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The Economics of Internal Migration: Advances and Policy Questions*

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I. Introduction

Internal migration patterns in the US have drawn growing attention among researchers, policy analysts, and others. This interest has been driven by two trends. First, internal migration in the US has fallen for more than three decades (Molloy et al. 2011; Frey 2009; Cooke 2011, 2013). This decline raises questions about whether it stems from desirable factors, like improved location or job matching, or undesirable factors, like employer monopsony power or other barriers to job mobility (Kaplan and Schulhofer-Wohl 2017; Molloy et al. 2016). Relatedly, highly educated Americans have become increasingly concentrated in larger cities (Diamond 2016). Thus, both the level of migration in the US and the types of destinations chosen by different types of people have changed in important ways over the last several decades.

Figure 1 shows that the decline in long-distance migration has been broad. We plot a measure of migration in the US—the share of people residing outside their birth states by age—for cohorts born since the 1940s. With few exceptions, this measure is lower at every age for successive cohorts. The cross-cohort declines are also large. For example, migration rates for those in their early twenties are five percentage points lower for the cohort born in the 1990s than the cohort born in the 1940s, a decrease of 20 percent. The figure also shows that despite the decline in migration over time, migration is still fairly common. Roughly 40 percent of those born in the US end up living in another state. The life cycle pattern in migration is also dramatic, suggesting that much of this relocation takes place during a critical period between a person’s labor market entry and mid-thirties. These striking features motivated an older literature on migration, and they remain relevant today.

The second trend driving growing attention in migration is that convergence in labor market outcomes across local markets in the US has slowed and, by some measures, the outcomes have diverged (Nunn et al. 2018; Gaubert et al. 2021a). With people less likely to move from weaker labor markets to stronger labor markets, persistent geographic disparities raise questions about the best way to improve economic outcomes for individuals and families in low-performing areas (Ludwig and Raphael 2010; Austin et al. 2018; Wozniak 2018).

Growth in economists’ interest in issues related to migration can be seen in published economic research. In the three decades between 1980 and 2010, only six papers with “migration” in both the title and abstract were published in the major general interest economics journals. In the last decade, that number was 19.¹ Moreover, migration has emerged as a topic that spans economic fields and

* This paper is forthcoming (2022) in *The Journal of Economic Literature*.

¹ Major general interest journals are defined as *Econometrica*, *QJE*, *AER* (excluding *May’s Papers and Proceedings issue*), *JPE*, and *Review of Economic Studies*. An alternative metric – the number of papers in the same journals with migration in the title or the abstract – points to a similar conclusion. Using this method, 39 such papers were published in the three decades before 2011, and 45 since then. The *Journal of Economic Literature* has not featured an article on internal migration since Greenwood’s influential 1975 survey “Research on Internal Migration in the United States: A Survey.” Dustmann

methodologies. Major contributions to the study of migration have been made using both structural and reduced form estimation, and they have been authored by researchers working in macro-labor, micro-labor, urban, urban-trade, development, and economic history.

This broad interest has generated many insights, but too often, these insights have gone unused by others working on related topics. Researchers tend to overlook the related literature produced by others working in different fields and with different methods. The first contribution of this paper is to create a single review of the literature on migration, which spans a range of fields and methods. We hope this approach will foster a discipline-wide perspective on internal migration. More ambitiously, we hope economists working on migration will not just read a wider set of papers but also use the papers' insights to inform their own work. To support this goal, our discussions attempt to relate various strands of the migration literature to one another, highlighting places where findings are complementary or contradictory.

A second contribution is to outline open questions as well as consensus, in order to suggest productive avenues for future work. We first focus on economic theories of the migration decision and related efforts to estimate structural models of migration. We find that despite increasingly sophisticated modeling options, many of the key questions around migration remain open; for example, how large are the full costs of migration to movers? We then turn to reduced form analyses of migrant outcomes. Given the focus on identification in this approach, these studies necessarily focus on migrant outcomes rather than determinants of the migration decision. Yet their results raise important questions for structural approaches more focused on the migration decision, as they broadly suggest that some welfare-enhancing moves may not be made without an external incentive. We then review two sub-literatures on migration that have received much attention from researchers over the past decade: the literature on migration's role in equilibrating local demand shocks and that on the role of housing market constraints in migration.

Our review's third contribution is to open a discussion about the potential for significant migration-related policy in the US in coming years and to encourage economists to develop research agendas that will inform it. In the final section, we examine two forms such policy might take—information treatments and direct moving subsidies—and review what is known about their potential impacts. Currently, we know very little. This lack of understanding concerns us, but it presents important opportunities for scholars and for evidence-based policy. We hope economists take up these opportunities.

Our effort to bring together different studies on migration requires us to narrow our review in other respects. For a manageable discussion, we focus on internal migration.² Immigration and internal migration are distinct in important ways that are relevant for our survey; namely, the policy options and relevant barriers that correspond to each are quite distinct, although there are similarities in the behavioral models. We also focus on internal migration within the US. International comparisons are challenging because of differences in mobility definitions and measurement across countries. We

and Gorlach's JEL paper from 2016 is related to international migration and will be discussed in Section II of the paper.

² This article focuses on internal migration, defined as movement of incumbent individuals within the borders of a given country.

make exceptions to include papers using international contexts when it provides substantive information unavailable in US studies. Also, studies that attempt to monitor changes in internal migration over time show considerable variation across developed countries.³ We do not delve deeply into the specific literature on why internal migration has declined, although we refer to this where appropriate. We do not review the literature on short-distance moves, since these moves reflect fundamentally different decisions than longer-distance moves. Finally, we leave it to other papers to discuss the measurement of migration and the challenges it entails.⁴

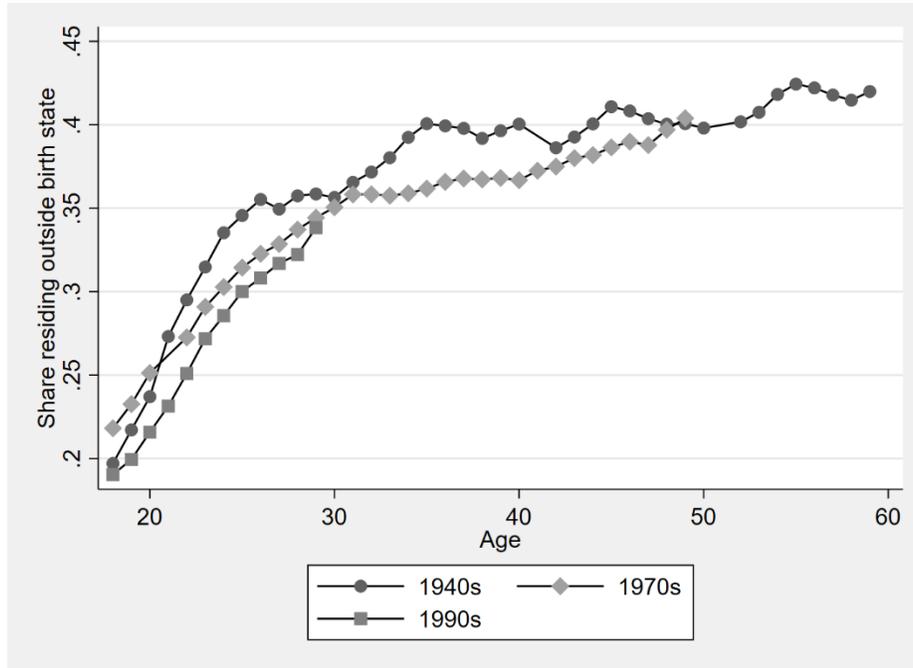


Figure 1. Share Residing outside Birth State by Age and Birth Cohort

Notes: Source: IPUMS USA, various Census and ACS files spanning 1960 to 2019 (see Ruggles et al. 2021). Sample limited to US-born population, ages 18 and older.

II. Migration Models and Structural Approaches

In this section, we review two broad approaches to modeling internal migration: optimal location choice (migration decision) models and spatial equilibrium models of local market aggregates. The former focus on the partial equilibrium choice of an individual or household migration decision,

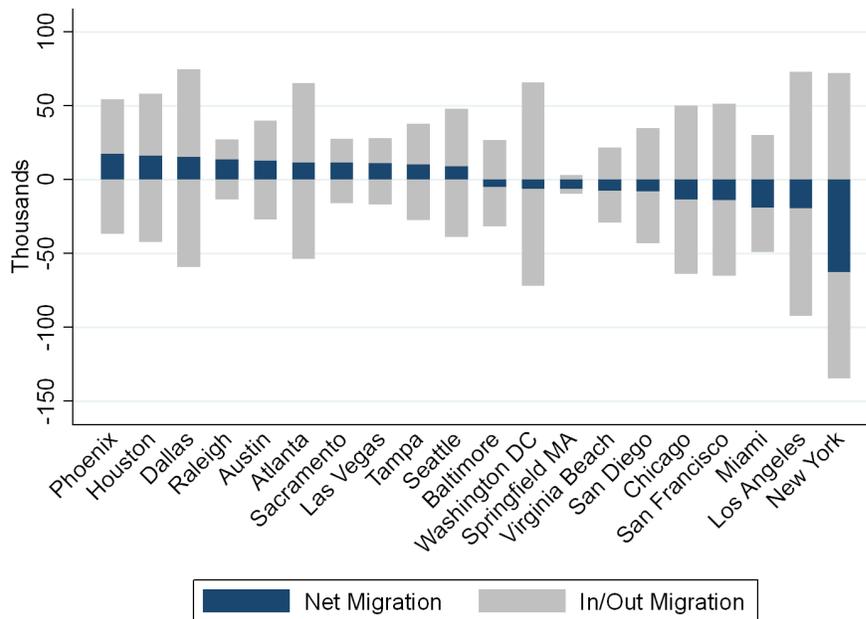
³ The US has a higher mobility rate than most countries, although mobility has been declining since the 1980s. Declining mobility appears to be a unique feature of the US, although the United Kingdom has also experienced it (Long et al. 1988, Long 1991, Greenwood 1997; Newbold and Bell 2001, Molloy et al. 2011, Bell et al. 2002, Bell and Muhidin 2009, Bell et al. 2015).

⁴ See Long et al. (1988); Greenwood (1997); Rogerson (1987); Ferrie (2003); Rosenbloom and Sundstrom (2004); Kaplan and Schulholfer-Wohl (2012); Molloy et al. (2011); and Hyatt et al (2018).

assuming that decision-makers seek to maximize utility and that relocation offers one means of doing so. The latter assume that a spatial general equilibrium must exist after such moves, and they examine how population flows work to balance market-level outcomes like local wages or housing prices across space. Both approaches continue to be used in recent papers, but both go back decades. We survey the development of each class of models, and we highlight how these models advance our understanding of migration decisions and the role of migration as an equilibrating mechanism. We then discuss some of the open questions and potential directions for further investigation.

To set the stage, we oversimplify somewhat by noting that one can characterize micro-level models of the migration decision as focused on moves that generate gross migration, whereas the focus of spatial equilibrium models is on net migration. Figure 2 shows that the quantities of these types of migration differ starkly in the US—gross migration flows are generally much larger than net flows. Even in locations with large net inflows, many people still choose to move out. Likewise, in locations with large net outflows, many people still move in. As we discuss below, dynamic equilibrium models of migration can accommodate both individual migration decisions and spatial equilibrium and hence both gross and net migration.

Figure 2. Gross and Net Migration by US Metropolitan Area, 2019



Source: 2019 American Community Survey. The figure shows the number of migrants into and out of the 10 metropolitan areas with the largest net inflows and the 10 metropolitan areas with the largest net outflows. Migration is defined as having lived somewhere else in the United States in the year prior. Calculations exclude Alaska, Hawaii, and metropolitan areas for which residence in the previous year is not observed.

II.A. Individual Migration Choice Models

The basic idea behind the foundational models of individual location choice is that individuals choose to migrate when the net expected benefits to a relocation exceed the costs. These models take a single individual or household as the decision-maker and motivate migration as a mechanism for achieving maximum welfare.

An influential framework for these decisions was developed in Sjaastad (1962).⁵ This model assumes that individuals make location decisions based on the costs of and returns to migration. Returns include monetary returns as well as non-monetary returns based on locational preferences. Migration costs include both monetary costs, which can partly depend on distance travelled, and non-monetary costs such as forgone earnings associated with the time it takes to move and “psychic costs” due to changes in environment. Individuals choose the location where the present value of the expected net benefit from migration is greatest. Mincer (1978) develops a model to allow a joint family migration decision, recognizing that the optimal location choice for the family could differ from that for individual spouses. The model illustrates how family ties affect migration and how migration influences employment, earnings, and family stability.

Over the next 40 years, these models were extended in many important dimensions including the factors in the utility function, the time horizon, and the set of location choices. A number of these advances are combined in the prominent Kennan and Walker model of individual migration choices from 2011; hereafter we refer to this model as KW. The structural dynamic model in KW permits a rich decision-making process for individuals. It allows for individual heterogeneity in skills and location preferences, as well as heterogeneity in moving costs. It also allows for many alternative location choices each with payoff flow generally uncertain, for location match components in wages and preferences, and for sequential location decisions rather than a single choice. The model solves individual migration decisions as an optimal search process and aims to describe the partial equilibrium response of workers to wage differentials across locations, assuming that the individual maximizes expected lifetime income, net of moving costs.

The core of individual’s objective function in KW illustrates the range of forces at work in this model. Suppose there are J locations. Denote l as a vector including the sequence of recent locations (with l^0 as the current location), and ω as the corresponding vector containing information on wage and utility in each location. The state vector x consists of l , ω and age. ζ_j is a random variable that is assumed to be independent and identically distributed (i.i.d.) across locations and across periods, and independent of the state vector.⁶ For an individual whose home location is h , the flow payoff is

$$\widetilde{u}_h(x, j) = u_h(x, j) + \zeta_j, \quad (1)$$

where

$$u_h(x, j) = \alpha_0 w(l^0, \omega) + \sum_{k=1}^K \alpha_k Y_k(l^0) + \alpha^H \chi(l^0 = h) + \xi(l^0, \omega) - \Delta_\tau(x, j), \quad (2)$$

⁵ The foundational concepts are formulized by Greenwood (1975) into a model on individual location choice.

⁶ For simplicity, i -subscripts are dropped. The component ζ_j is also i.i.d. across individuals.

In equation (2), the first term is wage income in the current location. The second term includes the nonpecuniary variables, reflecting amenity values.⁷ The parameter α^H captures a premium for home location. ξ represents the location match component of preferences, which is a permanent random draw inferred when the location is visited. The term Δ_τ denotes the moving cost from l^0 to l^j , which allows for unobserved heterogeneity as indexed by type τ .⁸ Lastly, as described in equation (1), there is an unexplained component of the utility flow, ζ_j , that is due to shocks to preferences or moving costs. Individuals maximize the expected present value of lifetime utility by moving from the current location, incurring moving costs, and accumulating utility in the next location as dictated by the shocks they experience and their knowledge of opportunities elsewhere.⁹

Dynamic models like that developed in KW advance our understanding of migration in several important ways. First, early migration studies using aggregate data tended to find little evidence for the role of wages in migration decisions.¹⁰ KW find a significant effect of expected income changes on interstate migration. Specifically, migration decisions depend on the difference between the quality of the match in the current location and the prospect of obtaining a better match in another location. Their estimates reveal substantial variation in the portion of wages related to location match, implying that some individuals can potentially increase their earnings by a large amount by moving from a low wage state to a high wage state (which is location-specific, but the same for all individuals of a given type) and by replacing a bad location match draw with a good draw (which is location-specific, but varies across individuals).¹¹

Second, these models provide insight into the role of migration costs in location decisions because they allow for more complex modeling of the heterogeneity in these costs. KW find that the average moving cost is quite large, about \$312,000 (in 2010 dollars). It is worth noting that this estimate is based on hypothetical moves to arbitrary locations and in arbitrary periods. Actual realized moving costs can be much smaller, as individuals choose to move only when the payoff shocks are favorable. KW suggest that the costs of moving vary considerably both across individuals and over time for the same individual and estimate that the cost of a typical move is negative. The authors suggest that this is because the typical move is motivated by unobserved shocks, ζ , that lead to a higher current payoff in the destination location relative to the current location, rather than the prospect of obtaining a higher utility flow in another location. Relatedly, Bayer and Juessen (2012) provide a microeconomic structural model that explicitly deals with the problem that migration incentives are unobservable and highly autocorrelated. That is, individuals are in a location because they are better off there than elsewhere. Their model can be aggregated to examine the evolution of unobserved migration incentives and migration rates at the aggregate level. When taking into account dynamic self-selection in migration, the authors estimate the structural parameters of the

⁷ K denotes the type of local amenity. The authors consider local climate in the main specification.

⁸ KW assume two types in the model, where the pure stayer type denotes individuals who regard the cost as prohibitive.

⁹ Structural dynamic location choice models with many destinations are computationally intensive to estimate. To implement their model, KW assume that individuals with the same recent history are in the same state, regardless of their previous histories. By restricting the information set to wage observations in recent locations, the model can be numerically solved using a discrete approximation.

¹⁰ Greenwood (1997) notes that the earlier evidence is not strong, and exact results are sensitive to model specification, the population subgroup, and estimation methods.

¹¹ Bishop (2012) builds a dynamic model of location choice and amenity valuation and finds that location-specific amenity values can explain important trends in observed migration patterns.

model with aggregate data and obtain an estimated cost for interstate migration of less than one-half of average annual household income.

Third, these models can incorporate forward-looking behavior and past migration experience, unlike earlier models. In KW, migration decisions are reversible, rather than a once-and-for-all choice. Dustmann and Görlach (2016) develop a model that focuses on international temporary migration. This model shares the feature of allowing return migration with KW, but the Dustmann and Görlach model explores how migration behavior changes when explicitly temporary migration is possible. In their model, migration abroad and back can be motivated by differential skill accumulation or returns to skill in the two locations or by different preferences for home versus host country consumption. This suggests that return migration may occur even in the absence of shocks, like those which motivate relocation in KW.

Fourth, the dynamic models have allowed a deeper understanding of the relationship between various life cycle and familial factors and migration. With a single period, earlier models cannot be used to explore how migration is related to life cycle choices. Gemici (2016) estimates a dynamic model of household migration decisions with intra-household bargaining. Calibration of the model shows that family ties hinder mobility, wage growth, and family stability.

And finally, these models can provide a helpful framework for policy evaluation and counterfactual analysis because they can be sparsely parameterized and tractable. For example, the KW framework has been modified to examine the effects of interstate differences in welfare benefits and state subsidies for higher education on migration (Kennan and Walker 2010, Kennan 2020).

II.B. Equilibrium Models of Spatial Aggregates and Optimal Dynamic Migration Models

The individual or household approach to modeling migration takes a disequilibrium perspective, assuming that migration occurs in response to shocks or to opportunities for a permanent wage gain and thus a higher level of utility. An alternative theoretical approach analyzes the determination of wages and rents in equilibrium, taking into account the effects of migration flows on these outcomes. In equilibrium, earnings differences reflect compensating differentials across locations in local amenities, with no utility surplus across locations.

Early versions of these models generally assumed that regional markets are efficient and labor adjusts instantaneously. Foundational models in this vein include Tiebout (1956), Harris and Todaro (1970), Rosen (1979), and Roback (1982, 1988).¹² The Rosen-Roback model is the classic workhorse of spatial equilibrium models.¹³ In the basic version of the model (Roback, 1982, Section I), workers' indirect utility depends on nominal wages, housing costs, and local amenities. Workers are

¹² The Tiebout model assumes no migration costs and complete information. Consumers move freely across locations and choose the community that best satisfies their preferences patterns; that is, they “vote with their feet”. Harris and Todaro (1970) develop a two-sector internal trade model of rural–urban migration where the urban minimum wage is higher than rural earnings. An equilibrium is reached when the expected wage in the urban sector, i.e., actual wage adjusted for unemployment, equals the average wage in the rural sector.

¹³ As Moretti (2011) noted, the Rosen-Roback framework is widely used for “simplicity, tractability, and especially the fact that it captures a very intuitive notion of equilibrium across local labor markets within a country.”

homogeneous and perfectly mobile. Land is fixed in supply, with limited elasticity of housing supply.¹⁴ An important implication from this framework is that any shock to the local economy is fully capitalized in land prices, thus leaving worker utility unaffected. For example, a positive productivity shock raises nominal wages and demand for housing. Workers consume less housing in response to higher housing prices, thereby allowing some in-migration.¹⁵ In the new equilibrium, workers are not better off, and the amount of the productivity increase accrues to landowners.

It is worth noting that the implications of these models depend on the assumptions regarding the elasticity of labor supply and the elasticity of housing supply. More recent spatial equilibrium models relax some of these assumptions. Some important examples are outlined in Glaeser and Gottlieb (2009) and Moretti (2011).¹⁶ For example, Moretti (2011) presents a general equilibrium model that assumes that worker mobility is not necessarily infinite, owing to idiosyncratic preferences for certain locations, and housing supply does not need to be fixed. In this case, shocks to a local economy might not be fully capitalized into land prices and the incidence of the productivity shock between workers and landowners depends on the relative magnitude of the elasticities of local labor supply and housing supply.

Spatial equilibrium models can speak to a range of topics, such as agglomeration effects and local human capital spillovers, that are beyond the scope of individual or household level location choice models. For example, Dahl (2002) combines the human capital investment decision motivation for migration with an equilibrium model in which individuals sort across states based on demand for their particular type of human capital and state-specific amenities. Results suggest that self-selection of higher educated individuals leads to upward biases in estimated state-specific returns to college. Diamond (2016) estimates a structural spatial equilibrium model to study the causes and welfare implications of increased skill sorting. The findings suggest that although local demand changes were the drivers of migration, a higher share of college graduates led to endogenous increases in local productivity and improved local amenities that caused more in-migration, driving up local rents. This increased spatial sorting and led to an increased inequality in well-being between college and high school graduates.

Several studies combine these two foundational approaches and build in a micro-level dynamic location choice feature into spatial equilibrium models. These dynamic general equilibrium models of migration explicitly consider the sources of the spatial wage gap and their effects on net and gross migration. They also allow for different types of spatial barriers, such as labor reallocation frictions

¹⁴ Roback (1982, 1988), Hoehn et al. (1987), and Blomquist et al. (1988) develop hedonic models to derive estimates of quality of life. Unlike earlier work that uses prices to infer location-specific attributes and utility, the Rosen-Roback framework emphasizes that it is critical to account for the impact of amenities on income in hedonic models. Amenity-rich areas will experience net in-migration, which lowers wages and raises prices of local goods and services and land, other things equal. In equilibrium, utility is spatially invariant, with zero consumer and producer surplus. Bishop and Murphy (2019) discuss the potential bias in the static approach and how to implement the dynamic approach in the hedonic model.

¹⁵ A more general version of the model (Roback, 1982, Section II) assumes fixed land but allows for the production of housing. After a local shock, workers adjust consumption of housing. Housing stock also increases, allowing for more workers in the city.

¹⁶ Glaeser and Gottlieb (2009) propose frameworks in which housing production uses both local labor and land. Moretti (2011) discusses models with heterogeneous labor, agglomeration economies, and multiple industries within each local economy and local multipliers.

and informational frictions. A particular focus of these models is understanding of migration as a mechanism to equilibrate across labor markets after local shocks in the longer term.

For example, Coen-Pirani (2010) develops a dynamic general equilibrium model that emphasizes the role of unobserved heterogeneity among individuals in migration decisions. The model characterizes the joint pattern of gross and net migration flows, where the former are driven by idiosyncratic match shocks and the latter are due to persistent productivity shocks. Workers move to locations hit by positive productivity shocks and learn their idiosyncratic match upon migration. These newly arrived workers are more likely to move than long-time residents because incumbents have chosen to stay due to relatively good idiosyncratic matches. The calibrated model can account for the fact that places with higher inflows of population also tend to have higher outflows, a feature of the data that is not explained by models of net inflows only. Incorporating idiosyncratic match effects with spatial equilibrium can also explain the similarity in age, education, and industry of incoming and outgoing workers, a feature which is not well-explained by a model of individual location choice with either observable worker heterogeneity or location-specific shocks alone.

Some recent spatial equilibrium models provide estimates of migration costs that are lower than the estimates found in KW. For example, Schmutz and Sidibé (2019) develop a dynamic migration model in which workers face spatial frictions in job search, in addition to migration costs. The model distinguishes between actual mobility costs and informational frictions, or “spatial frictions,” as the two occur at different stages in the migration process. Spatial frictions affect the frequency of job transitions, whereas migration costs affect the distribution of accepted wages. After controlling for frictions, the authors find estimated mobility costs that are an order of magnitude lower than reported in KW, about 18 months of work paid at minimum wage in French cities. Heise and Porzio (2019) develop a job-ladder model with worker reallocation across space and across firms to explore the wage gap between East and West Germany. The authors quantify three types of barriers: migration costs, workers’ preferences, and moving opportunities. Estimates suggest that moving costs between regions are about 3.4 percent of an individual’s lifetime earnings, or €17,000, again much smaller than the interstate moving costs estimated in KW. The model also shows that in a frictional labor market with productivity differences across locations, there might be a large spatial wage gap in equilibrium, even with relatively small moving costs.

Several papers use these models to investigate the longer-run role of migration in the dynamics of labor market adjustment after local shocks. Giannone (2017) develops a dynamic spatial equilibrium model with heterogeneous agents and selective migration to examine the causes of regional wage convergence and divergence. The model shows that the interaction between skill-biased technical change and agglomeration plays an important role in explaining the changes in cross-city wage convergence in the US after 1980. Amior and Manning (2018) combine the local equilibrium model with a dynamic migration equation to examine the persistent variation in employment rates across locations. The authors show that the population response to local demand shocks tends to lag behind employment, thus in the presence of the serial correlation in local demand shocks the migration mechanism cannot fully equalize economic opportunities across locations. Monras (2018) develops a general equilibrium dynamic model to evaluate the speed of convergence and the welfare consequences of the Great Recession. Calibration shows that with internal migration as the only mechanism dissipating local shocks, within 10 years the economy is back to the steady state. Bilal

and Rossi-Hansberg (2018) explore the mobility response to income shocks by incorporating the investment dimension in the location choice model. The model can explain why some individuals do not move out of low opportunity locations, even in the absence of mobility costs.

In the macro/trade literature, researchers have developed spatial equilibrium models with migration flows to examine the effects of shocks. For example, Dix-Carneiro (2014) builds a structural dynamic equilibrium model to study how the labor market adjusts to trade liberalization. The author finds that the large costs of mobility seem to be an important factor in the slow adjustment of the labor market, which lowers the potential aggregate welfare gains from trade. Lyon and Waugh (2018) suggest that a progressive tax system reduces the migration incentives for insurance as an economy opens to trade. Thus, the optimal degree of tax progressivity must balance the gains from social insurance versus the losses in allocative efficiency due to less migration. Carneiro, Dvorkin, and Parro (2019) use a dynamic spatial trade and migration model to estimate the welfare and employment effects of trade shocks. The authors find that the effects vary across location, owing to trade and migration frictions.

Despite the considerable progress described above, there are still many open questions for theory to address. First, while unobserved and potentially very large costs might help explain migration rates that are low relative to the potential earnings gains from migration, different models imply substantively different estimates of the size of these costs. Future research could continue to address this question by explicitly including specific moving barriers and general labor market frictions into these models and accounting for the dynamic structure of the unobserved migration incentives. Second, further efforts to incorporate heterogeneity in preferences and skills among workers in models of migration decisions would be worthwhile. For example, what are the underlying factors for the unobserved idiosyncratic shocks that determine individual location choice? How do institutional settings such as social insurance programs affect migration motives? Relatedly, migration is much less common at certain stages of the lifecycle, and changes in preferences or the arrival of shocks at different life stages should be explored in future models, as noted in Greenwood (2015). Finally, as the number of outcome and location states increases, estimation of dynamic models is computationally challenging. Improved quality of longitudinal microdata and increased computational capacity might enable full implementation of these dynamic models and thus uncover important structural parameters in migration decisions.

III. Causal Impacts of Migration on Individual Outcomes: Reduced Form Evidence

The models discussed in Section II help us formalize expectations for migration patterns. They also allow for structural estimation of the parameters assumed to govern the migration decision. At its core, this approach assumes that individuals choose to migrate when there is an opportunity to improve their overall welfare by doing so.

This means there are challenges to causally attributing post-migration changes in outcomes to migration itself, since migrants may differ from non-migrants in ways that account for some or even all of any subsequent changes in earnings or other outcome differences. As discussed in Section II, there have been efforts to derive structural estimates that address this concern, but another way to learn about the causal consequences of migration is to use reduced form techniques to study

episodes of exogenous or quasi-exogenous migration. A few policies result in a strong version of exogenous location choice, like location assignment of early career military families or refugee resettlement, in which national assignment systems choose destinations for refugee families. Other examples include migration in response to natural disasters that make previous residences uninhabitable or direct subsidies of migration.

Such episodes offer an opportunity to learn what happens to aspects of welfare after an exogenous relocation. The core models suggest that welfare should decline; otherwise, a different location would have been chosen *ex ante*. However, many of the available studies find economically large positive impacts on outcomes, suggesting exogenous migration might causally increase welfare in some cases. These studies therefore offer insights into possible limitations of existing models.

Migration that results from displacement or assigned relocation arguably identifies a treatment effect of migration, since it provides a means of controlling for unobservable differences between migrants and non-migrants. Studying such episodes can help answer the question of whether *facilitating* migration might improve outcomes for those who would otherwise have stayed in place. These studies tell us about the potential role for frictions in preventing optimal location choice, which is relevant for understanding why at times we observe incomplete adjustment in response to shocks. We can also learn about the range of treatment impacts of migration, which are likely to contain substantial heterogeneity. Understanding this heterogeneity is particularly important for evaluating policies that might incentivize migration, as discussed in the final section of this paper.

III.A. Causal Impacts of Migration on Employment and Earnings

We begin by reviewing studies of earnings outcomes following arguably exogenous long-distance relocations. More recently, researchers have begun to analyze the impact of migration on other outcomes—namely, health, intergenerational mobility, and marriage—using similar strategies. We review these in the next subsection.

Several studies using this approach focus on earnings trajectories following a relocation after a natural disaster. Deryugina et al. (2018) document Hurricane Katrina’s immediate and longer-run effects on a variety of outcomes for New Orleans–area residents. Among other changes, they find a large spike in migration—30 percent of residents changed cities in 2005—followed by incomplete return to the city. About 10 percent of residents still lived elsewhere after almost 10 years. They find a long-run increase in earnings for New Orleans households that were less affected by the storm, but this increase is about 24 percent larger for households that did not return to the city, compared with controls from other cities. This estimate of the earnings gap does not have a causal interpretation, since the choice to return was endogenous, but it suggests that displaced residents found significantly better earnings opportunities outside New Orleans, which they had not taken up before the storm.

Groen et al. (2020) echo these findings in their research on the same context. In their analysis, residents of even the most damaged neighborhoods also ultimately had long-run earnings that exceeded those of residents in comparable counties. On the other hand, the post-Katrina earnings of more damage-affected residents trailed those of New Orleans households that were less affected. This suggests that the most disrupted households did not benefit from the relative labor supply and demand shifts that raised earnings for New Orleans stayers compared with those of residents of

other cities. However, the long-run earnings gains for more damage-affected residents (who were more likely to move away from New Orleans) relative to the comparison group is potentially consistent with unrealized gains from relocation.

Nakamura et al. (forthcoming) study a similar catastrophic event, a volcanic eruption in Iceland that destroyed about 30 percent of one town's housing stock. Like the New Orleans studies, their finds modest reduced form increases in earnings for those in the neighborhood most disrupted by the volcano. The authors depart from the New Orleans studies in their use of initial residential location to instrument for moving out of the town. They report IV estimates an order of magnitude larger than the reduced form estimates: an increase of over \$25,000 per year in labor income (\$2014) for IV-movers versus an increase of \$3000 for those with destroyed residences. This is driven by very large increases for a small number of younger movers, a group they argue is most likely to benefit from a significant change of occupation enabled by the move. They also find higher earnings for the children of movers. Although the IV estimates of annual earnings increases for movers are very large, the reduced form estimates are similar in magnitude to reduced form estimates from the Katrina context, based on prior residence in the most damaged neighborhoods.

Studies exploiting natural disasters as identifying variation have provided necessary insight into the causal effects of migration, because programs that encourage long-distance moves are unusual. Briggs and Kuhn (2008) evaluate one early long-distance moving subsidy intended to assist with re-employment. They study Kentucky's Relocation Assistance Program (RAP), which offered households with a welfare recipient up to \$900 in support for relocation expenses if they accepted a job offer more than 10 miles from their current residence.¹⁷ One-third of program participants moved across county or state lines. Using an instrument for program advertisement intensity at the welfare office level, Briggs and Kuhn find the program substantively increases employment rates. Earnings also increase for recipients, but likely through the employment channel alone.

The military offers another context in which to study the causal impact of relocation. Using a large sample of spouses who relocated with a military partner assigned to a new location, Burke and Miller (2018) examine the short-run earnings impacts of exogenous relocation on earnings. They find that spouses who relocate experience a decline in earnings in the year of the move, on the order of 14 percent of mean earnings. This falls to 3 percent of mean earnings by two years after a move. The short-run impacts are consistent with those in the Katrina studies, as is the short-run trajectory, but the data do not permit these authors to estimate a longer-run impact.

Despite focusing on very different contexts, these studies find similar reduced form earnings impacts of a strong incentive to migrate. More work is needed to understand distributional differences that might be behind these impacts. Is it the case, as in the Nakamura et al. evidence, that a small number of individuals with high positive outcomes drive these changes? Or are positive changes common? In either case, how often do migrants suffer net losses? How large are these, and are they undone by return migration?

¹⁷ They note that a similar program operated in Tulare County, CA, but that records from that program are too incomplete to allow an evaluation.

Table 1: Effects of Disruptive Location Shocks or Moving Incentives from Reduced Form Approaches

Paper	Study population	Shock	Gross change in outcomes	Main reported effects
Briggs and Kuhn (2008)	Kentucky welfare recipients in 1996–2008	Relocation Assistance Program payment, conditional on ex ante job offer	SR earnings (n.r.), employment (n.r.); LR earnings (+); employment (+)	10% increase in RAP advertising > 2.68 percent increase in employment (1 pp increase in employment rate), similar uncond. earnings elasticity
Deryugina et al. (2018)	New Orleans residents, 1998–2013	2005’s Hurricane Katrina	Full sample SR earnings (-), employment (-); Full sample LR earnings (+), employment (o); Movers relative LR earnings (+), employment (-)	30% of all NO residents left city, about 10% permanently; by 2013 non-returners’ earnings gain was 24% higher than unaffected stayers’; residents of most damaged neighborhoods had long-run earnings gains rel. to controls, more modest rel. to less affected NO residents
Groen et al. (2020)	New Orleans residents 2003–2012	2005’s Hurricane Katrina	SR earnings (weakly -), employment (-); LR earnings (+); employment (o)	Most affected NO residents earn (more likely to move) earned \$535 (\$2005) more than non-NO controls by 2012; less affected NO residents earned \$772 more.;
Nakamura et al. (forthcoming)	Residents of Iceland’s Westman Islands who were under	Lava flow destroyed 30% of town residences	SR earnings (n.r.), employment (n.r.);	For those younger than 25 in 1973, reduced form average

	age 25 in 1973 and their children.	over several months	LR earnings (+); employment (n.r.)	lifetime annual earnings increase of \$3000-\$3500 (\$2014); IV increase of approx. \$27,000. For those older than 25, reduced form effects are zero and IV modest and negative but imprecise.
Burke and Miller (2018)	Civilian spouses of US military members, 2000–2012	Military spouse assigned to new duty station	SR earnings (-), employment (-); LR earnings (n.r.); employment (n.r.)	Year of move earnings decline of 14%; 2 years after move, decline is 3%

Notes: Citations available in references. The “gross change in outcomes” column indicates the direction of changes to unconditional earnings and employment in the short- and long-run after the shock in column 3. (+) indicates a statistically significant increase, (-) a statistically significant decrease, and (o) no detectable change; “n.r.” indicates results not reported for the outcome. Short-run changes are 0–2 years after the shock in column 3, long-run are 2 or more years after. More details on the main effects reported in each paper can be found in the text and column 5.

III.B. Causal Impacts of Migration on Other Outcomes

Using similar methods for identifying migration impacts, a number of papers explore the causal impact of migration on outcomes beyond earnings and employment. These include health, marriage, and intergenerational mobility. Models of the migration decision have little to say about these specific outcomes, as they typically focus on a general concept of welfare or earnings and employment. By focusing on migration’s relationship to other components of welfare, these studies reveal more about the decision-making process and consequences around migration.

Building directly on the approach in Deryugina et al. (2018), Deryugina and Molitor (2020) examine health changes following Hurricane Katrina. They compare cohorts of older New Orleans residents at the time of the hurricane with control cohorts living elsewhere, as well as comparing within groups of displaced New Orleans residents. They find that in the seven years following the storm, mortality for New Orleans residents declined markedly. They attribute much of this decline to migration out of New Orleans, which had one of the highest rates of elderly mortality in the US at the time. Specific destination was also important. They further show that observable characteristics are not predictive of destination, but destination health (mortality) reduces long-run mortality of migrants.

This is approximately the same mechanism studied by Finkelstein et al. (forthcoming) in the broader context of elderly US adult movers. They quantify location-specific variation in life expectancy and show that selection-corrected moves to higher-scoring places raise life expectancy for movers. By contrast, Black et al. (2015) find that the Great Migration of Black Americans to northern cities worsened health. Specifically, those born in counties with greater Black out-migration due to railroad placement experienced earlier mortality than those born in other counties.

Taken together, the studies of health outcomes following migration indicate the importance of the wider context at the origin and destination locations. Clearly, migration alone does not improve health. Instead, the full spectrum of institutions and community structures at both ends of a move contribute to a complex outcome like mortality. Future advances in this literature will require investigating the mechanisms by which economic, social, and institutional context contributes to health, as well as whether and how migrants are able to access these.

A well-known set of papers by Chetty, Hendren and co-authors provides another set of striking findings on moving and intergenerational earnings mobility. Chetty and Hendren 2018a and 2018b focus on longer-distance moves across commuting zones or counties.¹⁸ These companion papers demonstrate that such moves have causal impacts on later life outcomes for children. The papers explore mechanisms for this phenomenon. Specifically, the 2018a paper reports results using multiple identification strategies to identify causal impacts of migration in childhood. The results show that each year of childhood exposure to a new commuting zone leads to greater convergence between that child's adult earnings outcomes and those of original commuting zone residents. This means that children who relocate at younger ages experience more convergence. Strikingly, convergence holds at the distribution level, not just the mean or median. The 2018b paper examines destination (county) characteristics that predict higher adult earnings, ultimately generating predictions for “opportunity bargains”—counties that, under the causal impacts identified in 2018a, would lead to the greatest adult earnings outcomes for children at the lowest housing cost. Looking at a very different context, Shoag and Carollo (2020) find that the internment of Japanese-Americans during WWII had long-term effects on internees' earnings trajectories. Those interned near places with higher post-WWII earnings had higher earnings in 1980, well after internment. Other outcomes, like home value and educational attainment, were also higher. However, the authors' analysis does not provide separate estimates for older and younger internees, so it is difficult to know if these results are broad.

Although Chetty et al. (2014) and Chetty and Hendren 2018b examine correlates of improved adult outcomes, the mechanism by which neighborhood or county influences children's adult outcomes is not fully clear. Rothstein (2019) investigates one such mechanism: educational outcomes potentially attributable to local schools. He finds they do not play a large role in raising child earnings in high

¹⁸ Other papers by this team examine moves out of narrowly defined neighborhoods, which may or may not be long distance. Chetty et al. (2014) documented substantial spatial variation in intergenerational income mobility in the United States. Specifically, the paper examined the intergenerational correlation between income rank at middle age for adults born between 1980 and 1982 in the US with income rank at the same age for their parents, as observed in dependent claiming in tax returns. The paper also identified correlates with this variation and documented publicly available data aggregates generated for the analysis. Chetty et al. (2016) examined adult earnings outcomes for children who were part of the 1990s Moving to Opportunity (MTO) demonstration project. MTO vouchers incentivized moving across neighborhoods but not over long distances (across metro areas).

mobility commuting zones. Instead, he identifies a large potential role for broadly defined local labor market characteristics and for local marriage propensity. Both factors remain something of a black box, but Rothstein's analysis represents a useful step towards identifying mechanisms behind the relationships in the Chetty and Hendren papers.

Going a step further, Gallagher et al. (2019) consider the external validity of the Chetty and Hendren approach. Gallagher et al. use data on individuals and households that are more detailed than those originally available to Chetty and Hendren. They find that movers differ from non-movers on basic observables, even conditional on narrow location in the income distribution. Moreover, movers who relocate to areas with higher intergenerational mobility also differ from those who move to lower-opportunity areas. Gallagher et al. express reservations that the impacts on movers identified in Chetty and Hendren (2018a) in particular will generalize to a broader group of movers. Finally, Derenoncourt (2019) shows that although Black residents of northern cities had better earnings and education outcomes than similar southern residents at the outset of the Great Migration, these advantages dissipated after migration led to large increases in local Black populations. This raises the question of whether the gains in intergenerational earnings achieved by individual migrants would hold for more systematic migrant waves.

Future work should continue to examine whether and under what conditions migration can raise intergenerational earnings mobility. As is the case with the health impacts of migration, the intergenerational mobility impacts available so far depend importantly on broader context. Additional research can help us understand what causal connections between migration and outcomes might be relatively generalizable.

Ongoing work should also focus on two other matters. First, there is the question of whether migration and other significant outcomes are causally linked. A broader set of causal studies can shed light on the mechanisms that generate migration or vice versa. Examples of these are limited, but Malamud and Wozniak (2012) show that college attainment causally increases long-distance migration. They point to a role for general human capital rather than "learning-by-doing" through distant college attendance. Carter and Wozniak (forthcoming) show that marriage causally increases around exogenous moves among Army soldiers, and this increase is largely independent of relative destination characteristics. They suggest that the evidence is relevant for broader civilian populations and consistent with a model of costly decision-making around major life decisions, or investments. Kosar et al. (forthcoming) use an elicited choice probabilities approach to study the determinants of the migration decision. Their survey-based choice experiment approach allows them to study the relative roles of employment opportunities, amenities, and personal connections in preferences for a long-distance move.

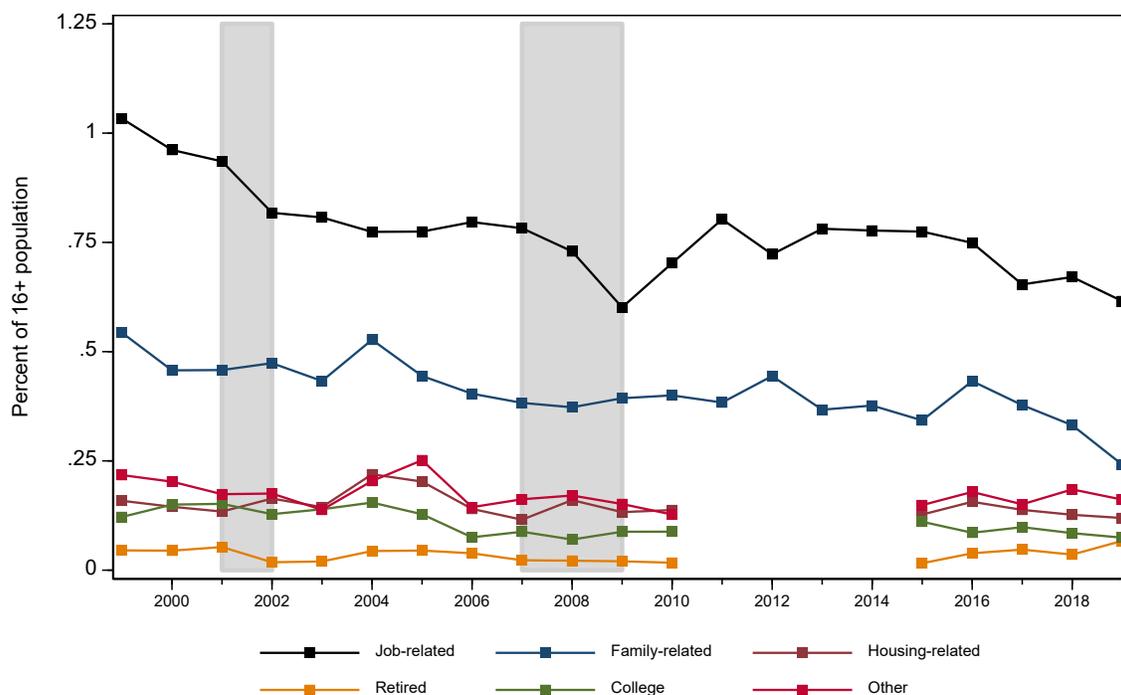
Second, future work should investigate a broader set of general equilibrium effects that go beyond equilibrating wages and earnings. This area of research links the causal studies in this section to models reviewed earlier and can potentially shed light on whether gains in welfare parallel gains in earnings (or not). Such studies are essential to understanding whether the locally identified impacts on migrants from the causal studies are likely to hold for a broader set or larger groups of migrants. Derenoncourt's 2019 paper is a major contribution in this area, as is Gelbach (2004), but more are needed.

IV. Migration and Local Labor Market Adjustment: The Next Generation

The net migration response to a labor demand shock—and, more broadly, the mechanisms through which local labor markets adjust to a shock—has received much attention from economic researchers during the past several decades, in part because of its implications for long-run growth, macroeconomic fluctuations, and dispersion in household welfare across locations. Indeed, the topic of migration and labor market adjustment has arguably developed into its own distinct sub-literature. As highlighted by some models in Section II, the net labor market benefits from moving to a new location (e.g., higher wages, potential for a better match with employers) relative to pecuniary and non-pecuniary moving costs are a key determinant of migration decisions. Thus, an adverse labor demand shock in some areas *should* induce migration away from these areas towards areas with relatively stronger labor markets (and the reverse for areas experiencing booming labor markets). Consistent with labor market considerations' being a key driver of migration decisions, Figure 3 shows that work-related explanations are the most common reason given for cross-state moves from adult (25+) respondents to the Current Population Survey. Further, the decline in cross-state migration as measured in the CPS over the last few decades is attributable primarily to a decline in work-related mobility. This suggests that the decline in longer-distance migration is likely linked to labor market-related factors—related to a worker's ability or desire to change jobs, and possibly also locations—which is a point developed in more detail in Molloy et al (2017).¹⁹

Figure 3. Self-Reported Reasons for Moving across State

¹⁹ Molloy et al (2017) show that the decline in longer-distance internal migration and job switching has been broad-based across demographic groups, industries, and occupations. They argue that the decline in job switching and job-related migration may be related to rising costs of separating from employment or switching jobs (e.g. greater importance of firm-specific capital, which would be lost upon a job change) and/or declining benefits from switching jobs (e.g. wages are more similar across employers or initial matches are of higher quality). In part related to this class of explanations, Kaplan and Schulhofer-Wohl (2017) argue that greater availability of information on alternative locations may alleviate the need for migration related to location-sampling. Also, Johnson and Kleiner (2020) suggest that the rise in occupational licensing, which makes it more difficult to switch occupations, may have also had a small role in explaining the decline in migration.



Note: Authors' calculations from the Annual Social and Economic (ASEC) supplement to the CPS, as provided by IPUMS (see Ruggles et. al. 2021); since respondents report migration over the previous year, and the ASEC is administered in March, the data plotted in the figure are lagged by one year (e.g. the 2018 survey is plotted as 2017). Estimates are for 16+ population, and respondents with imputed values are dropped. NBER recessions are shaded. Job-related reasons include new job or job transfer, looking for work or lost job, easier commute. Family-related reasons include change in marital status, establishment of own household, or other family reason. Housing-related reasons include wanting to own home and not rent; new, better, or cheaper housing; other housing-related reason. Other includes change of climate, health reasons, other reasons, natural disaster. Due to potential issues with survey responses for migration reasons other than job-related and family-related in the 2011-2015 ASEC, we drop these years for affected categories of migration; for more information, see: <https://www.census.gov/programs-surveys/cps/technical-documentation/user-notes/geographic-mobility-user-notes/2019-01.html>.

An influential 1992 paper by Blanchard and Katz (henceforth BK) was supportive of the notion that net migration was a key mechanism through which local labor markets adjusted to a shock. BK used data from 1978 to 1990 from the Current Population Survey to show that a shock to employment growth in a state (measured as deviation in annual state employment growth from national employment growth) led to a persistently lower employment *level* on average, with no persistent effects on employment *rates* (either the unemployment or labor force participation rates). Although BK did not directly measure the effect on net migration (since they lacked administrative data on migration flows that became more accessible only later), the lack of persistent effects on the employment rate, coupled with the persistent effect on the employment level, suggested that net migration must have responded to the shock. Moreover, their findings suggested a rapid migration response: in the first year of the shock, a decrease in employment of one worker led to on average

an increase of 0.3 unemployed workers, a decrease of 0.05 individuals in the labor force, and therefore an increase in net out-migration of 0.65 workers.²⁰

These findings appear consistent with the canonical models discussed earlier—following labor market shocks, people move from less prosperous to more prosperous areas—and proved to be influential in informing a general understanding that (a) local labor markets were fairly flexible (at least in the medium run) and (b) migration was the primary channel through which this adjustment occurs. And although BK focused on a two-decade period, the findings seemed broadly consistent with US experience during earlier periods of large regional differences (e.g., the Dust Bowl—see Hornbeck 2012—or the migration of African Americans from south to north and west during the Great Migration of the early to mid-1900s) as well as with general income convergence across US regions through the 1980s (Ganong and Shoag 2017).

However, subsequent developments and research have challenged this view and helped shape a more nuanced understanding of migration's role as a factor in cross-labor market equilibration. First, following large, adverse labor demand shocks since the early 1990s, the US experience has been inconsistent with the conventional view. Studies of the effects on the US labor market of Chinese import penetration and the Great Recession demonstrated slow and incomplete local labor market adjustment in areas that were disproportionately affected, with large and persistent effects on local employment and participation rates and small effects on population adjustment via migration (on the labor market effects of Chinese imports, see Autor et al. 2013; on the Great Recession, see Yagan 2019). Next, a growing body of research suggests that labor market outcomes (e.g., employment rates and income) have stopped converging or have diverged across US states and cities over the last few decades, inconsistent with the idea of internal migration as an effective reallocation mechanism (Amior and Manning 2018; Austin et al. 2018; Ganong and Shoag 2017). Finally, cross-labor market migration within the US has fallen over the past few decades (Molloy et al. 2011, 2017). Depending on the causes of declining migration, this trend could either be a reason why local labor markets adjust differently to shocks than in the past (barriers to mobility make moving in or out of a location difficult) or a reflection of how adjustment margins have changed for other reasons (migration decisions are less responsive to shocks than they used to be, because of structural changes that have allowed other margins to be more responsive; for example, liberalization of disability insurance may have facilitated movement out of the labor force for some displaced workers).

Dao et al. (2017) revisit the key ideas from BK and show more directly that the nature of local labor market adjustment to demand shocks has changed in the last few decades—and that the diminished responsiveness of net migration is a key reason for the change in how local labor markets adjust. The authors take a similar approach to BK by estimating adjustment margins at the state level's response to demand shocks. However, they extend the BK sample with an additional 20 years of data and make other methodological innovations, including using administrative data on migration flows instead of inferring population adjustment from CPS-based measures. Among the many useful contributions of this analysis is a demonstration that after 1990, the net migration response to

²⁰ Even at the time BK was written, however, there wasn't complete agreement on the relative importance of the migratory channel. Bartik (1993), for example, argued that adjustment on the labor force participation margin was greater than what BK found.

a state-level demand shock has been smaller on average than in earlier periods, and the response of the unemployment and labor force participation rates is larger. Hence, one way to reconcile the BK findings with the more recent conflicting evidence on local labor market adjustment and regional divergence is that migration was more important as an equilibrating mechanism from the 1970s through the early 1990s (the period in the BK sample) and has recently become less important.²¹

Consistent with this more recent understanding, Foote et al. (2019) show that before 2007, counties that experienced a mass layoff generally adjusted employment levels via out-migration; after 2007, the out-migration response became less important, and the labor force participation rate was the primary mechanism of adjustment. Similarly, Partridge et al. (2012) use a Bartik shock as an instrument for local demand shocks and show that county population growth and net migration were less responsive to a demand shock in 2000–2007 than in 1990–2000. Also supporting the minimal importance of migration as an equilibrating mechanism over the past few decades, Molloy et al. (2019) show that in less prosperous metro areas, outflow rates were on average no greater than in more prosperous areas.²²

As this latest generation of research on local labor market adjustment has suggested that migration is less responsive than previously thought, some other consistent and important findings have also emerged. For one, migration into an area appears to be more responsive to labor market shocks in the receiving area than migration out of an area is to shocks in the sending area (Monras 2018; Yagan 2019; Howard 2018; Bartik 2018). Relatedly, migration decisions appear to be more responsive to positive shocks than to negative ones (Dao et al. 2017 and Notowidigdo 2020). Consistent with these generalities, the out-migration response in areas most affected by increased Chinese imports was relatively small, while the in-migration response to strong labor demand from the fracking boom in the early 2000s was relatively large.²³

Another common theme in recent research on internal migration is that across socioeconomic characteristics, there appears to be significant heterogeneity in how likely individuals are to move in response to changing labor market conditions. For example, more-educated and younger individuals are more likely to move in response to a shock than less-educated and older individuals (Bound and Holzer 2000, Molloy et al. 2019). Some recent evidence (Notowidigdo 2020) suggests this may be because social welfare and/or transfer payments disproportionately compensate less-educated and lower-wage workers for their decline in earnings. These individuals may also be less mobile because the earnings impact of adverse labor market shocks appears to dissipate more quickly for less-educated workers, perhaps reducing their need to move after a shock (Wozniak 2010). Also, while the migration decisions of *native* (non-foreign born), less-educated populations appear relatively non-responsive to local shocks, some evidence suggests foreign-born, less-educated populations are

²¹ That said, Dao et al. (2017) also show that even when using the same years of data as in BK, migration is somewhat less responsive than in BK estimates once certain methodological adjustments are made (specifically, addressing the endogeneity of state-level demand shocks and directly measuring migration flows).

²² The literature on how natives' internal migration responds to immigration inflows is related to internal geographic equilibration. See Card and DiNardo (2000) and Card (2001) for evidence that internal migration is relatively non-responsive to foreign inflows, and Borjas (2006) for some counter-evidence; Piyapromdee (2021) is more recent evidence documenting heterogeneity in natives' migration response to in-migration.

²³ On the out-migration's responsiveness to the China shock, see, for example, Autor, Dorn, and Hanson (2013) and Autor, Dorn, Hanson, and Song (2014). On the responsiveness of in-migration to the fracking boom, see Bartik (2018) and Wilson (2020a, 2020b).

much *more* mobile (Cadena and Kovak 2016). These findings are also consistent with general correlations elsewhere, which have noted lower overall levels of mobility for older and less educated individuals (e.g., Greenwood 1975).

Returning to figure 3, we see that the bulk of the decline in cross-state migration over the last two decades is attributable to a decline in job-related migration—consistent with migration’s changing responsiveness to labor market shocks and declining importance as an equilibration mechanism, as highlighted by many of the studies described in this section. That said, key motivating questions for research going forward are *why* labor markets adjust differently following a shock than they used to, and whether this *reflects* declining internal migration due to other factors or is instead a *cause* of declining internal migration.

V. The Influence of Housing Market Features and Policies on Migration

Because moving to a new location requires moving to a new home, migration choices are intertwined with housing choices. Consequently, migration research has devoted considerable attention to how various features of housing markets and policies affect the costs of migration. One active area has focused on frictions related to homeownership or mortgage markets, which are potentially important contributing factors to the migration costs discussed in Section II. Another active area has examined the effects of land use regulation, which can increase the cost of migration by raising housing costs in supply-constrained areas relative to other areas. A third strand of research has examined how the durability of housing can reduce the incentive to move out of areas with low housing demand, effectively increasing the cost of moving to other locations relative to that of staying.

V.A. Frictions Related to Homeownership and Mortgage Markets

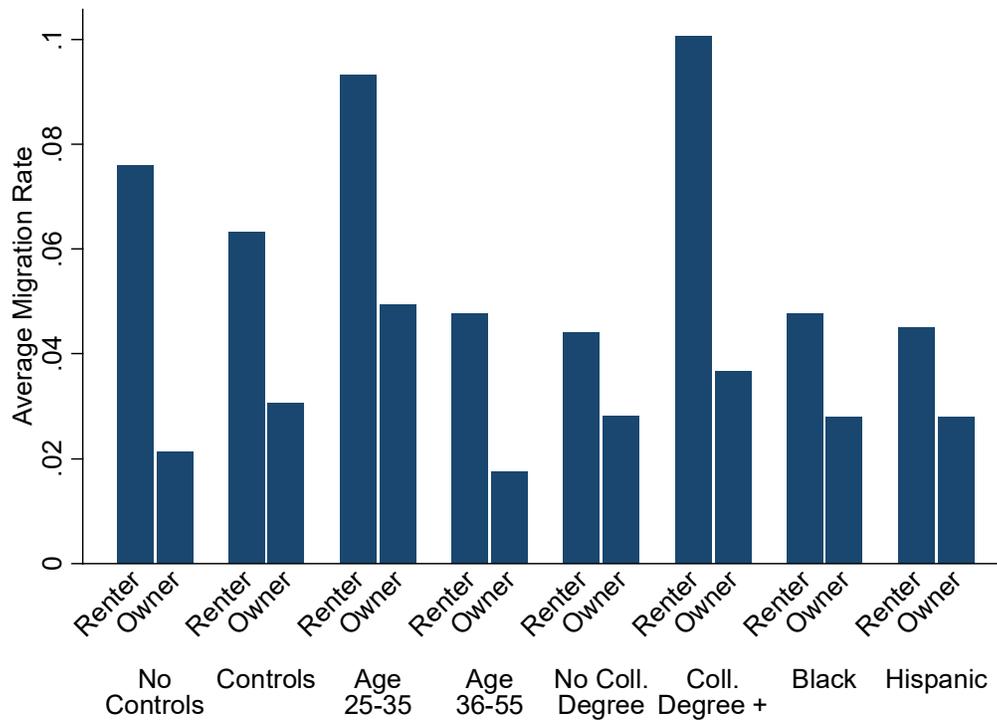
The costs of buying and selling homes—including realtor fees, transfer taxes, and fees required to take out a new mortgage—mean that the cost of moving is generally higher for homeowners than it is for renters. Perhaps because of these costs, homeowners tend to move much less frequently than renters (Molloy et al. 2011; Coulson and Fisher 2009). Figure 4 illustrates this large difference in migration rates. As shown by the first set of bars, in 2019 only about 2 percent of homeowners had moved across metropolitan areas within the previous year, whereas about 7½ percent of renters had made this type of move. However, this difference may reflect many other factors in addition to the costs of homeownership. For example, homeowners tend to be older, and older people move less often. Perhaps surprisingly, the second set of bars in the figure shows that the difference between homeowners and renters remains large even after controlling for a wide variety of demographic and socioeconomic characteristics including age, education, marital status, military status and veteran status.²⁴ The remaining sets of bars in Figure 4 show that large migration differences between homeowners and renters are prevalent within many demographic groups. Thus, the lower migration

²⁴ Specifically, we estimate a linear probability model with indicators for the following characteristics: five age categories, sex, school enrollment, four educational attainment categories, four race/ethnicity categories, being married, being separated, being divorced, the presence of children under 18, the presence of children interacted with marital status, veteran status, unemployment, not being in the labor force, self-employment, not being a citizen, being naturalized citizen, having been born abroad, and employment in the military. Most of these controls are statistically significant.

rate of homeowners is widespread across demographic groups and does not appear to be attributable to demographic and socioeconomic characteristics that are correlated with homeownership.

That said, it is difficult to control for all other possible factors that would lead to migration differences between homeowners and renters. For example, a person who plans to stay in an area for a long time could be more likely to purchase a home in the area, and migration expectations are difficult to observe. Botsch and Morris (forthcoming) find that assistant professors with a lower probability of obtaining tenure, and therefore higher probability of needing to move, are less likely to be homeowners. Oswald (2019) calibrates a life cycle model of location choice to migration across the nine US Census divisions. Even after accounting for the unobserved heterogeneity that would affect both housing tenure and mobility, he finds that migration costs are higher for homeowners than for renters and that removing these higher migration costs would raise aggregate migration by 5 percent.

Figure 4. Inter-metropolitan Migration Rates of Homeowners and Renters in 2019



Note. Statistics are for household heads ages 21 to 60 in the 2019 American Community Survey. The bars labeled “controls” show average migration rates after controlling for the following characteristics: age, education, marital status, employment status, race, ethnicity, veteran status, military status, self-employment status, citizenship, presence of children under 18 living in the home, and presence of children interacted with marital status. Specifically, we regress migration on these characteristics, then compute the average residual for homeowners and renters separately by the subsamples shown. The remaining bars show the average residuals for renters (homeowners) in each demographic group added to the average migration rate for that group.

A large literature has examined the effect of homeownership on migration by looking for indirect effects on labor market outcomes. As prominently argued by Oswald (1996), the migration costs associated with homeownership will prevent homeowners from moving to take new jobs, raising the likelihood that homeowners will be unemployed. Oswald and others have examined the correlation between homeownership and unemployment, generally finding that countries or regions with higher homeownership have higher unemployment (Belot and van Ours 2001, Green and Hendershott 2001, Partridge and Rickman 1997). Of course, many other factors could generate this relationship. Subsequent studies have tried to address this endogeneity problem in various ways, and most find evidence inconsistent with the hypothesis that homeownership raises unemployment. Munch et al. (2006) use individual fixed effects in Danish panel data and find that although homeownership reduces job finding in other local labor markets, job finding within the same local labor market increases. On net, they find that homeownership is associated with *shorter* periods of unemployment. Consistent with this result, Coulson and Fisher (2009) find that homeowners are *less* likely to be unemployed, while Taskin and Yaman (2019) find homeowners are more likely to find a job than renters are.²⁵ Meanwhile, Broulikova et al. (2020) predict homeownership from variation in privatization of public housing in central and eastern Europe and find no evidence that homeownership raises unemployment. One study that finds a positive effect on unemployment is Ringo (2020), which predicts an individual's homeownership status with the ownership rate in the county and time period when the person grew up and finds that homeownership lengthens unemployment spells by about 50 percent. On balance, the evidence suggests that homeownership itself is not a major factor that prevents people from moving to take a new job, although it is possible that growing up in predominantly homeowner areas does influence job-related mobility later in life.

Beyond looking at the effect of homeownership in general, researchers have begun to examine specific homeownership-related frictions that may depress migration. A potentially large one occurs when the value of a home falls below the amount owed on the mortgage—often called “negative equity.” In this case, in order to sell the home, the owner must either use funds from another source to repay the mortgage or convince the lender to accept less than the full mortgage amount. The large house price declines experienced in the late 2000s caused many homes to enter negative equity, generating much interest among academics and policy makers concerning its effects on migration.

The strongest evidence of negative equity's negative effect on migration was presented by Ferreira et al. (2010, 2012), who find that having negative equity reduces migration rates by one-third. Other papers that find similar results include Bloze and Skak (2016) and Andersson and Mayock (2014). However, negative equity does not reduce the probability of all types of moves. It has been shown

²⁵ Coulson and Fisher (2009) predict homeownership using the facts that families with more children are more likely to be homeowners and families in which the two oldest children are the same sex are more likely to have additional kids. Taskin and Yaman (2019) predict homeownership using state-level land use regulation, which they show raises the price-to-rent ratio and reduces homeownership.

to increase the probability of an involuntary move by raising the probability of foreclosure (Andersson and Mayock 2014, Coulson and Greico 2013, and Bricker and Bucks 2016).

The labor market implications of this migration friction depend on whether it dampens job-related migration. The long-run returns to moving for a job may be greater than those for other types of moves, so homeowners in negative equity may be more likely to move for job-related reasons than for other ones. After all, owners with homes in negative equity still can move by paying the bank the difference between the sales price and the mortgage amount, short-selling, entering foreclosure, or renting out the home. Demyanyk et al. (2017) construct a dynamic model in which negative home equity is not a significant barrier to job-related mobility, because the benefits of moving for a job outweigh the costs. Because most job-related moves tend to occur across local labor markets rather than within the same labor market, empirical research in this area has distinguished between effects on longer-distance (across local labor markets) compared with shorter-distance (within labor market) migration. Brown and Matsa (2020) find that people living in ZIP codes that experienced large house price declines during the Great Recession were less likely to search for jobs in other labor markets than people who did not experience such price declines. However, studies examining actual migration outcomes have generally found that negative equity does not appear to reduce interstate migration (Coulson and Greico 2013, Foote 2016). And while Modestino and Dennett (2013) find negative equity has a statistically significant negative effect on interstate migration, the magnitude is very small compared with the average migration rate. Also, Valetta (2016) finds no evidence that house price declines increase the duration of homeowners' periods of unemployment relative to that of renters, as one would expect if house price declines put owners in negative equity and negative equity reduces job-related mobility. In sum, the empirical research is consistent with the idea that the benefits of moving for a job generally outweigh the extra migration frictions imposed by negative equity. Thus, negative equity does not appear to impose a material labor market friction, even though it creates an additional migration cost that reduces shorter-distance migration.

Another mortgage-related friction is that borrowers with fixed-rate mortgages face an increase in borrowing costs if the currently offered mortgage rate is higher than the rate on the borrower's current mortgage. Lee (2018) develops a model in which borrowers with a fixed-rate mortgage are locked in, while those with an adjustable rate are not; switching everyone to adjustable-rate mortgages increases migration. Empirically, Ferreira et al. (2010) find that mortgage rate lock-in reduces migration. In their study, every \$1000 by which a homeowner's annual mortgage payment would increase if they were to obtain a new mortgage at prevailing rates reduces migration by about 10 percent. Similarly, Berger et al. (2018) show that the probability of moving is lower when the mortgage rate is above the prevailing rate. Neither of these papers examine how these effects vary by distance of the move, so the implications for labor market frictions are unclear.

Other frictions stemming from homeownership have also been examined. Ferreira et al. (2010) find that a policy limiting property tax increases reduced homeowner migration, as people would no longer benefit from this property tax relief once they moved. Hilber and Lyytikäinen (2017) find that housing transfer taxes reduce homeowner migration over short distances but not long-distance migration.

V.B. Frictions Related to Land Use Regulation or Dispersion in Housing Costs

Housing markets can affect migration in many ways besides frictions imposed by homeownership and mortgage markets. One topic that has received growing attention is the role of land use regulation. Growth controls and restrictions on the number of building permits can directly reduce new residential construction, while a variety of other regulations can raise the price of housing. An increase in housing costs in more-regulated areas relative to those in less-regulated ones could reduce migration into the regulated locations. As regulations have become more restrictive over the past several decades and house prices have risen in the more-restrictive locations, researchers have become interested in how these changes affect migration.

Theoretical models can generate very large negative effects of housing supply restrictions on migration flows and consequently on aggregate productivity. An influential paper by Hsieh and Moretti (2019) develops a model that they calibrate to data on US cities. The model simulation suggests that relaxing housing supply regulations in New York, San Francisco, and San Jose to those of the median US city would raise aggregate GDP by 3.7 percent. Similarly, Herkenhoff et al. (2018) develop a model in which modest land use deregulation results in substantial increases in aggregate productivity, output, consumption, and investment. The models in both of these papers assume a Cobb-Douglas production function. Glaeser and Gyrouko (2018) point out that a Cobb-Douglas production function implies a very elastic labor demand curve, so that even very small wage differences across areas can lead to large shifts in the location of economic activity. Using a range of linear demand elasticities, they find smaller effects of the potential gains from labor reallocation. Ganong and Shoag (2017) emphasize that local regulations will not only affect only the number of migrants but also the types of people who choose to move. Specifically, they show that local land use regulations should influence the location decisions of low-skilled workers more than those of high-skilled workers, resulting in a slowdown of income convergence across space.

Empirical estimates of the effects of land use regulation are extremely difficult to identify because locations with more regulation tend to have stronger demand (Davidoff 2013). A related identification issue is that households tend to move between metropolitan areas with highly correlated house price movements (Sinai and Souleles 2013). Empirical evidence is mixed. Papers examining direct evidence on regulatory constraints tend not to find meaningful effects. For example, Zabel (2012) finds that the response of in-migration to a labor demand shock is not smaller in metropolitan areas with a lower housing supply elasticity. And Molloy, Smith, Trezzi and Wozniak (2016) find no evidence that labor market fluidity, of which interstate migration is one component, has declined more in states with stricter housing supply regulation. By contrast, Ganong and Shoag (2017) do find that income convergence across states has slowed much more for states with tight housing supply regulation, while convergence has continued for less-regulated states.

Although not tied to direct evidence on regulatory constraints, some empirical work has found evidence that high housing costs deter migration. Plantinga et al. (2013) find that high housing costs deter migration when they instrument for housing costs using characteristics of the local population. In their analysis, the estimated correlations of migration with house prices and apartment rents are positive, illustrating that the method of identification is important in obtaining the expected result. Barkema and Bayoumi (2019) instrument for house prices in a metropolitan area with income and house prices of metros within 200 miles, as well as house price and income differentials from 15

years earlier. They find that high house prices reduce migration from low price to high price metropolitan areas.

While most of the research relating migration to housing costs has focused on the effects of high housing costs, a few papers have investigated the role of low housing costs. Specifically, the durability of housing means that housing costs can become very low in locations with persistently low demand, thereby encouraging the local population to remain in the area instead of moving out in search of better labor market opportunities. Glaeser and Gyourko (2005) show that the durability of housing has caused the distribution of city growth rates to be skewed, as cities grow more quickly than they decline. They also show that negative local shocks decrease house prices more than population. Notowidigdo (2020) shows that in low-demand locations, low-skilled workers are less likely to leave than high-skilled workers, owing to both falling house prices and rising social transfers.

In summary, frictions stemming from mortgage markets and homeownership may reduce migration to some extent, but they do not appear to be an important drag on workers' ability to move across labor markets in response to changing economic conditions. However, housing costs do appear to play a role in long-distance moves, encouraging people to stay in low-demand areas and perhaps preventing them from moving into high-demand areas.

VI. Emerging Migration Policy Levers

Concerns about how to assist workers in places with slow economic growth have periodically led to discussions about whether policy should encourage such workers to migrate elsewhere. These discussions often focus on two policy levers: information provision and financial moving incentives. A related set of policy conversations concerns relocation following natural disasters and subsidence of coastal areas, both of which are forecast to accelerate as a result of climate change. Internal migration has not been an active area of federal US policy for many decades, but climate change and momentum to close opportunity gaps may change that. In this section, we review what is known about such policies and their likely impacts.

Beyond policies to encourage migration out of locations with low labor demand, public policy could instead aim to stimulate employment growth in these locations. Austin et al. (2018) argue that such place-based policies could be useful because increases in labor demand tend to have larger effects on employment in areas where the fraction of population not working has historically been high. We will not discuss the research on these policies here, as this research is well summarized in Glaeser and Gottlieb (2008), Kline and Moretti (2014), Gaubert et al. (2021b), and Bartik (2020). We will note, however, that the creation of Opportunity Zones in 2017 has given researchers new fodder for examining the effects of place-based policies. Recent working papers studying the effects of this policy include Freedman et al. (2021), Chen et al. (2019), and Arefeva et al. (2021).²⁶ Relatedly, Zabek (2019) shows that distortions caused by place-based policies may be small because existing

²⁶ Also somewhat related to place-based policies, Moretti and Wilson (2017) show that the migration patterns of star scientists are influenced by state tax rates, including investment tax credits.

residents of depressed areas have high migration frictions due to local ties, while potential migrants are less likely to move to depressed areas than other areas.

VI.A. Information Provision

The importance of information in migration decisions is not new. For example, Harris and Todaro (1970) include the probability of employment in their model to consider how uncertainty affects migration.²⁷ Kennan and Walker (2012) assume that workers do not have full information about the wage in another location and learn the package only by visiting the location.

Recent technological changes have greatly improved information access and thus workers' ability to learn about other locations before a move. This raises interesting questions for migration studies. For example, how does better information affect migration decisions? Kaplan and Schulhofer-Wohl (2017) develop a migration model assuming workers have information about the distribution of job opportunities in other locations but not about their amenities. Better information increases the precision of workers' priors about the local amenities, which then increases news-driven moves while lowering experimental moves. The authors find that overall migration declines with improved information because the reduction in the latter is larger than the increases in the former.

However, empirical work on the role of information in migration is limited, partly because it is difficult to measure information access and find exogenous variation to the potential migrants. Some studies show that information about potential destinations varies by demographic groups. For example, the international migration literature finds that social networks play an important role in migrants' location decisions.²⁸ The impact of social networks is relatively underinvestigated in the internal migration literature. Carrington, Detragiache and Vishwanath (1996) develop a dynamic model of internal migration in which migration costs decrease with social networks in the destination. This implies that migration occurs gradually over time and may increase even with declining wage differentials. The model predicts migration patterns that are consistent with the historical evidence from the Great Black Migration over 1915-60. In a recent study, Stuart and Taylor (forthcoming) proxy for migration networks using detailed data on town of birth and county of residence at old age for cohorts born between the 1910s and 1930s. Results show that migration networks were very important for explaining the location choices of Southern black migrants. One underlying mechanism is providing information about employment opportunities in the destinations. Network effects were stronger in birth counties with higher literacy rates, implying a role of education in network formation.

Information access might also vary by geographic location. For example, Wilson (2020a) finds a sizeable migration response to positive local labor market shocks from fracking booms, with substantial heterogeneity across demographics and regions. Fracking counties with more newspaper

²⁷ Greenwood (1975, 1985), Langley, (1974), and O'Connell (1997).

²⁸ Greenwood (1975), Winters, de Janvry, and Sadoulet (2001), Munshi (2003), McKenzie and Rapoport (2007, 2010), and Hanson and McIntosh (2010).

publicity had more migration from the places where the information was published, implying that heterogeneous information flows help explain different migration patterns across regions. Using variation across counties in exposure to news about labor market impacts from fracking, Wilson (2020b) explicitly assesses the role of information in migration decisions. Estimated effects of information access on migration and commuting to the fracking counties are economically significant and stronger in counties with weak labor markets. This suggests that information provision could encourage migration, especially in weak labor markets, where returns to migration are likely to be the largest.

A policy implication from these studies is that improving information about potential outcomes following a move could increase both migration and welfare. A related and growing literature in the US is studying how to facilitate take-up and use of housing vouchers through information provision and framing. The Moving to Opportunity (MTO) experiment provides treated group conditional housing vouchers that can be used only in low-poverty neighborhoods and additional housing-mobility counseling. The Section 8 group received regular housing vouchers with no counseling. Studies find that the housing voucher has a significant effect on household migration behavior, and moving to better neighborhoods generated positive medium- and long-term treatment effects.²⁹ The effects of the experimental voucher are larger than the Section 8 voucher's, suggesting that information framing through counseling or restricting choice set could enhance the impacts of housing vouchers. In contrast, using quasi-experiment data Schwartz, Mihaly, and Gala (2017) evaluate the effects of light-touch interventions in housing mobility programs. Results demonstrate that the light-touch mobility counseling services did not induce more households to move to opportunity areas, indicating standardized information provision has a limited role in boosting migration.

The ongoing Creating Moves to Opportunity (CMTO) project provides housing vouchers with no location constraints. The program includes customized search assistance, landlord engagement, and short-term financial assistance. Bergman et al. (2019) find that the treatment significantly increased the fraction of households who moved to higher-opportunity areas. In addition, households induced to move tend to stay in the new areas and have higher satisfaction about the neighborhoods. This suggests that most low-income families stay in low-opportunity areas because of barriers in the housing search process. Removing the barriers by providing customized search assistance in addition to existing financial support can promote moves to high-opportunity areas and increase upward mobility. It is worth noting that the authors find that the effects on migration are unlikely to be driven by the provision of information alone and point to the importance of customized support in the search process. However, the experimental design of CMTO focuses on short-distance moves in the Seattle and King County area. It is unknown whether a similar housing intervention with a long-distance relocation emphasis would generate similar impacts.

²⁹ Kling et al. (2005), Sanbonmatsu et al. (2006), Kling et al. (2007), Clampet-Lundquist and Massey (2008), Sanbonmatsu et al. (2011), Ludwig et al. (2013), Chetty et al. (2016), Chetty and Hendren (2018 a), Chetty and Hendren (2018 b), and Chyn (2018).

VI.B. Relocation Incentives

In the era following WWII, the US policymakers have provided only modest and intermittent incentives for residents to relocate. However, a decade-plus of significant coastal storms after Hurricane Katrina, along with rising sea levels, has led two federal agencies and several state governments to develop more substantial relocation policies in the latter 2010s.

The two most significant programs are offered through the US Department of Housing and Urban Development (HUD) and the Federal Emergency Management Agency (FEMA). In 2019, HUD announced a new category of Community Development Block Grants (CDBG) for mitigation of damage from climate risk; these grants were called CDBG-MIT. Approved localities can use CDBG-MIT funds to assist with buyouts and relocation of affected residents, among other activities. FEMA's Building Resilient Infrastructure and Communities (BRIC) program was launched in 2020. It allows states and other local jurisdictions to apply for funding to engage in "pre-disaster mitigation activities," which might include coordinated efforts to encourage migration away from disaster-prone areas (Department of Homeland Security 2020). These programs build on one-time, community-level federal relocation buyouts during the Obama administration for neighborhoods in Staten Island and New Jersey affected by Hurricane Sandy (in 2012) and for the Louisiana town of Isle de Jean Charles (in 2016). The Army Corps of Engineers also began requiring counties to agree, as a condition of receiving Corps assistance, to use eminent domain if needed to seize properties that were likely to experience repeated damage from natural disasters.³⁰

These programs—sometimes called "managed retreat" policy—are relatively new in the US. Though they build on earlier, more targeted programs, the newer efforts have yet to see broad implementation, particularly in more populous areas. However, the scale of such programs is likely to grow in coming years. Evaluation of early participants is a much-needed input into the ongoing design of these programs.

At the moment, little is known about how the details of relocation and rebuilding programs affect behavior and outcomes for affected residents. The available research on environmentally driven relocation in the US focuses primarily on outcomes for post-disaster migrants without analyzing the role of public programs in shaping those decisions. A notable exception is Gregory (2017), who studies how the Louisiana Road Home program affected rebuilding decisions among residents affected by Hurricane Katrina. This program was funded by a one-time congressional block grant appropriation to the state of Louisiana, which in turn provided grants for residents to either relocate from or repair their flood-damaged homes. Gregory's analysis focuses on the rebuilding decision and finds that the Road Home program modestly increased rebuilding rates (from about 48 percent to about 52 percent), with larger increases among Black residents and those with larger uninsured losses. In addition to evaluating specific programs, Partridge et al. (2017) encourage economists studying migration to consider building better forecasting models to anticipate migration responses to climate change and to facilitate their integration into broader economic impact estimates.

³⁰ Flavelle, Christopher. "U.S. Flood Strategy Shifts to 'Unavoidable' Relocation of Entire Neighborhoods." <https://www.nytimes.com/2020/08/26/climate/flooding-relocation-managed-retreat.html>.

In addition to post-disaster relocation policy, some have proposed enhancing geographic mobility in order to help workers access distant employment opportunities. Some have proposed improved information access, but a few proposals directly target mobility. Changes to unemployment insurance benefits in some states aim to facilitate geographic mobility among married couples. Specifically, spouses voluntarily leaving a job in order to accompany a relocating partner are eligible for regular UI benefits in 23 states. Venator (2020) studies the impact of these expanded benefits and finds that they lead to substantively higher migration rates among married households as well as improved post-move earnings for women. Ludwig and Raphael (2010) propose a federally financed “Mobility Bank,” which would allow workers to borrow to finance a relocation and repay through later earnings. They argue that such a program could be made available to residents of qualifying cities based on elevated unemployment rates. Wozniak (2018) proposes two mechanisms to enhance geographic mobility among college attendees. The first is an enhanced Pell grant available to Pell-eligible students who attend college far from their home. The second is an extended grace period before the beginning of federal student loan repayment for those who undertake a long-distance move after completing college.

VII. Concluding Discussion

We conclude with a brief discussion of the major themes that characterize the current state of research on internal migration in the US. We also review key questions for future research to explore. While these questions are also identified in section summaries throughout the paper, here we assemble the full range of questions that we view as the most pressing for ongoing migration scholarship to address.

The first theme is the critical role of migration costs in explaining migration patterns. Despite substantial advances in structural approaches, a consensus has not yet emerged about the magnitude of unobserved migration costs. The most recent approaches suggest significant heterogeneity in these costs. For example, Kennan and Walker (2011) document very large average migration costs, but with enough variation that costs may actually be negative for some individuals. Kosar et al. (2019) also find substantial heterogeneity using a completely different elicited preference approach. The existence of such heterogeneity may explain why average migration costs are not always found to be high, as in Heise and Porzio (2019). Thus, the answer to the question of whether migration costs are large or small may simply be “yes.” Structural estimation of migration models has helped us understand that important factors that contribute to heterogeneity in estimated migration costs include family ties, idiosyncratic preferences for locations, social insurance, and unobserved migration incentives as well as separate barriers like spatial frictions in job search.

A second theme is that the role for migration costs in worker misallocation deserves ongoing study. Taking a broad view of the literature, as we do, suggests that whether and to what degree migration frictions lead to misallocation of talent remains an open question. Significant barriers to migration seem to exist in some contexts. For example, the fact that causal migration shocks tend to lead to better employment and health outcomes, as documented in Section III, is consistent with frictions that prevent easy adjustment. Incomplete migration responses to local labor market shocks (Section IV) are also consistent with prohibitive migration costs. Both sets of findings imply some degree of misallocation. However, evidence on the link between frictions and misallocation is mixed. The research on housing-related frictions (Section V) largely suggests that these do not generate

substantial misallocation. Also, even large costs may not necessarily create economically meaningful misallocation, as in Marinescu and Rathelot (2018). Finally, the converse is also possible: misallocation is not necessarily a sign of high migration costs, as it can also arise when information is incomplete or when other moving barriers are substantial (as discussed in Section VI).

A third theme is the burgeoning policy relevance of migration, as discussed in Section VI. We urge economists to help inform the myriad policies that are either affected by migration or will shape migration. For example, understanding the migration responses to local economic incentives is key to formulating successful place-based policy. Also, migration responses to climate change will likely depend on the specific policy tools applied to these risks. Even policy responses to the Covid pandemic may influence future migration. Inequitable pandemic impacts across space may spur policymakers to address systemic disparities in part through encouraging migration to greater opportunity. Relatedly, the potential need for reallocation across sectors in the post-Covid recovery, as discussed in Barrero et al. (2020) may lead to greater migration if growth opportunities are unevenly distributed across places.

These themes suggest broad areas where future scholarship may be particularly fruitful. We have also identified a number of specific questions on which there are clear opportunities to expand our current knowledge. Questions about the size and distribution of migration costs provide one such opportunity. Explaining heterogeneity in these costs across different types of people, and developing a clearer understanding of what determines the size and distribution these costs is important to moving the study of migration forward in economics and could also potentially be useful to policymakers and a broader set of social scientists.

A second set of questions that deserve near-term study pertain to the determinants of migration decisions. Migration costs are certainly one key determinant, but information, community ties, and lifecycle considerations are likely also important, among other determinants, and these factors deserve separate careful study. Better understanding of migration's determinants could shed additional light on the reasons for changes in migration patterns over time, including the long-run trends in aggregate migration and on how and why migration responses to various shocks may have changed.

Finally, the welfare implications of migration are an important area for further study. To what extent might increased migration reduce misallocation of workers across space, resulting in higher productivity and incomes for both movers and non-movers? Is the value of local ties and amenities so large that a shock causing or forcing people to move would reduce welfare despite a potential increase in income? What are the longer-term welfare effects of migration, such as on intergenerational earnings mobility?

In pursuing these questions, we believe it is important that researchers keep in mind the complementarity between structural and reduced form approaches. Structural models of migration behavior require many key modeling choices, and the complexity of migration's general equilibrium impacts will always pose a challenge to modelers. For the same reasons, migration can be highly context dependent. So a program or event that offers clean identification of migration's impacts may not produce generalizable findings. Given the issues and caveats that come with any single approach,

it seems important for scholars using different approaches to work harder to communicate their findings to one another.

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