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"The Matthew Effect in Immigrant Assimilation"

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The Matthew Effect in Immigration Assimilation

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Abstract

It is argued that a series of hypotheses from across the literature together suggest a Matthew Effect in the immigrant experience: Migrants who are already quite assimilated assimilate further, while those who are not so assimilated 'reverse assimilate'. These hypotheses and the Matthew Effect are tested using panel data from the Longitudinal Survey of Immigrants to Canada. Some implications for contemporary debates and perspectives on assimilation are discussed.

The Matthew Effect in Immigrant Assimilation[1]

Arnout van de Rijt

Introduction

In the research cycle, a simple model persists until a slightly more complicated model that makes theoretical sense empirically outperforms it. For a social *process*, the simplest model one can try to fit is one with a constant rate. On a chart with as horizontal axis time and as vertical axis the focal social phenomenon, this model produces a *straight line*. It has been repeatedly claimed that the conceptualization of the immigrant adjustment process as a straight line is flawed: ""Straight-line" theory…is much less successful in accounting for the experience of non-European origin groups." (Waldinger & Gilbertson 1994:432; quotes in original) "These anomalies immediately question the applicability of straight-line assimilation." (Zhou 1997:72) "One cannot but…see that the process of "becoming American" has been far from a uniform or straight-line march" (Rumbaut 1997:488; quotes in original)

The straight-line model is commonly attributed to classical scholarship on assimilation, sometimes called "the canonical account" (e.g., Nee & Alba 1997:827). A collection of early sociological works are said to share a common view of assimilation, namely that of a monotonic process during which the immigrant or immigrant group, as

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life- or calendar time progresses or subsequent generations replace preceding ones, further and further adjusts towards greater and greater assimilation. The debate does not revolve around the quantitative feature of linearity. It can be a "bumpy line" (Gans 1992:44). Some even contend that "…none of the scholars whose names are associated with assimilation theory (e.g., Park, Frazier, Myrdal, Gordon) posited that the path of ethnic change was linear..." (Hirschman 1991:180) And, without a quantifiable definition of assimilation, the linearity feature of the straight-line model is not even falsifiable. Contested, rather, is the qualitative model property of an irreversible course with only one possible end point, complete assimilation. It is this property against which much evidence has been presented, taken as null hypothesis in a multitude of empirical studies.

These studies, of which I mention a few, show that in some 'domain' of assimilation and during some period or over the course of some generations, certain immigrants do not assimilate or even 'reverse' assimilate (Portes & Stepick 1993:8). In their classic study of New York City neighborhoods, Glazer & Moynihan (1963) describe how the Italians, Irish, Jews, and Puerto Ricans do not melt. More recently, Alba et al. (1999) show that length of stay is not related and U.S. citizenship inversely related to immigrants' odds of suburbanization (p. 457), which Park & Burgess (1924) identified "…as a key step in a process of spatial, or residential, assimilation" (p. 447). Portes, Haller & Guarnizo (2002) find that "long periods of residence in the United States increase the probability of engaging in…transnational entrepreneurship…" which is "…contrary to what may be expected from an assimilationist perspective" (p. 289). Guarnizo, Portes & Haller (2003) find no significant effect of U.S. citizenship and a positive effect of length of stay on engagement in political activities that involve the

sending nation (p. 1234), which is at odds with "…orthodox theoretical approaches…" which predict "…that the longer immigrants live and are socialized into the ways of the host society, the greater the likelihood of their becoming thoroughly absorbed in it." (p. 1215) Perreira et al. (2006) state that "The straight-line hypothesis predicts that ethnic differences in high school dropout rates, within and across immigrant generations, will diminish over time" (p. 512) but find that "…for every race-ethnicity except Hispanic, the first generation drops out at significantly lower rates than third and higher generations." (p. 522) The question that these studies thus raise is 'If not a straight line, then what model does describe assimilation?'

In response to the counter-evidence, theorists have first removed the inevitability from the argument. In what has been called 'segmented assimilation theory', Portes & Zhou (1993) consider straight-line assimilation one out of a number of possible trajectories that immigrants may follow. In their 'new assimilation theory', Alba & Nee (2003) conclude that "…the assumption of inevitability assumes away what requires explanation..." (p. 38) and instead regard assimilation as "…something that frequently enough happens to people when they make other plans." (p. 282)

They have then proceeded to take two more important steps in the direction of an alternative model. Scholars have identified qualitative system behaviors, or "modes of assimilation" (Portes & Zhou 1993), that are commonly observed but that the old model cannot exhibit. Examples are long-term states of segregation in "immigrant enclaves" (Wilson & Portes 1980:295), forms of reverse assimilation such as "reactive ethnicity" (Portes & Rumbaut 2001:186) and "downward assimilation" (Portes & Rumbaut

2001:59), and forms of "selective assimilation" (Portes & Zhou 1993:90) such as assimilation without loss of ethnic identity or gain in economic status.

They have also identified a host of mechanisms that appear to drive the assimilation dynamic. Alba & Nee (2003:38-57) organize "mechanisms of assimilation" into four categories, namely "purposive action", "network mechanisms", "forms of capital", and "institutional mechanisms". I will follow up on their effort and bring together from dispersed sources a range of mechanisms of assimilation of the first three categories.

I attempt to take one further step. I propose an alternative model of assimilation that (1) incorporates these mechanisms of assimilation, (2) can exhibit the aforementioned modes of assimilation, (3) adds minimal complexity to the straight-line model, and (4) is empirically competitive with the straight-line model. This alternative model, as I then show, has the following characteristic qualitative property, namely that the quite-assimilated assimilate further while the not-so-assimilated reverse-assimilate, a property that, in the context of academic prestige was dubbed *Matthew Effect* (Merton 1968:57).

I will proceed as follows. I define terms, overview mechanisms of assimilation, show how the hypotheses associated with the mechanisms are of a common, shared form, synthesize the hypotheses into a model, derive the existence of a Matthew Effect, show that the model allows for the various modes of assimilation, outline the testing strategy, test the various hypotheses and the Matthew Effect using panel data, and discuss limitations and some implications for contemporary debates and perspectives on assimilation.

Definitions

When an individual migrant or ethnic group arrives in a host country, it is potentially ethnically distinguishable in a number of ways. With time, these distinctions can remain, fade, or intensify. I borrow the definition of assimilation from Alba & Nee (2003), namely "the attenuation of distinction based on ethnic origin" (pp. 30-1). Each way in which either an ethnic group or an individual can be distinct I will call a domain. Let a_{ik} denote the level of assimilation of individual $i = 1, 2, \ldots I$ in domain $k = 1, 2, \ldots K$. $a_{ik} \rightarrow -\infty$ indicates minimal assimilation or maximal distinction, and $a_{ik} \rightarrow \infty$ indicates maximal assimilation or minimal distinction. I consider eight domains ($K = 8$): marriage, language, residence, workplace, career, friendship, culture, and identity.

TABLE 1 ABOUT HERE

Table 1 overviews the eight domains for two levels of analysis, the level of the individual migrant and the level of the ethnic group. A member of an ethnic group distinguishes herself in the household domain by sharing a household with members of her own ethnic group. An ethnic group distinguishes itself in the marriage domain when strong homogamy makes many households mono-ethnic. A member of an ethnic group distinguishes herself in the language domain by speaking the official language of the host country poorly. An ethnic group distinguishes itself in the language domain when it exhibits strong monolingualism. A member of an ethnic group distinguishes herself in the residence domain by having co-ethnic neighbors only. An ethnic group distinguishes

itself in the residence domain when its members live segregated. A member of an ethnic group distinguishes herself in the workplace domain if all her colleagues co-ethnic. An ethnic group distinguishes itself in the workplace domain when there are high levels of workplace segregation. A member of an ethnic group distinguishes herself in the career domain when she earns less. An ethnic group distinguishes itself in the career domain when its members earn less than the mean income. A member of an ethnic group distinguishes herself in the friendship domain if all her friends are co-ethnic. An ethnic group distinguishes itself in the friendship domain if it exhibits strong homophily. A member of an ethnic group distinguishes herself in the culture domain if she carries on the traditions associated with her ethnic group. An ethnic group distinguishes itself in the culture domain if its traditions are practiced. A member of an ethnic group distinguishes herself in the identity domain if she identifies with the ethnic group. An ethnic group distinguishes itself in the identity domain if it exhibits a strong ethnic identity.

A member of an ethnic group has lost her distinction entirely when she does not share her household with members of her own ethnic group, when she speaks the official language fluently, when her neighbors, colleagues, and friends are all of a different ethnicity, when she earns a top-income, when she does not uphold the cultural values of her group, and when she does not identify with her ethnic group. An ethnic group has lost its distinction entirely when its members have as spouses, friends, colleagues, and neighbors members from other groups, when they speak the official language fluently, when they all earn top incomes, when they do not uphold the cultural values of the group, and when they do not identify with the ethnic group. One could argue that minimal distinction should occur instead when scores on domains correspond to those of an

average member of society, not when they reach one of the extremes. For example, those with top incomes would then be less assimilated then those with nationally average incomes, and Chinese with no Chinese friends less than Chinese with one Chinese friend. Lacking those empirical averages for most domains and opting for simplicity, I place the point of minimal distinction at the extreme.

The domains are neither exhaustive nor mutually exclusive, but do reflect existing categorizations. The domains household, friendship, residence, and workplace match the first four categories of Bogardus' social distance scale, namely people's willingness to accept out-group members as close relative by marriage, close personal friend, neighbors on the same street, and co-workers in the same occupation (e.g. Babbie 1992). Assimilation along the domains residence, workplace, and friendship are perhaps what Gordon (1964:79) referred to as "structural assimilation," assimilation along the culture domain "acculturation", assimilation along the identity domain "ethnic identification", assimilation along the household domain "intermarriage", assimilation along the language domain "language acquisition", and assimilation along the career domain what Chiswick (1978) referred to as "economic assimilation". Note however, that while Gordon took as reference and end point of assimilation the time-specific and arguably arbitrary "middle-class cultural patterns of, largely, white Protestant, Anglo-Saxon origins," (p. 72) the reference here is simply the out-group. Thus, in principle, everyone is considered an immigrant, and members of all classes, religions, and ethnicities can be dissimilated. The out-group as reference is implied by the Alba & Nee definition: If one looks like members of other ethnic groups, distinction is lost. Note also that Gordon considered the domains to be sequential stages in the assimilation process, whereas I

allow the assimilation process to involve simultaneous changes, forward or backward, in multiple domains.

I will express all model dynamics in terms of one conception of time, lifetime. Let t denote lifetime and $\dot{a}_{ik} = \partial a_{ik} / \partial t$ the rate of assimilation for i in domain k. The straight-line hypothesis has also been cashed out in terms of calendar time as well as in terms of generations. We can analyze calendar time dynamics by considering individual-specific time zeros, and we can analyze generational dynamics by ensuring that the time zeros of members of later generations come after the time zeros of members of earlier generations.

Hypotheses

The hypotheses I bring together from the immigration literature will all be of the following form: For any individual i, the rate of assimilation $\dot{a}_{ik}$ in some target domain k positively depends on the level of assimilation a_{il} in some source domain $l \neq k$. Table 2 lists all hypotheses and gives the corresponding target domain, source domain, and social mechanism.

TABLE 2 ABOUT HERE

Van Tubergen & Kalmijn (2005) discuss a strand of research that hypothesizes that exposure to the official language of the host country eases an immigrant's acquisition of this language. The more frequent the contact with those who do not speak the ethnic language, the faster conversation skills improve. The 'exposure hypothesis' indeed fits

the specified form when the target domain is language and the source domain marriage, residence, workplace, or friendship.

The converse of the exposure hypothesis has also been stated (Chiswick & Miller 1995; Espinosa & Massey 1997). Language skills allow conversations one could otherwise not have and thus facilitate cross-ethnic contact. The 'facilitation hypothesis' has as target domain marriage, residence, workplace, or friendship, and as source domain language.

Alba & Logan (1993) hypothesize that "…members of minority groups...convert socio-economic and assimilation progress into residential gain." (p. 1390) The desire to live in a mixed neighborhood is often not sufficient. Because of housing price differences between ethnic and mixed neighborhoods, it must be complemented with the socio-economic means. The hypothesis stems from theoretical work on residential segregation by Massey (1985), and has come to be labeled the 'spatial assimilation hypothesis.' Here I label each hypothesis by the associated social mechanism, hence 'affordability hypothesis'. It can be made to fit the specified form by making residence the target domain and career the source domain.

Sanders, Nee, and Sernau (2002) argue that immigrants' "...reliance on social ties...facilitates job hunting in the wider domain of the economy, where prospective employers may be of any ethnicity." (p. 281) Conversely, "...ethnic networks provide sources of information about...sources of jobs inside the community." (Portes & Rumbaut 1996:86) By definition, those who work in the 'ethnic economy' (Light & Karageorgis 1994) tend to be co-ethnic and those who work in the mixed economy of a different ethnicity. Information about jobs in the ethnic economy thus flows in through co-ethnic

social ties and information about jobs in the mixed economy through cross-ethnic social ties. The 'referral hypothesis' (Nee, Sanders, and Sernau 1994; Sanders et al. 2002) fits the proposed form when the target domain is workplace and the source domain is marriage, residence, or friendship.

Portes and colleagues (e.g., Portes & Sensenbrenner 1993) show how trust in ethnic ties allows fellow members of an ethnic group to provide startup funds for a business in the ethnic economy in the absence of a contract or formal guarantee. The 'trust hypothesis' is based on this alternative mechanism through which assimilation in the workplace domain is contingent upon assimilation in the marriage, residential, and friendship domains.

The monetary gains from trust in ethnic ties suggests another target domain, namely 'career', with an associated negative cross-domain effect, but this effect has in the past been subject to much debate (e.g., the back-and-forth in December 1987 issue of ASR). Sanders and Nee (1987) take elements from classical theories of assimilation and segmented labor market theory to counter-formulate what they call the "ecological hypothesis" (p. 745) that there is a mobility cost to economic and residential segregation. Advanced capitalist societies are structured such that jobs in ethnic firms located in ethnic neighborhoods tend to be in the secondary labor market thereby lacking opportunities for promotion and advancement. The ecological hypothesis thus has as source domains residence and workplace and as target domain career and operates through a "job prospects" mechanism. Whether or not the ecological hypothesis counteracts the trust hypothesis that concerns the career domain sufficiently to make the cross-domain effects positive is an empirical question.

Kalmijn and Flap (2001) speak of a "supply-side perspective" as a collection of theories that argue "that the social contexts in which people participate, mold their networks by shaping the pool from which they draw their contacts…" (p. 1290) The argument goes that people who share common characteristics tend to run into one another more readily, namely at meeting places that are associated with those characteristics (Blau & Schwartz 1984). Marriage, friends, the neighborhood, and the workplace are all typical meeting places. One's spouse and one's friends introduce one to third parties who are all potential future friends, romantic partners, neighbors, or colleagues. Similarly, one meets romantic partners, friends, neighbors, and colleagues in the neighborhood and at work. The extent to which these meeting places are populated by co-ethnics determines how likely future spouses, friends, colleagues, and neighbors are co-ethnic. The 'interaction' hypothesis thus has as target and source domains marriage, residence, workplace, and friendship.

According to social identity theory (Tajfel & Turner 1979), people form an identity by classifying themselves as member or non-member of groups. They are more likely to identify with groups whose other members they interact with. The 'identification hypothesis' thus has as target domain identity and as source domain marriage, residence, workplace, and friendship.

One consequence of this identification is the inclusion of members in and exclusion of non-members from one's social network. For the case of 'residence', this hypothesis can be found in the immigration literature as the 'place stratification hypothesis', which traces residential segregation back to exclusion on the basis of group membership (Denton & Massey 1989; Logan & Alba 1993). This 'inclusion' hypothesis

has as target domains marriage, residence, workplace, and friendship, and as source domain 'identity'.

Two mechanisms underlie the pervasive tendency for people to interact with similar others: 'selection' and 'influence' (e.g., Macy et al. 2002). Selection is the choice of interaction partners on the basis of similarity. When cultural similarity is considered, the selection hypothesis has as target domains marriage, residence, workplace, and friendship, and as source domain 'culture.' For the case of 'residence', the selection mechanism is found in literature on the link between residential preferences and segregation (e.g., Schelling 1971). Influence concerns the opposite causality and is the tendency of people to grow similar to interaction partners. When cultural similarity is considered, the influence hypothesis has as target domain culture and as source domains marriage, residence, workplace, and friendship.

And lastly, human capital theory (e.g., Becker 1984) predicts that language skills, being a form of human capital, enhance career advancement (Chiswick & Miller 1995). Assimilation in the career domain will proceed faster if language skills are better. The 'skill' hypothesis has as target domain career and as source domain language.

Derivation of the Matthew Effect

It has been argued that in model building in the social sciences a procedure of stepwise increases in complexity is desirable (e.g., Lindenberg 1992). The classic model of assimilation, the straight line, is the simplest possible model for a social process. Let us take its formalization, a constant rate, α_k, as baseline. This baseline has been repeatedly argued and shown to fail to capture the essence of the assimilation process. I therefore

increase complexity minimally in a way that has maximal theoretical and empirical backing. Let $\boldsymbol{B}$ be a KxK matrix of coefficients. I maximize backing by adding terms that do not represent new hypotheses but rather the hypotheses discussed afore, which have not yet been rendered obsolete in the process of scientific inquiry. The added complexity is minimal because the hypotheses all fit a common form so that I only have to add one type of formal term to the constant rate equation for assimilation in domain k, namely i's level of assimilation in target domain l, a_{il}, multiplied by a coefficient β_{kl}:

$$\dot{a}_{ik} = \alpha_k + \sum_{l=1}^{K} \beta_{kl} a_{il} \qquad (1)$$

I choose to introduce this term through addition, and not, for example, multiplication. This choice is arbitrary, though convenient because it makes the system of differential equations linear, and thus solvable in closed form (e.g., Strogatz 1994:123-44). In fact, the dynamical system of K equations of type (1) has been well studied across the physical sciences. The solution vector $a_i(t)$ is given by

$$a_i(t) = \sum_{m=1}^{K} c_m e^{\lambda_m t} v_m \qquad (2)$$

Here, c is a vector of constants and λ_m is the m-th eigenvalue with corresponding eigenvector v_m. If the coefficients β_{kl} are zero, the summation in equation (1) simply drops out and we obtain the classical straight-line model of assimilation, with for each domain only a (positive) constant rate α_k. And, adding an error term, we would get

Herbert Gans' "bumpy line" (1992:44). If, however, the coefficients β_{kl} are instead positive, conform the assimilation hypotheses we reviewed, then the Perron-Frobenius theorem says that for some n, λ_n is real positive and strictly larger than all other eigenvalues, and that the corresponding eigenvector v_n has non-zero entries of the same sign. As inspection of equation (2) establishes, this means that as t becomes large, the term $c_n e^{\lambda_n t} v_n$ comes to dominate in magnitude, as it is asymptotically approached by $a_i(t)$. Since $c_n e^{\lambda_n t} v_n$ grows exponentially with t, the system has only two attractors, namely maximal assimilation in all domains, $a_i \to \infty$, and minimal assimilation in all domains, $a_i \to -\infty$, depending on whether c_n is positive or negative. After sufficient time has elapsed, the immigrant finds herself on a solid trajectory of either ever increasing or ever decreasing assimilation. This is the Matthew Effect that Merton spoke of in the context of status in science – the famous becoming more famous and the fameless less famous, later borrowed to refer to increasing income inequality – the rich becoming richer and the poor poorer –, to increasing educational inequality (Stanovich 1986), and musical taste (Salganik, Dodds, and Watts 2006). Which of the two trajectories the immigrant will follow depends on initial conditions. Immigrants who start off rather assimilated further assimilate. Immigrants who start off not so assimilated reverse assimilate. This endogenously-arrived-at dichotomization of immigrants into assimilators and reverse assimilators on the basis of initial assimilation levels appears to fit exogenously-arrived-at dichotomizations on the basis of initial assimilation levels from the literature, such as the one between new and old immigrants (Massey 1995) and high and low capital migrants (Nee et al. 2002).

Modes of Assimilation

The Matthew Effect tells us what will ultimately happen to the immigrant under the model assumptions. It concerns the system behavior for sufficiently large t. The ultimate mode of assimilation is either assimilation in all domains or reverse assimilation in all domains. We have, however, not defined the unit of time, and thus left open the possibility that the Matthew Effect sets in postmortem. It is therefore informative to look at possible system behavior early on, for small t, before the eigenvector with largest eigenvalue starts to dominate and the Matthew Effect sets in.

These early assimilation dynamics cannot at any time involve assimilation in all domains ($\dot{a}_i > 0$) or reverse assimilation in all domains ($\dot{a}_i < 0$), because these states are self-perpetuating; once assimilation or reverse assimilation in all domains has set in, it cannot stop. They must therefore involve "selective assimilation" (Portes & Zhou 1993:90) where assimilation occurs in some domains but not in others. For example, no economic progress is made or no ethnic identity is lost.

We can visualize the early and ultimate assimilation dynamics together in a two-dimensional phase portrait if we reduce the number of domains K from eight to two. Figure 1 shows a phase portrait with on the horizontal axis domain 1, say, structural assimilation, and on the vertical axis domain 2, say, acculturation, and for arbitrary parameters values $\alpha = 0$, and $\boldsymbol{B} = 2 - \boldsymbol{I}$. The thick arrows represent ultimate assimilation dynamics. Once the immigrant finds herself in the area northeast of the lines $a_2 = -2a_1$ and $a_2 = -\frac{1}{2}a_1$, she monotonically assimilates in both domains. Similarly, once the immigrant finds herself in the area southwest of the lines $a_2 = -2a_1$ and $a_2 = -\frac{1}{2}a_1$, she monotonically reverse assimilates in both domains. Before she arrives on either trajectory,

which because of the Matthew Effect is inevitable, she may find herself temporarily in the area between the two lines, where she assimilates in one domain and reverse assimilates in the other. The thin arrows represent these early assimilation dynamics. If she starts northeast of the line $a_2 = -a_1$, these early assimilation dynamics will eventually bring her to the assimilation trajectory. If she starts southwest of the line $a_2 = -a_1$, she will drift towards the reverse assimilation trajectory.

FIGURE 1 ABOUT HERE

The modes of assimilation considered so far concerned individual migrants, within their lifetime. The model of assimilation developed here also allows for various modes of assimilation that have in the literature been specified for generations or ethnic groups, modes that the straight-line model did not allow. "Downward assimilation" (Portes & Rumbaut 2001:59) occurs when a second-generation immigrant becomes economically less successful than her parents. There are several ways this dynamic can be accommodated in the model, for example when $\dot{a}_i > 0$ for the parents while the child finds herself selectively or reverse assimilating. If this were the case for enough first generation parents and second-generation children, we have an instantiation of the phenomenon of "second generation decline" (Gans 1992).

Testing Strategy

I seek evidence that speaks for or against the hypotheses and for or against my claim that the Matthew Effect is empirically competitive with the straight line. The purest test is a

direct estimation of the parameters in equation (1) as coefficients in a statistical model that is as similar as possible to the theoretical model developed afore. Each coefficient β_{kl} and associated t value would then address a separate hypothesis from table 2. t values below –1.96 are votes against both the straight line and the Matthew Effect, t values between –1.96 and +1.96 are votes for the straight line, and t values above +1.96 are votes for the Matthew Effect. Moreover, plugging the estimated coefficients back into equation (1), one could do equilibrium analysis to see whether there is either a single assimilation equilibrium (straight line), or an assimilation ánd a reverse assimilation equilibrium (Matthew Effect), or some other set of equilibria.

A strong candidate for such a statistical model is the Euler approximation of equation (1) with an error term added:

$$a_{ik,t+1} = \alpha_k + (\beta_{kk} + 1)a_{ik,t} + \sum_{l \neq k}^{K} \beta_{kl} a_{il,t} + \varepsilon_{ik} \qquad (3)$$

Conveniently, equation (3) is a regression equation with as dependent variable the target domain k at time t+1, as independent variables the target and source domains k and l at time t, and as estimable coefficients the theoretical model parameters. Needed to estimate equation (3) for each domain are measures of all eight domains at the beginning and end of some period of the immigrant's stay in the host country. It does not matter what period, because the theoretical model assumes the assimilation process to be ahistoric – t does not appear at the right-hand side in equation (1).

The use of more than one observation of assimilation per individual necessitates data with that information, which is scarce due to the higher collection costs. In the past,

scholars lacking repeated measurements had to address the problem by making comparisons between more and less recent migrants (e.g. table 9.1 in Massey et al. 1987:257) or by trusting respondents' ability to retrospect (e.g. table 3 in Sanders et al. 2002:298-9). Fortunately, recently, a number of panel studies of assimilation were undertaken. For my analysis, I draw on the first two waves of the Longitudinal Survey of Immigrants to Canada (LSIC).

The target population of the LSIC is all immigrants aged 15+ who entered Canada between October 1, 2000 and September 30, 2001 from abroad with legal 'landed immigrant' status. The sampling frame is an administrative database from Citizenship and Immigration Canada of all landed immigrants. This excludes those who landed from within Canada, who may have spent considerable time in Canada before landing. Although the ahistoric nature of the model makes it irrelevant what period out of the life of the immigrant is analyzed, the fact that all sampled immigrants are starters avoids certain omitted time variable biases.

Immigrants were interviewed six months, two years, and four years after landing. The numbers of respondents for the first and second wave are respectively 14,356 and 9,332. Weights constructed by Statistics Canada, who collected the data, were designed to compensate for biases from non-response at both waves (see chapter 12 of the Wave 2 User Guide). I will use these weights throughout the analysis. Note that the resulting rounding in head counts will make some cells not add up to their row or column totals.

These interviews were conducted face-to-face or by telephone in one of 15 languages. Validity and reliability of responses were augmented in two ways. Computer-assisted interview technology automatically detected real time for various inconsistencies

and errors in the responses, with previous questions being asked again until consistent. Also, Statistics Canada assured respondents' beforehand that "…your answers will be kept strictly confidential. They will be added to answers from many other immigrants and then studied." (p. 8 of LSIC wave 1 questionnaire). It enforced this promise by not releasing a PUMF, by having me undergo a security screening, and by making me analyze the data in one of Canada's Research Data Centers so that it could double-check that I did not accidentally reveal respondent-identifying information. For this reason, I can here not display minimum and maximum values or cross-tabulations with cell counts below 10.

For the intended regression equations, I need data at each wave on the level of assimilation of the respondent in each of the eight domains. The scaling of each variable is irrelevant, because the theoretical model leaves it unspecified, as long as higher scores represent higher levels of assimilation. The operationalizations of the eight domains are shown in the last column of table 1. For the *household* domain, I use a measure on the proportion of the household members who speak English and French. The existence of two official languages in Canada requires a decision on which measure(s) to use and how. In the analysis I will present, I use the measurement of French language skills for residents of Quebec and the measurement of English language skills otherwise. I have tried alternative strategies, such as separate models for Quebec and the rest of Canada, or models with both language measures included as separate variables, and these models do not alter the conclusions I will draw later. I would have preferred a measure of the actual ethnicity or country of origin of household members, but the LSIC questionnaire asks for spouse's country of origin at wave 1 and for spouse's ethnicity at wave 2, so that there is

no wave-constant measurement of either. Fortunately, for all other structural assimilation variables, I do have wave-constant measures of ethnicity available to me.

For the *language* domain, I use the question "How well can you speak English/French?" Answer categories are "cannot speak this language", "poorly", "fairly well", "well", and "very well". The computer skipped the question if English/French was both the first language of the respondent and the language spoken most often at home, which cases I treated as "very well". Consistent with the household measure, I consider French language skills for Quebec residents and English language skills for others. I considered responses equidistant and standardized them, recoding the five answer categories as respectively 0, ¼, ½, ¾, and 1.

For the *residence* domain, complete residential histories since landing for the first three digits of the postal code are available. I matched these with 2001 Canadian Census proportions neighborhood residents whose country of origin matches that of the respondent for those postal code areas. Note that this leads to a violation of the i.i.d. assumption. To correct for this violation I cluster cases by postal code and compute robust standard errors (Huber 1967). This reduces *T* values for most effects slightly.

For the *workplace* domain, I use the question "How many of your co-workers are of the same ethnic or cultural group as you?" Note that this question leaves it up to the respondent to define what her or his ethnic or cultural group is. An advantage of this question is that it measures assimilation in a way that is meaningful to the respondent. A drawback is that it permits a risk that assimilated migrants consider their ethnicity to be Canadian. Possible answers were "all of them", "most of them", "some of them", and "none of them", which I coded as 0, 1/3, 2/3, and 1 respectively. The question was asked

for respondents who ever worked since landing (wave 1) or since wave 1 (wave 2) and were not self-employed. I consider other respondents segregated in the workplace and assign them score 0. Whether or not this is the correct way to deal with these cases is debatable. Therefore, in analyses not reported on here I treated such cases as missing and these do not alter the conclusions I will draw later.

For the *career* domain, I measure the total personal income from all sources since landing (wave 1) or since wave 1 (wave 2). I follow the convention of taking the logarithm after imposing an artificial lower bound of 1 dollar.

For the *friendship* domain, I use the question "How many of your friends are of the same ethnic or cultural group as you?" Again, the question leaves it up to the respondent to define what her or his ethnic or cultural group is. Possible answers were "all of them", "most of them", "half of them", "some of them", and "none of them", which I coded as 0, ¼, ½, ¾, and 1 respectively. Note the extra category in comparison to the workplace measure. The question was asked for respondents who made friends since landing (wave 1) or new friends since wave 1 (wave 2). For those without friends at wave 1, I made the same decision and ran the same robustness checks as for the colleague measure. The wave 2 measure concerns new friends. If wave 2 friends replaced the wave 1 friends, we could treat the answers as reflecting the entire Canadian friendship network. However, if they were added to the old friends, our best guess of the ethnic composition would be the average of the wave 1 and wave 2 measurements. The structure of the questionnaire allows for both possibilities. In separate analyses not shown here I tried both operationalizations of friendship network composition, as well as analyses excluding these special cases, and found results to be robust. The results that are presented here are

based on the assumption that new friends replace old friends. If there were no new wave 2 friends, I used the wave 1 measurement for wave 2 as well.

For the *culture* domain, the LSIC contains no behavioral measures of engagement in cultural traditions, so I employ the attitudinal question "How important is it for you to carry on the values and traditions of your ethnic or cultural group or your homeland?" Answer categories are "very important" (0), "important" (1/3), "not very important" (2/3) and "not important at all." (1)

For the *identity* domain, I use a measure of perceived closeness to the ethnic group: "When you think of others in Canada from the same ethnic or cultural group as yourself, how close would you say you feel to that group as a whole?" Answers ranged from "very close" (0), to "close" (1/3), to "not very close" (2/3), to "not close at all" (1).

Some of these variables are of ordinal, others of interval measurement level. I report results from OLS regression models, but I did run parallel ordered and multinomial logistic regression models to verify that conclusions were robust across model specifications. Differences in the means of these eight variables at waves 1 and 2 indicate assimilation patterns for the 2001 cohort of Canadian immigrants as a whole. The straight line permits no negative differences, while the Matthew Effect permits any differences.

In the intended regression models, omitted variable bias may lead to a false assessment of the relative empirical tenability of the Matthew Effect with respect to the straight line. To reduce this risk, I control in all models for a number of variables. These are age, church attendance, and marital status, gender, domestic college degree, foreign college degree, immigration class, and Western, muslim, Asian, and Hispanic countries of origin. The first three are wave-specific measures, the others wave-constant.

Table 3 displays the means and standard deviations of all variables. I cannot report the exact numbers of missing observations per variable, because many of them are below 10 and thus shielded by Statistics Canada. Missing values reduce the sample from 9,332 to 8,575. I report on analyses of this smaller sample of list-wise deleted cases. It would not be correct to impute the domain variables, because each is also used as dependent variable. I ran models with imputed control variables and found no deviating results. As mentioned before, I can also not report minimum and maximum values.

TABLE 3 ABOUT HERE

All empirical domain variables are bounded, while none of the theoretical variables are. I deal with this discrepancy in two ways. First, I do not interpret intra-domain effects, because strong ceiling effects are operating. Cross-domain effects do not have this problem. Note that all hypotheses concern cross-domain effects; they are placed in off-diagonal cells in table 2. Second, in the equilibrium analysis I analyze the system behavior given a matrix $\boldsymbol{B}$ with the estimated cross-domain effects as fixed off-diagonal cells and varying inter-domain effects on the diagonal.

The estimated cross-domain effects will speak to the empirical tenability of the hypotheses, but not to the mechanisms through which they operate. At the end of the results section, I present some descriptive evidence concerning these mechanisms.

Results

The differences between the wave 1 and wave 2 means of the domain variables in table 3 represent the change over 1½ years in the levels of assimilation of the average migrant of the 2001 cohort of immigrants to Canada. While any negative change would violate the straight-line model's prediction of monotonous positive change, the Matthew-Effect model is not falsifiable at the group level. The table shows that the cohort as a whole assimilates along the household, language, workplace, career, and friendship domains. No significant assimilation occurs along the residence domain. Reverse assimilation is visible in the culture and identity domains.

Table 4 shows the estimated theoretical parameters and the associated *t* values (both multiplied by 100 for a better visual assessment of the relative sizes), R^2, number of clusters, and number of observations from the eight corresponding linear regression models.

TABLE 4 ABOUT HERE

Of all 56 cross-domain effects, 3 have *t* values below –1.96, 31 have *t* values between –1.96 and +1.96, while 22 have *t* values above +1.96. We could count these as 3 votes against both models, 31 votes for the straight-line model, and 22 votes for the Matthew-Effect model.

This test has some drawbacks. Strictly speaking, the Matthew Effect does not require every single cross-domain effect to be positive. Also, the competitive edge of the Matthew Effect over the straight-line increases with sample size. An alternative

assessment of the competitiveness of the Matthew Effect with the straight line is an answer to the question whether the cross-domain coefficients in table 4 give rise to a straight-line dynamic, a Matthew Effect dynamic, or some other dynamic. The answer should come from the eigenvalues and eigenvectors of the parameter matrix ***B***. I constructed a matrix ***B*** with as off-diagonal entries the estimated cross-domain effects and with zeros on the diagonal. The eigenvalue with largest real part is then strictly positive, namely .146, and the corresponding eigenvector [.039 .026 .001 .073 .993 .062 .032 .048] as well. As I discussed in the section "Derivation of the Matthew effect" this gives rise to a Matthew effect dynamic. This conclusion continues to hold for any sufficiently large intra-domain effects on the diagonal of **B**. For strongly negative intra-domain effects, the dominant eigenvalue becomes negative and the system dynamics drift towards an intermediate state of assimilation along all domains. This dynamic would be predicted by neither the straight-line nor the Matthew Effect.

Although all of these hypotheses are borrowed from the literature, for many this is one of the few tests if not the first with longitudinal data. Table 5 displays the results of the hypothesis testing. A '–' signifies a *t* value below –1.96, a '0' a *t* value between –1.96 and +1.96, and a '+' a *t* value above +1.96. 1 hypothesis was falsified, 20 had an undecided test result, and 19 were confirmed. These counts are different from the counts for the cross-domain effects because for some cross-domain effects no hypotheses were formulated. We can express the results also in terms of "mechanisms of assimilation" (Alba & Nee 2003:38-57). The hypothesis associated with the affordability mechanism was rejected. Tests of hypotheses that operated through the attraction mechanism were all

undecided. For each of the mechanisms exposure, interaction, referral, trust, influence, identification, skill, job prospects, and inclusion, some hypothesis that operates through that mechanism was confirmed and none rejected.

TABLE 5 ABOUT HERE

The evidence for and against these mechanisms is indirect. Hypotheses that were formulated on the bases of their operation through these mechanisms were tested, but table 4 does not speak to the question if they indeed operate through these mechanisms. It is possible that confirmations are mistakenly attributed to these mechanisms and that falsifications are due to counter-acting other mechanisms. Here I provide some complementary descriptive evidence that is suggestive of some of these mechanisms.

The interaction mechanism associates assimilation along the target friendship domain with levels of assimilation in the household, residence, and workplace domains, through the functioning of the household, the neighborhood, and the workplace as meeting places where new friends are made. If the interaction mechanism is indeed the mechanism that drives these cross-domain effects, then when asked where they acquired these new friends, respondents should in large numbers mention these meeting places. Of all 7,385 respondents who reported new friends at wave 1, 4% said they acquired some of these through spouse's work, 9% through their children's school, 29% in their neighborhood, and 37% at work. Of all 8,076 respondents who reported new friends at wave 2, 5% said they acquired some of these through spouse's work, 10% through their children's school, 38% in their neighborhood, and 55% at work.

The exposure mechanism associates assimilation along the language domain with the level of assimilation in the workplace through the opportunity for practicing language skills that a cross-ethnic workplace provides. If this effect indeed operates through the exposure mechanism, then at least it would have to be true that migrants much more often speak the official language with their co-workers in the mixed economy. Of all 435 respondents whose co-workers were all co-ethnic at wave 1, 34% said they spoke to their co-workers in English (French for Quebec), while of all 1,072 respondents with no co-ethnic co-workers 95% said that they spoke English with their co-workers. Of all 538 respondents whose co-workers were all co-ethnic at wave 2, 35% said they spoke to their co-workers in English, while of all 1,788 respondents with no co-ethnic co-workers 95% said that they spoke English with their co-workers.

The referral mechanism associates assimilation along the workplace domain with the level of assimilation in the friendship domain through the opportunity for referrals to mixed economy jobs that cross-ethnic friends provide more than co-ethnic friends. If this effect indeed operates through the referrals mechanism, then at least it would have to be true that referrals to mixed economy jobs less often come from co-ethnic friends than ethnic economy jobs do. Of all 740 respondents who at wave 1 had only cross-ethnic supervisors and said they found their job through a referral by a friend, 79% said this friend was co-ethnic, while of all 551 respondents who at wave 1 had some co-ethnic supervisor and said they found their job through a referral by a friend, 94% said this friend was co-ethnic. Similarly, at wave 2, of all 758 respondents who had only cross-ethnic supervisors and said they found their job through a referral by a friend, 72% said this friend was co-ethnic, while of all 506 respondents who had some co-ethnic

supervisor and said they found their job through a referral by a friend, 95% said this friend was co-ethnic.

Discussion

I have synthesized into an alternative model theoretical work that followed repeated falsification of the standard model of immigrant assimilation and assessed its empirical competitiveness. In the process, I have provided evidence from panel data for and against a series of hypotheses and associated mechanisms from this theoretical work. I finish by proposing ways in which limitations to the current study can be addressed in future work and by relating the study to contemporary perspectives, debates, and public policy.

A first limitation is the mismatch between the unbounded assimilation variables in the theoretical model and the bounded assimilation variables in the empirical model. This prevented me from using the estimates from the regression models as diagonal entries in the matrix $\boldsymbol{B}$, thereby necessitating an assumption about these entries to investigate the observed assimilation dynamics and thus weakening the confidence in the evidence for the existence of a Matthew Effect. Transforming the empirical variables so that they become unbounded is not an option, because respondents with as scores on the bounded assimilation variables the extreme values 0 and 1 could not be given a finite score. The only option in future work is to leave the empirical variables bounded, and to instead bound the theoretical variables. This would make the dynamical system nonlinear and complicate system analysis. An example is a model consisting of a logistic map (e.g., May 1976) for each target domain, the rate of each map being a function of the source domains. Following the principle of stepwise complexity, I here decided to add minimal

complexity and stay as close to existing models and theory, thereby sacrificing the match between empirical and theoretical model. I did, however, estimate an alternative empirical model that has a weaker link with theory but allows for a test of the existence of a Matthew Effect without needing any assumptions about within-domain effects. The eight domains are represented by dichotomous variables with as only values "high assimilation" and "low assimilation" and the model regresses the logit of each target domain at wave 2 additively on the target and source domains at wave 1. The Matthew Effect is found back in this alternative model in three ways. First, of the 56 cross-domain effects, 32 are significantly positive, 24 are insignificant, and 0 are significantly negative. Second, calling a situation in which one is highly assimilated in m domains an "m-state", the model then yields the following vector of $K + 1$ probabilities with which m-states at t reproduce themselves at $t + 1$: [.159 .064 .035 .026 .026 .031 .047 .081 .172]. Thus, the 0-state (low assimilation in all domains) and the 8-state (high assimilation in all domains) reproduce themselves with a higher probability than other states: They are more stable. Third, the Markov chain with 2^8 x 2^8 transition matrix that the parameters in this logit give rise to has a 2^8-entry steady state vector in which m-states have the following nine average probabilities: [.032 .025 .028 .042 .069 .100 .156 .235 .316]. Again, the probabilities follow a bimodal distribution over m-states, albeit skewed.

A second limitation is the confinement of the empirical analysis to the first years of first-generation immigrants. The fact that the LSIC samples the same period in the same calendar year for the same generation prevents the interference of period and calendar time effects. The cost is that it prevents me from testing the theoretical model's assumption that assimilation is ahistoric. The generalizability of the Matthew Effect to

other periods and generations can be assessed through a replication of this study using other longitudinal surveys that were recently conducted or are currently underway. The third wave of the LSIC allows for a test for later years in the experience of first-generation immigrants and the Children of Immigrants Longitudinal Study a test for second-generation immigrants.

Third, I have not investigated the system dynamics at the group level beyond a demonstration that the model allows for some of the modes of assimilation that have been identified in past work for groups and generations. In the current model, the assimilation of individual migrants occurs independently. At the group level, the Matthew Effect, pushing immigrants to one of two extremes, produces a tendency toward bimodal distributions of assimilation variables. This tendency has been found back in empirical studies. For example, Esser (1987) noted such bimodality in the ethnic friendship network compositions of first- and second-generation Turkish and Yugoslavian immigrants to Germany. There are two reasons to suspect that the Matthew Effect at the level of the individual migrant scales up to the level of the ethnic group if the assimilation of migrants is made interdependent. The first reason is that some domains of assimilation for migrant i cannot change unless some domains of migrant j change in the same direction. For example, by marrying someone of another ethnicity one assimilates in the household domain, and so does partner. A similar logic applies to the other structural assimilation domains: residence, workplace, and friendship. This logic caused Schelling (1971) to find that small deviations from assimilation in the residence domain for some migrants could cause reverse assimilation in that domain for all other migrants; One migrant cannot move without reducing the proportion of co-ethnic neighbors for some

stayers. The second reason is that many of the mechanisms that underlie the hypotheses about cross-domain effects *within* migrants are equally valid for hypotheses about cross-domain effects *between* migrants. For example, if the language skills of some migrants improve, then through the exposure mechanisms the language skills of other migrants improve as well. The significant effect of English language skills on the proportion of members who speak English in the household and its marginally significant converse effect provide some evidence for the existence of such cross-domain, cross-migrant effects. If the domains across migrants are mathematically related in the same way the domains within migrants are, then the Perron-Frobenius theorem equally applies to the population of migrants; after sufficient time, either all migrants are assimilating in all domains, or all migrants are reverse assimilating in all domains. This suggests that the snowball effects that Massey et al. (1987) and Palloni et al. (2001) find in the entry phase of migration, where one migrant increases the chance of a second migrant, may generalize to the adjustment phase: The more migrants make the step from segregation to integration, the more likely subsequent migrants follow. See Esser (1985, 2003) for a model of interdependent assimilation that allows for a similar threshold dynamic.

Fourth, the model developed here makes multiple assimilation experiences possible for any migrant. Which one she will undergo depends on initial conditions, as shown in the section 'modes of assimilation'. I have not investigated what determines these initial conditions. One candidate factor is relative group size. Following the logic of Blau & Schwartz (1984), large groups will by random chance equip their members with more co-ethnic neighbors, friends, household members, and colleagues. This makes it more likely they start off on a reverse assimilation trajectory than members of smaller

groups. In multi-level models not shown here I found a significantly negative effect of group size at the national level on both the initial level of assimilation and on the change between wave 1 and wave 2. The Chinese, forming the largest immigrant group in Canada, start off most segregated and more likely reverse assimilate than members of other groups.

The study speaks to contemporary perspectives, debates, and public policy in a number of ways. First, the only rejected hypothesis was what has been called the 'spatial assimilation hypothesis', operating through an affordability mechanism. This hypothesis has been critiqued earlier in the literature (e.g., Logan & Molotch 1987, Denton & Massey 1989, Crowder & South 2005). Scholars have argued that even with better incomes, racial discrimination in the housing market prevents economically assimilated migrants from moving out of ethnically segregated neighborhoods. The rejection of the hypothesis in the current study supports this critique.

Second, while confirmation was found for the 'ecological' hypothesis with residence as its source domain, an insignificantly negative effect was found for the ecological hypothesis with workplace as its source domain. This speaks to the aforementioned ethnic enclave debate by suggesting that ethnic segregation hurts in the residence domain, but may benefit in the workplace domain. According to the empirical analysis, most mobile are migrants who work with co-ethnics but live with cross-ethnics.

Third, a more recent debate in the immigration literature is one between two contrasting perspectives on the adaptation process that some have dubbed 'assimilationist' vs. 'transnationalist' (e.g., Portes, Haller & Guarnizo 2002, Guarnizo, Portes & Haller 2003, Waldinger & Fitzgerald 2004). The debate centers around the

question whether length of stay and mobility in the host country reduce respectively increase the chance of engagement in political or economic activities that involve the homeland. The theoretical model advocated here leaves the effect of length of stay undetermined because it in principle allows for two ultimate assimilation courses, further and further assimilation or further and further reverse assimilation. Average ethnic identification and cultural distinction were found to increase over time in the empirical model. As for the effect of mobility, the theoretical model says that those with more resources are on the one hand more able to engage in transnational activities but on the other hand are less likely to identify with the homeland. However, no significant effect of income on identification was found in the empirical model.

Lastly, if immigrant assimilation along certain domains is politically desirable (typically, structural assimilation) or undesirable (typically, cultural assimilation), and tax dollars can be used to speed up or slow down assimilation along certain domains, then the present study suggests that these exhibit non-constant marginal returns. Minimally and maximally assimilated migrants will not move unless pushed away from equilibrium along multiple domains. Targeted intervention that involves multiple domains of few migrants, such as sponsored family adoptions of migrants, with which European governments have experimented, are then more effective. By contrast, the semi-assimilated can be steered rather cheaply. For them, general policies that involve a single domain for many migrants, such as mandatory language programs, subsidies for schools with minority representation, or sponsoring of ethnic organizations, are more likely to work. But according to the model developed here, any policy that is aimed at permanent selective assimilation is doomed to fail. Structural assimilation in combination with the

continued practicing of cultural traditions and strong ethnic identification is a (potentially very long, but nevertheless strictly) temporal phenomenon. Ultimately the Matthew Effect takes over, either reversing course along the structural domains or setting in motion a process of cultural detachment and fading ethnic identification.

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Table 1: Domains of assimilation along which ethnic distinction can be lost.

Domain	Theoretical		Empirical
	Ethnic group	Individual migrant	Operationalization
Household	Homogamy	Ethnicity of household	Proportion household members who speak English/French
Language	Monolingualism	Fluency in official language	English/French language skills
Residence	Residential segregation	Ethnicity of neighbors	Proportion neighbors from another country of origin
Workplace	Workplace segregation	Ethnicity of colleagues	Proportion cross-ethnic colleagues
Career	Income Disadvantage	Income Disadvantage	Log annual individual income from all sources
Friendship	Homophily	Ethnicity of friends	Proportion cross-ethnic friends
Culture	Ethnic traditions are practiced	Practices ethnic traditions	Does not find important to carry on ethnic traditions
Identity	Ethnic identity	Identification with ethnic group	Does not feel close to ethnic group

Table 2: Hypotheses (cells) as combinations of target domains (columns), source domains (rows), and mechanisms (groups of cells).

Domain	Household	Language	Residence	Workplace	Career	Friendship	Culture	Identity
Household		exposure	interaction	interaction & referral & trust		interaction	influence	identification
Language	facilitation		facilitation	facilitation	skill	facilitation		
Residence	interaction	exposure		interaction & referral & trust	job prospects	interaction	influence	identification
Workplace	interaction	exposure	interaction		job prospects	interaction	influence	identification
Career			affordability					
Friendship	interaction	exposure	interaction	interaction & referral & trust			influence	identification
Culture	selection		selection	selection		selection		
Identity	inclusion		inclusion	inclusion		inclusion		

Table 3: Means and standard deviations of all variables by wave and domain (I = 8,575).

		Wave 1		Wave 2	
Domain	Variable	Mean	Standard Deviation	Mean	Standard Deviation
Household	Proportion household members who speak English/French	.676	.251	.849	.244
Language	English/French language skills	.675	.322	.740	.301
Residence	Proportion neighbors from another country of origin	.961	.053	.963	.052
Workplace	Proportion cross-ethnic colleagues	.313	.383	.462	.396
Career	Log annual individual income from all sources	5.32	4.21	7.02	4.33
Friendship	Proportion cross-ethnic friends	.316	.315	.396	.295
Culture	Does not finds important to carry on ethnic traditions	.276	.245	.264	.231
Identity	Does not feel close to ethnic group	.354	.265	.343	.249
	Age	35.0	12.0	36.6	12.0
	Single	.240	.427	.222	.416
	Attends religious services	.144	.351	.160	.367
	Male	.497	.500		
	Holds college degree from foreign country	.648	.478		
	Western	.061	.239		
	Muslim	.236	.425		
	Asian	.588	.492		
	Hispanic	.059	.235		
	Immigrant Class “Family”	.263	.440		
	Immigrant Class “Independent”	.670	.470		
	Immigrant Class “Business”	.061	.239		
	Immigrant Class “Refugee/Other”	.005	.074		

Table 4: Results from eight OLS regression models. Effects of control variables are omitted.

Wave 1↓ 2→	Household		Language		Residence		Workplace		Career		Friendship		Culture		Identity	
	100 x		100 x		100 x		100 x		100 x		100 x		100 x		100 x	
	par	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)	*par*	*t*(*par*)
β_{kl}																
Household			2	179	0	6	4	242	29	140	2	136	5	354	3	250
Language	21	1304			0	101	15	879	68	339	14	1052	-3	-308	-1	-88
Residence	31	441	37	513			36	459	-163	-112	73	1060	8	125	7	105
Workplace	1	102	-0	-12	0	247			167	1190	1	131	-0	-19	1	97
Career	-0	-247	-0	-76	-0	-222	0	185			-0	-81	0	65	0	54
Friendship	2	227	4	484	0	87	3	225	-3	-16			2	232	5	402
Culture	0	20	-1	-87	-0	-62	0	29	30	161	1	98			6	492
Identity	0	18	2	290	0	191	0	25	-24	-135	7	625	4	293		
β_{kk}+1	18	1229	57	4845	77	2860	39	3126	245	1578	26	2252	22	1744	15	1264
α_k	14	212	1	21	21	853	-8	-101	623	432	-51	-797	6	93	16	260
R^2	.26		.57		.70		.31		.24		.31		.10		.7	
# clusters	894		894		894		894		894		894		894		894	
# migrants (*I*)	8,575		8,575		8,575		8,575		8,575		8,575		8,575		8,575	

Table 5: Results of hypothesis testing: Falsified (–), undecided (0), or confirmed (+).

Domain	Household	Language	Residence	Workplace	Career	Friendship	Culture	Identity
Household		0	0	+		0	+	+
Language	+		0	+	+	+		
Residence	+	+		+	0	+	0	0
Workplace	0	0	+		+	0	0	0
Career			–					
Friendship	+	+	0	+			+	+
Culture	0		0	0		0		
Identity	0		0	0		+		

Figure 1: Phase portrait of the assimilation model with $K = 2$, $\alpha = 0$, and $\boldsymbol{B} = 2 - \boldsymbol{I}$.