

Valuation of environmental amenities in urban land price: A case study in the Ulaanbaatar city, Mongolia

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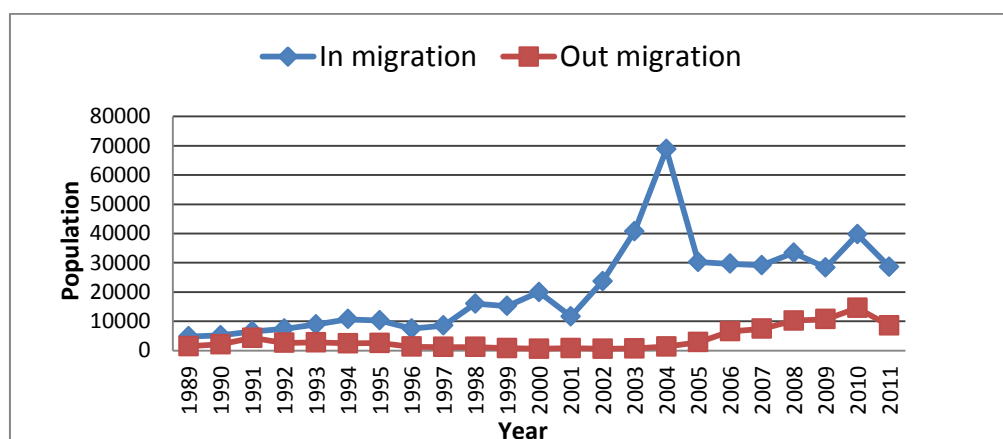
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Introduction

Economic and political transition in the 1990s, land policy and land use have dramatically changed; the government begins to encourage land ownership and property market in Mongolia. Constitution of Mongolia was amended in 1992. By the law Mongolian citizen can have a property. In 2002, “Law on allocation of land to Mongolian citizens for ownership” was enacted. By this law, citizen can own land. Land privatization is going on the ger (Mongolia traditional house) district which is land for family use. In 1997, the government evaluated land base value. But now this evaluation value could not meet rapidly growing economic in Mongolia. Based on base value amount, if person want to rent or lease their owned land to the bank, the price of land is much lower than market price.

Another big reason for re-evaluating land value is rapid urbanization and improper sprawl settlements in the urban area. Mongolia is experienced rapid urbanization in last few decades. The collapse of socialist regime in Mongolia, people is to seek better access to jobs, services, and education in the cities. Ulaanbaatar has, by far, absorbed the largest numbers of these migrants and with little affordable housing available, most of the newcomers ultimately settle in the ger areas. In 1989, 26.8 percent of Mongolia’s population lived in Ulaanbaatar; by 2006 that number had risen to 38.1 percent; and by the 2010 census, 45 percent of Mongolia’s population lived in the capital, which covers 0.3 percent of the country territory (See Fig. 1).

Figure 1.



According to JICA research (2009), reasons of rapid growth of population in Ulaanbaatar city are in migration, zhud (natural hazard), land privatization in the ger districts and cottages (See Table. 1).

Table. 1

Year	Population growth rate in Mongolia, %	Population growth rate in Ulaanbaatar city, %	Factors
1998	1.4	4.2	In migration
1999	1.4	6.4	Zhud
2000	1.4	3.5	Zhud
2001	1.5	3.3	-
2002	1.3	4.2	Land privatization
2003	1.2	5.5	Zhud
2004	1.2	3.9	-
2005	1.2	4.0	-
2006	1.3	3.0	-
2007	1.6	3.7	Cottage privatization

Due to rapid population growth, urban spatial growth without proper settlement, downtown land price have increased tremendously and many environmental problems facing such as lack of water, severe air pollution, soil pollution and degradation. It shows us, need to improve and develop land policy and urban planning system.

By the Master Plan of Ulaanbaatar city development until year 2020, the government declared top 6 development priorities. In the plan, urban environment and land management issues have considered through the improving environment, set-up green facilities and developing efficient land management which are waste management improvement, water management and protect water source and pollution management, air pollution management, and creation of recreational zone, etc. As well as in the efficient land management priority, government implementing redeveloping ger districts, improving urban infrastructure and improve legal framework (Ulaanbaatar city, Government urban planning, research and design institute. 2013). During the master plan implementation, there some difficulties are coming such as land compensation issues are raising in the ger district. Because government gives compensation to the residents using base value amount and it could not meet current market price.

Due to the all this reasons, Ulaanbaatar city's land valuation is seems very important study now.

Hedonic approach

The hedonic price method is used to estimate the value of environmental amenities that effect price of market goods. Value of environmental amenities were better recognized and incorporated into land use planning, negative impacts associated with urbanization could be minimized (Heather A. Sandera and S. Polasky. 2009). As well as, urban green facilities and environment are seen as a factor that contributes to the quality of life for residents and sustainability in land use (F.Waltert, et al. 2011; Erin O. Sills, Jill L. Caviglia-Harris. 2008). Provide estimated value to planner and policy maker is for better evaluate the impact of land use change before decision.

In practice, there are number of variables are used for hedonic price method such as neighborhood and location, local environmental, and structure variables. Which variable to apply the research is depending on the study purpose, for example, on farmland, distance from market and soil quality as main determinants of product and land value (Petr Sklenicka et al., 2013). Ulaanbaatar city, depend on engineering system, infrastructure welfare, and labor market, and traffic density, is classified to a monocentric city. In this case, location variable is very important (O. Nyamsuren. 2012). Monocentric model, with land values declining with distance from the center and land use type is segregated by circle and it became high pressure of land use from another land use type. According to O. Nyamsuren study, 2012, defined 15 evaluation zones in the central 6 district's ger area. Compared defined price to the base value is much lower. It explained that the ger district's land is located close to the center of the city is sold at high price. From this study, priority variable is distance from center.

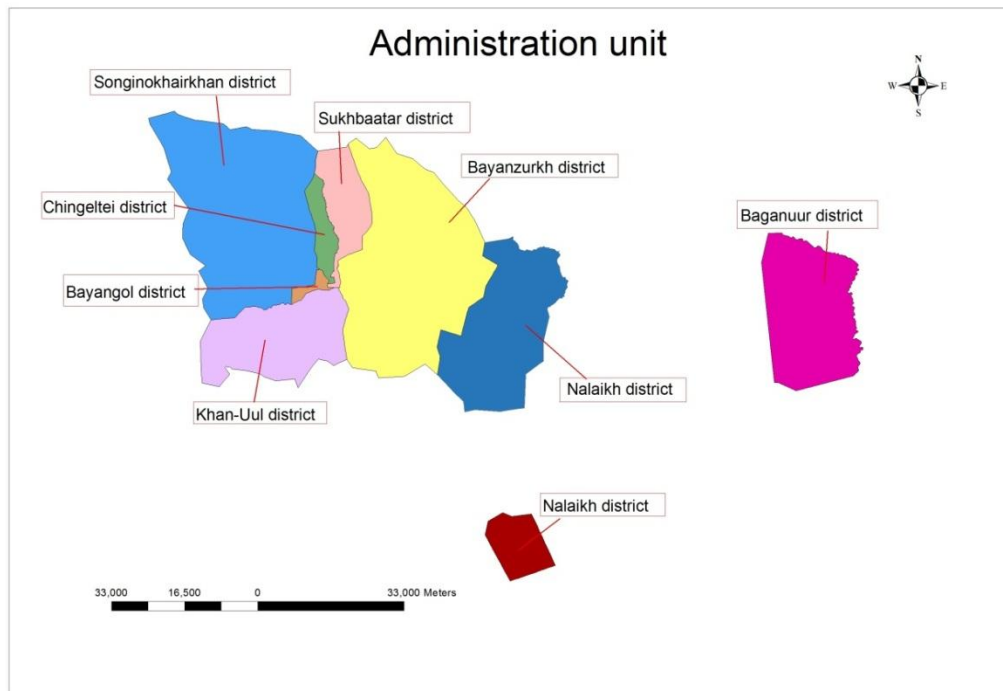
Hedonic price approach estimate the variables using a multiple regression model with housing price. Numbers of studies are used linear, log-linear and log-log models for get the results.

In addition, using hedonic price method, the result of this study will give reliable information for the newly established land market and recommendations of future implementation activities and policies to the urban development in Mongolia.

Study area

Ulaanbaatar city is capital city of Mongolia. Total territory is 470.4 thousand ha (Administration of Land affairs, Construction, Geodesy and Cartography. 2010). The city has 9 districts (See Pic. 1). The study will focus on central 6 districts's ger areas, which are Songinokhairkhan, Sukhbaatar, Chingeltei, Bayanzurkh, Bayangol and Khan-Uul districts.

Picture .1



By the government regulation, 2002, Mongolia has 6 main types of land use classifications (See Fig. 2). The main classifications are divided into sub-classification of their function and utilization. Ger district is belonged to Cities, villages and other settlements land (See Fig. 3). By the annual land management report of Ulaanbaatar city, showed in 2012, 84734 household's 4623.69 ha are owned (www.umch.ub.gov.mn).

Figure. 2

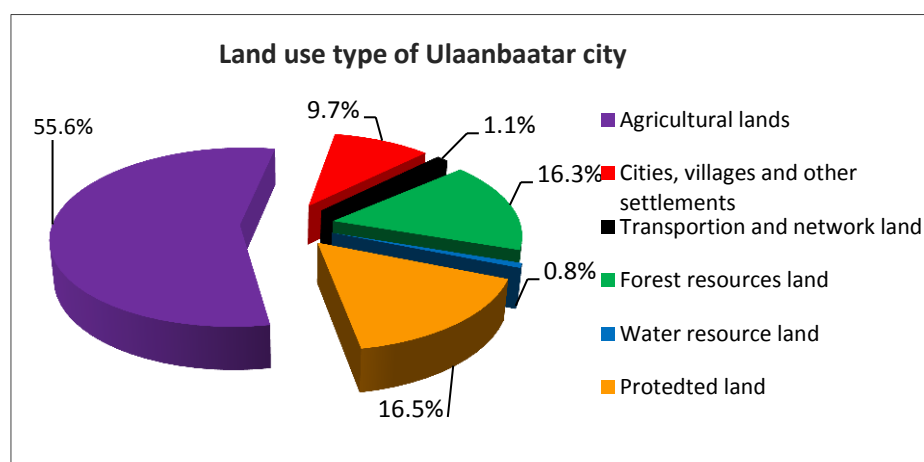
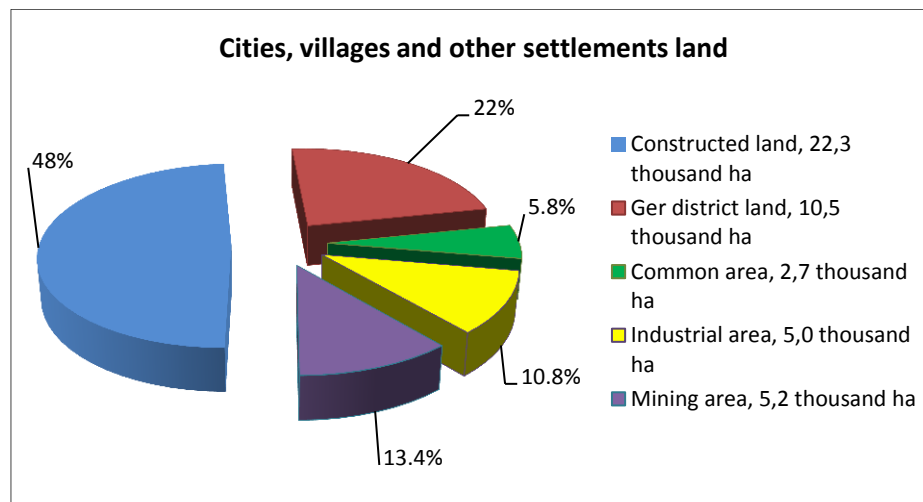


Figure. 3



Approximately, 60 % of total populations live in Ger district in Ulaanbaatar. Ger district is a land rounded by fence; house or ger is located inside the fence and it does not connect basic public services which are heating, water and sewage system, paved road.

Data collection

Primary data was collected. I collected the information of the market price of 6 main districts' 564 single families residential property sold at the market source from Administration of Land affairs, Construction, Geodesy and Cartography, in 2012. Data includes land size, location, property right, housing structures, administration unit, etc. I defined a property's distance from center, distance from bus station and school, distance from well, distance from nearest green area or park using Geographical information system (GIS).

Future work

Do more literature review; choose which regression analysis is appropriate to the study, analysis the data and with the result, to map land price with zoning using GIS. In addition, give a recommendation to urban administration office for redevelopment of ger district.

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