Looking at the declining rates of U.S. mobility: Literature review and implications

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Abstract

For the past forty years, the United States has experienced a steady decline in the mobility rate. Aside from the economy-wide impacts of mobility, this decline presents an interesting research opportunity as a satisfactory theory to explain it has not been put forth. In this extended literature review, we will explore what theory says about migration and locational choice. We will then ground ourselves in the research of Koşar et al. before we propose applying some of the explored theory to an extension of Koşar et al.'s work. Specifically, we look at incorporating questions to help identify relative deprivation motivations. As well as questions to suss out respondents' risk aversion and the impacts that will have on the Koşar et al. framework.

Introduction

The foundational economic theory of migration or locational mobility is labor economics. Individuals, barring any regulatory constraints, will generally migrate to those areas where they can apply their skills and knowledge for an advantageous outcome (higher wages, better working conditions, etc). Even in those instances where an agent has moved more than once, intuition tells the story; they migrated, believing that a new location offered them an advantage, once the agent discovers that this new location isn't advantageous, they seldom return to their original location instead they move on. Theory suggests and is backed by the empirical evidence, that once people decide to migrate, they will continue to do so until they find an area where their skills and knowledge offer an advantageous outcome (Partridge, Rickman, Olfert, & Ali, 2012) (Bayer & Juessen, 2012).

The economic benefits underlying migration are just as intuitive. For an individual to find an advantageous outcome using her skills and knowledge, it stands that her skills and knowledge filled a demand, or offered a beneficial innovation to the new area. Thus, both the migrant and the destination benefit from mobility. This is a simplification that ignores

or minimizes any disutility to change, the presumption being that even irrational objection to change can with time be overcome by obvious advantage. The relatively high mobility rates in the US have traditionally been cited as one of the strengths of the US economy (Zelinsky, 1971).

Since 1980 the United States has seen a steady decline in mobility (with a temporary spike around 1985). The decline has held steady through both recessions and recoveries (Bureau, 2019). The consequences of this are numerous. Aside from the implications for business (i.e., reduced increases in productivity to outright stalls or declines, and so on), there are possible negative implications for society in general. While mobility began to decline, the income gap between the lower socioeconomic groups and the highest began to widen, as did the gap between earnings for rural and urban areas, historically mobility within the US would help mitigate both trends (Koşar, Ransom, & Van der Klaauw, 2019).

In this literature review, we will look at some of the theories related to migration and location choice. Specifically, those dealing with risk aversion and relative deprivation while offering proof from empirical studies. We will then look at three of the most readily offered reasons over the previous forty years for the decline in mobility. We will then focus on Koşar et al. (2019). Before finally offering two possible fruitful avenues of research to move beyond Koşar et al. and one not fruitful.

Theory

Risk Aversion

Heitmueller (2005) analyzes immigration incentives under risk aversion assuming a CRRA utility function, where there are two states, employed and unemployed $s \in \{1, 2\}$ respectively. In this setting the standard utility function

$$\frac{(\epsilon + w)^{1-\gamma}}{1-\gamma}$$

yields an expected utility function:

$$\mathbf{E}(u_{k,t}(\epsilon, w^i, p^i_{-s})) = p^i_{-s}\frac{(\epsilon + w^i_{1,t})^{1-\gamma}}{1-\gamma} + (1 - p^i_{-s})\frac{(\epsilon + w^i_{2,t})^{1-\gamma}}{1-\gamma}$$

where for individual k, at time t, in country i, with the probability of employment p^i_{-s} being conditional on state, in time $t-1$, either employed or unemployed and $1 - p^i_{-s}$ the probability of being unemployed. Heitmueller uses ϵ for a state independent income, w is the gain from the decision to migrate or not, and γ is the coefficient of relative risk aversion (Heitmueller, 2005).

Heitmueller then derives the certainty equivalents for what he deems the host and sending countries.

$$\mathbf{E}(u_{k,t}(\epsilon, w^i, p^i_{-s})) = \frac{(\epsilon + w')^{1-\gamma}}{1-\gamma}$$

$$w' = CE^i_{k,t} = [p^i_{-s}(\epsilon + w^i_1)^{1-\gamma} + (1 - p^i_{-s})(\epsilon + w^i_{2,t})^{1-\gamma}]^{\frac{1}{1-\gamma}} - \epsilon$$

where the state (employed, unemployed) of the home h (sending) country is assumed to be known. For all individuals k at all times t. Hence the expected utility for the home country is $\mathbf{E}(u^h(\epsilon, w^i) = \frac{(\epsilon + w^h_s)^{1-\gamma}}{1-\gamma}$ with the certainty equivalent:

$$\frac{(\epsilon + w^h_s)^{1-\gamma}}{1-\gamma} = \frac{(\epsilon + w')^{1-\gamma}}{1-\gamma}$$

$$CE^h = (\epsilon + w^h_s) - \epsilon$$

$$= w^h_s, \forall(t)$$

the author then assumes that, in order to gain unemployment benefits, an individual must be employed in some previous time period within the country to create a gross return function from $CE^i_{k,t}$ (Heitmueller, 2005).

$$R^i_{k,t} = \begin{cases} CE^i_{k,t}(w^i_{2,t} = 0) & t = 0 \\ p^i_{-s}CE^i_{k,t}(w^i_{2,t} > 0) + (1 - p^i_{-s})CE^i_{k,t}(w^i_{2,t} = 0) & t > 0 \end{cases}$$

Combining the home country certainty equivalent and the gross return he formulates the "net discounted income flow," as follows

$$\Gamma^i_{k,t} = \sum_{t=0}^{T} \frac{R^i_{k,t} - CE^h_t}{(1+r)^t} - q^i$$

essentially, the sum of differences between the gross return of migrating and staying, over time periods, while discounting future income and subtracting a fixed migration cost for each country, q^i (Heitmueller, 2005). The migration decision then simply becomes $\Gamma^i_{k,t} > 0$ which does not need to hold for every time period. To isolate the impact of risk aversion on migration note that; $\frac{\partial R^i_k}{\partial \gamma} < 0$ and $\frac{\partial CE^h}{\partial \gamma} = 0$ which entails $\frac{\partial \Gamma^i_k}{\partial \gamma} < 0$. Therefore, as relative risk aversion increases net difference flows decrease making migration less likely (Heitmueller, 2005).

Wang and Wirjanto (2004) look at risk aversion as well, taking a representative agent at time $t = 0$ working and living in region A (agent's origin) who found a new position in region B. The agent has a utility function $u(x)$ where X and Y are processes for the current wage in Region A and B respectively. X and Y are stochastic to capture the uncertainty of wages in both regions and both X and Y are the net wages in the region. For instance, Y in $t = 1$ would include the direct or indirect costs of moving from region A to B for the agent (Wang & Wirjanto, 2004).

If the agent migrates at time $t = \tau$ then her inter-temporal utility becomes:

$$\mathbf{E}_0 \left\{ \int_0^\tau e^{-\rho t} u(X_t) dt + \int_\tau^\infty e^{-\rho t} u(Y_t) dt \right\}$$

Where

$$\tau^* = \sup_\tau \mathbf{E}_0 \left\{ \int_0^\tau e^{-\rho t} u(X_t) dt + \int_\tau^\infty e^{-\rho t} u(Y_t) dt \right\}$$

Wang and Wirjanto then offer an explicit utility function $u(x) = \frac{x^\gamma}{\gamma}$ with $0 < \gamma \leq 1$, and introduce geometric Brownian motion for the growth in both X and Y for compactness,

they then denote

$$W_x(x) \equiv \mathbf{E}_0 \left\{ \int_0^\infty e^{-\rho t} u(X_t) dt \right\}$$

and allow the agent to migrate at time $t = \tau$; which solves

$$\begin{aligned} \mathbf{E}_0 \left\{ \int_0^\tau e^{-\rho t} u(X_t) dt \right\} &= \mathbf{E}_0 \left\{ \int_0^\infty e^{-\rho t} u(X_t) dt - \int_\tau^\infty e^{-\rho t} u(X_t) dt \right\} \\ &= W_x(x) - \mathbf{E}_0 \left\{ e^{-\rho \tau} W_x(X_t) \right\} \end{aligned}$$

which captures the utility of the agent before migration. After migration the agent achieves the utility:

$$\mathbf{E}_0 \left\{ \int_0^\infty e^{-\rho t} u(Y_t) dt \right\} = \mathbf{E}_0 \{ e^{-\rho \tau} W_y(Y_t) \}$$

therefore, the discounted sum of before and after migration utilities is

$$\mathbf{E}_0 \left\{ \int_0^\tau e^{-\rho t} u(X_t) dt + \int_\tau^\infty e^{-\rho t} u(Y_t) dt \right\} = W_x(x) + \mathbf{E}_0 \{ e^{-\rho \tau} [W_y(Y_t) - W_x(X_t)] \}$$

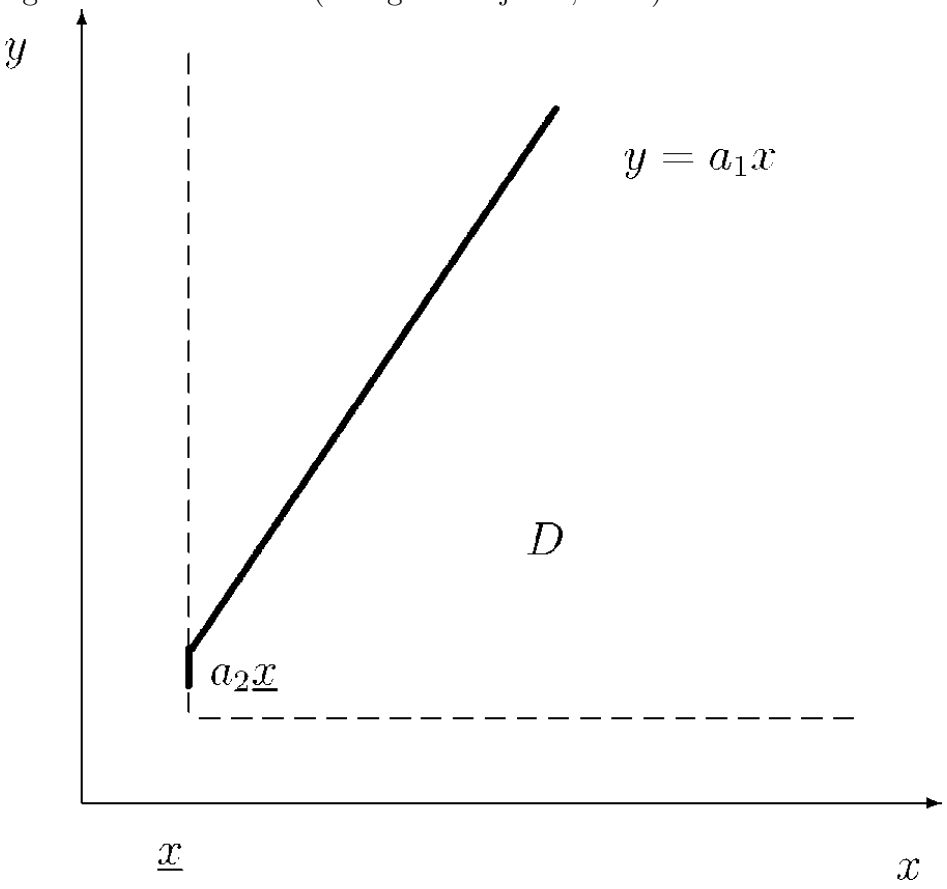
The agent then simply solves

$$\sup_\tau \mathbf{E}_0 \{ e^{-\rho \tau} [W_y(Y_t) - W_x(X_t)] \}$$

From here Wang and Wirjanto apply the geometric Brownian motion to produce the graph seen in figure Wang 1. Where wage X is the x-axis and Y is the y-axis, $\underline{x}$ (the dashed vertical) is the minimum x (the dashed horizontal is similar for y). Both a_1 and a_2 are equations of the expected growth rate in wages, variance in wages, and risk aversion derived directly from the Brownian motion.[1] Those agents facing the wage pairs in area D do not migrate at time $t = \tau$, those facing pairs along the bold lines or above do migrate. What is more, there are circumstances where those with a higher risk aversion will be the first to migrate (this will happen along the bold lines). The intuition is that if the uncertainty in wage growth an agent faces in their home country is higher than the uncertainty of wage growth in another country those more risk-averse will migrate sooner.

[1] For a more detailed treatment of a_1, a_2 and the entire figure, in general, please see theorem 2.1 from Wang and Wirjanto (2004).

There will also be instances, again due to the agent's risk aversion, where agents will wait to migrate even though conditions are favorable for migration this is represented in the figure as the size of D (Wang & Wirjanto, 2004).



Wang 1

Both Heitmueller (2005) and Wang and Wirjanto (2004) suggest that risk aversion should be a determinant of migration decisions. Jaeger et al. (2010) determine that risk aversion does impact migration. Using data from the German Socio-Economic Panel (SOEP) for 2000-2006, and paying particular attention to two years 2004 and 2006, where questions regarding the respondents' general attitude towards risk are posed. the authors found that those who are less averse to risk do have an increased chance of migrating. Using data on respondents that had not moved before 2004 but had moved before 2006 it could be shown that the act of migration had not decreased respondents risk aversion, thus there is scant evidence that Jaeger et al.'s findings are influenced by reverse causation. Some additional highlights from the paper are that in general moving/migration is viewed

as a risk, not only because of impacts on work but also due to impacts on relationships with family and friends (Jaeger et al., 2010) This is a subject that Koşar et al. explore as well.

Income and relative deprivation

Katz and Stark (1987) offer a simple model, with two countries one wealthy the other less so. The decision equation for a laborer from the poor country is:

$$kW_R(S) > W_P(S)$$

Where W_R, W_P are the wages offered in the wealthy (rich) country and the less wealthy country. S represents skill and enters wages positively for both countries; k is a discount factor that the less wealthy laborer places on the wages in the wealthy country (Katz & Stark, 1987). Katz and Stark describe this discount factor as arising due to cultural affinity and a preference for friends and family[2].

When under asymmetric information with a signaling device available for a price (i.e., diploma, license, etc.). Katz and Stark identify three groups of laborers, the low skilled laborers who will migrate without paying for the signaling device–as their wages will always be higher in the wealthy country. A mid-skill group who won't pay for the signaling device or migrate as their wages in the wealthy country minus the fixed cost for the device would be less than the wages they make in the less wealthy country. And finally, a third highly skilled group who will pay for the signaling device and migrate as their wages in the wealthy country minus the cost of the signaling device are still higher than their wages in the less wealthy country. From this, it is easy to see that income and potential income play a significant factor in determining whether to migrate and where to migrate (Katz & Stark, 1987). Also, it is clear that if we were to place some fixed cost for moving say m into the model, we would have at least one additional category, low-skilled workers that couldn't afford to move, or as the contemporary literature deems them, the stuck (Koşar et al.,

[2] This is not the first time preferences for family and familiar cultural norms appear in the literature, Zalinsky (1971), for instance, used these concepts to help explain the form of his inverted U graph

2019). Although Katz and Stark motivate their model with international migration, it isn't a stretch to apply it to mobility within a country, particularly as most previous employers will not go beyond confirming employment dates for former employees giving rise to information asymmetries.

Stark and Wang (2000) revisited the conditions under which migration may occur. They build upon the understanding that not only does an individual's current and possible income influence an individual's choice to migrate but the incomes of that individual's peers would also influence the choice. Further, as Stark had in other previous works [3] already explored relative deprivation, Stark and Wang focused on a situation where relative deprivation leads the individual to seek a new reference group, instead of a new or better income. The model consisted of two equally desirable regions and each individual's relative deprivation is due solely to comparisons with other individuals within the current region. They accomplished this by holding income for all individuals constant, thus the only way to reduce relative deprivation would be to migrate or leave one reference group for another (Stark & Wang, 2000).

They explore this through a repeated simultaneous move game, where each player is treated as a naive player. Although each player's utility is determined by the decisions of the other players, none of those involved in the game can discern the impacts of others on themselves or their impact on others before they take action. What results is a game in which there is no steady state. However when strategic thinking is allowed a steady state is achieved in just one period where the highest income group remains in region A (where all incomes begin) and all the remaining income groups migrate to region B (Stark & Wang, 2000).

The reason for this discrepancy lies solely with the actions of the two lowest income groups as the two highest income groups have no incentives to be in the same region (See table below). The second to lowest income group's relative deprivation is always improved

[3] (Stark, 1984), (Stark & Yitzhaki, 1988), (Stark & Taylor, 1989), (Stark & Taylor, 1991)

when it is in the same region as the lowest income group. However the lowest income groups relative deprivation is improved when it is in a region without the second to the lowest group. Thus (without strategic thinking) after the first period where all the lower-income groups migrate, the lowest income group would migrate back in the next period to escape the second to lowest group, only to be followed in the next period by the second to lowest, setting the stage for the next cycle. However, when strategic players are introduced the lowest income group will predict the behavior of the second to the lowest group. Thus the lowest income group will choose the region where it's relative deprivation is the lowest with the second to lowest group present, hence the lowest income group will migrate with the second to the highest group and remain (Stark & Wang, 2000). This behavior helps to explain some of the locational choices we see, where the wealthiest within a region/city live in a distinct area (whether that is a suburb, neighborhood, etc.) separate from the other income groups. Please note $(\epsilon + \delta) < (5 - 1)$ where $\epsilon < \delta$ and $\epsilon, \delta > 0$

Period 0		Period 1	
Region A	Region B	Region A	Region B
5		5	
$5 - \epsilon$			$5 - \epsilon$
$5 - \epsilon - \delta$			$5 - \epsilon - \delta$
1			1
Period 2		Period 3	
Region A	Region B	Region A	Region B
5		5	
	$5 - \epsilon$		$5 - \epsilon$
	$5 - \epsilon - \delta$	$5 - \epsilon - \delta$	
1		1	

(Stark & Wang, 2000)

Bertoli, et al. (2012), find that international migration decisions do respond to earnings differences. They also find that factors other than earnings are crucial determinants. It should be noted that Bertoli et al. are primarily interested in solving the self-selection problem so prevalent in migration estimates. [4] Bertoli et al. finds that income does impact individual migration decisions, it helps explain the composition of observed migration flows. Also, that changes in income at a particular destination affect destination choice conditional on migration. Bertoli et al.'s findings are consistent with the theory presented in the two Stark papers above. The episode that Bertoli et al. looked at was a shock to the Ecuadorian economy and the resulting migration to the US and Spain, where the overwhelming majority of migrants went to Spain, despite higher earnings potential in the US. Bertoli et al suggest cultural affinities as part of the explanation, though the largest explanation is reserved for the US placing a block on visas to most Ecuadorians without family already present in the US. The subsequent extra-legal migration into the US represents a high fixed moving cost and a larger discount on future earnings as the risks of being discovered increase with time. The choice of Spain over other countries is a clear indication of preferences for both higher wages (as compared to South and Central American nations) and cultural affinities (choosing Spain over other possible European destinations) (Bertoli, Moraga, & Ortega, 2013).

We find additional evidence for cultural affinities as a determinate of location when we look at network effects and migrations (Haug, 2008), (McKenzie & Rapoport, 2007). Haug (2008) finds that an increase in social capital at destination locations increases the probability of emigration. Strong social ties to the home/sender country indicate an increased likelihood of return, though this is counterbalanced by any new social ties established in the destination location (Haug, 2008). Mckenzie and Rapoport (2007) find

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[4] We will look more closely at another solution for self-selection but as the paper of focus Koşar et al. avoids self-selection in estimates by direct questioning; we won't spend as much time, as the literature does, covering it

that when there is not a large network already established in a destination location; those in the middle of the socioeconomic distribution from a sender/home area will be the first to migrate. As the network increases in size at the destination– migration costs go down. Thus allowing for the lower socioeconomic groups from the home/sender country to migrate as well. (McKenzie & Rapoport, 2007).[5] Both Haug (2008) and McKenzie and Rapoport (2007) help explain the behavior of the Ecuadorian migrants in Bertoli et al. (2013).

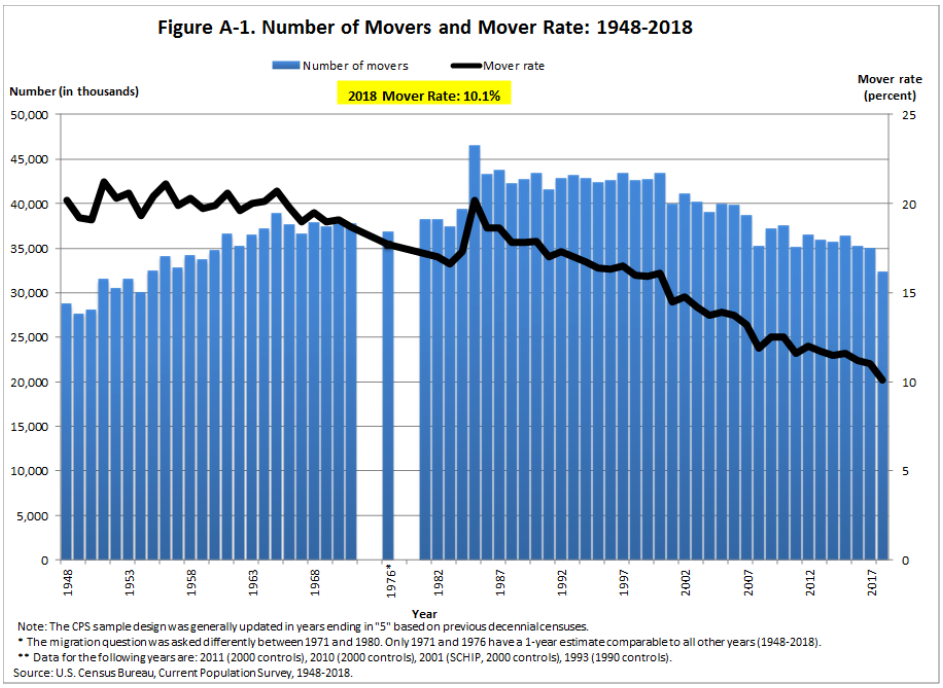

Figure A-1

Forty previous years in the U.S.

The above image was generated by the US Census Bureau. It shows mobility rates (black line) being relatively steady from 1948 until 1965. In 1965 we see a downturn in mobility rates. This downturn appears to continue until 1983, unfortunately from 1971 to 1980 the migration question was asked differently than in other years, thus there is little comparable data for a decade. As such most recent work comparing mobility rates focuses post-1985 (Bureau, 2019).

When confronted with a clear downturn such as that depicted in Figure A-1 it is

[5] McKenzie and Rapoport (2007) prove the inverted U hypothesis from Zelinski (1971)

natural to begin asking what the possible causes could be. Immediately three possible explanations tend to be offered: preferences (there has been a shock to individuals preferences), costs (whether the cost of housing or those associated with the physical move itself), and finally– reaching a locational steady state, or achieving a "stationary spatial equilibrium," as suggested by Partridge et al. (2012).

The hypothesis presented by Partridge et al. was that the marked downward trend in gross US migration rates could be explained in the successful pricing of location-specific amenities. Essentially, the market had finally been able to price different amenities such as distance from parks, the quality of nearby schools, even the weather, across the US to accurately indicate their actual value thus leading towards an equilibrium. This hypothesis was rejected as migration from the "frost-belt" towards the "sun-belt" remained static if a bit less than historically observed (Partridge et al., 2012). The intuition is that if the amenities had been priced properly than migration due to the overall climate should be declining proportionally to the general decline in migration.

The second hypothesis Partridge et al (2012) explored was that the local labor markets had shifted in some way such that migration was no longer necessary to fill positions. This hypothesis was not able to be rejected outright as Partridge et al. found that in fact migration's responsiveness to industry shocks had declined. They then hypothesized that shifts in the nature of work had made migration less reactive to industry shocks, and more responsive to occupational shocks. An easy example would be; take two employees in a foundry, one employee is a smelter by profession and the other is an accountant. If the foundry closed, the smelter would have a higher probability of needing to move to find work as a smelter. The accountant, however, could just as easily be an accountant for an automotive company, a textile company, etc. Partridge et al. suggested this hypothesized shift in the nature of work as a continuing research avenue (an avenue not explored for this literature review, although it is intriguing) (Partridge et al., 2012).

Although Partridge et al. (2012) only analyzed the data from 2000 to 2011. If at some

point in the previous forty years the market had been able to achieve the complete pricing of locational amenities, it stands to reason that there would be evidence of a commensurate decline in climate comfort migration as hypothesized. Instead, the authors note an upward trend in climate migration as higher incomes in the eighties and nineties facilitated migration for climate alone (Partridge et al., 2012). Thus, the third explanation for the downward trend in mobility, nearing a stationary spatial equilibrium, finds scant evidence.

We will now turn our attention to the second of our ready explanations, that of costs. Admittedly costs play a role in all mobility decisions, the nature of that role and the extent, however, could vary based on other factors. The explanation for this will be delayed until we explore Koşar et al. (2019). For now though, it will behoove us to focus on the research to estimate migration costs and to explain housing costs.

Bayer and Juessen (2012) was written in response to a simplification that is often used when estimating migration costs. Namely that after controlling for observable variables agents' future incomes are assumed to be i.i.d. The authors argue that although this assumption is employed as a simplification, and to avoid self-selection issues, this assumption does have marked impacts on parameter estimation. The self-selection that arises when the i.i.d. assumption is done away with is relatively simple to understand. An agent's future location is conditional to her current location and as agents are utility maximizers previous choices would indicate that the agent has self-selected (migrated) into that region that gives him the highest income already (Bayer & Juessen, 2012).

To combat this self-selection Bayer and Juessen (2012) treats the decision to migrate as a dynamic choice thus coming to a bellman equation which is used to determine the choice trigger equations:

$$V(k, w_{iAt}, w_{iBt}) = \max_{j=A,B} \left\{ \exp w_{ijt} - \prod_{k \neq j} c + \beta \mathbf{E}_t V(j, w_{iAt+1}, w_{iBt+1}) \right\}$$

Where k is the current region, j is the destination region $j = A, B$, i is individual, w is welfare, and $\prod$ is an indicator function which equals 1 if the individual moved from k to j. As the optimization is stationary and independent of age, agents die at the constant rate δ.

The choice equation reduces to the individual migrates from k to j if and only if migration costs c are lower than the sum of direct benefits and the expected gain.

$$\text{Expected gain: } \Delta V(w_{iAt}, w_{iBt}) = \beta \mathbf{E}_t[V(A, w_{iAt+1}, w_{iBt+1}) - V(B, w_{iAt+1}, w_{iBt+1})]$$

$$\text{Direct benefits: } \exp w_{ijt} - \exp w_{ikt}$$

$$\implies c \leq \exp w_{iBt} - \exp w_{iBt} + \Delta V(w_{iAt}, w_{iBt})$$

Thus the decision on migration becomes:

$$\Lambda_j(w_A, w_B) \begin{cases} 1 & \text{if } j = A \text{ and } c \leq \exp w_{iBt} - \exp w_{iBt} + \Delta V(w_{iAt}, w_{iBt}) \\ \text{Same as above} & \text{if } j = B \text{ and } c \leq -[\exp w_{iBt} - \exp w_{iBt} + \Delta V(w_{iAt}, w_{iBt})] \\ 0 & \text{Otherwise} \end{cases}$$

With these equations they use a two stage estimation on wages and the method of simulated moments to attain four key takeaways. A typical interstate migration in the US costs $34,248, a much lower estimate than those that do not take into account self-selection $84,843. The second is that the failure to account for endogeneity and the impacts of the distribution of unobserved future incomes can generate substantial bias in the estimated migration costs. Three the comparative statistics of the model with exogenous changes in migration costs will vary depending on if persistence of future income differences are modeled and how they are modeled. Finally, they show different micro-level migration dynamics when compared to a model that does not track the income distribution. Although the above issues with the i.i.d. assumption impact the estimation of migration costs; that same assumption is used throughout the econometrics literature (Bayer & Juessen, 2012). Koşar et al. avoid the issue by estimating the counterfactual incomes only after they have derived the propensity to move for different demographic groups via survey.

Now for the housing costs. Glaeser et al. (2005) is a seminal paper in which the elasticity of housing supply is identified as the key determinate in housing prices given that cities are physical spaces and subject to geographic constraints. The main takeaway is that

in the face of an upward demand shift a lower elasticity of housing supply will drive up housing prices ceteris paribus and a higher elasticity will help mitigate the upward pressure on prices. The implications of this are clear, any regulations that impact housing elasticity in a negative way (land-use restrictions) will increase housing prices in the face of an increase in demand. This explains the high housing prices seen in cities such as San Diego, L.A., San Francisco, Seattle, New York, New Orleans, etc. and the lower housing prices in cities like Houston (Glaeser, Gyourko, & Saks, 2005).

Citing Glaeser et al. (2005), Albouy and Ehrlich (2018), identify both positive and negative effects of land-use restrictions. Using both OLS and IV regressions the authors show that the positive effects of common land-use restrictions i.e., increased demand through improved quality of life (parks, minimum lot sizes, etc.) are superseded by the negative effects (higher prices). This means that on net, land-use restrictions will decrease social welfare (Albouy & Ehrlich, 2018). The policy ramifications seem evident.

Koşar et al.

The work on the estimation of migration costs and the determinants of housing costs both will have implications for a group of individuals identified in Koşar et al. (2019), the stuck. Koşar et al. (2019) takes an innovative approach in hopes of explaining the downturn in mobility that we have seen for almost forty years. First, instead of using a revealed preference approach which leads to the estimation issues identified in Bayer and Juessen (2018), Koşar et al. (2019) follow a direct report approach. The authors' goal was to combine both mobility and locational choice in their model simultaneously to capture the correlation between these two. By doing so they also remove the self-selection issue, while recognizing that there will be high heterogeneity (Koşar et al., 2019).

They use a nationally representative sample of the New York Fed's Survey of Consumer Expectations, a monthly survey, to which they attached questions designed to elicit responses concerning general attitudes toward migration and the location choice

probabilities regarding individual preferences for location-specific attributes. They attached questions twice; first to the January survey and then to the September survey in 2018 they aimed to derive a preference set of locational attributes and the corresponding probability distribution (Koşar et al., 2019).

Instead of just asking the respondents to rate their preferences on some arbitrary scale (which they did do) they also asked the respondents to assign a probability to given scenarios. For instance, respondents were asked to provide the probability that they would move to a location with certain attributes if they had to move within the next two years. In this manner, they were able to ascertain the probability distribution of certain location attributes. Further Koşar et al. ask the respondents directly to classify themselves (using terms that have become popular within the literature) as; mobile, stuck, or rooted (Koşar et al., 2019).

Those who identified as rooted tended to be older, married, white, homeowners, rural, and more likely to live within 50 miles of family. Those that identified as mobile tended to have similar educational attainment and incomes to the rooted, less likely to live within 50 miles of family, and urban. Those that identified as stuck were generally less educated, below-average income, more likely to live within 50 miles of family, and urban. Just under half of the respondents identified as rooted, just over a third as mobile and approximately one in seven identified as stuck. All of which is reflected in the data for the US as a whole. Additionally, the paper found correspondingly low, expected and observed rates of migration, that declined as distance increased. The authors also noted that the subjective median respondent's chance of moving in the next two years 10%, and the average of 25%, are within the range of actually observed probability (Koşar et al., 2019).

The results of their survey followed predictably from those that self-identified as rooted, mobile or stuck. The rooted offered satisfaction with their current home and neighborhood, being close to friends and family, and involvement in their community as the highest-rated reasons to not move. The rooted also rated all the possible reasons to move

as less important. The stuck tended to identify high housing costs in other locations, high fixed costs of moving, uncertainty with qualifying for a new mortgage, as important reasons to not move. While rating lower costs of housing as an important factor to move. The stuck were also more likely to be dissatisfied with their current and prospective jobs. The mobile tended to rate the desirability of a new neighborhood, better job opportunities, and local amenities as reasons to move (Koşar et al., 2019).

Overall satisfaction with current home, neighborhoods, jobs and job prospects, friends and family, as well as concerns of affordability/desirability of alternate locations, and high perceived costs of moving were the highest-rated reasons for not moving. Several other barriers for moving that have been offered were also asked about; licensing requirements, loss of welfare benefits, mortgage lock-in, and difficulty securing a new mortgage where all rated as below average in general. Concerning reasons to move; higher home quality and affordability, proximity to friends and family, safer and more desirable neighborhood, and job opportunities were offered as the highest-rated reasons to move across the three groups. Other factors pointed to as possible reasons to move Medicaid coverage, higher welfare benefits, and a reduction in commute times were all rated less important. Again these results are in line with what theory would point to in general and are reflected in the data available. The largest surprise is how little impact costs (whether housing in new locations or the physical cost of moving) have. Only the stuck group identified any form of cost as an important determinant to either stay or move (Koşar et al., 2019).

Further Research

Although Koşar et al. provide valuable insights regarding preference relations there are a few concepts from the theory that they do not incorporate that could be informative. The first is the idea of relative deprivation (Stark & Wang, 2000). It is possible Koşar et al. have captured the impact of relative deprivation through their questions regarding cultural affinity though if so, then it is implicit as none of their questions regarded the incomes of

respondents neighbors. Intuitively, it could easily be the reverse, which is to say the concept of relative deprivation could be a stand-in for questions of culture. As Koşar et al do not mention relative deprivation as a factor in the locational choice further study will be needed.

Another concept that Koşar et al. do not mention is the idea of discounting wages in another location. It could be argued that the classifications of rooted, stuck, and mobile preempt a locational discount. Imagine a situation where we were able to determine locational discounts for each individual it would then be merely a matter of identifying some $\overline{k}$ such that a $k > \overline{k}$ indicates someone is rooted. The trouble, however, comes when we look a little closer at the two groups rooted and stuck. Many of the locational characteristics that the rooted identify as being important to them the stuck also identify, particularly proximity to friends and family (Koşar et al., 2019). It isn't too much of a stretch then to postulate that there could very well be a k^* such that $\overline{k} < k < k^*$ indicates someone is either rooted or stuck. Fortunately, the discount factor proffered by Katz and Stark (1987) k is, by design, an abstract catch-all for anything outside of income that would make a higher income less attractive. It is doubtful that attempting to identify a quantifiable locational discount factor would be fruitful.

The third and final concept from theory that Koşar et al. do not mention is the first concept we explored in the theory section, risk aversion. Koşar et al. claim that due to their approach they can avoid hidden variables. I would challenge that assertion, it is clear from Jaeger et al. that risk aversion does impact the decision to migrate. Also from Jaeger et al. we know that the risks of moving are not just limited to the uncertain impacts on wages but also on familial relationships and friendships. To then argue that risk aversion would not impact the distance to friends and family that a respondent would identify as acceptable would be difficult. Going even further Koşar et al. show that the stuck group is the group most concerned with crime as a determinate- it would be difficult to argue that risk aversion would have no impact on how accepting of an increase in crime an individual

would be. Luckily Jaeger et al. also provide a clear strategy for determining an individual's risk aversion. It would be a matter of repeating the Koşar et al. survey and adding the risk attitude questions from the SOEP 2004 and 2006 waves. Once this information is collected we could then add risk aversion to the regression. I would expect that the WTP's identified by Koşar et al. would change for some characteristics. I would not expect a change in the ordinal relationships of those characteristics.

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