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by

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Abstract:

Does the economic effect of immigrant women differ from that of immigrants in general? This paper examines if gender has influenced the short- and long-term economic impact of mass migration to the US, using Census microdata from 1880 and 1910. By means of ordinary least squares and instrumental variable estimations, the analysis shows that a greater concentration of immigrant women is significantly associated with lower levels of economic development in US counties. However, immigrant women also shaped economic development positively, albeit indirectly via their children. Communities with more children born to foreign mothers and that successfully managed to integrate female immigrants experienced greater economic growth than those dominated by children of foreign-born fathers or American-born parents.

Keywords: Gender, migration, economic growth, development, counties, US.

JEL Codes: F22, J16, J61, O15, R23

Introduction

In 2015, 244 million people lived outside their countries of origin. Women represented almost half of all migrants, that is 48 percent or 117 million of total immigrants worldwide (United Nations, 2016). The salience of women immigrants has led to the development of a large literature focusing on women immigrants, how their experience differs from male immigrants, and how they are differentially embedded in family and social structures (e.g. Chant and Radcliffe, 2003; Kofman et al., 2008). Similarly, the economic impact of immigration has been thoroughly researched and, more recently, studies have begun to consider the long-term economic impact of migration, finding that it has a significant and positive economic impact on the places of destination and that this positive effect endures more than a century later (Rodríguez-Pose and von Berlepsch, 2014, 2015). Yet, despite the growing literature on gender and immigration and incipient research into the long-term economic impact of immigration, the interaction between these two factors has been ignored. Research on the economic impact of migration has too often considered the immigrant as 'genderless' and assumed that the dominant – e.g. 'male' – perception of the immigrant experience was identical for women. Hence, the question of whether there are gender-specific dimension to the long-term macroeconomic impact of migration remains unanswered.

This paper intends to tackle this gap in our knowledge. Focusing on the United States (US) during the Age of Mass Migration around the turn of the 20th century – a time when millions of people left their homelands and established themselves on American soil – we assess the link between female migration and economic development. We assume that women immigrants have a *two-fold* economic impact: A direct effect via territorial concentrations of female migration and a second, indirect one via their children. These two influences may affect economic development differently in the short- and long-term. While in the short-term large clusters of female immigrants could be connected to lower economic activity levels due to a lower participation of women in the official labour force, over the long-term, deep cultural ties across generations could leave a more positive trace. In line with the relevant literature, we assume immigrant women have played an essential role in migrant communities. We posit that women have acted as 'cultural carriers' of the mentality, customs, traditions, and social capital associated to the character of the immigrant and that, in this role, they have positively shaped the economic development of the places where they settled over the long-term. We argue that the institutional constructs brought to the US by immigrants and transferred especially from mother to child left a territorial imprint on their settlement regions

and that this imprint still affects the economic well-being of communities and territories in the US today.

In order to test whether this is the case, the paper adopts the following structure. Section 2 provides a historical overview of women immigrant settlement patterns in the US. Section 3 summarizes the literature linking female migration and economic development. In section 4, we explain the methodology and the employed data. Section 5 displays the results, while section 6 concludes.

Immigrant women during the Age of Mass Migration

The period between the mid-19th century and World War I is commonly referred to as the 'Age of Mass Migration' – a time where population movements reached an unprecedented dimension. Between 1860 and 1920, the stock of foreign-born in the US multiplied by more than a factor of three, from roughly 4 million in 1860 to nearly 14 million in 1920 (Gibson and Jung, 2006). During this time migration to the US was strongly gender-biased: only one in three immigrants was a woman. However, despite a higher male entry rate, greater male return rates and higher male mortality resulted in a relatively equal gender balance of the US foreign-born population. The gender ratio was close to 1 over the entire period (Appendix 1) (Gabaccia, 1994).

Women often shared the same motives as men for leaving Europe: poverty, population increases, food shortages, drought, political upheaval, and economic and religious oppression. They, however, also escaped other "forms of oppression unique to them as women" (Schwartz Seller, 1981:6): unwanted arranged marriages, unequal wages and working conditions, discrimination, sexual harassment, and the restrictiveness of female domestic roles.

Entering the US as immigrants proved more difficult for women than men. Although in theory gender-neutral, US immigration practices effectively hindered the entry of women. US law made entry difficult for those 'likely to become a public charge'. Particularly when travelling unaccompanied, women were scrutinised far more than men, especially regarding their marital status, intended residence, and financial situation. The absence of a male 'provider' often meant that women were viewed as economic dependents and sent back home (Friedman-Kasaba, 1996).

In spite of this, many foreign-born women made it to the US. The origin of these women was highly diverse in terms of social class, age, national origin, religion, and education. However, a series of common traits can be identified. Most women immigrants were young, generally between 25 and 44 (Gibson and Jung, 2006). In 1900 over 70% of them stemmed from north-western Europe– mainly Germany, Ireland, or Britain. Between then and the early 1920s, the share of southern and eastern European women – mainly from Russia, Austria-Hungary, and Italy – grew.

The large majority of immigrant women originated from agrarian and extractive areas, such as the potato and wheat fields of Ireland, the orchards of southern Italy, or the mining towns of Britain. Most were poor, unskilled and could neither read nor write. In some cases they had worked either as farm hands or domestic servants, in addition to their duties within the home. For those from outside the British Isles, familiarity with the English language was rare (Schwartz Seller, 1981).

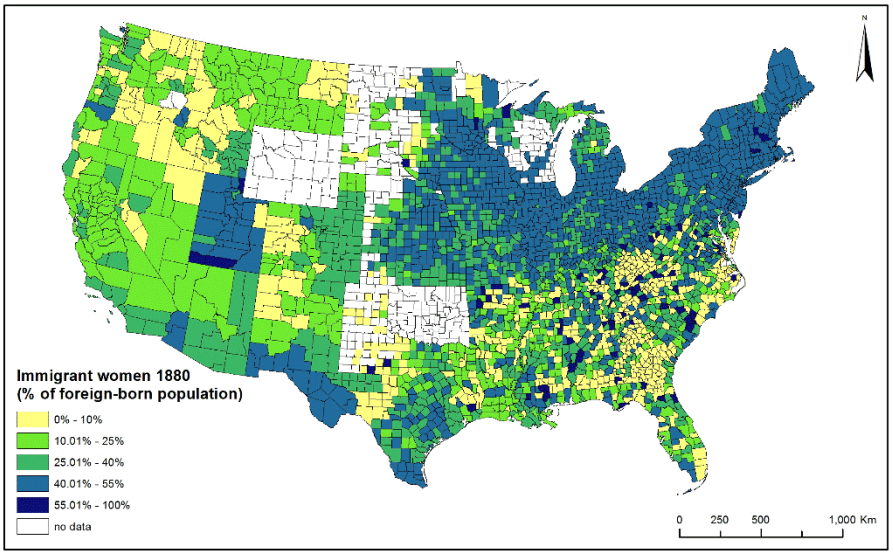
In 1900, close to 70% of women immigrants living in the US were married while only 20% were single (US Bureau of the Census, 1900). Being single was considered a great disadvantage at the time. Belonging to a family meant not only support in a new unknown country but, most importantly, financial security. Only very few women had enough savings to pay for the journey and to survive on their own after arrival. Unmarried women travelling alone generally did so to re-join parents, siblings, or other relatives (Weatherford, 1986). Thus, as a way to survive in the unknown, most women immigrants became wives or mothers shortly after arrival. The marital age for foreign-born women (around 20-21) was significantly lower than that of American-born women (usually 24-25) (US Bureau of the Census, 1900). While 70% of foreign-born women chose a partner from the same home country, those marrying outside their national origin tended to remain within their cultural group (i.e. an Irish woman marrying a Scot) or chose American-born men (Carpenter, 1927).

Immigrant families were usually larger than American ones. Foreign-born women had on average, one child every 3.2 years, while the figure for American women was 5.3 years (US Immigration Commission, 1911). The younger the mother, the higher the likelihood of one pregnancy per year. "[…] The child of a German immigrant was three times as likely to be the tenth child in its family as the American baby" (Weatherford, 1986:2).

Shortly after their arrival, most immigrant women received at first support from relatives and kinfolk already settled in the US. "Kinship became the single most important link in the construction of migration 'chains' from specific locations [back in Europe] to specific

locations within the United States" (Gabaccia, 1994: 62). After arriving in the US, immigrant women followed in their relatives' footsteps and joined them in their area of settlement. Figure 1 shows their settlement pattern based on 1880 Census data. High shares of female immigrants were the norm in the North-East of the country. In contrast to men, women tended to settle in the highly urbanized arc extending from Maine to Minnesota and, in particular, in New England, New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. Outside this belt, Utah and parts of southern Texas also had a high concentration of immigrant women.

Figure 1. Settlement pattern of immigrant women (% of total foreign stock), 1880



Source: IPUMS data; own calculations

In contrast, immigrant men largely outnumbered women in the West and in agricultural regions (Appendix 2). Urban and industrial areas had a more balanced immigrant gender ratio than rural ones, predominantly in the West (see Appendix 3). This bias was mostly due to the availability of 'female jobs'. The combination of domestic services and a concentration of female worker dominated industries, such as the textile and garment industry, drew immigrant women in large numbers. These settlement patterns for both female and male immigrants remained similar over time, as displayed in Appendix 4.

Job opportunities affected female foreign-born settlement. Yet, only around one in five immigrant women were gainfully employed and therefore active in the official labour market. In 1900, a mere 19% of the total adult – 15 years and above –, female, white, foreign-born population was an 'active breadwinner' (US Bureau of the Census, 1900a, Appendix 5). Immigrant female labour force participation also had a very distinctive structure.

Predominantly young women – aged under 24 – were in employment. Marriage and the birth of children marked a watershed, as immigrant wives and mothers generally stayed out of the official labour force. Return to official gainful employment was mainly associated with the loss of a husband as a consequence of separation, divorce, or death (Appendix 6). This implies that the family and the rearing of children, in particular, were the centre of the life of most immigrant adult women. Roles within the family were clearly divided: wives worked at home, providing childcare, food, shelter, and clothing while husbands worked outside, as breadwinners.

Officially employed women concentrated in so-called 'female industries', such as domestic services, manufacturing, textiles, fabric mills, or tobacco. While foreign-born men were employed in more skilled, higher paying jobs, the wide range of foreign-born female occupations was at the low end of the occupational ladder and hence low-skilled and low-paying. If immigrant women had left the official labour force, they often undertook unofficial wage-earning activities inside their home commonly including their children as helpers. These homeworkers typically packed "food into jars, stripped feathers, basted pants, made buttonholes, crocheted slippers, assembled toys" (Gabaccia, 1994:50), rolled cigars, or made artificial flowers. The contribution to the family income, however, was often acquired unofficially and thus remained excluded from statistical records.

Women immigrants and economic development

The wide literature on the economics of international migration largely sees an influx of immigrants as positive for economic development (i.e. Borjas, 1994; Card, 2005). Transmission mechanisms, such as increasing returns to scale (i.e. Borjas, 1995), alterations to the ratio of skilled to unskilled labour (Lundborg and Segerström, 2002), increasing wages (Ottaviano and Peri, 2006), and the stimulation of productivity by means of innovation and specialization (i.e. Gordon and McCann, 2005; Partridge and Furtan, 2008), are considered important drivers of economic growth in the receiving country. In the case of the US, 19th century migration was behind an increase of between 13 and 42 percent in capital stock (Neal and Uselding 1972), making migration essential for the take-off of the US economy (Hirschman and Mogford, 2009).

These findings have, in our opinion, two strong drawbacks. First, economic research has tended to downplay the gender dimension of the economic impact of migration, and, second,

studies have focused on the short-term, largely ignoring the long-term economic impact of gender.

Gender and the economic impact of immigration

There is a growing literature across the social sciences looking at the gender dimensions of immigration. This research has shown that the specific characteristics of women, the reasons behind their migration decision, their migratory patterns, their impact on their places of origin, and their assimilation and participation at the places of destination differ from those of men (i.e. Hondagneu-Sotelo, 1994; Cerrutti and Massey, 2001; Mahler and Pessar 2003; Oishi, 2005; Andall, 2013). The majority of this gender-based research however has focused on the individual (e.g. Cooke, 2003), neglecting macroeconomic approaches. Studies on the macroeconomic impact of migration have tended to simply pool male and female immigrants together to form 'the migrant' – one homogenous category. In many studies, gender is simply relegated to a control variable, if considered at all (Pfeiffer et al., 2008). Because of this, there is an implicit assumption that men and women play equal roles in shaping the economic outcomes of migration.

Of the literature which does investigate the macroeconomic influence of female migrants, some studies have hinted at a positive economic impact of a strong presence of women immigrants in the labour force in the case of the US (Blau et al., 2003) or of the incidence of foreign women entrepreneurs in Australia (Collins and Low, 2010). Others, however, have pointed in the opposite direction. Smith and Bailey (2006) show a negative economic impact associated with a gender gap between native-born and foreign-born families. Poor integration of immigrant women into the labour market and a tendency to end up in occupations below their skill level also indicates an unused economic potential linked to immigrant women (Riaño and Baghdadi, 2007). In short, the limited research on the macroeconomic impact of female immigrants goes in different directions, providing no clear answers as to how women immigrants shape the economy wherever they settle.

Do women immigrants have a different long-term impact to male immigrants?

Most studies on the macroeconomic impact of migration have focused on the relatively short-term. These analyses have generally found that migration has positive effects, improving economic dynamism in the receiving area. In contrast, the long-term dimension has been largely overlooked. The exceptions are Rodríguez-Pose and von Berlepsch (2014, 2015), who analyse the effect of 19th century migration on US economic development in 2005 and 2010.

Their findings, robust across different migration waves, underline that migration leaves a very long-lasting imprint, with positive effects detected at a local level long after the first-generation of immigrants becomes assimilated into US society.

A possible explanation for the persistence of the economic legacy of migration is linked to the institutional 'constructs' built by immigrants in their places of destination (Tabellini, 2010; Rodríguez-Pose and von Berlepsch, 2014). These constructs – whether termed as culture, norms or habits – have been shown to shape long-term economic development (e.g. Acemoglu et al., 2001; Tabellini, 2010; Mokyr, 2016). Immigrants bring "baggage […] in the way of culture, religion, social networks and links with the society of origin" (Joly, 2000:30), which helps them model entire institutional structures according to the "national blueprint" they had left behind (Rodríguez-Pose and von Berlepsch, 2015:399). Not only language was preserved, but also customs, habits, mentality, and traditions were imported (Rice and Feldman; 1997). "[Immigrants] came not to establish something new but to re-establish something old" (Daniels, 1990: 146). Immigrants and the institutional frameworks they set up transformed the territories where they settled.

Institutional constructs have been shown to persist over very long time frames. Putnam (1993) studying social capital and Duranton et al. (2009) focusing on family structures have demonstrated that institutional structures built in the Middle Ages still shape regional development today. Algan and Cahuc (2010) also find that values, norms and beliefs of second- and third-generation immigrants are highly correlated to those of their country of origin. Mass migration has led to the formation of 'ethnic landscapes' (i.e. Conzen 2001; Nostrand and Estaville, 2001), where economic success is a consequence of "the cohesive bond provided by shared values and common backgrounds [of migrants, which] took root and remain strong to this day" (Harwick, 2009: 237). Given the spatial clustering of 19th century immigrants arriving in the US, their sheer volume, and the strong immigrant networks across the country, it could be assumed that the institutional mechanisms developed during the Age of Mass Migration have resulted in the formation of institutional constructs that shape current economic development to this day.

But do women play a distinctive role in the transfer of habits and institutional traits from one generation to another? The economic role of female immigrants is closely linked with their position in the family (Zlotnik, 1995). According to Anthias and Yuval-Davis (1989), women are the "ideological reproducers, [...] the 'cultural carriers' of the ethnic group" (p. 9). In their role of mothers, women transmit the cultural heritage, way of life, and history of their

ancestors to the next generation. It is mainly the immigrant woman who conveys traditions, customs and habits, establishes strong ties within the ethnic community, and plays an essential role in preserving the native culture (i.e. Yuval-Davis, 1993; Pettman, 1996). Immigrant women thus bear "the responsibility for the maintenance and generational transmission of culture" (Gray, 2003: 34). The mother plays a more important role than the father in diffusing ethnic and cultural identity and habits to the next generation (see for example the empirical studies of Killian and Hegtvedt, 2003; Sabatier, 2008; Schüller, 2015).

Many of the traits of the life of immigrant women during the Age of Mass Migration support this theory. While fathers were mostly absent from their children's lives, due to long working hours and leisure activities outside the home, mothers were seen as the "guardian of the family" (Friedman-Kasaba, 1996:130). Mothers taught their children the language of their country of origin and transmitted their way of life, customs, and traditions. Children learned from their mothers about the hardships of an immigrant's life, contributing to the diffusion of the 'spirit of a migrant' – i.e. being more risk-seeking, entrepreneurial and dynamic than their American counterparts – to the second generation. Furthermore, immigrant women, far more than their male counterparts or native-born Americans, cultivated strong bonds within the immigrant community. Reaching out to neighbours, distant kin, their ethnic group, and their church or synagogue community, foreign-born women created large and dense cultural networks (Gabaccia, 1994). As Ryan (2011) argues, immigrant women often formed localised networks which are different from those of men but no less important in passing on cultural norms. This was particularly the case with immigrant mothers who often formed networks based on mutual support rather than economic production (Ryan et al., 2008). Within these networks, traditions and cultural festivities were kept alive. Solidarity, support and cooperation across generations, social class or gender, sharing of information, household equipment or food within community networks helped in withstanding the hardships of immigrant life (Gabaccia, 1994).

In this article, we hypothesize that the institutional constructs formed within the period of mass migration have left a territorial imprint that can still be felt in the economic development of US counties today. We argue that this effect was stronger in areas with higher concentrations of immigrant women, who acted as 'cultural carriers' of ethnic identity and behaviours. Large concentrations of immigrant women are hypothesized to embed the 'spirit of the immigrant' in those communities, helping them to become more dynamic, entrepreneurial, and risk-seeking. These conditions are likely to have resulted in an enduring

economic dynamism, translated in a greater level of development of those territories that attracted more immigrant women and where second generation immigrant children became prevalent.

Empirical Approach

In order to assess whether immigrant women settling in the US during the Age of Mass Migration left a trace on subsequent county-level economic development, we estimate two different econometric models. Model 1 focuses on the direct impact of immigrant women. We seek to determine whether a large share of female immigrants in a given US county affects its economic growth in the short-term and whether this potential impact shifts over time. We also consider the ratio of female to male immigrants, inquiring whether a greater immigrant gender-balance in a county has left a significantly different imprint on the county's economic trajectory than in counties where immigrant men predominated.

Model 2 evaluates the indirect effect of immigrant women over the long-term focusing on their children. We analyse the first generation born to immigrants on American soil and their imprint on economic growth. We test the notion of the immigrant mother as 'cultural carrier' and compare the impact on economic development of a large share of children born to immigrant mothers, relative to those born to immigrant fathers and to two American parents.[1]

Our hypothesis is that larger shares of immigrant women in a given US county during the Age of Mass Migration will have had a significant and positive impact on the growth trajectory of the county, both directly and indirectly. Following the literature on gender equality, women empowerment, and female participation in the labour force (i.e. Berik et al, 2009; Duflo, 2012), a large share of immigrant women can act as a driver of regional growth in the short- and long-term. In the short-term, women immigrants expanded the labour force, especially in traditional 'female' industries, such as the textile or garment industry, which contributed a non-negligible share to the US GDP in the late 19th and early 20th centuries. Their manpower boosted economic activity shortly after their arrival in the US and served as an important fillip for the receiving region's economy.

[1] We use the notion of American or 'native-born' to refer to people born on US soil. 'Foreign-born' refers to a birthplace outside the US.

In the long-term, the impact of immigrant women on economic growth would have adopted a more indirect form via their children. We hypothesize that the role of immigrant mothers as carriers of culture and harbingers of the mentality of the immigrant (Anthias and Yuval-Davis, 1989) would have made their children and the territories where they settled more dynamic than those where women immigrants were absent or in a minority. The cultural institutions passed on by immigrant mothers to their children over 100 years ago would therefore have left an indelible territorial impression on US counties which is still evident today. The immigrant women's institutional baggage affected the counties' territory in a way that part of the immigrants' mentality – being more dynamic, more risk-seeking and entrepreneurial – became engraved into the territory's very own character.

Model 1: The direct impact

Model 1 evaluates the *direct* impact of women immigrants on their areas of settlement. It adopts the following form:

$$y_{i,t} = \alpha + \beta Femig_{i,t_0} + \gamma Mig_{i,t_0} + \delta Ratio_{i,t_0} + \partial X_{i,t-k} + \theta Z_{i,t_0} + \mu state + \varepsilon_{is} \qquad (1)$$

where y represents the natural log of income per capita in county i at period t (t = 2010, 1910, 1880); *Femig* depicts the share of female immigrants in the total population of county i at time t_0 (t_0 = 1880, 1910); *Mig* is the percentage of foreign-born relative to the total population of county i at time t_0; *Ratio* depicts the ratio of female to male immigrants in county i at time t_0[2]; X is a vector of variables associated with the level of economic development of county i at time t-k (k =10);[3] Z represents a similar vector of factors considered to have had an effect on the county's economic development at time t_0 and that may also have influenced its attractiveness to immigrants; *State* represents state fixed-effects controlling for any unobserved factors at state level, while ε depicts the county-specific error term, clustered at state level s, controlling for arbitrary spatial correlation within any given state. The correlation coefficient between *Femig* and *Mig* and *Mig* and *Ratio* is, respectively, below 0.1 and below 0.4, implying a very limited risk of multicollinearity. All three variables are thus included in the regression analysis.

[2] Using a single measure of immigration provides analytical clarity but may fail to reflect the significant diversity between and within different migrant groups. While we cannot fully address this challenge within the framework of the article, this represents an important strand for further research. We are grateful to a reviewer for raising this point.

[3] In order to avoid multicollinearity, X is included only in the long-term analysis.

Model 2: The indirect impact

Model 2 estimates the *indirect* long-term impact of female migration at the turn of the twentieth century on regional economic growth in 2010, focusing on children below the age of sixteen born to immigrant women. While the dependent and control variables remain the same as in model 1, we exchange the variables of interest for different combinations of parentage. The model takes the following form:

$$y_{i,t} = \alpha + \beta Mforeign_{i,t_0} + \gamma Fforeign_{i,t_0} + \delta Aparents_{i,t_0} + \partial X_{i,t-k} + \theta Z_{i,t_0} + \mu state + \varepsilon_{is} \quad (2)$$

where *Mforeign* is defined as the share of children born in a given county *i* to a foreign-born mother and an American-born father relative to the total number of children in the same county at time t_0; *Fforeign* represents the share of American-born children with a foreign-born father and an American-born mother in a given county *i*; and *Aparents* corresponds to the share of children with both American-born parents. The base category in this second model is the share of children with both foreign-born parents.

Data

The dependent variable – the natural log of income per capita at county level – was extracted for 2010 from the US Bureau of Economic Analysis (BEA) database, measured in US dollars. As income per capita data more than a century ago are unavailable, we referred to the Integrated Public Use Microdata Series USA database (IPUMS) Version 6.0 (Ruggles et al. 2015) for the construction of the 1880 and 1910 variables. This database provides US microdata covering the censuses and American Community Surveys between 1790 and 2010.[4] We use a proxy aggregated at county level based on individual data of median total incomes per occupation in 1950 dollars.

Migration and parentage variables in both models were generated using the IPUMS database. A weighted sample of the US population of 5,791,531 individuals in 1880, covering 11% of the total US population at the time, and 923,153 individuals in 1910, representing 1% of the population, was used to construct the main variables of interest. All data were allocated to the individuals' county of residence and aggregated at county level. All residents with a non-US birthplace were classified as 'immigrants'.

[4] The American Community Survey was only initiated in 2005.

As US county size, quantity, and geography changed over the period of analysis (2,875 counties or equivalent territorial units in the 48 contiguous states in 1880; 3,123 in 1910; 3,109 in 2010), counties in 1880 and 1910 were matched to their regional equivalent in 2010, using cartographic boundary files of the 48 continental states (excluding Alaska and Hawaii) for every decade of analysis provided by the US Census Bureau. 1880 and 1910 were chosen as reference years for our regression analysis, as both represent a peak in foreign-born population stock – 1880 covering the first migration wave; 1910, the second.

Two differentiated sets of control variables are included in the model (vectors *X* and *Z*). Vector *X* comprises factors dating from period *t-k* (year 2000). All variables in vector *Z* date from the time of the two historic censuses, 1880 and 1910 respectively. Vector *X* accounts for variables directly determining the current income per capita levels across US counties. Vector *Z* is incorporated to consider factors that may have influenced the level of economic activity – and, therefore, growth – in a given US county at the time of migration, but also to control for variables that served as pull-factors, affecting the initial settlement decision of the immigrant women.

Both vectors contain, wherever possible, the same variables measured at county level: educational attainment, unemployment rate, share of black population, urban share, percentage of the labour force employed in manufacturing, and female participation rate in the labour force. While educational attainment is measured as the literacy rate for the historical years, for the *t-k* dimension we resort to the share of people with tertiary education. The share of women in the total county population is included in the model as a way to prevent the main variable of interest, female migration, from picking up effects related to the size of the overall female population in a county.[5] Furthermore, in the long-term analysis, we control for the initial average income at county level at the time of migration, by incorporating an income proxy based on individual data reflecting the median total income per occupation in 1950 dollars (IPUMS USA database). All 2000 controls were extracted from the US BEA, the Current Population Survey (CPS) tables of the US Bureau of Labor Statistics (BLS), and the 2000 Census Summary files. The IPUMS USA database and the Inter-University Consortium for Political and Social Research database (ICPSR) were used as sources for the historical variables. In cases, where data were only available at the individual level, the same method as

[5] As the share of female population in t_0 is highly correlated with the stock of immigrant women in 1880 and 1910, this variable is discarded from the analysis in the early years. Only the size of the female population in time dimension *t-k* is included.

for the migration and parentage variables was used for the construction of new variables. A detailed description of all variables and sources can be found in Appendix 7.

Instrumental Variable (IV) Estimation

Any analysis involving income and migration data over long time frames is prone to potential endogeneity issues. Prosperous counties may have attracted large numbers of immigrant women, but a large share of immigrant women, in turn, can be behind the economic dynamism and GDP of these counties. The direction of causality is therefore difficult to ascertain. Furthermore, immigrant women might have purely settled in counties which either had higher income levels or showed good growth prospects, resulting in spatial sorting. Lastly, any model analysing data spanning more than 100 years is highly likely to suffer from omitted variable bias. In order to address these concerns, factor out the true underlying impact of immigrant women on economic development, and ensure the validity of our least squares estimations, we refer to instrumental variable estimation methods (IV). Two different types of instruments are proposed for estimating the direct and indirect effect of female migration: Socio-economic factors and the path dependency of immigrant women.

In the case of the *direct* effect of women immigrants, we differentiate in Model 1 instruments by time horizon. For the short-term analysis, we employ the share of married individuals and the mean number of distinct generations living in the same household to instrument for the share of immigrant women in a given county. Both socio-economic instruments are taken from the respective year in question (1880 or 1910) and extracted from the IPUMS USA and ICPSR databases. For the long-term analysis, we add the share of population in urban areas in 1910.

These instruments are uncorrelated with the disturbance term and explain the variation in settlement choice by women immigrants. Spinsterhood was considered a great disadvantage at the time, meaning that immigrant women to the US either were already married upon arrival or married shortly thereafter. The outlook "to a land where they could marry quickly and relatively well, and where they could exercise more choice in acquiring a spouse" (Gabaccia, 1994:34) encouraged many women who had few hopes of a favourable marriage in their places of origin to cross the Atlantic. Marriage rates among the immigrant population were distinctly higher than among the American-born population, just as foreign-born women married at a significantly younger age – women immigrants married, on average, five years earlier than American-born women (Dickinson, 1975) This implies that marriage rates are

likely to be correlated with the presence of women immigrants, without simultaneously being correlated with the error term.

On average, immigrant women were also younger when they had their first child than their American counterparts. "An annual pregnancy was a fact of life for a great many immigrant women" (Weatherford, 1986: 2). Children were considered an economic asset. They worked for the family from an early age and helped make ends meet. To save money, the large majority of children remained part of their parents' household long after they had grown up. Immigrant women also generally moved with their in-laws upon marriage. As immigrant women were frequently responsible for establishing and maintaining immigrant social networks, their 'kinship-work' often involved taking care of the older generation in their own homes (Weatherford, 1986; Gabaccia, 1994). Consequently, immigrant women tended to end up living with their children, their children's children, and their parents, making the average number of generations under one roof a suitable instrument to assess endogeneity. As family structure and living arrangements in the US have evolved drastically over the past 130 years, the number of distinct generations in one household more than a century ago does not have any independent influence on income per capita levels in 2010.

By adding the urbanisation level 1910 as instrument for the share of immigrant women in the long-term analysis, we exploit the distinct settlement pattern of immigrant women depicted in Figure 1. Women immigrants clustered predominantly in the highly urbanized areas of the Northeast, where 'female industries' concentrated. As many current major urban clusters were merely small towns 100 years ago, the share of urban population at the turn of the twentieth century is uncorrelated to county GDP levels in 2010, meaning that the instrument does not to violate the exogeneity condition.

For the *indirect* effect of immigrant women on economic development, a third type of instrument is used in Model 2. Exploiting the fact that immigrant women followed the footsteps of their next of kin, creating a path-dependency in migration patterns (Gabaccia, 1994), we use the supply-push component of children with foreign-born mothers and native-born fathers (see also Card and DiNardo, 2000; Ager and Brückner, 2013). This instrument assumes that immigrant women in 1880 and 1910 respectively a) follow the same settlement patterns as their average female predecessor and b) integrate in society in a similar manner and frequency (i.e. marrying American men) as immigrant women had done in the past.

The supply-push instrument is calculated using the US growth rate of the share of children with foreign-born mothers and American-born fathers between a base year and the target year

1880 (1910), multiplied by the initial share of this population group in the base year.[6] As initial base year population shares are used in the computation, the instrument is exogenous to any county-specific shocks that may have affected the share of children born to foreign-born mothers in any given county between 1870 and 1910.

The Staiger and Stock (1997) test for weak instruments and Kleibergen-Paap Wald F statistics, in combination with Stock and Yogo (2005) critical values, are used in order to make sure that all chosen instruments are non-weak instruments. In almost all cases the weak instrument hypothesis is rejected. The only exception is the number of distinct generations per household in the long-term analysis of Model 1. We therefore limit the use of this instrument to the short-term analysis.

Analysis

The direct impact of immigrant women

The first part of the analysis focuses on whether large shares of immigrant women settling in the US around the turn of the twentieth century had a significant direct impact on economic development both in the short- and long-term. We first assess Model 1 for the short-term using ordinary least squares (OLS), followed by an instrumental variable (IV) estimation controlling for wealth-influencing factors at the time of migration and including state fixed-effects in order to minimize potential issues of spatial correlation and control for unobserved state-specific factors. Standard errors are clustered at state level to control for arbitrary spatial correlation within a given state. As instruments, we employ the share of married individuals in a county and the mean number of distinct generations living in a household. Table 1 reports the results for our main variable of interest – *female immigrants* – with respect to income per capita in 1880 and 1910 respectively. Columns (1) through (3) display the results with base year 1880, while columns (4) through (6) cover the year 1910.

Contrary to expectations, Table 1 reveals a negative association between higher shares of women immigrants and economic development across both base years. For the 1880 regressions, negative and strongly significant (at the 1% level) coefficients for OLS regressions are estimated. While high concentrations of immigrants, regardless of gender, emerge as an important growth enhancing factor, a higher share of women immigrants is

[6] The supply-push component of children with foreign-born mothers for target year 1880 is computed using initial shares in 1870. For 1910, we use 1880 initial base year values due to the significantly larger data sample.

connected to significantly lower short-term county levels of economic development. This result is corroborated and strengthened when correcting for potential endogeneity issues using IV estimation methods. Both instruments retrieve highly significant and negative coefficients for both base years. The ratio of women to men immigrants, however, displays a positive sign across OLS and IV 1880 regressions at levels of significance below 5% in the majority of cases. Hence, while migration was a strong driver of economic development, both a large presence of immigrant women or a high imbalance between men and women at the turn of the twentieth century led to lower levels of economic growth in the short-term. Results for the 1910 regressions, albeit displaying slightly weaker coefficients, point in the same direction.

The validity of these results is reinforced by the significance levels and coefficients of the control variables across both base years and OLS as well as IV regression results. With the exception of the unemployment rate, all controls show the expected signs. A better educated, more urbanized county, with a higher share of manufacturing employment, a larger black population, and a strong female labour force participation was significantly richer 100 years ago than a more rural one, with lower literacy, less manufacturing, less black population, and fewer women in employment.

Table 1. The direct impact of immigrant women over the short-term – OLS 1880 and 1910

Dep. Var: Mean income per capita 1880/1910 (ln)	1880			1910		
	(1) OLS	(2) IV Married	(3) IV Generations	(4) OLS	(5) IV Married	(6) IV Generations
Female Immigrants ~	-0.395***	-0.448***	-4.226***	-0.0458	-2.386***	-1.453*
	(0.137)	(0.131)	(0.318)	(0.0434)	(0.135)	(0.782)
Immigrants ~	0.582***	0.592***	1.339***	0.498***	1.608***	1.200***
	(0.141)	(0.126)	(0.426)	(0.113)	(0.263)	(0.326)
Ratio ~	0.0170**	0.0209*	0.297***	-0.00128	0.143***	0.0861*
	(0.00782)	(0.0117)	(0.0365)	(0.00225)	(0.0120)	(0.0502)
Manufacturing ~	0.739***	0.738***	0.675***	0.606***	0.316**	0.422***
	(0.128)	(0.124)	(0.244)	(0.0629)	(0.126)	(0.114)
Urban Share ~	0.157***	0.161***	0.450***	0.350***	0.658***	0.533***
	(0.0469)	(0.0456)	(0.105)	(0.0239)	(0.0761)	(0.0977)
Literacy ~	0.479***	0.488***	1.142***	0.478***	0.765**	0.662**
	(0.0881)	(0.0937)	(0.382)	(0.0810)	(0.300)	(0.274)
Unemployment ~	0.103**	0.101**	-0.0368	0.635***	1.623***	1.212**
	(0.0464)	(0.0448)	(0.0491)	(0.145)	(0.341)	(0.495)
Black Population ~	0.367***	0.372***	0.755***	0.213***	0.738***	0.532***
	(0.0989)	(0.104)	(0.246)	(0.0640)	(0.0892)	(0.206)
Fem. Participation ~	1.147***	1.169***	2.726***	0.988***	1.342***	1.192***
	(0.186)	(0.199)	(0.383)	(0.115)	(0.246)	(0.174)
State Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,851	2,851	2,843	3,120	2,950	2,942
R-squared	0.6625	-	-	0.5661	-	-
First-stage F-stat	-	54.19	42.78	-	173.09	14.18

~ Variables date reflect the respective year of migration: 1880 or 1910.
Robust standard errors in parentheses, clustered at state level.
*** p<0.01, ** p<0.05, * p<0.1

One variable which may explain the – at first sight rather perplexing – result of a seemingly negative impact of women immigrants on economic development is female participation in the labour force, which is both positive and statistically significant. During the Age of Mass Migration, only around 19% of white, foreign-born women were active in the official labour market (US Bureau of the Census, 1900a). Most foreign-born women were 'homemakers' or worked in the shadow economy. Hence, the yield of the average immigrant woman's work was often not recorded in traditional measures of economic activity, such as mean income. Moreover, 'success' for women immigrants at the time was often linked to marriage and bearing children. This type of 'success' generally implied leaving the labour force and making a less measurable contribution – at least in official records – to the economy. In any case, the positive and significant coefficient of the female participation in the labour force variable displays that, once gainfully employed, even if in the low-skill and low-pay 'female jobs' dominant at the time, women immigrants made a positive contribution to regional economic growth by enlarging the labour force in the region,

When considering the long-term impact of women immigrants, wealth-influencing controls for both the time of migration as well as 10 years prior to the dependent variable – the natural log of income per capita in 2010 – are included in Model 1. Table 2 reports the results for 1880 (1910 results are presented in Appendix 8).

When taking the whole US county sample into account, OLS estimations for both base years display insignificant coefficients for the main variable of interest (Column 1). While overall levels of migration remain positively and significantly associated with higher income per capita levels 100 to 130 years later, large shares of immigrant women settling in a given US county around the turn of the twentieth century have no bearing on current levels of county development. This hints at a waning of the very strong initial negative impact of female migration numbers over time. Similar findings are obtained for the ratio between female and male immigrants. Despite high significance levels in the short-term displayed in Table 1, the wealth-declining effect of high imbalances between men and women immigrants all but disappears in the long-term.

If one assumes however, that a minimum critical mass of immigrant women is necessary in order to leave a long-lasting territorial imprint on the regions where they settled, we reach different results. Column (2) in Table 2 displays the results for those counties where the share of immigrant women in the total foreign-born population was at least 10% in 1880. In contrast to the whole sample regressions, the coefficient of female migration remains negative but

becomes significant at the 5% level for 1880 and at the 10% level for 1910 respectively (see Appendix 8). Both the coefficients for total migration as well as for the ratio of immigrant women to immigrant men remains nearly unchanged. Hence, female migration is significantly and negatively associated with economic development in the long-term only if the number of immigrant women settling in any given county surpasses a 10% threshold. Below this threshold, it can be assumed that women immigrants were simply too few in number to leave a direct long-lasting legacy on economic growth.

As would be expected, most of the year 2000 controls are significant (with the exception of the share of black population in the 1910 base year regressions and female participation in the labour force across both base years) and show the expected signs. While the share of population with a college degree and the share of women in a county's population are positively associated with economic development, a high unemployment rate, a large black population, and high employment in manufacturing are negatively linked to economic growth.

Table 2. The direct impact of immigrant women over the long-term – 1880

Dep. Var.: Income per capita 2010 (ln)	OLS		IV			
			Whole sample		Female migration ≥ 10%	
	(1) Whole sample	(2) Female migration ≥ 10%	(3) Married	(4) Urban share	(5) Married	(6) Urban share
Female Immigrants ~	-0.0336	-0.0652**	-1.063***	-0.562**	-0.838***	-1.008**
	(0.0234)	(0.0297)	(0.284)	(0.236)	(0.189)	(0.491)
Immigrants ~	0.234***	0.284***	0.467***	0.353***	0.395***	0.420***
	(0.0684)	(0.0650)	(0.0739)	(0.0757)	(0.0473)	(0.0933)
Ratio ~	0.00288	0.00386	0.0745***	0.0397**	0.0486***	0.0584*
	(0.00279)	(0.00287)	(0.0228)	(0.0176)	(0.0136)	(0.0311)
Manufacturing 2000	-0.144***	-0.142***	-0.0919*	-0.117***	-0.0989***	-0.0896**
	(0.0253)	(0.0318)	(0.0471)	(0.0300)	(0.0343)	(0.0386)
Education 2000	0.0113***	0.0108***	0.0120***	0.0117***	0.0114***	0.0115***
	(0.000912)	(0.00100)	(0.00111)	(0.000913)	(0.000995)	(0.000962)
Female 2000	0.0153***	0.0153***	0.0155***	0.0154***	0.0152***	0.0152***
	(0.00157)	(0.00181)	(0.00241)	(0.00178)	(0.00238)	(0.00260)
Unemployment 2000	-0.0220***	-0.0249***	-0.0206***	-0.0213***	-0.0230***	-0.0225***
	(0.00436)	(0.00421)	(0.00445)	(0.00401)	(0.00378)	(0.00368)
Black Population 2000	-0.00104***	-0.00100***	-0.00197***	-0.00152***	-0.00101***	-0.00102**
	(0.000344)	(0.000342)	(0.000440)	(0.000332)	(0.000392)	(0.000437)
Fem. Participation 2000	0.00112	0.00121	0.00485**	0.00304**	0.00239*	0.00265*
	(0.00107)	(0.00127)	(0.00208)	(0.00139)	(0.00143)	(0.00145)
Income ~	0.0157	-0.0204	-0.113**	-0.0504	-0.120***	-0.141*
	(0.0240)	(0.0219)	(0.0550)	(0.0418)	(0.0395)	(0.0736)
Manufacturing ~	-0.0118	0.00540	0.117	0.0544	0.0750	0.0902
	(0.0588)	(0.0710)	(0.103)	(0.0829)	(0.0891)	(0.105)
Literacy ~	0.167***	0.247***	0.421***	0.297***	0.291***	0.301***
	(0.0373)	(0.0617)	(0.0862)	(0.0739)	(0.0572)	(0.0696)
Unemployment ~	-0.00510	0.0139	-0.0104	-0.00783	0.00442	0.00235
	(0.0123)	(0.0177)	(0.0190)	(0.0142)	(0.0266)	(0.0280)
Black Population ~	0.233***	0.284***	0.360***	0.298***	0.186***	0.164**
	(0.0358)	(0.0450)	(0.0613)	(0.0482)	(0.0619)	(0.0785)
Fem. Participation ~	-0.0872	-0.129	0.645***	0.289	0.256	0.340
	(0.153)	(0.154)	(0.250)	(0.237)	(0.210)	(0.359)
State Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,444	1,998	2,444	2,444	1,998	1,998
R-squared	0.684	0.684	–	–	–	–
First stage F-statistic	–	–	10.84	26.32	39.10	12.40

~ Variables date from respective year of migration 1880 or 1910 | Robust standard errors in parentheses, clustered at state level | *** p<0.01, ** p<0.05, * p<0.1

The base year controls which display significant associations with income per capita 100 to 130 years later are literacy levels, the percentage of black population, and employment in manufacturing; the latter however only for 1910. The only 1880 or 1910 variable with a strong and significant positive association across all samples and base years over the very long time is the share of total immigrants, supporting earlier work in this area (Rodríguez-Pose and von Berlepsch, 2014). The previously highly significant coefficient of initial female participation in the labour force fails to leave a long-lasting effect and becomes irrelevant for the determination of income per capita levels in 2010. A simple enlargement of the labour force by immigrant women adding their manpower to the aggregate production function leaves no long-lasting impact on regional economic growth.

As a means to address potential endogeneity issues involving models including both migration and income per capita variables, we perform an IV estimation using again the share of married individuals residing in any given county and the share of population living in urban areas. The results for 1880 are displayed in Table 2 columns (3) through (6); those for 1910 in Appendix 8. We use the same two samples as in the OLS analysis, focusing first on the whole county sample and then limiting it to those with a minimum critical mass of 10% women immigrants in the two historical US Censuses.

The coefficients for women immigrants in both base years are robust to correcting for endogeneity and potentially biased estimators and replicate the short-term results. A large presence of foreign-born women at the turn of the twentieth century has a significant and negative impact on county income per capita levels in 2010. Consequently, the results suggest that counties where large numbers of foreign-born women settled during the Age of Mass Migration have endured a substantially worse economic trajectory over the last 100 to 130 years than those which had been largely bypassed by female migration. In contrast to the OLS regressions, the coefficient of the ratio of women to men immigrants is positive and significant for all IV regressions in Table 2. As in the short-term, these coefficients allude to the fact that a higher gender-balance in the immigrant community was a powerful driver of economic dynamism over the very long-term. Counties largely dominated by male immigrants (equivalent to a very low ratio of female to male immigrants) have consequently had a worse economic trajectory than those with a greater gender balance amongst immigrants. The coefficients for both sets of control variables in the IV regressions largely coincide with those obtained using OLS.

The indirect impact of immigrant women

A seemingly negative direct impact of female immigration on officially-recorded levels of economic development does not necessarily mean that women did not have other channels to influence economic outcomes. The second part of the analysis focuses on whether immigrant women became drivers of development indirectly via their children or via their own work in a society that, at the time, shunned their direct contribution to the economy. To do that, we estimate Model 2, focusing on the main variable of interest 'children with a foreign mother', including again the two sets of control variables. Table 3 reports the results for both base years 1880 and 1910.

Table 3. The indirect impact of immigrant women over the long-term –1880 and 1910

Dep. Var.: Income per capita 2010 (ln)	OLS		IV	
	(1) 1880	(2) 1910	(3) 1880	(4) 1910
Children with foreign mother ~	0.195***	0.110*	0.219*	0.138**
	(0.0603)	(0.0598)	(0.121)	(0.0542)
Children with American parents ~	-0.142***	-0.0790*	-0.144***	-0.0757*
	(0.0366)	(0.0427)	(0.0225)	(0.0409)
Children with foreign father ~	-0.0568	0.00892	-0.0580	0.0120
	(0.0694)	(0.0448)	(0.0550)	(0.0445)
Manufacturing 2000	-0.152***	-0.147***	-0.152***	-0.147***
	(0.0256)	(0.0286)	(0.0240)	(0.0279)
Education 2000	0.0113***	0.0113***	0.0113***	0.0113***
	(0.000910)	(0.000907)	(0.000665)	(0.000885)
Female 2000	0.0154***	0.0159***	0.0154***	0.0159***
	(0.00161)	(0.00163)	(0.00151)	(0.00158)
Unemployment 2000	-0.0207***	-0.0208***	-0.0207***	-0.0207***
	(0.00432)	(0.00435)	(0.00319)	(0.00423)
Black Population 2000	-0.00118***	0.000137	-0.00118***	0.000136
	(0.000348)	(0.000415)	(0.000330)	(0.000406)
Fem. Participation 2000	0.000882	0.00192*	0.000880	0.00192*
	(0.00107)	(0.00110)	(0.000749)	(0.00108)
Income ~	0.0376	0.0302	0.0377**	0.0303*
	(0.0288)	(0.0187)	(0.0164)	(0.0182)
Manufacturing ~	-0.0306	-0.0962**	-0.0305	-0.0960**
	(0.0605)	(0.0398)	(0.0350)	(0.0388)
Literacy ~	0.166***	0.144	0.166***	0.143
	(0.0511)	(0.0900)	(0.0310)	(0.0881)
Unemployment ~	0.000466	0.0281	0.000484	0.0288
	(0.0146)	(0.134)	(0.0123)	(0.131)
Black Population ~	0.249***	0.144***	0.250***	0.144***
	(0.0365)	(0.0437)	(0.0370)	(0.0426)
Fem. Participation ~	-0.169	0.0392	-0.170**	0.0382
	(0.157)	(0.0646)	(0.0863)	(0.0634)
State Controls	Yes	Yes	Yes	Yes
Observations	2,437	2,617	2,437	2,617
R-squared	0.685	0.672	–	–
First stage F-statistic	–	–	188.22	276.60

~ Variables date from respective year of migration 1880 or 1910

Robust standard errors in parentheses, clustered at state level | *** p<0.01, ** p<0.05, * p<0.1

The results confirm the role of the immigrant mother as 'cultural carrier' (Anthias and Yuval-Davis, 1989) of the ethnic capital and mentality of the immigrant. Across both base years, the OLS coefficients of our main variable of interest are significant at the 1% level for 1880 and at the 10% level for 1910 respectively (Columns 1 and 2). A large share of children with a foreign mother and an American-born father is positively associated with higher levels of income per capita in 2010, relative to the base category: children with two foreign parents. Children with a foreign-born father, by contrast, and an American mother contributed no more

to the long-term economic development of a county than the presence of children with two foreign parents. Counties with a higher share of children born to two American parents have, by contrast, performed decisively worse over the long-term. Immigrant women marrying American men were the most entrepreneurial in securing both a better future for themselves – through marriage to Americans who, on average, had higher wages than immigrants (Abramitzky et al., 2014) – and for their communities of adoption through their capacity of transmitting the spirit of the immigrant and their 'cultural baggage' to their children, coupled with their ability to become assimilated in the society of their receiving region. The dynamism of the migrant transferred onto the first American-born generation by their immigrant mother was thus reinforced by the inter-cultural character of the relation between immigrant mothers and American fathers.

To further test our results while correcting for potential endogeneity and checking whether the effect of the first American-born generation on long-term economic development is causal rather than a mere association, we conduct an IV estimation using the calculated supply-push as instrument. The results of the analysis are displayed in Table 3, columns 3 and 4.

The outcomes confirm the results of the OLS analysis. The results suggest once again that the children of immigrant women marrying American men have a distinctly higher impact on long-term county economic growth than those born to women marrying other immigrants or foreign men marrying American women. The presence of higher shares of children with two American-born parents leaves the lowest long-term imprint on economic development of the four different groups considered.

In short, rather than directly, our retrieved findings suggest that immigrant women played an important role in the long-term economic development of US counties indirectly, via their children, when successfully integrating in the receiving community. Once actively integrated into the community of their chosen county, 'melting' into US society and marrying native-born Americans, immigrant women transmitted the immigrant mentality and cultural baggage to their children which set up the base for long-term economic dynamism wherever they settled. Counties endowed with a large share of children born to immigrant women and American men more than 100 years ago, are significantly better off today than those where the share of children born to women immigrants was substantially lower. The ability of immigrant women to integrate by establishing inter-cultural ties, paired with their skill to transmit the spirit of the migrant onto their children, has been a long-term growth accelerator

for those regions which not only succeed in attracting female migration but also managed to successfully integrate foreign-born women into their communities.

Conclusion

Despite a large body of research on migration and economic development, at least two important factors have been neglected. First, the macroeconomic impact of the gender dimension has been largely overlooked, under the implicit assumption that the economic effects of migration are identical for both men and women. Second, the long-term impact of migration attracted limited attention – perhaps because short-term impacts are politically more urgent. This paper has aimed to fill both gaps.

We have assumed that women immigrants have a *two-fold* impact on economic development: a) a direct one, triggered by large concentrations of immigrant women, and b) an indirect one, via their children. With this fundamental assumption in mind, we analysed two research questions: (1) What has been the short- and long-term territorial economic impact of large shares of immigrant women settling in the US around the turn of the twentieth century? and (2) Do immigrant women have a different direct and indirect effect than the immigrant in general? The analysis confirms that immigrant women have indeed exerted an important and differential direct and indirect effect on the short- and long-term economic development of US counties.

This impact, however, is not always in line with expectations. The concentration of immigrant women in specific counties at the turn of the 20th century is connected with significantly *lower* levels of regional economic development both immediately after settling in the US as well as many decades later. Regions which were largely bypassed by female migration have performed significantly better over the next 130 years than those heavily targeted by immigrant women. This seems to be mainly due to the low female participation rate in the official labour force. Consequential to large numbers of 'homemakers' and immigrant women employed in the shadow economy, the yield of the average immigrant woman's work remained unrecorded in traditional measures of economic activity.

The positive influence of women on long-term economic development has come in an indirect manner: via their children. Counties where immigrant mothers bore more children – especially those married to American fathers – and which successfully managed to integrate them into their communities, have been more dynamic over the next century than specifically

those where the majority of children were born to two American parents. Communities where large clusters of children were born to foreign-born mothers and American-born fathers more than 100 years ago have become a motor of local economic development. This economic legacy of immigrant women is also significantly stronger than that of foreign-born fathers.

Consequently, immigrant women have been a distinct force for development in the US since, at least, the late nineteenth century. While habits and customs – early, often arranged, marriages which generally led to child-bearing and exclusion from the labour market – prevented them from making a measurable, positive contribution, their economic contribution has come in more intricate and indirect ways: via their capacity to shape the gender-ratio between foreign-born women and men, via their ability to integrate into their chosen communities and, especially, via their children. It is likely that women immigrants, more than immigrant men, transferred the risk-seeking, hard-working, entrepreneurial spirit of the immigrant and the culture of their places of origin to their offspring. This transmission would have contributed to trigger an economic dynamism within the children of women immigrants that became etched in the institutions of the places where they settled. This impact was strongest amongst the more integrated of women immigrants: those who married locals. Whereas many foreign women at the time came to America following kin or as a consequence of pre-arranged marriages to men from their villages that had already made the transatlantic crossing, those marrying locals were more independent and determined to make a future for themselves.

Our results, although embedded in the particular historical and geographical context of the later nineteenth and early twentieth century America, have important policy implications for the present. In times of increasing aversion to mass migration, special attention needs to be paid to policies that lead to male-dominated immigrant inflows. Huge gender imbalances in the immigrant population have not only serious social consequences but, as our paper shows, important short- and long-term negative economic effects. The results show the need to establish mechanisms to quickly integrate immigrant women in society, both by encouraging their labour force participation and creating the mechanisms to allow them to make free choices in issues such as marriage. Successfully absorbing and integrating women immigrants will guarantee current and future economic prosperity. Failing to achieve this integration would, in all likelihood, undermine the positive economic influence of migration for decades to come.

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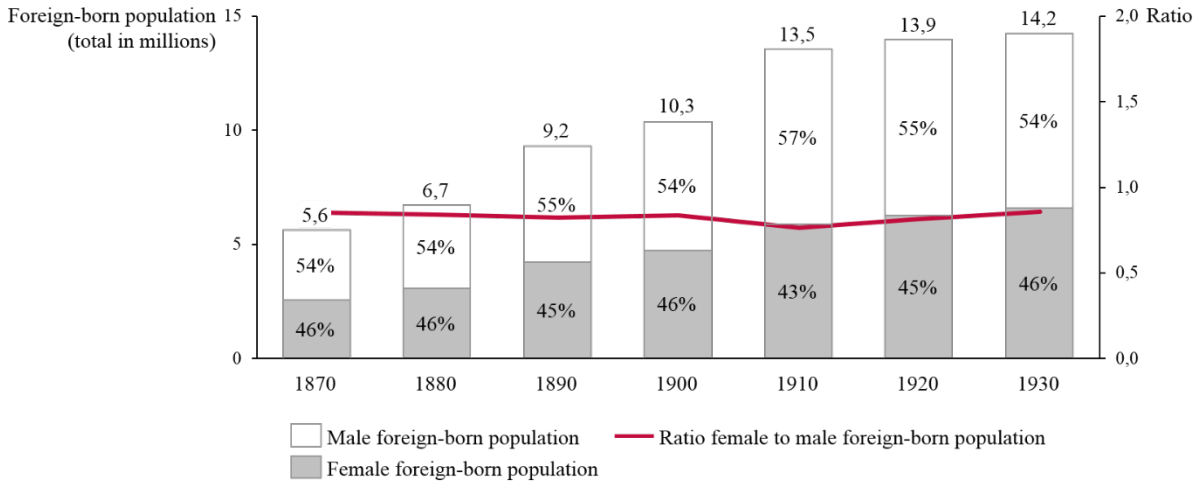
Appendix 1

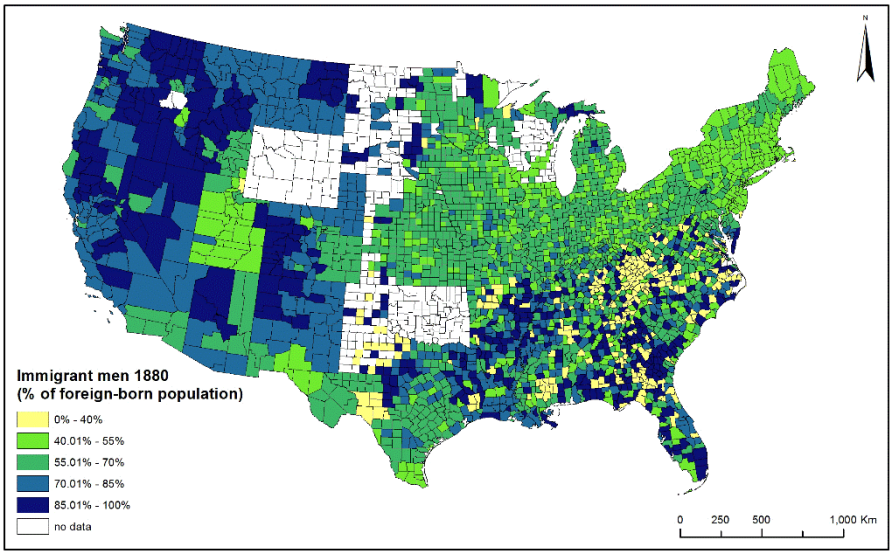
Appendix 1. US Foreign-born population by gender 1870-1930



Source: Own calculations based on Gibson and Jung (20069

Appendix 2

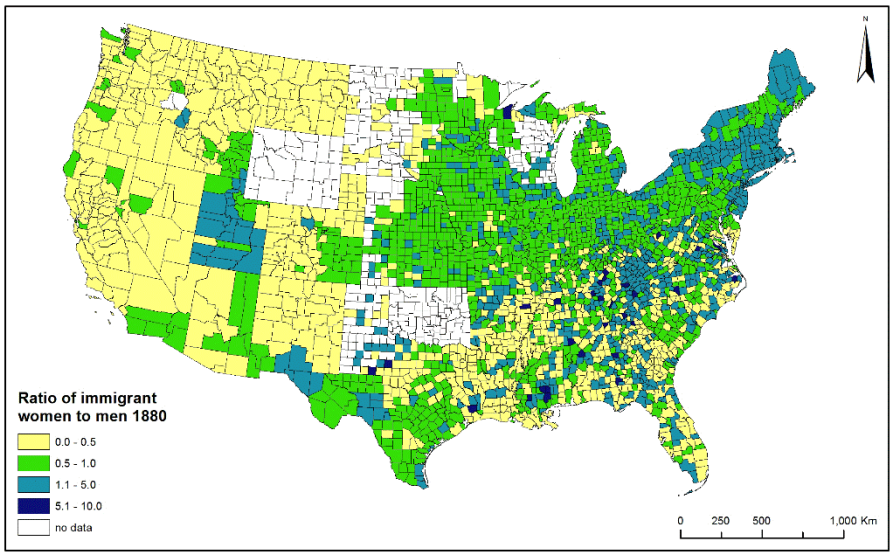
Appendix 2. Settlement pattern of immigrant men (% of total foreign stock), 1880

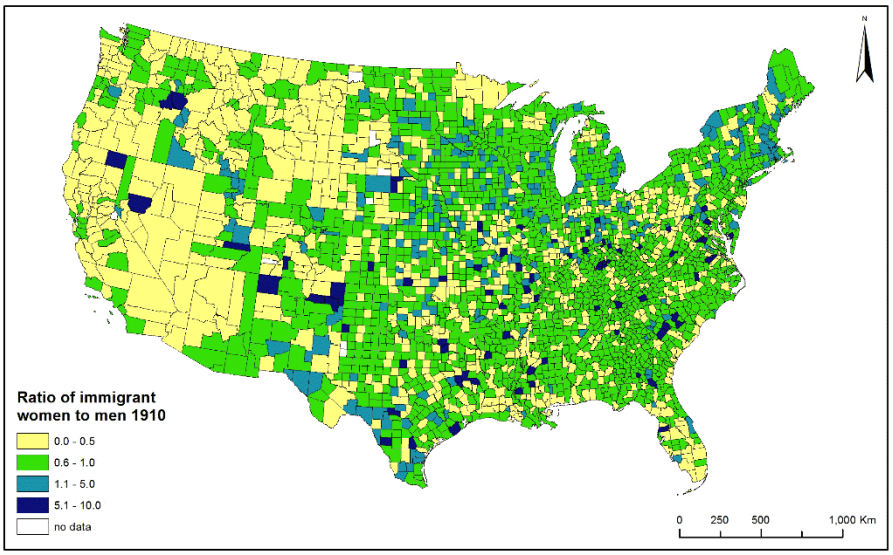


Source: IPUMS data; own calculations

Appendix 3

Appendix 3. Gender ratio of female to male migration, 1880 and 1910

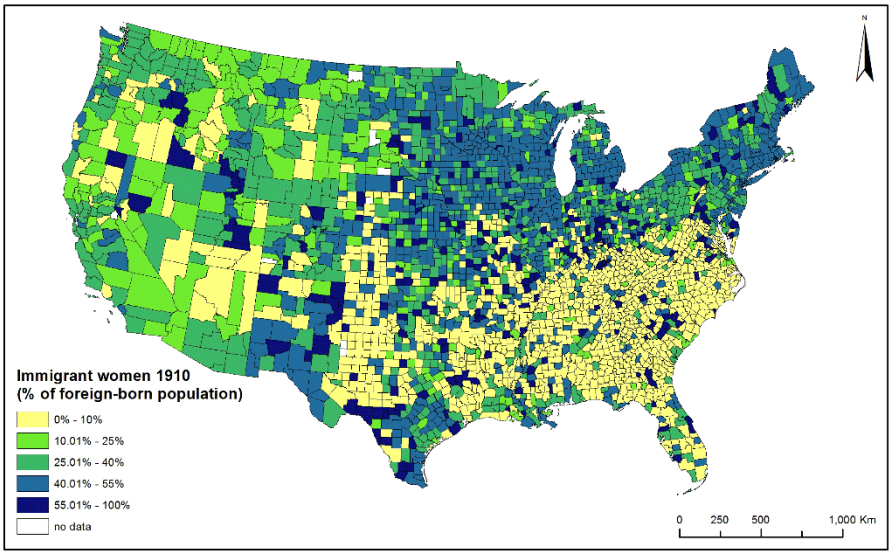


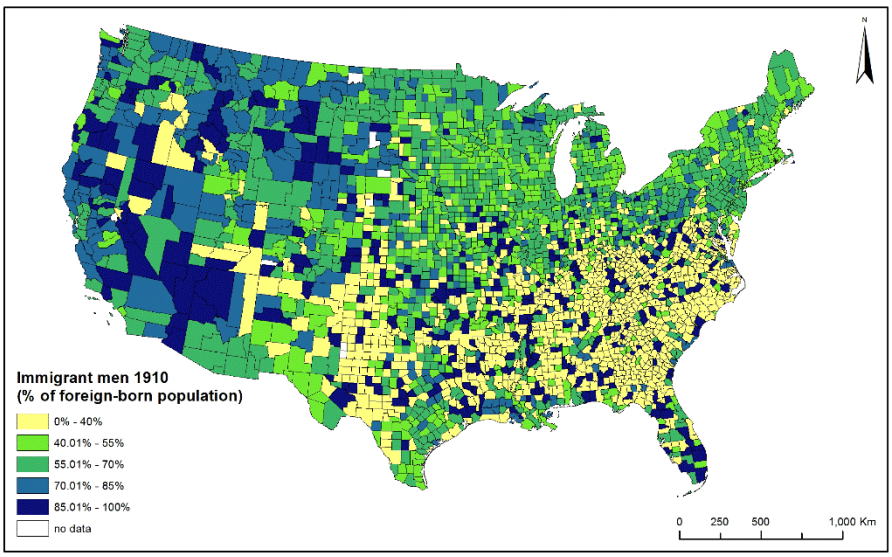


Source: IPUMS data; own calculations

Appendix 4

Appendix 4. Female and male migrant settlement pattern (% as share of total foreign stock), 1910





Source: IPUMS data; own calculations

Appendix 5

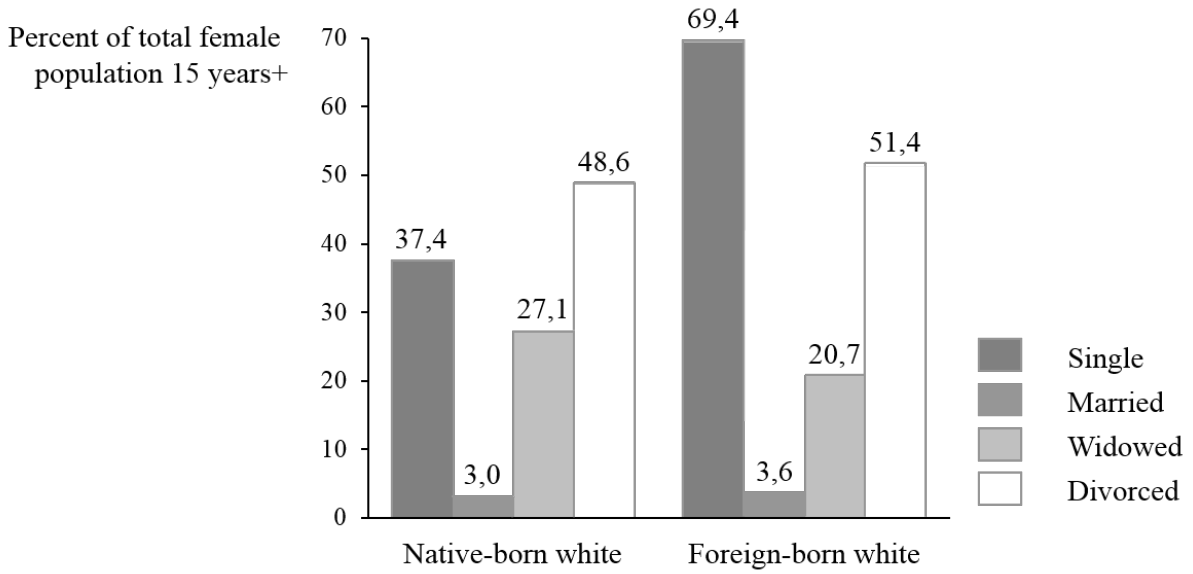
Appendix 5. Foreign-born white females in gainful employment by age (in %), 1890 and 1900

	1890	1900
Share of total 15+	**19,8**	**19,4**
15 to 24 years	50,4	48,9
25 to 34 years	19,8	19,8
35 to 44 years	12,0	13,0
45 to 54 years	10,5	11,7
55 to 64 years	9,4	9,8
65+	6,1	6,2
Age unknown	37,5	26,3

Source: US Bureau of the Census data, 1900a; own calculations

Appendix 6

Appendix 6. Gainful employment in the female population 15 years+ by marital status, 1900 (in %)



Source: US Bureau of the Census data, 1900a; own calculations

Appendix 7

Appendix 7. Variable descriptions and sources

Variable	Description	Source
Main variables of interest		
Dependent variables:		
Income per capita 2010 (ln)	Income levels of county *i* in year *t* and t_0 respectively • 2010: Income per capita data in current dollars - not adjusted for inflation, as natural log	US BEA
Mean income per capita 1880/1910 (ln)	• 1880, 1910: Aggregated mean income constructed on the basis of median total income per occupation in hundreds of 1950 dollars based on individual occupational data, as natural log	IPUMS USA
Independent variables (Model 1):		
Femig Female immigrants	Share of female foreign-born individuals of total population in county *i* in year t_0 constructed from individual data*	IPUMS USA
Mig Immigrants	Share of total number of foreign-born individuals of total population in county *i* in year t_0 constructed from individual data	IPUMS USA
Ratio	Ratio of female to male foreign-born population in county *i* in year t_0 constructed from individual data	IPUMS USA
Independent variables (Model 2):		
Mforeign Children with foreign mother	Share of individuals below the age of 16 with foreign-born mother and native-born father in county *i* relative to the total number of children below the age of sixteen in the same county at time t_0	IPUMS USA
Fforeign Children with foreign father	Share of individuals below the age of 16 with foreign-born father and native-born mother in county *i* relative to the total number of children below the age of sixteen in the same county at time t_0	IPUMS USA
Aparents Children with American parents	Share of individuals below the age of 16 with both American-born parents in county *i* relative to the total number of children below the age of sixteen in the same county at time t_0	IPUMS USA

Variable	Description	Source
Instruments		
Married	Percentage of married population in county *i* relative to total county population in year t_0 constructed from individual data	IPUMS USA
Generations	Average number of distinct generations living in one household in county *i* in year t_0 constructed from individual data	IPUMS USA
Longitude	Longitude of county *i*	Own calculation
Urban share	Share of population of county *i* living in urban areas in 1910	ICPSR
Controls included in *X* and *Z*		
Education	Percentage of population of county *i* with college degree in year *t-k**	ICPSR
Literacy	Literacy rate in county *i* in 1880, 1910 constructed from individual data	IPUMS USA
Manufacturing	Percentage of labour force employed in manufacturing in county *i;* for 1880 and 1910 constructed from individual data	US BLS and IPUMS USA
Black Population	Percentage of black population in county *i*	ICPSR
Female	Percentage of female population in county *i*	Census 2000 summary files
Female Participation	Female participation rate in the labour force in county *i;* for 1880 and 1910 constructed from individual data	ICPSR and IPUMS USA
Unemployment	Unemployment rate in county *i*; for 1880 and 1910 constructed from individual data	IPUMS and US BLS
Income (ln)	Initial income in historical years on county level constructed on the basis of median total income per occupation in hundreds of 1950 dollars based on individual occupational data, as natural log	IPUMS USA
State Controls	State dummies	Own construction

* t_0 refers to the years of migration either 1880 or 1910; t -k refers to the year 2000

Appendix 8

Appendix 8. The direct impact of immigrant women over the long-term – 1910

Dep. Var.: Income per capita 2010 (ln)	OLS		IV			
	(1) Whole sample	(2) Female migration ≥ 10%	Whole sample		Female migration ≥ 10%	
			(3) Married	(4) Urban share	(5) Married	(6) Urban share
Female Immigrants ~	-0.00400	-0.0504*	-0.394	-0.453***	-1.344*	-0.648***
	(0.0201)	(0.0266)	(0.338)	(0.141)	(0.717)	(0.211)
Immigrants ~	0.217**	0.287***	0.426**	0.458***	0.349***	0.316***
	(0.0962)	(0.0817)	(0.209)	(0.102)	(0.0887)	(0.0728)
Ratio ~	-0.000231	0.00135	0.0238	0.0274***	0.0595*	0.0282***
	(0.00165)	(0.00152)	(0.0206)	(0.00952)	(0.0332)	(0.0105)
Manufacturing 2000	-0.147***	-0.108***	-0.139***	-0.138***	-0.0147	-0.0648
	(0.0285)	(0.0377)	(0.0318)	(0.0301)	(0.0890)	(0.0488)
Education 2000	0.0112***	0.0113***	0.0113***	0.0113***	0.0108***	0.0111***
	(0.000905)	(0.00120)	(0.000879)	(0.000893)	(0.00141)	(0.00122)
Female 2000	0.0161***	0.0151***	0.0180***	0.0183***	0.0156***	0.0153***
	(0.00159)	(0.00262)	(0.00239)	(0.00211)	(0.00350)	(0.00280)
Unemployment 2000	-0.0211***	-0.0221***	-0.0230***	-0.0233***	-0.0247***	-0.0233***
	(0.00437)	(0.00597)	(0.00498)	(0.00441)	(0.00714)	(0.00572)
Black Population 2000	0.000202	0.000309	0.000291	0.000304	0.000777	0.000525
	(0.000415)	(0.000725)	(0.000327)	(0.000303)	(0.000760)	(0.000674)
Fem. Participation 2000	0.00204*	0.00100	0.00326**	0.00344***	0.00177	0.00136
	(0.00110)	(0.00147)	(0.00141)	(0.00116)	(0.00164)	(0.00146)
Income ~	0.00151	-0.00246	-0.00128	-0.00169	-0.0243*	-0.0125***
	(0.00229)	(0.00349)	(0.00429)	(0.00324)	(0.0130)	(0.00402)
Manufacturing ~	-0.0931**	-0.0834**	-0.0903***	-0.0899***	-0.0649	-0.0749**
	(0.0374)	(0.0404)	(0.0286)	(0.0285)	(0.0461)	(0.0355)
Literacy ~	0.174*	0.281**	0.248**	0.259***	0.387***	0.330***
	(0.0866)	(0.115)	(0.115)	(0.0982)	(0.102)	(0.0987)
Unemployment ~	0.0364	-0.166	0.311	0.352**	0.130	-0.0294
	(0.131)	(0.128)	(0.246)	(0.176)	(0.276)	(0.145)
Black Population ~	0.147***	0.215	0.220***	0.231***	0.388*	0.295**
	(0.0436)	(0.129)	(0.0781)	(0.0454)	(0.203)	(0.125)
Fem. Participation ~	0.0667	0.0893	0.187	0.205**	0.558*	0.306***
	(0.0617)	(0.0794)	(0.153)	(0.0993)	(0.296)	(0.110)
State Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,618	1,692	2,618	2,618	1,692	1,692
R-squared	0.672	0.644	–	–	–	–
First stage F-statistic	–	–	6.72	29.84	5.07	26.26

~ Variables date from respective year of migration 1880 or 1910 | Robust standard errors in parentheses, clustered at state level | *** p<0.01, ** p<0.05, * p<0.1