



# Migration, housing market, and labor market responses to employment shocks

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## ARTICLE INFO

### Article history:

Received 26 May 2010

Revised 25 May 2012

Available online 15 June 2012

### JEL classification:

R

### Keywords:

Housing market

Household migration

VAR models

## ABSTRACT

One reason for the United States' economic success is the willingness of its residents to follow jobs. Households' decisions to move depend not only on job prospects but also on the relative cost of housing. I investigate how the housing market affects the flow of workers across cities. This occurs through at least two channels: the relative mobility of homeowners versus renters, and the relative cost of housing across markets. I use homeownership rates to measure the former, and use an index that measures house prices across metropolitan statistical areas (MSAs) and the price elasticity of housing supply to capture the latter. To show how variation in the these housing market factors not only affects cross-city migration but also the housing and labor markets, I estimate a VAR model of migration, employment, wages, house prices, and new housing supply using annual data from 277 US MSAs for 1990–2006. The response functions based on labor supply and demand shocks show substantial variation when evaluated at different values of the homeownership rate, the price elasticity of housing supply, and relative housing prices. I also allow for spillover effects in the model that reflect the impact of a labor demand shock in the nearest city.

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## 1. Introduction

The United States is known for the ability of its residents to move to where the jobs are and this is one (of many) reasons for its economic success. The following two quotes in *USA Today* from Mark Zandi, chief economist of Moody's Economy.com, and Mark Vitner, senior economist at Wachovia Securities, make this clear<sup>1</sup>:

The ability to move to a place where there are better opportunities is important to the health of the US economy and has long made downturns in the USA shorter and shallower than those in other parts of the world.—Mark Zandi

The ability of people to relocate throughout the country has been one of the United States' greatest competitive advantages. It's a thing unique to our economy.—Mark Vitner

A classic example is the mass migration that occurred as the United States geared up to provide armaments for World War II. Millions of households moved from the eastern United States to war production centers in California, Oregon, and Washington, while six million people moved from rural to urban areas and from the South to the North (Goodwin, 1994).

The pace of the recovery from the late-2000s recession will depend, in part, on households' ability to move to areas with excess

demand for labor. Mills, Reynolds, and Reamer (2008) have pointed to regional industry clusters as a “potent source of productivity at a moment of national vulnerability to global economic competition,” because they produce “more commercial innovation and higher wage employment” (p. 1). Such a plan would entail a large relocation of workers to these new employment centers.

The housing market can significantly affect this household mobility because the ability to move depends on the relative cost of housing across metropolitan statistical areas (MSAs). A major component of the late-2000s recession was the unprecedented national downturn in the housing market. While some areas of the country have been relatively unscathed, significant parts have seen major drops in housing prices. Those declines, in turn, have significantly altered the relative cost of housing across the United States.

The housing market can affect household mobility through at least two channels. The first is the relative mobility of subsets of households within cities. A well-established literature shows that homeowners are less likely to move than renters because of the higher costs of moving, the mortgage “lock-in” effect, and loss aversion. The “great recession” made moving even harder, because so many homeowners had negative equity in their homes, making it very difficult to sell (Economist, 2009). Ferreira, Gyourko, and Tracy (2010) show that such owners are 50% less likely to move than those with positive equity. This lower mobility rate can adversely affect the employment prospects of homeowners (Coulson & Fisher, 2009; Oswald, 1997).

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<sup>1</sup> See [http://www.usatoday.com/money/economy/employment/2009-02-08-recession-unemployment-relocation\\_N.htm](http://www.usatoday.com/money/economy/employment/2009-02-08-recession-unemployment-relocation_N.htm).

A second channel is the relative cost of housing across markets: the likelihood that a household will move from one MSA to another depends on the relative cost of residing in each city.<sup>2</sup> A direct means for capturing the relative cost of housing is an index that measures relative house prices across MSAs. An indirect means for doing so is the price elasticity of housing supply in each MSA. This measure reflects the new emphasis on the supply side of the housing market in explaining the large variation in the price of housing across the United States.

In this paper, I analyze the role that the housing market plays in people's migration responses to employment shocks across MSAs in the United States. I pay particular attention to how homeownership rates, the price elasticity of housing supply, and relative house prices affect migration rates. The longer-term migration response is tied to the housing and labor markets. Thus to show how variation in the above housing market factors not only affects cross-city migration but also the housing and labor markets, I estimate a VAR model of migration, employment, wages, house prices, and new housing supply using annual data from 277 US MSAs for 1990–2006. I then plot out response functions based on labor demand and supply shocks. These functions show substantial variation when evaluated at different values of the homeownership rate, the price elasticity of housing supply, and relative housing prices. I also allow for spillover effects in the model that reflect the impact of a labor demand shock in the nearest city.

The results of this analysis will be of considerable interest to policymakers. As the United States recovers from the recession that began in the late-2000s, job openings will be generated across the nation. How these opportunities translate into actual employment will depend on the ability of workers to move to the new jobs. As I show, these employment demand shocks can generate substantial migration responses that depend on the housing market conditions.

Another policy issue concerns the “brain drain” that often occurs in cities in the Mid-West or in cities with high costs of living. The results in this analysis suggest that general policies at increasing local labor supply may not result in increased employment.

The next section reviews the literature that is relevant to an analysis of migration and the housing market. In the following section, I develop a model of migration and the housing and labor markets. I then discuss the data I use to estimate this model. My data set consists of information on 277 MSAs across the United States for 1990–2006, including annual data on house prices, wages, employment, in-migration, out-migration, and housing permits. My data also include estimates of the price elasticity of housing supply from Saiz (2010) and a cross-city house price index and homeownership rates from the 1990 US Decennial Census. In the last two sections, I present my results and offer concluding remarks.

## 2. Literature review

The study that is closest to the one I conduct here is by Saks (2008), who analyzes the effect of housing supply on metropolitan-area labor markets. She considers the scenario of a labor demand shock and its impact on employment, wages, and house prices. Saks notes that the ability of an MSA to increase the supply of housing to accommodate the increase in employment will affect the impact of this shock.

To capture the role of the responsiveness of housing supply in determining the impact of a labor demand shock on employment growth, Saks specifies a vector autoregressive (VAR) model of

changes in employment, wages, and house prices (all in logs). She does not have an exogenous measure of the price elasticity of housing supply (a direct measure of housing supply responsiveness), so she develops a (cross-sectional) land-use regulation variable based on information from six sources.

Saks also follows Bartik (1991) in generating an exogenous labor demand variable. The VAR model thus includes two lags of the endogenous variables, the labor demand shock, interactions between the regulation variable and the lagged endogenous variables and the labor demand shock, time dummies, and MSA fixed effects.

Given the limited scope of the regulation data, the final data set consists of information on only 72 MSAs from 1980 to 2002. Response functions are estimated to show the long-term impacts of an increase in labor demand on prices, wages, and employment. When Saks compares these responses at the 25th and 75th percentiles of the regulation index, she finds that long-run employment is relatively higher, and wages and house prices are relatively lower, in the metro area with regulations at the 25th percentile.

Evenson (2004) claims that house price variability can distort housing decisions, and ultimately employment, productivity, and economic growth. Hence it is important to understand the determinants of house price variability. Evenson focuses on supply-side determinants that can affect responses to changes in (employment) demand, and hence price changes. In particular, Evenson models housing stock and prices using VAR and error-correction models. Like Saks, she tracks the path of housing stock and prices over time, using the impulse response function when the system is subject to an employment shock. The data consist of annual observations from 1975 to 1999 for 47 MSAs.

Evenson calculates the housing supply elasticity as the ratio of the percentage difference in housing stock values to housing price values obtained from the impulse response functions. This produces a time series of supply elasticities for each metro area. The elasticities increase monotonically and take widely varying paths across metro areas.

The supply elasticities are generally inelastic in the first period, but by year 12, 40% are estimated to be fairly elastic. Evenson then regresses the supply elasticity at years 1, 3, 6, 9, and 12 on a number of characteristics: 1990 population, land area, past employment growth, average January temperature, the median age of the housing stock, market structure, and region dummies. When the supply elasticity is regressed on the market structure variable alone, the result is a negative and significant coefficient. When the other variables are included, this variable is significant only in years 1 and 3. Evenson concludes that policies that allow for more local government coordination can increase supply elasticities.

Hwang and Quigley (2006) estimate a three-equation model of (inverse) housing demand, supply (permits), and vacancies of single-family housing at the MSA level. These analysts are the first to provide evidence on the importance of vacancies in determining housing demand and supply. Hwang and Quigley use their results to simulate the effect of an exogenous income shock (similar to the impulse response function in VAR models). They show that when regulatory stringency is high, the house price response is higher, and persists longer, than when regulatory stringency is low.

Johnes and Hyclak (1994) estimate a four-equation model of wage growth, the unemployment rate, net migration, and house price growth. They estimate the model by three-stage least squares using annual data for the southeast UK for 1973–1992. Instruments include current and lagged price inflation and regional growth, lagged national real growth, net in-migration, regional unemployment, and national house price and wage growth. The results show that a demand shock will increase wages and house prices and decrease unemployment, but will also lead to a net out-migration owing to higher house prices. Because an increase

<sup>2</sup> It is common in the housing literature to assume that MSAs constitute separate housing markets. I will make that assumption in this study.

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