Cultural Assimilation and Earnings Penalties among Immigrants

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Abstract

This paper investigates how exposure to collectivist versus individualistic cultural values shapes earnings penalties in the labour market. Leveraging rich administrative data on immigrant households and by exploiting the variation in cultural exposure among immigrant siblings, I analyze how differential retention of collectivist cultural norms, proxied by age at migration, influences earning penalties in the labour market. I also explore potential cultural drivers of the earnings gap with a focus on tenets such as occupational prestige, social value, creative component, and the routinization of tasks in jobs. The findings reveal that exposure to collectivist cultural environments *(i)* leads to significant earnings penalties, with individuals earning less than their predicted wages *(ii)* fosters a preference for occupations with greater routinization of tasks *(iii)* individualistic cultural origins mitigate these gaps by enhancing the alignment between skills and wages.

1 Introduction

Cultural traits are known to exhibit remarkable persistence over time (Nunn, 2012; Spolaore and Wacziarg, 2013), with several studies documenting their enduring influence across generations (Fernandez, 2007; Fernández and Fogli, 2009; Algan and Cahuc, 2010). A growing body of literature has also highlighted the role of culture and norms in influencing a wide range of economic outcomes and decision-making at the microeconomic level (Fernandez, 2007). There remains great cultural diversity among the world's populace, with a multitude of values, beliefs and aspirations (Inglehart *et al.*, 2010). Cultural norms are entrenched as a way of seeking a social identity, and shape one's beliefs and aspirations (Shayo, 2020) which further impact choices.

In this paper, I study whether variation in cultural assimilation generates earnings penalties in the labour market, and if they can they be explained by cultural drivers through the lens of collectivist norms.

The theoretical foundation that grounds my research relies upon two popular strands of the literature. First, I use the epidemiological approach (Fernandez, 2007) which posits the following: cultural beliefs vary across immigrant groups in a systematic fashion reflecting culture in the country of origin, and individuals who live in the same country face similar economic and formal institutional environments. The second theoretical underpinning is based on the mover design, where Chetty and Hendren (2018) compare biological siblings who share similar abilities (Björklund *et al.*, 2006; Smith-Woolley *et al.*, 2018) and home environments but move at different ages. They find that neighborhoods in which children grow up shape their earnings, college attendance rates, fertility and marriage patterns. I extend the idea of varying economic wealth within neighborhoods to a cultural narrative, that is, I envisage countries as neighborhoods with a varying cultural diversity. Taken together, the epidemiological approach implies that immigrant children assimilate the culture of both, the origin and the host country commensurate with the time spent in each. The mover design suggests, those that immigrate (that is, move to a different cultural neighbourhood) are differentially exposed to the culture in their country of origin.

I study the outcomes of biological siblings who are similar in terms of abilities and home environments, but differ by the relative time they spend assimilating the culture in their country of origin. I study their occupational outcomes at age 30, as it is likely that choices made after the age of 30 are influenced by other rationales, and not early cultural experiences. Being older while migrating implies greater exposure to (or retention of) the origin country's culture. I use this variation in exposure to the culture of the country of origin among younger and older siblings, to understand whether country-specific differences in cultural beliefs foster dissimilar preferences in economic outcomes.

A prime focus of this study is variation in cultural assimilation, and delineating the influence of culture as a possible determinant of economic phenomena is challenging. This stems from the broad notion of culture, it enters economic discourse through channels that are vague and ubiquitous. This makes it difficult to measure culture in a tractable manner, and design testable hypotheses that provide insight into how cultural exposure affects outcomes (Greif, 1994, 2006). In recent years, however, better techniques and more data have made it possible to identify systematic differences in people's preferences and beliefs and to relate them to various measures of cultural legacy (Guiso *et al.*, 2006). As an example, consider the World Values Survey (Haerpfer *et al.*, 2022) (henceforth abbreviated as WVS), one of the world's largest cross-national survey programs which explores the values, beliefs, and attitudes that shape societies across the globe from over 120 countries. This enables the construction of country-specific indices that capture the variation in cultural norms. In the analysis, immigrants are assigned the individualism index value of their country of origin.

In order to construct a country-specific index that captures the individualism-collectivism dimension, I closely follow the work of Inglehart *et al.* (2004, 2010) which has been influential in political science and sociology. I extract the top two factors from an underlying set of answers to WVS questions that emphasize self-expression by means of factor analysis. I complement this measure with the dimensions of culture as measured by Hofstede *et al.* (2010). Taken together, these capture country-specific variation in individualism. Immigrants are assigned the index of individualism associated with their country of origin. In summary, I leverage rich administrative data on immigrant households to compare immigrant siblings, who share similar cognitive capacities and

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home environments, but vary in their relative exposure to the origin country's cultural dimension of individualism. I exploit the variation in exposure to the origin country's culture.

The analysis primarily focuses on the individualism-collectivism divide. First, I explore whether exposure to collectivist cultural norms can generate earnings penalties in the labour market. I find robust empirical evidence that shows exposure to collectivist cultures is associated with an earnings penalty where immigrants earn less than predicted income, and individualistic origins ameliorate some of these mismatches. Further, I explore potential drivers of these gaps from the lens of collectivist cultural assimilation. Collectivist cultural environments often emphasize societal expectations over personal interests or goals. This prioritization may lead individuals to select occupations that do not align with their own skills or preferences, potentially resulting in economic inefficiencies, such as earning less than their predicted wages.

I test the hypothesis that, siblings who are more exposed to a collectivist culture would foster preferences for occupations that are conventionally perceived as prestigious, or have higher social values. Collectivism attributes a higher importance to family, kinship and the needs of the society, while individualism prioritizes self-interests. Therefore, it seems plausible that individuals exposed to collectivist cultures are more reliant on parental advice and societal perceptions such as perceived occupational prestige and the social value of occupations, over personal interest.[1] I also explore two other cultural tenets, namely, creative occupations and the routinization of jobs. I hypothesize that exposure to collectivist norms may discourage individuals from pursuing careers in the creative or cultural sectors, as such occupations often entail non-traditional trajectories, high autonomy, and self-expression, traits more closely aligned with individualistic values. However, my empirical findings provide no support for these hypotheses, as the results indicate null effects. Lastly, I test the hypothesis that exposure to collectivist cultural norms encourages the uptake of jobs where tasks are routinized as routine occupations, characterized by structured workflows, repetitive tasks, and adherence to authority, align

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[1]Data on occupational prestige is obtained from Newlands and Lutz (2024), who present new indices of occupational prestige and occupational social value for 576 occupational titles aligned with the ILO International Standard Classification of Occupations *(ISCO-08)*, and I subsequently match these to the Standard för svensk yrkesklassificering (*SSYK*), the Swedish system of classifying occupations. This allows me to match occupations with an associated prestige score.

closely with collectivist cultural norms, which value conformity, hierarchy, and societal order.

My findings can be summarized as follows: *(i)* exposure to collectivist cultural environments leads to significant earnings penalties, with individuals earning less than their predicted wages *(ii)* individualistic cultural origins mitigate these earnings penalties by enhancing the alignment between skills and wages *(iii)* collectivist culture fosters a preference for occupations with greater routinization of tasks.

The contribution of this paper to the related literature is threefold. **First**, it relates to a strand of economic literature that studies cultural assimilation and the labor market outcomes of immigrants. Cultural traits are known to exhibit remarkable persistence over time (Nunn, 2012; Spolaore and Wacziarg, 2013), with several studies documenting their enduring influence across generations (Fernandez, 2007; Fernández and Fogli, 2009; Algan and Cahuc, 2010). Recent research has examined how culture shapes decision-making at the microeconomic level. Building on foundational models in evolutionary anthropology, these studies suggest that under general conditions, individuals often rely on social learning (culture) when making decisions (Bisin and Verdier, 2000, 2001; Hauk and Saez-Marti, 2002; Francois and Zabojnik, 2005; Tabellini, 2008; Greif and Tadelis, 2010; Bisin and Verdier, 2017; Doepke and Zilibotti, 2017). However, cultural regimes can also shift significantly over time. Notable examples include the rapid demise of Communist Party rule in Eastern Europe, the end of apartheid in South Africa, the abandonment of practices such as female genital cutting in Africa or the use of honorific pronouns in Europe (Belloc and Bowles, 2013). This paper contributes to this literature by studying how cultural assimilation influences occupational outcomes and preferences among immigrants. Dustmann (2003) highlight how cultural differences affect wage gaps and employment opportunities, while Åslund *et al.* (2012) document that age at migration significantly affects social integration, with older migrants being less likely to live close to, work with, or marry natives.

Second, I contribute to the literature on the individualism-collectivism dimension of culture. This dimension has been identified as a key cultural factor influencing long-term economic development (Gorodnichenko and Roland, 2011, 2012, 2017). Individualism

and collectivism have been shown to shape various economic behaviors, including income redistribution (Binder, 2019; Hammar, 2016), trade patterns (Zizzo and Oswald, 2017), working hours (Tatliyer and Gur, 2022), and human capital formation (Ek, 2024). Moreover, the divide between these cultural dimensions is considered one of the most important cross-country distinctions in cultural psychology (Heine, 2020). To the best of my knowledge, this paper is the first to causally investigate the relationship between collectivist exposure and occupational preferences. Other related research includes studies exploring theoretical links between cultural dimensions and economic outcomes (Ahuja *et al.*, 2015) and empirical analyses linking individualism to long-run economic growth (Ball, 2001; Hofstede *et al.*, 2010; Schwartz, 1994).

Third, I explore the role of culture in generating penalties in the labor market. Cultural retention can lead to misalignment between skills and wages, particularly among migrants exposed to collectivist values for longer durations. This analysis builds on a growing body of literature investigating the labor market integration of immigrants and the mechanisms through which culture mediates economic outcomes. (Bisin and Verdier, 2011) show that cultural transmission influences the intergenerational mobility of immigrants, while Giuliano *et al.* (2013) explore the impact of cultural persistence on economic outcomes. My findings contribute to this literature by highlighting how cultural values impact occupational sorting, skill-to-wage alignment, and labor market mismatches. I also explore potential drivers of such earnings penalties from the perspective of cultural assimilation, with a focus on occupational prestige, the social value of jobs, routinization of tasks (following Ek (2024))and the creative component of jobs. To the best of my knowledge, this is the first paper that studies the association between the above-mentioned tenets in influencing the observed earnings gap.

The remainder of this paper is organized as follows. Section 2 summarizes the data sources, discusses the sample restrictions, and provides details on the outcome and explanatory variables. Section 3 outlines the empirical strategy implemented in the study and presents the estimating equations. The results of the analysis are detailed in Section 4, followed by robustness checks and supplementary analyses in Section 5. Finally, Section 6 concludes with a discussion of the findings and their broader implications.

2 Data Sources and Sample Restrictions

2.1 Population-wide data

This paper uses administrative individual-level data primarily sourced from Swedish administrative register sources collected by Statistics Sweden (Statistiska centralbyrån).

The population register includes data on date (and country) of birth and and migration. In the sample, I include immigrants who have migrated not more than once prior to moving in Sweden, and I further limit the sample to siblings that migrate from the same country and were less than 18 when migrating.

The Educational Register, which includes data on higher education enrollment, course completion, degree completion, and financial aid forms the basis for educational qualifications.

In order to identify family linkages, I use the Multigenerational Register, which identifies the parents of all individuals in the population since 1961. This allows me to identify biological sibling pairs.

I observe summary measures of an individual's total earnings and parental leave from employment each year from the Longitudinal Integration Database (LISA). This also forms the primary basis for data on the demographic characteristics of individuals such as sex, educational qualifications (following the SUN classification), industry (following the SNI structure) and the municipality of residence.

The primary occupational and wage data source is the Structural Wage Statistics supplemented with LISA, which surveys all public sector employees and a sample of firms in the private sector that accounts for about half of private sector employees each year. This allows me to understand the sector of employment following the SSYK standard for Swedish occupational classification, which is a system for grouping individuals' occupations or tasks. I match this to ILO's ISCO classification.

2.2 Collectivist cultural norms

Collectivist cultures value the needs of a group or a community over the individual, and attribute much importance to kinship, family and community. Such societies prioritize the goals of their in-groups and shape their behavior primarily on the basis of in-group norms (see Triandis (2001) for a review on how collectivist and individualist cultural norms affect a variety of life-cycle outcomes). Conversely, individualistic cultures value personal preferences and attitudes over the norms of their in-groups. In the analysis, immigrants are assigned the individualism index value of their country of origin.

In order to measure country-specific individualism, I primarily use the dimensions of cultural individualism from Hofstede *et al.* (2010) for 76 countries. Please refer to Figure 2 for a map that descriptively illustrates the extent of individualism and collectivism across the world.[2]

To complement this measure, I also construct a country-specific index of cultural norms that indicate the extent of collectivism prevalent in the region. I closely follow the work of Inglehart *et al.* (2004, 2010) which has been very influential in political science and sociology in constructing the first index, where I extract the top two factors from an underlying set of answers to WVS questions that emphasize self-expression by means of factor analysis, and use the first factor as a measure of collectivism. Figure 1 illustrates this in a scatterplot. In this measure, countries that are more individualistic are assigned lower scores, and data for 59 countries are used.[3] I primarily use this measure for

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[2]The index formula used by Hofstede *et al.* (2010) to calculate the individualism index (IDV) is given by:

$$IDV = 35(MeanQ4 - MeanQ1) + 35(MeanQ9 - MeanQ6) + Constant, \qquad (1)$$

where MeanQX is the mean score of question X in the following:

"In choosing an ideal job, how important would it be for you to:

   (1) have sufficient time for your personal or home life;

   (4) have security of employment;

   (6) do work that is interesting;

   (9) have a job respected by your family and friends."

These questions are ranked on a 5-point scale, ranging from 1, *"of utmost importance,"* to 5, *"of very little or no importance."*

[3]In order to create the index of individualism/collectivism, the following questions are chosen. I apply a standard dimension reductionality method, factor analysis, on an underlying set of answers to WVS questions that underscore self expression. The questions indicate appropriately scaled measures of the following: *Happiness; Trust; Trust in family, neighbourhood, and those known personally; Importance*

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robustness checks, as this measure allows for the inclusion of a smaller set of countries.

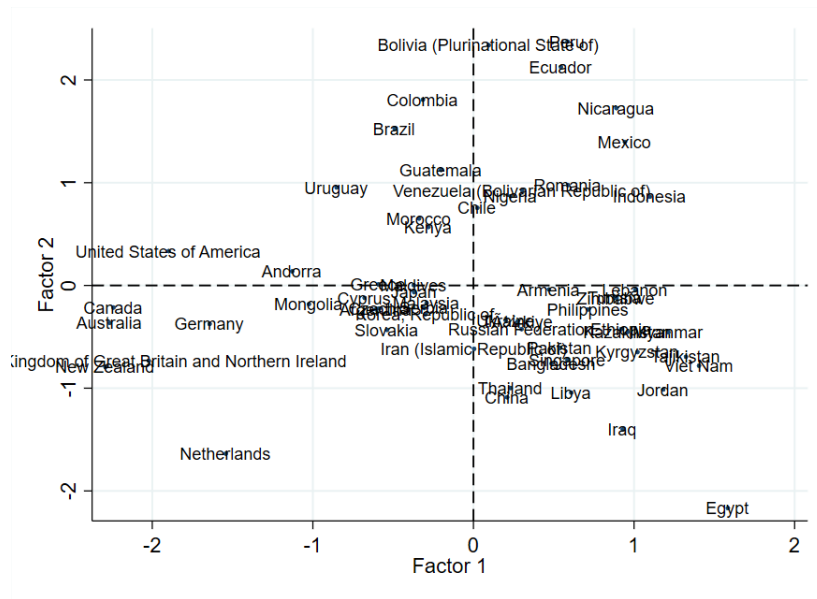Figure 1: The scatterplot displays the top two factors derived from World Values Survey (WVS) questions on self-expression. Countries with similar scores cluster together, reflecting comparable cultural traits. Individualistic countries, such as New Zealand, Australia, and Canada, exhibit lower scores, while collectivist countries, like Iraq, Vietnam, and Egypt, show higher scores.
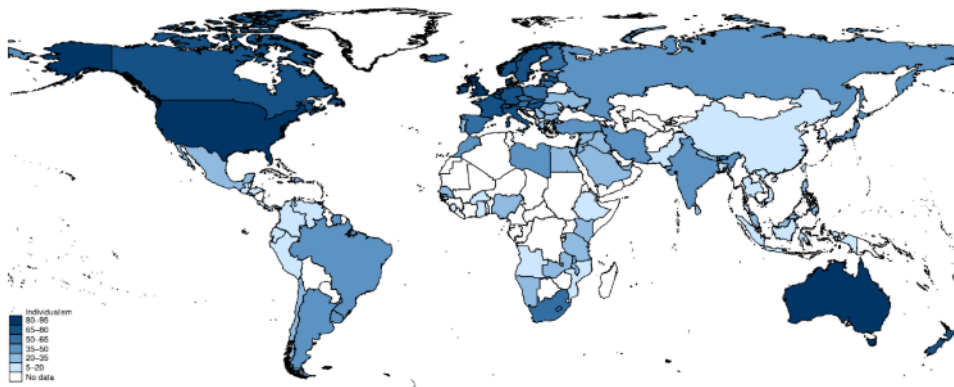

Figure 2: Source: Hofstede *et al.* (2010)

2.2.1 Occupational prestige and the Social Value of Occupations

Data on occupational prestige is obtained from Newlands and Lutz (2024), who present new indices of occupational prestige and occupational social value for 576 occupational titles aligned with the ILO International Standard Classification of Occupations *(ISCO-08)*, based on comprehensive evidence from $2,429$ respondents in the United Kingdom. Occupational prestige refers to the societal status or recognition attributed to a particular job, reflecting its perceived importance and reputation in the social hierarchy. In contrast, occupational social value evaluates the perceived utility or societal contribution of an occupation, emphasizing its role in advancing social welfare or addressing collective needs.

I calculate the average prestige score, and average social value of occupations for each 4-digit classification within the *ISCO-08* system, and subsequently match these to the Standard för svensk yrkesklassificering *SSYK*, which is the Swedish system of classification using the key provided by Statistiska centralbyrån (SCB). Finally, I compute the average score for each occupation at the 4-digit *SSYK* level, excluding occupations at the armed forces.
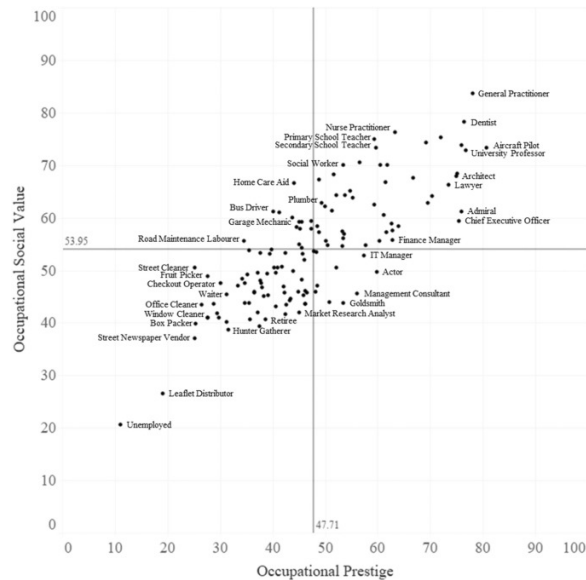
Figure 3: Distribution of perceived occupational prestige and social value (Newlands and Lutz, 2024).

While this method allows for a consistent comparison of occupational prestige across national systems, several drawbacks exist. First, the indices from Newlands and Lutz (2024) are based on data from the UK, which may not fully capture the cultural and economic factors influencing occupational prestige and social values in Sweden. Second, discrepancies in occupational classifications between the *ISCO-08* and *SSYK* systems, even when using the SCB key, could lead to misclassification or averaging across dissimilar occupations. Finally, prestige scores derived from a single survey of respondents may not account for temporal or regional shifts in occupational values.

2.2.2 Creative and Cultural Occupations

Creative and cultural occupations span a broad range of roles requiring originality, artistry, and intellectual contributions. These include architects, designers, authors, artists, musicians, and performing artists. I use Eurostat's definition of cultural employment (Link) to identify creative occupations following the International Standard Classification of Occupations (ISCO) code. To ensure consistency with administrative data, these classifications were manually mapped to SSYK 2012 and SSYK 1996 codes.

2.2.3 Automation

I use the routine and non-routine component of occupation-specific tasks where routine, abstract and manual refer to task content as recorded in O*NET in 1991 and map them to the Swedish SSYK system of classification. In further iterations I aim to refine this measure.

3 Empirical Strategy

This paper employs an epidemiological approach to analyze the influence of cultural beliefs on individual outcomes. The underlying assumptions of this approach are that cultural beliefs vary systematically across immigrant groups based on the culture in their country of origin and that individuals residing in the same host country are subject to

similar economic conditions and formal institutional environments (Fernández, 2011). Specifically, the approach assumes that: (*i*) parents transmit cultural beliefs to their children, (*ii*) these cultural beliefs reflect the culture of the parents' country of origin, and (*iii*) individuals raised in the same host country experience similar institutional contexts. Immigrants assimilate cultural norms from both their country of origin and the host country, with the extent of assimilation depending on the duration of exposure to each culture.

To further isolate the effects of cultural exposure, the study adopts a mover design, leveraging evidence that neighborhoods exert substantial effects on childhood outcomes. Prior research demonstrates that the incomes of children who move converge to the incomes of permanent residents in the destination at a rate of 4 % per year of childhood exposure (Chetty and Hendren, 2018). In addition, literature from economics and behavioral genetics suggests that genetic and hereditary traits account for 40–60% of cognitive abilities and play a significant role in determining educational and labor market outcomes (Björklund *et al.*, 2006; Smith-Woolley *et al.*, 2018). This analysis exploits differences between biological siblings who share similar cognitive traits but experience varying degrees of exposure to the cultural norms of their origin country due to differences in age at immigration. By leveraging these sibling differences, the study isolates the effects of cultural exposure on economic and educational outcomes.

3.1   Earnings penalty

Earnings reflect ability, hours worked, and a number of other personal characteristics such as education, choice of employment, or time and place of employment. I construct an *earnings score* following the approach of Besley *et al.* (2016). They use residuals from a Mincer equation, defined over a large set of socioeconomic characteristics. Specifically, the following regression is estimated:

$$y_{i,m,t} = f(\text{age}_{i,t}, \text{educ}_{i,t}, \text{empl}_{i,t}) + \alpha_{m,t} + \epsilon_{i,m,t}, \tag{2}$$

where $y_{i,m,t}$ represents disposable income for individual i in municipality m and year t. The function f includes age, education, and employment interactions[4], while $\alpha_{m,t}$ captures municipality fixed effects to capture systematic income differences across regions, or urban and rural areas.

In this analysis, the residual $\epsilon_{i,m,t}$ represents the difference between an individual's predicted and actual income. A positive value of $\epsilon_{i,m,t}$ indicates that the individual earns less than predicted income based on their socioeconomic characteristics, suggesting a gap in their earning compared to their potential income in their occupation. I compute the average of the residualized wages, $\hat{\epsilon}_{i,m}$, at ages 20, 25, and 30. This is used as the primary outcome to quantify the earnings penalty faced by an individual, and serves as a proxy for misallocated talent. However, it is important to acknowledge that this measure may also capture other factors beyond misallocation, such as differences in hours worked, participation at the extensive margin, or productivity variations, potentially influenced by language barriers or cultural adjustment. While discrimination is a plausible contributor, it is challenging to directly measure and disentangle from other factors using the available data.

Using a sample of biological sibling pairs within immigrant households, I estimate the following specification to understand how exposure to collectivist cultural environments shapes the earnings penalty:

$$Y_{ijmo} = \beta_0 + \beta_1 \text{Age}_i^{lm} + \beta_2 \text{Individualism}_o + \beta_3 \text{Individualism}_o \times \text{Age}_i^{lm} + \alpha_j + T_i + \epsilon_{ijo}$$

The outcome variable, Y_{ijmo}, represents the earnings mismatch, $\hat{\epsilon_{i,m}}$, for individual i residing in municipality m from family j with a country of origin o, Age_i^{lm} is i's age at

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[4]To examine the relationship between educational attainment and occupational outcomes, I construct a dummy variable for tertiary education based on the Swedish SUN classification of education. Individuals are classified as having tertiary education if their education level is greater than 4, which includes any post-secondary education or higher. Occupations are categorized using the Swedish Standard Industrial Classification (SNI) codes at the 1-digit level. These classifications encompass broad occupational categories such as "Managerial," "In-depth university competence," "University education," "Administration and customer service," "Service, care, sales," "Agriculture, gardening, forestry, fishing," "Construction and manufacturing," "Machine manufacturing and transport," and "Shorter education," along with a separate category for "Military." I use the interaction between tertiary education and the SNI occupational categories.

migration, and Individualism$_o$ captures cultural individualism for the origin country, o.

The interaction term (Individualism$_o \times$ Age$_i^{lm}$) captures the moderating effect of individualistic cultural exposure on the relationship between age at migration and the earnings gap. The model includes family fixed effects (α_j) and controls for year of migration (T_i) to account for time-varying factors common to siblings.

Additionally, I include birth order effects and other controls to account for differences in choices between younger and older siblings. Controlling for birth order is essential because older siblings typically have a higher age at migration, which is mechanically correlated with birth order. Additionally, Hotz and Pantano (2015) build on the framework proposed by Hao *et al.* (2008), to show that birth order effects arise from strategic parenting, where stricter discipline for earlier-born children helps parents establish a reputation of toughness. This results in early-borns facing greater parental pressure, while later-born siblings benefit from more autonomy in their decision-making.

3.2   Understanding the Drivers of the Earnings Gap

This section explores potential drivers of the earnings gap through the lens of cultural assimilation, particularly the influence of collectivist norms. Prior research highlights the persistence of cultural traits and their role in shaping beliefs, aspirations, and occupational choices. Sweden, as a highly individualistic society, may sharply contrast with the cultural norms that immigrants from primarily collectivist societies bring with them.

Collectivist cultures place a strong emphasis on societal perceptions and conventions, fostering preferences for occupations that are deemed prestigious or socially valuable. These norms also encourage conformity and adherence to authority, which may translate into a greater likelihood of selecting occupations with a higher degree of routinization. Such occupational choices, while aligning with societal expectations, may not always match individual skills, interests, or economic opportunities, potentially leading to earnings mismatches.

I test the hypothesis that greater exposure to collectivist cultural environments leads

individuals to prioritize occupations that are *(i)* conventionally prestigious, *(ii)* perceived as having higher societal value, *(iii)* less likely to be classified as creative or cultural occupations and *(iv)* characterized by routine tasks that reflect conformity and adherence to authority. Assimilating collectivist values can perpetuate differences in occupational preferences, and this section understands whether these differences can explain the observed earnings gap.

Using a sample of biological sibling pairs within immigrant households, I estimate the relationship between exposure to individualistic cultural values and outcomes discussed further. The specification is as follows:

$$Y_{ijo} = \beta_0 + \beta_1 Age_i^{lm} + \beta_2 Individualism_o + \beta_3 Individualism_o * Age_i^{lm} + \alpha_j + T_i + \epsilon_{ijo}$$

The outcome variable, Y_{ijo}, represents the outcome associated with the profession chosen by individual i from family j from a country of origin o, Age_i^{lm} is i's age at migration, and Individualism$_o$ captures cultural individualism for the origin country, o. The interaction term (Individualism$_o \times Age_i^{lm}$) measures the moderating effect of individualistic cultural exposure on the relationship between age at migration on the outcome. The model includes family fixed effects (α_j) and controls for year of migration (T_i) to address time-varying factors common to siblings. Additionally, while estimating these specifications, I also include birth order effects and other controls to account for differences in choices between younger and older siblings, similar to the framework described previously. A discussion on the outcome variable, Y_{ijo}, follows.

3.2.1 Occupational prestige

In collectivist cultures, societal perceptions often emphasize hierarchical structures and the societal prestige of professions. As a result, individuals may align their occupational choices with roles deemed prestigious by societal standards rather than prioritizing personal interests, aptitudes, or economic opportunities. Such preferences for conventionally prestigious occupations can perpetuate economic inefficiencies, particularly when these

choices result in a mismatch between skills and earnings.

In this analysis, the outcome variable Y_{ijo} reflects the perceived occupational prestige associated with the profession chosen by individual i from family j with a country of origin o. The variable Age_i^{lm}, which measures years spent in the origin country prior to migration, serves as a proxy for exposure to collectivist cultural values during formative years. I hypothesize that greater exposure to collectivist environments fosters preferences for occupations that carry higher societal prestige. This can be formally tested by examining the coefficient on Age_i^{lm} (β_1), where a positive value would indicate that longer exposure to collectivist norms increases the likelihood of choosing prestigious occupations.

To further explore the moderating role of individualistic cultural values, I include the interaction term ($\text{Individualism}_o \times \text{Age}_i^{lm}$). Individualistic cultures, which emphasize personal fulfillment and intrinsic job satisfaction over societal status, are expected to weaken the relationship between age at migration and occupational prestige. A negative coefficient on the interaction term (β_3) would suggest that exposure to individualistic values mitigates the observed preference for prestigious occupations induced by collectivist norms.

This analysis provides insight into whether cultural assimilation contributes to occupational sorting patterns and, consequently, to observed earnings mismatches. Specifically, it examines whether individuals who prioritize occupational prestige in collectivist settings may also experience greater economic inefficiencies, such as earning less than predicted given their skills and characteristics.

3.2.2 Social Value of Occupations

This subsection explores whether greater exposure to collectivist cultural environments fosters preferences for occupations with higher perceived social value. Jobs with higher social value are often seen as contributing to societal welfare, fulfilling communal responsibilities, or carrying cultural honor, regardless of their associated economic returns. Such preferences may arise from the emphasis placed on societal recognition and approval

within collectivist norms, where alignment with societal expectations takes precedence over personal economic incentives.

In this setting, the outcome variable Y_{ijo} represents the perceived social value of the profession chosen by individual i from family j with a country of origin o. The key explanatory variable Age_i^{lm}, capturing years spent in the origin country, proxies for exposure to collectivist cultural values. I hypothesize that greater cultural retention leads individuals to prioritize occupations associated with societal contributions or communal recognition, as reflected in a positive coefficient on Age_i^{lm} (β_1).

To test whether individualistic cultural exposure moderates this relationship, I include the interaction term ($\text{Individualism}_o \times \text{Age}_i^{lm}$). In contrast to collectivist values, individualistic cultures emphasize self-fulfillment and economic efficiency over societal approval, which may weaken the preference for socially valued occupations. A negative coefficient on the interaction term (β_3) would indicate that exposure to individualistic norms reduces the likelihood of sorting into high-social-value occupations.

By linking cultural exposure to occupational preferences, this analysis sheds light on whether prioritizing societal recognition, as opposed to economic returns, contributes to the observed earnings mismatches.

3.2.3 Creative and cultural occupations

Collectivist cultures prioritize conformity, adherence to traditional values, and alignment with community expectations, often discouraging risk-taking or unconventional career paths. The creative and cultural sector, by contrast, is often associated with non-traditional career trajectories, high levels of autonomy, and a need for self-expression—all traits that align more closely with individualistic cultural values. Here, we test the hypothesis that exposure to collectivist cultural norms is associated with lower probabilities of choosing an occupation in the creative/cultural sector.

The outcome variable Y_{ijo} in this analysis is a binary variable that takes the value of 1, if the individual i from family j with a country of origin o chooses an occupation in the creative/cultural sector. I hypothesize that greater exposure to collectivist cultural

environments decreases the likelihood of sorting into creative jobs, reflected in a negative coefficient on Age_i^{lm}, (β_1).

To explore whether individualistic cultural exposure moderates this tendency, I include the interaction term (Individualism$_o \times$ Age$_i^{lm}$). Individualistic norms, which emphasize creativity, independence, and self-expression, may encourage individuals to select occupations in the creative sector. A positive coefficient on the interaction term (β_3) would support this hypothesis, suggesting that exposure to individualistic values offsets the collectivist preference for non-creative tasks.

3.2.4 Automation

In this subsection, I examine the relationship between cultural exposure and the technological nature of occupations, specifically the extent to which individuals sort into routine jobs. Routine occupations, characterized by structured workflows, repetitive tasks, and adherence to authority, align closely with collectivist cultural norms, which value conformity, hierarchy, and societal order. Conversely, non-routine occupations often require autonomy, innovation, and flexibility—traits more closely associated with individualistic values.

The outcome variable Y_{ijo} in this analysis captures the non-routine component of the occupation chosen by individual i from family j with a country of origin o. I hypothesize that greater exposure to collectivist cultural environments increases the likelihood of sorting into routine jobs, reflected in a negative coefficient on Age_i^{lm}, (β_1), which implies a lower presence of non-routine tasks in the selected occupations.

To explore whether individualistic cultural exposure moderates this tendency, I include the interaction term (Individualism$_o \times$ Age$_i^{lm}$). Individualistic norms, which emphasize creativity, independence, and innovation, may encourage individuals to select occupations with greater non-routine content. A positive coefficient on the interaction term (β_3) would support this hypothesis, suggesting that exposure to individualistic values offsets the collectivist preference for routine tasks.

This analysis informs our understanding of how cultural values influence occupational

sorting patterns and may contribute to the observed earnings gap.

4 Results

This section is summarizes the results of the analysis. The first section presents the results of the effect of cultural assimilation on occupational prestige, and the second studies its impact on generating mismatches in the labour market.

4.1 Earnings penalty

This section explores the relationship between cultural exposure and the misallocation of talent, proxied by the earnings gap. The outcome variable is the earnings gap, defined as the residual from a Mincer equation which is the difference between predicted wages (based on observed socioeconomic characteristics such as age, education, and employment type), and actual wages. A positive residual indicates that an individual earns less than predicted, suggesting a mismatch in occupational choice, while a negative residual implies better-than-expected earnings. Individualism is measured by standardizing the dimension from Hofstede *et al.* (2010) relative to the population mean, and one unit increase in the standardized index corresponds to an increase of approximately 23 units in the original index (for perspective, the difference between the indices of Germany and United States of America) The minimum and maximum scores for countries are 6 and 91 respectively.

Table 15 presents the results, and 22 incorporates an interaction term between cultural exposure and the country's per-capita gross domestic product (GDP) over the past 10 years to assess the robustness of the results to the inclusion of other economic factors. The coefficient for age at migration ($\beta = 69.27$, $p < 0.01$) is positive and statistically significant. This result implies that for the most collectivist countries (where the Individualism score is at its lowest), individuals migrating at older ages have larger earnings mismatches. This consistent with the hypothesis that greater exposure to collectivist cultural environments (proxied by age at migration) exacerbates labor market

mismatches. Since income is measured in 100 SEK units, the coefficient implies 6927 SEK lower-than-predicted annual earnings per extra year spent in the country of origin. The corresponding low standard error (14.97, which is much smaller than the coefficient of 69.27), indicates that the estimate is precise and relatively unaffected by sampling variability.

The interaction term between age at migration and cultural individualism ($\beta = -29.48$, $p < 0.01$) is statistically significant. This implies, every one-unit increase in the standardized individualism index is associated with lowering the earnings gap by 29.48 units, or 2948 SEK. This suggests, exposure to individualistic environments offsets labour market mismatches significantly.

The coefficient for gender ($\beta = 296.9$, $p < 0.01$) is positive, highly significant, and precise. Female immigrants have 29690 SEK lower than predicted earnings per year, compared to their male counterparts per year. This disparity suggests that immigrant women are disproportionately affected, consistent with prior literature on gender disparities in the labor market. This may also be attributed to womens' preferences being aligned towards jobs that prioritize associated amenities or flexibility. However, the broader non-monetary aspects of occupational choice among women remain outside the scope of this study.

The coefficients indicating birth order effects for later-born siblings are statistically insignificant and exhibit low t-values, indicating limited precision owing to relatively high standard errors.

These findings highlight the influence of cultural exposure on labor market outcomes, with older migrants and women experiencing significant mismatches in earnings. However, exposure to individualistic cultural origins mitigates some of these mismatches. To further illustrate this, I regress the treatment effect of age at migration on the individualism index at the country level, focusing on countries with at least 70 migrants (please see Figure 4 below). Each point represents the coefficient of a separate regression. The results indicate that for every unit increase in the individualism index, the positive effect of age at migration on the earnings mismatch decreases.

Variables	
Age at migration	69.27***
	(14.97)
Female	296.9***
	(36.91)
Age at migration*Individualism	-29.48***
	(6.806)
Birth order	
2	46.64
	(47.74)
3	96.06
	(92.54)
Constant	-891.3***
	(162.9)
Observations	11,375

Table 1: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the household level, in parentheses. The outcome is misallocation of talent, measured by the average earnings gap at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.
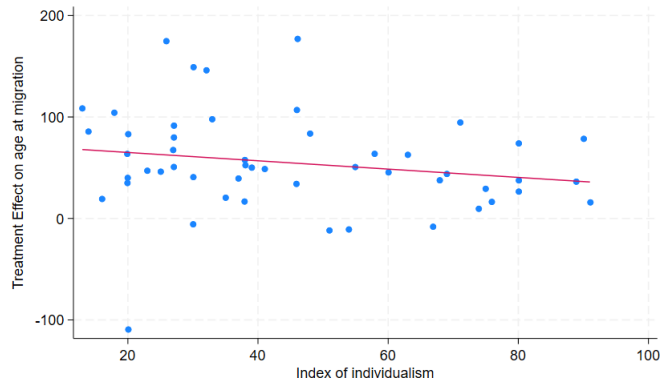

Figure 4: The graph plots the treatment effect of age at migration on the individualism index at the country level, focusing on countries with at least 70 migrants. Each dot represents an (anonymized) country. The graph suggests, as the individualism index increases, the positive effect of age at migration on mismatch decreases.

4.2 Individualism and Occupational Prestige

Table 10 presents the results of how exposure to individualistic cultural environments affects occupational prestige. The dependent variable is the perceived occupational prestige associated with an individual's profession. I focus on the outcomes relevant to Column (1) for ease of interpretation. Individualism is measured by standardizing the dimension from Hofstede *et al.* (2010) relative to the population mean, and one unit increase in the standardized index corresponds to an increase of approximately 23 units in the original index (for perspective, the difference between the indices of Germany and United States of America).

The coefficient for age at migration ($\beta = -0.282$, $p > 0.1$) is negative but not statistically significant, and relatively imprecise owing to the large standard errors compared to the coefficient. This suggests that, for the most collectivist countries (where the score of individualism is minimal), migrating at older ages may reduce occupational prestige scores, but the imprecision of the estimate means that this effect cannot be reliably distinguished from zero. Two opposing forces may be at work, potentially explaining the null effects. On the one hand, collectivist cultural origins may encourage a preference for conventionally prestigious occupations, contributing positively to the coefficient on age at migration. On the other hand, migrating at an older age often entails challenges such as adapting to a new educational system, overcoming language barriers that hinder networking and social integration, facing greater informational frictions, and ultimately enrolling in lower-ranked colleges. These barriers could reduce the likelihood of pursuing high-prestige occupations, potentially offsetting the effect of cultural preferences and contributing to a positive coefficient on age at migration.

The interaction term between age at migration and individualism ($\beta = 0.184$, $p > 0.1$) is positive but also not statistically significant and imprecise. While the point estimate suggests that exposure to individualistic cultural environments might slightly amplify the relationship between age at migration and occupational prestige, the wide confidence interval and lack of significance limit any firm conclusions about this moderating effect.

Birth order effects are also included in the analysis. The coefficients for second-born

($\beta = -1.275$, $p < 0.1$) and third-born ($\beta = -2.409$, $p < 0.05$) siblings are both negative, indicating that later-born individuals are less likely to pursue occupations with high prestige compared to first-born siblings. Hotz and Pantano (2015) build on the framework proposed by Hao *et al.* (2008), to show that birth order effects arise from strategic parenting, where stricter discipline for earlier-born children helps parents establish a reputation of toughness. This results in early-borns facing greater parental pressure, while later-borns benefit from more autonomy in their decision-making. In this framework, we see later-born siblings (who face greater autonomy in their decision-making) tend to select occupations that are less conventionally prestigious, in comparison to the older siblings.

Variables	
Age at migration	-0.282
	(0.248)
Age at migration*Individualism	0.184
	(0.122)
Individualism	-
Birth order	
2	-1.275*
	(0.759)
3	-2.409**
	(1.162)
Constant	55.47***
	(2.323)
Observations	5,158

Table 2: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The dependent variable is occupational prestige. Individualism is measured by standardizing the dimension of Individualism following Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

In order to understand whether there are differences in birth order effects commensurate with the varying cultural individualism, Table 3 examines the relationship between age at migration, individualism, and occupational prestige across countries with varying levels of cultural individualism, but I find null results. The index of individualism increases as we move from Column (1) to (3), while Column (4) includes countries that are similar to Sweden with regard to their individualism score.

Variables	1	2	3	4
Age at migration	-0.963	-0.495	1.875***	-2.037***
	(0.883)	(0.536)	(0.533)	(0.565)
Age at migration*Individualism	-0.484	-0.00556	-3.461**	0.683
	(0.567)	(0.731)	(1.071)	(0.695)
Individualism	-	-	-	-
Birth order				
2	-0.894	-1.199	-2.387	-3.284
	(1.020)	(1.473)	(2.552)	(2.897)
3	-1.740	-1.871	-3.469	-10.69*
	(1.736)	(1.773)	(4.727)	(5.199)
Constant	53.17***	57.37***	55.05***	65.22***
	(3.880)	(3.123)	(5.799)	(7.293)
Observations	2,179	1,687	677	530
R-squared	0.599	0.645	0.648	0.649

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is occupational prestige at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

The coefficient on *Age at migration* is negative and statistically significant in highly individualistic ($\beta = -2.037, p < 0.01$), suggesting that later age at migration reduces occupational prestige more prominently in this context. In contrast, in less individualistic countries (Column 3), *Age at migration* exhibits a positive and significant association with occupational prestige ($\beta = 1.875, p < 0.01$), implying that older migrants retain preferences for higher-prestige jobs in collectivist environments. The interaction term between age at migration and individualism is negative and significant in less individualistic countries ($\beta = -3.461, p < 0.05$), further reinforcing that individualistic origins ameliorate the positive effect of age at migration on occupational prestige. No significant effects are observed for countries that are highly collectivist (Columns 1 and 2), however, these countries are also likely to face higher challenges in integration as a result of cultural differences.

While collectivist cultures are hypothesized to foster preferences for jobs that are conventionally prestigious, aligning with societal expectations and norms; collectivist origins are often correlated with structural disadvantages, such as lower parental income, which may constrain access to opportunities that lead to prestigious occupations. To disentangle these forces, I split the sample based on parental income. This is measured as the total annual income of parents divided by the average income in Sweden for the corresponding year to account for inflation, please see Figure 7.

Table 4 presents the results. Column (1) reports outcomes for children from higher-income households (above the average parental income), and Column (2) reports outcomes for children from lower-income households. The coefficient on the interaction between age at migration and individualism remains statistically insignificant across both subsamples ($\beta = 0.0690$ and 0.0826, respectively), suggesting no differential effects of collectivist cultural exposure based on parental income. Notably, the null effects imply that higher parental income does not systematically improve access to prestigious occupations for children of immigrant households. This result highlights that the preference for occupational prestige among individuals from collectivist origins does not appear to be driven by differences in socioeconomic background or income constraints.

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Variable	(1)	(2)
Age at migration	-0.181	-0.271
	(0.416)	(0.500)
Age at migration*Individualism	0.0690	0.0826
	(0.208)	(0.265)
Individualism	-	-
2	-1.400	-1.302
	(1.176)	(1.424)
3	-2.462	-1.790
	(2.754)	(2.131)
Constant	55.28***	53.64***
	(3.767)	(4.692)
Observations	1,418	2,142
R-squared	0.663	0.609

Table 4: *Notes:*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The dependent variable is occupational prestige. Individualism is measured by standardizing the dimension of Individualism following Hofstede *et al.* (2010). The first column represents the outcomes of children whose parental earnings exceed the average income in the sample, and the second column represents otherwise.

4.3   The Social Value of Occupations

Table 5 presents the results examining how exposure to individualistic cultural environments influences the perceived social value of occupations. The dependent variable is the perceived societal value of the profession chosen by the individual, where higher values indicate occupations deemed more socially valuable or honorable within a given context. Individualism is measured using the standardized dimension from Hofstede *et al.* (2010), where a one-unit increase in the standardized index corresponds to a substantial shift in cultural individualism.

The coefficient for age at migration ($\beta = -0.0144$, $p > 0.1$) is negative but not statistically significant. While the point estimate suggests that migrating at older ages slightly reduces the likelihood of choosing jobs with high social value, the lack of statistical significance and relatively large standard errors indicate imprecision in the estimate. This null result could reflect competing mechanisms at play. On the one hand, collectivist cultural norms emphasize societal perceptions and may encourage individuals to prioritize occupations seen as honorable or contributing to communal welfare. On the other hand, challenges faced by older migrants, such as integration difficulties, educational disruptions, and informational frictions, may limit access to such socially valued professions, partially offsetting the cultural effect.

The interaction term between age at migration and individualism ($\beta = 0.159$, $p > 0.1$) is positive but also not statistically significant. The positive point estimate suggests that exposure to individualistic cultural environments may attenuate the negative association between age at migration and the social value of occupations. However, the lack of statistical significance and wide confidence interval underscore the imprecision of this moderating effect.

Birth order effects are also notable in the analysis. The coefficients for second-born ($\beta = -1.280$, $p < 0.05$) and third-born ($\beta = -1.776$, $p < 0.05$) siblings are both negative and statistically significant. These results indicate that later-born siblings, who enjoy greater autonomy in their decision-making, tend to prioritize occupations less influenced by societal perceptions compared to their first-born counterparts.

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Variables	
Age at migration	-0.0144
	(0.187)
Age at migration*Individualism	0.159
	(0.134)
Individualism	-
Birth order	
2	-1.280**
	(0.498)
3	-1.776**
	(0.776)
Constant	61.60***
	(1.961)
Observations	7,356

Table 5: Robust standard errors, clustered at the country level, in parentheses. The outcome is the perceived social value of occupations. Individualism is measured by the standardized cultural dimension from Hofstede *et al.* (2010) where countries with a predominantly individualistic culture are assigned higher scores. Further, I include household fixed effects and immigration year fixed effects.

4.4 Creative and Cultural Occupations

Table 6 presents the results of testing the hypothesis that exposure to collectivist cultural norms is associated with a lower likelihood of pursuing a career in the creative and cultural sector. The dependent variable is a binary indicator of whether an individual is employed in a creative or cultural occupation. The interaction term between age at migration and individualism ($\beta = 0.000371$) is positive but not statistically significant, and the coefficient for age at migration ($\beta = 0.00183$) is also small and imprecise. These results suggest no strong evidence of a relationship between exposure to collectivist cultural environments and occupational sorting into the creative and cultural sector.

The null results could reflect several underlying dynamics. First, while collectivist cultures may discourage unconventional career paths, the decision to pursue creative occupations may be influenced more strongly by individual-level factors such as intrinsic motivation or access to opportunities, rather than cultural norms alone. Additionally, institutional and economic factors in the host country, such as access to education in creative fields

or labor market demand for cultural occupations, may play a larger role in shaping occupational choices. Finally, the creative and cultural sector encompasses a wide range of occupations, some of which may align more closely with societal expectations even in collectivist contexts, potentially diluting the hypothesized effects.

Variables	
Age at migration	0.00183
	(0.00182)
Age at migration * Individualism	0.000371
Birth order	
	(0.000942)
2	0.00795*
	(0.00467)
3	0.00369
	(0.00708)
Constant	-0.00543
	(0.0186)
Observations	10,372

Table 6: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is having an occupation in the creative and cultural sector. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

4.5   Automation and occupational choice

This subsection investigates the relationship between cultural exposure and the technological nature of occupations, specifically the extent to which individuals sort into routine versus non-routine jobs. Routine occupations typically involve tasks that require adherence to authority, structured workflows, and limited scope for autonomy—traits that align more closely with the values emphasized in collectivist cultural environments. By contrast, non-routine jobs often involve creativity, independent decision-making, and adaptability, aligning with the traits commonly associated with individualistic values. The analysis tests the hypothesis that greater exposure to individualistic cultural environments increases the likelihood of selecting non-routine occupations, and vice

versa.

Table 7 presents the results, where the dependent variable reflects the degree of routinization in occupations. The key independent variable, *years spent in Sweden*, serves as a proxy for exposure to the host country's individualistic cultural values. In this framework, greater years spent in Sweden correspond to lower exposure to collectivist cultural norms in the home country.

The coefficient for age at migration ($\beta = 0.00603$, $p < 0.05$) is negative and statistically significant. This indicates that a one-year decrease in time spent in Sweden is associated with a 0.6 percentage point decrease in the non-routine component of occupations. The finding is consistent with the hypothesis that prolonged exposure to collectivist environments encourages individuals to choose less of non-routine occupations, that provide greater autonomy and align better with individual preferences. The precision of the estimate, evidenced by a relatively small standard error, supports the robustness of this result.

The interaction term between years spent in Sweden and individualism ($\beta = 0.00186$, $p > 0.1$) is positive but not statistically significant. While the point estimate suggests that individuals from more individualistic origins may experience an additional 0.2 percentage point decrease in the likelihood of selecting routine jobs for each year spent in Sweden, the lack of significance and relatively larger standard error preclude any firm conclusions.

Birth order effects are also considered in the analysis. The coefficient for second-born siblings ($\beta = -0.0182$, $p < 0.05$) is negative and statistically significant, indicating that second-born siblings are 1.8 percentage points more likely to choose routine occupations compared to first-born siblings. The coefficient for third-born siblings ($\beta = -0.0266$) is also negative, corresponding to a 2.7 percentage point higher likelihood of selecting routine jobs, although this effect is not statistically significant. These findings align with prior literature on birth order effects, where later-born siblings face less parental pressure and exhibit greater autonomy in their occupational choices, potentially leading them to select less structured occupations.

Variables	
Age at migration	-0.00603**
	(0.00269)
Years spent in Sweden* Individualism	0.00186
	(0.00128)
Birth order	
2	-0.0182**
	(0.00826)
3	-0.0266
	(0.0175)
Constant	0.388***
	(0.0507)
Observations	4,857

Table 7: *Notes:* *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcome is the earnings penalty at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

Further, I explore whether choices pertaining to the routine-ness of tasks could explain the earnings gap observed in previous section.

Table 8 presents the results for routine and non-routine occupations.

Variables	Non-routine	Routine
Age at migration	72.42**	-4.660
	(35.80)	(63.30)
Age at migration*Individualism	-40.69**	-42.99
	(17.33)	(32.44)
Birth order		
Constant	-987.4**	-163.5
	(414.5)	(762.8)
Observations	673	408

Table 8: *Notes:* *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is the earnings penalty at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included, and I also account for birth order effects.

The coefficient on *Age at migration* is positive and significant for non-routine jobs ($\beta = 72.42, p < 0.05$), suggesting that older migrants experience higher earnings penalties in these occupations. Importantly, the interaction term between age at migration and individualism is negative and significant ($\beta = -40.69, p < 0.05$), indicating that individualistic exposure partially mitigates, but does not eliminate, these mismatches. By contrast, the coefficients for routine occupations are both statistically insignificant, implying limited earnings penalties in these jobs irrespective of cultural exposure.

This suggests that the earnings gap observed in the previous sections is concentrated in non-routine occupations, where older migrants from collectivist origins face substantial mismatches that persist even with exposure to individualistic cultural norms. Therefore, immigrant children who are more exposed to the individualistic environment in Sweden are likely to sort in non-routine jobs, but face higher earnings penalties with older ages at migration, and these differences are not mitigated by collectivist origins.
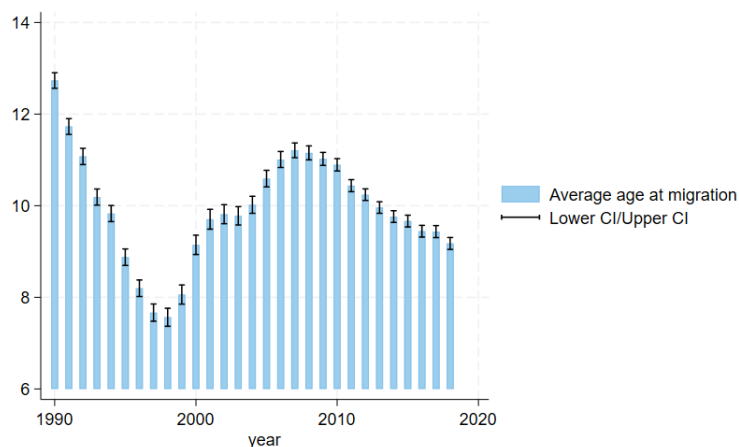
Figure 5: The graph plots the average age at migration over years.

5   Robustness Checks

The results described previously in captures the earnings penalty to immigrants from a cultural perspective, and the impact of cultural retention in fostering a preference for occupations considered conventionally prestigious, socially valuable, creative, or routinized. In the above results, immigrants are assigned the individualism-index per-

tinent to their origin country, and I use country-specific indices of individualism from Hofstede *et al.* (2010) for the same. As a robustness check, I use a different measure of individualism, where I closely follow the work similar to Ek (2024); Inglehart *et al.* (2010). The previously described analyses are repeated using the new index. The results are presented in the appendix in Section 7. The results in the analysis are robust to the alternate measure of individualism.

I further discuss the identifying assumptions and threats to identification. The identification strategy leverages variation in age at migration among biological siblings to isolate the causal effects of cultural exposure on labor market outcomes. This approach assumes that the timing of migration, conditional on observable characteristics, is exogenous to unobservable factors influencing outcomes. Sibling fixed effects control for shared family-specific characteristics, ensuring that differences in outcomes are attributed to differential cultural exposure. However, such household fixed effects do not always control appropriately for cultural experiences even between children grow up in the same household with the same biological parents. Parents may be programmed culturally to react differently to children owing to gender or birth order differences. In addition, children arrive at different stages of the parents' relationships and have different temperamental sensibilities, which makes the same parents react differently towards them. Children growing up in the same household may therefore experience the same parents differently, and these differences cannot be accounted for by controlling for household fixed effects. Additionally, the analysis assumes that cultural exposure effects are linear and independent across siblings, with no spillover effects between them, which is a rather strong assumption. Lastly, there may be selection effects if parents and leave behind some children in their origin country, and move with children that they think are more likely to benefit from integrating in Sweden. In most analyses, I restrict the sample to siblings where the birt order is less than 4. These differences weaken the identification strategy employed in the paper.

6 Discussion

This paper examines the influence of childhood cultural exposure on occupational outcomes, with a particular focus on the individualism/collectivism dimension. By combining an epidemiological approach with a mover design, I leverage rich administrative data on immigrant households to compare immigrant siblings, who share similar cognitive capacities and home environments, but vary in their relative exposure to the origin country's culture. I exploit the variation in exposure to the origin country's culture, to estimate the effects of cultural assimilation on labor market penalties. I find that exposure to collectivist cultural environments leads to significant earnings penalties, with individuals earning less than their predicted wages, while individualistic cultural origins mitigate these gaps by enhancing the alignment between skills and wages. Furthermore, I also find that immigrant women experience disproportionate mismatches, highlighting systemic disparities in the labor market.

I also explore cultural drivers that may be responsible for perpetrating an earnings gap, from the lens of individualistic cultural assimilation. In collectivist cultures, societal norms and conventions are often prioritized over individual interests. This dynamic can lead to economic inefficiencies, such as labour market mismatches, where individuals align their occupational choices with societal expectations rather than pursuing roles that align with their personal preferences and skills.

My first hypothesis is, exposure to collectivist environments fosters a preference for occupations that are conventionally considered prestigious. Collectivist norms place great value in family, and the perceived values of the society, such as the perceived prestige associated with occupations. Therefore, it seems plausible that retention of collectivist values (reflected by older age at migration, or greater exposure to the origin country's culture) fosters a preference for occupations that are conventionally considered prestigious. My second hypothesis is, exposure to collectivist environments fosters a preference for occupations that are highly valued in the social sphere, as they are often seen as contributing to societal welfare. Similarly, I hypothesize that exposure to collectivist norms may discourage individuals from pursuing careers in the creative

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or cultural sectors, as such occupations often entail non-traditional trajectories, high autonomy, and self-expression, traits more closely aligned with individualistic values. However, my empirical findings provide no support for these hypotheses, as the results indicate null effects.

Lastly, I test the hypothesis that exposure to collectivist cultural norms encourages the uptake of jobs where tasks are routinized. Routine occupations, characterized by structured workflows, repetitive tasks, and adherence to authority, align closely with collectivist cultural norms, which value conformity, hierarchy, and societal order. Therefore, it seems plausible that exposure to collectivist cultures may encourage the choice of jobs that are highly routinized. My empirical findings provide robust evidence in support of the proposed hypothesis, and I find that collectivist cultures foster a preference for routinized occupations.

The findings are germane to recent policy discussions regarding labour market mismatches among immigrants, as they highlight the importance of cultural integration in shaping labor market outcomes. This may occur when individuals align their occupational choices with societal expectations rather than pursuing roles that match their skills, interests and preferences. For immigrants, this challenge is often exacerbated by limited awareness of available career options and trajectories. Providing targeted career counseling, access to information about possible career pathways, and networking opportunities could aid them in making more informed choices. In addition, I also find that older migrants and immigrant women are disproportionately impacted by earnings mismatches in the labour market. Addressing these disparities could involve initiatives that improve access to information about available resources that aid womens' labour market participation, such as parental leave benefits, work-life balance programs, and mentoring opportunities. Increased awareness of such resources can enable women to make informed occupational decisions, thereby reducing labor market frictions and fostering more efficient talent allocation. Finally, tailored support for late-arriving migrants and investments in upskilling programs can align individual skills with labor market demands, helping to address the observed earnings penalty.

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7 Appendix

Foreign-born population in Sweden in 2023, by country of birth

Country	Number
Syria	197,201
Iraq	145,586
Finland	129,406
Poland	100,706
Iran	86,838
Somalia	68,290
Afghanistan	67,738
Yugoslavia	60,636
Bosnia and Herzegovina	60,003
India	58,094
Germany	56,969
Türkiye	56,871
Eritrea	49,639
Thailand	45,940
Norway	39,951
China	38,253
Denmark	37,655
Romania	36,738
United Kingdom	32,916
Lebanon	29,770

Number of inhabitants

Source
Statistics Sweden
© Statista 2024

Additional Information:
Sweden; 2023; Top 20

Figure 6: The graph plots the number of foreign-born individuals in Sweden by country of birth, in 2023. Source: Statlista

7.1 Robustness checks

Variables	(1) Earnings gap	(2) Earnings	(3) Hours worked	(4) Income dummy	(5) Average salary
Age at migration	65.98***	-76.53***	-0.898	-0.00565*	-0.0519***
	(10.31)	(11.54)	(0.623)	(0.00331)	(0.00679)
Age at migration* Individualism	-26.56***	15.74**	-0.0414	0.00325*	0.00619
	(6.757)	(6.890)	(0.446)	(0.00189)	(0.00474)
Birth order					
2	34.80	7.732	-2.415	-0.00498	-0.0221
	(35.96)	(28.32)	(1.995)	(0.00842)	(0.0223)
3	63.80	17.63	-1.249	-0.00732	-0.00965
	(57.57)	(58.04)	(4.174)	(0.0181)	(0.0433)
Constant	-664.3***	2,571***	155.0***	0.863***	0.330***
	(108.2)	(123.4)	(7.348)	(0.0364)	(0.0758)
Observations	11,375	54,850	12,697	54,830	9,824

Table 9: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcomes are as follows (1) represents the earnings gap, the difference between predicted and actual annual earnings. (2) Earings at the age of 30 (3) Hours worked at the age of 30. (4) a dummy variable indicating earning an income above 50000 SEK annually (5) Average salary in the occupation-sector, by the 4-digit SSYK code and SNI code at the 1 digit level. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included. Earnings are winsorized at the 99 percent level.

7.1.1 Occupational Prestige

Variables	
Age at migration	-0.282
	(0.248)
Age at migration*Individualism	0.184
	(0.122)
Individualism	-
Birth order	
2	-1.275*
	(0.759)
3	-2.409**
	(1.162)
Constant	55.47***
	(2.323)
Observations	5,158

Table 10: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The dependent variable is occupational prestige. Individualism is measured by standardizing the dimension of Individualism following Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

Variables	
Age at migration	-0.403
	(0.244)
Age at migration*Collectivism	-0.175
	(0.130)
Collectivism	-
Birth order	
2	-1.437*
	(0.734)
3	-2.498**
	(0.944)
Constant	55.63***
	(2.194)
Observations	4,614

Table 11: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is residualized earnings. Collectivism is measured by the standardized cultural dimension following Inglehart *et al.* (2010); Ek (2024), and countries with a predminantly collectivist culture are assigned higher scores. Further, I include household fixed effects and immigration year fixed effects.

7.1.2 Earnings Mismatch

Variables	
Age at migration	69.27***
	(14.97)
Female	296.9***
	(36.91)
Age at migration*Individualism	-29.48***
	(6.806)
Birth order	
2	46.64
	(47.74)
3	96.06
	(92.54)
Constant	-891.3***
	(162.9)
Observations	11,375

Table 12: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the household level, in parentheses. The outcome is misallocation of talent, measured by the average earnings gap at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

Variables	
Age at migration	85.78***
	(15.92)
Female	313.0***
	(40.29)
Age at migration*Collectivism	29.76***
	(8.499)
Collectivism	-
Birth order	
2	70.68
	(51.12)
3	108.9
	(96.80)
Constant	-1,064***
	(180.6)
Observations	9,551

Table 13: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the household level, in parentheses. The outcome is residualized earnings. Collectivism is measured by the standardized cultural dimension following Inglehart *et al.* (2010); Ek (2024), and countries with a predominantly collectivist culture are assigned higher scores. Further, I include household fixed effects and immigration year fixed effects.

7.2   Social Value of Occupations

Variables	
Age at migration	-0.149
	(0.193)
Age at migration*Collectivism	0.0114
	(0.152)
Collectivism	-
Birth order	
2	-1.505***
	(0.466)
3	-1.954***
	(0.693)
Constant	61.99***
	(1.928)
Observations	6,675
R-squared	0.590

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Robust standard errors, clustered at the country level, in parentheses. The outcome is the perceived social value of occupations. Individualism is measured by the standardized cultural dimension from Inglehart *et al.* (2004) where countries with a predominantly collectivist culture are assigned higher scores. Further, I include household fixed effects and immigration year fixed effects.

Variables	(1) Highly prestigious	(2) Less prestigious
Age at migration	60.51***	186.3**
	(9.646)	(83.12)
Female	286.4***	104.5
	(37.82)	(177.8)
Age at migration*Individualism	-34.96***	-13.24
	(8.797)	(52.72)
Individualism	-	-
Birth order		
2	39.36	154.9
	(40.41)	(195.1)
3	48.66	614.0
	(65.91)	(461.9)
Constant	-800.0***	-2,040**
	(99.87)	(749.7)
Observations	9,067	230
R-squared	0.601	0.640

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is earnings penalty, measured by the average earnings gap at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010).Household and immigration year fixed effects are included. Column 1 presents the results for prestigious jobs (that is, occupations where the associated prestige score is above the sample average), and Column 2 presents the results for non-prestigious occupations.

8 Alternative measure of occupational prestige

Variables	(1) occupational_prestige
Age at migration	-0.838
	(0.956)
Age at migration*Individualism	-0.139
	(0.740)
o.Individualism	-
Birth order	
2	-0.325
	(0.806)
3	0.0616
	(1.783)
Constant	42.74***
	(2.884)
Observations	3,719
R-squared	0.610

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is occupational prestige of the chosen occupation at the age 30, measured by the average annual earnings in the industry-sector combination. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

| | (1) |
Variables	
Age at migration	-0.0605***
	(0.00866)
Age at migration*Collectivism	-0.00674*
	(0.00397)
o.std_IWB1	-
2	-0.0313
	(0.0237)
3	-0.0332
	(0.0509)
Constant	0.378***
	(0.0970)
Observations	8,130
R-squared	0.656

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is occupational prestige of the chosen occupation at the age 30, measured by the average annual earnings in the industry-sector combination. Individualism is measured by the standardized cultural dimension of individualism from Inglehart *et al.* (2010). Household and immigration year fixed effects are included.

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9 Earnings penalty: GDP

Variables	(1) 2
Age at migration	73.09***
	(12.91)
Age at migration*Individualism	-25.80***
	(8.844)
Age at migration*GDP	-0.00202
	(0.00130)
Individualism	-
Birth order	
2	41.60
	(40.90)
3	92.39
	(66.61)
Constant	-723.8***
	(126.2)
Observations	11,375
R-squared	0.587

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 18: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is the earnings penalty at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included. This specification also includes an interaction term between age and a country's average gross domestic product (GDP) over the past ten years, sourced from the World Bank Open Data.

10 Automation

Variables	Non-routine	Routine
Age at migration	72.42**	-4.660
	(35.80)	(63.30)
Age at migration*Individualism	-40.69**	-42.99
	(17.33)	(32.44)
Birth order		
2	51.53	-88.29
	(134.7)	(192.1)
3	84.96	-348.5
	(242.7)	(347.8)
4	426.3	17.06
	(344.6)	(506.9)
5	-144.1	-674.8
	(491.4)	(642.5)
6	-28.20	-46.42
	(636.4)	(873.4)
7	-337.4	-513.3
	(846.7)	(1,076)
9	1,429	
	(1,283)	
10	757.3	
	(1,622)	
8		-2,346
		(1,889)
Constant	-987.4**	-163.5
	(414.5)	(762.8)
Observations	673	408

Table 19: *Notes:*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors, clustered at the country level, in parentheses. The outcome is the earnings penalty at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.

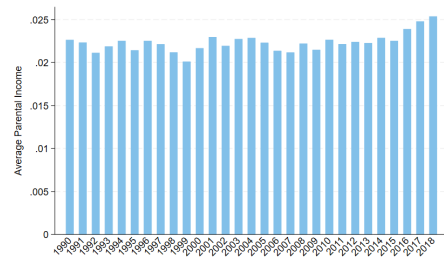| Variables	(1)	(2)
Years spent in Sweden	0.00603**	0.00613**
	(0.00269)	(0.00249)
Years spent in Sweden* Individualism	0.00186	0.00197*
Birth order		
	(0.00128)	(0.00103)
2	-0.0182**	-0.0191**
	(0.00826)	(0.00729)
3	-0.0266	-0.0329**
	(0.0175)	(0.0149)
4		-0.0323
		(0.0244)
5		-0.0319
		(0.0316)
6		-0.0557*
		(0.0316)
7		-0.000550
		(0.0550)
8		-0.0464
		(0.110)
9		-0.0725
		(0.0720)
10		-0.167
		(0.126)
11		-0.266***
		(0.0673)
12		0.315***
		(0.0778)
Constant	0.388***	0.389***
	(0.0507)	(0.0454)
Observations	4,857	6,180

Table 20: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is the earnings penalty at the age of 30. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.
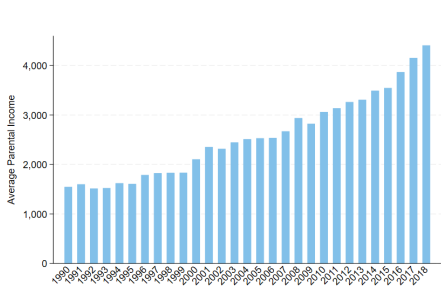
(a) Average parental income

(b) Average parental income relative to the yearly average annual income in Sweden

Figure 7: Comparison of parental income measures.

11 Creative and cultural occupations

Variables	(1)
Age at migration	0.000732
	(0.00168)
c.Age at migration*Collectivism	-0.000925
	(0.00142)
Birth order	
2	0.00164
	(0.00480)
3	-0.00487
	(0.00764)
Constant	0.00706
	(0.0190)
Observations	9,511

Table 21: *Notes:*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcome is having an occupation in the creative and cultural sector. Individualism is measured by the standardized cultural dimension of individualism from Inglehart *et al.* (2010). Household and immigration year fixed effects are included.

	(1)	(2)
Varibles		
Age at migration	69.48***	86.25***
	(11.91)	(13.82)
Age at migration*Individualism	-30.04***	-16.51*
	(6.928)	(9.630)
Age at migration* Per capita GDP		-0.880**
		(0.437)
Birth order		
2	43.31	37.02
	(41.34)	(40.80)
3	96.49	86.36
	(67.05)	(65.96)
Constant	-734.3***	-709.7***
	(127.0)	(122.1)
Observations	11,375	11,375
R-squared	0.587	0.587

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22: *Notes:**** p<0.01, ** p<0.05, * p<0.1 Robust standard errors, clustered at the country level, in parentheses. The outcomes is the earnings gap, the difference between predicted and actual annual earnings at the age of 30. The second column includes an additional interaction term between age at migration and the average per capita GDP, measured in 1000 US dollars, between 2000 to 2015. Individualism is measured by the standardized cultural dimension of individualism from Hofstede *et al.* (2010). Household and immigration year fixed effects are included.