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The future of agriculture in the shrinking suburbs: The impact of real estate income and housing costs

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ABSTRACT

This paper offers solutions to some of the challenges around maintaining productive agricultural land close to cities in countries facing a decline in urban populations. In such circumstances, some farmers have been observed to convert their land into real estate and leave farming before land prices decline, therefore decreasing the area of agricultural land close to large cities. In contrast, many suburban farmers in developed countries remain in farming even when land prices decline and suburbs shrink. We argue that such behaviour can be explained by a desire to remain in farming, even at the expense of profits. In such cases, agricultural income may be supplemented by rental income or by selling land. This paper demonstrates that, when land prices are high, a preferential taxation system may help farmers with real estate income to retain more of their land.

This study is based on data from a survey of farmers in Tokyo, Japan where, in 1992, a programme combining preferential taxation and restrictions on the conversion of farmland was implemented. Our findings suggest that farmers in more populated areas with a strong dependence on real estate income tend to continue farming, as do those in less populated areas who are less dependent on this income source. Analysis further suggests that imposing heavy taxes on residential property simply increases living costs for farmers and results in the loss of agricultural land and that policies which promote diversification and reduce housing costs are important for keeping urban fringe land in agriculture.

1. Introduction

Over recent decades competition over land between agricultural uses and urban development has become an important issue in many countries. The desire to protect land from development may be based on one of a number of motives and this has resulted in a variety of policy-based solutions ranging from regulation restricting development, to the introduction of incentive schemes. Based on traditional location theory (e.g. North (1955)), incentives to develop agricultural land exist because of the differences in the rents from urban land use compared to the income available from agricultural use. In contrast, the conservation of agricultural land[1] can be justified on the grounds of its multifunctional values including agricultural production (Kline and Wichelns, 1996).

However, abiding by the general principle of freedom of property rights and occupational choice in the market economy, compelling landowners to preserve agricultural land against their wills is not an easy task.

Some developed countries are now, however, entering a period of population decline. Due to an overall decrease in fertility rates, population growth in Europe is predicted to be negative in the next decade. Declining populations are also likely to be observed in many countries in Asia and South America by the middle of the century (United Nations, Working Paper No. ESA/P/WP/248). According to OECD population projections, by 2050 at least six OECD countries are expected to see their populations falling to a level more than 10% below their peak (Below, 2016). Above all, Japan's population, which peaked in 2010 at just over 128 million, is projected to experience a steep and continuous decline. This raises the issue of land use and the state of agriculture in the so-called "shrinking suburbs" (Hollander et al., 2009; Yokohari and Bolthouse, 2011) as opposed to the problems of urbanization and urban sprawl observed in the growth phase. In the suburbs, most farmers rely on off-farm income particularly from rental property (Keep, 2009).When the population decreases and demand for rental properties falls, landowners tend to adapt slowly and are often not able to achieve adequate returns from their land. This leads to instability in

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[1] Conservation of agricultural land refers to preventing the conversion of privately-owned farmland to urban land uses, usually residential development. Greenhouses and other simple structures are included as agricultural use.

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farm household incomes, which may result in the eventual sale of agricultural land and the associated loss of its multifunctional benefits. In many areas suburban agriculture is expected to provide such multifunctional benefits to local populations (Zasada, 2011), but ensuring it does this requires appropriate land use planning systems that are informed by an understanding of the possibility of the loss of farmland to other uses.

In 2016 the number of urban areas (defined as a continuously built up land mass of urban development), with a population in excess of ten million was 36, compared to only two in 1950. Nearly one-tenth of the world's population resides in those cities and a quarter live in urban areas with populations greater than a million. Among these, Tokyo, the capital city of Japan, is by far the largest with 37.8 million people living in the associated urban area (Cox, 2016). To look at agriculture in the shrinking suburbs within the Japanese metropolis is, to some extent, to glimpse the future challenges that will be faced by other developed countries (Yokohari and Bolthouse, 2011). Based on a survey of farmers located in the suburban areas surrounding central Tokyo, this paper focuses on the strategies employed by farmers to remain in agriculture. This will provide some insights into how agriculture and the benefits it provides can be retained in the shrinking suburbs.

1.1. The shrinking suburbs

There is an extensive literature on urban shrinkage which is relevant to this study. When investigating ten European cites, Haase et al. (2016) identified three major factors affecting urban shrinkage, namely, economic crisis, suburbanization and demographic change. Of these, demographic change, in particular falling birth rates, is a particular threat in certain countries, such as Japan. In addition, domestic and urban-rural migration, regional economic downturn and a decrease in demand for land in particular urban areas have all been identified as important factors leading to urban shrinkage. In some cases, rather than a reduction in size of the city centre, the outlying suburbs are observed to shrink. This phenomenon has been observed in some parts of Eastern Europe (Haase et al., 2016; Oswalt, 2006; Turok and Mykhnenko, 2007) the Mediterranean (Salvati et al., 2015), South Korea (Nam et al., 2016) and Japan (Buhnik, 2010, 2017; Flüchter, 2008; Fol and Cunningham-Sabot, 2010).

Acknowledging the difficulty of delineating the urban core from the surrounding suburbs (Weaver, 1975), we define suburbs, or more precisely sprawling suburbs, as areas within the urban agglomeration where agricultural and residential land uses are intermixed. Suburbs are typically located just outside the urban core (Fig. 1). A similar geographical concept is that of peri-urban areas a term which is used mainly in the European context where zoning restrictions are relatively strong. The dominant land use in most peri-urban areas is agriculture and population density is relatively low (Lange et al., 2013; Piorr et al., 2011). Under this definition suburbs are usually found within urban rather than peri-urban areas (Piorr et al., 2011). In urban areas, the most common forms of agriculture tend to be non-agrarian community gardens, allotments, backyard and roof top gardens (Opitz et al., 2016). In many cases, these sites are not officially protected by planning authorities because urban areas are not regarded as spaces for agriculture (Castillo et al., 2013; Opitz et al., 2016). In contrast, the border between peri-urban and urban areas in a large, sprawling metropolis, such as Tokyo, can be hard to identify (Heimlich and Brooks, 1989). Here, agricultural holdings can be found in suburbs with a population density of 10,000 inhabitants/km^2 (Sorensen, 2001), where many farmers rent out a part of their land and sustain their households with the resulting income.

1.2. Agriculture in the shrinking suburbs

A large body of literature exists on the persistence of agriculture in suburban or peri-urban areas. Major factors influencing the maintenance of agricultural land use in such areas includes proximity to urban markets, agricultural viability, individual preferences, and land use policy.

Many researchers agree that increasing land prices accelerate the tendency of farmers to leave agriculture, or that at least they contribute to the so-called "impermanence syndrome" attributable to speculation related to conversion (Adelaja et al., 2011; Edelman et al., 1999; Lopez et al., 1988). Speculation is generally observed when landowners wait to dispose of land during times of urban expansion and rising land prices, even though immediate conversion for rental use would be profitable because revenue from urban rents exceeds that from agricultural rents. If speculation is assumed, farmland should be sold before prices decrease. Moreover, profits can be maximized through conversion for rental use even if owners delay the timing of a sale as long as the rental income achieved still significantly exceeds the agricultural rent (Stobbe et al., 2009). Such speculative behaviour would not, however, explain the behaviour of those farmers who remain in the shrinking suburbs.

A number of empirical studies have found that while large-scale farmers close to urban areas tend to continue agriculture (Kimhi and Bollman, 1999; Towe et al., 2008), only the most intensive, innovative, and adaptive farmers on smaller holdings keep farming (Adelaja et al., 2011; Heimlich and Brooks, 1989; Hoppe and Korb, 2001; Inwood and Sharp, 2012). In areas where multifunctional land use is encouraged, including some suburban areas, agriculture-oriented diversified activities such as the direct marketing of food products may be common (Jongeneel et al., 2008; Lange et al., 2013; Pölling and Mergenthaler, 2017; Stobbe et al., 2010; Zasada, 2011).

Other researchers have suggested that individual subjective utilities from owning farmland and engaging in agriculture are important in influencing farmers' decisions to keep farming (Lynch and Lovell, 2001; Rilla and Sokolow, 2000). For example, hobby or lifestyle farmers may

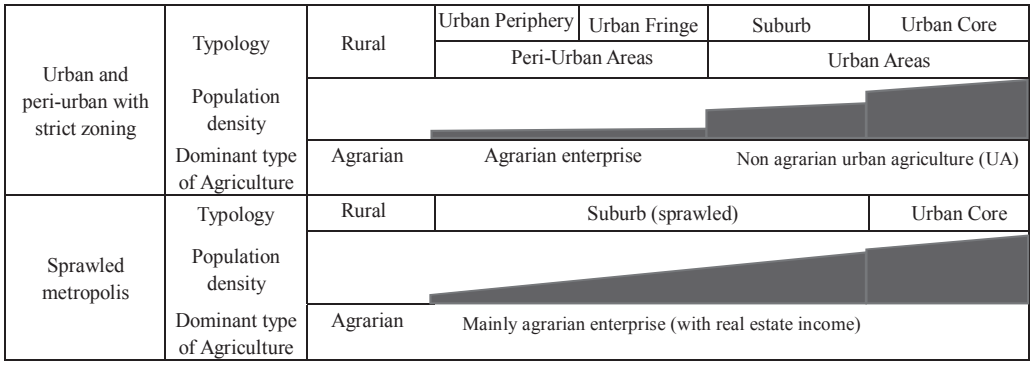

Fig. 1. Suburban Agriculture in Sprawled Metropolis.
Source: Piorr et al. (2011) and authors' illustration.