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**CITIES WITHOUT LAND MARKETS:
LOCATION AND LAND USE IN THE SOCIALIST CITY**

by

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ABSTRACT

How does the spatial dynamics of the socialist city compare with that of the market city? What happens to a city when all investment decisions are made without land markets? What are the outcomes when the forces described by familiar urban models aren't allowed to work? This paper describes the structure of Russian cities after seventy years of Soviet development. This is the longest socialist experience on record and its results are of paramount interest to urban economists. In the absence of price signals and of economic incentives to recycle land over time, the administrative-command process has led to a startling pattern of land use. Its central feature is a perverse population density gradient which rises as one moves away from the center of the city. The Soviet city is also characterized by rusting factories in prime locations and distant residential areas in the suburbs. Such a structure tends to maximize the economic and social inefficiency of the socialist city and environmental ill-effects. Real estate prices are now emerging with market-oriented urban reforms. Their negative gradient signals again the massive scale and fundamental nature of past land misallocation in the Soviet city. The experience of socialist cities is also a powerful warning about the ill effects of public ownership and allocation of land to achieve the "socialization" of land rents.

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I. INTRODUCTION

The rejection of private ownership of capital and of the means of production has been a central tenet of Marxist ideology. To what extent does the socialist city differ from the market city? How does its land use differ from the outcomes of our familiar models of residential and business location based on competitive land markets developed in the tradition of Alonso, Wingo, Muth, Mills and now extended beyond the monocentric city? Also, what happens when public ownership and public allocation of land is the road chosen to solve the long-standing concern with the “capture” of public generated land rents by private owners? What is the systemic impact of the administrative-command system as a substitute to the market? The purpose of this paper is to describe the long-term effects of administrative-command systems which do away with land markets on location and land use in cities.

The evidence presented comes from Russian cities which are the urban centers with the longest history of development in the absence of land markets. Except for the old historical centers, almost all of Russian urban growth has taken place during the Soviet era 1917-1991. The fact that urban development took place in a period when land was nationalized and administratively allocated, rather than sold on an open market for a price, has had a very profound impact and negative impact on the internal organization of Russian cities. The combination of Marxist ideology, national institutions, domestic economic system and level of urbanization has produced somewhat different results in each socialist economy. However, it is quite relevant to speak of a "socialist city" wherever urban development is expected to proceed without land markets and land use decisions are made administratively.^{1/} The socialist city experiments bring out multiple issues of property rights, institutional organization and governance, agency problems, as well as urban planning regulations. This paper focuses only on the striking spatial anomalies and pervasive urban inefficiencies caused by the inability of an administrative-command system to evaluate even very approximately the value of a land site and its opportunity cost in alternative uses and to remedy the grossest land use misallocations.

^{1/} Our initial interest in the structure of socialist cities started with field work in China in 1988, see Renaud and Bertaud, 1989. A seminal influence were the papers in French and Hamilton, 1979. Qualitative results comparable to those presented here for Moscow and St. Petersburg have also been obtained in the case of other socialist cities such as Warsaw in Poland and Beijing, Shanghai and Tianjin in China, see Bertaud, 1994.

II. LAND ALLOCATION IN CITIES WITHOUT MARKETS

In Soviet Russia, and other socialist cities as well, administrative decisions based on "needs" and norms govern the use and quantity of land consumed. By contrast, in a market economy, land price differentials constitute the most important factors determining quantity and location of land consumed. These divergent principles governing land allocation and land use could be expected to produce different spatial and efficiency outcomes. A quantitative land use analysis of Moscow and St. Petersburg reveals that there are indeed major differences between Russian cities and market economy cities in the distribution and consumption of land.² Inspection of land use maps or satellite photos of other Russian cities confirms that these are systemic features of the socialist city.³

A. Absence of Incentives to Recycle Land in Soviet and Other Socialist Cities

As their economy and their population grow, cities expand through the progressive addition of concentric rings, similar to the process for trees in successive growing seasons. New rings are added to the periphery as the city grows. Within each ring, land use reflects the combined effects of demography, technology, and the economy at the time when the ring was developed. While this organic incremental growth is common to all cities, in a market city changing land prices exert their pressure simultaneously in all areas of the city, not just at the periphery. Land prices exert a powerful influence to recycle already developed land in the inner rings when the type and intensity of the existing use is too different from the land's optimum economic use. Thus, changing land values bring a built-in urban dynamism as continuous variations in land prices trigger land use changes by putting a constant pressure on the existing uses of land.

By contrast, under Russia's command economy, the absence of land prices removed all incentives to redevelop built-up areas. Once land was allocated, it was almost never recycled. Without price signals, it was administratively simpler to respond to current land demand pressure by developing at the periphery than to redevelop well-located areas with obsolete land uses. While the city expanded outward, land use in already developed areas remained unchanged. One striking illustration of this phenomenon is the persistence and uniformity of housing types in successive rings around Moscow. Each type is usually designated by the period in which it was built. Thus, driving from the center of Moscow, one passes through rings of Stalin, Khrushchev, and then Brezhnev flats.

² The methodology used is based on the measurement of population density in the built-up area, i.e. the population within two concentric rings at 1 km interval divided by the built-up area within this interval. This built-up area does not include large parks, physical obstacles to land use such as rivers and lakes, and any undeveloped area. These densities are derived from digitized land use maps, satellite photographs and detailed databases related to land uses by type of users. These data bases are routinely maintained by local urban planning offices. The geocoded data was analyzed with a graphics-based GIS software.

³ In Chinese cities, however, the socialist land use system has a much shorter and more recent history than Russia. Also, Russia has completed its urbanization but China is just entering its phase of most massive urban growth. As a result, the historical Chinese urban core which was developed under a market economy has kept a much larger relative importance than in Russia. Moreover, in China, the absence of large urban infrastructure and public transport investment plus severe under investment in housing between 1949 and 1979 has led to more compact cities and reinforced the population density at the center. But now, under the rapid urban investment of the last decade, administrative processes operating without land markets are again generating outcomes similar to those of Soviet cities: new residential floor area ratios follow the Russian pattern and are higher in the periphery than in the center. (For more comparative data, see Bertaud, 1994).

This socialist land use process creates sizable enclaves of "fallow" or "dead land" areas which combine low levels of economic activity with negative environmental qualities. The Soviet administrative command economy has generated an urban development process with two characteristic features of large land use inefficiencies: (1) Areas with obsolete land use occupy large amounts of the total city area; and, (2) Households tend to be concentrated in the periphery with increasing densities further from the center and "historically" low densities in central areas. This pattern tends to increase transport costs and pollution by requiring higher energy expenditures without providing better amenities such as larger plot size or a better environment that would be the normal trade-off for increasing commuting distance in a market economy.

B. Why Rusting Factories in Prime Urban Locations?

The failure to recycle land occupied by old activities of little value yields several spatial outcomes: centrally located industrial belts, large total amount of urban industrial area, low job density in the industrial belts, and central land areas fragmented by dense railway networks. There are four major consequences.

First, of these pathologies, the most startling are the *old industrial belts* that ring Moscow and St. Petersburg. Developed during the 1930's and 1950's, these belts are still spread between 4 and 8 kilometers from the city centers. These industrial land use bottlenecks have never been recycled, even though the land values would have been prohibitively expensive for these enterprises had market land prices been used. The absence of market signals resulted in a land use freeze that pushed residential areas further toward the city periphery than in market cities. Meanwhile, obsolete and low density activities have remained as enclaves on accessible and well serviced land.⁴

The absence of land prices and the dominance of industrial planning in government thinking and policies explains the second phenomenon. Not only are Moscow and St. Petersburg characterized by centrally-located industrial belts, but also the *total industrial land area within these cities is extraordinarily large*. For example, in Moscow, 31.5% of the total built-up area is used by industries, compared with 5% in Paris, 6% in Seoul, and 5% for Hong Kong. In the industrial belt from 7 to 8 kilometers from the center of Moscow, 67% of land is used by industries. (See FIGURE 1.a). The extensive use of prime, centrally-located urban land for industries is particularly inefficient in Russia because of socialist industrial organization which requires most industries to hold large inventories of materials in order to survive in the socialist system. *These industries therefore use large areas of land for warehousing and heavy transport infrastructure* -- a peculiar constraint on industrial land use that results in a low ratio of jobs per unit of land. In a market economy, such a low job-to-land ratio would be incompatible with the central location of these industries.

Third, the distribution of jobs by distance to the city center shows that both Moscow and Saint Petersburg, are still monocentric cities with a high concentration of jobs in the city center, a feature common with most market economy cities. (See FIGURE 1.b). As the transition to markets progresses, many industrial jobs will disappear and more service jobs will be created. The majority of these jobs will be located in the city center further reinforcing the monocentric characters of these cities. The histograms of the geographical distribution of jobs for Moscow (FIGURE .1.b) and Saint Petersburg (not shown) confirm that the *industrial zones do not significantly increase the number of*

⁴ The almost Dickensian character of centrally located factories in the Soviet Union and China also reflects a very low rate of technological change, especially compared to those of today's "emerging markets" in Asia. See the discussion of high growth rates with little or zero productivity gains under central planning in Renaud, 1990.

jobs to justify their prime location so close to the city center. No data were available to conduct a more detailed analysis of present land use and floor space. But the very high spot prices reached by new office space in Moscow and Saint Petersburg are indicative of an acute supply constraint for land and floor space dedicated to services in the city center, a typical shortage in socialist economies in transition.

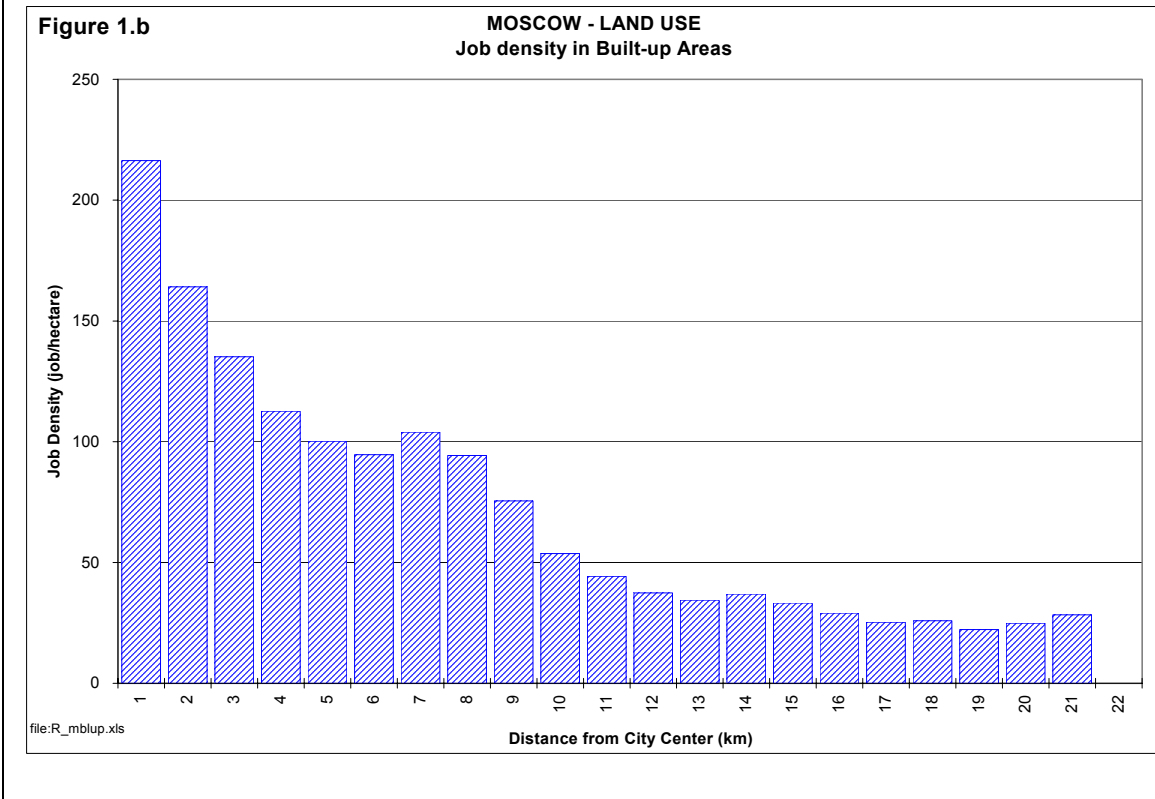
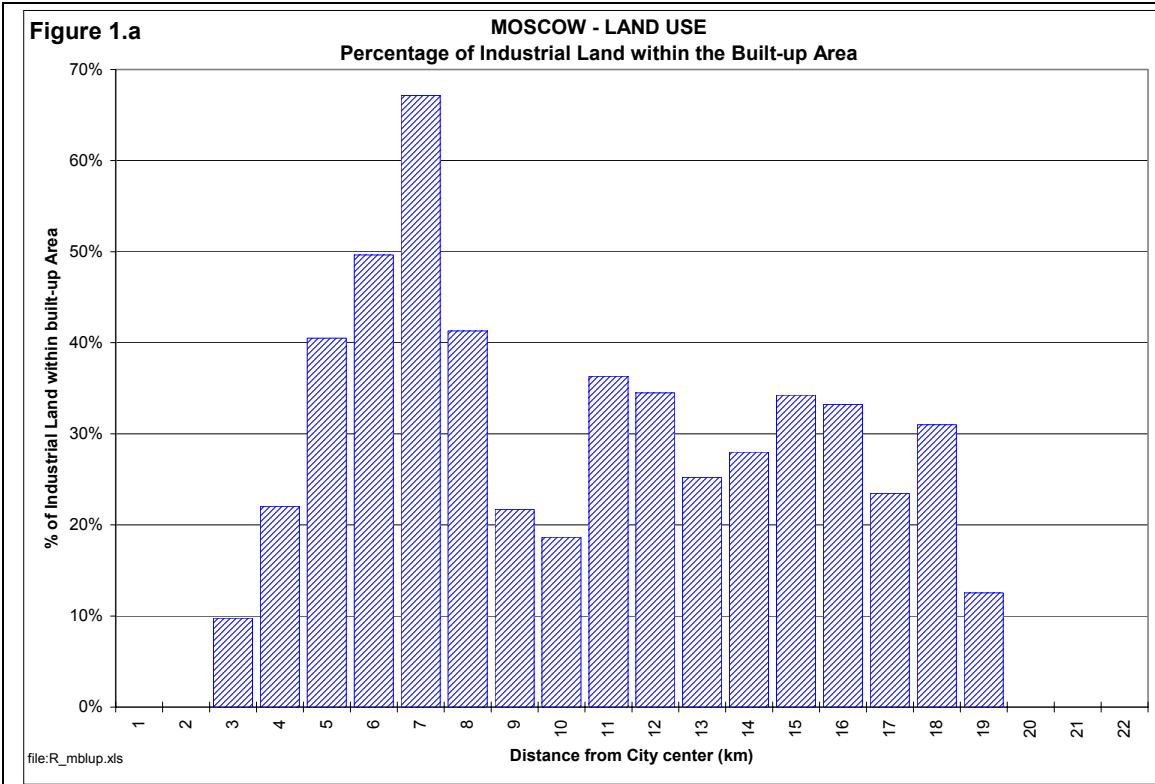
Fourth, obsolete forms of intercity transport further solidify this frozen land use pattern. The land of the industrial belt of Moscow is serviced by a *dense network of railways* which have the effect of further *fragmenting the land and making land on the exterior side of the industrial belt expensive to service*. Only a small part of the volume of traffic on the rail network within Moscow Municipal boundary is used for passenger and commuter traffic; *most of it is used for freight*. This fragmentation further reduces the usability of land adjacent to centrally-located industrial areas and increases significantly the cost of the primary infrastructure network which has to be developed to service it. This fragmentation of urbanized land by railroads is linked to the Soviet Union's extraordinarily high dependence on rail transport compared to any other country which is nine times higher than in Western Europe, and to the industrial bias of Soviet economic and urban planning. This problem is encountered in most Soviet cities and other socialist economies.

C. Dynamics of Housing and Residential Development in the Socialist City

The prevalence of unrecycled large-scale industrial belts in Moscow and St. Petersburg is a subset of a larger set of spatial distortions found in Russian cities. The process of development of housing projects under the administrative command-system and the activities of real estate developers in market cities follow different motivations and yields totally different outcomes from those predicted by market models of location and land use. The key to understanding these larger distortions also provides a tool to design policies for reducing inefficiencies. In a market, housing developers are *value* maximizers while in a supply-driven command economy bureaucratic housing builders are *cost* minimizers with little interest in final users satisfaction since these are not the direct clients which are other administrations.

FIGURE 1

INDUSTRIAL LAND USE AND JOB DENSITY PATTERNS



In a market economy, private developers compete for the same location. The winning bid will go to the activity estimated to be most profitable at that site. Land prices exert their pressure on the whole supply of land, including the already built land. This is the key to economically efficient cities and lies at the core of our urban models. As the city expands, land prices tend to rise throughout the city. Land prices stay the highest in the most accessible areas around the city center and along transport corridors. This was already Von Thünen's fundamental insight. Such pricing triggers density increases in those areas. The rise in density triggered by relative price changes is due to the compounded effects of two phenomena: (1) Floor-to-land area ratios (FAR) increase in central locations because of land recycling through demolition and reconstruction, and (2) The consumption of land space per job or per resident decreases because the more efficient land users out-bid less efficient land users who then move to more peripheral locations where land is cheaper.

Over time, the interaction of these effects produces a population density profile that is negatively sloped from the high-population center to the sparsely-populated periphery. The driving force behind this density gradient is not master planning by city planners, but the individual decisions of real estate developers who want to maximize the difference between production costs and the market value of the final product. As a city grows larger and richer, recycling land in already built-up areas offers the opportunity to maximize this difference. This is an incremental and decentralized process but it is not slow. In advanced industrial economies, about 2% to 5% of all urban jobs within an urban area relocate every year, depending on economic growth conditions. In a market economy like the US, families relocate about every five years, but 80% of moves are within the same urban area.

By contrast, under the administrative-command economy, housing construction organizations are typically integrated into housing *kombinats* and they respond to very different incentives. A *kombinat's* performance is measured by its ability to reduce *input costs* while meeting quantitative production targets. The costs have to be minimized while the *value* of the final product is irrelevant. Land may be free, but it must be allocated from what is available. Due to the lack of incentive for land recycling, the supply of land is limited to the new areas developed that year in the outer fringe. As a consequence, *kombinats* have to meet their production targets using land that is almost exclusively at the periphery. The density of the newly built area (defined as the unit of floor space divided by unit of land) will then reflect the ratio between the developed land available and the amount of floor space to be built to meet the production quota.

As the socialist city expands, the land at the periphery becomes less and less desirable and more expensive to develop because primary infrastructure -- and metro lines in the case of Moscow and St. Petersburg -- have to be expanded. But in a command economy, housing is entirely supply-driven and, if the supply of serviced land is lagging behind the floor space production target, the building density in the outer rings will tend to rise. Over time, Soviet housing *kombinats* have been stacking up more floor space on the more distant land. The failure to price land is compounded here by artificially low energy prices. The dynamics of such a system do not tend to produce the resource-preserving, more efficient negative density gradient of market cities.⁵

⁵ Note that the artificially low socialist cash wage (see Renaud, 1991) compounds residential land use distortions. In market cities, behavioral studies show that urban residents tend to value their time traveling to work as a significant proportion between one-third and one half of the hourly-wage equivalent of their salary (see Chapter 8 in Meyer and Gomez-Ibanez, 1981). In socialist cities, the distorting effects on land use allocation of the lack of land prices are further masked by the artificially low value that urban residents are placing on their time. Price and wage

C. The Socialist City Compared With the Market City: Moscow versus Paris

The comparison of *density profiles* between Moscow and Paris is revealing (see FIGURE 2.a). Both metropolitan regions have a population of about 9 million. They are strongly radio-concentric, and have similar peak densities. However, the way densities are distributed geographically is strikingly different. Paris shows the typical density profile of a market economy city, with a *negatively* sloped gradient. In sharp contrast, Moscow has a *positively* sloped density gradient. The net density of Moscow at 15 kilometers from the city center is twice as high than in the center. The density of Moscow suburbs at 15 kilometers from the center is the same as in the center of Paris. One should note the drop of density at 6 kilometers from the center in Moscow. This drop of density is due to the unrecycled industrial land use producing the enclaves of "dead land" in the city fabric.

The *degree of population dispersion* can be measured in a rough manner by comparing the median distance to the center per person. FIGURE 2.b shows the cumulative population distribution curve of Moscow, St. Petersburg and Paris. The cumulative curves of Moscow and Paris intersect each other at Kilometer 14, corresponding to a population of about 6 million people. This means that within a circle of a 14 kilometers radius, Moscow and Paris serve the same population, and as a consequence have the same average density. However, because of the difference in the density profile between the two cities, the median distance per person to the center is 7 km for Paris and 10 km for Moscow, *a 42% greater dispersion in the case of Moscow*. Is the land use and the density profiles of socialist cities like Moscow or St.-Petersburg a mere curiosity for land use specialists? Emphatically not. It matters a great deal to the Russian urban economy where three-fourth of the population lives, for the following reasons:

1. Average densities being equal, the population of a city with a positively sloped density profile is more dispersed than one located in a city with a negatively sloped profile. This implies higher transport costs, higher primary infrastructure costs, higher urban operating costs, and a greater share of labor time wasted in travel. these distortions are paid for in the form of lower levels of economic development.
2. A large amount of floor space has been developed where there is little demand for it, that is, in the suburbs with less accessibility. When transport subsidies are progressively removed and full wages restored, demand -- and consequently land prices -- for this type of high density housing far from the city center will drop even further. Prices could well drop below replacement costs and trigger abandonment.
3. The fully-serviced, underused land close to the city center has a high opportunity cost.

liberalization are now triggering massive shifts in relative prices that are deeply disruptive, as discussed further in Part IV.

FIGURE 2

THE SOCIALIST CITY COMPARED TO THE MARKET CITY
Moscow Compared to Paris

Figure 2.a

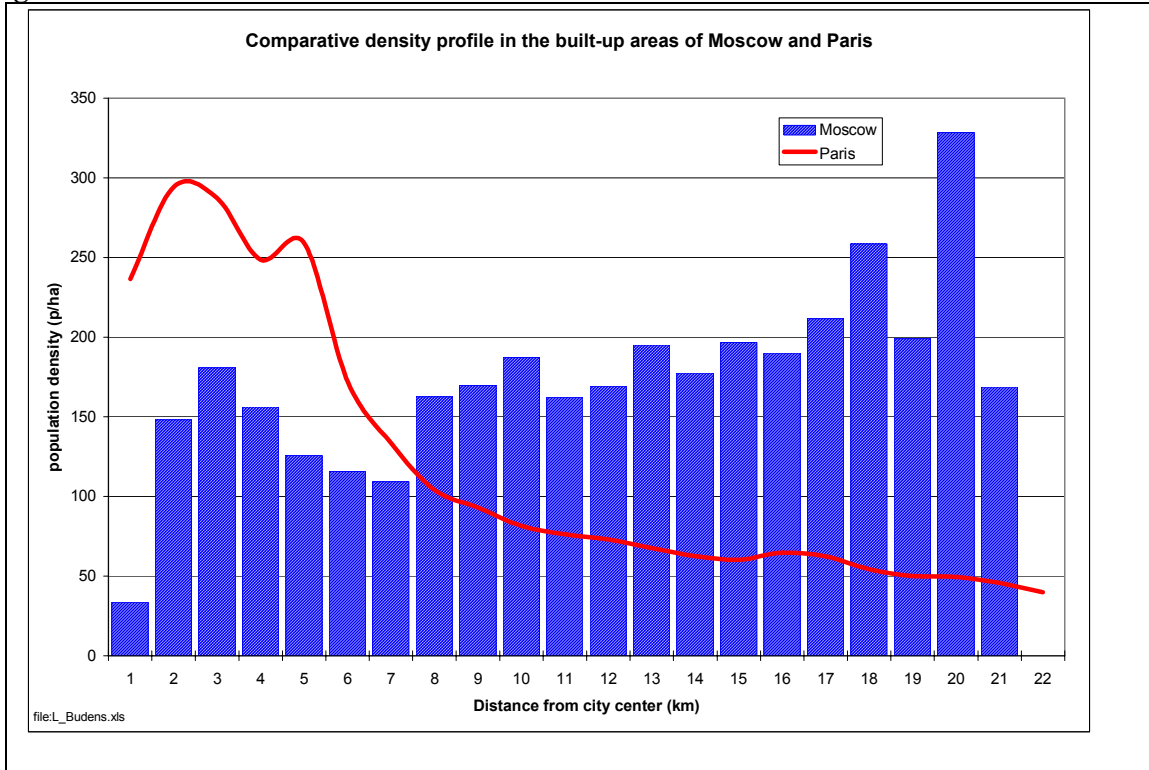
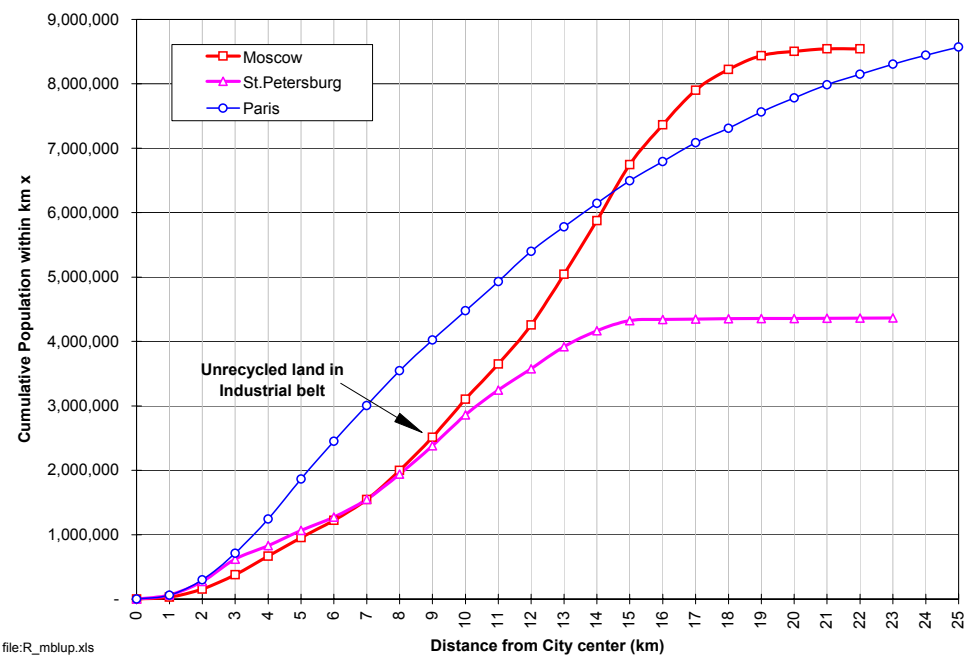


Figure 2.b

COMPARATIVE POPULATION DISTRIBUTION Moscow, St.Petersburg & Paris



III. EMERGING PROPERTY MARKETS AND REAL ESTATE PRICES

For seventy years, Soviet Russia has used its great natural resources to built an urban system of doubtful efficiency and sustainability. More generally, the socialist city has inordinately high capital/output ratios and requires more resources for less urban output than market cities. Urban land markets are therefore a very important part of overall economic reforms. The allocation of land should be driven by its current opportunity cost. However, the value of a specific land parcel in its highest and best use can prove difficult to estimate even in a stable fully developed urban land market. The next best prices are actual market transactions which are the result of private valuation of investors looking at the future *and risking their own-resources*. Since 1990, urban laws and constitutional reforms promoting individual ownership and decisions have been enacted in Russia (Butler and O'Leary, 1994), as well as other socialist countries, including China (Kerzner 1993). Consistent with Kornai's insight (1990), such reforms were initially attempted for narrow bureaucratic reasons.

A. Synthetic Land Price Gradients and Normative Prices

During the late 1980's, under Gorbachev's *perestroika*, local governments resources had become severely constrained. Local mechanisms to finance the production of serviced land had to be found to complement the inadequate resource transfers from the central government. It was therefore decided to create a land use tax to finance local infrastructure. In the peculiar logic of an administrative-command system, officially land has no value in construction projects. Yet everyone agreed that different locations have very different economic values. The solution chosen was to estimate normative land prices on which taxes could be based. For the first time, various research institutes began building models to calculate synthetic land price maps according to which taxes would be raised, and from which land price gradients could be derived. These institutes have attempted to map normative values of land calculated on the basis of weighted coefficients representing amenities such as transport, infrastructure, environmental quality, etc. Typically, demand factors were not included, and price estimates were based on the arbitrary and highly distorted accounting prices of the late 1980s. Regardless of these fundamental flaws, land value maps were produced from which one can infer a city's normative, land price gradient.

The resulting normative land price gradients of Moscow and St. Petersburg were negatively sloped. Moscow's gradient was somewhat flatter than St. Petersburg. The normative price variation between the center and the periphery in Moscow was only 2.5 to 1 (from Rb 4,000 at km 0 to Rb 1,600 at 22 km in the now irrelevant 1990 prices). Both curves are much too flat. In market cities, in the absence of major topographical and legal constraints, the ratio between the land price in the central business district and at the fringe of the built-up periphery is usually on the order of 10 to 1. In spite of their correct slope, the profile of these normative curves was highly arbitrary as nobody knew either the highest nor the lowest values. Such normative prices could greatly improve the traditional urban master plans made in Russia, but they would be of no value for the choice of a specific location for a given investment.

B. Housing Privatization and Rapidly Emerging Implicit Land Price Gradients

With the beginning of housing reforms, actual apartment sales transactions between private parties have been taking place in Moscow since 1991. Privatization and opportunities to trade

units are now rising dramatically.^{1/} A preliminary empirical analysis of 2,000 transactions carried in the first trimester of 1992 and of another group of transactions in the fourth trimester of the same year provides an important first look at emerging real estate and land prices. The study analyzed the residuals from an apartment sales model that uses only building-specific variables based on resales of privatized apartments. It is possible to construct a land price gradient by plotting the residual as a function of distance from the center of the city as show in FIGURE 3. These preliminary results provide some critical information. First, the emerging price gradient is downward sloping from the center. Clearly, housing kombinats are not providing the housing that household value the most. As FIGURE 3.a shows, the land price index decreases from 100% in the center to 70% at 25 km. -- a negative price gradient -- with the greatest decreases coming in the first 8 km. This model suggests that, at present, imputed land prices are only about 1.5 times higher at the center than at 25 km. This is still a very weak price differential to trigger the urban restructuring that Russian cities need. Various factors can explain this flat price gradient including the collapsing economy, ambiguities about land values, and the disequilibrium state of an emerging market.

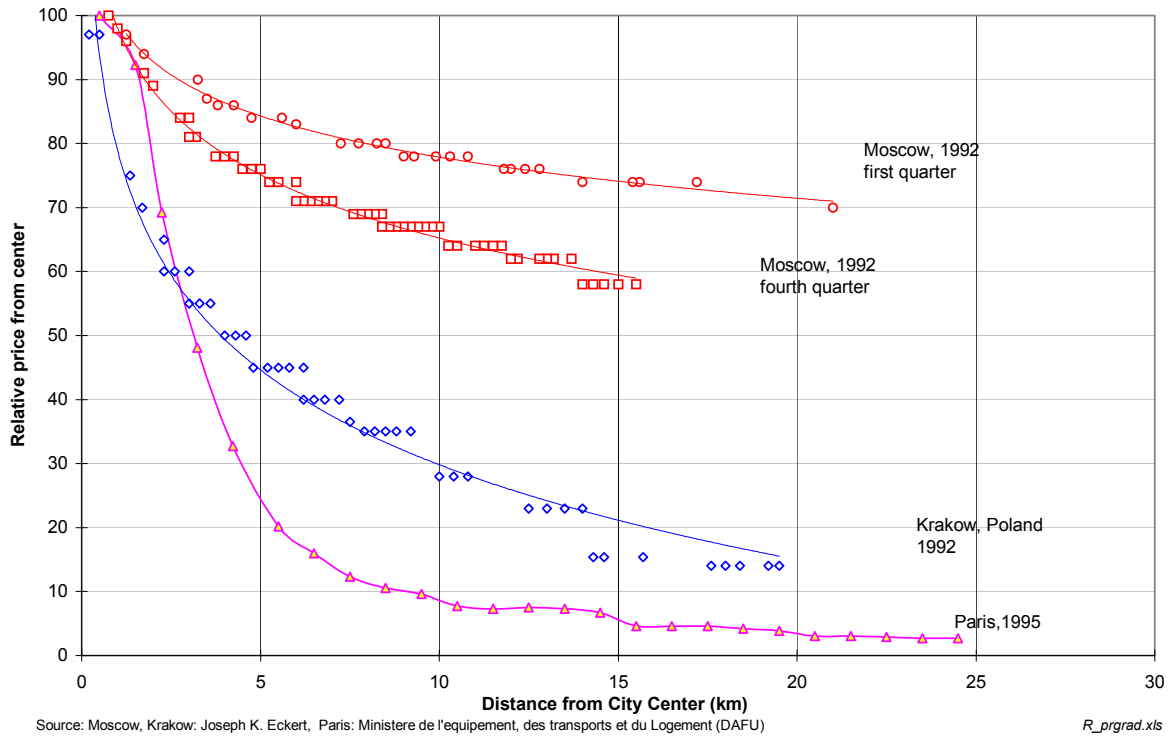
What is rather striking and unanticipated is that the land price gradient seems to be rotating very rapidly during the transition to market.⁷ The analysis for the second period in Moscow shows that the slope of the price gradient has steepened from 100 percent in the center to 58 percent at only 15 kilometers from the center. This a real adjustment of 20 percent in less than a year. It can be expected that, with new legal clarifications of land ownership rights in December 1992, privatization, as well as continuing relative price changes regarding energy the gradient will continue to rotate rapidly. This expectation is also fed by a similar analysis of land prices in Krakow, Poland which shows that in that city the land price differential has already reached a market city differential of about 10 to 1. Polish urban reforms, in particular the restoration of private land ownership rights has been more thorough that what has been done so far in Russia. At this early stage in the development of the land market, location values are not yet being fully capitalized into property values. A more normal price differential will only emerge when investors have more certainty about land tenure, when real estate information institutions become more proficient, and when economic and political conditions stabilize.

^{6/} For reference, it is estimated that about 125,000 housing units were exchanged or sold in 1992. Since there are about 3.1 million apartments in Moscow, this represents a rate of about 4 percent of the housing stock. In a market city, the annual ratio of housing trades is often of the order of 15 percent of the stock. A major social change is taking place with the rapid privatization housing units by their occupants. Between late 1992 and the end of 1993, 35.5% of the state stock was privatized in Moscow and 26% in Russia. By the end of 1994, the share of privately owned Moscow units was expected to reach 55%, in dramatic contrast to a ratio of less than one percent in 1990. This Muscovite rate of privatization remains much higher than other cities.

⁷ Privatization of housing units has been particularly rapid in Moscow and St. Petersburg. By the end of 1994. The share of privately owned units in Moscow has risen dramatically from less than one percent in 1990 to more than 55 percent by the end of 1994.

^{8/} This rapid rotation is confirmed in the analysis of different Moscow housing price data by G.S. Madalla, Y. Toda, and N.N. Nozdrina in "The Price of Apartments Auctioned in Moscow: A Heeding Approach" (unpublished draft paper, May 1993).

FIGURE 3
EMERGING MARKETS' LAND PRICE GRADIENTS
in Moscow, Krakow, and Paris



IV. THE TRANSITION TO MARKETS: IS THE SOVIET CITY SUSTAINABLE?

Urban land markets are expected to raise the efficiency of the socialist city, but what happens during the transition, especially in Russia? For seven decades, Soviet planners have made urban investment decisions under four greatly distorted prices: land had no site value, interest on capital was not recognized, energy prices were only a small fraction of world prices, and cash wages bore no relation to the marginal productivity of labor. The emergence of markets will lead to sharp shifts in relative prices. In cities, the process is likely to be seriously disruptive. We can only point here at some of the management issues during this transition to markets.⁹ What will be the outcome of the interactions between the negatively sloped land price gradient with the positively sloped population density gradient? What will happen to: (1) the land occupied by existing enterprises, and (2) to the pricing of dwelling units, both rents and sale prices?

A. Market Prices and Affordability of Land Currently Occupied by Enterprises

Land reform administrators are presented with a difficult dilemma: if enterprises are asked to pay the market price (as defined above) for the land they occupy -- in the form of rent or land use tax -- most of them would not be able to afford it, and some would have to be declared bankrupt. Alternatively, if the financially weaker enterprises are given a reprieve or a waiver on the cost of land they occupy, this will perpetuate the status quo. The urban community will lose the opportunity cost of the land. New infrastructure would have to be developed elsewhere, while the costly existing infrastructure would remain underused. If the objective is to improve land use efficiency as rapidly as possible, one approach for responding to the above dilemma is to grant to existing enterprises explicit property rights in the land they now occupy. Then the enterprise will have the incentive to use this land as equity in planning to relocate to more affordable, appropriate land.

The value of the land resources involved in industrial land recycling -- even under the emerging low and still flat price gradient estimated for 1992 in FIGURE 3-- is very large. If we assume that the percentage of industrial land of Moscow could be reduced from the present 32% to 10% -- still a high ratio by international standards -- then about 100 square kilometers of already developed land could be recovered. Current Russian discussions of the affordability problem of non-residential land are a false problem which ignores the necessity of land use transition. By definition, the market price of land is affordable to new users. The industrial land may not be affordable, however, to *existing* users who are asked to pay for it retroactively, but these existing users are precisely those who are using land in an inefficient manner. The affordability dilemma can be solved by recognizing the land equity interest of present land users and then allowing these users to trade freely the land they occupy.

B. Impact of the Transition to Markets on Housing and Services Areas

The basic price of a housing unit depends on three main parameters: (1) location, (2) floor area, and (3) land area. Households, when shopping for housing, have to make *trade-offs* between those three parameters. For a given shelter price, suppliers are theoretically able to provide a dwelling unit in any location. This is possible by allocating different combinations of values to the three basic parameters: location, floor and land. Thus, the floor-to-land-area ratio of different housing unit types may vary widely within the same city. The net land area required to build one square meter of floor

⁹ For details, see Bertaud and Renaud (1994).

space may vary from 0.10 square meter for high rise apartments to 15 square meters for detached houses. Urban regulations and the many-dimensional features of housing demand impose a limit to the theoretically infinite number of permutations between location, floor area and land area.

With housing privatization which has been taking place very rapidly in Moscow and St. Petersburg, a housing market is emerging in Russia. Households are gaining ownership interest in the units they currently occupy, but different units of the housing stock at different locations within each city have very different values. The larger part of the housing stock built in the periphery of Moscow and St. Petersburg and the 150 largest cities of Russia (nationally about 55%) consists of prefabricated, reinforced-concrete, large-panel, high-rise apartments of 5, 9, 12, 15 and 22 floors. The actual economic value of such units and not their resource cost will be revealed by household preferences for the first time. High rise apartments at the periphery have four problems. (1) Operating and maintenance costs -- defined to include the cost of maintenance and operations of elevators and lift pumps, cost of central heating caused by the bad insulation of panel buildings, costs of frequent structural repairs required by the building technology used, and the cost of maintenance of large common open space. At present, rents no longer cover much if anything beyond the sharply increased energy costs. (2) The space standards measured according to room dimensions and height of ceiling which did not vary between central and suburban locations. (3) The quality of amenities including distance to shops and a variety of services may be lower than in central locations. (4) Transport costs formerly expressed only in time to work, are rising rapidly in financial terms as energy costs and other costs rise and transport subsidies decrease.

The market price which will emerge as land and real estate markets develop may turn out to be much below the replacement cost of such a unit. Most importantly, the market price of such units expressed in terms of market rent, might not even cover maintenance costs. Viewed through the prism of emerging market prices, much of the housing stock in periphery apartment buildings may have a discounted present market value of less than zero -- a sobering issue for privatization policy and for future housing investment programs. In the case of Moscow, as can be seen in FIGURE 2.a, the units at risk would be those located in residential areas with densities above the density line for Paris between kilometer 9 and kilometer 22. Given the current housing shortage, transition policies of preferential treatment in terms of transportation subsidies, higher quality maintenance may ease the burdens on residents. But it will remain a fact that these parts of the housing stock have very low and mostly negative transitory economic value. The high accessibility of some parts of the suburban areas (around metro stations for instance) should provide the opportunity for the emergence of secondary employment centers. Such centers would contribute to restoring the economic value of some of the residential areas. For this to happen, land use regulations and local administrative practices should show enough flexibility and speedy responsiveness to allow land conversion wherever firms of all sizes choose to use this location opportunity. Allowing this type of land use transformation to proceed should be a high urban policy priority.

It should be clear from the quantitative analysis presented that the suburban housing crisis which is looming in the cities of Russia cannot be attributed to the transition to markets, but to the legacy of the past. This crisis is the result of the administrative-command which disregarded the practical needs and preferences of the final users and lacked means of self-correction. The economic value of the housing that was produced did not match the true economic cost of the resources used. This cost was masked by distorted accounting prices which provided no meaningful guidance to decision makers who resorted to inadequate or perverse physical and administrative criteria. The scissors effect between low rents and low wages on one hand, and rising operation and maintenance costs on the other is not sustainable. Restoration of an economic balance could result from

abandonment of the least attractive part of the stock combined with increasing crowding of remaining units and much higher rent to income ratios.

CONCLUSIONS

The absence of land markets has profoundly impaired the ability to allocate and recycle urban land and has had a very negative impact on the internal efficiency, productivity, environmental quality, and livability of the socialist city. The extent of land use misallocation and the degree of rigidity encountered in the Russian economy which is by now fully urbanized is startling. The consequence is that the socialist city tends to have very high capital/output ratios and consumes more resources per unit of output.

A second important lesson of the failed socialist experiment is that the well-meaning attempt to socialize the collection of the land rent through public ownership and administrative allocation of land has not achieved the intended results. There is nothing presented in this paper that would call into question the social goals of any community. Rather, it is the allocation of land by administrative means in the name of equity and efficiency which has demonstrably failed on an inordinate scale. A broad variety of social goals can be accommodated under market conditions. Soviet cities remind us that what is most valuable in urban land market institutions is their ability to signal through prices how the current and future use of land is valued by individuals and society-- and to reveal how site valuation shifts up or down over time.

Finally, the evidence suggests that the social and economic transition costs of moving to markets will be the highest in economies such as Russia that are most highly urbanized and where cities are moving to market during a period of sharp economic contraction. Urban reforms are particularly urgent and most feasible in the socialist economies of Asia where economies are growing and the greatest wave of urbanization still lies ahead. In order to move to markets, the main components of the needed urban reform are: clear and tradable property rights; efficient and market-oriented information systems; a taxation system consistent with efficient land use; and, last but not least, the timely publicity and contestability of urban planning decisions (see Bertaud, Renaud, 1994).

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