SEOUL'S GREENBELT: AN EXPERIMENT IN URBAN CONTAINMENT 2018

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ABSTRACT—Urban containment policies are considered by some to be a promising approach to growth management. The greenbelt-based urban containment policy of Seoul, Republic of Korea is examined as a case study. Seoul's greenbelt has generated both significant social costs and benefits. Korea's greenbelt policy is currently being revised, largely due to pressure from greenbelt landowners and developers. While there is no definitive answer to the question of whether Seoul would be a more or less "sustainable city" today without the greenbelt, it is certain that in the absence of the greenbelt Seoul would have lost much of its rich natural heritage and essential ecosystem services.

Countries around the world have responded to growing concern about the problems associated with sprawling development patterns by creating a wide range of policy instruments designed to manage urban growth and protect open space (Bengston *et al.* 2004, Richardson and Bae 2004). But the effectiveness of these policies is often questioned. Innovative and effective policies will be required to stem the tide of increasingly land-consumptive development. Out of the array of growth management techniques, urban containment policies are considered by some to be a promising approach. National urban containment policies have been in place for many decades in a few countries, including the United Kingdom and the Republic of Korea. In the United States, local urban containment programs have typically been created by individual municipalities without direction or assistance from state or national governments (Dawkins and Nelson 2002).

Pendall *et al.* (2002) distinguished three types of urban containment policies: greenbelts, urban growth boundaries, and urban service boundaries. A greenbelt refers to a physical area of open space–farmland, forest, or other greenspace–that surrounds a city or metropolitan area and is intended to be a permanent barrier to urban expansion. Development is strictly regulated or prohibited on greenbelt land. Greenbelts may be created through public or nonprofit acquisition of open space or development rights, as in Boulder, Colorado (Pollock 1998), or they may be created and enforced by regulation of private property. Voters in Ann Arbor, Michigan, recently overwhelmingly approved a greenbelt proposal that will involve purchase of both land and development rights (Ann Arbor News 2003). Greenbelts have rarely been used in the United States but have been used much more extensively in large cities in Europe and Asia. London was the first major city to introduce a greenbelt system in the late 1930s (Munton 1983). Other cities that have adopted (or adopted and subsequently abandoned) greenbelts include Ottawa and three other Canadian cities (Taylor *et al.* 1995); Asian megacities including Tokyo, Seoul, and Bangkok (Yokohari *et al.* 2000); and many large European cities such as Berlin, Vienna, Barcelona, and Budapest (Kuhn 2003).

In contrast to greenbelts, an urban growth boundary (UGB) is not a physical space but a dividing line drawn around an urban area to separate it from surrounding rural areas. Zoning and other regulatory tools are used to implement a UGB. Areas outside the boundary are zoned for rural uses and the area inside is zoned for urban use. A key distinction between UGBs and greenbelts is that the former are not intended to be permanent. A UGB is typically drawn to accommodate expected growth for some period of time, and the boundary is reassessed and expanded as needed. In Oregon, the Land Conservation and Development Act of 1973 required, among other things, the delineation of urban growth boundaries around all of the state's cities and around the Portland metropolitan area (Nelson 1994).

Urban service boundaries, the third type of urban containment policy, are even more flexible than UGBs. An urban service boundary delineates the area beyond which certain urban services such as sewer and water will not be provided. They are often linked with adequate public facilities ordinances that prohibit development in areas not served by specific public services and facilities. Assessments of urban service boundaries have generally found them to be of limited effectiveness in containing sprawl, in part because they tend to be easily and frequently amended in the face of political pressure to accommodate growth (e.g., Dearborn and Gygi 1993, Poradek 1997).

This paper focuses on greenbelts, the most restrictive form of urban containment policy. The idea of surrounding cities with a belt of agricultural land or other open space is an ancient one, dating back at least to the 13th century B.C.

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and the Levitical cities of Palestine (Ginsberg 1956, Osborn 1969). In more recent times, greenbelts were proposed in the influential work of Sir Ebenezer Howard in 1898 (Howard 1902), and they have been a widely used policy in some countries for containing urban expansion, protecting agricultural land and open spaces, and achieving other public goals. Greenbelts have long been a controversial public policy because of their purported negative consequences, including increased land and housing prices in the urban area contained by the greenbelt, decreased greenbelt land prices, loss or restriction of development rights for greenbelt landowners, increased urban congestion, and other undesirable consequences. Greenbelts also have been accused of causing sprawl and higher commuting costs as development jumps over the greenbelt. But greenbelts also generate significant social and environmental benefits, including amenity and recreational value, bequest value, and protection of open space, agricultural land, natural resources, and life-supporting ecosystem services.

We examine the longstanding greenbelt surrounding Seoul, Republic of Korea. Some have suggested that, overall, Seoul's greenbelt is a rare success in urban containment: "The greenbelt in Seoul, so far, may be evaluated as one of few successful greenbelt experiences in Asia," (Yokohari *et al.* 2000: 163). Others claim the social costs of Seoul's greenbelt have overwhelmed the benefits and the policy should be abandoned. The debate about Seoul's greenbelt policy is part of a broader debate among urban planners about the desirability and sustainability of compact cities (e.g., Gordon and Richardson 1997, Jenks *et al.* 1996).

The following sections describe the context and history of Seoul's greenbelt, briefly summarize its costs and benefits, and discuss recent major reforms in the policy. A concluding section discusses lessons from the Korean experience and relevance for growth management in other countries.

SEOUL'S GREENBELT POLICY

Korea's greenbelt system was introduced in 1971 during the authoritarian government of President Park Chung Hee. The social context for this policy was extremely rapid economic and population growth (Song 2003) and a high rate of rural-urban migration. Seoul grew more rapidly than any city in the world from 1950 to 1975, growing at an average annual rate of 7.6 percent (UN Population Division 2002). Seoul's population grew from just over a million in 1950 to more than 6.8 million in 1975. By 2000, the population of Seoul was about 10 million, but the population of the entire Capital Region (Gyeonggi Province, including the city of Inchon) had ballooned to more than 21 million.

Seoul's greenbelt was patterned after the greenbelt of London (Bae 1998) but adapted in the Korean context. Greenbelts, formally referred to as Restricted Development Zones (RDZs) in Korea, were introduced in the City Planning Law of 1971 and shaped by the 1972-1981 National Comprehensive Physical Plan of 1973 (Lee 2000, 2004). Greenbelts were designated around Seoul and 13 other cities between 1971 and 1973.

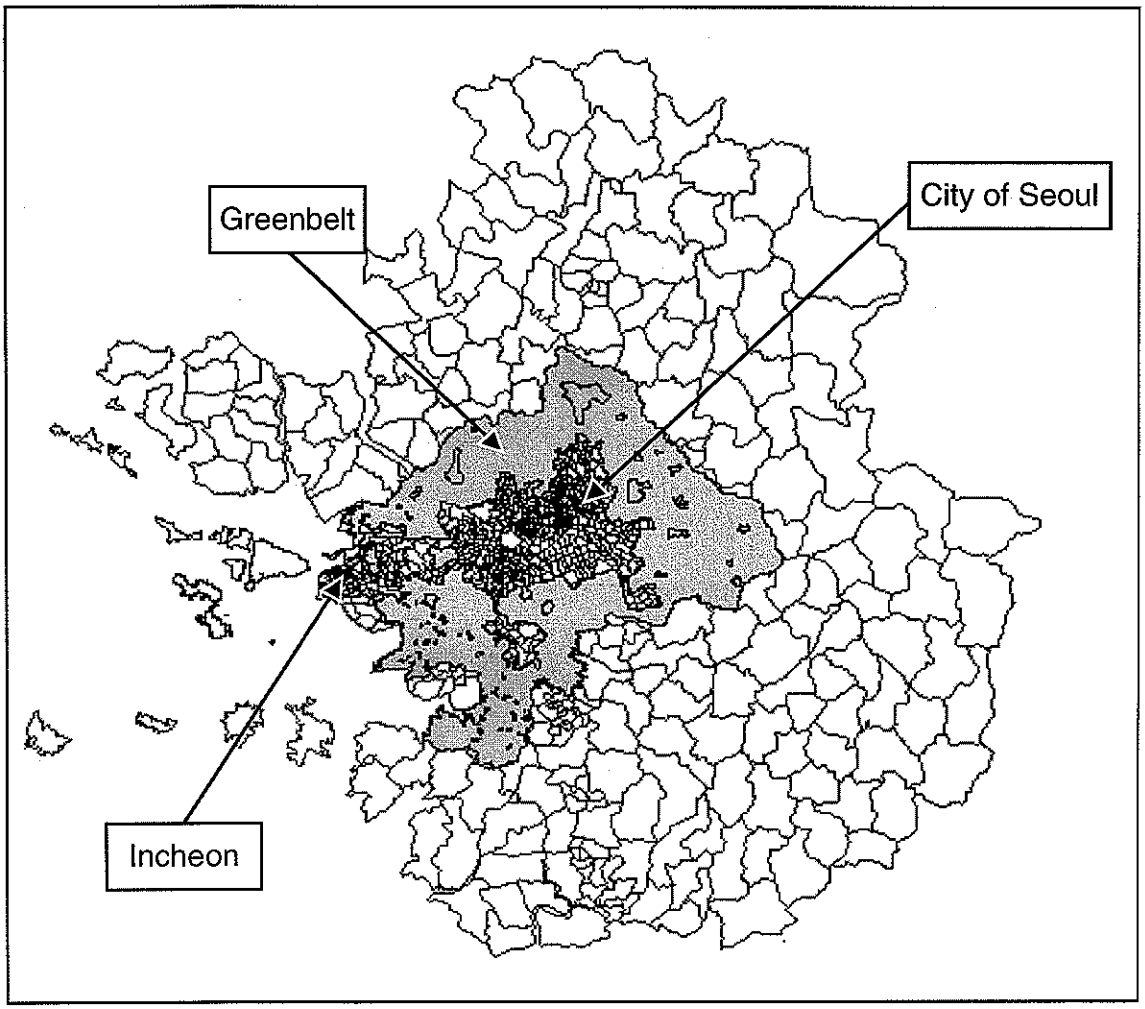
Seoul's greenbelt is very large, consisting of a band averaging about 10 km wide that begins about 15 km from Seoul's central business district (fig. 1). After being extended four times by 1976, Seoul's greenbelt contained 1,566.8 square km, about 13.3 percent of the Seoul Metropolitan Area. The population living within the greenbelt is small, however, accounting for only 1.66 percent of the Seoul Metropolitan Area's population (Bae and Jun 2003). Most development has been strictly prohibited on greenbelt land and greenbelt landowners have received no compensation for their loss of development rights (Bae 1998, Lee 1999). The economic hardship imposed on landowners has been contentious from the beginning, because nationwide about 80 percent of the land within greenbelts is privately owned (Lee 2000, 2004). The boundaries of Korea's greenbelts were hastily drawn without public input and without serious consideration of widely accepted criteria for the designation of greenbelts. In one case, a village was divided down the middle by the greenbelt boundary (Choe 2004b).

Bae (1998) identified seven objectives for the establishment of Seoul's greenbelt. First, unlike greenbelts in most countries, national security was originally a dominant objective. Given the perceived threat of invasion from North Korea, the greenbelt allowed the government to strictly control development near the Demilitarized Zone north of Seoul. Choe (2004a) noted that more than 40 percent of South Korea's population was living within range of a ground artillery attack from North Korea in the early 1970s. Second, greenbelt regulations were used as a means to eradicate illegal shantytowns on the outskirts of Seoul. Third, the greenbelt was viewed as a way to control urban sprawl. Government efforts to control the rapid expansion of Seoul during the 1960s had been ineffective (Kim and Kim 2000). A fourth objective was to reduce rapid growth in population and industrial concentration in the Capital Region. Fifth, expansion of the greenbelt was viewed as a way to limit land speculation in the metropolitan region. Sixth, the greenbelt was intended to protect agricultural land and promote food security. Finally, environmental and natural resource protection also was an objective of the greenbelt policy.

The relative importance of these objectives has changed over time. For example, the importance of environmental protection as a rationale for the greenbelt has grown significantly as environmental awareness and economic prosperity in Korea have increased (Lee 2000, 2004). An additional and increasingly important rationale for Seoul's greenbelt is the provision of recreational resources to a city short of parks and nongreenbelt open space. Almost three-fifths of Seoul's greenbelt consists of mountains and forests that are heavily used for recreation (Bae and Jun 2003).

Korea's greenbelt policy has enjoyed great support from the general public (Kim and Kim 2000). Lee (1999) cited several surveys conducted in the 1990s that found strong support from citizens, environmentalists, and Korean planners, but opposition from most greenbelt property owners who viewed the policy as seizure of private property. A 1998 survey conducted by the Ministry of Construction and Transportation (MOCT) found that most government officials and academics preferred to retain the greenbelt, but they felt reforms were

Figure 1.—The Capital Region (Gyeonggi Province) and Seoul's greenbelt.



needed to ensure the achievement of development goals (MOCT 1998). Lee (2004) carried out a multivariate analysis of the data from the 1998 MOCT national survey to account for variation in greenbelt support. He found greater support for the greenbelt policy by individuals with higher incomes and educational attainment, and lower support by individuals residing in regions with strong development pressure and in the Capital Region. Surprisingly, he did not find a statistically significant relationship between opposition to the policy and ownership of land within greenbelt boundaries.

COSTS AND BENEFITS OF SEOUL'S GREENBELT

Cheshire and Sheppard (2002) noted that most economic research on land use planning has focused on the costs and neglected the benefits. This is true for economic research on Seoul's greenbelt policy. Most of the economic studies of Seoul's greenbelt have focused on its social costs, especially higher land prices, housing prices, and commuting costs. Several studies have examined the decrease in the price of nongreenbelt land and housing that would result from either a partial relaxation or complete elimination of the greenbelt (e.g., Choi 1994, Kim 1993, Kim *et al.* 1986). These studies found relatively modest effects of the greenbelt on land and housing prices. For example, Choi (1994) estimated that land prices in the greenbelt in 1987 were about 30 percent below non-greenbelt land values, a much smaller price differential than suggested by anecdotal reports. Choi's analysis also indicated that if Seoul's greenbelt had been completely eliminated in 1987, greenbelt land prices would have risen by an average of 32.1 percent and nongreenbelt prices would have fallen by 7.5 percent.

It is important to recognize that Seoul's greenbelt policy is but one of many supply-side restrictions that put upward pressure on land and housing prices. A variety of other government policies may restrict land and housing supply, including multiple layers of urban zoning, agricultural zoning, a virtual public monopoly on urban land development, the system of land and housing taxation, and an inadequate system of housing finance (Choi 1993; Kim 1990, 1993). Hannah *et al.* (1993) concluded that the government's tendency to underallocate land to urban residential use was responsible for a substantial part of the increase in urban housing prices. Demand-side factors, such as the local and regional amenities provided by greenbelts, also put upward pressure on land and housing prices by shifting the demand curves for land and housing outward.

contain. The result has been a physical footprint (the area of land taken up by the entire metropolitan region) that is probably larger than would have been the case in the absence of the greenbelt (Bae and Jun 2003). But Seoul's greenbelt has been remarkably successful at protecting important agricultural land, providing badly needed recreational resources in a megacity with few parks, protecting the beauty and natural heritage of the ancient capital of Korea, and maintaining vital ecosystem services.

A lesson of this review is that urban containment policies lead to both significant benefits and costs, and that these costs and benefits change over time with population and economic growth. A number of researchers have concluded that the social costs of Seoul's policy could have been reduced if the greenbelt had been more flexible and had accommodated growth, similar to most urban growth boundaries in the U.S. For example, in discussing the implications of Seoul's policy, Dawkins and Nelson (2002: 6-7) stated that "... urban containment boundaries should be periodically re-evaluated and extended to allow for sufficient land release. If the boundary is not periodically revised, net social benefits will be offset by the increased social costs associated with congestion externalities and land supply constraints" (see also Jun and Hur 2001: 158, Lee 1999: 50). This view represents the conventional wisdom of the urban planning profession: growth accommodation is always the preferred policy (Zovanyi, this volume).

But this view fails to account for what are likely the most significant categories of benefits associated with Seoul's greenbelt: the life supporting ecosystem services and recreational resources it provides to residents of the Seoul Metropolitan Area. The value of these benefits will likely rise with continued growth and urbanization. Therefore, whether or not Seoul's greenbelt has provided net benefits to society remains an open question. Few studies have empirically examined the benefits of Seoul's greenbelt policy, and no studies have attempted to measure the economic value of its ecosystem services, recreational value, or bequest and heritage values.

Would Seoul be a more or less "sustainable city" today without the greenbelt? There is no definitive answer to this question. Despite the importance of moving toward more sustainable cities in our increasingly urbanized world, there is no consensus about the nature or dimensions of urban sustainability (Burton *et al.* 1996). Assessing urban sustainability is an extraordinarily complex task because of the complexity of cities: they consist of many layers of constantly changing economic, social, legal, cultural, political, and ecological systems. But we do know with certainty that in the absence of the greenbelt, Seoul would have lost much of its rich natural heritage and essential ecosystem services.

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