551)

Australia X widowed	0.00896	0.00828	0.00826
	(0.0493)	(0.0494)	(0.0495)
Australia X divorced	-0.00956	-0.0136	-0.0137
	(0.0458)	(0.0459)	(0.0459)
Australia X separated	0.0377	0.0349	0.0336
	(0.0789)	(0.0789)	(0.0789)
Australia X never married	-0.0578	-0.0575	-0.0561
	(0.0405)	(0.0404)	(0.0405)
Australia X employed part-time	-0.0427	-0.0413	-0.0403
	(0.0446)	(0.0444)	(0.0444)
Australia X unemployed	-0.161***	-0.158***	-0.159***
	(0.0571)	(0.0573)	(0.0573)
Australia X not in the labour force	0.0543	0.0543	0.0546
	(0.0358)	(0.0358)	(0.0358)
Australia X parents are not American/Australian and from different	-0.0385	-0.0364	-0.0351
	(0.0351)	(0.0355)	(0.0356)
Australia X parents are not American/Australian and from same country	0.0602	0.0613	0.0576
	(0.0434)	(0.0437)	(0.0438)
Australia X number of children	0.000327	0.00188	0.00217
	(0.00925)	(0.00926)	(0.00927)
Australia X other urban	-0.0404	-0.0424	-0.0416
	(0.0309)	(0.0308)	(0.0308)
Australia X bounded locality	-0.0584	-0.0639	-0.0659
	(0.0616)	(0.0619)	(0.0619)
Australia X rural area	-0.0549	-0.0608	-0.0614
	(0.0465)	(0.0466)	(0.0465)
GDP growth in country of origin		-0.00121	-0.00123
		(0.00322)	(0.00322)
GDP per capita in country of origin		-0.0124***	-0.0124***
		(0.00420)	(0.00420)
Unemployment rate in country of origin		0.00103	0.00101
		(0.00380)	(0.00380)
Democracy level in country of origin		-0.0163	-0.0161
		(0.0133)	(0.0133)
Australia X GDP growth in country of origin		-0.00152	-0.00151
		(0.00559)	(0.00559)
Australia X GDP capita in country of origin		0.00796	0.00801
		(0.00489)	(0.00489)
Australia X unemployment rate in country of origin		-0.00274	-0.00271
		(0.00535)	(0.00536)
Australia X democracy level in country of origin		0.00679	0.00662
		(0.0165)	(0.0165)
GDP growth in region of origin			-0.000719
			(0.00482)
Unemployment rate in region of origin			-0.00873
			(0.0114)
Population density in region of origin			0.00343
			(0.00309)
Crime rate in region of origin			-0.0000722

					(0.00750)
Constant		-0.193**	-0.273**	-0.111	-0.409
		(0.0776)	(0.109)	(0.138)	(0.300)
R-squared	0.084	0.118		0.120	0.120
Observations	9965	9954		9954	9954
Time fixed effects		Yes	Yes	Yes	Yes
Age and age squared		Yes	Yes	Yes	Yes
Other individual controls		No	Yes	Yes	Yes
Country of origin characteristics		No	No	Yes	Yes
Region of residence characteristics		No	No	No	Yes

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional individual controls are: gender, education levels, marital status, number of children, labour force status, urban/rural residence, region of residence, an indicator for whether both parents are immigrants from different countries and an indicator for whether they are from the same country. Country of origin characteristics are GDP growth, GDP per capita, unemployment rate and democracy level. Region of residence characteristics are GDP growth, unemployment rate, population density, crime rate (these are time variant). All the controls are also interacted with an indicator for Australia.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

Table A3 – Robustness checks

	OLS regression	**Probit regression (marginal effects)**	**Random effects panel regression**	**OLS excluding repeated observations**
Trust in the country of origin	0.568***	0.649***	0.568***	0.568***
	(0.125)	(0.139)	(0.125)	(0.143)
Australia X trust in the country of origin	-0.290*	-0.356**	-0.327**	-0.400**
	(0.158)	(0.172)	(0.157)	(0.161)
Country: 0=USA, 1=Australia	0.652***	0.652***	0.653***	0.808***
	(0.172)	(0.0858)	(0.173)	(0.152)
R-squared	0.120			0.106
Observations	9954	9954	9954	4731

Table A4 – Additional robustness checks

	Average WVS value	**Trust in maternal country of origin**
Measure of trust in country of origin	0.573***	0.559***
	(0.145)	(0.124)
Australia X measure of trust in the country of origin	-0.296*	-0.328**
	(0.178)	(0.154)
Country: 0=USA, 1=Australia	0.742***	0.592***
	(0.174)	(0.171)
R-squared	0.119	0.119
Observations	9954	10019

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. In the last column, standard errors are clustered at the country of origin level. The additional controls are as in Table II, column 3.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

Table A5 — OLS Regressions

	3 YEAR MOVING AVERAGE - 1 YEAR LAG					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Trust in the country of origin	0.570***	0.568***	0.568***	0.568***	0.566***	0.572***
	(0.125)	(0.125)	(0.125)	(0.125)	(0.125)	(0.125)
Australia X trust in the country of origin	-0.292*	-0.290*	-0.290*	-0.290*	-0.288*	-0.294*
	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)
Country: 0=USA, 1=Australia	0.634***	0.852***	0.338	0.761***	-0.474	0.528
	(0.177)	(0.201)	(0.459)	(0.203)	(0.579)	(0.322)
GDP growth	-0.0118					
	(0.00916)					
Australia X GDP growth	0.00778					
	(0.0142)					
Unemployment rate		-0.00139				
		(0.0103)				
Australia X unemployment rate		-0.0412*				
		(0.0212)				
Population density			0.000838			
			(0.0119)			
Australia X population density			0.124*			
			(0.0720)			
Crime rate				0.000265		
				(0.0165)		
Australia X crime rate				-0.0425		
				(0.0285)		
Female labour force participation					-0.00550	
					(0.00699)	
Australia X female labour force participation					0.0193**	
					(0.00939)	
Perceived racial inequality						-0.681
						(0.786)
Australia X perceived racial inequality						0.278
						(0.814)
R-squared	0.120	0.120	0.120	0.120	0.120	0.120
Observations	9954	9954	9954	9954	9954	9954

Levels of significance: *: 10% **: 5% ***: 1%
Sample: second generation immigrants residing in the United States or in Australia.
Note: standard errors (clustered at the individual level) in parentheses. The additional controls are as in Table II, column 3.
Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

Table A6 – OLS regressions, relation between trust in countries of origin and in countries of residence

	Dependent variable			
	Trust in the country of origin, 1st WVS value		Trust in the country of origin, WVS average	
	Coeff.	**t-statistic**	**Coeff.**	**t-statistic**
Trust in the country of residence, 1st WVS value	-0.4845	(-0.81)	-0.5923	(-0.97)
Number of observations	*36*	*36*	*36*	*36*
Trust in the country of residence, WVS average	-0.7753	(-0.81)	-0.9478	(-0.97)
Number of observations	*36*	*36*	*36*	*36*

Table A7 — OLS Regressions, First generation

	(1)	(2)	(3)	(4)
Trust in the country of origin	0.803***	0.495***	0.302*	0.299*
	(0.103)	(0.115)	(0.156)	(0.156)
Australia X trust in the country of origin	-0.467***	-0.124	0.0466	0.0489
	(0.124)	(0.134)	(0.178)	(0.178)
Country: 0=USA, 1=Australia	0.452***	0.396**	0.300	0.162
	(0.115)	(0.168)	(0.198)	(0.273)
GDP growth in country of origin			-0.00985	-0.00999
			(0.00742)	(0.00740)
GDP per capita in country of origin			0.00166	0.00171
			(0.00306)	(0.00307)
Unemployment rate in country of origin			-0.00389	-0.00365
			(0.00446)	(0.00445)
Democracy level in country of origin			-0.00636	-0.00737
			(0.0180)	(0.0179)
Australia X GDP growth in country of origin			0.00429	0.00443
			(0.00844)	(0.00842)
Australia X GDP capita in country of origin			-0.00258	-0.00261
			(0.00381)	(0.00381)
Australia X unemployment rate in country of origin			0.00238	0.00218
			(0.00556)	(0.00555)
Australia X democracy level in country of origin			0.00135	0.00238
			(0.0195)	(0.0195)
R-squared	0.098	0.136	0.138	0.139
Observations	8644	8636	8591	8591
Time fixed effects	Yes	Yes	Yes	Yes
Age and age squared	Yes	Yes	Yes	Yes
Other individual controls	No	Yes	Yes	Yes
Country of origin characteristics	No	No	Yes	Yes
Region of residence characteristics	No	No	No	Yes

Levels of significance: *: 10% **: 5% ***: 1%. Sample: first generation immigrants residing in the United States or in Australia. Note: standard errors (clustered at the individual level) in parentheses. The additional controls are as in Table II. Source: HILDA 2005, 2006, 2008, 2010 and GSS 1978-2010.

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