

Cultural Assimilation and Earnings Penalties among Immigrants

Shubhaa Bhattacharyya*

September 12, 2025

[Link to the latest version](#)

Abstract

This paper investigates how exposure to collectivist versus individualistic cultural values shapes immigrants' labour market outcomes, drawing on rich Swedish administrative data. Leveraging variation in age at migration among immigrant siblings, I isolate the effects of differential cultural assimilation on earnings, educational attainment, and occupational choices. The results show that migrating at an older age is associated with lower earnings, both in absolute terms and relative to observable skills, with this penalty attenuated for immigrants originating from more individualistic cultures. Older age at migration is also linked to a reduced likelihood of completing tertiary education, potentially constraining subsequent labour market opportunities. Women, despite sorting disproportionately into prestigious occupations, continue to face a persistent wage penalty relative to men. By contrast, I find no systematic evidence that exposure to collectivist cultural values influences occupational sorting into prestigious, socially oriented, creative, or routine-intensive fields.

*Department of Economics, Stockholm School of Economics. Email: shubhaa.bhattacharyya@hhs.se.
This paper has greatly benefited from helpful discussions with Robert Östling, Tore Ellingsen, Oscar Nordström Skans, Céline Zipfel, Ulrika Ahrsjö, Viking Waldén, Sofia Hernnäs, Petter Berg, Salil Sharma, and Cristina Clerici. Financial support from the Institute for Labour Market and Education Policy Evaluation (IFAU) is kindly acknowledged. All remaining errors are my own.

Keywords: Cultural assimilation; Integration; Gender; Discrimination

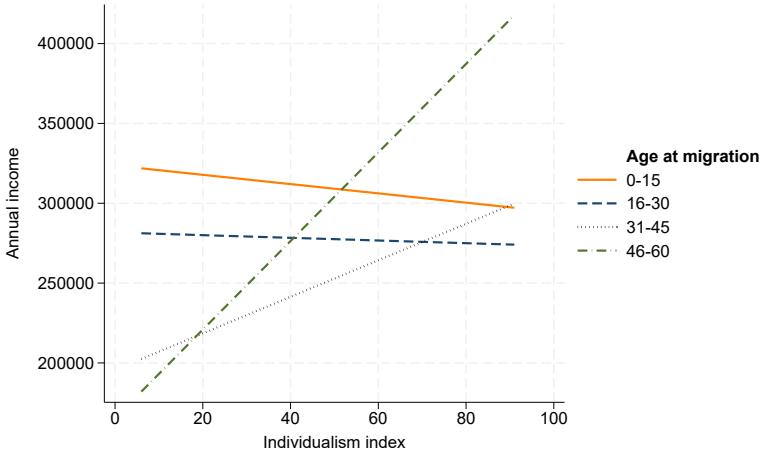
1 Introduction

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 [Fernandez2007](#). 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](#)). In a recent study, [Ek2024](#) provides compelling evidence that cultural values are a key determinant of economic success. He finds that country-of-origin culture (with a particular emphasis on autonomy versus obedience), robustly predict cross-country differences in human capital, after accounting for education and experience thus highlighting that culture, beyond formal skills or discrimination, leaves a lasting imprint on economic outcomes. Additionally, [Ek2024](#) also shows that individuals from high-autonomy (individualistic) cultures possess a comparative advantage in occupations characterized by low routinization, indicating a concrete channel through which culture influences occupational sorting. Motivated by these findings, this paper examines whether and how cultural background shapes immigrants' labour market trajectories.

Figure 1 depicts average annual earnings against the individualism index of the country of origin, differentiated by age at migration cohorts. The graph suggests that older immigrants from more individualistic societies generally achieve higher incomes, but that individualism does not seem to matter as much for immigrants who arrive when they are younger. One possible interpretation could be that immigrants who arrive with children are not representative of their home-country culture. Alternatively, it may be that early exposure to the host country environment allows young migrants to assimilate in ways that neutralize any disadvantage associated with collectivist norms, effectively erasing cultural penalties by the time they enter the labour market.

However, cross-country correlations can reflect many confounding factors, such as selective migration or unobserved family traits, beyond culture itself. To isolate the effects of

Figure 1: Individualism, earnings and age at migration



The graph plots annual average earnings (CPI adjusted to 2024 prices) against the individualism index of the country of origin. Separate lines represent different age-at-migration cohorts, illustrating how the association between cultural background and earnings varies by age at arrival.

cultural exposure more credibly, I employ a stringent empirical strategy using a sibling fixed-effects design. This approach compares the labour market outcomes at age 30 of siblings who migrated at different ages during childhood, but share similar home environments and genetic cognitive traits. An older sibling spends more formative years immersed in the country-of-origin culture, whereas a younger sibling experiences earlier assimilation into Sweden's more individualistic culture. By exploiting this variation in cultural exposure within families, I investigate how differential exposure to individualistic versus collectivist cultural norms, proxied by age at migration, influences immigrants' labour market integration.

Using this research design, I uncover two main results. First, as expected, I find a strong effect of age at migration on adult earnings. In the Swedish context, an immigrant's age upon arrival is a powerful predictor of their eventual labour market success. Early migration significantly improves earnings. This age-at-arrival penalty is consistent with standard assimilation narratives; as migrants who arrive later face hurdles in language acquisition, education, and social integration that correspondingly translate into lower earnings. Second, I find that cultural background, as captured by origin-country individualism, moderates the economic losses associated with migrating at older ages during childhood. The divergence in patterns between older and younger

migrants suggests that child migrants may be less influenced by origin-country cultural norms, or may adopt different values altogether, potentially leading to different economic outcomes compared to those who migrate later in life.

An alternative explanation is that assimilation to individualistic values occurs only gradually, but that it manifests itself through channels that are beyond earnings. For example, more collectivistic immigrants may be more prone to seeking high-paying jobs. After all, one of the defining characteristics of collectivism is that parents have a strong influence over the children's life-choices, and parents may value financial security more highly than their children do. To investigate this possibility, I next control for a variety of individual characteristics including education and occupation, two key factors potentially under parental influence, in the earnings regression. To the extent that individuals earn more because they are pushed into occupations they don't enjoy and are productive in, collectivism should now be associated with lower conditional earnings, or a larger earnings penalty. If cultural assimilation is a gradual process, younger siblings, who have spent more time immersed in the host country's environment, may be better positioned to resist parental pressure or internalized norms from the country of origin. In this case, the earnings penalty associated with collectivist cultural exposure should diminish as the duration of time spent in Sweden increases, particularly for those who arrive at younger ages and undergo more complete assimilation prior to labour market entry. I indeed find evidence that collectivist immigrants face earnings penalties that decrease with time in Sweden, as the gradual assimilation hypothesis suggests.

A more direct way to examine whether the influence of collectivist norms diminishes over time is to assess whether siblings who spent longer periods in Sweden prior to entering the labour market differ in their occupational choices from those who migrated later. If such differences are observed, and vary with the level of collectivism in the country of origin, this would provide further evidence that cultural assimilation is a time-dependent process and that resistance to culturally prescribed roles strengthens with earlier or longer exposure to the host society. While earnings represent a key dimension of economic integration, studying occupational choice further complements our understanding of labour market integration, as it reflects not only financial returns but also individual preferences over non-monetary job attributes such as autonomy, prestige, and social value.

Including occupational outcomes in the analysis allows for a broader understanding of how cultural values may shape immigrants' labour market behaviour beyond earnings alone, by influencing the types of roles individuals pursue and the environments in which they choose to work.

I first test the hypothesis that siblings with greater exposure to a collectivist culture develop a stronger preference for occupations traditionally regarded as prestigious or socially valuable. Collectivist cultures emphasize family, kinship, and societal needs, whereas individualist cultures prioritize self-interest. Consequently, individuals raised in collectivist environments may be highly influenced by parental guidance and societal perceptions, leading them to prioritize occupational prestige and social value over personal interests. I also focus on two other tenets, the choice of creative occupations and the degree of task routinization in jobs. I test the hypothesis that exposure to collectivist norms may discourage individuals from pursuing careers in the creative or cultural sectors, as these fields often involve unconventional career paths, high autonomy, and self-expression; traits more closely associated with individualistic values. Lastly, I test whether exposure to collectivist cultural norms leads to individuals prioritizing jobs with routinized tasks. Routine occupations, characterized by structured workflows, repetitive tasks, and adherence to authority, align more closely with collectivist values, which emphasize conformity, hierarchy, and societal order.

I find that cultural background does not significantly predict patterns of occupational sorting among child migrants. These findings suggest that while cultural influences remain broadly relevant, their specific impact on labour market outcomes, especially in terms of earnings and occupational sorting, is subtle and context-dependent. I also find that female immigrants are significantly more likely to sort into occupations perceived as socially valuable or prestigious, yet simultaneously experience larger earnings penalties relative to their male counterparts. This finding aligns with a growing literature that highlights the role of gender norms in shaping occupational preferences and economic outcomes. Cultural expectations regarding gender roles, especially in collectivist societies, tend to emphasize communal responsibilities, care work, and conformity to societal ideals, which may lead women to prioritize socially esteemed professions over economically lucrative ones ([Fortin, 2005](#); [Giuliano, 2007](#)). These occupational preferences, while

normatively valued, may offer lower monetary returns or less wage negotiation leverage, thereby exacerbating gender-based earnings disparities. Moreover, collectivist cultures often place a stronger emphasis on family obligations and gender-specific divisions of labour, which may restrict women's engagement with competitive or male-dominated sectors, particularly after migration. These mechanisms can compound the barriers faced by female migrants, making cultural background an important moderator of gender disparities in labour market integration.

I also examine educational choice as a potential mechanism. Migrants who arrive at older ages are less likely to attain tertiary education by age 30, suggesting that delayed integration may hinder educational advancement and limit earnings potential. While they are slightly more likely to choose STEM majors, consistent with collectivist norms favouring socially valued or secure fields, this effect is not statistically significant.

A prime focus of this study is variation in cultural assimilation, and delineating the influence of culture as a possible determinant of economic phenomena presents a natural challenge. 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](#)). In order to construct a country-specific index that captures individualism, I primarily focus on dimension of cultural individualism, following Hofstede2010. I complement this measure by closely following the work of Inglehart2010 which has been influential in political science and sociology. I use the World Values Survey ([Haerpfer et al., 2022](#)) (henceforth abbreviated as WVS), which is 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.

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 labour 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; 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; Doepeke and Zilibotti, 2017). This paper contributes to this literature by studying how cultural assimilation influences occupational outcomes and preferences among immigrants in Sweden. Åslund *et al.* (2015) document that age at migration significantly affects social integration in Sweden, with older migrants being less likely to live close to, work with, or marry natives. Holmlund *et al.* (2023) study whether exposure to immigrant origin peers in school affects natives' probability to have a child with a partner with non-Western background, and find that natives are affected by exposure to opposite-sex peers. Aldén (former Andersson) study the association between culture, gender roles and the gender gap in choice of major; finding that the gender gap in STEM is smaller for individuals who originate in countries where women are more likely, relative to men, to major in STEM.

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). Individualism and collectivism have been shown to shape various economic behaviours, including redistribution (Binder, 2019; Hammar, 2016), 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, this analysis builds on a growing body of literature investigating the labour 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 educational choice and occupational sorting, with a focus on occupational prestige, the social value of jobs, routinization of tasks and the creative component of jobs. To the best of my knowledge, this is the first paper that studies the role of culture in affecting occupational choices concerning prestige and social value of jobs.

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, presents the estimating equations and results, followed by robustness checks and supplementary analyses in Section 4. Finally, Section 5 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 and migration registers respectively provide data on date (and country) of birth and migration. In constructing my sample, I include immigrants who had migrated at most once prior to their arrival in Sweden. I further restrict the sample to siblings who migrated together from the same origin country and who were younger than 14 years old upon arrival. This age restriction ensures that these individuals completed at least Grade 9 in Sweden, thereby taking part in national standardized tests administered in grades 3, 6, and 9, which include Swedish as a compulsory subject. Consequently, the

sampled individuals are likely proficient in Swedish, significantly reducing the possibility that language barriers substantially influence their labour market outcomes. Additionally, I limit the analysis to siblings with a birth order below 4 to mitigate potential differences arising from parental investment variations associated with larger families.

The Educational Register provides 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 and the municipality of residence.

The source for data on occupations and wages is a combination of 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 the ILO's ISCO classification.

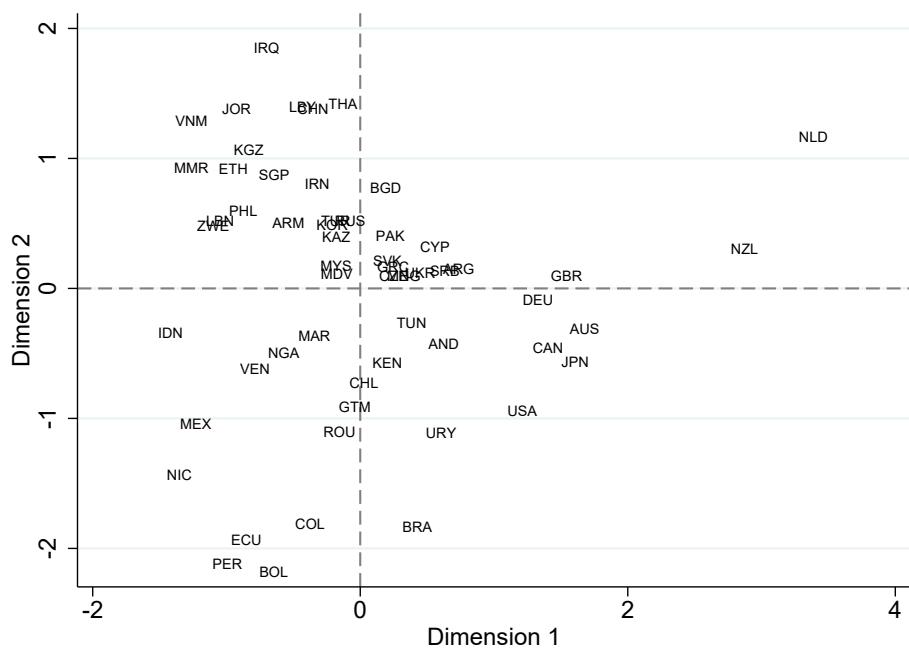
2.2 Individualistic and collectivist cultural norms

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-group members and shape their behaviour primarily on the basis of in-group norms (see Triandis2001 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 Hofstede2010 for 76 countries. The individualism index (IDV) is constructed based on average responses to four survey questions about job preferences. Respondents are asked to rate the importance of different job characteristics on a five-point scale, ranging from 1, *"of utmost importance,"* to 5, *"of very little or no importance."* The questions are: *"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?"* The index captures the relative emphasis placed on individual versus collective values, with higher scores indicating stronger individualistic preferences.

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 Ingehart2004, Inglehart2010 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 2 illustrates this in a scatterplot and data for 59 countries are used. In order to create this index, 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 of freedom over security; Political action (signing a petition, joining boycotts, attending lawful/peaceful demonstrations, joining unofficial strikes, organizing political activities, events and protests); Social activism (donating to a group or campaign, contacting a government official, encouraging others to vote); Justifying homosexuality; Freedom of choice and control over the way life turns out.* I primarily use this measure for robustness checks, as this measure allows for the inclusion of a smaller set of countries. The measure is constructed so that higher scores indicate stronger individualistic preferences.

Figure 2: Individualism across countries



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 Australia, Japan and Canada, exhibit higher scores and are grouped together, while collectivist countries, like Iraq and Vietnam show lower scores.

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.

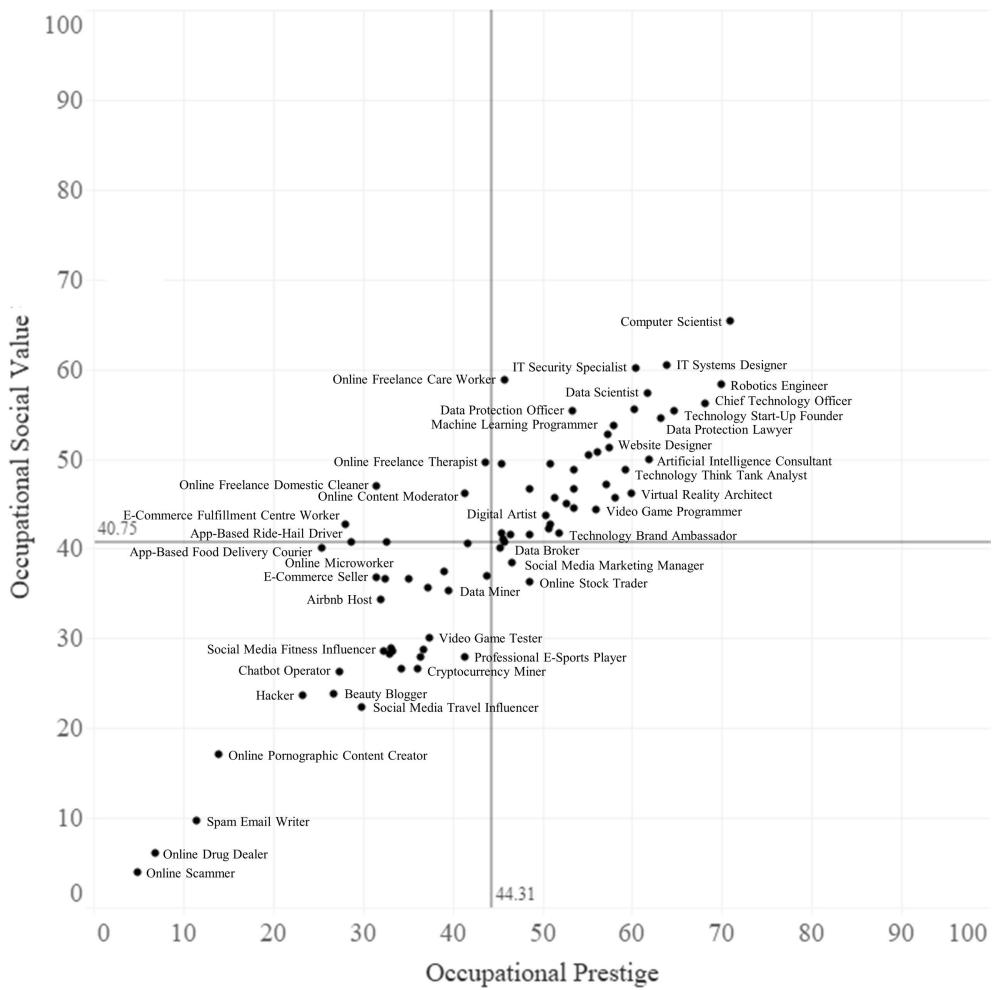
I calculate the average prestige score, and average social value of occupations for each 4-digit classification within the *ISCO-08* system, and subsequently match these to the Standard för svensk yrkesklassificering (*SSYK*), which is the Swedish system of classification using the key provided by Statistiska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

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

Figure 3: Occupational prestige and the social value of jobs



Distribution of perceived occupational prestige and social value ([Newlands and Lutz, 2024](#)).

(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 Task routinization in jobs

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 are mapped to the Swedish SSYK occupational classification system.¹ In future iterations, I aim to refine and expand this task-based index.

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 neighbourhoods 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

¹I am grateful to Sofia Hernäs for kindly sharing relevant data that enabled the construction of this measure.

behavioural genetics suggests that genetic and hereditary traits account for 40–60% of cognitive abilities and play a significant role in determining educational and labour 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.

Recent research highlights that cultural values from one’s country of origin, notably the dimension of autonomy versus obedience, robustly predict cross-country differences in human capital outcomes, even after controlling for educational attainment and labour market experience (Ek, 2024).

To rigorously isolate the impact of cultural exposure from confounding factors such as selective migration or unobserved family-level traits, I implement a stringent sibling fixed-effects design. The main sample consists of siblings who migrated before age 14, ensuring that each individual completed at least Grade 9 in Sweden and participated in compulsory standardized national exams in Swedish. This criterion helps ensure proficiency in Swedish, significantly minimizing language barriers that might otherwise affect labour market outcomes. In robustness checks, I relax this age restriction to assess the sensitivity of the results.

Specifically, using a sample of biological siblings within immigrant households, I estimate the following specification to examine how exposure to collectivist versus individualistic cultural norms, proxied by age at migration, shapes their economic integration at age 30:

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

The outcome variable Y_{ijmo} reflects various dimensions of economic integration for individual i from family j migrating from country o , Age_i^{lm} is i ’s age at migration, and Individualism_o captures cultural individualism for the origin country, o .

The interaction term ($\text{Individualism}_o \times \text{Age}_i^{lm}$) captures the moderating effect of individualistic cultural exposure on the relationship between age at migration and the relevant economic outcome (for example, earnings). The model includes family fixed effects (α_j) and for the 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 \(2015\)](#) show that birth order effects can arise from strategic parenting, where stricter discipline for earlier-born children helps parents establish a reputation of toughness. This results in early-born children facing greater parental pressure, while later-born siblings benefit from more autonomy in their decision-making.

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 labour 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 who 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 may make 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 leave behind some children in their origin country, and move with children that they think are more likely to benefit from integrating in Sweden.

3.1 Does culture affect economic integration?

3.1.1 Earnings

In order to assess the influence of cultural assimilation on economic integration, I estimate the specification outlined previously where the outcome variable, Y_{ijmo} , represents annual earnings at the age of 30 for individual i residing in municipality m from family j with a country of origin o . All covariates and fixed effects are defined consistently with prior specifications.

The results are presented in Column (1), in Table 1. The regression results reveal a strong and negative relationship between age at migration and earnings. Specifically, the coefficient on age at migration ($\beta = -145.20, p < 0.01$) indicates that among migrants from the most collectivist countries, each additional year spent in the origin country is associated with a reduction in annual earnings by approximately 14,520 SEK, or a standardized effect size of 0.07 SD. This finding suggests that individuals who migrate later in life may face substantial barriers to economic assimilation, including fewer years of host-country education, reduced language proficiency, and more limited integration into social and professional networks.

The interaction between age at migration and the individualism index ($\beta = 120.9, p < 0.05$) is positive and significant. This implies that for each unit increase in the standardized index of individualism, the negative earnings effect of age at migration is mitigated by around 12,090 SEK, which is approximately 83% of the amount of reduction in annual earnings, 14,520 SEK . This is consistent with the notion that individualistic cultural traits, such as self-reliance, autonomy, and initiative may facilitate economic integration by enhancing adaptability in unfamiliar labour market environments. To assess the robustness of the baseline estimates, I re-estimate the main specification on three progressively more restrictive subsamples; migrants who arrived before ages 9, 14, and 19. The results are reported in Table 8 in the Appendix. While age at migration remains a strong determinant of economic success, I find that the moderating effect of individualism is highly sensitive to sample restrictions.

The coefficient on gender ($\beta = -473.9$, $p < 0.01$) highlights a substantial earnings gap: female immigrants earn nearly 47,390 SEK less annually than their male counterparts. This pronounced gender disparity aligns with a large body of literature pointing to structural inequalities and differences in occupational preferences, hours worked, and returns to experience.

Birth order effects remain small and statistically insignificant across specifications, suggesting that unobserved family dynamics beyond age at migration contribute little to explaining variation in earnings among siblings.

In summary, age at migration emerges as a robust predictor of immigrant earnings, and there is a moderating effect of cultural individualism. These findings underscore the central role of early integration in shaping long-run labour market outcomes, while suggesting that cultural background may exert more subtle effects that are difficult to detect in earnings alone.

Table 1: Cultural assimilation and the labour market outcomes of immigrants

Variables	(1) Earnings	(2) Earnings penalty	(3) Hours worked	(4) Income dummy
Age at migration	-145.2*** (33.79)	75.85*** (8.224)	-0.973 (1.502)	-0.0147** (0.00687)
Female	-473.9*** (55.61)	225.3*** (28.75)	-18.96*** (2.248)	-0.0142 (0.0103)
Age at migration*Individualism	120.9** (58.84)	-49.33*** (17.09)	0.819 (2.780)	0.0159 (0.0112)
Birth order				
2	-16.84 (48.65)	-10.20 (13.71)	-2.220 (2.627)	-0.00447 (0.0110)
3	-16.91 (105.8)	-19.97 (23.50)	-2.339 (5.661)	-0.0110 (0.0233)
Constant	3,466*** (123.4)	-456.5*** (37.82)	162.2*** (6.719)	0.862*** (0.0313)
Observations	33,942	30,179	7,823	33,942
Average	2504.97	24.39	144.58	.78
Standard Deviation	2054.31	993.5	52.7	.41

Notes: ***p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcomes reflect various measures of labour market integration among immigrants. In Column (1), the outcome is CPI-adjusted annual earnings (in 100 SEK); in Column (2), it is the annual earnings penalty. Both variables are winsorized at the 99th percentile. Column (3) reports results for hours worked, while Column (4) uses a binary indicator equal to one if annual earnings exceed 50,000 SEK. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration year fixed effects are included, consistent with the main specification.

3.1.2 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.

Previously, I examined the effect of cultural assimilation on earnings and found that siblings who arrived in Sweden at younger ages (thus spending more time in the host country) tend to have higher earnings. While individualistic origins appear to mitigate the earnings penalty associated with later migration, this effect is sensitive to sample restrictions. This raises the possibility that families who migrate with children may already differ culturally from those who do not. Alternatively, assimilation to individualistic values may occur gradually, and earnings may be an incomplete proxy for such cultural shifts. After all, one of the defining characteristics of collectivism is of strong parental

influence, and parents value financial security over personal choices. To investigate this, I examine conditional earnings by controlling for education and occupation, two domains likely shaped by family expectations, and use the earnings penalty as a complementary outcome.

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:

$$y_{i,m,t} = f(\text{Education}_{i,t}, \text{Employment}_{i,t}) + \alpha_{m,t} + e_{i,m,t}, \quad (1)$$

where $y_{i,m,t}$ represents disposable income for individual i in municipality m and year t . The function f includes education and employment interactions², while $\alpha_{m,t}$ captures municipality fixed effects to capture systematic income differences across regions, or urban and rural areas.

The resulting residual, $e_{i,m,t}$, measures the deviation of actual income from predicted income. To facilitate interpretation, I define the earnings penalty as the negative of this residual:

$$\text{Earnings Penalty}_{i,m,t} = -e_{i,m,t}.$$

An earnings penalty 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, $\hat{e}_{i,m}$, at ages 20, 25, and 30. This is used as an outcome to quantify the earnings penalty faced by an individual. It is important to acknowledge that this measure may capture factors such as differences in hours worked, participation at the extensive margin, or productivity variations, potentially influenced by language barriers or cultural adjustment.

²To 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 includes post-secondary education of at least two years. Occupations are categorized at the 1-digit level, and 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,” and “Military.” I use the interaction between tertiary education and the SNI occupational categories.

While discrimination is a plausible contributor, it is challenging to directly measure and disentangle from other factors using the available data.

I estimate the specification outlined previously, where outcome variable, Y_{ijmo} , represents the earnings penalty, $e_{i,m}$, for individual i residing in municipality m from family j with a country of origin o . All covariates and fixed effects are defined consistently with prior specifications.

The results are presented in Column (2) in Table 1. The coefficient for age at migration ($\beta = 75.85$, $p < 0.01$) is positive and statistically significant. This result implies that for the most collectivist countries (that is, for countries with the lowest individualism score), migrating at older ages generates larger earnings penalties. Since income is measured in 100 SEK units, the coefficient implies 7,585 SEK (or, 0.076 SD) lower-than-predicted annual earnings per extra year spent in the country of origin. The corresponding low standard error (8.224), indicates that the estimate is precisely estimated.

The interaction term between age at migration and cultural individualism ($\beta = -49.33$, $p < 0.001$) is statistically significant. This implies, every one-unit increase in the standardized individualism index is associated with lowering the earnings gap by 4,933 SEK, annually, which is approximately 65.03% of the 7,585 SEK earnings gap per extra year spent in the country of origin. For illustrative purposes, consider the predicted earnings penalties at different cultural extremes. For migrants from the most collectivist countries (where the standardized individualism index equals 0), the earnings penalty is approximately 7,585 SEK per year of age at migration. This implies a total penalty of 75,850 SEK for a migrant arriving at age 10. In contrast, for migrants from the most individualistic countries (where the index equals 1), the earnings penalty is reduced by 4,933 SEK per year. Thus, the difference in predicted annual earnings penalties between migrants from the most individualistic and most collectivist countries when migrating at age 10 is approximately 26,520 SEK, or 26.70 standard deviations of the earnings penalty distribution. While large, this difference reflects a model-based contrast at the theoretical extremes of the cultural index, and should be interpreted as illustrative rather than representative of average cross-country differences.

The coefficient for gender ($\beta = 225.3$, $p < 0.01$) is positive, highly significant, and

precise. Female immigrants have 22,530 SEK lower than predicted earnings per year, compared to their male counterparts. This disparity suggests that immigrant women are disproportionately affected, consistent with prior literature on gender disparities in the labour market. This may also be attributed to women's preferences for jobs offering family-friendly amenities such as flexible working hours or parental leave benefits, over higher remuneration ([Xiao, 2024](#)). 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 limited precision.

These findings highlight the influence of cultural exposure on labour market outcomes, with older migrants and women experiencing significant penalties in earnings.

To further validate that the earnings gap indeed reflects broader patterns of labour market disadvantage, I examine how age at migration and cultural individualism relate to a series of alternative economic outcomes. Column (3) of Table 1 represents total hours worked; and Column (4) a binary indicator for earning above 50,000 SEK annually as complementary outcomes. These additional measures allow for a more comprehensive assessment of labour market integration, capturing both intensive margin behaviour (such as variation in total hours worked) and extensive margin outcomes (such as crossing meaningful income thresholds). The effect of age at migration on hours worked is not statistically significant, and there is a significant but moderate negative effect on the likelihood of earning above the threshold. These suggest that the earnings penalty is not merely a function of labour supply differences.

Finally, the earnings penalty measure described above is conceptually similar to conditioning on education and employment. As such, while this measure is useful for describing residual gaps in earnings relative to observable characteristics, it is problematic when used to infer causal mechanisms. To better understand these mechanisms, I examine education and occupational sorting as separate outcomes in the following sections.

3.2 Culture as a determinant of occupational choices

In the previous analysis, I examined the impact of cultural background on immigrants' economic outcomes, specifically their earnings and associated earnings penalties. Another mechanism is to observe occupational choices. I study whether they differ between siblings with varying exposure to the host country, and whether these differences are moderated by origin-country collectivism. Complementary to economic success, occupational choice also captures significant non-pecuniary preferences and motivations, reflecting aspirations and broader cultural influences.

Prior research has demonstrated the persistence of cultural traits and their significant influence on individuals' beliefs, aspirations, and career decisions. In Sweden, a distinctly individualistic society, immigrants from predominantly collectivist cultures may experience notable divergence between their cultural norms and those prevalent in the host country. Collectivist cultures often emphasize conformity, adherence to authority, and occupational paths perceived as prestigious or socially valuable. Such cultural orientations can steer individuals toward occupational choices aligned with societal expectations rather than their personal interests, skills, or optimal economic returns, potentially resulting in occupational misalignment and subsequent earnings penalties.

I test the hypothesis that greater exposure to collectivist cultural environments leads individuals to prioritize occupations characterized by *(i)* conventional prestige, *(ii)* perceived high social value, *(iii)* a lower likelihood of selection into creative or cultural occupations, and *(iv)* a higher degree of task routinization reflecting conformity and adherence to authority.

To empirically evaluate this hypothesis, I employ the sibling fixed-effects approach described previously, estimating the following specification:

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

Here, the dependent variable Y_{ijo} represents occupation-specific attributes for individual i from family j originating from country o , measured at age 30. Specifically, I consider: (i) perceived occupational prestige, (ii) perceived social value, (iii) an indicator of employment in creative or cultural sectors, and (iv) the extent of routinization of job tasks. All covariates and fixed effects are defined consistently with prior specifications. The results are presented below, and a discussion follows.

Table 2: Cultural assimilation and the occupational choice of immigrants

Variables	(1) Prestige	(2) Social Value	(3) Creative	(4) Non-routine
Age at migration	-0.526 (0.378)	-0.644 (0.405)	0.00511 (0.00321)	-0.00848 (0.00579)
Female	4.390*** (0.586)	6.290*** (0.832)	0.00231 (0.00642)	0.0168 (0.0135)
Age at migration*Individualism	0.402 (0.790)	0.718 (0.874)	-0.00854 (0.00564)	0.00431 (0.0127)
Birth order				
2	-0.856 (0.835)	-1.121 (0.814)	0.00837 (0.00569)	-0.0110 (0.0140)
3	-1.731 (1.157)	-2.246 (1.401)	0.0121 (0.00826)	-0.0251 (0.0298)
Constant	52.19*** (2.598)	59.71*** (2.934)	-0.00880 (0.0217)	0.545*** (0.0384)
Observations	4,383	4,381	6,324	2,800
Average	50.41	59.21	.01	.48
Standard Deviation	11.39	12.33	.11	.18

Notes: ***p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcomes reflect various dimensions of occupational choice among immigrants. Column (1) reports results for the perceived occupational prestige of the chosen job; Column (2) captures the perceived social value of the occupation. Column (3) presents a binary indicator for selecting a cultural or creative occupation, while Column (4) reflects the non-routine component of the job. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. All regressions include household fixed effects and immigration year fixed effects, consistent with the main specification.

3.2.1 Occupational prestige

In collectivist cultures, societal perceptions often emphasize hierarchical structures and the societal prestige of professions. This may encourage individuals to align their occupational choices with roles deemed prestigious by societal standards, rather than prioritizing personal interests, aptitudes, or economic opportunities.

In this analysis, the outcome variable $Y_{ij,o}$ reflects the perceived occupational prestige associated with the profession chosen by individual i from family j with a country of origin o . 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.

Column (1) in Table 2 presents the results of how exposure to individualistic cultural environments affects the choice of conventionally prestigious occupations. The dependent variable is the perceived occupational prestige associated with an individual's profession.

The coefficient for age at migration ($\beta = -0.526, p > 0.1$) is negative but not statistically significant, and relatively imprecise. This suggests that, for the most collectivist countries (where the score of individualism is minimal), migrating at older ages is associated with the choice of occupations that have lower 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 stifled academic achievements owing to these barriers. These barriers could reduce the likelihood of pursuing high-prestige occupations, potentially offsetting the effect of cultural preferences and contributing to a negative coefficient on age at migration.

The interaction term between age at migration and individualism ($\beta = 0.402, p > 0.1$) 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.

The results reveal that female immigrants are significantly more likely ($\beta = 4.390, p < 0.01$) to sort into occupations perceived as conventionally prestigious. This pattern may reflect underlying gender differences in how cultural norms are internalized, even among siblings within the same household. In particular, collectivist cultures tend to emphasize family obligations and reinforce gender-specific roles, which may place greater pressure on women to conform to traditionally esteemed career paths. While these dynamics offer an important lens for interpreting the observed patterns, a deeper investigation into gendered cultural transmission and its mechanisms lies beyond the scope of this study.

Birth order effects are also included in the analysis. The coefficients for second-born ($\beta = -0.856, p > 0.1$) and third-born ($\beta = -1.731, p > 0.1$) siblings are both negative, indicating that later-born individuals are less likely to pursue occupations with high prestige scores, compared to first-born siblings. This suggests, 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; but these effects are not statistically significant.

3.2.2 Social value of occupations

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 .

Column (2) in Table 2 presents the results. 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.

The coefficient for age at migration ($\beta = -0.644, p > 0.1$) is negative and statistically insignificant. While the point estimate suggests that migrating at older ages slightly decreases the likelihood of sorting into jobs with high social value, the lack of statistical significance and relatively large standard errors indicate imprecision in the estimate. There could be competing mechanisms at play. On the one hand, collectivist cultural norms emphasize societal perceptions and may encourage individuals to prioritize occupations seen as honourable 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. Moreover, many socially valuable occupations that emphasize public service or societal welfare (such as teaching, social work, or roles in charitable organizations), often require a deep understanding of local systems, institutional frameworks, linguistic excellence, or cultural norms. These requirements may pose additional barriers to immigrants, especially those who arrived later in life, making them less likely to pursue or be selected for such roles despite their potential alignment with collectivist values.

The interaction term between age at migration and individualism ($\beta = 0.718$, $p > 0.1$) is positive but also not statistically significant. The positive point estimate suggests that exposure to individualistic cultural environments may strengthen the positive 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. Female migrants are more likely to choose careers paths that are deemed socially valuable ($\beta = 6.290$, $p < 0.01$), and these effects are significant.

Negative birth order effects 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, but these effects are not statistically significant.

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; traits that align more closely with individualistic cultural values.

Here, I test the hypothesis that exposure to collectivist cultural norms is associated with lower likelihood 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.

Column (3) in Table 2 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 interaction term between age at migration and individualism ($\beta = -0.008$) is negative and statistically insignificant, and the coefficient for age at migration ($\beta = 0.005$) is also small, insignificant 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 labour 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.

3.2.4 Task routinization

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 .

Column (4) in Table 2 presents the results, where the dependent variable reflects the degree of routinization in occupations.

The coefficient for age at migration ($\beta = -0.008$, $p > 0.1$) is negative and statistically insignificant. This indicates that one additional year spent in the home country in Sweden is associated with a decrease in the non-routine component of occupations, for the most collectivist countries. 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 interaction term between age at migration and individualism ($\beta = 0.004$, $p > 0.1$) is positive but not statistically significant. While the point estimate suggests individualistic origins ameliorate the negative association between age at migration and the probability of choosing non-routine jobs, the lack of significance and relatively larger standard error preclude any firm conclusions.

Following birth order effects, the coefficient for second-born siblings ($\beta = -0.0110$, $p > 0.1$) is negative and statistically insignificant, indicating that second-born siblings are less likely to choose occupations with non-routine tasks, compared to first-born siblings. The coefficient for third-born siblings ($\beta = -0.0251$) is also negative, although these effects are not statistically insignificant.

3.3 Educational sorting

In previous analyses, I document a consistent earnings penalty associated with higher age at migration, a pattern that is particularly pronounced among migrants from collectivist cultural backgrounds. One potential channel through which these penalties arise is occupational sorting. In collectivist societies, social conformity, deference to authority, and communal prestige are often emphasized over individual autonomy. These cultural norms may influence individuals to select occupations that are conventionally regarded as prestigious or socially respected, rather than those that align closely with their personal interests or maximize economic returns. If such occupational preferences are linked with

lower financial rewards, this could partially explain the earnings gap observed among older migrants who retain more of their origin-country cultural norms. To investigate this mechanism, I examine whether individuals with greater exposure to collectivist cultures, proxied by older age at migration, are more likely to sort into occupations with higher perceived prestige, social value, lower creativity, and higher task routinization. However, my findings reveal no robust or statistically significant association between cultural assimilation and occupational choice.

In this section, I investigate educational choice as another mechanism. I estimate the same empirical specification used in the main analyses, replacing the outcome variable with a binary indicator for whether an individual has attained tertiary education by the age of 30, and the results are presented in Column (1) in Table 3. In a further extension, I examine whether cultural background and age at migration influence the likelihood of pursuing science, technology, engineering, and mathematics (STEM) majors, given their well-documented earnings premiums and potential for upward mobility and the results are presented in Column (2) in Table 3.

This is motivated by a growing body of literature suggesting that collectivist cultures exert a strong influence on individuals' educational and occupational choices, particularly by encouraging alignment with familial and societal expectations.

I find that greater exposure to origin-country culture, proxied by a higher age at migration, is associated with a lower likelihood (1.79 percentage point decrease per year) of attaining tertiary education by age 30. This finding suggests that delayed integration into the Swedish school system may hinder educational advancement, potentially contributing to subsequent earnings losses.

However, when disaggregating by field of study, I find that older migrants are slightly more likely to sort into STEM majors, with a 0.2 percentage point increase per year of delayed migration, although the interaction with individualism is statistically insignificant. These results are consistent with existing literature documenting the role of collectivist norms in guiding individuals towards societally esteemed or economically secure fields such as STEM. While older migrants from collectivist backgrounds may pursue STEM degrees, perhaps to meet communal expectations or mitigate risk, they may still face

structural or cultural barriers that prevent full labour market integration, such as credential recognition, language barriers, or limited social networks.

Table 3: Cultural assimilation and educational choices of immigrants

Variables	(1) Tertiary Education	(2) STEM
Age at migration	-0.0179*** (0.00321)	0.00268 (0.00384)
Female	0.102*** (0.00889)	-0.256*** (0.0277)
Age at migration*Individualism	0.0139* (0.00719)	0.000505 (0.00668)
Birth order		
2	-0.0224*** (0.00724)	0.0101 (0.00637)
3	-0.0347** (0.0158)	0.0262** (0.0109)
Constant	0.349*** (0.0178)	0.416*** (0.0274)
Observations	46,081	41,171
Average	.27	.33
Standard Deviation	.44	.47

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcomes represent measures of human capital formation. In Column (1), the outcome is a variable indicating attainment of tertiary (post-secondary) education at the age of 30. In Column (2), the outcome is an indicator variable indicative of graduating with a STEM major, at the age of 30. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration year fixed effects are included.

4 Robustness Checks

The main analysis investigates how immigrants' cultural backgrounds, captured by the individualism index from Hofstede2010, influence their labour market outcomes, specifically earnings penalties and occupational choices. To assess the robustness of these results, I conduct several additional analyses and alternative specifications.

First, I replicate the main analyses using an alternative measure of individualism constructed following the methodologies proposed by Ek2024 and Inglehart2010. The results, presented in Table 6 (earnings) and Table 7 (occupational choice) in the appendix, remain qualitatively consistent with the primary findings. Specifically, within the main subsample (that is, children who migrated before the age of 14) older age at migration continues to be associated with lower earnings, both in absolute terms and relative to predicted wages based on observable skills. Additionally, individualistic cultural origins moderate the negative relationship between age at migration and absolute earnings, though no significant moderating effect emerges for the earnings penalty. Consistent with previous analyses, cultural background does not significantly influence occupational sorting; neither age at migration nor its interaction with individualism reach statistical significance at the conventional 5 % level of significance. Once again, female immigrants disproportionately select into conventionally prestigious and socially oriented occupations, yet experience substantial earnings disadvantages and penalties relative to observable skills.

Next, I include additional control variables to test the sensitivity of my findings. Specifically, I incorporate per capita GDP in Table 4. Although age at migration retains its significant impact on earnings penalties, the interaction term with individualism becomes non-significant. This attenuation is likely due to the high correlation between per capita GDP and individualism, making it difficult to separate the two effects.

I also relax the stringent specification that includes sibling and immigration-date fixed effects, opting instead for immigration-year fixed effects in Table 5. This approach compares migrants arriving in the same year but from different cultural contexts. Here too, while the age-at-migration effect remains robust, the interaction with individualism

is diminished and loses statistical significance.

To assess the robustness of the baseline estimates, I re-estimate the main specification on three progressively more restrictive subsamples; migrants who arrived before ages 9, 14, and 19. The results are reported in Table 8 and Table 9 in the Appendix, which present estimates for earnings in absolute terms and relative to predicted earnings based on observable characteristics, respectively. As anticipated, the coefficient on age at migration remains negative and significant across all cut-offs, confirming that later arrival systematically depresses absolute earnings and enlarges the residual earnings penalty. While the negative impact of later arrival remains robust across cohorts, the moderating effect of origin-country individualism loses significance when older adolescent arrivals are included. This variability could stem from heterogeneity in language acquisition, educational opportunities, and social integration experiences among migrants arriving at different developmental stages. Consequently, interpretations regarding cultural moderation effects should account for potential age-specific assimilation mechanisms and cohort heterogeneity, reinforcing the importance of carefully defining and contextualizing age cohorts in analyses of immigrant labour market integration.

5 Discussion

This paper studies whether the effects of cultural norms internalized during childhood can have a prolonged impact on immigrants' economic outcomes. By exploiting the variation in age at migration among immigrant siblings, the analysis isolates the impact of cultural background on adult labour market performance. The findings reveal that immigrants who arrived at older ages, especially immigrant women, face lower earnings both in absolute terms and relative to their expected wages. By contrast, those from more individualistic cultural backgrounds tend to experience smaller losses.

Such earnings disparities may evolve over time due to a combination of structural, informational, and cultural barriers. Migrants frequently encounter challenges in completing comparable educational credentials, often requiring more time to adapt to different curricula, acquire language proficiency, and navigate the formalities of degree recognition

or accreditation. These delays can postpone entry into the labour market or limit access to more competitive occupations. Once employed, immigrants may face informational frictions, including limited access to job search networks or knowledge about prevailing wage norms, which can restrict mobility and wage growth. Discriminatory hiring or promotion practices may further constrain their ability to convert human capital into earnings. In addition to these structural impediments, cultural background may play a subtler but important role in shaping labour market behaviour. Individuals from collectivist societies may place a higher value on group harmony and social hierarchy, which can inhibit assertiveness in negotiations or interactions with supervisors. As a result, they may be less likely to advocate for promotions, negotiate higher salaries. Cultural norms that emphasize respect for authority and deference to established hierarchies may reduce engagement in competitive workplace behaviours, contributing to persistently lower earnings.

I also examine educational choice as a potential mechanism. Migrants who arrive at older ages are less likely to attain tertiary education by age 30, suggesting that delayed integration may hinder educational advancement. A lack of tertiary education can further impede labour market success and restrict access to opportunities, thereby widening income gaps. Although they are slightly more likely to choose STEM majors, consistent with collectivist norms that emphasize socially valued or economically secure fields—this effect is not statistically significant.

Furthermore, I compare the occupational choices of siblings who spent longer versus shorter periods in Sweden during childhood, and assess whether these differences are shaped by collectivism in the origin country. Beyond earnings, occupational choices provide meaningful insights into economic success and labour market integration. In collectivist societies, social conventions and communal expectations often take precedence over personal preferences, potentially guiding individuals toward roles that align with family or community norms, even if such positions do not fully reflect their skills or aspirations. By contrast, an individualistic orientation prioritizes autonomy and personal ambition, encouraging immigrants to pursue occupations that better match their own talents and career goals. I find, however, that cultural assimilation does not significantly affect the likelihood of selecting conventionally prestigious careers, socially oriented

occupations, creative fields, or routine-intensive jobs. These findings suggest that while cultural heritage substantially influences earnings, its effect on occupational sorting is more limited.

Furthermore, the analysis reveals distinct gender-based disparities in occupational outcomes. Female immigrants exhibit a significantly higher propensity to enter careers perceived as traditionally prestigious or socially beneficial, despite encountering notably greater earnings penalties. This observed gender differential likely arises from intensified social expectations within collectivist cultural environments, which may disproportionately compel women to pursue occupational roles aligned with conventional prestige and societal value. Collectively, these insights reveal how deeply embedded cultural values and gendered expectations intricately mediate occupational sorting and economic success among immigrant populations.

From a policy perspective, these findings underscore the importance of facilitating cultural integration to enhance immigrant labour market outcomes. Initiatives such as career counseling, mentorship programs, and accessible information about diverse educational and occupational pathways in the host country could encourage broader occupational exploration. Expanding networking opportunities could also help immigrants diversify their occupational choices by providing exposure to varied role models and contacts. Additionally, the significant earnings penalties experienced particularly by late migrants and immigrant women suggest the need for targeted policy interventions. Tailored support mechanisms for these groups could substantially improve individual economic outcomes and enhance overall labour market efficiency, ultimately contributing to more equitable and productive integration of immigrants in the Swedish labour market.

References

- AHUJA, K., VAN DER SCHAAR, M. and ZAME, W. R. (2015). A theory of individualism, collectivism and economic outcomes. *arXiv preprint arXiv:1512.01230*.
- ALDÉN (FORMER ANDERSSON), L. and NEUMAN, E. (2022). Culture and the gender gap in choice of major: An analysis using sibling comparisons. *Journal of Economic Behavior Organization*, **201**, 346–373.
- ALGAN, Y. and CAHUC, P. (2010). Inherited trust and growth. *American Economic Review*, **100** (5), 2060–92.
- BALL, R. (2001). Individualism, collectivism, and economic development. *The Annals of the American Academy of Political and Social Science*, **573** (1), 57–84.
- BESLEY, T., FOLKE, O., PERSSON, T. and RICKNE, J. (2016). Gender quotas and the crisis of the mediocre man: Theory and evidence from sweden. *American Economic Review*, **106** (4), 120–135.
- BINDER, C. C. (2019). Redistribution and the individualism–collectivism dimension of culture. *Social Indicators Research*, **142** (3), 1175–1192.
- BISIN, A. and VERDIER, T. (2000). "beyond the melting pot": Cultural transmission, marriage, and the evolution of ethnic and religious traits. *The Quarterly Journal of Economics*, **115** (3), 955–988.
- and — (2001). The economics of cultural transmission and the dynamics of preferences. *Journal of Economic Theory*, **97** (2), 298–319.
- and — (2011). The economics of cultural transmission and socialization. *Handbook of Social Economics*, **1A**, 339–416.
- and — (2017). *On the Joint Evolution of Culture and Institutions*. Working Paper 2017-039, Human Capital and Economic Opportunity Working Group.
- BJÖRKLUND, A., LINDAHL, M. and PLUG, E. (2006). The origins of intergenerational associations: Lessons from swedish adoption data. *The Quarterly Journal of Economics*, **121** (3), 999–1028.

- CHETTY, R. and HENDREN, N. (2018). The impacts of neighborhoods on intergenerational mobility i: Childhood exposure effects. *Quarterly Journal of Economics*, **133**, 1107–1162.
- DOEPKE, M. and ZILIBOTTI, F. (2017). Parenting with style: Altruism and paternalism in intergenerational preference transmission. *Econometrica*, **85** (5), 1331–1371.
- EK, A. (2024). Cultural values and productivity. *Journal of Political Economy*, **132** (1), 295–335.
- FERNANDEZ, R. (2007). Women, Work, and Culture. (12888).
- FERNÁNDEZ, R. (2011). Chapter 11 - does culture matter? *Handbook of Social Economics*, vol. 1, North-Holland, pp. 481–510.
- FORTIN, N. M. (2005). Gender role attitudes and the labour-market outcomes of women across oecd countries. *Oxford Review of Economic Policy*, **21** (3), 416–438.
- FRANCOIS, P. and ZABOJNIK, J. (2005). Trust, social capital, and economic development. *Journal of the European Economic Association*, **3** (1), 51–94.
- GIULIANO, P. (2007). Living arrangements in western europe: Does cultural origin matter? *Journal of the European Economic Association*, **5** (5), 927–952.
- , ALESINA, A. and NUNN, N. (2013). On the origins of gender roles: Women and the plough. *Quarterly Journal of Economics*, **128** (2), 469–530.
- GORODNICHENKO, Y. and ROLAND, G. (2011). Culture, institutions and the wealth of nations. *Review of Economics and Statistics*, **93** (3), 960–982.
- GREIF, A. (1994). Cultural beliefs and the organization of society: A historical and theoretical reflection on collectivist and individualist societies. *Journal of Political Economy*, **102**, 912–50.
- (2006). History lessons: The birth of impersonal exchange: The community responsibility system and impartial justice. *Journal of Economic Perspectives*, **20** (2), 221–236.

- and TADELIS, S. (2010). A theory of moral persistence: Crypto-morality and political legitimacy. *Journal of Comparative Economics*, **38** (3), 229–244.
- GUISO, L., SAPIENZA, P. and ZINGALES, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives*, **20** (2), 23–48.
- HAERPFER, C., INGLEHART, R., MORENO, A., WELZEL, C., KIZILOVA, K., DIEZ-MEDRANO, J., LAGOS, M., NORRIS, P., PONARIN, E. and PURANEN, B. (2022). World values survey wave 7 (2017–2022) cross-national data-set.
- HAMMAR, O. (2016). The cultural assimilation of individualism and preferences for redistribution. *Working Paper Series*, **2016** (441).
- HAUK, E. and SAEZ-MARTI, M. (2002). On the cultural transmission of corruption. *Journal of Economic Theory*, **107** (2), 311–335.
- HEINE, S. J. (2020). Cultural psychology.
- HOFSTEDE, G., HOFSTEDE, G. J. and MINKOV, M. (2010). *Cultures and Organizations: Software of the Mind*. McGraw-Hill.
- HOLMLUND, H., LINDAHL, E. and ROMAN, S. (2023). Immigrant peers in the class: Effects on natives' long-run revealed preferences. *Labour Economics*, **82**, 102360.
- HOTZ, V. J. and PANTANO, J. (2015). Strategic parenting, birth order, and school performance. *Journal of Population Economics*, **28** (4), 911–936.
- NEWLANDS, G. and LUTZ, C. (2024). Occupational prestige and occupational social value in the united kingdom. *Research in Social Stratification and Mobility*, **91**, 100935.
- NUNN, N. (2012). Culture and the historical process. *Economic History of Developing Regions*, **27** (sup-1), 108–126.
- SCHWARTZ, S. H. (1994). Beyond individualism and collectivism: New cultural dimensions of values. *Cross-Cultural Research*, **28** (3), 122–147.
- SMITH-WOOLLEY, E., AYORECH, Z., DALE, P. S., VON STUMM, S. and PLOMIN, R. (2018). The genetics of university success. *Scientific Reports*, **8** (1), 1–9.

- SPOLAORE, E. and WACZIARG, R. (2013). How deep are the roots of economic development? *Journal of Economic Literature*, **51** (2), 325–369.
- TABELLINI, G. (2008). The scope of cooperation: Values and incentives. *The Quarterly Journal of Economics*, **123** (3), 905–950.
- TATLIYER, M. and GUR, N. (2022). Individualism and working hours: macro-level evidence. *Social Indicators Research*, **159** (2), 733–755.
- XIAO, P. (2024). *Equilibrium Sorting and the Gender Wage Gap*. Working Paper 144, VATT.
- ÅSLUND, O., BÖHLMARK, A. and SKANS, O. (2015). Childhood and family experiences and the social integration of young migrants. *Labour Economics*, **35**.

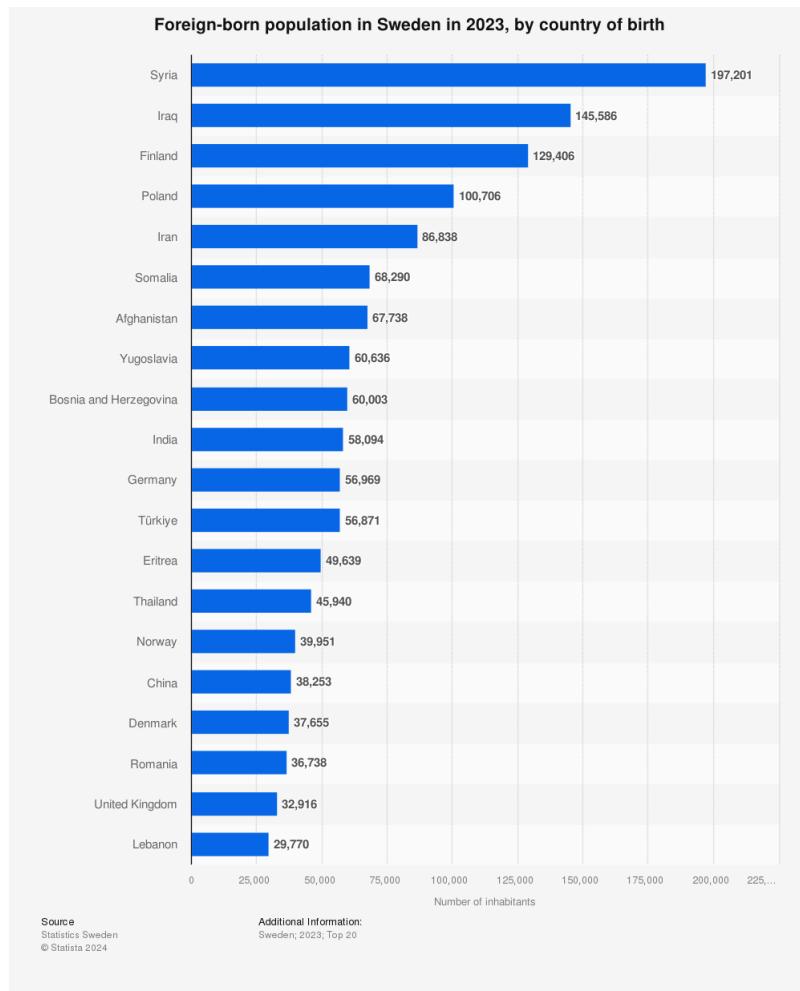


Figure 4: The graph plots the number of foreign-born individuals in Sweden by country of birth, in 2023. Source: Statista

5.1 Robustness checks

Table 4: Cultural assimilation and the earnings penalty: including per capita GDP

Variables	(1)	(2)
Age at migration	75.85*** (8.224)	67.21*** (9.314)
Female	225.3*** (28.75)	225.0*** (28.83)
Age at migration*Individualism	-49.33*** (17.09)	-10.00 (28.32)
Age at migration*Per capita GDP		-0.630** (0.276)
Birth order		
2	-10.20 (13.71)	-14.38 (14.89)
3	-19.97 (23.50)	-28.49 (26.60)
Constant	-456.5*** (37.82)	-442.8*** (37.49)
Observations	30,179	30,179
Average	24.39	24.39
Standard Deviation	993.5	993.5

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 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 using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration year fixed effects are included.

Table 5: Cultural assimilation and the earnings penalty:
including immigration year fixed effects

Variables	(1)	(2)
Age at migration	75.85*** (8.224)	62.58*** (5.151)
Female	225.3*** (28.75)	217.4*** (23.89)
Age at migration*Individualism	-49.33*** (17.09)	-32.84*** (7.965)
Birth order		
2	-10.20 (13.71)	-30.22** (14.16)
3	-19.97 (23.50)	-45.63** (18.52)
Individualism		120.1 (99.00)
Constant	-456.5*** (37.82)	-437.3*** (71.81)
Observations	30,179	39,674
R-squared	0.602	0.194
Average	24.39	24.39
Standard Deviation	993.5	993.5

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcome is the average earnings gap at the age of 30. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration date fixed effects are included in Column (1), and only the year of immigration fixed effects are included in Column (2)

Table 6: Cultural assimilation and labour market outcomes: results using an alternative measure of individualism

Variables	(1) Earnings	(2) Earnings penalty	(3) Hours worked	(4) Income dummy
Age at migration	-94.15*** (8.189)	59.93*** (4.766)	-0.479 (0.500)	-0.00557 (0.00352)
Female	-454.1*** (65.86)	224.6*** (33.48)	-18.03*** (2.304)	-0.0230* (0.0130)
Age at migration*Individualism	32.29*** (8.931)	-5.782 (9.055)	0.239 (0.546)	0.00365* (0.00204)
Birth order				
2	37.76 (31.83)	-9.174 (15.35)	-0.254 (1.948)	0.0114 (0.00728)
3	83.03 (72.90)	-19.85 (28.12)	2.032 (3.786)	0.0224 (0.0171)
Constant	3,577*** (80.01)	-582.3*** (47.71)	160.1*** (5.434)	0.840*** (0.0311)
Observations	27,610	25,519	6,969	27,610
Average	2504.97	24.39	144.58	.78
Standard Deviation	2054.31	993.5	52.7	.41

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcomes reflect various measures of labor market integration among immigrants. In Column (1), the outcome is CPI-adjusted annual earnings; in Column (2), it is the annual earnings penalty. Both variables are winsorized at the 99th percentile. Column (3) reports results for hours worked, while Column (4) uses a binary indicator equal to one if annual earnings exceed 50,000 SEK. Individualism is measured similar to Inglehart2010. Household and immigration year fixed effects are included, consistent with the main specification.

Table 7: Cultural assimilation and occupational choice: results using an alternative measure of individualism

Variables	(1) Prestige	(2) Social Value	(3) Creative	(4) Non-routine
Age at migration	-0.428* (0.244)	-0.390 (0.272)	0.000730 (0.00170)	-0.00200 (0.00570)
Female	4.018*** (0.649)	6.332*** (0.848)	-0.00153 (0.00593)	0.0146 (0.0129)
Age at migration*Individualism	0.0285 (0.155)	0.0238 (0.213)	-0.00267* (0.00138)	0.00336 (0.00262)
Birth order				
2	-1.100 (0.837)	-1.328* (0.782)	0.00143 (0.00584)	-0.00114 (0.0170)
3	-1.863* (1.078)	-2.201 (1.388)	-0.000657 (0.00714)	0.00390 (0.0323)
Constant	52.67*** (2.430)	59.65*** (2.870)	0.00731 (0.0184)	0.504*** (0.0511)
Observations	4,139	4,137	6,092	2,566
Average	50.41	59.21	.01	.48
Standard Deviation	11.39	12.33	.11	.18

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcomes reflect various tents reflecting occupational choice among immigrants. In Column (1), the outcome is the perceived occupational prestige of the chosen job, in Column (2), the perceived social value of the occupation. In Column (3), the outcome is a dummy variable indicating the choice of cultural/creative occupations, and Column (4) represents the non-routine component of jobs. Individualism is measured by the cultural dimension similar to Inglehart2010. Household and immigration year fixed effects are included, consistent with the main specification.

5.1.1 Variation across age-cohorts

Table 8: Estimated earnings effects: comparison across age cohorts

Variables	(1) 1-8	(2) 1-13	(3) 1-18
Age at migration	-188.9*** (50.72)	-145.2*** (33.79)	-133.6*** (30.86)
Female	-498.4*** (75.56)	-473.9*** (55.61)	-533.9*** (54.18)
Age at migration*Individualism	139.0* (77.36)	120.9** (58.84)	90.72 (57.91)
Birth order			
2	-98.98* (50.45)	-16.84 (48.65)	-6.122 (47.11)
3	-131.4 (113.2)	-16.91 (105.8)	-0.319 (95.28)
Constant	3,456*** (134.4)	3,466*** (123.4)	3,650*** (160.4)
Observations	17,344	33,942	46,829
Average	2675.41	2630.76	2561.34
Standard Deviation	2118.11	2087.28	2060.9

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors, clustered at the country level, in parentheses. The outcome is earnings (CPI adjusted and winsorized at the 99 % level) at the age of 30. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration year fixed effects are included.

Table 9: Estimated earnings penalty effects: comparison across age cohorts

Variables	(1) 1-8	(2) 1-13	(3) 1-18
Age at migration	89.05*** (19.03)	75.85*** (8.224)	62.69*** (9.126)
Female	217.5*** (20.34)	225.3*** (28.75)	232.7*** (25.78)
Age at migration*Individualism	-48.22** (20.69)	-49.33*** (17.09)	-24.82 (17.75)
Birth order			
2	30.58 (35.46)	-10.20 (13.71)	-13.77 (13.48)
3	56.96 (62.17)	-19.97 (23.50)	-30.41 (24.92)
Constant	-407.9*** (85.84)	-456.5*** (37.82)	-529.3*** (50.93)
Observations	16,369	30,179	41,572
Average	-50.94	-24.58	6.14
Standard Deviation	1046.31	1025.6	1001.74

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 (winsorized at the 99 % level) at age of 30. Individualism is measured using the cultural dimension described in Hofstede2010, normalized between 0 – 1. Household and immigration year fixed effects are included.