SOME SALIENT ISSUES IN POLICY EVALUATIONS OF URBAN HOUSING MARKETS

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PREFACE

Housing problems are truly universal. For households the residential choice decision is basic both in view of its influence on their welfare and the substantial portion of their budget it claims. For regions and nations, housing determines centrally the investment sacrifices and has strong influences on the financial markets. These significances of housing problems have entailed a whole range of laws, regulations, and policies to afflict the functioning of the markets both from quantity and distributional aspects.

Different nations and regions have developed different arsenals of policy tools. Some attempts have been made to review and compare the national housing policies and the methods used in policy assessment. Such comparative studies are less common at the regional level.

The current Working Paper addresses the contemporary issues of policy evaluations of the working of urban housing markets by suggesting a conceptual framework for such analyses, based on systems analytic considerations. The paper contains a claim for the development of a new generation of housing market models for policy evaluations based on modern theories of probabilistic choice and structural change in dynamic systems. It provides an agenda for an international research project on urban housing policies at a time when management and renewal have replaced expansion as traits of urban fabric.

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1. BACKGROUND

The economic problems of housing are central in both market and planned economies. Housing expenditures are major items in the consumption budgets of households in a free market context. In markets cleared by other means than the price mechanism, queuing and crowding are exponents of the central importance attached to housing by the households.

Housing investments play an important role in the dynamics of economic change. The capital accumulation needed for new construction and renewal of the national housing stock has to compete with investments in the productive sectors of the economy. The long term bindings exerted by the current housing stock make the investment decisions in the housing sector especially sensitive to uncertainties in the demographic and economic development.

Although the investment process is an integral part of the housing supply dynamics, the durability of the stocks basically make the housing market an exchange one. This implies that the management of the existing housing stock is the major way of clearing the market. The management rules and the behavior of the suppliers and managers of housing are different in market, mixed, and planned economies. It is therefore challenging to

assess whether these differences are superficial or reflections of deeper phenomena. The fact that the methodological tools employed are quite similar would tend to indicate that the former observation might be relevant.

The housing market research is scattered. Housing demand studies have recently expanded in the area of preference analysis where housing is looked upon as a commodity with a whole range of internal and external characteristics. The links between housing demand studies and general analyses of households' consumption expenditures are still quite weak, however. Also the dynamic aspects of housing choice have not been given the research attention warranted from the investment nature of residential mobility.

Housing supply studies are quite scanty especially in the regional perspective. The research that has been done most often relates to problems of free markets where short run price equilibria are derived and generalized. It is illuminating in this context to distinguish between the producers of new construction, the managers of the existing housing stock, and the owners of that stock. It should be a fruitful field of research to make a comparative assessment of the behaviors of these three actors in the supply of housing. Among the actors one should also count the public policy agencies in view of the substantial political element in the regulation of housing markets at least in mixed and planned economies. Also in the supply analyses we assert that methods may be more universal than the current diversity of supply organizations may indicate.

We are not arguing for a general systems analysis of the housing problem. However, we would like the problem description, and the research proposals below, to be judged in a much more general perspective. The focus of the research activities which we argue for engaging in is the housing problems of the large metropolitan areas in market, mixed, and planned economies. The spread of these areas makes the location aspect of housing important, thus also introducing the necessity to think about housing-transport interactions. Accessibility patterns also influence the price mechanisms and land-value dynamics. The

revival of the core of the urban regions stands out as one important field of study, e.g., in view of the changing relative prices of energy for heating and transport use.

A concentration of this housing research on medium and long term analyses is warranted. The current research is basically short run, at least when it comes to quantitative modeling. The current research should bridge some of the gaps between the current scattered housing research activities, by taking recourse to systems analytic methods and tools.

2. THE PROBLEM SETTING

Housing is a capital-intensive, durable, and immobile commodity. Once in place, it imposes benefits and costs, both to current and future household generations. Thus a foresightful construction and an efficient management of the housing stock is of fundamental importance in both planned and market economies.

Management issues may vary according to the economic system, the housing provision goals, and the time perspective, although the methodological tools available remain essentially the same.

In planned economies, the same decision maker (a central planning authority) is both the owner and the manager of the housing stock. Relevant management tools in this case are, in a short term perspective, the design of equitable rules to assign dwellings to households, and in a longer term perspective, the composition and location of new housing stock.

In market economies, public managers and owners of the housing stock do not usually coincide, and the market mechanisms introduce a new dimension into the problem. Management tools might be different too. In a short term perspective, public control can be exerted by indirect means which influence the behavior of the market agents, as rent control and housing allowances. In a long term perspective, changes in the production and location of the housing stock may become relevant. This may be done directly only to a limited extent (by provision of low-rent dwellings), and mostly indirectly, by influencing private producers with suitable incentives and regulations.

It is understood that a fundamental methodological similarity can be found among management situations, since all the above problems can be looked at as generalizations or specializations of another. A housing market model, for instance, reduces formally to a centrally planned housing model when the supply side is reduced to a single monopolist. The producer behavior might not be the same in both cases, but this does not affect the technical aspect of the problem. Even the price mechanism, which seems to be absent in centrally planned housing systems, is formally still there, and the shadow prices generated by a single-objective optimization provide excellent measures (even though not necessarily expressed in monetary terms) of the externalities "paid" by the households in order to get access to housing.

Such unifying features have a counterpart in the literature. Housing models have actually been developed by introducing further generalizations at each step. Just to mention a few operational versions of these models illustrating this guideline, one can start with the classical Herbert-Stevens model, which, although developed in the USA, is well suited to model the long run performance of a planned housing system as well. A next step is represented by introducing more realistic behavioral features (like dispersion of customer preferences), while still keeping the long run equilibrium philosophy. It is worth noting that the same type of models have attracted the attention of scientists in the USSR as well.

A more recent step is represented by introducing the multi-actor structure of the real markets explicitly and examining the resulting interactions in the short run. This type of models, definitely closer to many situations in western countries, have been developed in the USA primarily.

Two common features of all approaches are the roles played by the models for demand behavior and by the spatial considerations. Although the supply side and the goals may have quite different structures, there seems to be an agreement among East and West on the need to account for demand behavior in a realistic way. At the same time, the relationship between the housing system and the transportation system (which is the main way space is introduced in such models) seems to be universally recognized.

The transportation system interacts with the housing system in many ways, the most direct and universal one being its use as a communication channel among residences and other activities, as work places and service facilities. In market economies, other indirect effects are acting, such as the influence of transport investments and changes in accessibility on land values and rents.

Many different policy-evaluation problems can be formulated within the frameworks outlined above, although it is perhaps too ambitious to pretend to solve all of them in one single task. Some realistic goals which can be pursued in a relatively short time and are of an applied relevance seem to be:

— For the market economies, to improve the housing market models in order to evaluate the impact of public policies in short and medium term perspectives. As a further step, to develop longer term dynamic models, introducing incentives and changes in the housing stock.

— For the planned economies, to exploit the formal similarities of long-run equilibrium models for housing provision planning.

— Also, for planned economies, to explore possible short-run models, focussing on the optimal management and assignment rules (of households to dwellings). This would possibly constitute the "nonmarket" counterpart of the short and medium term market models.

— For both planned and market economies, to complement the model developments by empirical studies of a chosen set of metropolitan housing markets to assess their similarities and peculiarities.

3. HOUSING POLICIES AND HOUSING RESEARCH

The questions to be answered by policy makers and planners are quite varied in different market settings. A typical situation in a developed market economy is a large portion of private housing stock, often with many vacancies. At the same time, there is an unequitable distribution of the stock among households, with some demand strata not allowed to improve their housing conditions (because of income constraints), or even not able to enter into the market at all. In such situations production and location planning clearly become less important, and distributional issues within the existing stock and locations become dominant. However, public housing management only exists to a limited extent and uses indirect means, possibly resulting in inefficiencies. Market interactions determine the behavior of the system, and public policies must act within them, and be aware of them, if they purport to be realistic.

This suggests as a *first research goal* the further development of housing market models in order to provide policy impact forecasting tools for these situations. The currently available versions of these models are already quite good, as far as capturing the basic market-clearing mechanism in a purely private, competititve setting is concerned. However, they need many improvements and refinements to cope with more complicated markets, such as the European ones, where many different forms of public-imposed constraints and regulations are acting and make the assumption of pure competition unrealisitc. These models are of the short term type, in the sense that they can be applied to time spans short enough to neglect changes in stock size and location. However, this is not a serious limitation for many urban areas where this time span can indeed be very long.

This relative stability of the housing stock is not necessarily matched by an analogous stability on the demand side, however. Short time periods are enough to incur significant demographic changes as births, deaths, and marriages, which alter the number and composition of households desiring to enter into the market or to change their housing conditions. In this respect, current models are insufficient, since they assume a

stable set of households. Attempting to build in the interactions between household formation and change, and housing supply will therefore be a new research challenge.

As for the relationships with the transportation system, the focus on the market mechanism suggests introducing their effects not only on the demand side (in terms of customer's travelling behavior) but also on the supply side (for example, in terms of changes in land values and rents due to changes in accessibility).

Turning now to the situation of a planned economy, different questions must be answered. In a short term perspective, and assuming a good amount of stock is already available (although maybe with possible shortages), no market mechanism is in action to determine demand and producer's behavior. There is a single owner of the housing stock, and the behavior of that body should be different from profit maximizing. Demand is not filtered by rents and prices in getting access to dwellings. However, mainly if shortage is in action, other nonfinancial prices are paid by households, such as queuing time, postponement of purchase, or forced substitution. These nonmoney prices bear some analogy with the price mechanism of a market economy. However, the absence of private entrepreneurs controlling them make the system quite different. The amount of control exerted by public management is in this case much bigger. His problem is how to design and implement regulations for access of households to the housing stock in order to improve the performance of the system, as measured by the nonfinancial prices listed above.

A *second research goal* therefore arises, the exploration of models for the short term management of a housing stock in a planned economy (with possible shortages and queues). The theme is typically suited for an international collaboration network, and the contribution from experts and scholars in some Eastern countries will be required. Among them, the work of Kornai on the economics of shortage and queuing seems specially relevant. It may be noted that research on housing assignment under shortage, although typically suited for planned economies, might be of value for many situations in market and mixed economies as well. In countries where provision of low cost housing stock

is used, for instance, the problem of assigning such a stock is quite the same. The study of shortage is also useful in many developing countries or regions, even in a pure market environment, since when the housing stock is scarce some nonfinancial externalities might well become just as important as market prices in determining both customers' and producers' behavior.

If a long-term perspective is assumed, and the size and location of the housing stock is allowed to change, still different questions are posed in a market and in a planned environment. In a planned economy, the housing production and the location decision are controlled by a single decision maker. The planning problem may therefore be formulated in terms of a location-allocation framework. In a market economy, the housing production and the location decision is mainly private, and a limited influence can be exerted by a public authority, by means of land-use constraints on the one hand, and incentives or disincentives on building activity on the other.

The above picture refers to a long-run equilibrium situation. If, however, time is explicitly taken into account, then not only the equilibrium state, but also the path followed by the system to reach it is of concern in policy evaluation. This leads to considering comprehensive dynamic simulation approaches, such as the ones developed and implemented with some success for the San Francisco area and by the National Bureau of Economic Research in the USA. Particularly in the last example, an attempt to simulate important phenomena, such as residential mobility and journey-to-work relationships, is done. Independently of the economic system (market or planned) it is felt that two such phenomena, the dynamics of residential mobility and of travel demand, are the most important determinants of the behavior of a housing-transportation system over time.

A *third research goal* is therefore proposed, the exploration of theories and operational frameworks to model (and possibly optimize) household mobility and transport demand over time. Analytical models of housing-transportation relationships have already been developed for the static case. Dynamic generalizations to cope with household mobility explicitly avoiding the

cumbersome computational apparatus of simulation models, would constitute very useful tools for planning and policy evaluation.

4. A FRAMEWORK FOR POLICY EVALUATION

Despite the variety of problem features introduced in section 2, the design of a policy evaluation tool for the housing market can be reduced to a few essential elements:

a. A household mobility model. That is, an accounting procedure which, given the changes in the household structure, and in the housing stock composition, amount, and prices, updates household flows and stock occupancy over time.

b. A stock model. That is, an accounting procedure which updates the housing stock composition and amount.

c. A household choice model. That is, a model which relates the expected moves of households within the housing stock to their evaluation of present and future benefits deriving from the move.

d. A supplier's decision model. That is, a model which relates suppliers' decisions as to stock changes, investments, and changes in prices to their evaluation of present and future benefits deriving from such decisions.

Of course, none of the above processes is independent from the other, but they interact by many feedbacks. The main ones are as shown in Figure 1. Processes c and d actually drive the system, since they represent the demand and supply evaluation and decision units, while processes a and b are merely their physical stocks and flows counterparts.

In unit c (the household choice) households evaluate alternative moves (given by the stock occupancy) and relative prices, as fixed by supplier decisions (unit d). This leads to some expected moves (possibly in the form of transition probabilities), which are fed into unit a (the household mobility) to produce the expected redistribution of households within the housing stock. The new pattern of household distribution and stock occupancy are used in d (the suppliers' decision) to decide both changes in prices and changes in housing stock amount and composition. This basic loop is repeated over time, in order to reproduce the housing market dynamics.

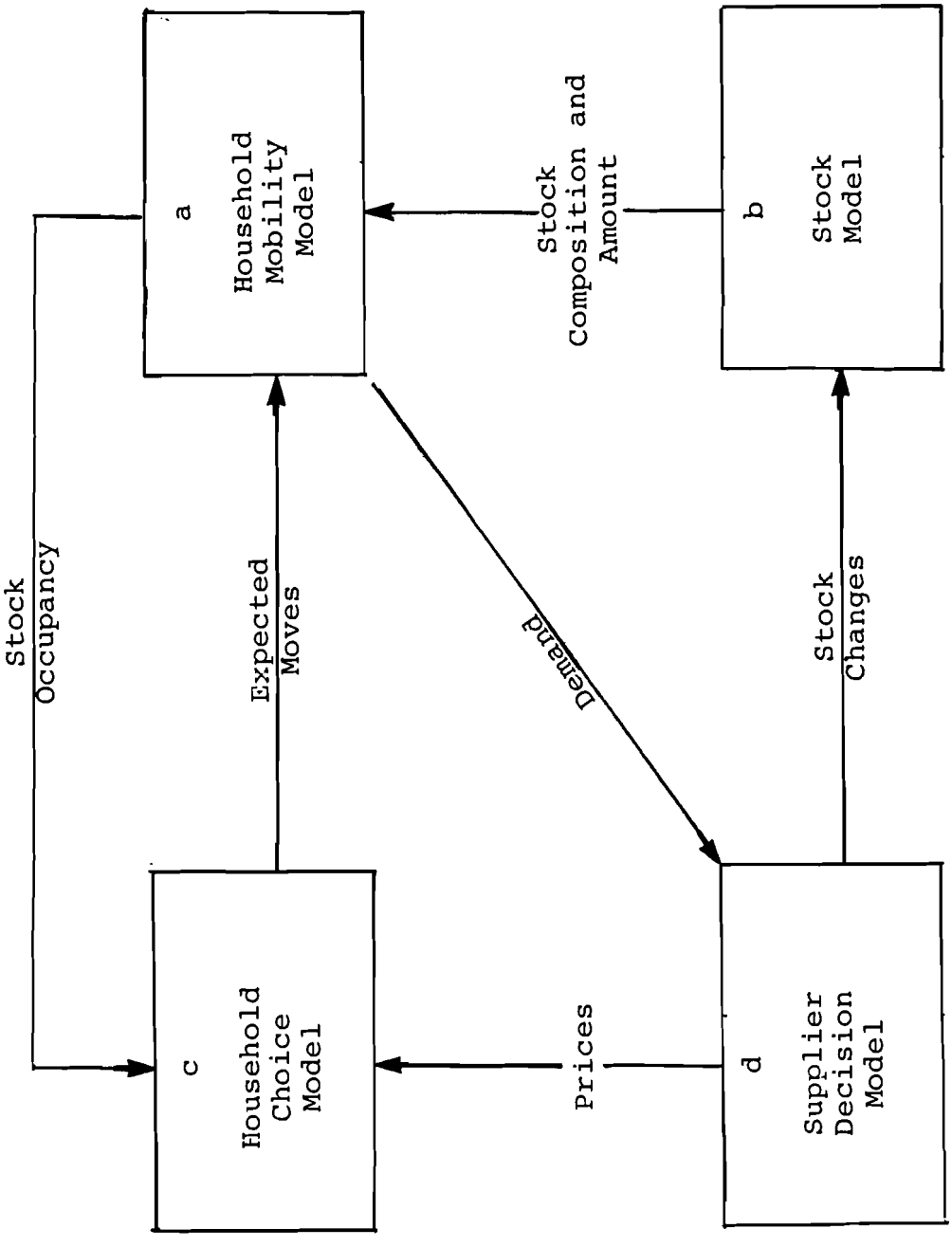

Figure 1. Main feedbacks in a simplified dynamic housing market model.

The four unit system shown in Figure 1 constitutes the bulk of a descriptive, or simulation, model of a housing market. It could be made more realistic by adding more details and disaggregations, but this would not change the basic structure of the process very much.

In order to use the above framework for policy evaluation, it must be specified where public control can be exerted in the form of exogenous inputs. Virtually all boxes of Figure 1 can receive such inputs.

The most popular (and perhaps weaker) form of public control is the direct provision of low-cost housing stock, that is, an input sent to box b. Another commonly used (and misused) public control is direct limitation on rents, that is, an input sent to box d.

Many countries also experience public control on household choice (box c), either directly (by rationing and queuing) or indirectly (by allowances to households).

Finally, although less frequently, public control could also be introduced (in a direct or indirect form) on household structure and changes.

The examples given above are just a few types of policies, or combination of policies which may be evaluated. Testing a policy impact implies not only simulating the policy effects on the behavior of the system, but also being able to compare the effectiveness of alternative policies by suitable performance indicators. The list of such indicators varies with the problem, the goals, and the decision makers involved.

It is necessary that the housing market model is flexible in this respect. The performance indicators might also form submodels attached to the core of the dynamic models where special studies are made of the outcome of the market simulation in terms of strains on the housing investment budget, payment streams of housing allowances, studies of goal fulfillment of social housing policies, etc.

5. CONCLUDING REMARKS

The above description of the research agenda has been given in general terms. It is the ultimate object of the study to implement the housing market model proposed, or developments and varients of it, in the real setting in a number of metropolitan areas in some selected European countries. This implementation will be brought to different degrees of refinement in different instances, depending on the most relevant issues formulated by housing producers, managers, planners, and analysts.

These implementation studies will therefore take the form of case studies where the emphasis primarily is not only directed towards the development of a housing market model but also to an understanding of the working of the different markets in a dynamic context. This important element of the housing and transportation study should be formulated in collaboration with representatives from the regions involved.