A Theory of Social Norms and Migration

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Abstract

This paper examines various determinants of human migration. There are two opposing migration trends observed in recent years. Neighborhoods and communities are generally becoming more ideologically segregated, while large cities are becoming more diverse. A theoretical model of social and economic incentives for migration reconciles these seemingly contradictory trends. Finally, an extension of this model shows how incentives change over multiple generations of migrants.

Keywords: identity economics, social norms, activism, migration

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1 Introduction

The goal of this paper is to examine current major trends in migration flows and analyze their underlying social and economic incentives using economic theory. People are constantly on the move; the world is full of immigrants, refugees, international students, and other global citizens. According to the World Migration Report (2015), there are an estimated 232 million international migrants and 740 internal migrants in the world. Three million people move into cities every week. The social, political, economic, and environmental implications of these flows are correspondingly of a similar scale. It is therefore crucial to understand issues surrounding migration.

This paper considers two opposing trends in migration that have become increasingly prominent and documented in recent years, particularly in the western world:

1. *Communities are generally becoming more ideologically segregated.*
2. *Major cities, such as New York, Paris, and Sydney, are becoming more diverse.*

The first trend is most notably documented in Bishop (2008), and the second is extensively described in the World Migration Report (2015). They are seemingly contradictory; on one hand, people are migrating to more like-minded communities, but at the same time, large urban areas are still seeing increasing diversity and heterogeneity in their populations. Uniform blanket forces can therefore be ruled out for driving migration flows.

A novel hypothesis put forth in this paper is that these trends can be explained via the relationship between social and economic incentives for migration. Economic incentives include more obvious material considerations such as income and economic opportunities. In contrast, social incentives refer to considerations about beliefs, ideologies, and social norms. There may be tradeoffs between these social and economic incentives for migration which may reflect recent migration trends. Accordingly, this paper's primary research question is

the following: How do tradeoffs between social and economic incentives for migration explain why neighborhoods are generally becoming more ideologically segregated while large cities become more diverse?

There is a growing empirical literature on social incentives for migration. For example, Belot and Ederveen (2012) and Caragliu et. al. (2013) find evidence that cultural and linguistic barriers are negatively associated with migration flows between OECD countries. However, there is insufficient migrant data to establish causal links, and structural and theoretical approaches to the problem have been largely absent (Caragliu et. al., 2013). A theoretical model of social incentives for migration is therefore one of this paper's contributions to the literature.

This theoretical model is developed using inspiration from two main subfields of the economics literature. Firstly, identity economics introduced the concept of "identity" into the utility function (Akerlof, 1997; Akerlof and Kranton, 2000). Intuitively, individuals gain utility if they are accepted in society, and they are made worse off if they are social outcasts. The model developed here extends the identity economics framework to examine how individuals can maximize their utility by migrating to different communities, where they face different social norms, and by optimizing the compatibility between those social norms and their own ideologies.

The second source of inspiration for this paper's model comes from Tiebout sorting. According to Tiebout's 1956 paper, if different communities produce different quantities of localized public goods, then individuals will "vote with their feet" to the community which best suits their preferences for those public goods. Subsequent research in the literature examines the economics of "foot-voting" (Bewley, 1981). A similar approach is used here to describe social incentives for migration; individuals "vote with their feet" to different communities with different social norms.

After developing a social theory of migration, this paper takes social incentives for migration and examines their relationship with economic incentives, with the goal of explaining the two previously outlined migration trends. Briefly, the results of the model are as follows. Social incentives for migration cause individuals to live in increasingly like-minded communities, away from others who have different beliefs and ideologies. However, individuals benefit economically if they live together despite their different beliefs, due to increasing returns to income. If economic incentives outweigh social incentives, then individuals with different beliefs will choose to live in the same community. Thus, this model predicts the first trend of increasing segregation when social incentives for migration are strong, and it predicts the second trend of increasing diversity in large cities where returns to income are high.

The final part of this paper develops a brief extension to its model by analyzing migration over multiple generations. The model treats beliefs and ideologies of subsequent generations are as endogenous, and it recalculates their social and economic incentives for migration. This exercise predicts that ideologically diverse communities will converge to become more homogenous over time, and economic incentives will dominate social incentives for migration as generations pass.

2 Model Overview

The intuition behind this paper's model is inspired by the concept of "social distance" in the identity economics literature, most notably attributed to Akerlof (1997) and Akerlof and Kranton (2000). Specifically, individuals prefer to exist in societies where their own beliefs are more closely in line with social norms. For example, social liberals prefer liberal societies, and conservatives prefer conservative societies, *ceteris paribus*. A key assumption of this paper is that individuals' beliefs are fixed.

This paper characterizes beliefs in terms of the variable a. The variable can be thought of

as some abstract index of beliefs, or an index of acceptance levels for some specific belief. For example, a could be an identification scale wherein larger values represent less conservative and more liberal beliefs. The point is that a quantifies beliefs and allows them to be compared across individuals. Finally, social norms are characterized as average societal beliefs, i.e. some average measure of a. They will be denoted $\bar{a}$. Importantly, this model assumes that beliefs have no external effects on the economy beyond their direct effects on utility.

The representative agent's utility function is expressed the following way:

$$u_i = x_i - (\bar{a} - a_i)^2 \tag{1}$$

where for individual i, x_i is standard consumption of goods and services; a_i is the individual's given belief, and $\bar{a}$ is the social norm, a societal average measure of all individual beliefs.

The first term of Equation (1) can be thought of as the standard material component of utility which satisfies the non-satiation assumption. The second term reflects the concept of social distance; utility is decreasing in the distance between individual beliefs a_i and the social norm $\bar{a}$. Although this second argument is squared primarily for technical purposes, it is reasonable to believe that large belief disparities disproportionately affect utility. Slight differences in beliefs can be overlooked with ease, but radical departures from the norm are far more difficult to ignore. Finally, the two utility components in Equation (1) are independent and the utility function is quasi-linear for the sake of analytical parsimony.

The utility function specified in Equation (1) is the basis for this paper's model of migration. Economic and social incentives for migration affect the two different components of utility, x_i and $(\bar{a} - a_i)$, respectively. The rest of the model will unfold as follows. Section 3 explains social incentives by developing a social theory of migration. Section 4 then contrasts these social incentives with economic incentives for migration. In doing so, this paper achieves its goal of explaining the opposing migration trends described in the introduction;

neighborhoods are becoming more ideologically segregated while cities become increasingly diverse. Finally, Section 5 briefly outlines a simple extension of the model which makes beliefs endogenous and analyzes changes in incentives for migration over multiple generations.

3 A Social Theory of Migration

The representative agent's utility function, described by Equation (1), is also their objective function. Utility decreases as individuals' beliefs a_i diverge from their community's social norm $\bar{a}$. Individuals therefore maximize their utility by seeking to minimize the distance between these two variables. They can do this by migrating to a different community where they face a different and more favorable social norm. In the absence of transaction costs, which is assumed, individuals are better off migrating to a community where their beliefs are closer to others' beliefs.

However, if individuals choose not to migrate to a more like-minded community, they also attempt to minimize the distance between a_i and $\bar{a}$ in their current community by engaging in activism. Individuals face some social norm, $\bar{a}$, given by some average measure of all individuals' beliefs. Equation (2) expresses $\bar{a}$ as a weighted average of all a_i:

$$\bar{a} = (1/\sum_{i=1}^{n} e_i) * (\sum_{i=1}^{n} e_i a_i) \tag{2}$$

where $e_i/(\sum_{i=1}^{n} e_i)$ are the weights for every individual i. This model defines e_i as the amount of activism performed by an individual. *Ceteris paribus*, an increase in e_i will increase the relative weight of individual i's own beliefs on the social norm, and therefore $\bar{a}$ converges towards a_i. Assume that if all $e_i = 0$, then $\bar{a}$ equals the unweighted average of all a_i.

Assume that activism is costly. Each individual faces the following budget constraint:

$$f(L_i) = x_i + e_i \tag{3}$$

where $f(L_i)$ is individual income as a function of labour supply L_i. Assume that income is uniform and fixed for now. The individual faces a straightforward tradeoff between standard consumption of goods and services x_i and activism e_i.

In a game with n players, the representative agent faces the utility function described in Equation (1), where $\bar{a}$ is the activism-weighted social norm given by Equation (2), and there exists a tradeoff between x_i and e_i, given by Equation (3). These equations combine to create the following utility maximization problem:

$$\max_{e_i} u_i = f(L) - e_i - [(\sum_{j \neq i}^{n} e_j a_j + e_i a_i)/(\sum_{i \neq j}^{n} e_j + e_i) - a_i]^2 \tag{4}$$

The first order condition for Equation (4) solves for the individual's best response function. This function expresses each individual i's equilibrium level of activism e_i, given the activism levels of all other individuals $j \neq i$. The best response function is derived as follows:

$$\begin{aligned} (1/2)(e_i + \sum_{j \neq i}^{n} e_j)^3 &= (\sum_{j \neq i}^{n} e_j a_j - a_i \sum_{j \neq i}^{n} e_j)^2; \\ e_i &= 2^{1/3}(\sum_{j \neq i}^{n} e_j a_j - a_i \sum_{j \neq i}^{n} e_j)^{2/3} - \sum_{j \neq i}^{n} e_j \end{aligned} \tag{5}$$

Unfortunately, this generalized best response function is not very illuminating. Consequently, the next two sections will re-examine the utility maximization problem in the case with only two and three players.

3.1 Activism and Migration with Two Players

Consider a game with two players living in the same community, who are identical except for their beliefs, i.e. $a_1 \neq a_2$. In this case, the best response functions for players 1 and 2 simplify from Equation (5) to the following:

$$\begin{aligned} e_1 &= 2^{1/3} e_2^{2/3} (a_2 - a_1)^{2/3} - e_2 \\ e_2 &= 2^{1/3} e_1^{2/3} (a_1 - a_2)^{2/3} - e_1 \end{aligned} \tag{6}$$

Figure 1 graphs the shapes of both players' best response functions in terms of e_1 and e_2, given some level of $a_1 \neq a_2$. The intuition behind the functions' shape is fairly straightforward. As player one's activism levels rise, player two will initially also increase their own activism levels in opposition; however, the marginal worth of activism eventually declines, and they will be better off using their income for consumption of other goods and services instead. Thus, their activism levels initially increase, peak, and then decrease to zero again.

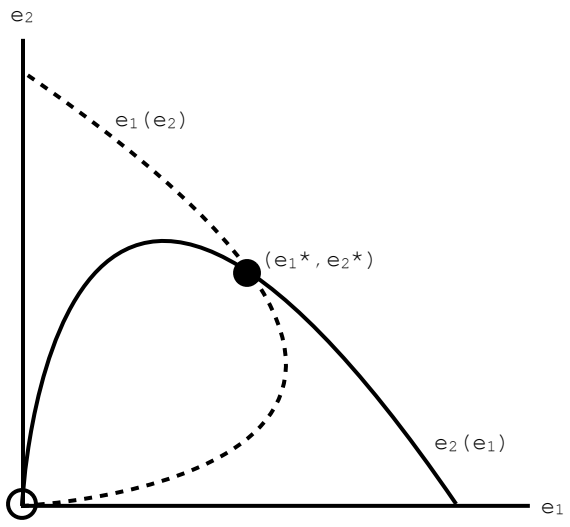

Figure 1: Best Response Functions, 2-Player Activism Game, $a_1 \neq a_2$

The intersection of the best response functions in Figure 1 shows the solution to Equation (6), the equilibrium levels of activism for both players, denoted e_1^* and e_2^*. At the equilibrium, neither player has an incentive to change their behavior. The result is as follows:

$$(a_2 - a_1)^2/4 = e_1^* = e_2^* \tag{7}$$

Firstly, Equation (7) shows that e_1^* and e_2^* are increasing in the absolute value of $(a_2 - a_1)$. Figure 2 illustrates this relationship. This result makes sense because *ceteris paribus*, greater differences in beliefs result in greater disutility for both players, and they have a greater incentive to influence the social norm $\bar{a}$ by engaging in more activism.

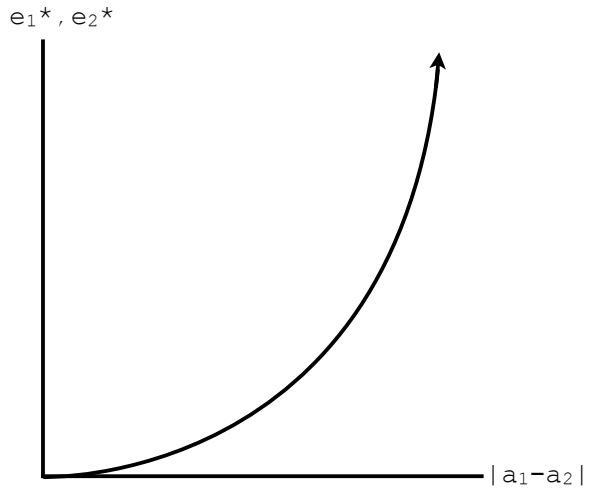

Figure 2: Figure 2: Equilibrium Activism Levels, Given a_1, a_2

However, according to Equation (7), both players match each other's activism levels perfectly in equilibrium. This means that both players' beliefs capture an equal weight in influencing the social norm, and $\bar{a}$ is an equally weighted average of a_i, which is the same as an unweighted average:

$$\bar{a}|e_1^*, e_2^* = (a_1 + a_2)/2 \tag{8}$$

Recall that in the case where all $e_i = 0$, $\bar{a}$ also becomes an unweighted average. Therefore, in equilibrium, the social norm is the same as it would be in the case with zero activism. This phenomenon can be summarized by the following proposition:

Proposition 1. *For players whose beliefs are different, equilibrium levels of activism result in a tragedy of the commons.*

Neither player gains an upper hand in attempting to bring $\bar{a}$ closer to their own beliefs. Moreover, if there is no activism, players still face the same average societal beliefs, but they would actually have more income to spend on standard consumption of goods and services, x_i, since activism is costly. They would both be better off if neither engaged in activism, but this outcome is not an equilibrium and cannot be sustained. Intuitively, activism is non-excludable but rival among individuals with different beliefs; every individual's activism affects everyone else, and as $\bar{a}$ approaches one player's beliefs and makes them better off, it diverges from the other's beliefs and makes them worse off.

Here is an example of Proposition 1. Consider that a_1 and a_2 reflect the fact that player 1 is a social liberal, and player 2 is a social conservative. In equilibrium, they will engage in activism on behalf of their beliefs in order to influence the social norm, but their efforts perfectly cancel each other out. If player 1 shouts loudly about their beliefs, player 2 shouts back equally loudly. As a result, the social norm is exactly what it would be if neither player engaged in activism; it would reflect a centrist position. However, players 1 and 2 are made worse off in the equilibrium outcome because they expend resources on activism. Thus, the equilibrium outcome is a tragedy of the commons.

The zero-sum nature of activism in this model echoes implications from the rent-seeking literature in political economy. Theories of rent seeking describe how agents will expend resources to compete for a given good, such as government funding. Since these efforts are not actually productive and they do not contribute to social welfare increases, they are

inefficient (Krueger, 1974; Tollison, 1982). Similarly to how competition between rent-seekers nullifies each others' efforts, players' activism levels will cancel each other out in this model.

Given the equilibrium outcome for activism if players 1 and 2 live together, both players can now make a migration choice: they can live together, or migrate away from each other and live alone. In this section, living alone is equivalent to living with others who have the same beliefs, since individuals would be faced with a social norm $\bar{a} = a_i$ either way. Analyses of players 1 and 2 are symmetric, since they are identical except for their beliefs.

Consider player 1's migration decision. If they choose to live alone, then they face social norms which are identical to their beliefs. They therefore suffer no disutility from that corresponding component of their utility function. Their utility level equals their income, which is used for standard consumption of goods and services, x_i:

$$u_{1|alone} = f(L) \tag{9}$$

However, if player 1 chooses to live with player 2, then given their equilibrium activism levels, they will face a social norm which is the equally-weighted, or equivalently unweighted, average of their beliefs. Then, player 1's utility level is:

$$\begin{aligned} u_{1|together} &= f(L) - (a_2 - a_1)^2/4 - [(a_1 + a_2)/2 - a_1]^2 \\ u_{1|together} &= f(L) - (a_2 - a_1)^2/2 \\ u_{1|together} &= f(L) - 2e_1^* \end{aligned} \tag{10}$$

Comparing Equations (9) and (10) shows that player 1 is unambiguously better off living alone. Moreover, they are better off by the amount $2e_1^*$. Therefore, player 1 will choose to migrate away from player 2. By symmetry, player 2 is also worse off living with player 1, and they will also migrate away. This implies the following result:

Proposition 2. *Individuals with different beliefs will migrate away from each other and into more like-minded communities.*

The utility differential $2e_1^*$ can be considered player 1's migration premium for living away from player 2. It is the amount by which player 1 is better off migrating to a community without player 2. Since utility is quasilinear, the migration premium is also a measure of player 1's willingness to pay to live away from player 2. The migration premium reflects both the direct disutility of living with others who have different beliefs, as well as the disutility from wasting resources on activism due to the tragedy of the commons. For the rest of this model, the migration premium is used to represent social incentives for migration.

3.2 Activism and Migration with Three Players

This subsection now briefly considers a caveat of the social theory of migration using a three-player specification of the model. Consider that players 2 and 3 have identical beliefs, i.e. $a_2 = a_3$. Player 1, on the other hand, has different beliefs, i.e. $a_1 \neq a_2$. This game can thus be thought of as having a majority group consisting of players 2 and 3, and minority group consisting of player 1. In this specification, each player's solution to their utility maximization problem simplifies to the following three best response functions:

$$\begin{aligned} e_1 &= 2^{1/3}(e_2 + e_3)^{2/3}(a_2 - a_1)^{2/3} - e_2 - e_3 \\ e_2 &= 2^{1/3}e_1^{2/3}(a_2 - a_1)^{2/3} - e_1 - e_3 \\ e_3 &= 2^{1/3}e_1^{2/3}(a_3 - a_1)^{2/3} - e_1 - e_2 \end{aligned} \tag{11}$$

Equation (11) can be solved for equilibrium levels of activism:

$$(a_3 - a_1)^2/4 = e_1^* = e_2^* + e_3^* \tag{12}$$

According to Equation (12), only the combined activism levels of players 2 and 3, the majority group, matches the activism level of player 1. This is the "vocal minority" and "silent majority" phenomenon often witnessed in politics; the minority group, i.e. player 1, is responsible for a disproportionately large share of total activism in the community. Then $\bar{a}$ is disproportionately skewed in player 1's favor:

$$\bar{a}|e_1^*, e_2^*, e_3^* = (2a_1 + a_2 + a_3)/4 = (a_1 + a_2)/2 \tag{13}$$

The vocal minority and silent majority phenomenon arises in this model because among individuals with identical beliefs, activism is non-rival. Among these individuals, activism is therefore a public good. Player 2's activism benefits player 3, and vice versa; consequently, they free-ride on each other's activism. In contrast, Player 1 is the minority in terms of their beliefs, so no free-riding occurs there.

Note that player 1's equilibrium activism level is the same as it was in the two-player specification previously. Player 1 also faces the same social norm $\bar{a}$ as in the two-player specification; in both cases, they capture half the weight on $\bar{a}$. This result means that living with both players 2 and 3, as opposed to only with player 2, does not affect player 1's migration decision. Either way, player 1 engages in the same level of activism, they face the same social norm, and their migration premium for migrating away and living alone is therefore the same. Player 1 still chooses to live alone, but the alternative option of living together is no more worse in the three-player specification than the case with only two players.

However, consider player 2's migration decision. Assume that they can choose between

living with players 1 and 3 or migrating away and living alone. Previously in the two-player specification, player 2's migration premium was symmetric to player 1's premium, because their equilibrium activism levels were the same. However, comparing Equation (7) to Equation (12) suggests that player 2's equilibrium activism level is never as large here in the three-player specification, but it may be less; $0 \leq e_2^* \leq (a_3 - a_1)^2/4$. This result occurs because player 2 could free-ride on player 3's activism if the latter is also in the community. Player 2's migration premium may therefore be lower now, and they may not be as worse off living with the other players in the same community. In this way, player 3's presence affects player 2's social incentives for migration. Ultimately, though, players 2 and 3 would still be better off migrating away from player 1.

The properties uncovered from analyzing the three-player game specification can be summarized as follows:

Proposition 3. *Individuals may become more well off as their own beliefs become more common in the community, but their utility is not affected by the popularity of other individuals' beliefs.*

Although this result is not overly central to this model's general themes, nor to the primary goal of this paper, it is nonetheless interesting and worth discussing, and it is perhaps worthy of elaboration in future work.

3.3 A Social Theory of Migration: Summary

The social theory of migration suggests that individuals are unambiguously better off migrating away from others who have different and opposing beliefs. Moreover, individuals with different beliefs who live together suffer additional disutility from engaging in activism, because the tragedy of the commons means that their activism is futile. The migration

premium is the utility differential between living with others who have different beliefs, versus migrating away and living alone. It represents how much better off individuals become from living alone, and it also reflects their willingness to pay in order to do so. Finally, individuals' migration decisions depend on the popularity of their own beliefs in the community, but not on the popularity of others' beliefs; in the latter case, their migration premium remains the same.

Individuals' migration premiums reflect social incentives for migration. Based on the social theory of migration, it can be seen that individuals are better off in like-minded communities where their beliefs are closer to other community members' beliefs, and thereby close to the social norm. As a result, like-minded individuals will migrate to the same communities. The following outcome should occur:

Proposition 4. *As individuals migrate to like-minded communities, regions will become more ideologically segregated.*

This result is consistent with one of the two major trends in migration flows described in the introduction and model overview; according to Bishop (2008), neighborhoods and counties are generally becoming more segregated. With this in mind, the model now turns to examine economic incentives for migration. These economic incentives, and their relationship to social incentives, will explain the second observed migration trend, which is increasing ideological diversity in major urban areas.

4 Social and Economic Trade-offs in Migration

Up until now, this model assumed that individual income is fixed at some level $f(L)$. This assumption is now relaxed so that income is endogenous. Specifically, assume that

there are increasing returns to income from higher population There are many reasons why this may be the case. The economic growth literature cites greater levels of competition and innovation, greater transfer of technological knowledge, and economies of scale as just some examples of why economic growth is tied to population growth (Jones and Romer, 2010). These properties are observed most often in highly networked and population-dense societies, such as cities and large urban regions. Alternately, increasing returns to income could be motivated by some positive externality that arises when individuals with a diverse set of beliefs live together.

With the above rationale in mind, income is now given by the following constant elasticity of substitution (CES) production function:

$$f(L, n) = (\sum_{i=1}^{n} L_i^{\alpha})^{1/\alpha}/n \tag{14}$$

Where L_i is each individual's labour supply, n is the population of the community, and $0 < \alpha < 1$ is some fixed parameter. If labour supply L_i is fixed at unity, then the production function simplifies to the following:

$$f(L, n) = n^{\beta} \tag{15}$$

Where $\beta = (1/\alpha) - 1 > 0$. Thus, income is increasing in population.

Now, once again consider the two-player game from the previous section, where $a_1 \neq a_2$, i.e. the players have different beliefs. Previously, in a fixed-income scenario, player 1's migration premium meant that they always were strictly better off migrating away and living alone. Now, if player 1 lives alone, then they suffer no disutility, similarly to before, and they gain one unit of utility from their income:

$$u_{1|alone} = 1 \tag{16}$$

On the other hand, if they choose to live with player 2, then in equilibrium their level of activism and the community's social norm are as follows:

$$\begin{aligned} e_1^* &= (a_2 - a_1)^2/4; \\ \bar{a}|e_1^*, e_2^* &= (a_1 + a_2)/2 \end{aligned} \tag{17}$$

Given these equilibrium outcomes, player 1 then has the following utility level:

$$\begin{aligned} u_{1|together} &= 2^\beta - (a_2 - a_1)^2/4 - [(a_1 + a_2)/2 - a_1]^2; \\ u_{1|together} &= 2^\beta - (a_2 - a_1)^2/2; \\ u_{1|together} &= 2^\beta - 2e_1^* \end{aligned} \tag{18}$$

Equation (18) shows that player 1 still faces the same migration premium as in the previous section; however, they are no longer unambiguously better off migrating away from player 2. In fact, player 1 is better off living with player 2, if and only if:

$$\begin{aligned} &2^\beta - (a_2 - a_1)^2/2 > 1; \\ &\beta > ln(1 + (a_2 - a_1)^2/2)/ln(2) \end{aligned} \tag{19}$$

In other words, β must be sufficiently large. The intuition behind this result is that if returns to income from higher population are large, then the economic benefits of living with player 1 outweigh the social incentives for living alone; the returns to income are larger than their migration premium. Moreover, player 1 becomes increasingly better off living with player 2 relative to living alone as β increases. On the other hand, if β is relatively small, then the migration premium is still too high and player 1 still prefers to live alone.

4.1 Trade-offs in Migration: A Three-Player Example

Now consider the case where there are three players such that $a_1 \neq a_2 = a_3$, similar to the specification in Section 3.2. Once again, assume that player 1's migration decision is to either live alone, or live together with players 2 and 3. This assumption will be relaxed and justified soon.

If player 1 chooses to live alone, they suffer no disutility and receive one unit of utility from income, similar to Equation (16) previously. If player 1 chooses to live with players 2 and 3, equilibrium activism levels are given by Equation (12) and the social norm is given by Equation (13) from Section 3.2. Given these equilibrium outcomes, if player 1 chooses to live with players 2 and 3, their equilibrium utility is the following:

$$\begin{aligned} u_{1|together} &= 3^{\beta} - (a_2 - a_1)^2/4 - [(a_1 + a_2)/2 - a_1]^2; \\ u_{1|together} &= 3^{\beta} - (a_2 - a_1)^2/2; \\ u_{1|together} &= 3^{\beta} - 2e_1^* \end{aligned} \tag{20}$$

Where once again, $2e_1^*$ is player 1's migration premium for migrating away from players 2 and 3.

Player 1 will choose to live with players 2 and 3 instead of living alone if the following condition is satisfied:

$$\begin{aligned} &3^{\beta} - (a_2 - a_1)^2/2 > 1; \\ &\beta > ln(1 + (a_2 - a_1)^2/2)/ln(3) \end{aligned} \tag{21}$$

Once again, β must be sufficiently large. As usual, the intuition behind this result is that the returns to income from population for player 1 must outweigh their migration premium. In this case, economic incentives for migration dominate social incentives. Moreover, the

condition in Equation (21) is less stringent than the condition in Equation (19) because the player 3 increases the community's population from two to three players. They create returns to income, but they do not change the social norm due to activism free-riding between players 2 and 3.

Finally, it is time to relax the assumption that players 2 and 3 begin the game together. It should be clear that *ceteris paribus*, players 2 and 3 are always better off together than alone. They suffer no disutility from living with each other since their beliefs are the same, but their incomes are higher due to increasing returns to income from population. For this reason, it is a valid assumption that players 2 and 3 are already together in a community when player 1 makes their migration decision.

Now, consider player 2's migration decision. Note that it is symmetric to player 3's decision. Player 2 can either live with player 3 only, or they can choose to live with both players 1 and 3. If they choose the latter option, their utility can be expressed the following way:

$$u_{2|together} = 3^{\beta} - e_2^* - [(a_1 + a_2)/2 - a_2]^2 \tag{22}$$

Recall that according to Equation (12) from Section 3.2, equilibrium activism levels for this game specification are $e_1^* = e_2^* + e_3^*$. This means that $0 \leq e_2^* \leq (a_3 - a_1)^2/4$, and the same is true for e_3^*. In other words, players 2 and 3 each only engage in the same equilibrium activism level as player 1 at most.

Assume that e_2^* is at its upper bound. This also means that player 2's migration premium is at its highest, and conversely player 3's migration premium is at its lowest. In this case, the condition for player 2 to be better off living with both players 1 and 3 instead of with

only player 3 is expressed the following way:

$$3^{\beta} - (a_2 - a_1)^2/2 > 2^{\beta};$$
$$3^{\beta} - 2^{\beta} > (a_2 - a_1)^2/2 \tag{23}$$

Although β cannot be isolated in Equation (23), it can be seen that $3^{\beta} - 2^{\beta}$ is increasing in β. A large value of β is thus once again the sufficient condition. Moreover, it is clear that the condition in Equation (23) will be satisfied if Equation (21) is also satisfied, since $2^{\beta} > 1$ for all $\beta > 0$.

Therefore, given that player 1 chooses to live with both players 2 and 3, player 2 will also choose to live with both players 1 and 3. Moreover, recall that player 2's migration premium for living away from player 1 is at its highest and, conversely, player 3's migration premium is at its lower bound. It logically follows that if player 2 is better off living with player 1, player 3 is also better off living in the community all together. The overall result is that in equilibrium, given the sufficiently high value of β expressed by Equation (21), all three players will choose to live together in the same community. The economic incentives for living together outweigh the social incentives for migrating away and living with like-minded others only.

4.2 Trade-offs in Migration: Summary

The introduction of increasing returns to income from higher population results in trade-offs between economic and social incentives for migration. The social theory of migration suggests that individuals with different beliefs are better off living away from each other. On the other hand, these individuals may also benefit from higher incomes when they live in the same community. There are increasing returns to income from population for a variety of reasons such as increased competition and innovation, increased transfer of technologi-

cal knowledge, and economies of scale. In this model, these returns are captured by the parameter β.

The tradeoffs between social and economic incentives for migration depend on the returns to income from population. If β is sufficiently high, then in equilibrium, the economic benefits of living in large communities outweigh individuals' migration premiums for living away from others with opposing beliefs. In this case, communities comprised of many individuals with different beliefs will arise. Conversely, if β is too low, then economic incentives are not sufficient to convince individuals to live together, and ideological segregation across communities will occur and perpetuate.

This model suggests that given the underlying assumptions, communities with high returns to income from population should be more diverse and have higher populations, and communities with low returns should be more segregated. As mentioned at the beginning of this section, large cities and major urban areas most often have the ingredients for a high value of β. They are highly networked and connected, and they provide an environment optimal for competition and knowledge transfer. Thus, this model explains the second major observed migration trend of increasing ideological diversity in large cities. Because urban areas such as New York, Sydney, and London have high values of β, migrants with opposing beliefs are willing to live there together in order to capture high economic gains.

In contrast, if suburbs and rural regions have a low value of β, then the result remains the same as in the social theory of migration from the Section 3, and increasing segregation and polarization will occur. Individuals do not accrue sufficient economic gains from forming large communities, so social incentives dominate their migration decision. Their migration premiums cause them to migrate away from others with different beliefs and live in like-minded communities.

In summary, this model predicts the following:

Proposition 5. *Larger and more ideologically diverse communities are expected in large cities, whereas suburbs and rural areas will be smaller and more segregated.*

In this way, the seemingly contradictory trends which motivated this model have been theoretically resolved. Increasing segregation at the general neighborhood and county level and increasing diversity within large cities can be explained by the tradeoffs between economic and social incentives for migration. Specifically, the size of returns to income from population, and of migration premiums for living away from others with opposing beliefs, determines whether individuals are willing to live in large communities with a diverse set of beliefs, or in smaller and like-minded communities.

5 Extending the Model to Multiple Generations

This section briefly examines the effect of individuals' migration decisions on their descendants' decisions. The goal is to formulate predictions for how the tradeoffs between social and economic incentives for migration may change over future generations. This will be done by extending the model from previous sections in an extremely simplistic manner.

Consider the case from previous sections where there are two players such that $a_1 \neq a_2$. Assume that returns to income from population are sufficiently large, i.e. β is sufficiently high, so that the players' migration decisions are to live together in the same community. Now, assume that players 1 and 2 have children separately in the community. The offspring will be denoted players A and B, respectively.

Firstly, players A and B must develop their own beliefs, a_A and a_B. Generally speaking, peoples' ideologies, opinions, and beliefs are influenced by many factors. Perhaps most obviously, an individual's beliefs reflect their parents' beliefs, since parents are usually the

primary caregiver and role model during adolescence. Secondly, an individual's beliefs reflect the beliefs of society as a whole, as they are exposed to social norms through school, peers, and role models outside of the household. Correspondingly, the beliefs of players A and B, the children of players 1 and 2, are formed as an average of their parents' beliefs and the social norm $\bar{a}$:

$$\begin{aligned} a_A &= (a_1 + \bar{a}|e_1^*, e_2^*)/2 = (3a_1 + a_2)/4 \\ a_B &= (a_2 + \bar{a}|e_1^*, e_2^*)/2 = (a_1 + 3a_2)/4 \end{aligned} \tag{24}$$

The beliefs of players A and B are essentially weighted averages of a_1 and a_2. This makes sense, because the social norm $\bar{a}$ is also an average of a_1 and a_2.

An important implication of Equation (23) is that players A and B's beliefs are closer to each other than players 1 and 2's beliefs:

$$a_B - a_A = (a_2 - a_1)/2 \tag{25}$$

Players A and B's beliefs are twice as close as their parents' beliefs. Immediately, this suggests that players A and B suffer less disutility from living together compared to their parents. When players A and B are the representative agents instead of players 1 and 2, the reduced disparity in beliefs has effects on all subsequent outcomes in this model.

Recall Figure 2 from Section 3, which shows that equilibrium activism levels are increasing in the absolute difference of belief levels. In equilibrium, players A and B engage in the following activism levels, expressed in terms of their parents' beliefs:

$$\begin{aligned} &(a_B - a_A)^2/4 = e_A^* = e_B^*; \\ &[(a_2 - a_1)/2]^2/4 = e_A^* = e_B^*; \\ &(a_2 - a_1)^2/16 = e_A^* = e_B^* \end{aligned} \tag{26}$$

Compared to players 1 and 2's equilibrium activism levels from Equation (7) in Section 3, players A and B engage in fourfold less activism in equilibrium. Recall that the migration premium is $2e_i^*$; then players A and B face a lower migration premium compared to their players 1 and 2. This means that their social incentive for migration is less strong; they are not made as better off living away from each other as in their parents' case.

Finally, a lower migration premium means that smaller returns to income from population are sufficient for players A and B to be better off living together, relative to their parents. Consider player A's migration choice between living with player B or living alone. Player A is better off in the first scenario under the following condition:

$$\begin{aligned} &2^{\beta} - (a_B - a_A)^2/2 > 1; \\ &\beta > ln(1 + (a_B - a_A)^2/2)/ln(2); \\ &\beta > ln(1 + (a_2 - a_1)^2/8)/ln(2) \end{aligned} \tag{27}$$

This condition is more relaxed than the condition for players 1 and 2 to live together in Equation (19) in Section 4, i.e. it is satisfied by a lower value of β.

Thus, players A and B, who are the offspring of players 1 and 2, have beliefs which are twice as close to each other compared to their parents. Consequently, they suffer less disutility from living in the same community, and their migration premiums for living away from each other are smaller. Moreover, economic incentives do not need to be as strong for players A and B to choose the same community; smaller returns to income are sufficient to overcome their migration premiums. The following proposition expresses this result:

Proposition 6. *Migrant communities will become more ideologically homogenous over time as they become populated by subsequent generations of individuals, and social incentives for migration will diminish.*

Whereas those individuals who originally move to the same community are often from very different backgrounds and have a diverse set of beliefs, their children will likely adopt beliefs more in accordance with social norms, and they will do so quickly. Second or third generation descendants of migrants may indeed have beliefs which are indistinguishable from each other, since beliefs converge at an increasing rate according to this model.

In contrast, consider communities comprised of individuals with similar or identical beliefs, perhaps due to low returns to income from population, i.e. a low value of β. The first part of Proposition 6 still applies to these communities. The original migrants are like-minded to begin with, and this is reflected by the social norm. The original migrants' beliefs will then be perpetuated by subsequent generations, who remain similarly like-minded.

This simplistic multiple generation model of migration has some strong assumptions but also valuable implications. If large communities of individuals with different beliefs become more homogenous in subsequent generations, then it should be the case that social incentives for migration dissipate over time as migration premiums shrink. Economic incentives for migration, such as returns to income from population, will dominate individuals' migration decisions.

6 Conclusion

This paper provides an explanation for two opposing observed trends in human migration: increasing ideological segregation in general communities and increasingly diverse cities and urban regions. It explains these trends in a novel way by analyzing the tradeoffs between social and economic incentives for migration within a theoretical model. In doing so, this paper also develops a social theory of migration inspired by identity economics to contribute to the literature.

The social theory of migration characterizes individual beliefs and social norms as variables within the individual's utility function. Individuals minimize the distance between their beliefs and social norms by migrating to communities with different social norms, or by engaging in activism in their original community. Activism's various properties make it a largely futile endeavor in the model. Individuals are better off migrating away from others who have different beliefs, and they are better off living in like-minded communities. This utility differential is characterized by a migration premium. Social incentives for migration therefore explain why communities are becoming increasingly ideologically segregated.

However, when the model introduces increasing returns to income from higher population, individuals receive gains from living in larger communities. If the size of these returns to income outweigh individuals' migration premiums, then individuals are better off living all together in the same community, rather than migrating away and living only with like-minded others. Urban environments are ideal for fostering large populations and high returns to income. The tradeoffs between social and economic incentives therefore explain the second described migration trend. Large cities are expected to experience increasing ideological diversity.

Finally, the model briefly examines how tradeoffs between social and economic incentives for migration may change over multiple generations when beliefs are endogenous. Subsequent generations' beliefs will become more homogenous over time because they are influenced by both their parents' beliefs and social norms. Diverse communities will therefore become more like-minded over time, and social incentives for migration will diminish. Conversely, economic incentives for migration will dominate; they do not need to be as strong in order to influence migration decisions.

This paper merely scratches the surface of a fascinating and understudied topic. The introduction mentioned that migration has enormous social, economic, political, and environmental implications. In particular, social determinants of migration are undeniably

important from a historical perspective, yet they have been overlooked by the economics literature. Hopefully, the future will provide useful survey data in order to establish empirical arguments regarding these social incentives and their relationship with the more established economic incentives for migration. Nonetheless, this paper shows that even a simple theoretical framework can lead to valuable conclusions which are consistent with current observed trends, and they may even provide good predictions for the future.

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