



Does land use planning shape regional economies? A simultaneous analysis of housing supply, internal migration and local employment growth in the Netherlands

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ABSTRACT

Why has job growth over the past decades been weaker in the Dutch Randstad area than in surrounding regions? In a simultaneous equations analysis, we find that employment has adjusted to the regional supply of labour. Net internal migration was predominantly determined by regional housing supply, and not by employment growth. Growth of the regional housing stock appeared insensitive to changes in the number of people and jobs. This lack of responsiveness to demand conditions is consistent with the presence of strong restrictions on residential development near the main Dutch cities, suggesting that the current regional distribution of economic activity in the Netherlands reflects land use planning decisions.

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1. Introduction

Government interventions in land and housing markets may have a strong impact on the quantity and location of new residential construction, while reducing the responsiveness of supply to market signals. A literature has built up that provides ample evidence of the negative impact of the stringency of land use regulations on the price elasticity of housing supply. For instance, [Quigley and Raphael \(2005\)](#) show that supply elasticities at the city level correlate negatively to an index of regulatory restrictiveness in California, while [Green et al. \(2005\)](#) and [Saiz \(2008\)](#) report

the same relationship for a national sample of US cities. An extensive inquiry into British housing supply indicates that it is almost fully inelastic, at least partly as a consequence of the planning system ([Barker, 2003, 2004](#)). [Vermeulen and Rouwendal \(2007\)](#) find that for similar reasons, housing supply in the Netherlands is almost fully inelastic as well.

This literature enables us to understand the impact of land use regulation on the functioning of housing markets, but its wider effects on regional economies have received significantly less attention. Restrictions on the supply of housing that limit the number of households in a region affect labour supply and employment. For instance, [Glaeser et al. \(2006\)](#) and [Saks \(2008\)](#) show that in US cities in which such restrictions are strong, shocks in labour demand push up wages and house prices, while the local

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employment response is small.¹ Moreover, it has been well established that the spatial distribution of jobs relates to productivity through the presence of agglomeration economies (cf. Rosenthal and Strange, 2004), so that regional productivity growth may be inhibited by restrictions on residential development too (cf. Glaeser and Gottlieb, 2008).

An argument along these lines has recently been put forward by the OECD in its Territorial Review of Randstad Holland (OECD, 2007). As one of the most densely populated in the OECD, this area contains the four largest cities in the Netherlands on about 20% of all the land in this country, and its contribution to the national income presently exceeds 50%. Nevertheless, the Territorial Review points to lagging labour productivity growth in the past few years, relative to other metropolitan areas. Amongst the potential culprits, it discusses the lack of high quality dwellings, as a consequence of rigidities in Dutch housing markets. In view of the strength of government intervention in land markets, it makes sense to relate these rigidities at least partially to land use planning.

Rather than consisting of one large metropolitan area, the Randstad area may be described as a ‘cluster of towns and open space’, and land use planning has consistently strived to maintain this character (Koomen et al., 2008). Key ingredients of the planning strategy are preservation of the Green Heart area between the main cities of the country (Amsterdam, Rotterdam, The Hague and Utrecht) and of so-called Buffer zones, which prevent these cities from melting together. Other important policy concepts are ‘compact cities’ and ‘clustered deconcentration’. The first of these policies aims to foster high urban densities, so that open space outside of cities is preserved, and the second aims to concentrate suburbanisation at specific locations for similar reasons.

Fig. 1, which is based on Koomen et al. (2008), aptly illustrates the implementation of these policy concepts.² It shows the contours of the present Green Heart, as well as the contours of its original conception half a century ago. When interpreting the minor shift in these contours, it should be kept in mind that Dutch population has grown by almost 50% and that the number of households has more than doubled since. Considering changes in land use between 1995 and 2003, Koomen et al. (2008) show that indeed, the propensity of transformation from open space to urban use was significantly lower in the Green Heart and the Buffer zones than in other parts of the Randstad. Moreover, Fig. 1 indicates that such changes occurred predominantly in relatively large contiguous areas that are attached to urban areas, thus adhering to the principles of compact development and clustered deconcentration. The figure also points to a significant presence

of agricultural land and nature, about 75% of all land in the Randstad may be characterised as open space. Overall, these observations suggest that land use planning has succeeded in restricting urban development in this area.

More evidence in support for this claim is found in the gap between residential land values at the fringe of cities and the price of agricultural land, which may be interpreted as a shadow price of restrictions on land use, or as a ‘regulatory tax’ (Glaeser et al., 2005). Using information on agricultural land prices, conversion costs and the value of residential land in a new development project at the Amsterdam fringe, Vermeulen and Rouwendal (2008) estimate that the gap amounts to roughly 30% of the average house value in Amsterdam. This exceeds regulatory tax rates for cities like Boston, New York and Washington, DC as reported in Glaeser et al. (2005).

Finally, Vermeulen and Rouwendal (2007) interpret their finding that housing supply at the national level is almost fully inelastic with respect to prices in terms of restrictive planning, while ruling out several alternative explanations for the surge in real house prices, such as rising construction costs. Using a large dataset on individual housing transactions, these authors also estimate quality-controlled local house price differentials at the level of municipalities and by using information on the year of construction, they develop an index of the average attractiveness of location of different vintages of new housing supply since 1970. In spite of large spatial differences in the attractiveness of new building sites, this ‘quality of location’ index shows remarkably little variation over time. In particular, it is not the case that the more attractive locations have been developed earlier, which would have been expected in freely operating land markets. Consistent with the evidence in Fig. 1, this suggests that land use planning has not only restricted aggregate housing supply but that it has also strongly marked the spatial distribution of residential development.

Motivated by the potentially significant implications that land use planning may have on productivity, our present paper investigates the extent to which housing supply has shaped the regional distribution of people and jobs in the Netherlands. We estimate three simultaneous equations for growth of the housing stock, net internal migration and employment growth on annual regional panel data that span three decades. Our econometric approach essentially follows Carlino and Mills (1987), although we extend their framework in a number of ways. First of all, we introduce an equation for growth of the housing stock as in Greenwood (1980) and Greenwood and Stock (1990). Second, as the regions in our data are not closed in terms of commuting, spatial interaction is accounted for following Boarnet (1994). Because internal migration is the main channel through which the population adjusts to regional labour and housing market conditions, we model the net internal migration rate rather than population growth (cf. Greenwood and Hunt, 1984). Moreover, the use of regional time series allows us to distinguish short-run and equilibrium adjustment effects in the interaction of our endogenous variables, while controlling fully

¹ Similarly, Glaeser and Gyourko (2005) present evidence for the impact of housing supply on population growth in declining cities in the US. In these cities, the low supply elasticity of housing results from durability of the stock, rather than from restrictive land use regulation. They show that downward demand shocks lead to a fall in house prices, rather than in the stock, so that population decline is attenuated.

² This map has been produced by Spinlab, VU University.

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