Urban Housing Reform in China
An Economic Analysis

George S. Tolley
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<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>Illustrative Effects of Voluntary Debt and Debt Service Reduction Operations.</td>
<td>Ruben Lamdany and John M. Underwood</td>
</tr>
<tr>
<td>67</td>
<td>Deregulation of Shipping: What Is to Be Learned from Chile.</td>
<td>Esra Bennathan with Luis Escobar and George Panagakos</td>
</tr>
<tr>
<td>69</td>
<td>A Multilevel Model of School Effectiveness in a Developing Country.</td>
<td>Marlaine E. Lockheed and Nicholas T. Longford</td>
</tr>
<tr>
<td>70</td>
<td>User Groups as Producers in Participatory Afforestation Strategies.</td>
<td>Michael M. Cernea</td>
</tr>
<tr>
<td>71</td>
<td>How Adjustment Programs Can Help the Poor: The World Bank's Experience.</td>
<td>Helena Ribe, Soniya Carvalho, Robert Liebenthal, Peter Nicholas, and Elaine Zuckerman</td>
</tr>
<tr>
<td>72</td>
<td>Export Catalysts in Low-Income Countries: A Review of Eleven Success Stories.</td>
<td>Yung Whee Rhee and Therese Belot</td>
</tr>
<tr>
<td>73</td>
<td>Information Systems and Basic Statistics in Sub-Saharan Africa: A Review and Strategy for Improvement.</td>
<td>Ramesh Chander</td>
</tr>
<tr>
<td>74</td>
<td>Costs and Benefits of Rent Control in Kumasi, Ghana.</td>
<td>Stephen Malpezzi, A. Graham Tipple, and Kenneth G. Willis</td>
</tr>
<tr>
<td>75</td>
<td>Ecuador's Amazon Region: Development Issues and Options.</td>
<td>James F. Hicks, Herman E. Daly, Shelton H. Davis, and Maria de Lourdes de Freitas [Also available in Spanish (75S)]</td>
</tr>
<tr>
<td>76</td>
<td>Debt Equity Conversion Analysis: A Case Study of the Philippine Program.</td>
<td>John D. Shilling, Anthony Toft, and Woonki Sung</td>
</tr>
<tr>
<td>77</td>
<td>Higher Education in Latin America: Issues of Efficiency and Equity.</td>
<td>Donald R. Winkler</td>
</tr>
<tr>
<td>78</td>
<td>The Greenhouse Effect: Implications for Economic Development.</td>
<td>Erik Arrhenius and Thomas W. Waltz</td>
</tr>
<tr>
<td>79</td>
<td>Analyzing Taxes on Business Income with the Marginal Effective Tax Rate Model.</td>
<td>David Dunn and Anthony Pellechio</td>
</tr>
<tr>
<td>80</td>
<td>Environmental Management in Development: The Evolution of Paradigms.</td>
<td>Michael E. Colby</td>
</tr>
<tr>
<td>81</td>
<td>Latin America's Banking Systems in the 1980s: A Cross Country Comparison.</td>
<td>Felipe Morris, Mark Dorfman, Jose Pedro Ortiz, and others.</td>
</tr>
<tr>
<td>82</td>
<td>Why Educational Policies Can Fail: An Overview of Selected African Experiences.</td>
<td>George Psacharopoulos</td>
</tr>
<tr>
<td>83</td>
<td>Comparative African Experiences in Implementing Educational Policies.</td>
<td>John Craig</td>
</tr>
<tr>
<td>84</td>
<td>Implementing Educational Policies in Ethiopia.</td>
<td>Fassil R. Kiros</td>
</tr>
<tr>
<td>85</td>
<td>Implementing Educational Policies in Kenya.</td>
<td>G. S. Eshiwani</td>
</tr>
<tr>
<td>86</td>
<td>Implementing Educational Policies in Tanzania.</td>
<td>C. J. Galabawa</td>
</tr>
<tr>
<td>87</td>
<td>Implementing Educational Policies in Lesotho.</td>
<td>T. Soh Thelejani</td>
</tr>
<tr>
<td>88</td>
<td>Implementing Educational Policies in Swaziland.</td>
<td>Cisco Magalula</td>
</tr>
<tr>
<td>89</td>
<td>Implementing Educational Policies in Uganda.</td>
<td>Cooper F. Odart</td>
</tr>
<tr>
<td>90</td>
<td>Implementing Educational Policies in Zambia.</td>
<td>Paul P. W. Achiola</td>
</tr>
<tr>
<td>91</td>
<td>Implementing Educational Policies in Zimbabwe.</td>
<td>O. E. Maravanyika</td>
</tr>
</tbody>
</table>

(Continued on the inside back cover.)
Urban Housing Reform in China
An Economic Analysis

George S. Tolley
ABSTRACT

As part of the broad economic reforms implemented during the 1980's in China, an important program of urban housing reforms was announced in February 1988. Its aim was to introduce market mechanisms in what has so far been an administratively managed urban housing system. The purpose of this paper is to analyze some major elements of a market-oriented reform drawing on the experiments carried out in selected cities prior to the 1988 Reform Plan. Because the housing problems faced by China share many systemic features with those of socialist countries of Eastern Europe and the USSR, the analysis is relevant beyond the Chinese case.

Following a general introduction about the status and context of reform in China, the paper selects some critical issues for the introduction of market mechanisms in urban housing. First, the paper analyzes pricing and allocation reforms in the existing stock. The present policy of low rents where urban households spend about 1% of cash income on housing is unsustainable and leads to ever growing distortions and large scale subsidies. However, raising rents to their economic level requires a solution to the present interlocking combination of low cash wages and artificially low rent levels. New rent policies must consider stock reallocation among households, adjustments for inflation, and real cost changes due to rent adjustments that occur over time. A framework for evaluating winners and losers from rent reforms--and therefore their feasibility--is presented.

The structure of ownership rights in China is significantly different from market economies. A central question in all socialist economies is whether a market for housing can co-exist with state allocation as is presently attempted. What is the relationship between rationed and unrationed markets? The next section of the paper provides an analysis of the tenure choice based on the user-cost of capital concept to show the functional relationship between rent reforms and the potential development of home ownership in Chinese cities. Such a framework is also necessary to understand the effects of reform policies, the relationship between rents and sale prices which determine the interactions between the future market for existing housing and that producing new units.

Pursuing further the critical distinction between the demand for housing ownership (the demand for assets) and that for housing services, the next section evaluates the significant efficiency benefits that can be derived from allowing the free exchange and allocation of existing housing units. In spite of difficult housing conditions in China and the severe shortage of housing, a non-zero housing vacancy rate can be quite efficient for the optimum allocation and use of housing services.

Building on the foregoing analysis, the final section of the paper provides suggestions to improve the present approach to housing reforms in China regarding sale prices, the setting of rents and credit conditions offered to finance housing sales. Particular stress is placed on property rights reforms to achieve maximum economic and social benefits from urban housing reform.
ACKNOWLEDGMENTS

This report has its origins in the 1989 World Bank mission on Chinese housing reform organized by Bertrand Renaud. He gave invaluable counsel and comments throughout. Tao Yang provided invaluable assistance. Useful comments at various stages were received from Peter Fong, Doris Holleb, Gale Johnson, Edwin Mills, William Parish, Yukun Wang and participants in the Urban Finance and Planning Seminar at Northwestern University and the Southeast Asia Workshop at the University of Chicago. Thanks are due to Michaeleen Green and Marit Rasmussen for editorial assistance.
Table of Contents

I. PROBLEM STATEMENT .................................................................................................................. 1
   A. Goals of Housing Reform ........................................................................................................ 1
       Privatization of Urban Housing ......................................................................................... 1
       Equity and Efficiency ......................................................................................................... 1
       The Chinese Context ......................................................................................................... 1
       Beyond Immediate Goals .................................................................................................. 2
   B. Rent and Wage Adjustments as a Prerequisite ...................................................................... 2
   C. Mixed News on Experience So Far ....................................................................................... 3
   D. Long Road Ahead .................................................................................................................. 4
       Housing as a Valued Output ............................................................................................... 4
       Property Rights Questions .................................................................................................. 4
       Links Between Rents, House Prices and Costs .................................................................. 4
       The Tenure Decision .......................................................................................................... 4
       Major Housing Problems to be Solved ................................................................................ 5
   E. About This Report .................................................................................................................. 5
       Analytical Issues .................................................................................................................. 6
       A Note on the Numbers ....................................................................................................... 8
       Outline ................................................................................................................................ 8

II. RENTS AND WAGES ................................................................................................................... 11
   A. Reform Policy Approach ....................................................................................................... 11
   B. Rent Calculations .................................................................................................................. 11
       Market Rent ......................................................................................................................... 11
       Equilibrium or Cost-Based Rent Including Site Value ...................................................... 11
       Cost-Based Rent Excluding Site Value ............................................................................... 13
       Preferential Rents ................................................................................................................ 17
   C. Redistributions ....................................................................................................................... 18
       Net Gain or Loss of the Individual Worker .......................................................................... 18
       Redistributions Among Units Supplying Housing ............................................................. 20
       Impounded Deposits and Apartment Size Adjustments .................................................... 21
       Problem For Administering District If Increased Wage Payments Exceed Rent Revenues . 24
   D. Adjustments for Changing Conditions ............................................................................... 24
       Inflation ................................................................................................................................ 24
       Useable Space Adjustments ................................................................................................. 25
       Combined Adjustments ....................................................................................................... 26
E. Policy Simulations ........................................ 26
Wage and Useable Living Area Distributions ................. 26
Commercial Rent Policy .................................... 27
Preferential Rent Policy .................................... 29
Transfers Under the Policies ................................ 30

F. Remaining Questions ...................................... 32

III. HOUSING TENURE CHOICE ............................... 33
A. User Cost and the Outline of this Part ................. 33
B. Major Considerations Affecting Tenure Choice ........ 37
Rental Price Relative to Selling Price ..................... 37
Borrowing Terms ............................................ 38
Property Rights ............................................. 41
Savings-Portfolio Considerations .......................... 43

C. Slope of Home Ownership Demand Schedule ............ 46

D. New Versus Existing Housing .............................. 47

E. Policy Analysis ........................................... 47
Loci of Rents, Selling Prices and Number Sold ......... 47
Mixture of an In-Kind and Cash System .................. 52
Relations Between Rationed and Unrationed Markets ...... 57
Savings, Inflation and Financial Intermediation .......... 60

F. How to Sell More Apartments ............................ 64
Implications of the Policy Analysis ....................... 64
Present Situation ............................................ 64

IV. HOUSING REFORMS BEYOND ENCOURAGING OWNERSHIP ........ 68
A. Challenge ................................................... 68
B. Demand for Housing Services ............................ 68
C. Benefits If a Housing Rental Market Were Allowed .... 68
Present Sparseness of Apartment Exchanges ............... 68
Contrast With Normal Market ................................ 70
Rental Re-Allocation Gains vs. Vacancy Rates ............ 72

D. The Overall Supply of Housing .......................... 76
Goal ......................................................... 76
The Market Test ............................................ 77
Application to Individual Projects ......................... 77

E. Incongruous Quality Mix .................................. 78

F. Under-Maintenance ........................................ 78
G. Interference With Labor Mobility ........................................ 79
H. The Site Value Problem .................................................. 80
I. Equity .............................................................................. 81
   Long-run Equity ................................................................ 81
   Short-run Equity: Dealing with Windfalls ......................... 82
V. CONCLUSIONS ................................................................ 88
   A. Major Problems with Present Reform Approach ............... 88
      Overhang of Rationed Rental Market ............................. 88
      Inflationary Credit Arrangements ................................. 89
      Stifling of Further Transition ...................................... 89
      Increased Bureaucratization .......................................... 90
      Lack of Vision .................................................................. 90
   B. Suggestions for Improvement Within the Present Approach . 90
      Attack the Causes of Slow Sales .................................... 90
      Charge Market Rents ..................................................... 91
      Provide Credit on Competitive Terms ......................... 91
      Improve and Clarify Property Rights ............................. 91
      Undertake More Varied City Experiments ..................... 91
      Strengthen the Knowledge Base ................................... 91
   C. A Fundamentally Different Reform Approach:  ................. 92
      Divorce Housing From Work Units .................................. 92
Tables

Table 1: Estimates of Cost-Based Rent excluding Site Value . . . . 16
Table 2: Approximation to Distribution of Households by Basic Wage Income and Useable Space . . . . . . . . . . . . . . . . . . . . 28
Table 3: Per Family Gains or Losses under Two Wage and Rent Adjustment Policies . . . . . . . . . . . . . . . . . . . . . . . . . . . 31
Table 4: Extra Gains and Losses from High Rent Policy . . . . . . 86

Figures

Figure 1: Tenure Choice as Affected by Housing Purchase Price . . 35
Figure 2: Iso-tenure Choice Schedules . . . . . . . . . . . . . . . . . . . . 51
Figure 3: Effects of Rationed Rents on Unrationed Market . . . . . 59
Figure 4: Demand for Housing Services . . . . . . . . . . . . . . . . . . . . 69
I. PROBLEM STATEMENT

A. Goals of Housing Reform

Privatization of Urban Housing

1.1 Privatization of housing has been announced as one of the most important objectives of Chinese economic reforms. The step is particularly dramatic in a socialist country where for decades ownership of property was considered anathema.

1.2 The main concern of the Chinese housing reforms is with urban housing. While families in rural areas provide their own housing, work units and housing bureaus supply the preponderant fraction of urban housing (83 percent in 1984 according to Barlow 1988, pp.8-9). The central issue in the design of the reforms has been how to privatize the housing stock now in the hands of work units and housing bureaus.

Equity and Efficiency

1.3 Privatization is at best a means to broader goals. Under a broad conception of housing reform, one of the major goals would be to achieve economic efficiency in housing, as determined by usefulness of housing relative to its costs. This goal concerns the appropriateness of the amount and quality of housing space, and the extent to which housing is occupied by those who value it most highly relative to other goods.

1.4 Another major goal would be to achieve equity, tempering efficiency goals if necessary to ensure minimal housing for those at the lower end of the income scale.

1.5 Given these broad goals, the practicalities of housing reform concern: 1) the rental, ownership and financing arrangements chosen to attain the goals and 2) the steps in arriving at these arrangements, involving questions of pace and sequencing of reforms.

The Chinese Context

1.6 Rather than being greatly concerned with broad goals or with pace and sequencing, the Chinese housing reforms have concentrated on a very specific hurdle: how to sell houses to people whose housing at the present time is provided essentially free of charge.

1.7 Such goals beyond privatization as have been mentioned are on the whole more immediate than broad efficiency and equity goals. For many in China, the reforms are seen as a way to ease inflationary problems. The hope has been expressed that saving for housing ownership will dampen consumption and divert demand away from durables such as TV's and pianos. For others, the reforms are seen as a means of raising funds to build new housing.
1.8 Regarding equity, remediation of cases of hardship caused by the reforms has been mentioned as a concern. However, whether and how this concern translates into action is far less clear. This concern in any case does not address longer run equity problems in the provision of housing.

1.9 One of the purposes of the present report is to analyze Chinese housing reform on its own terms, considering the extent to which the proposed rent, wage and housing finance arrangements will permit attainment of the enunciated Chinese aims. The report brings out needs for improvement if these enunciated aims are to be accomplished.

**Beyond Immediate Goals**

1.10 Another purpose of the present report is to evaluate Chinese housing reform in terms of broader goals. Selling all or part of the housing stock to occupants need not result in achievement of broader goals, especially while rents of those who do not buy, though higher than at present, remain low relative to housing costs, with a necessity for rationing the housing that remains rented. A key question is whether by going part way, to a system in which a controlled and uncontrolled housing market exist side by side, a sequence will be possible where broader goals can be achieved.

1.11 This report serves to emphasize that Chinese housing reform efforts would benefit from attention to broader goals. Recommendations are made to reduce impediments to achieving broader housing goals.

**B. Rent and Wage Adjustments as a Prerequisite**

1.12 Considerable thought has been given in China to how to induce families to choose to buy, rather than continuing to live in their quarters as they do now, neither paying appreciable rent nor owning. The basic change proposed is to switch from a system of providing housing services as a noncash in-kind payment to charging rent.

1.13 Instead of having the work units and housing bureaus directly provide housing services to workers, workers' wages are to be raised. The increased wages will provide workers with the means to make rent payments. In this way, present arrangements will be changed to arrive at a payment system that more nearly resembles a normal rental market.

1.14 Simply substituting cash for in-kind payments might at first glance seem to make little difference, since workers would pay back in rent what they receive in increased wages. However, as part of the reforms, occupants will be given the choice of buying rather than renting, with financial arrangements provided to facilitate the choice.

1.15 It is hoped that the incentive to avoid paying rent will induce a large fraction of the occupants to decide to buy their apartments.
C. Mixed News on Experience So Far

1.16 Favorable news is the progress that has been made in thinking through the needs for rent and wage adjustments, and in carrying out experiments in 11 small- and medium-sized cities. Less favorable news is the indication that wage and price adjustments, if not accompanied by other reforms, could end up making very little contribution to solving China's fundamental housing problems. Several types of evidence suggest this possibility.

1.17 First, people in the experimental cities where wages and rents have been raised do not appear to be inclined to buy housing in great numbers.

1.18 Second, the hope that charging higher rents would induce people with large amounts of housing to reduce their housing consumption significantly, making available extra housing for those in queues for more housing, has not been realized. The housing stock in the experimental cities appears to remain essentially as seriously mal-allocated as ever with doubled up families facing waits of up to half of a lifetime for apartments. The requirement to pay rent has not resulted in the emergence of a truly effective rental market.

1.19 Third, because of paucity of sales, most housing in the experimental cities remains the responsibility of work units and housing bureaus. It seems likely that housing is seriously under-maintained. Meanwhile, few signs exist of preparing prospective owners to assume maintenance, which will require housing expertise and group decision-making in apartment buildings.

1.20 Fourth, the wage and price adjustments have not helped to improve supply decisions for new housing. Partly because state allocations for new housing construction have once again been cut back after a period of several years of expanded construction, and partly because demand to buy houses is limited, few resources have been available recently to build new housing. It is certain that some parts of China's population remain under housed, and it is quite possible that the total housing stock is inefficiently low in the sense that extra housing has a value greater than its construction costs. Meanwhile the quality of such new housing as is being built appears to be higher than consistent with demand conditions, at least for the foreseeable future. While under-maintenance mentioned above appears to make the quality of old housing inefficiently low, design standards chosen with relatively little regard to demand conditions may make the quality of new housing inefficiently high.

1.21 Fifth, efforts to provide financial instruments for long term housing loan repayments remain rudimentary and to some extent self-contradictory. Low-interest rate loans are to be provided to encourage purchase of housing, which could actually lead to inflationary pressures if the interest subsidies are not financed by explicit taxes on others. In contradiction, the short repayment schedules offered imply unrealistically high household savings rates, which discourages ownership.
Housing as a Valued Output

1.22 It becomes apparent that effective housing reform involves more than finding a way for urban housing to pass from public to private ownership. The task is seen to be the more challenging one of finding a way to constructively alter the traditional socialist treatment of housing. Housing has traditionally been viewed as a non-useful cost of production that must be borne to produce truly valued output, consisting of manufactured goods. Approaches are needed that make housing a fully functioning and positive contributor to the economy.

Property Rights Questions

1.23 The legacy of strictures on private ownership of property is a part of the problem. To understand slow sales of housing in the experimental cities requires recognizing the existing ambiguity of property rights. Ostensibly, work units and housing bureaus own most of China's urban housing stock. They have been responsible for housing construction and upkeep, and for allocating housing units to families. However, the families occupying the housing are not tenants as encountered in market economies, since they pay almost nothing for housing, and they have many de facto rights reserved to property owners in market economies. Occupants are unlikely to be evicted unless the family leaves the work unit, which is rare. They have de facto inheritance rights, with children continuing to live in units occupied by their parents after the parents die. With the de facto situation already conferring many of the privileges of ownership and with restrictions placed on re-sale, people may rightly hesitate to buy even if, superficially, the price appears to be right.

Links Between Rents, House Prices and Costs

1.24 The insight driving the reforms, namely, that raising rents gives incentives to buy housing, is only the tip of the iceberg of housing economics. A neglected consideration is that housing construction costs determine the prices at which housing can be sold if costs are to be covered, a statement that applies to new housing and reproduction costs of existing housing. Construction costs also determine rents that must be charged if the rental revenues received are to be sufficient to recoup the costs.

1.25 Failure to follow cost-based guides in setting rents and housing sales prices leads to great complications. In the Chinese reform case where rents are set below costs, the prices people are willing to pay to purchase apartments are reduced, and the link between the value that people place on housing and the cost to the economy of China fails to be established. A minimal need for the housing reforms to succeed in their own terms, much less to go toward broader goals, is to give greater attention to the inter-relations between rents, house prices and costs.

The Tenure Decision

1.26 The tenure decision of whether to rent or buy housing depends in part on the price of housing relative to renting. A low rent reduces the housing
price at which people will be willing to purchase. Meanwhile, at any rent level, a lowering or raising of purchase price will result in more or fewer families being induced to purchase. The tenure decision also depends on property rights, as well as on individual characteristics of families including their income and wealth position, family composition and the stage of their lives.

1.27 With isolated exceptions, there has been little attention in China to the need for better knowledge of housing economics, that would make it possible to devise more effective selling terms, estimate how much housing can be sold, and help housing reforms contribute to the economy of China. Reforms devised in the absence of this knowledge run the danger of tinkering counterproductively, unleashing unanticipated effects.

Major Housing Problems to be Solved

1.28 A broader view of housing problems leads to an agenda of problems that need to be addressed, including:

(a) a combination of housing assignment procedures and tenant immobilities that reduces the usefulness of the services obtained from the housing stock, which could be overcome by fostering a normal rental market quite apart from measures to promote home ownership,

(b) the lack of means for determining an appropriate overall supply of housing,

(c) the provision of an incongruous mix of housing quality,

(d) under-maintenance of housing,

(e) the effects of housing arrangements in reducing labor mobility in the economy,

(f) the neglect of site values as an allocator of land among competing urban uses, and

(g) the interference of housing with rationalized urban form, that would enable the layout of China's cities to more effectively contribute to the functioning of the economy.

E. About This Report

1.29 This report begins by considering the formulas proposed for adjusting rents and wages under the Chinese housing reforms, goes on to consider housing tenure decisions determining how many apartments will be sold, and then considers a number of complications arising from the mixed housing system implied by the reforms. Finally, the report evaluates the reforms from the point of view of efficiency and equity goals and makes recommendations.
Analytical Issues

1.30 The reforms move away from complete socialist provision of housing but go only a small part of the way to a free market in housing. There is relatively little experience, either in China or elsewhere, with the sort of system envisaged under the reforms, where houses will be sold below cost, with many if not most families continuing to live as tenants paying below-market rents.

1.31 In developing a framework for analyzing the reforms, several analytical issues are encountered. Some are issues from received housing economics that need to be recognized in the Chinese situation. Some are more unusual issues that arise because of the mixed system proposed under the reforms. The following analytical issues deserve special mention.

(a) Rent Concepts. The relation of rents that will be charged under the reforms to rent concepts needs to be established. Market rents, the usual focus of analysis in considering the demand and supply of rental housing, are not observed in China and have not in any case been proposed. Equilibrium or cost-based rent including site value is amenable to the tools of demand and supply but has not been proposed either. Cost-base rent excluding site value is discussed in the reform proposals but in the end is also rejected. The reforms use low preferential rents. (The rent concepts are considered in Section II.B.)

(b) Tenure Choice Where None Existed. The Chinese reforms have been conceived with little in-depth analysis of factors affecting the rent-or-buy decision. The present report provides a framework for predicting the number of apartments sold. It is based partly on received housing economics featuring user cost of home ownership, borrowing terms and savings-portfolio considerations in a life cycle context (Section III.B). Beyond this received analysis, an additional need arises in the Chinese setting to quantify the economic value of property rights (also in Section III.B). Because rents and sales prices are chosen as policy variables rather than being market determined, a further relation not usually needed is the loci of rents, selling prices and number of apartments sold (Sections III.C and III.E.1).

(c) Managing a Mixed Housing Economy. Under the reforms, buyers are absolved of making future rent payments, but they are also deprived of receiving the future in-kind rent subsidy implied by the below-market rents that will be charged under the reforms. People will deduct the loss in rent subsidy in deciding on purchase price they are willing to pay, so that at the margin there will tend to be neither a gain nor loss from buying. This principle of the wash from buying needs to be recognized. The work units rid themselves of the necessity to provide the in-kind rent subsidy in the future, but they too
experience a wash since the reduction in subsidy they are required to pay tends to be offset by the necessity to sell apartments below costs in view of the reduced bids of buyers.

The wash from buying discourages any future upward adjustments in wages and rents toward equilibrium levels, since the wash point would be changed raising house prices and conferring gains on those who initially bought, meanwhile imposing losses on the work units if they are required to raise wages of people who have already purchased housing. The alternative is a complicated process of selectively denying future wage adjustments to those who previously bought housing (Section III.E.2).

People who do not buy apartments will be charged below market rents and rationing of rental housing will continue. There will be markets for three types of housing: rationed rental housing, existing apartments which occupants have chosen to buy, and new apartments purchased by individuals. Tensions between the rationed and unrationed housing markets are to be expected (Section III.E.1).

(d) Benefits of a Natural Vacancy Rate. Under a market approach, a proportion of apartments remain vacant at any time. The proportion is sometimes called the natural vacancy rate. It occurs because of the difficulty of exact coordination of moves when many people are looking for new quarters, with some people moving out of apartments before new tenants have been found. An advantage of the process is that it allows freedom of choice, leading to efficient allocation of housing among occupants. A cost of the present system of housing rationing in China, that would persist with rental housing under the reforms, is failure to use housing efficiently. An economic efficiency analysis is needed, quantifying the gains under a market approach from re-allocating space away from those who live in large apartments relative to their needs and who place a low value on extra space, to those in small overcrowded apartments who place a high value on extra space. The gains from re-allocation can be compared with the costs of the extra housing capacity needed to support a natural vacancy rate, to obtain the net gains from a market approach (Section IV.B).

(e) Inflationary Effects of Housing Finance. For housing privatization to be anti-inflationary, as hoped, requires that several conditions be met. Charging low preferential rents below housing cost lowers the apartment purchase price people will be willing to pay, reducing the savings they need to undertake if they buy. To get the most savings from this reduced pool, measures proposed under the reforms to induce people to buy apartments and to encourage savings to pay for them include: a) impoundment of any excess of wage adjustment over rent increase in deposits to be used only for apartment
purchase; b) requirement of repayment of housing loans in only a few number of years; and c) interest subsidies on housing loans. While each of these measures may appear to directly favor housing savings and thus be anti-inflationary, indirect effects need to be estimated. Analysis is particularly required of interest subsidies with attention to slippages whereby subsidies are given to those who would buy anyway, analysis of who pays for interest subsidies, and effects on overall budget deficit and money creation (Section III.E.4).

1.32 In attempting to provide a comprehensive view of housing reform effects, the present report goes beyond the above analytical issues. The issues are given special mention because they pose unusual challenges. The context in which the issues are encountered will be brought out in the overall outline of the report to be presented below.

A Note on the Numbers

1.33 Unless otherwise referenced, the figures in this report were obtained in interviews in Beijing, Yantai and Shenyang in March 1989. As a problem besides lack of comprehensive data, some of the cost and interest rate figures obtained in interviews and from published sources are open to question, for such reasons as ambiguity of measurement concept, lack of knowledge of which year some numbers refer to, and need to adjust for inflation (See especially Section III.B.3).

1.34 For these reasons, the quantitative estimates should be viewed as indicating only general orders of magnitude however the major conclusions should remain intact.

Outline

1.35 Following this Part I problem statement, the purposes of evaluating the housing reforms, from the point of view of enunciated Chinese objectives and broader goals, are accomplished in this report as follows.

1.36 Part II considers the wage and rent adjustments designed to make home ownership attractive. Different rent concepts are reviewed, bringing out that the proposed rents are low preferential rents below the cost of supplying the housing. Administrative problems are considered arising from the inequality between the amount collected in rents by the units supplying housing and the amount paid out in increased wages, due to the fact that occupants and work unit members do not exactly coincide. The effects of impounding rent payments as deposits for the purchase of housing are discussed. The question is raised of how to make adjustments for inflation and real cost changes that occur over time. Finally, estimates are developed of redistributions among families caused by the wage and rent adjustments.

1.37 Part III begins by considering factors affecting the housing tenure choice between renting or owning one's residence. To analyze the first factor,
rent level, a user cost formula is derived to quantify the reduction that charging low preferential rents causes in the willingness to pay for owning housing.

1.38 A second factor is lending terms. The conflict between a short required repayment period and interest rate subsidies on housing loans is analyzed. The possibility is brought out that proposed interest subsidies on home loans might result in dissavings, counter to the desire to encourage savings.

1.39 A third factor is property rights. An attempt is made to analyze quantitatively the reduction in purchase price people are willing to pay in view of de facto rights of tenants to continued occupancy, restrictions on re-sale and property use by owners, and uncertainty of future rights.

1.40 The fourth factor affecting the home ownership decision is its relation to savings-portfolio decisions. Lumpiness and illiquidity of housing are considered in the context of motives for accumulating wealth. The need to estimate how the decision to buy housing is affected by family characteristics, including income and age, is brought out.

1.41 Part III has a section on the distinction between previously existing housing and new housing. It is pointed out that the demand to own each of these two types of housing is made different by housing rationing, which will continue after reforms due to less than market clearing rents. Emphasis is given to the need to recognize the different types of demand in order to understand the market for ownership, and the effects of reform policies on interactions between the markets.

1.42 Finally and most importantly, Part III builds on the foregoing sections by developing a four part policy analysis framework. The framework deals with (1) the proportion of families who will rent or buy, (2) the mixed in-kind and cash rental system perpetuated by the reform proposals, (3) relations between rationed and unrationed housing markets and (4) effects of the reforms on savings and inflation. The framework is used to indicate how to sell more apartments.

1.43 Part IV concerns the relation between encouragement of individual home ownership and the broader housing reforms needed to make housing a fully functioning contributor to the Chinese economy. Estimates are developed indicating that the gains from having a free rental market for housing would outweigh the higher vacancy rate that would accompany it. Attention is given to criteria for deciding on the overall supply of housing, the under-maintenance problem, the problem of an incongruous mix of housing quality, the effects of housing arrangements on labor mobility, and the neglect of site values as a guide to urban land use.

1.44 Finally, long-run and short-equity issues are discussed. The possibility is raised of dealing with the long-run equity problem through a coupon or voucher plan for housing for low income families. The short-run problem has to do with windfall gains and losses occurring at the time of
initiation of housing reforms. Compensation for windfall losses is suggested, financed from the windfall gains, which would limit the most undesirable windfalls, and would open the way to the larger rent and wage adjustments needed to accomplish efficiency goals of reform.

1.45 Part V presents conclusions. Major problems inherent in Chinese housing reform are summarized. Five suggestions for improvements within the context of the current approach are emphasized: 1) Explore more fully combinations of rents, apartment prices and ancillary conditions that would lead to more sales, 2) Make larger rent and wage adjustments accompanied by compensation, 3) Clarify property rights, 4) Arrange credit on competitive terms, and 5) Strengthen the existing meager knowledge base through further surveys and on-going analysis.

1.46 Lastly, a suggestion is offered for a different approach to housing reform in China avoiding the halfway house problems of the present approach and permitting realization of longer term goals. The approach would consist of divorcing the provision of housing entirely from the work units.
II. RENTS AND WAGES

A. Reform Policy Approach

2.1 The basic approach being tried in experimental cities, and contemplated for extension to all cities, is to simultaneously raise rents and wages. A significant amount of rent is to be charged, instead of charging a nil rent. Wages are to be raised at the same time to enable families to pay the rent.

2.2 A major purpose is to give incentives for individuals to buy their housing units. The choice between owning and renting, or tenure choice, will be analyzed in detail in Part III.

2.3 To begin with, complications encountered in the wage and rent adjustments need to be considered. These include: (1) choice of rent concept and determination of rent levels, (2) lack of exact offsets of workers' rent and wage adjustments, (3) disposition of the differences between rent and wage adjustments, (4) adjustments for inflation and future cost changes and (5) redistributions of income among families.

B. Rent Calculations

Market Rent

2.4 One concept of rent is market rent, which is the level that would prevail in a freely functioning rental market for housing. The absence of housing rental markets in China precludes obtaining observations of market rents. A long term goal to be considered is to move to market rents. Market rents can be part of an efficient system for guiding individual decisions as to whether to own or rent housing, and for guiding new construction as well as maintenance of the housing stock. Market rents do not, however, figure in the Chinese housing reform proposals.

Equilibrium or Cost-Based Rent Including Site Value

2.5 Another concept of rent is equilibrium rent. Equilibrium rent is the market rent that would prevail after housing supply decisions have had a chance to fully respond to demand. Equilibrium rent can differ from market rent because market rent responds to shifts in demand which it takes time to respond to, and because impediments to responding to demand may exist.

2.6 In China, it has been necessary to decide on housing construction allocations without market guides as to what the value of housing is. It is therefore difficult to say definitely whether the cost of constructing new housing is above or below its value to the people occupying the housing. Before 1978, when urban living space was especially constricted, value people placed on housing relative to other goods was almost certainly above construction cost for new housing, which is to say that market rents on new housing would have been
above equilibrium rents. Whether this is still so today after significant increases in housing space is more difficult to say.

2.7 Suggestive indications that the value of new urban housing is above its construction costs are contained in the Survey and Income and Expenditure of Urban Households, where, in 1985, 30 percent of urban households had less than 4 square meters (m²) of living space (roughly, living room plus bedroom space) per person, among whom 11 percent were in inconvenient or one-room apartments, and over 1 percent had no housing of their own meaning doubled up with other families (as reported in Barlow, 1988, p.82). A further indication is the finding of living space per person in rural areas, where people provide their own housing, double that in urban areas. The 1985 figures were 14.7 m² rural versus 6.7 m² urban (Source: China Statistical Yearbook, 1987 as reported in Barlow, 1988, p. 80). Whether greater availability of land in rural areas would lead to such a great difference if urban housing supply were fully responding to demand, is moot.

2.8 Maintenance is another important determinant of the supply of housing services. The low amount of maintenance expenditures and the observed deteriorated condition of much of the housing stock suggests that housing, once constructed, tends to be under-maintained in the sense that an extra yuan of maintenance expenditures would generally yield more than a yuan's worth of housing services.

2.9 Considering new construction and maintenance together gives a presumption that there is under-provision of housing services, which is to say that if there were market determination of rents, market rents would be above equilibrium rents, signalling a need for supplying more housing services, particularly through better maintenance.

2.10 Housing policy decisions might well be taken to charge equilibrium rather than market rents, with the goal of approximating long run conditions and not conferring windfalls or losses due to short run conditions. However, Chinese housing reforms apparently do not aim to achieve equilibrium rents.

2.11 Equilibrium rent is identical to cost-based rent including the opportunity cost of the site. If housing supply responds fully to demand, then the cost of an extra unit of housing will equal its value. Therefore, equilibrium rent is identical to a cost-based rent, with the important proviso that one component of the cost is the cost of the land on which the housing is built. The cost of the land or site value in turn depends on its access value. If the land is located near work or shopping sites so that living there will save travel costs, or if it is situated favorably with regard to amenities such as pleasant surroundings, then more services will be obtained from the land by economizing on its use.

2.12 In a freely functioning land market, favorably situated land will be bid up in value providing the incentive to economize on its use. Without a land market, there is an absence of signals on how much to economize on land. Prime land may be devoted to low density uses, instead of being signalled to be built up more densely. For efficiency, the land should be built up to the point where the extra density on the land, saving travel costs and providing other amenities,
will be just offset by the extra cost of the greater land use density. The extra cost of the greater land use density includes the lesser desirability of a lower amount of space per person and the extra cost of building taller buildings.

2.13 Site values vary greatly within a city and across cities. They can easily account for 50 percent of total housing cost, especially in high density cities of East Asia.

Cost-Based Rent Excluding Site Value

2.14 Still another concept of rent is cost-based rent excluding site value. This is one of the concepts being used in the Chinese housing reform proposals. The concept of cost-based rent excluding site value is the same as the concept called commercial rent in many discussions of Chinese housing reform. Strictly, however, the term commercial rent is a misnomer, since a true commercial rent would include site value.

2.15 While cost-based rent excluding site value is simpler to estimate than rent including site value, a number of problems of estimation still arise. The cost elements other than site value may not be as variable as site value, but they still differ among types of housing. The calculation of cost-based rents excluding site value has been a major concern in housing reform. It will now be considered in more detail.

2.16 Capital Value. A major determinant of the yearly cost of providing housing is the total or capital value of the housing. For Yantai, Changzhou, Tangshan and Chongping, Wang (1989a, Table 2) uses a construction cost of 200 yuan per m² and assumes that 75 percent of construction area is available as space within apartments in a building. The implication is that capital cost is 200/.75, or 267 yuan per m² of useable area. A not too dissimilar figure of 303 yuan per m² was found in a Yantai survey of residential buildings constructed in 1985 as reported by Barlow (1988, p.22).

2.17 It is assumed that these capital cost figures, plus the other costs to be discussed below, refer to costs per unit of "useable area". "Useable area" is total space within the apartment available to the family, in contrast to the narrower concept of "living area" found in the China Statistical Yearbook, which consists roughly only of living room plus bedroom space and is sometimes referred to as space receiving sunlight. "Useable area" includes kitchen, bathroom and other auxiliary space in addition to "living area". Lack of complete certainty as to which area concept various figures refer to, is one reason why the present report should be viewed as accurate only to general orders of magnitude.

2.18 The closeness of the two capital value figures above may mask wide differences that occur in practice, since housing values are subject to much greater variation among units than most commodities. For example, housing value per m² will depend on quality as determined by construction characteristics, quality as determined by how well the housing has been maintained, whether the housing—even if identical when constructed and identically maintained—is old or new, differences in construction costs among cities, and clearance and displacement costs which may vary greatly depending on the construction site.
2.19 Members of the 1989 World Bank mission on housing reform were told of new construction costs running as high as 1,100 yuan/m², though this figure may include costs of taking care of displaced families. Symmetrically low values for low quality old housing may exist but were not explicitly discussed.

2.20 Estimation of costs is further complicated by inflation. Apparently no reliable deflator for housing costs exists. Respondents are often unaware of the importance of dating their estimates of costs in view of rapidly rising prices.

2.21 **Interest.** Capital value is used in calculating the most important component of cost-based rent, which is interest, or foregone earnings on the housing capital. Wang (1989a, Table 2) uses an interest rate of 10.44 percent based on the long term deposit rate in 1986 and 1987, although he notes that it could be higher in view of the rise to 12 percent in September 1988. Applied to his estimate of capital value of 267 yuan/m², the estimate of yearly interest cost is 1.044 times 267, which comes to 27.9 yuan/m² per year (or, dividing by 12, 2.32 yuan/m² per month).

2.22 In the Yantai experiment, as reported by Barlow (1988, p. 22), an interest rate of only 3 percent has been used. Applying this interest rate to the Yantai survey estimate of capital cost of 303 yuan/m² gives an interest cost of .03 times 303, or 9.1 yuan/m² per year (.76 yuan/m² per month). The difference from the previous result indicates how greatly the assumed interest rate can affect the rental calculation.

2.23 The question arises whether to use a real interest rate or nominal interest rate. The nominal interest rate is the observed interest rate and consists of the real interest rate plus the premium charged by lenders for expected inflation. The premium arises because inflation reduces the real value of future loan repayments. The money paid back will be of less value than the money borrowed, for which the lender is compensated by a higher interest rate. However, if the analysis is carried out in nominal terms, one should allow for the rise in nominal value of the housing asset owned by the borrower. The borrower pays a higher nominal interest rate because of inflation, but this charge tends to be offset by a nominal capital gain on housing experienced by the borrower, assuming that house value rises along with the rise in the general price level. In short, if a nominal interest rate is used, then the gain or negative cost of the nominal capital gain on housing should be subtracted in totalling up housing costs. As an alternative procedure, one can calculate costs in real terms using a real rate of interest, in which case there is no capital gain in real terms, under the assumption that housing prices change in proportion to the general price level. The same estimate of housing cost should be obtained no matter whether the analysis is in nominal or real terms, as long as the analysis is internally consistent. Since no nominal capital gain is included in the housing cost figures for China, the implication is that a real analysis is required, so that the appropriate interest rate for the calculations in the present report is a real rate.

2.24 Ideally, one would observe a free nominal interest rate on loans of the same riskiness as mortgage loans. This rate would then be adjusted by subtracting an estimate of expected inflation to arrive at the real rate to be
used in calculating yearly housing cost. The problem arises that bank interest rates in China tend to be controlled rates, making their relation to the desired interest rate ambiguous. A real mortgage lending rate of 10 percent, particularly in the situation of high opportunity cost of capital in China, does not seem unreasonable. The 10.44 percent interest rate used by Wang may therefore be more reasonable than the lower 3 percent rate used in the Yantai experiment.

Depreciation. The next most important component of cost-based rent, also based on capital value, is depreciation. Wang (1989a, Table 2) and Barlow (1988, p.22) both report depreciation of 2 percent per year which in view of their similar capital values gives similar depreciation costs of .02 times 267, or 5.34 yuan/m² per year, versus .02 times 303, or 6.06 yuan/m² per year (.44 versus .50 yuan/m² per month).

The depreciation rate, which corresponds to straight line decline in value with a 50 year life, would be increased by 20 percent by a 40 year life and cut by 50 percent by a 75 year life, neither of which would be obviously unreasonable. Exponentially declining or other depreciation schedules could be assumed and would change the results further. Still, the depreciation rate does not appear to be as great a source of variability in the estimate of cost-based rent as capital value and interest rate which were considered above.

Maintenance. Both Wang (1989a, Table 2) and Barlow (1988, p.22) report a maintenance cost of 2.1 yuan/m² per year (.18 yuan/m² per month). One would like to see a fuller discussion of how maintenance is estimated, particularly in view of the widespread impression that housing is under-maintained.

If housing is in fact under-maintained, how are estimates obtained of what the adequate maintenance would be? Maintenance and depreciation are intimately related, since housing will depreciate more rapidly the lower the maintenance. The maintenance expenditure assumed should be consistent with the depreciation rate that is assumed. Both should reflect the actual amount of maintenance that will be undertaken. Presumably, with more rental revenues coming in, more maintenance than at present would be undertaken. Ideally, serious attempts would be made to find optimal levels of maintenance, to which correspond optimal rates of depreciation, though to do so may be beyond the level of refinement possible at the present time.

A conjecture is that there is a considerable range to maintenance cost. Not enough information is available to say much about the range.

Management, Taxes, Insurance and Profit. From Wang (1989a, Table 2) the remaining items making up cost-based rent come to 6.72 yuan/m² per year (.56 yuan/m² per month). From Barlow (1988, p.22) the larger value for these items is obtained of 11.52 yuan/m² per year (.96 yuan/m² per month).

Total Cost-Based Rent. Table 1 compares the estimates of cost-based rent and its components from the Wang and Barlow studies. The table gives monthly values. The Wang study with depreciation calculated as described above implies a total cost of 3.50 yuan/m² per month, in contrast to the Barlow result of 2.40 yuan/m² per month. The primary reason for the difference is that the
### TABLE 1: ESTIMATES OF COST-BASED RENT EXCLUDING SITE VALUE (YUAN/M² PER MONTH)

<table>
<thead>
<tr>
<th>Rental Component</th>
<th>Changzhou</th>
<th>Chongping</th>
<th>Tangshan and Yantai a/</th>
<th>Yantai b/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>2.32</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>.44</td>
<td>.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>.18</td>
<td>.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management, Taxes, Insurance and Profit</td>
<td>.56</td>
<td>.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>3.50</td>
<td>2.40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a/ Yukun Wang, "Housing Commercialization and Inflation," State Council, 1989, Table 2. Numbers are the same as in Wang except for slightly different calculation of depreciation. Calculation of depreciation here is explained in text.

b/ Melinda Barlow, "Urban Housing Reforms in China: A First Overview," Policy, Planning and Research Staff Working Papers, Urban Development Division, World Bank, 1988, pp. 22 and 25. Entries in table for interest, depreciation and maintenance are obtained from p.22. Total is commercial rent given on p. 25. The remaining entry (Management, Taxes, Insurance and Profit) is obtained by subtracting the other entries from commercial rent.

c/ The total figure is referred to by Wang and Barlow as commercial rent. As explained in the text of this paper, the term commercial rent as used in discussions of housing reform in China appears to be the same as cost-based rent excluding site value.
interest rate used by Wang is a bank interest rate of 10.44 percent in contrast to that used by Barlow from Yantai experiment calculations of 3 percent. The estimate in the Barlow study for management, taxes and insurance and profits is higher than in the Wang study, but not by enough to offset the interest difference.

2.32 The difference in results between the two studies, being importantly due to difference in interest rate assumptions, is not primarily attributable to the difference in cities considered. Indeed, the similarity of items such as maintenance suggests that the Wang and Barlow results may be based on some of same underlying figures. Whether their figures refer to different years is not clear. Since 10.44 percent is a better approximation of an unsubsidized real mortgage interest rate than the 3 percent used in the Yantai experiment calculations, preference should probably be given to the Wang result if one wants a truly cost-based rent, although the discussion has brought out several reasons for uncertainty in estimates, as well as for differences in rents among housing units not reflected in the average-type figures used in the experiments as reported by Wang and Barlow.

**Preferential Rents**

2.33 Cost-based rents considered above have not actually been used in any of the housing experiments that have come to the attention of the World Bank mission. Apparently because cost-based rents, even excluding site values, have seemed to call for uncomfortably large wage adjustments, still lower rents are to be charged. Various calculations of lower rents have been made which sometimes give the appearance of having a rationale in costs, but which may be motivated by other program objectives. There are several variants of these lower rents. These may be grouped together for purposes of the present discussion and referred to as preferential rents.

2.34 For example, Wang (1989a) gives an "exact cost cover" rent which excludes taxes, insurance and profit, and an even smaller "low interest rate" rent. The values for the two rents are, respectively, 3.06 and 1.94 yuan/m² per month. Barlow (1988) reports several different calculations made in Yantai. These include a "full cost" rent, excluding certain cost items, of 1.53 yuan/m², and a "standard" rent, excluding still further costs, of 1.28 yuan/m².

2.35 Barlow uses an important formula in displaying the still lower rent of 1.16 yuan/m² per month actually charged in the Yantai experiment. The formula used, from p. 22 of Barlow, relates the rise in rent on a standard size apartment to the wage change:

(1) \[
\text{proportionate rise in wage} = \frac{\text{new rent per m}^2 - \text{old rent per m}^2)(\text{standard apt. size})}{\text{old wage}}
\]

The numerator on the right side gives in parentheses the difference between the new and the old rent per m², which is multiplied by a standard apartment size, to arrive at an increased payment per month due to charging higher rent. The denominator is the pre-reform wage. Dividing the numerator by the denominator gives the proportionate rise in wage necessary to cover the rental cost.
2.36 A standard apartment size of 16.4 m² and a monthly wage of 79.42 yuan were used in the Yantai experiment. The new rent as already noted is 1.16 yuan/m² per month. The old rent is the pre-reform almost nil amount of .066 yuan/m² per month. Applying the above formula, the calculation given by Barlow is:

\[
\text{proportionate rise in wage} = \frac{(1.16 \text{ yuan/m²} - .066 \text{ yuan/m²})(16.4 \text{ m²})}{79.42 \text{ yuan}}
\]

which is equal to .235, implying a 23.5 percent increase in wage.

2.37 From a policy point of view, the true dependent variable is the new rent rather than the rise in wage. That is, the policy appears to have been to decide that the maximum wage rise to be allowed was 23.5 percent, with the new rent kept low enough to ensure this result. To reflect how rent was chosen, the formula should be written with .235 inserted for the proportionate rise in wage, which would then be solved to arrive at the 1.16 yuan/m² rent.

2.38 The relations of preferential rent charged to actual housing costs and to the wage adjustments given to cover the rent, are at the heart of the effects of the housing reforms and will be considered further below.

C. Redistributions

Net Gain or Loss of the Individual Worker

2.39 The fact that wages are to be raised by an equal percentage amount for all workers, whereas rents will be charged on a square meter (m²) basis, implies that there will be redistributions among workers. For any individual worker, the amount received in wage increases may not be same as the amount of rental payment required. Indeed the two amounts are very unlikely to be the same.

2.40 For example, among families receiving the same wage raise, those who happen to occupy larger amounts of living space will pay more rent than those occupying less space, even though their wage raise is the same. As another example, workers with higher than average wages will receive a greater than average absolute increase in wage payments, in view of the equal percentage rise in wages. If the space they occupy exceeds the average space occupied proportionately more than their wage exceeds the average wage, they will have to pay more in rent than they receive in wage increase, even if the total of the wage payment increases paid to all workers is equal to the total of the rental payments paid back by the workers.

2.41 Suppose that the yearly wage payments without bonus for a two-worker family before the housing reforms are 1,000 yuan per worker or 2,000 yuan for the family, and that a 25 percent wage increase coming to 500 yuan for the family is given to cover rents that are now to be charged. Suppose further that the wage increase is just sufficient to meet the rental payments for the average two-worker family living in a housing unit whose useable area is 32 m². For the wage
raise to just cover the rental payments implies that the yearly rent per square meter is 500/32 or 16 yuan/m², which dividing by 12 implies a monthly rent of 1.3 yuan/m². Then for a family receiving the same wages, living in a larger than average unit having a living area of 61 m², the rent paid would be 61 times 16 or 976 yuan. The rent payment required would exceed the wage raise by 976 minus 500 yuan, which comes to 476 yuan. On the other hand, for a family with the same wages, living in a smaller unit with an area of 16 m², the rental payments would fall short of the wage raise by 500 minus 16 times 16 yuan, which comes to 244 yuan.

2.42 The requirement to pay out 476 yuan more than received for the family living in the large unit, and the windfall of 244 yuan for the family in the small unit, represent substantial gains and losses to the families involved. The gain to the family in the small unit is on the order of 10 to 15 percent of basic wage income without bonus, and is still 7 to 10 percent of total family income including bonus, assuming a bonus of about one third of basic wage income. The loss to the family in the large unit is 20 to 25 percent of income without bonus and still amounts to about 15 percent of income including bones. There may be some tendency for higher wage families to live in larger units, which would lessen the redistributions. However, the correlation between wages and apartment size is undoubtedly far from perfect. Reasons for looseness of correlation include the historical basis on which occupancy has been determined in many cases, queueing and methods of rationing of apartments not based strictly on wages, and differences among work units in availability of units of different sizes. While only suggestive, the example indicates that the redistributions resulting from the method of adjusting wages and rents are by no means negligible.

2.43 The promulgations of the city experiments have mentioned making allowances for hardship cases and for the related matter of adjusting rents for differences in housing quality. However, in none of the materials received on outcomes of the housing experiments or discussions in China were the individual redistributions a major concern. This situation is somewhat puzzling in view of the indication from the foregoing example that some sizable individual redistributions must be involved.

2.44 Questions that need to be asked of those in China concerned with the housing reforms are:

(a) What numbers from the experimental cities are available on the magnitude of individual differences between wage adjustments and rental payments (as for example, frequency distributions of individual gains and losses by size of gains and losses)?

(b) What numbers are available on the number and magnitude of rental adjustments that have been made for hardship and for apartment quality differences in the experimental cities?

(c) Are analyses available of the extent to which the individual redistributions might pose problems of being excessively large and disruptive in extending the reforms to all cities?
2.45 Any proposal to extend the reforms to all cities will most desirably include the results of study of individual redistributions to ensure they will not raise major problems, and should include more specific guidelines on how to deal with the redistributions in a reasonably uniform and equitable manner.

Redistributions Among Units Supplying Housing

2.46 Redistributions among units supplying housing, as opposed to the redistributions among individuals just considered, could be an additional impediment to instituting wage adjustments and rental payments on a large scale.

2.47 Redistributions Among Work Units. A potential problem, due to redistributions among work units, arises when one or more family members is employed in a work unit other than the one supplying the family's housing. These family members receive wage increases from the work unit where they are employed, but they make rent payments to the work unit where they are living. The work unit where they are employed loses, and the work unit where they live gains.

2.48 The fact that little mention of this problem has been made in reporting on the city experiments may suggest that the problem is unimportant. However, it could be that coverage to date has not extended to difficult situations, such as where a work unit incurs substantial losses on the wage adjustment because the rents accrue to other work units, and where the work unit is already incurring losses in its general operations rendering the losses on the wage adjustments particularly onerous.

2.49 Redistributions Between Work Units and Housing Bureaus. The second problem has to do with redistributions between work units and housing bureaus. An example is that a redistribution may arise for workers who live in housing supplied by housing bureaus. The work units where they are employed pay out the increased wage payments to cover the rents, but the housing bureaus would logically receive the rent payments. The work units then lose, and the housing bureaus gain.

2.50 To evaluate the situation requires considering in more detail the pre-reform financing of housing bureaus and the provisions, if any, for restructuring the financing after rent reform.

2.51 Redistributions Involving Those Living in Private Housing. If workers who live in privately owned housing receive wage increases along with other workers, they might simply keep the wage increases since they are not beholden to work units or housing bureaus for their housing. According to Barlow (1989) p.8, roughly 17 percent of housing units are privately owned. How many of the residents of this housing are employed in work units where wage increases would be given is not known, nor is it known whether provisions are contemplated that would either prevent or recoup the wage increases from this group. The simplest procedure would be not to grant a wage increase to any workers living in private housing.

2.52 Implications. These problems have received some attention in Yantai, where four work unit situations are identified: 1) increased wage payments lower than rents, so that the unit makes money, 2) increased wage payments greater than
rents, so unit loses money, 3) increased wage payments just equal rents, so there is a balance, and 4) units having little or no housing. Within each of the four categories, there are profitable and unprofitable enterprises.

2.53 In Yantai, the enterprises keep 58.6 percent of total rent received and pay 41.4 percent to a central fund that can be used to make redistributions, presumably helping to make up the losses experienced in situations 2) and 4).

2.54 An example of the fourth situation (no housing) is barber shops and other small enterprises, as workers housing is typically provided by housing bureaus. These enterprises face losses since they presumably will now pay higher wages, while the housing bureaus collect the increased wages. Presumably the central fund could help redress this problem, and the possibility that the tax bureau would help was also mentioned.

2.55 Questions needing further discussion are:

(a) How thoroughly have problems of re-structuring payments between different work units, between work units and housing bureaus, and between work units and those living in private housing, been studied?

(b) Are more precise details available on the results?

(c) What criteria are used in trying to redress losses and gain between units?

2.56 Any proposals for extending wage adjustments and rent payments to all cities would clearly need to include provision for re-structuring of payments among work units and housing bureaus. The question is not pursued further in this report, because the extent to which it is already being addressed is not known, and the nature of the needed adjustments, though possibly involving many administrative complications, is in any case rather self-evident.

Impounded Deposits and Apartment Size Adjustments

2.57 In the initial proposals for wage adjustments and rents in the experimental cities, "empty" and "real" circulation means were originally mentioned for handling the wage adjustments and rental payments. See Renaud (1988). Under empty circulation, vouchers were to be issued that could be used to pay rent. Under real circulation, wage increases were to be paid in cash, and rent was likewise to be paid in cash. Apparently, both the empty and real circulation schemes have now been replaced by a system in which any shortfall of rent below wage adjustment received, rather than being paid out to individuals, is put into housing savings deposits that can be used to make down payments when buying housing.
2.58 Such a shortfall of rent below wage adjustment would be expected for families living in smaller units. Families living in larger units may on the other hand have an excess of rental payments over their increase in wages. Presumably any families having an excess of rent over wage adjustment will have to pay the excess in cash to the work unit or housing bureau owning the apartment.

2.59 To clarify, suppose a work unit pays increased wages of 15 each to residents of two apartments for a total wage payment increase of 30. Suppose further that the rent on the first or small apartment is 10, while the rent on the second or large apartment is 20. The work unit receives rent payments of 10 plus 20 or as much as it pays out in increased wages. Renters of the larger apartment will pay rent of 5 more than they receive in increased wages. Renters of the small apartment will pay rent of 5 less than they receive in increased wages, but rather than receiving the excess of wage increase over rental payments as cash, they will have deposits of 5 set up in their name in housing savings deposits.

2.60 Note that, for those in the small apartments who choose not to buy, new deposits are acquired every year. The deposits will build up over time, making it financially easier and easier to buy as time passes. In the not unrealistic example considered at the outset of this section, where there was an excess of wage adjustment over rental payments of 244 yuan per year, over 35 years would be required to acquire the funds to fully purchase a 10,000 yuan apartment outright. The example is not realistic because no interest is included and other funds might be used by the family as a down payment. Still, it is apparent that the impounded deposits are likely to make a very limited contribution to accumulation of down payment.

2.61 With regard to those with an excess of rent increase over wage increase, a hope has been that these persons will choose less housing. Housing would be freed for those in queues, contributing to a more efficient use of the housing stock. Little has been heard about the outcome. An impression is that relatively few such adjustments are occurring, but a better factual basis is needed.

2.62 One of the problems is the lack of a free rental market that would allow such adjustments. In the present rationed situation, families must arrange trades. For example, if they could find a smaller apartment to avoid higher rents under the reforms, they might choose to do so, but the family in the smaller apartment would have to be induced to move. The cumbersome one-on-one exchange system required under the rationed system apparently acts as a great impedance to housing adjustments. With a freely functioning rental market, there would be a normal or natural vacancy rate, and those wishing to make changes could find an apartment of desired size among the apartments vacant at any time. The natural vacancy question, and the likelihood that allowing a natural vacancy rate would result in gains in housing efficiency, will be considered further in Part IV.

2.63 Several questions about disposition of worker gains and losses need to be directed to those in China working on housing reforms:
(a) Has a decision definitely been made to replace empty and real circulation schemes with a process of depositing any excess, of wage adjustment over rental payments due, in housing savings deposits useable only toward purchasing of housing?

(b) What interest rate will be paid on the housing savings deposits? Will the interest be paid out, or will it accumulate in the deposits?

(c) Will the deposits be backed with assets whose earning are equal to the interest paid on the deposits? If so, what assets? Have estimates been made of the total amounts of savings deposits that might be created by the excess of individual wage payments over rents, and of the financial re-structuring implied? For the first year? For future years?

(d) If the interest rate paid on the deposits will not equal the interest earned on the assets backing the deposits, have estimates been made of total subsidy payments or taxes on the deposits?

(e) What information is available about the extent to which people with an excess of rental payments over wage adjustment have chosen to reduce their living space rather than pay extra rent?

2.64 The following exercises are needed:

(a) Prior to extending reforms to all cities, studies are needed of the financial re-structuring accompanying the housing savings deposits, their magnitude in future years, and the subsidies or taxes involved in the interest payments on the deposits. A plan should be developed to accommodate the institutional and financial changes implied.

(b) Information needs to be brought together from the experimental cities on the extent to which families with rent payments in excess of wage adjustments have chosen to reduce their space, and special survey studies should be conducted if necessary to find out more detail on the characteristics of people who have and have not chosen to change their space, along with reasons for the decisions.

(c) The results should be used to project the contribution of the wage and rent adjustments to relieving crowding, and to obtain ideas on how more effectively to encourage re-allocations between crowded and less crowded apartments.

2.65 The extra effort required to carry out these recommendations will depend on how much information already is being collected in the course of the city experiments, and on how much advance planning has already been done.
Problem for Administering District If Increased Wage Payments Exceed Rent Revenues

2.66 An impression from most discussions of the housing reforms is that the total of the wage increase payments will be close to that needed to cover the increased rental payments, considering the city or political district as a whole responsible for administering the reforms. (The narrower problem of lack of offsets among units supplying housing because the occupants and the workers in the work unit do not exactly coincide was considered in subsection 2 above.)

2.67 In Yantai, it appears that the increased wage payments and rental payments are in fact about equal, so that for the experiment as a whole there is neither a large gain or loss. Concern in Yantai has taken the form of making redress to enterprises losing money on the wage and rent adjustments by using surpluses from enterprises making money on the adjustments, along the lines discussed in subsection 2 above. The idea that there would be a net loss taking all work units together is not emphasized.

2.68 In Shenyang, there is more concern. It is stated that less comes back in rent than the amount of increased wages, and that this remains true even after 20 percent of the subsidy is allowed to be passed through in price increases. The problem may possibly be connected with the choice of the basic rent in connection with the size distribution of the housing stock. Only a few more successful enterprises have so far been included in the Shenyang experiment. Of the enterprises to which the reforms might be extended, only 40 percent are profitable, exacerbating the problem of extending the housing reform system.

2.69 One of the lessons is that it is difficult to handle wage and rent adjustments so that they have the desired effect of offsetting each other in the aggregate. As a minimum, careful studies are needed in each city before proceeding. The bureaucratic burden imposed by the proposed reforms should not be under-estimated.

D. Adjustments for Changing Conditions

2.70 The discussion of rent and wage adjustments so far has concerned initial implementation. Over time, changing economic conditions can cause complications that need to be allowed for. Two of the more important changes are inflation and changes in useable space per household. Tao Yang has collaborated in the following remarks on adjustments that could be made for these changes.

Inflation

2.71 According to the 1988 China Statistical Yearbook p. 777, the rise in the consumer price index was 12 percent in 1985 when the housing reform experiments started, and 7 percent and 9 percent in the two following years. Making once for all rent adjustments according to equation (1) above, without making further changes as inflation occurs, implies that the rent will decline in value over time relative to prices of all other goods if there is further inflation. One would gradually go back toward the pre-reform rent in real terms.
Meanwhile, if wages rose in proportion to inflation, the real value of the wage adjustment would not decline. A windfall of declining rents unaccompanied by any decline in real wages would be bestowed on workers. The situation would be more complicated if wages did not rise in proportion to inflation.

2.72 To maintain the situation in real terms, rents and wages would need to be indexed, or changed in proportion to the changes in the general price level. A straightforward approach is to raise rents in proportion to the price level, and if wages rise in the same proportion, the situation will stay the same in real terms. If wages do not automatically rise in proportion to the price level, then that component of the wage which is the initial wage adjustment to cover rent should be indexed, if the rent and wage adjustment component are to stay the same in real terms.

Useable Space Adjustments

2.73 According to the 1988 China Statistical Yearbook, p. 836, average useable space per person for urban households was 9.97 m² in 1985, 10.95 m² in 1986 and 11.47 m² in 1987.

2.74 Increases in useable space per person probably primarily take the form of allowing undoubling of some families, rather than being spread evenly over all families. Being in cramped quarters, the families who undouble after the reforms have been initiated seem most likely to be among those for whom the wage increases initially exceeded rent payments. There is some hope that the wage increases initially received will cover the rents. Under the system of impounding the excess of wage adjustment over rent in deposits reserved for down payments in the event of apartment purchase, allowing a reduction of monthly impoundment to the extent of the increased rent paid on the new space could make possible payment of the rent, without undue necessity to reduce spending on other things.

2.75 Regardless of the distribution of rent payments among families, the increased rental revenues from the rise in useable space will mean that total rent collections now exceed the increased wage payments from the wage adjustment initially made. The policy will no longer be a breakeven one.

2.76 When total useable space changes, the initial condition for breaking even on the wage and rent adjustments is violated. Since from equation (1), \((NR_t - OR_t)(TUS)\)=\(\text{Change in TW}_t\) where \(NR\) and \(OR\) refer to new and old rent, a change in total useable space \(TUS\) implies that either the new rent or the wage adjustment must change. Otherwise the rent receipts will exceed the wage adjustment that has been given.

2.77 One solution is to make yearly wage adjustments according to increase in total useable space of the system (the city or administrative district administering the rent program), keeping the new rent \(NR\) the same. In the absence of inflation, the further wage adjustment as a percent of the original change in the total wage bill is: \((NR_t - OR_t)(\text{Change in Total Useable Space})/(\text{Original Change in TW}_t)\), or new minus old rent times the change in total useable space, as a fraction of the original wage change.
2.78 This procedure results in income redistribution to all families, but this redistribution is needed if the families are to have the wherewithal to pay for the additional space.

2.79 Another procedure would be to selectively raise the wages of those who acquire the additional space. Alternatively, the excess of rent payments over wage adjustment could be allowed to stand, and could be considered recompense to work units partly compensating them for the new construction costs borne.

Combined Adjustments

2.80 The inflation and total space adjustments could be combined into one needed yearly adjustment, and further complications could be dealt with. The discussion serves to emphasize the problem of allowing for economic changes once the reforms are set in motion.

E. Policy Simulations

Wage and Useable Living Area Distributions

2.81 Two illustrations of effects of the reforms on incomes of individual workers were given in subsection C.1 above. A more complete picture of redistributions may now be obtained by considering the proportions of people in various wage categories and useable area situations.

2.82 Based on the 1985 distributions of gross income including basic wage plus bonus (Barlow, p.73), a three point approximation to the family basic wage income distribution may be developed. The first point is for the lowest 30 percent, the second for the middle 30 percent, and the third is for the highest 40 percent of families. According to Barlow, the annual per capita income in urban households was 841.40 yuan which multiplied by the 3.82 average number of persons per household gives average annual income of 3138 yuan. For a uniform income distribution between deciles and quintiles of Barlow's p. 73 figures, interpolating between income groups would give an annual gross income of 2219 yuan for the lower point, 2088 yuan for the middle point and 4421 yuan for the higher point. Since an average 67 percent of gross family income is attributed to the basic wage in 1985 (1988 Statistical Yearbook, p. 182), the average basic wage income for the three groups is approximated as 1500, 2100 and 3000 yuan. The weighted average of the three points is 2190 yuan. Converting this number to gross income according to the 67 percent assumption gives gross income of 3268 yuan, which is very close to the observed average income of 3138 yuan noted above.

2.83 With regard to the distribution of useable space, the urban household income and expenditure survey for 1985 gives percentage distributions of households by living space per capita, as reported on p. 82 of Barlow. These figures can be used to construct a three point approximation to family useable space. The first point is useable space for the families in the lowest 40 percent of the useable space distribution, the second is for those in the middle 35 percent, and the third is for those in the upper 25 percent. It is assumed
that living space per person is 3 m² for persons with no house or those who are in crowded or inconvenient quarters, who make up 30 percent of total families. With a uniform distribution of living space within and between groups, interpolation gives per capita living space of 3.36 m² for the lower point, 6.38 m² for the middle point and 12.37 m² for the highest point. Using the national average of 3.82 people per family, the living space figures per household for the three groups come to 12.84 m², 24.37 m² and 47.25 m². Finally, using the national average ratio of useable to living space per family (32.96/25.48) the three points in the approximation for useable space are 16 m², 32 m² and 61 m². The weighted average of the points is 32.85 m² which is very close to the observed national average per family useable space of 32.96 m².

2.84 The wage and useable space distributions that have been described determine the marginals in a nine point joint distribution of wages and living space. The nine points have been filled in judgmentally, using the marginals as controls, along with the assumption that the greatest frequencies are along the diagonal where living space rises with income. The frequencies are not clustered entirely along the diagonals, in view of rationing of space according to criteria other than income and in view of historical considerations not related to current income that can influence who lives in what housing. The higher weightings of smaller family useable spaces in the marginal for useable living space is consistent with asymmetries of useable space at each income level, wherein there are a larger number of families below than above the diagonals, as would be expected if the diagonals tend to represent equilibrium demands but with the existence of rationing of these units due to less than an equilibrium amount of total housing. Consistent with this possibility, the off diagonal elements cluster just below the diagonal.

2.85 Table 2 shows the judgmentally determined nine point distribution. The elements are denoted f, with the first subscript indicating income level and the second indicating amount of family living space. The nine point distribution will now be used to carry out highly approximative policy simulations.

Commercial Rent Policy

2.86 The method of solution is, first, to calculate the amount that will be collected in rent summing over the different housing unit sizes, and, second, to find the percentage increase in wages summing over different income levels that will result in wage payments equal to the rent payments. Consider as a first possibility a policy of charging a full cost-based rent exclusive of site value, which is the same as what is called commercial rent. Alternatively, the policy might be considered as an approximation to a full cost-based rent including site value but assuming that the capital value of the housing without site value is over-estimated due to deterioration in value of older housing, which may be reasonable especially in light of tendencies to under-maintain housing once it is built.

2.87 To obtain a high estimate of policy effects for illustrative purposes, suppose the commercial rent to be charged is the higher of the two rents shown in Table 1, or 3.5 yuan/m² per month. The yearly rental rate will then be 12 times this amount, or 42 yuan/m² per year.
<table>
<thead>
<tr>
<th>Basic Wage Income (yuan/yr)</th>
<th>16</th>
<th>32</th>
<th>61</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>$f_{11}=.20$</td>
<td>$f_{12}=.05$</td>
<td>$f_{13}=.05$</td>
<td>$f_{10}=.30$</td>
</tr>
<tr>
<td>2100</td>
<td>$f_{21}=.15$</td>
<td>$f_{22}=.20$</td>
<td>$f_{23}=.05$</td>
<td>$f_{20}=.40$</td>
</tr>
<tr>
<td>3000</td>
<td>$f_{31}=.05$</td>
<td>$f_{32}=.10$</td>
<td>$f_{33}=.15$</td>
<td>$f_{30}=.30$</td>
</tr>
<tr>
<td>Total</td>
<td>$f_{01}=.40$</td>
<td>$f_{02}=.35$</td>
<td>$f_{03}=.25$</td>
<td>1</td>
</tr>
</tbody>
</table>
2.88 The total rent paid in a year will be the yearly rent per m2 times the total floor space. The total floor space in turn can be calculated from the marginal distribution of households by floor space, given in the bottom row of the Table 2, as the sum of the proportions of families in each size of housing unit times the sizes, or \((0.40)(16) + (0.35)(32) + (0.25)(61)\), which equals 32.85 m2 and is the weighted average floor space per family in the economy.

2.89 In the present case, the total rent paid in a year will then be the 42 yuan/m2 per year rental rate times the 32.85 m2 floor space, or 1380 yuan. In view of the weighting of magnitudes by the proportions of families to which they apply, this number like all the numbers in the example refers to economy totals divided by number of families, or simply amounts per family.

2.90 Let \(x\) be the proportionate rise in basic wage income necessary to make possible the total rent payments. Each family will receive a rise in wage income equal to \(x\) times its existing basic wage income. When this rise in wage income is summed over all the wage levels weighted by the proportions of families at the wage levels, the total increase in wage payments is obtained. Since the proportionate rise in basic wage \(x\) is the same for all families, \(x\) factors out and multiplies the existing weighted average basic wage income per family in the economy. From the marginal distribution of households by income level given in the right-most column in Table 2, the increased wage payments are equal to \(x\) times: \((0.30)(1500) + (0.40)(2100) + (0.30)(3000)\). The weighted average basic wage income in the economy given by the latter sum is 2190 yuan/yr, as already derived earlier.

2.91 For the wage increase payments to be equal to the rental payments implies that the magnitudes calculated in the last two paragraphs be equal, or 2190\(x\) = 1380. The small amounts already being paid for rent should be subtracted from the 1014 yuan of rental payments. If the present rental payments are .066 yuan/m2 per month, multiplication by 12 to obtain a yearly value and by the 32.85 m2 weighted useable living space gives 26 yuan present payments that should be subtracted from the 1380, giving 1354 yuan. Using 1354 yuan as the required increase in basic wage income, the solution for proportionate rise in basic wage income \(x\) is 1354/2190, giving \(x\) = .62 and implying a 62 percent wage increase.

2.92 The results here support the contention in the Wang (1989a) paper that charging commercial rents would lead to high percentage increases in wages, leading to large negative and positive windfalls on persons depending on their individual circumstances.

** Preferential Rent Policy**

2.93 Applying the same logic as for the 3.50 yuan/m2 per month commercial rent policy, instead now assuming the charge is the preferential rate of 1.16 yuan/m2 per month, multiply 1.16 times 12 to arrive at yearly payment of 13.92 yuan/m2, and further multiply by weighted average apartment size of 32.85 m2 as derived above to arrive at weighted average total rent payment per year of 457 yuan. Subtracting 26 yuan as before for present rent payment, gives required rise in rent payment of 457 minus 26, or 431 yuan.
2.94 The proportionate rise in basic wage is as before x times the weighted average basic wage before wage rise, or x times 2190 yuan/yr. Applying the formula that the wage rise 2190x=431 and solving gives the proportionate wage rise x=431/2190 or x=.20, indicating that a 20 percent rise in basic wage would be sufficient to pay for the rent increase, which contrasts with the increase in wages of 62 percent estimated above if commercial rent were charged.

2.95 This example illustrates the substantial reduction in needed wage increase if preferential rents are charged.

Transfers Under the Policies

2.96 Table 3 shows the net gains and losses of the groups of tenants in the nine point distribution, under the two policies that have been considered. The gains and losses under the first or commercial rent policy are quite pronounced in view of the wage increases, which for some of the nine groups are large relative to the rent increases. The gains and losses under the second or preferential rent policy are smaller in view of the lower rents and smaller wage adjustments.

2.97 The entries in the cells in Table 3, giving the effects on each of the nine types of families, are calculated as follows. A negative contribution to each cell is calculated which is equal to the increase in rental rate per m2 per year multiplied by the living space per family in the cell. To this negative contribution is added a positive contribution which is the basic wage income applicable to the cell times the proportionate rise in wage income due to the wage adjustment for the policy in question.

2.98 Consider the entry in the upper left cell for a family with 1500 yuan/yr basic wage income and with 16 m2 of useable space. Under the first policy considered above of charging a commercial rent of 3.50 yuan/m2 per month with a breakeven wage adjustment, subtracting the present rent of .066 from the 3.50 to arrive at 3.43 yuan/m2 and multiplying times 12 to arrive at yearly rent per m2 and further multiplying by the 16 m2 apartment size for this cell gives a yearly total rental payment increase or negative contribution to the cell of 659 yuan. Meanwhile, the wage adjustment under this policy gives a 62 percent increase in cash income or .62 times the 1500 yuan pre-reform cash income received for families in this cell, giving a 930 positive contribution to the cell. The difference between the negative entry of 659 yuan and the positive entry of 930 yuan for the cell net to a positive 271 yuan, which is the gain under the policy to a family in this cell.

2.99 Table 3 shows the gains or losses per family in each cell. If the entry in each cell is weighted by the proportion of families in the cell and summed, the net payment, if any, from work units to tenants is obtained.

2.100 The top panel in the table pertains to the break even commercial rent policy. As can be seen, there are gains for 4 of the 9 cells. The gains are experienced by families in the lower left part of the table, being most pronounced for those in smaller apartments with higher incomes. The weighted sum for the families experiencing gains is 265 yuan, which amount would be deposited by the work units in housing savings deposits credited to the workers. The
<table>
<thead>
<tr>
<th>Family Useable Space (m²)</th>
<th>16</th>
<th>32</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Wage Income (Yuan/yr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commercial Rent Policy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>271</td>
<td>-388</td>
<td>-1583</td>
</tr>
<tr>
<td>2100</td>
<td>643</td>
<td>-16</td>
<td>-1211</td>
</tr>
<tr>
<td>3000</td>
<td>1201</td>
<td>542</td>
<td>-653</td>
</tr>
<tr>
<td><strong>Preferential Rent Policy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>90</td>
<td>-120</td>
<td>-500</td>
</tr>
<tr>
<td>2100</td>
<td>210</td>
<td>0</td>
<td>-380</td>
</tr>
<tr>
<td>3000</td>
<td>390</td>
<td>180</td>
<td>-200</td>
</tr>
</tbody>
</table>
excess of rental payments over wage increases for those in the upper right portion of the table would be just equal to the amount of these deposits, enabling the work units to set up the housing savings deposits without loss. In effect, families experiencing losses would bear the costs of setting up the deposits. The families experiencing losses would be taxed, with the proceeds of the tax being used to set up housing savings deposits which the gainer would be able to use toward payment for housing if they chose to buy.

2.101 The bottom panel of Table 3 gives the smaller net gains and losses for each cell for the break-even preferential rent policy. The weighted sum of the positive entries is only 87 yuan, and the entries showing per family gains or losses for each of the nine types of family situations are correspondingly lower.

F. Remaining Questions

2.102 While charging low preferential rents may ease transfer and other policy problems, it should be recognized that every reduction in rent level diminishes the incentives of families to purchase their housing rather than rent. The revenue to the work units, housing bureaus and development corporations from selling of housing is thus reduced. The potential national saving and accompanying reduction in inflationary pressures from house purchasing is thereby reduced. There is a trade-off between reducing transfers and other short run policy problems and charging higher rents that would raise purchase prices that people are willing to pay for housing.

2.103 This trade-off issue has been implicitly raised by Wang (1989a) who sees a problem in giving incentives to people to buy housing if rents are low, but there apparently has been no wide discussion of the issue. Answers need to be sought to the question: What are the trade-offs, and what is the best point on the trade-off, between easing short run transfer and adjustment problems, on the one hand, and charging sufficient rents to encourage prices for housing that will result in substantial new national savings, on the other hand?

2.104 National projections, that apparently have not yet been made, are needed of: 1) the relation of rent levels to housing purchase prices, 2) potential savings to the nation and to the government that can be generated by housing purchases, and 3) redistributions among occupants along the lines of the policy simulations in Section E above, 4) work unit losses or gains. Attention is needed to how to deal with the work unit losses and gains, which is challenging in view of the differing incentive structures and (often soft) budget constraints encountered among the diverse national, provincial and local enterprises, collectives, government organizations and institutions and private units.

2.105 Meeting the needs will be aided by attention to the housing tenure decision, which is the fundamental determinant of how many houses will be sold as will be considered in Part III. We have not yet considered the problems of introducing a mixed system of a rationed rental market and a private ownership market, which will complicate the operation of the reforms and will also be considered in Part III. Nor have we considered effects of the reforms on longer run housing goals, which will be the concern of Part IV.
III. HOUSING TENURE CHOICE

A. User Cost and the Outline of this Part

3.1 There has possibly been too much pre-occupation with the mechanics of rent and wage adjustments considered in Part II. There has been too little attention to tenure choice of whether to own or rent housing, that will determine how many apartments will be sold.

3.2 One determinant of tenure choice is the relationship between the price of renting and owning. The yearly price of housing if the family rents is simply the yearly rent charged. The yearly rent can be directly compared with yearly expenditures on food, clothing and other items as the family decides how to allocate its income to various desired uses.

3.3 The yearly price if the family owns is less straightforward. The observed outlays on housing by an owner do not accurately measure the yearly price of housing. True, the maintenance that the owner must undertake which would be done by the provider of the housing if the family rented, is a part of the yearly cost of home ownership, but it is only a part, and ordinarily a small part, of the total yearly cost of home ownership. There are additional costs associated with ownership of a valuable asset. For example, the equity in the house (house value minus outstanding mortgage indebtedness) could be invested elsewhere and earn a return if the house were not owned. Furthermore, interest must be paid on any outstanding indebtedness on the house. The earnings foregone plus the interest actually paid can be represented as an average interest rate times the value of the house.

3.4 The yearly cost is a far cry from the actual outlays made on housing which can be seen by noting that, in the year of purchase, the owner makes a down payment outlay, but the yearly cost of housing is not suddenly very large in the first year and correspondingly reduced in later years when no down payment is made. The yearly cost associated with the down payment is not an observed outlay at all, but rather consists of the foregone interest or other earnings that would be obtained each year on the down payment if the home was not purchased. To make an informed decision, thought must be given to the yearly benefits given up by having to make a down payment. The payments on the mortgage loan taken out to finance the remainder of the purchase price over the down payment are not entirely a cost of housing. The mortgage payments ordinarily consist of two components. One component is the payment of interest on principal or remaining loan outstanding, and the other component is repayment of part of the principal, so that the debt outstanding is gradually reduced over time. While the interest component is attributable to housing, the loan repayment component actually represents savings by the family and is not a housing cost. Other things being equal, the net worth of the family goes up with the reduction in indebtedness.

3.5 Meanwhile, another cost not reflected in any observed yearly outlay is decline in the value of the housing as it ages, i.e. depreciation.
3.6 From the previous paragraphs, the yearly cost of home ownership is seen to be the sum of various annualized costs and is: yearly upkeep expense E, plus interest on the housing asset (consisting of foregone interest on equity in the home plus actual interest paid on outstanding mortgage amount) or iV, plus yearly depreciation sV, where \( i \) is interest rate, \( V \) is apartment value and \( s \) is depreciation rate. This yearly cost of home ownership is often called the user cost of ownership.

3.7 If user cost is less than the rent that would be paid as a tenant, owning will be less expensive than renting. The converse statement holds if user cost is greater than rent.

3.8 User cost relative to rent plays a central role in the housing tenure decision. With uncontrolled housing markets, house value which developers must charge to stay in business will be determined by construction costs, and rents will have to be set by providers of housing to recover the costs. The family compares its user cost to the rental rate in deciding whether to be a tenant or an owner.

3.9 However, housing markets are not completely uncontrolled under the Chinese reforms. User cost performs a different function. Since the rental rate is set preferentially at an amount insufficient to recover housing costs, people will choose to buy only if the house value is reduced sufficiently that the user cost of owning compares favorably with the rent charged.

3.10 The top part of Figure 1 shows the simplified situation that would prevail if all families were identical and if stringent assumptions were fulfilled including market-type property rights, perfect financial liquidity with no borrowing constraints, no expectation of capital gains and losses, and no tax advantages or disadvantages of ownership relative to renting. By market-type property rights is meant a situation where the owner can sell the housing at any time in a freely functioning housing ownership market, and the tenant has a right to occupy the housing on rental and related conditions for a finite period such as a month or a year.

3.11 Under these assumptions, families would face an interest rate \( i \) at which they could invest or borrow as many funds as they wished without risk, and this interest rate would govern the terms on which they would value yearly financial magnitudes and capital values. Families would be indifferent between renting and owning only if the yearly rental charge \( R \) were equal to user cost, that is, \( R=E+iV+sV \). For any given rental rate \( R \) faced by the family, the sale price \( V \) making the equality between rental charge and user cost hold will be the maximum amount the family will be willing to pay to purchase the housing. Looked at another way, the price \( V \) that would be paid for a house would be the sum of 1) the discounted present value of future rental payments that can be avoided by owning, or \( R/(1+i) + R/(1+i)^2 + R/(1+i)^3 + ... + R/(1+i)^n + ... \) with the sum conceptually extending to time infinity, which is equal mathematically to \( R/i \), minus 2) the capitalized value of depreciation and operating expenses associated with owning the house, which would have to be subtracted from \( R/i \) to obtain net savings from avoiding rent. The result is the same as obtained by solving the above rent user cost equality \( R=E+iV+sV \) for \( V \), namely \( V=(R/i)-[(sV+E)]/i \), which simplifies to \( V=(R-E)/(i+s) \). Only when \( V \) and \( R \) conformed to this relationship.
FIGURE 1: TENURE CHOICE AS AFFECTED BY HOUSING PURCHASE PRICE

(a) Simplified

Housing Purchase Price, V

0 1
Proportion of Families Choosing to Own

(b) Actual

Housing Purchase Price, V

Tenure choice affected by factors other than housing purchase price

0 1
Proportion of Families Choosing to Own
would people be indifferent between renting and owning. If selling price $V$ was set above the level of indifference to rent, no-one would purchase. There would be no home ownership. If $V$ was set below this level, all people would decide to purchase.

3.12 This simplified situation is depicted in the top part of Figure 1. For given values of the rental price, of depreciation rate and of operating expenses, the schedule showing the demand for home ownership would be a horizontal line at $V_0$. If housing price was above $V_0$, all people would find it advantageous to rent. The proportion choosing to own would be zero. On the other hand, if price were below $V$, owning would be the preferred tenure choice for all people.

3.13 The actual demand for home ownership is depicted by the more complicated situation in the bottom part of Figure 1. More generally than in the top part, a demand schedule for home ownership can be conceived in which the proportion of families choosing to own is greater, the lower is the price paid for home ownership. The position of the schedule, determining how much will be paid to purchase housing if a given proportion of families are to be induced to purchase, depends partly on the rental price, but it also depends on other considerations.

3.14 Different positions of the demand schedule are shown to emphasize this fact. For example, if the property rights to ownership are clear and allow sale in a free market whereas tenants rent purely on a monthly or yearly basis, the property rights gain from ownership may be substantial. The demand schedule for ownership will be in a high position. If re-sale rights are uncertain and if tenants have property rights of occupancy that are similar to those of ownership, then the advantages of home ownership are reduced, and the schedule is in a low position. There will be relatively little demand for home ownership even at a low selling price of housing.

3.15 Families face different liquidity conditions and portfolio considerations affecting demand to hold assets, depending on age composition and their overall wealth position, among other things. The demand schedule for home ownership has a different position for different families and, since we are summing over families, the total demand schedule becomes downward sloping instead of being perfectly horizontal, as different families are brought into the market by a lowering of selling price.

3.16 Within the framework represented by the lower part of Figure 1, Section B below will consider in more depth what determines the position of the demand schedule for home ownership in China. Four major considerations are:

(a) rental price as an alternative to owning,

(b) lending terms,

(c) property rights, and

(d) savings-portfolio decisions.
These four pre-conditions, as influenced by policy, determine the size and viability of the market for housing ownership.

3.17 Section C will consider factors affecting the slope of the demand schedule for ownership. Knowledge about the slope is needed in deciding on specific housing selling prices to offer, given the pre-conditions. Section D will consider differences that need to be recognized between the markets for previously existing and newly built housing.

3.18 Building on the foregoing sections of Part III and the results from Part II, Section E will present the elements of a policy analysis framework for estimating effects of housing reforms, consisting of:

(a) Solution for Proportion of Families Owning,
(b) Predicting Implications of Mixing Cash and In-Kind Rent,
(c) Relating Rationed and Unrationed Housing Markets, and
(d) Non-Housing Effects Including Inflation.

Finally, Section F will give implications for housing reforms efforts.

B. Major Considerations Affecting Tenure Choice

Rental Price Relative to Selling Price

3.19 Conversion of Rental Formula to Value Formula. The rental cost of housing is equal to the interest cost on the investment plus depreciation plus operating costs or

\[ R = iV + sV + E \]

where \( R \) is yearly rent, \( i \) is the interest rate, \( s \) is the depreciation rate and \( E \) is yearly operating expenses including maintenance, management, taxes, insurance and normal profit. This formula corresponds to the way rent was calculated in the examples in section II.B on rent calculations. If a full commercial rent is charged, and if the interest rate used in calculating the commercial rent is the same as \( i \) used by the buyer in deciding on price that will be paid, then the price that will be paid \( V \) is equal to the capital value used in determining the commercial rent.

3.20 The formula may be re-arranged to find the price \( V \) a buyer would be willing to pay when faced with the alternative of paying rent \( R \):

\[ V = (R-E)/(i+s) \]

which recapitulates the result in the preceding section and states that the price paid \( V \) will be the yearly rent minus operating costs, divided by the sum of the interest and depreciation rates. In a more extended treatment, changes could be
assumed in future R's rather than assuming them not to change over time, capital
gains could be allowed for by putting in future selling values, and various tax
considerations could be introduced. If all assets have the same riskiness, then
i is a generalized discount rate. The discount rate might be varied depending
on whether the housing asset is more or less risky than other assets.

3.21 To apply equation (6) using the rental costs in the first column of
Table 1, the yearly equivalent of the monthly rent is 12 times 3.50 or 42 yuan
from which is subtracted the yearly equivalent of the operating expenses given
as the last two items in the table or 12 times .74 equalling 8.88 yuan, giving
a difference of 42 minus 8.88, or 33.12, which is the value of R-E. Since an
interest rate i of 10.44 percent and a fifty year life or depreciation rate s of
2 percent was used in the calculation, the value of i+s is .1244. Inserting
these figures into equation (6) gives a value of V of 33.12/.1244, or 266 yuan,
which reproduces the capital value used in arriving at the rent in the first
place.

3.22 Effect of Change in Rent on Value. Consider now what will happen to
the offer price V for a house if a rent different from the full commercial rent
is charged. From equation (6), the lower is the rent charged, the lower will be
the price people will be willing to pay to purchase the housing, since the rental
payments they avoid is lower. If operating expenses E are small relative to rent
R, then E can be neglected, and the purchasing price that will be paid varies
just in proportion to the rent. Since the 8.88 yuan operating expenses are
fairly small in relation to the yearly rent of 42 yuan, the proportionality
assumption is not too bad for small changes in rent. However, the farther below
commercial rent is actual rent, the greater is the effect of subtracting
operating expenses, and it becomes increasingly important to apply equation (6)
more exactly.

3.23 An example will bring out the depressing effect on sales prices that
charging preferential rates below commercial rents can have on prices at which
people will buy housing. If a preferential rent of 1.16 yuan/m2 per month is
charged, as in the Yantai experiment, then the yearly rent R is 12 times 1.16 or
13.92 yuan/m2. Using this value instead of the original rental cost of 42 yuan
in equation (6) gives a value V of 40.5 yuan, which is only about 15 percent of
the capital value used in determining the true rental cost.

3.24 In terms of Figure 1, charging low preferential rents shifts the
demand schedule for housing ownership down. The schedule is shifted down more
than in proportion to the reduction in rent below the commercial rent. That is,
the revenue obtained from selling a given amount of housing is reduced more than
in proportion to the reduction in rent.

Borrowing Terms

3.25 Repayment Period and Down Payment Requirements. If liquidity did not
matter, down payment and repayment period would not be a concern. Then, in
response to imposition of a 30 percent down payment requirement and a short
repayment period requirement of 10 years, as in the housing reform experiments, instead of a more normal 10 to 20 percent down payment and 20 to 30 year repayment period, a family could borrow funds elsewhere to make the effective repayment period anything it liked.

3.26 But this is not likely. Using an average selling price of 250 yuan/m² as reported for Shenyang, and assuming an apartment with 25 m² of usable space, the sales price of the apartment would be 6,250 yuan. With a 30 percent down payment requirement, the down payment is 1,875 yuan, or on the order of half a year's income. The time allowed for payment of the balance is 5 to 15 years, with an attempt to make the payments equal to 10 to 15 percent of household income. The down payment and repayment conditions are generally similar in Yantai.

3.27 This illustration corroborates that both the down payment and the yearly repayment schedule require savings that are very large relative to the average households savings. Using the figures from the 1987 China Statistical Yearbook given in Barlow (1988), p.69, multiplying the per capita results by the reported 3.82 persons per household gives annual income available per family of 3162 yuan and annual living expenditures of 3052 yuan, or savings of 110 yuan, which is a savings rate of 3.5 percent. It is plausible that the largeness of the down payment and of yearly repayments in relation to normal savings would encounter severe liquidity problems, acting to discourage home ownership.

3.28 Requiring high down payments and short repayment periods discourages home ownership as demonstrated in the study of South Korea by Gyourko and Han (forthcoming), which indicates on p.16 that an increase of 5 percent in own funds available increases the probability of being a home owner by 4.5 percent. While the coefficient cannot be used directly to estimate an effect on purchase price people would be willing to pay, the finding constitutes empirical evidence on the importance of liquidity constraints. It translates into the implication that requiring greater initial and monthly payments shifts the demand schedule for ownership downward.

3.29 Surveys of household income and savings and housing objectives could be useful in throwing light on the extent to which requirements of high down payment and short repayment period discourages home ownership. Attempts should be made to ascertain whether the increased savings due to the requirement, by those who purchase, is enough to compensate for the decreased savings by those discouraged from buying.

3.30 Interest Subsidies. On the other hand, an interest subsidy on a mortgage loan, which is implied if lower than market interest in charged, lowers the cost of home ownership. The proposal to charge only 3 percent interest as in Yantai thus constitutes a proposal to subsidize home ownership.

3.31 Suppose that the market interest rate \( r \) is 10 percent and that a subsidized interest rate \( i \) of 3 percent is charged on mortgage loans. If the borrowing were in perpetuity, then the subsidized payments would be \( i \) each time period times the amount borrowed, whereas they would be \( r \) if there were no subsidy. The present value of the stream of subsidized payments of \( i \) each year into perpetuity capitalized at the unsubsidized rate \( r \) is \( i/r \). Thus the present
value of subsidized payments in this example is 3 percent divided by 10 percent or 30 cents for every dollar borrowed. With a shorter repayment period, the subsidized payment stream would not last so long, and its present value would be raised. Suppose the present value were doubled and became 60 cents. There would still be a subsidy of 40 cents on each dollar borrowed. If the down payment were one quarter of the purchase price of the house, three quarters would be borrowed. The cost of home ownership would be reduced by three quarters of 40 percent, or by 30 percent. This is the percentage by which the demand for ownership schedule would be shifted up by the interest subsidy. That is, other things equal, the price that people would be willing to pay to purchase an apartment would be raised 30 percent by the interest subsidy.

3.32 Meanwhile, somebody else (ultimately, other households or work units) must pay for the interest subsidy, as will be analyzed below in Section E when savings, inflation and financial intermediation are considered more fully.

3.33 **Net Effects.** To summarize, short repayment periods and high down payments lower the price that people are willing to pay to purchase housing. Interest subsidies on the other hand raise the amount people are willing to pay, but they require possibly inflationary subsidies from elsewhere in the economy.

3.34 As far as is known, no comprehensive estimates of these effects of the proposed short repayment periods and interest subsidies have been attempted. The following exploratory comments are suggestive of the kind of analysis that is needed.

3.35 The formula for the amount people are willing to pay to buy housing needs to be modified if there are short required repayment periods and interest rate subsidies. Equation (5) showing the required equivalence between rent $R$ on the left side and yearly cost of home ownership on the right, if people are to be indifferent between renting and owning, becomes:

$$ R = [i_o(1-F)+i_sF]V' + sV' + E + d(1-F)V' $$

In the first term on the right, the interest cost on the capital value $V'$ in the presence of repayment period requirement and interest subsidy is now a weighted average of the home purchaser's interest rate applied to his own funds $i_o$ and the subsidized interest rate $i_s$, with the weights being $1-F$ and $F$ where $F$ is the fraction of payment for the home represented by the subsidized loan. The second term for depreciation $sV'$ and the third term for yearly operating expenses $E$ remain as originally given in equation (5).

3.36 The final term $d(1-F)V'$ is the addition to yearly home ownership cost because of the requirement of large down payment and short repayment period. The coefficient $d$ is the amount a household needs to be compensated to be indifferent to taking on extra payments. The positive value of $d$ is due to the loss in utility from other saving that the household will forego if it takes on the home purchase and to the possible decrease in consumption expenditures associated with increased savings undertaken to make the quick repayment. The coefficient $D$ multiplies the borrowed amount subject to quick repayment $(1-F)V'$. 
3.37 Re-arrangement of (7) for the value $V'$ that will be paid for a home, analogous to equation (6), gives

\[
V' = (R-E)/[(i_0+d)(1-F) + i_F+s]
\]

As a suggestive numerical example, let $R=42$ yuan, $E=8.88$ yuan, $i_0=.1044$, and $s=.02$ as in the example for equation (6) without lending policies, and let the lending fraction $F=.7$, the subsidized interest rate $i_s=.03$ and the coefficient for disutility of shortened repayment $d=.10$. Then the value of $V'$ is found to be 324 yuan, which is higher than the value $V$ of 266 yuan found from equation (6) without lending policies. The fact that the value is higher indicates that the interest subsidy effect raising purchase price people are willing to pay outweighs the shortened repayment effect lowering it.

3.38 If a monthly preferential rent of 1.16 yuan/m² is used instead of the commercial rent of 3.50 yuan/m² underlying the result in the preceding paragraph, the value of $V'$ from equation (8) is found to be 49 yuan, indicating that the lending policies still do not come close to offsetting the depressing effect of preferential rents on housing purchase offer prices.

**Property Rights**

3.39 **Why Property Rights Matter.** The demand schedule for home ownership is shifted down by de facto ownership rights given to tenants and by limitations and ambiguities on the property rights of owners.

3.40 For example, the gain from ownership is reduced and may be negated if a tenant has rights in virtual perpetuity to live in the apartment without eviction, and if the owner is not sure of the conditions under which he will be able to sell, in particular whether bidding without restriction from all comers will be allowed if he wishes to sell, and if he is forbidden to obtain income from the housing asset by renting it out.

3.41 The prospective gains from home ownership are further reduced by the continued existence of a substantial number of tenant units paying government determined rents below market rents, that are an alternative to owning and keep down the amount that people will be willing to pay for a house. The gains are still further reduced if the apartment that is bought is in a building where the work unit or housing bureau continues to make the major common area building upkeep decisions, which may result in under-maintenance and consequent low resale value of apartments in the building. A pervasive problem is uncertainty about what the future stance of government will be toward property rights.

3.42 **Experience With Offering Different Kinds of Property Rights.** In Yantai, according to Barlow (1988), p. 26, the commercial value of new housing was estimated at 400 to 455 yuan/m² depending on whether location was in city or suburbs. Taxes and development fees were subtracted to arrive at a full property rights value of 256 to 258 yuan/m². A limited property rights value approximately 70 percent of the full property rights value was established at 180 yuan per m². The limited property rights include user and inheritance rights. However, transference of ownership, renting to others, giving the apartment away or borrowing against it are prohibited. If sold, the apartment is to be sold
back to the work unit or government office from which it was bought. The prices and conditions for existing housing are indicated to be the same as for new apartments.

3.43 In Shenyang, a limited property right purchase entails co-ownership of the apartment between the worker and the enterprise. The apartment cannot be re-sold for at least five years, and the enterprise must be offered the right of first refusal. Any capital gains are to be shared in proportion to the equity share as between the worker and the enterprise. It is not known how the re-sale price will be determined, e.g. whether a construction cost basis will be used, whether a market determined price will be allowed, or whether some other basis will be used.

3.44 One percent of buyers in Yantai paid the full commercial value of approximately 455 yuan/m². These buyers were reported to be largely self-employed persons. They may have been declared ineligible for the lower full property rights value of 256 to 258 yuan/m² because of high income or other reasons. The full property rights value was paid by 10 percent of buyers. The remainder or 89 percent of purchasers bought at the limited property rights value of 180 yuan/m².

3.45 It is not clear in Shenyang how sales will be divided between full and limited property rights sales.

3.46 Toward Estimation of Property Rights Effects. To consider how much property rights affect the purchase price that people are willing to pay, note that rights of continued tenancy, including passing on the tenancy to heirs, reduce the cost of renting below the simple amount of rent paid R. The option of staying in the apartment has a value to tenants. The cost of renting R under the present property rights situation in China on the left hand side of equation (7) becomes R-0, where 0 is the value attached to the option of being able to stay in the apartment indefinitely.

3.47 Turning to the value of ownership, the option of being able to sell the apartment in a freely functioning housing market, with perhaps the expectation of capital gain, and the option of being able to rent the apartment out, mean that yearly costs of home ownership on the right side of equation (7) need to be reduced by the value G attached to these options in a usual market economy situation. In the property rights situation in China, the right side of (7) is reduced only by the amount qG where q is the probability less than one that the options connected with ownership will be able to be exercised.

3.48 Taking account of property rights, equation (7), stating that housing value should be such that there is indifference between owning and renting, becomes for a market economy

\[ R = XV'' + E - GV'' \]

where V'' refers to value in a market economy taking account of property rights, G is the property rights gain from ownership in a market economy, R as before is
yearly rent, E as before is operating expenses and where X is equal to 
\[ i_o (1-F)+i_F+s+ d(1-F) \] and is the sum of the per dollar interest rate, depreciation and liquidity costs introduced earlier.

3.49 With property rights as in China, equation (7) becomes

\[
R - T = XV'' + E - qGV''
\]

where \( V'' \) refers to value taking account of the property rights situation in China, \( T \) is the property rights gain from being a tenant in China, and \( q \) is the probability of realizing market economy property rights gains from ownership in China.

3.50 Solving (9) for \( V'' \) and (10) for \( V''' \), and dividing one by the other, gives the ratio of value with Chinese property rights to value with market economy property rights

\[
\frac{V'''}{V''} = \frac{[1-T/(R-E)][(1-G/X)/(1-qG/X)]}{[1-T/(R-E)][(1-G/X)/(1-qG/X)]}
\]

and expresses the ratio as a function of: \( T/(R-E) \), or tenant option value in China relative to the excess of rent over operating expenses; \( G/X \), or the ratio of market economy ownership property rights option value to the sum of per dollar interest rate, depreciation and liquidity costs; and \( q \), or the probability an apartment owner will be able to realize the ownership rights in China.

3.51 If \( T/(R-E) \) and \( G/X \) are both .3 and the probability \( q \) is .5, then (11) becomes \( (1-.7)((1-.3)/(1-.15)) \), which is equal to .58. The property rights situation reduces the amount people are willing to pay to purchase housing to 58 percent of the value that would be paid if property rights were as in a market economy.

3.52 While the numbers are only intuitive, the analysis tries to consider explicitly the ways in which property rights affect willingness to pay. It indicates that property rights limitations can reasonably be expected to have substantial effects.

3.53 A strong case can be made for strengthening rights associated with ownership, making rental a more business-like arrangement, and taking measures to induce people to believe that these rights will be honored. Both analytical work and surveys are needed investigating what property rights are worth to people.

Savings-Portfolio Considerations

3.54 The Demand to Hold Wealth. The demand for home ownership is not a demand for housing services as such, but rather is a demand to hold wealth in the form of home ownership. The position of the demand schedule for home ownership, as depicted in the lower part of Figure 1, is shifted up by a high demand to hold wealth, and shifted down by a low demand to hold wealth.
The general lack of private property, in conjunction with social welfare provided to individuals, has led to reduced experience with and incentives to accumulate assets in China. Traditionally, important motives to hold wealth include 1) the motive to gain the interest income available from holding wealth, 2) desires to provide for retirement, 3) desire to protect against uninsurable events such as job loss or illness and 4) bequeathment motives. These motives are underdeveloped in China.

Rapid changes have been occurring in individual savings and the availability of wealth holding instruments in China that may raise the portfolio demand to own housing. Prerequisites to holding wealth are that there be something to hold, and that people have enough resources to put something aside into wealth holding. That these prerequisites are increasingly being met is revealed by financial changes documented by Wang (1989b) who indicates in his Table 2, p.2, that residents' monetary income rose from 41.7 percent of national income in 1978 to 75.0 percent in 1987, reflecting decentralization leaving more of the national income in the hands of individuals.

Figures from various issues of the Statistical Yearbook of China plotted by Qian, Yingyi, "Urban and Rural Household Savings in China," IMF Working Paper, 1988 as reproduced in Barlow (1988, p.76), indicate that urban per capita savings were virtually zero until 1978, after which they rose progressively and by 1985 had passed 50 yuan per year in 1950 prices. Some have said that there also existed pent-up savings prior to 1978.

Wang (1989b) indicates in his Table 5, p.5, that in 1978, 45 percent of residents' monetary assets consisted of currency, while the remaining 55 percent was in bank deposits. By 1988, only 28 percent was in currency, while 62 percent was in bank deposits, and by that time a remainder of about 10 percent was in various kinds of securities. Although the proportion in currency dropped from 45 to 28 percent, the real value of currency probably rose during this period. The figures thus suggest that there has been very dramatic growth of deposits and other earning financial assets.

The changes since 1978 have given households the wherewithal to accumulate wealth, and financial instruments to obtain a return on holdings have been provided. The demand to hold wealth has undoubtedly shifted up, which should increase the demand for home ownership.

The availability of competitive wealth instruments yielding significant returns might at first glance be thought to cut down on the demand to hold wealth in the form of housing, but the effect could be complementary to housing ownership. Besides giving a return during the time a down payment is accumulated, an array of wealth holding possibilities including both earning financial assets and housing enables a portfolio choice. Housing being a large, lumpy, illiquid asset is undesirable as the sole asset owned. While other assets have satisfied shorter needs, housing in market economies has been a chief vehicle for ensuring long run maintenance of real value of wealth, or inflation hedge. This consideration underlines the importance of allowing unencumbered resale rights.
3.61 **Income, Wealth and the Limits to the Proportion of Home Owners.** The demand to hold assets tends to rise more than in proportion to income, partly because such savings as poorer people can make may go into investing in their children rather than in physical wealth. For whatever reasons, home ownership is likely to be chosen more by high income than lower income families. Even if housing prices are made attractive, only some fraction of families will choose to buy, with income and overall wealth position being an important consideration.

3.62 For perspective, with higher real income and strong tax inducements to home ownership, 64 percent of families were home owners in the United States in 1987, according to the Census Bureau. The home ownership ratio is one of the largest among the high income countries. The percentage was lower in urban areas. The fact that home ownership rises with income is well documented. For example, Blank and Rosen (1989) report, in Table 1 on p. 21, Current Population Survey results from the eight largest metropolitan areas indicating that 30 percent of poor families, 44 percent of near-poor families and 63 percent of upper income families are home owners.

3.63 To predict home sales will require better knowledge than now available in China about effects of income and financial variables on tenure choice. Another implication is that it is unrealistic to assume that most or all urban families in China will choose to become owners. At most, a fraction will.

3.64 The prospect of having a housing stock of which a substantial fraction is owned and a substantial fraction rented must be prepared for. A system will be required in which both a rental market and an ownership market can function, and can function together.

3.65 **Life Cycle Considerations.** Age is another well documented consideration affecting the demand for home ownership. This statement has validity in any context, and it is particularly true in present day China. Persons who have already retired or are near retirement are unlikely to undertake the substantial savings required over a number of years to acquire ownership of housing. It could be that a transition to more home ownership over a period of a generation should be contemplated, through such policies as concentrating inducements to buy among households with younger breadwinners, as for example raising rents and perhaps the accompanying wage adjustments on an age-dependent schedule, and precluding inter-generational transfer of occupancy rights by tenants.

3.66 The report that sales in Yantai are concentrated among persons under 35 years of age and lower income families may be consistent with findings about influences of family characteristics on home ownership found in other countries. What is observed in China are first time sales, which are normally concentrated among households with young heads. Older families in China already have their life financial plans made. The considerable re-arrangement that would be required for an asset for which the horizon is normally of a generation, may not be warranted.

3.67 While a concentration of sales among lower income families may appear more puzzling, correlation between age and income could be partly responsible.
The finding may reflect the fact noted above that 89 percent of sales have been for limited property rights, reflecting the tapping of a particular market where liquidity constraints associated with lower income act to hold down amounts paid for housing. Another reason might be the low pay to those who work for neighborhood and private enterprises which have no housing. These workers must enter a queue for city-owned housing and may be more likely to turn to private housing, though it is not clear that simply wanting to buy a limited property rights apartment will guarantee that such an apartment is available to be purchased by someone not already a tenant.

3.68 **Need for Further Work.** The literature on tenure choice in other countries needs to be further assessed, giving attention to demographic and financial characteristics in the context of well founded theoretical constructs. Ideas need to be obtained from this literature for carrying out more serious studies of tenure choice in China.

C. **Slope of Home Ownership Demand Schedule**

3.69 Once a general price range is found that is consistent with the four considerations in the preceding section affecting how much people are willing to pay to purchase apartments, it will remain true that the number sold will depend on just what prices are chosen within that range. In terms of the lower part of Figure 1, the four considerations in the preceding section determine the position of the demand schedule for home ownership. To decide more precisely how many houses to try to sell, it is also necessary to consider the slope.

3.70 For example, as housing selling price is lowered gradually, beginning at high prices with only high income persons being induced to buy, lower and lower income families will become interested as price is lowered. The same is true with regard to age. At high prices, decisions to purchase may be concentrated among families with heads in their thirties. With lower prices, some families with still younger family heads will be induced to buy earlier than they otherwise would have. At an attractive enough price, middle aged people near retirement may decide to buy if they have not bought before.

3.71 The elasticity, b, giving the percentage change in the proportion of families choosing to own in response to a one percent change in purchase price of housing, determines the slope of the home ownership demand schedule. The elasticity will play a key role in subsection III.E.4 below on the inflationary effects of interest rate subsidies. It would be highly desirable to make price responsiveness estimates, even on a judgmental basis, giving attention to different groups who would be induced to purchase as prices are lowered.

3.72 The possibility of making estimates is exemplified by Haurin, Hendershott and Ling (1987), who find that the elasticity of home ownership rate with respect to relative price of buying versus renting in the United States is very high for some groups. The elasticity ranges from a high of -.84 to -.85 for low income households with head under 30 years of age, down to lows of .01, with the elasticity declining with increasing income and age.
D. New Versus Existing Housing

3.73 Queueing, crowding and non-price rationing of housing lead to pronounced differences between the markets for existing and new housing in China. With little movement in or out of existing apartments, the customer base for the purchase of an existing apartment is limited largely just to the present occupant of the apartment. The customer base for purchase of new apartments extends widely to many of those in queues or in highly crowded quarters who, through purchase of a new apartment, can get more and better space than is available to them in the existing housing stock.

3.74 The excess demand, due to rationing of use of the existing housing stock, is an important influence on the demand to buy new apartments.

3.75 The larger customer base and the possibility of gaining use of a greater amount of housing than available in the rationed housing market suggest that new apartments will command a price premium over non-new ones. The premium will exceed what would be expected on sheer quality grounds. The demand for ownership of new apartments is likely to be particularly strong among more affluent families, including those in independent employment, e.g. taxi drivers, who have been allocated only crowded existing housing.

3.76 Surveys and experiments to throw more definite light on the magnitude of demand to purchase new housing are very much needed. The inter-relations between the demands to purchase old and new housing should be investigated, giving attention to people on the margin between buying and not buying, and within that group, subgroups on the margin between buying an old or a new apartment.

E. Policy Analysis

Locj of Rents, Selling Prices and Number Sold

3.77 Solving for Proportion Choosing to Own. Building upon the analyses of rents and wages in Part II and of tenure choice here in Part III reveals four elements that need to be taken into account in attempting to privatize housing.

3.78 The first of the four elements is a relationship showing how the number of families choosing to purchase the apartments where they are living depends on rents and selling prices. The relationship takes account of property rights and credit arrangements, as well as individual characteristics of people including their income, wealth and life cycle considerations. These additional considerations shift the schedule relating rents to selling prices.

3.79 The relationship can be derived from the user cost approach developed above in Section B on considerations affecting tenure choice. First, a formulation is needed that brings together the major considerations affecting tenure choice. Second, summation is needed taking account of the fact that households differ, with the result that some households will choose to own while others continue to rent. Third, the relationship needs to be solved explicitly for the proportion choosing to own.
3.80 A user cost formulation incorporating the considerations affecting tenure choice in Section B is

$$R - T = iV + sV + E - Q(Y, Z, P)$$

where the left side refers to costs of being a tenant, and the right side refers to costs of home ownership. On the left, $R$ is yearly rent paid, and $T$ is yearly value of property rights that go with being a tenant. On the right, $V$ is selling price, $i$ is interest rate, $s$ is depreciation rate, $E$ is yearly upkeep expense, and $Q(Y, P, Z)$ is additional value that attaches to home ownership for all the various reasons considered in Section B.

3.81 The extra value $Q$ placed on home ownership is presumably positive but could be negative. Among the variables affecting $Q$ are the factors $Z$ affecting attractiveness of home ownership other than just a place to live. These include property rights, credit arrangements, the prospects of capital gains, taxes, and options for renting the property out, many of which have been analyzed above. Another set of variables affecting $Q$ consists of those denoted $Y$. These are the individual characteristics of the family such as income, wealth and life cycle considerations. For any given values of the $Z$ variables, some people will find home ownership more attractive than will others.

3.82 An important distinction must now be made between viewing the user cost equation as applying on the one hand only to an individual family, or on the other hand to a group of families. If the equation applies strictly to an individual family, then, given all the values including $Z$ and a complete enumeration of all the $Y$ variables, the right side will either be greater or less than the left side, and only by chance would the two sides be exactly equal. Therefore, for the family, the tenure choice is a zero-one type choice. The family will either choose to own or not to own. One could take each family and calculate whether the right side was greater than the left side, recording a one denoting home ownership for every family where this was true, and a zero denoting rental choice otherwise. Then one would add up all the ones to obtain the number in the economy choosing to buy. Note that, in equation (12), according to this complete enumeration interpretation, the variable $P$ does not enter.

3.83 Suppose we now view equation (12) as applying to a group of families with given $Y$ characteristics, also holding constant for the moment property right type considerations reflected in $Z$. If it is recognized that not all individual characteristics can be measured, an unobserved or random variable can be introduced. Well known discrete choice approaches involving proportions or probabilities must then be used.

3.84 The unobserved or random variable gives the effects of the unmeasured influences. Following this approach, the proportion of families with observed characteristics $Y$ who will place an extra value on home ownership as great as a given amount $Q$, needs to be considered. At a low value of $Q$, a high proportion $P$ will find the extra value of home ownership to be this great. Even people who for idiosyncratic unobserved reasons place a low extra value on home ownership, will place some small value on home ownership and will be included in the proportion $P$ at a low value of $Q$. As $Q$ is raised, the proportion of families placing an extra value on home ownership as great as $Q$ decreases. Based on the
probability distribution of the unobserved variable, a relation is obtained
\( P \cdot P(Q,Z,Y) \) indicating how the proportion of families, placing an extra value on
home ownership as great as \( Q \), declines as \( Q \) increases.

3.85 The relation is shifted by the measured variables \( Z \) and \( Y \) that
influence the value placed on home ownership. For example, if property rights
variables in \( Z \) and observed family characteristics \( Y \) such as income, are
favorable to home ownership, then the proportion placing as high an extra value
on home ownership as a given value \( Q \) will be increased.

3.86 Re-arrangement of \( P \cdot P(Q,Z,Y) \) as a solution for \( Q \) gives \( Q \cdot Q(Y,Z,P) \)
which is the relation appearing in equation (12). It shows the extra value \( Q \)
placed on home ownership corresponding to the proportion \( P \) of families who place
this much extra value on home ownership, for given values of \( Y \) and \( Z \). At a very
low level of \( P \), \( Q \) must be very high. The high value of \( Q \) will preclude much
chance of the family placing this much value on home ownership. Similarly, if
the level of \( P \) is to be very great, the value of \( Q \) must be very low to give this
great a chance of placing that value on \( Q \). More generally, consider raising \( P \).
The value of \( Q \) will be less and less as the proportion of families an extra value
on home ownership as great as \( Q \) is increased.

3.87 In view of the relation \( Q \cdot Q(Y,Z,P) \) appearing in equation (12), there
is a proportion \( P \) that will just make the two sides of the equation equal.
Equation (12) may be thought of as applying to the marginal family, just
indifferent between renting and owning. The value of \( P \) is that proportion which
just makes the marginal family indifferent to home ownership, when families are
ranked by the extra value they place on home ownership. For example, if the
variables on average indicate that there will not be ownership for a particular
type of family, still, some small proportion may choose to own for idiosyncratic
reasons not captured in the measured variables. The variable \( P \) is the proportion
of that type of family that will just make the equality hold. That proportion
of families of a given set of measured characteristics will own, and the rest
will rent.

3.88 If one finds the proportion \( P \) that just makes equation (12) hold for
each family type and sums the equation over all family types, weighting by the
proportion of family types, the following aggregate or total relation is
obtained:

\[
(13) \quad R - T = IV + sV + E - Q(Z,P)
\]

where underscoring refers to weighted average values for the economy as a whole,
and where the \( Y \) variables do not appear since they have been summed over. The
same result is obtained in the complete enumeration case by recording zeros or
ones for each comparison of the left and right side of Equation (12).

3.89 If one solves equation (13) for \( P \), the sought for relation is
obtained expressing the proportion of families choosing to own in terms of rent
level, selling price and the various other variables appearing in the equation.
The solution can be written as:
(14) \[ P = \Omega'(Z,K) \]

where \( K = (R-T-E) - (1+g)V \).

3.90 Equation (14) shows how the proportion \( P \) choosing to buy depends on rent level \( R \) and selling price level \( V \) in a particular way, since both \( R \) and \( V \) occur in \( K \). Any combination of rents and selling prices that keeps \( K \) constant will leave the proportion choosing to buy unaffected.

3.91 Take the differential of \( K \) letting only \( R \) and \( V \) vary, and solve for \( dV/dR \):

\[ \frac{dV}{dR}|_K = \frac{1}{(1+s)} \]

If yearly rent is reduced one yuan, then using the illustrative values of interest rate \( i = 0.1044 \) and depreciation rate \( s = 0.02 \), the reduction in selling price that will be necessary to still retain the same proportion of people choosing to buy, is \( 1/(1.1244) \), or 8 yuan.

3.92 In comparing the two policy simulations in Section II.E, the rental cost of charging full commercial rents of 3.5 yuan/m² per month gave a yearly rental payment for a family living in a 32.85 m² apartment of 1380 yuan, as compared with 457 yuan under the preferential rent of 1.16 yuan/m² per month. The difference of 1380 minus 457, or 823 yuan, multiplied by the value of \( 1/(1+s) \) of 8, gives a 6,584 yuan reduction in the amount the family would be willing to pay to purchase the apartment.

3.93 Holding constant \( P \) in equation (14) gives a schedule or locus of values of rents and purchase prices consistent with the given level of \( P \). Different schedules are obtained for different values of \( P \). Figure 2 shows such schedules. The lower schedules correspond to a higher proportion choosing to own, since for a given rent level, the lower the selling price, the more attractive is home ownership.

3.94 If the precondition variables \( Z \) are changed making home ownership more attractive, the schedules are shifted up. A given combination of purchase price and rent level will induce a larger proportion of families to choose to own rather than rent.

3.95 One way or another, housing reform of the kind being contemplated in China implies choosing a combination of rent level \( R \), selling price \( V \) and preconditions \( Z \) that will determine a home ownership proportion \( P \). The relationship given by equation (14) and depicted in Figure 2 can aid in considering this choice more explicitly.

3.96 Market Condition. The point \((V_0,R_0)\) in Figure 2 is of particular interest. \( V_0 \) is the replacement cost of the housing, and \( R_0 \) is the level of rent required for whoever collects the rents to provide yearly upkeep and recover costs. The point \((V_0,R_0)\) is the point that would prevail in normally functioning
FIGURE 2: ISO-TENURE CHOICE SCHEDULES

Housing Purchase Price, $V$

Alternative Proportions Of Families Choosing to Own, $P$

Rent Level, $R$

$V_0$, $X$, $1/(1+s)$, $R_0$
housing markets, and the value of $P$ on whose locus this point lies is the tenure proportion that would prevail under market conditions. Considering the point $(V_0, R_0)$ helps to underscore the idea that only a fraction of people will choose to own under market conditions.

3.97 The point $(V_0, R_0)$ deserves further thought and estimation. One possibility is to consider the point as a goal toward which privatization should strive. Another possibility, if this goal is not followed, is to use the point as a benchmark. The farther is the actual situation from this point, the greater will be the pressures which housing policies must overcome, and the greater will be management problems.

3.98 **Actual Condition.** An impression is that the housing reform experiments have chosen a point like $X$ in Figure 2. A rent level below market level $R_0$ has been chosen, and while selling price has been reduced below cost $V_0$, it has not been reduced sufficiently to encourage a large proportion to choose ownership. Concomitantly, the preconditions $Z$ have for the most part shifted the iso-tenure schedules down, reducing home ownership for any given combination of rent and selling price.

3.99 **Algebraic Example.** As a linear approximation, the $Q$ function giving the extra value placed on home ownership can be written $Q = a - cP$, where the intercept $a$ shifting the linear $Q$ function depends on the precondition variables $Z$, or $a = a(Z)$. The negative sign in front of $c$ indicates that as one contemplates higher proportions of people choosing home ownership, the value of home ownership will decline due to progressing to people in the population for whom ownership is valued less and less.

3.100 Inserting $Q = a - cP$ for the $Q$ function in equation (13) and solving for $P$ gives the linear approximation counterpart to (14):

$$P = [(R - T - E) - (i + s)V - a] / c$$

which is a special case having all the characteristics of the general case that have been noted. There appears to have been little systematic consideration of how choices of alternative combinations of rent levels $R$, selling prices $V$ and preconditions as reflected in the parameter $a$ could affect home ownership proportion $P$. A fuller search using the approximation given by (16) could be useful in finding different and more effective policy combinations.

3.101 Perhaps even more important, the relation explaining home ownership proportion in terms of rents, selling prices and preconditions, that has been considered in this section, provides a framework or way of thinking about policies. Even if not rigorously quantified, it can help in understanding consequences of policy choices and can lead to contemplating a wider array of approaches.

**Mixture of an In-Kind and Cash System**

3.102 The first element in understanding housing privatization, that has just been considered, derives entirely from tenure choice considerations. The
second element consists of taking account of the relation between tenure choice and the proposed wage and price adjustments, that is, the relation between Parts II and III of this report.

3.103 A key consideration in the present section is that failure to raise rents to a full commercial level implies continuing to pay some part of wages as in-kind rent. The decrease in amount people are willing to pay to purchase homes when less than full commercial rent is charged, is seen to be a compensation for loss of the in-kind rental component of their wage. Any further transition beyond an initial wage and rent adjustment is rendered much more complicated by this consideration. These points are elucidated below.

3.104 Step 1: In-Kind Component of Rent Under Preferential Policies. A consequence of failing to raise rents to a level fully reflecting costs, is that the work unit or housing bureau from whom the apartment is rented will have to pay the remaining cost that tenants do not pay. If a reform policy of raising rents and wages breaks even in the sense that the total increase in rental revenues for the system just equals the total in increased wages paid out, the real income of workers on average will remain the same as before reform. An inescapable implication is that, if the rent charged is less than the full cost of providing housing, the work units or housing bureaus must continue to pay some part of the housing costs of workers.

3.105 For example, the second policy simulation in Section II.D was for a policy where a preferential rent of 1.16 yuan/m² per month was charged. The basic wage had to be raised 20 percent to arrive at a breakeven situation enabling workers to just meet the rent increase. Under the preferential policy, the work units charge less than full rent, paying out just enough increased wages to enable workers to cover the preferential rent. The remainder of the rental cost continues to be paid by the work unit.

3.106 Decreeing that rent increases are to be charged in per m² terms and that wage increases are to be given in percentage terms results in redistributions among workers, but, under a breakeven policy, the gains of workers who are benefitted are equal to the losses of workers who are harmed. The real situation on average, expressed on a per worker or per family basis for the economy as a whole, is unchanged in going from one breakeven policy to another.

3.107 Indeed, the real situation is unchanged from before housing reform. Before reform, workers are receiving all of their rent except for a very small amount as an in-kind payment. In the simulations of Part II, the basic wage income per family before reform was 2190 yuan/yr. Assuming that a rent of 3.5 yuan/m² per month would fully reflect costs of supplying housing, then the costs of supplying housing to the family come to 1380 yuan/yr, of which 26 yuan/yr is being paid by the family as a nominal rent payment. The family is receiving 1380 minus 26, or 1354 yuan/yr as in-kind rental income. Before reform, then, the sum of the basic wage income and in-kind rental income is 2190 plus 1354, or 3544 yuan/yr.
3.108 In the first reform policy simulation, a rent charge of 3.5 yuan/m² was introduced fully reflecting costs of supplying the housing. Wages had to be raised 62 percent to enable payment of the rent, making the basic wage income 3544 yuan/yr. The real situation totalling to 3544 yuan/yr remains the same, as there is no longer any in-kind component of rent.

3.109 In the second reform policy simulation, where monthly rent is only 1.16 yuan/m², the 20 percent wage increase required for the policy to break even gave a yearly increase in basic wage income of 431 yuan. The new basic wage income is 2190 plus 431, or 2621 yuan/yr. However, the work units must still pay about two-thirds of the rental costs, since the 1.16 yuan/m² cash charge for rent is only about a third of the full cost of 3.5 yuan/m². That is, about two-thirds of the value of the rent is still being given by the work units as an in-kind payment. The in-kind payment in this case equals the 1380 yuan yearly cost of providing the housing minus the 457 yuan rent now paid by workers, or 923 yuan. The sum of basic wage income and the in-kind component of rental income, is 2621 cash plus 923 in-kind rent, or 3544 yuan/yr. The total is the same as in the other situations. People are still able to live in the same apartments and have the same amount left over after housing expenses to spend on other goods.

3.109 Step 2: The Wash from Buying. We wish now to relate the phenomenon of the mixture of cash and in-kind rent, which occurs under a preferential rent policy, to the decision to purchase.

3.111 As has been noted in connection with the user cost equations, raising of rents increases the incentive to purchase an apartment, as a way of avoiding the rent payments. As has further been noted, for the family on the margin, who is just indifferent between owning and renting and who determines the proportion of families who will choose to own, the purchase price the family is willing to pay just makes the yearly cost of ownership equal to the yearly cost if the apartment is rented.

3.112 In taking Step 1, where, at the instant rents are increased, everyone continues to rent, the real situation remains the same because the in-kind component of rent is changed in a compensating fashion. In taking Step 2, where some families purchase apartments as a result of the rise in rent, the purchase price people are willing to pay provides the mechanism for leaving the real situation the same as between renting and buying.

3.113 People who buy will be relieved of making cash rental payments, but, since as owners they will become responsible for providing their own housing, they will no longer receive in-kind rental income. Compensation for giving up the in-kind rental income is obtained by paying a lower price to purchase the apartment. Under a preferential rent policy, apartments must be sold at preferential prices, meaning that they are sold below cost.

3.114 In the preferential rent example, if a family chooses to buy after introduction of the reforms, family basic wage income will continue at its level under the reforms before buying, namely 2190 plus the 431 yuan wage increase that was granted to cover the cash portion of rent, or 2621 yuan. As has been noted, the in-kind component of rent before buying in this case is 923 yuan. If the family purchases the apartment, it will continue to receive the 2621 yuan basic
wage income, but it will no longer receive the in-kind component of rent. The family will not willingly take a cut from the real amount of 2621 plus 923, or 3544 yuan, if it continues to rent, to only 2621 yuan if it buys. Compensation will be required. The compensation takes the form of paying less for the apartment than its cost, so that housing services continue to be obtained below cost.

3.115 Let C be the cost of constructing the apartment. Then the true rental cost $R_0$ is: interest on the construction cost $iC$, plus depreciation $sC$, plus yearly upkeep $E$, or $R_0 = iC + sC + E$, which is an application of equation (5), used this time to indicate the rent a housing supplier must charge in order to cover costs. Re-arrangement as an expression for $C$ gives:

\[
C = \frac{(R_0 - sC - E)}{i}
\]

which says that the capitalized value of the rent charged less depreciation less upkeep must equal construction costs, if cost are to be covered.

3.116 A family considering buying will compare the cash rent charge $R$, which with preferential rent will be different from $R_0$, with the user cost of owning which consists of: interest on the purchase price $iV$, plus the amount that must be laid by to replace the asset and is equal to depreciation rate applied to the cost of the asset or $sC$, plus yearly upkeep expenses that must now be borne by the owner $E$. That is, the user cost of owning is $iV + sC + E$. Ignoring for the moment any additional value that attaches to home ownership beyond receiving housing services, the amount $V$ the family will be willing to pay to purchase the apartment will be such that the user cost of owning is no more than rent if the family continues to rent, or $V$ will be such that $R - iV + sC + E$, which upon solving for $V$ gives

\[
V = \frac{(R - sC - E)}{i}
\]

By subtracting (18) from (17), the difference between the true cost of the apartment and what the buyer pays is

\[
C - V = \frac{(R_0 - R)}{i}
\]

which is the capitalized value of the in-kind rent the family would receive if it continued to rent.

3.117 The present value of basic wage income plus in-kind rent if the family continues to rent is: original basic wage income, plus wage adjustment that covers cash rent $R$, plus the value of in-kind rent. The amount comes to $[2190 + 431 + (R_0 - R)]/i$. The present value if the family buys is: the negative of the undiscounted outlay $V$ that will be made at the present time to purchase the apartment, plus the present value of the cash income, plus the present value of the future housing services that will be received, minus the present value of the future expenses that will be borne as an owner. This amount is $-V + (2190 + 431 + R_0 - sC - E)/i$, which in view of (18) relating purchase price $V$ to cash rent avoided, is equal to $[2190 + 431 + (R_0 - R)]/i$, the same as if the family continued to rent.
3.118 This wash, or equality between renting and owning, can also be seen from the point of view of work units. In making a sale, the work unit absolves itself of the costs of supplying housing services accompanied by incompletely offsetting rental revenues if the family were to continue to rent, which is to say it absolves itself of the part of worker compensation taking the form of in-kind rental payment. However, it takes a loss on the sale of the apartment because the apartment must be sold below cost. The present value of absolving itself of the in-kind rental payment is just equal to the loss on the apartment sale.

3.119 To elaborate, for those who continue to rent, the work unit lays out a cost $R_0$ to supply the housing services, receiving cash rent payment $R$ which has been compensated for by a wage increase, and providing the remainder of the value of rental services or $R_0 - R$ as an in-kind payment. For those who choose to buy, the work unit will no longer have to lay out $R_0$, and while still providing the wage increase, will no longer receive cash rent payment $R$. The net yearly outlay saved on families who choose to buy is then $R_0 - R$, the capitalized value of which is $(R_0 - R)/i$. This saving in net yearly outlays is exactly offset by the loss that the work unit takes on each apartment sold of $C - V$, which from equation (19) is seen to be the same amount $(R_0 - R)/i$.

3.120 This discussion has attempted to elucidate the basic principle that shedding the provision of in-kind rental services, which work units rid themselves of when they sell apartments, represents a gain whose present value tends to be offset by the loss from having to sell the apartments below cost, leaving the real situation unchanged. Nuances such as additional positive or negative values connected with home ownership, as reflected in the term $Q(Z, Y, P)$ in equation (12), could be introduced, but the basic tendency that has been noted would still be operative.

3.121 This subsection has introduced a slight variant of the user cost equations appearing in the rest of Part III. In the variants in equations (1) through (12), the depreciation rate $s$ was applied to purchase price $V$, but this calculation of depreciation strictly speaking understates the true depreciation, because $V$ is less than the true cost of the asset $C$. Depreciation applied to $V$ will not be sufficient to replace the asset costing $C$ at the inevitable times in the future when rehabilitation or building of a new structure will occur. Applying depreciation to $C$ rather than $V$ further raises the user cost of home ownership, acting to lower still more the purchase price families are willing to pay, reinforcing points that have been made throughout Part III.

3.122 **Step 3: Future Rent and Wage Adjustments.** Complications due to future inflation and changes in useable space per worker were dealt with earlier in Section II.D. As implied there, if both rents and wages are indexed to inflation, the existence of inflation need not change the real split between cash and in-kind rent payments. Everything will go up in proportion to the price level, staying the same in real terms.

3.123 Note that, if wage adjustments tend to be made to catch up with inflation but cash rents are left the same in nominal terms, the real value of cash rents will decline over time with a concomitant rise in the in-kind component. Even with perfect expectations of inflation, the incentive to
purchase housing will decline as the real cash rent avoided goes down. The decline in real cash rents exerts downward pressure on apartment selling prices in real terms, imposing real capital losses on those who earlier purchased apartments. The possibility of this course of events could be a consideration reducing incentives to buy, or in formal terms shifting down the Q function giving the additional value of home ownership in equation (12).

3.124 Meanwhile a fundamental problem of more importance exists that could deter further progress toward a normal market situation for housing. This problem arises quite apart from the surmountable problems from inflation and useable space changes considered earlier. The preferential rent approach, where rents are only a third or less of the true costs of housing, can be viewed as a first partial step toward a normal market situation. Later further increases in rents could be introduced if the rent approach proves feasible, and the time comes when it is thought circumstances will permit higher rents accompanied by additional wage increases. If such further steps are not contemplated, China will be forever consigned to the necessity for a managed housing market in which the more ultimate benefits of housing reform, to be dealt with in Part IV, are not achievable.

3.125 However, the catch 22 problem arises that future rent and wage adjustments will be more difficult if they have to be built on adjustments already taken. Suppose that, some time after introducing a cash rent equal to one third the true rental cost, it is decided to raise rents to two-thirds of the true cost, as a way of encouraging more sales, easing rationing problems, and reducing the tensions that occur between markets when space in apartments rented out by work units is rationed (as it must be if rents are below market levels) and is unrationed in owned apartments.

3.126 Work units will raise wages to enable the increased rent payments to be made, but unless the wage increases are selectively denied to families who have already purchased, the apartment owners will receive a windfall gain since they receive increased wages without necessity to pay increased rents. Either the work units will face losses from paying out more wage increases than they receive back in increased rental payments, or difficult and most likely controversial denials of wage increases to existing apartment owners will be necessary. The task will be complicated by the fact that the further adjustment is superimposed on a situation of per m2 rent increases and percentage wage increases that are already imposing distributional effects among workers. The denial of wage increases to previous owners could be taken as a signal that people who buy may be discriminated against, acting to reduce the perceived value people place on home ownership, and discouraging further sales.

Relations Between Rationed and Unrationed Markets

3.127 The two elements for understanding housing privatization considered so far have not taken account of the fact that, with remaining renters continuing to pay less than full commercial rent, two—or perhaps even three—separate housing markets will be brought about. One is rationed, another is free, and the one in the middle may be a grey market.
3.128 The third of the four elements needed to understand housing privatization consists in taking account of the relations between the markets.

3.129 Three Markets. A first market for housing space is made up of families who continue as tenants. Under preferential rents below those that would equate supply and demand, this market will continue to be a rationed market.

3.130 A second market is made up of those who buy the apartments where they now live, in response to the incentives of the housing reforms. This market in many ways remains the murkiest, because it is not clear what will happen when these families want to make a change in the future. Presumably they could choose to become tenants in the existing apartment again if they sold the apartment back to the work unit, but the terms of the sale are uncertain. These families may want to sell their apartments on the open market, but if originally purchased preferentially, which is the situation for most apartment sales so far, there are strings attached to the sale including sharing any capital gain with the work unit. If the families are able to find and afford another housing unit to purchase, they can continue to live in owned housing. On the other hand, if they want to become tenants, as might happen with inter-generational changes, they will have to enter a queue for rationed housing.

3.131 A third market is made up of those who buy new apartments. The extent of this demand, like that for purchasing of existing apartments where people now live, depends on rents avoided in the rental market. These families too face a queueing prospect if they ever want to return to the rental market.

3.132 The influences of the three markets on each other are important in determining the effects of housing reform provisions on sales of existing and new units, and in managing housing. Some of the interrelations that need to be analyzed are as follows.

3.133 Effects of Excess Demand in the Rationed Rental Market on Demand for Newly Built Apartments. The top part of Figure 3 shows the demand for housing by a family, not doubled up with any other family, living in an apartment where the preferential rent is $R$. The cost of new housing converted to a yearly basis is $R_0$. The rectangular area labelled with a minus sign is the loss from having to pay for more than the existing amount of area occupied if the family chooses to purchase a new apartment. The area labelled plus is the gain, measured as consumer surplus or the excess of what the family would be willing to pay over what it has to pay for the extra floor space it would choose if it purchases a new apartment.

3.134 The family can be expected to choose to purchase a new apartment if the plus area in the diagram exceeds the minus area. The greater the preferential rent $R$, the smaller is the minus area, indicating how a higher rent increases the likelihood of choosing to buy a new apartment.

3.135 The bottom part of Figure 3 pertains to doubled up families. The right side of the figure shows the demand for housing by the family contemplating undoubling by purchasing a new apartment. The minus and plus areas found for the family living by itself can also be seen in this diagram, but there is an
FIGURE 3: EFFECTS OF RATIONED RENTS ON UNRATIONED MARKET

(a) Families Living By Themselves

Yearly Equivalent Cost, $R$ (Yuan/m²)

(b) Doubled Up Families

Yearly Equivalent Cost, $R$ (Yuan/m²)
additional plus area due to the fact that undoubled space is more highly valued by the family than space living doubled up with another family. The existence of two plus areas for doubled up families increases the likelihood of choosing to buy a new apartment.

3.136 The left side of the bottom part of Figure 3 shows, with flipped x-axis, the demand by the family who will stay in the existing apartment and who also gains from the undoubling. The staying family obtains the entire space which is a larger amount assuming the measurement of quantity is on a per person basis. Like the moving family, the staying family is also likely to value a given amount of space more highly if it is undoubled space, as reflected in the diagram by the higher demand curve for undoubled space. The gain by the family staying could be an influence on the decision of the other family to move out.

3.137 The approach provides a basis for attempting systematic estimates of the market for new housing, and of the influence of housing reforms on it.

3.138 Tensions Between Markets. The facts that re-sale of apartments sold at preferential prices are prohibited until after a waiting period, and that work units share in any capital gains, is evidence of problems that arise in selling an asset below its cost. Without control of sales between the markets in which preferential sales take place and the market for units sold at unrestricted prices, there will be a tendency for prices of apartments in the two markets to equalize. The needed restrictions on re-sale put a damper on sales of existing apartments.

3.139 Meanwhile, sales of new apartments serve to reduce excess demand in the rationed market. At present low levels of sales, the effect is not great, but it could become much greater if prices in the two markets were allowed to move closer together.

Savings, Inflation and Financial Intermediation

3.140 The three elements considered so far all have to do with housing. The fourth and final element concerns the estimation of non-housing effects.

3.141 Home Buyer Savings Behavior. Mobilizing housing savings to combat inflation has been a chief impetus to housing reform. Yet, in view of credit subsidies, it is quite possible that the reforms as now proposed will lead to less, rather than more, net savings and therefore will be inflationary.

3.142 Let f be the fraction of a dollar devoted to increased yearly housing payments that the payments take away from consumption, rather than from other forms of saving. The yearly housing payments would be the interest rate times purchase price, if only interest on capital were being paid as in a perpetual loan, with no contributions being made to reducing the loan balance. Actual yearly payments can be represented as this interest payment times a finite loan length factor greater than one, reflecting the fact that the yearly payments include loan repayment in addition to payment of interest. The increased savings from buying a home then are equal to the payment savings fraction f times the loan repayment factor times the interest component of the payment. Without
lending subsidies, the increased savings from buying a home are \( f \) times \( g_i V \) and, with lending subsidies, the increased savings are \( f \) times \( g' i' V' \), where \( g \) and \( g' \) are the finite loan length factors, \( i \) and \( i' \) are the respective unsubsidized and subsidized interest rates, and \( V \) and \( V' \) are the respective purchase prices without and with the credit subsidies and short required repayment period.

3.143 If the loan repayment periods were the same with and without lending subsidies, \( g' \) would be greater than \( g \). While the lower subsidized interest rate acts to make monthly payments less due to the lower interest component, the monthly payments must also be sufficient for the repayment component to sum to the total borrowed value over the time of repayment. If \( g \) and \( g' \) were equal, then the monthly payments would be reduced in proportion to the values of the interest components at time of initiation of loan \( i_0 V \) and \( i_0' V' \). But if this were the case, the monthly amount of repayment would be very small under the subsidized loan and would be insufficient to pay back the amount of the principal over the life of the loan.

3.144 As an illustration, with \( i_0 = 0.1044 \) and \( i_0' = 0.03 \), and with per m2 values of \( V = 266 \) and \( V' = 324 \), as in the calculations for equations (6) and (8), then \( i_0 V \) is 28 yuan and \( i_0' V' \) is 10 yuan. If one twentieth of the principal were repaid in the first year on the unsubsidized loan at the 10.44 percent interest rate, the first year payment would be the \( i_0 V \) amount 28, plus \( (1/20)(266) \) or 41 yuan, which implies a value of \( g \) of 41/28 or 1.46. The loan would be paid off in less than 20 years, since the amounts of repayment would increase each year as the interest component of the repayments declined over time. If \( g' \) had the same 1.46 value as \( g \), then the first year repayment on the subsidized 3 percent interest rate loan would be only .46 times the value of \( i_0' V' \) of 10 yuan, or about 5 yuan. The fraction paid off in the first year would be 5/324 or one sixty-seventh of the principal, which is less than the one twentieth first year repayment for the 10.44 percent loan. While more refined examples based on present values of annuities are possible, the illustration makes clear that \( g' \) must be greater than \( g \) even if the subsidized loan is to be paid off in the same length of time, much less the lesser time under the shortened repayment period.

3.145 The change in total homeowner savings caused by the lending subsidy is the sum of a first term consisting of decreases in savings by those who would purchase anyway plus a second term consisting of the increase in savings by those induced to buy:

\[
(fg' i_0 V' - fg_0 V)p + fg' i_0 V'(p'-p)
\]

Let \( p \) be the proportion buying in the absence of the lending subsidy policy and \( p' \) be the proportion in the presence of the lending subsidy. Let \( b \) be the absolute value of the elasticity of the proportion of families choosing to buy with respect to housing purchase price, or \( b = ([p'-p]/p)/(V'-V)/V) \), implying on re-arrangement that \( (p'-p) = pb(1-V'/V) \). Substituting this result in for \( (p'-p) \) and factoring out \( fg' i_0 V' p \) gives as the effect on homeowner savings

\[
fg' i_0 V' p[(1-g_0 V/g' i_0 V') - b(1-V'/V)]
\]

3.146 The numbers become particularly tenuous at this point, but if we use an elasticity \( b \) of 1 and assume that the ratio of the finite loan length factors
g/g' is .5, then using the illustrative values of V=266 and V'=324 from applying equations (6) and (8), with i_o=.1044 and i_r=.03, in the case of the commercial rent of 3.50 yuan/m², gives for the bracket in the preceding centered expression

\[(1-(.5)(.1044/.03)(266/324) - 1(1-324/266)) \text{ or } [-.429 + .218]\]

which equals -.21 and, being negative, indicates that the lending subsidy policy results in a decrease in homeowner savings.

3.147 The reason for the result is that the savings decrease by those who are subsidized and would purchase anyway (the negative term) substantially outweighs the savings increase by those induced to purchase (the positive term). The value of b that makes the bracket zero (when the positive term just outweighs the negative term), is 1.9. The elasticity b would have to be at least as great as this rather high value, for the lending policies to increase homeowner savings.

3.148 If a preferential rent of 1.16 yuan/m² is used, the result is very similar. The value of the bracket is \([- .44 + .21]\) or -.23, instead of -.21. Because of the lower values of V (¼0.5) and V' (¼9) and because p might be very different, the absolute change in savings might be very different as between commercial and preferential rents.

3.149 These examples, while only illustrative, open up the definite possibility that the proposed lending policies would be inflationary by reducing homeowner savings, due to the discouragement to savings imparted by subsidies to those who would purchase anyway. The framework here needs to be extended by considering level of selling price as an additional variable influencing savings. The framework could be used to make serious quantitative estimates, now lacking, of effects of the housing reforms on national savings.

3.150 **Who Pays the Credit Subsidy?**. To get the total inflationary effect requires considering those who pay the subsidy. A part of the subsidy may be paid by families whose wage adjustment exceeds the amount they pay in rent, and by others taxed in the process of amassing lending funds. A part of the payment of the subsidy may be paid for by general government funds through inflationary financing.

3.151 There is a transfer from whoever is paying the subsidy to the home purchaser. With a developed banking system, double entry accounting ensures that the mortgage assets of the lending institutions are matched against the loans or deposit liabilities used to make the mortgage loans. If a lower than market interest rate is charged on the mortgage loans, the lending institutions will not have the revenues to pay depositors or lenders to the institution a going interest rate. The depositors or lenders to the institutions will be taking a loss equal to the difference between what they are actually paid and the interest they could earn if their funds were put to work at a normal rate. The difference amounts to a tax and almost surely will not be sustainable if the deposits are voluntary. If they can, people will withdraw their funds from the deposits paying low interest and put them to work where they can earn more.
3.152 Sources of funds in addition to impounded deposits from the excess of wage over rent adjustments include government housing allocations, housing funds from work units, maintenance and depreciation fees, a part of work unit housing funds, and funds raised from selling houses. Obtaining funds in these ways and then lending them out at low interest involves some further combination of taxes on individuals and work units, including those in the economy at large if the general government budget is affected.

3.153 The subsidies may be hidden, but are no less real, if the mortgage funds are supplied by government. One way or other, if there are to be many low interest rate loans for housing, a fraction of them will almost surely come out of the government budget. The outlays by government to finance the home purchases return less to the nation than if invested at full productivity.

3.154 A likely outcome is that part of the interest subsidy will be paid for partly through a greater government deficit than would otherwise occur, with an end result of greater inflation from the subsidy. The initial loans, if financed by government, will be directly inflationary, and the failure to collect adequate interest will mean less return revenues to the government in future years. People at large are then taxed through losses in the real value of government liabilities including cash balances, and in foregone returns and losses in real value of government backed deposits and government bonds paying low interest rates not anticipating the full amount of the inflation.

3.155 A problem with this likely outcome of the subsidy contributing to inflation is that it runs counter to one of the major purposes of encouraging home ownership, which is to combat inflation.

3.156 Financial Intermediation. The first Housing Savings Loan Bank in China was established in Yantai in December 1987. The paid in capital is on the order of 20 million yuan, which has come from transferring to the bank a number of existing accounts and, apparently to a small degree, the impounded deposits of families whose wage adjustment exceeds their rent adjustment. The bank receives funds from sales of state owned buildings and receives proceeds from housing production taxes and real estate taxes.

3.157 The bank is involved heavily in the financing of new construction undertaken by housing development corporations, as well as in the financing of purchases of both existing and new housing by individual buyers. A buyer of a new apartment must pay 30 percent down one year in advance and then can qualify for a loan at a 2.88 percent interest rate. Another schedule of interest rates was mentioned of 3.6 percent for 5 years, 3.9 percent for 10 years and 4.32 percent for 15 years. It was mentioned that there was a policy of "taxing enterprise" to make up for losses on deposits.

3.158 For buyers of existing houses, a 30 percent down payment is also required, with the balance paid in 10 years or less at no interest. In addition to the wage adjustment revenue of 23.5 percent, an additional 15 percent is drawn from the worker's wage.

3.159 The housing savings bank approach represents a decision to set up separate entities to finance housing rather than having housing savings
departments in regular banks. One rationale given by central government people in Beijing is that more specialization in delivery of services will be possible. However, it is also clear that, in the case of the first housing savings bank, the financial intermediation role of banks to facilitate mobilization of savings and channel them into productive uses is being blurred and circumvented at least to some extent by the heavy role in housing subsidies.

3.160 Financial intermediation and the role of housing in savings-portfolio decisions are clearly large areas needing further attention.

F. How to Sell More Apartments

Implications of the Policy Analysis

3.161 The preceding section has attempted to systematize major economic effects of housing reforms. A number of different effects, sometimes working against each other, as well as management problems and broader policy issues, have been identified.

3.162 The analysis has brought out the importance of basic economics, and it suggests needs for bringing expertise further to bear. The discussion now will consider some more immediate implications.

Present Situation

3.163 Slow Sales to Date. Newspaper stories about blocks of new houses selling out in a few hours apparently refer to a smattering of atypical situations of gross underpricing. The bigger picture is that, in spite of substantial efforts to encourage home buying in the experimental cities, only a very small proportion of homes have been sold. An effective formula for selling homes has not yet been arrived at.

3.164 In Yantai, only 1,646 homes were sold from August 1987 to February 1989. Of these, 584 were newly built apartments, and the remaining 1,062 were previously existing apartments. The selling rate is not more than one or two percent of total apartments, in view of the 96 thousand households in the city, 65 percent of whom are included in the housing reform experiment according to Barlow (1988), p.25.

3.165 Information available on sales in Shenyang is less precise. It was reported that 10 percent of new houses built have been sold to individuals. This figure probably represents less than one percent of the total Shenyang housing stock, and may result primarily from tapping the excess demand created by rationing of the existing stock.

3.166 The hope is to sell 10 percent of existing housing in Shenyang in 1989. However, experience is too preliminary to infer what sales of existing housing can ultimately be expected. Only 6 enterprises, all profitable, are now
in the Shenyang experiment, and 4 of these were added in June 1988. Another 55 profitable enterprises are under consideration. Their inclusion would bring as much as half of Shenyang into the experiment, but these would still not reveal the problems of including unprofitable enterprises.

3.167 The fact that sales have been slow to date would seem to lend support to the hypothesis stated earlier that a combination of rent levels and selling prices like point X in Figure 2 has been chosen, suggesting the need to contemplate a wider variety of combinations.

3.168 **Limited Information on Motives.** Surveys that have been carried out in connection with the housing experiments, questioning people on their motives for buying, are a small beginning toward understanding the circumstances under which people will buy.

3.169 Of 4,000 people on waiting lists to buy apartments in Yantai, several types of potential buyers were identified. One consisted of those who "failed in the distribution of housing," as for example people after marriage living in dormitories, or with parents or with friends. This type reflects the excess demand for new housing due to rationing of existing housing discussed in the preceding section. Another type consisted of people having to pay more in rent than received in wage subsidy to pay the rent, such as lower income people living in larger apartments as a result of previous allocation of housing. This category may result in part from the system of rationing, since with a freer rental market, these people might more easily find smaller apartments and keep on renting. Still another type consisted of people in the opposite situation of receiving more increase in wages than in rent payments, which implies building up of impounded housing savings deposits that would help overcome the downpayment and savings hurdles to buying. Finally, there were people who said they were saving to obtain the benefits of housing reform, namely to protect their real wealth, which would correspond to savings-portfolio motives for home ownership.

3.170 The answers to these questions are consistent with the analysis of tenure choice in preceding sections, but the answers do not permit quantifying market potential or give many guides for policy. A more serious housing demand survey is needed that relates people's present housing to income, financial assets, and demographic characteristics, and questions them carefully about the circumstances under which they would buy housing, giving attention to price, rental alternatives, loan conditions, and their perceptions of actual property rights as well as how improved property rights would affect their decision.

3.171 **Bottom Line.** Notwithstanding great lacks in information, the analysis of tenure choice that has been presented in this part of the report makes the pace of housing sales understandable, and it has strong implications for policies to effectively encourage privatization.

3.172 **Need for Broad Attack on Causes of Slow Sales.** The fact that housing sales have been slow is evidence that the prices offered for ownership are unattractive relative to the alternative of renting. From the analysis of tenure choice, the first of four reasons for a low willingness to pay for housing ownership is that rents, though raised, are still far below those required to
recoup housing costs. A second reason is that stringent down payments and rapid repayment have been required. A third reason is that perverse and uncertain property rights reduce the expected gain from ownership. The fourth reason—less amenable to influence—is that the demand to hold wealth, of which the demand to own housing is a part, is reduced by low income.

3.173 Attempts to make sales more buoyant have not dealt with these fundamental causes of slow sales. There has been a tendency to attribute slow sales to lack of financing and a need for credit subsidies. Interest rate subsidies have been offered which have only to a small extent countered the more fundamental reasons for slow sales. The interest rate subsidies have deleterious side effects, including being inflationary.

3.174 A stock taking is needed, to see if there are more constructive ways to encourage housing sales, in view of the four fundamental reasons for slow sales.

3.175 The Case for Higher Rents. Low rents, in keeping down prices people are willing to pay for housing, make it obvious that on new and recently built housing, losses are being taken, since the price paid is below construction cost. The fact needs to be faced that, as long as rents are held below costs, losses on housing sales may be inevitable, except for the possibly small sales from pent up demand from rationing the use of the existing stock.

3.176 The losses from sales by work units of housing at prices below costs are in part a manifestation of the continued in-kind component of rental payment. The continued in-kind rental component, by affecting prices at which apartments can be sold, further confuses the situation for the work units. It may become increasingly difficult for the work units to even know how much workers are being compensated in a post-reform situation of part cash and part in-kind rental payments, where some workers remain as tenants and others own their apartments.

3.177 In addition to these complications having to do with purchasing of apartments, low rents magnify the differences between the rationed and unrationed markets for housing, leading to greater problems of excess demand in the rationed market and reduced demand in the unrationed market. The greater are the differences between the markets, the greater are the management problems.

3.178 A clear implication, from the fundamental causes of slow sales listed earlier and the complications from low rents just noted, is that higher rents need to be contemplated.

3.179 There seems to be a feeling that high rents will lead to too high a wage increase. However, the pros and cons have not been aired. Beyond this possibility, the case for not allowing rents to rise all the way to market determined levels has not been aired.

3.180 Providing Credit on Competitive Terms. On the financing side, the banking system could be encouraged to greatly expand its abilities to handle mortgage lending through offering mortgage instruments and having mortgage loan officers on hand. At the same time, there could be insistence that housing loans
be competitive in credit markets, paying going interest rates, and that they be offered without special down payment and repayment period restrictions encouraging more rapid payback than consistent with normal prudence.

3.181 Property Rights. The analysis throughout Part III supports the contention that fuller and more forthright efforts should be made to clarify and improve property rights.

3.182 More Variety in City Experiments. A way to make more rapid progress toward finding a set of rents, wages, housing selling prices, credit conditions and property rights that will succeed in selling houses, is to widen the scope of city experiments.

3.183 Most of the experiments to date appear to be attempts to fine tune, without having established whether general orders of magnitude are right. Variations include minor differences in rent levels among cities, differences between raising rents slowly or rapidly, having empty versus real circulation (a distinction apparently now abandoned), and differences in the number and types of work units included.

3.184 Only two really basic differences have so far been identified: 1) raising wages and rents, which is the approach being tried in the experimental cities, and 2) selling houses directly without rent and wage adjustments, which is being discussed for Beijing and Shanghai. The latter policy would limit housing sales to the excess demand existing because of rationing of use of the existing housing stock, and would contribute to disparities among people in amounts paid for housing.

Wider variation in rents, credit terms and property rights are needed in the experiments. At least one experiment is needed where market determined rents are allowed, and several are needed where housing is auctioned to find what people are actually willing to pay. One experiment could be to sell houses without any rent or wage adjustments, giving particular attention to how great the pent up demand for new housing is in view of rationing of the existing stock. This outcome would be compared with market for new housing in a city where rents were allowed to rise to market determined levels, to see if the price raising effects increasing price that people would pay offsets the pent up demand effect under rationing.

3.185 Strengthening the Knowledge Base. China is attempting one of the largest policy changes ever made anywhere toward housing, with an extremely meager knowledge base that needs to be expanded as rapidly as possible. The need is urgent for studies of the types that have been mentioned throughout Part III.
IV. HOUSING REFORMS BEYOND ENCOURAGING OWNERSHIP

A. Challenge

4.1 A challenge not yet considered in this report is how to encourage home ownership in a way that will lead to the wider benefits of fully functioning housing markets. If the wider goals of housing reform are not pursued, the efforts to encourage home ownership may amount to very little.

B. Demand for Housing Services

4.2 Tenure choice that was the major focus in Part III should be sharply distinguished from the demand for housing services.

4.3 Tenure choice determines the proportion of occupants who will be renters or owners of a given stock of housing. The demand for housing services concerns the broader question of how much housing there should be and how it can best be allocated among people.

4.4 Figure 4 shows the schedule of demand for housing services. The quantity of housing demanded, shown on the x-axis, can in some cases be measured as m² of useable space. This procedure ignores quality questions that will be discussed in later sections.

4.5 Demand is a function of the yearly price of housing services, shown on the y-axis. For tenants, the price is the rent paid per unit of housing services. For owners, price is a user cost that converts the values and charges associated with home ownership into an approximate yearly cost. These rents and user costs are the same ones that figured in equations (6) through (11) in Part III. There the concern was with housing values that would equate rents and user costs. Here the concern is with the effect of the level of rent or user cost on the quantity of housing demanded.

4.6 Figure 4 provides a frame of reference for the discussion below of the need for rental markets and their relation to home ownership decisions, the appropriate overall amount of housing, quality and maintenance problems, and the site value problem.

C. Benefits If a Housing Rental Market Were Allowed

Present Sparseness of Apartment Exchanges

4.7 The rudimentary and extremely low volume of apartment exchanges, that have been encouraged through exchange fairs and other means, may appear to be a start toward a housing rental market. Yet it is questionable whether the few exchanges that have been achieved are much of a start.
FIGURE 4: DEMAND FOR HOUSING SERVICES

Yearly Equivalent Cost, $R$
(Yuan/m²)

$R_0$

$Q_1$ $Q'$ $Q_2$ $Q_s$

Amount of Housing (m²)
Shenyang has promoted housing sales through establishment of a center where 24 housing development corporations have offices, but it has not primarily touched individual sales or rentals. The offices face on a small circular park and extend for a block down a side street. The center was established to facilitate communication in view of the expanding number of housing development corporations, which totalled 50 in Shenyang in 1985 and had grown to 98 by 1988. Housing development corporations started in the late 1970's when responsibility for building new housing was transferred from work units. Only 24 of the housing development corporations have joined the center, because it is costly to join. The others keep in touch through those who are members.

The major activity at the center is sales of new houses to enterprises, although sales to individuals are also handled. In 1988, 95 percent of the housing sold was to enterprises, and 5 percent was to individuals. These numbers are similar to those reported for the city as a whole.

The inklings of a rental market occur only as informal activity in the small circular park on which the housing development corporation offices face. On Sundays and apparently on other days too, several dozen people come and lay signs on the ground indicating their desires for apartment exchange. For example, one woman had a 3-room apartment and wanted to exchange it for a 1-room and a 2-room apartment. She had come every Sunday for over a year and not yet found a match.

Advertising of apartments in newspapers does not occur, we were told, because it would be too expensive.

In Shenyang, side payments accompanying apartment exchanges are deemed to be illegal, although Bahl and Zhang (1989), p. 11, report that in Beijing side payments accompanying exchanges are permitted, and that three-way or more deals are possible there. Still they report on p. 10 that, in Yantai and Shanghai, only .5 to one percent of properties are exchanged every year.

Contrast With Normal Market

The rudimentary exchange activities are clearly a far cry from what goes on in a normal rental market, where rents and housing allocations are determined through the interaction of demand and supply. In China, there are apparently no rental agents or brokers. Search activity, advertising and turnover are almost non-existent compared to what occurs in a usual rental market. The idea of permitting a vacancy rate, considered a natural phenomenon of market economies, is foreign.

The question arises whether China is losing out on one of the major gains from housing reform by not moving toward normal rental markets.

The question is also an issue with regard to exchange of ownership, rather than rental, among individuals, assuming enough apartments are to be sold to support a market for ownership among individuals. The fact noted earlier, that most sales that have occurred are limited property right sales, implying that resale of apartments may be back to the work units, does not indicate much of a move toward freely functioning home ownership markets either.
4.16 The benefits of an unencumbered rental market may be discussed in relation to Figure 4. At a nil or zero yearly price, people will desire more housing than if a significant price is paid. The fact that housing has to be rationed with queues for apartments is not surprising, since price does not determine the amount of housing that people choose. On the other hand, with positive yearly price, people will need to think about how much they want to spend on housing relative to other goods.

4.17 The amount of housing area chosen by a family paying zero or nil price is the saturation quantity $Q_s$, where the demand schedule meets the x-axis. It is the amount of housing space people would choose if they could have all they wanted at zero price. Meanwhile the quantity $Q_1$ is the useable area of a small apartment, say 16 m$^2$, and $Q_2$ is the area of a relatively large apartment, say 61 m$^2$. In the pre-reform situation, a family living in either a $Q_1$ or $Q_2$ apartment would choose more space, since little or nothing would need to be paid for it.

4.18 The rent charged after housing reform is introduced, is $R_0$. The higher price reduces the amount of floor space demanded from the saturation level $Q_s$ to the quantity $Q'$ demanded at the price $R_0$. As depicted, the family living in the large apartment $Q_2$ will prefer less housing when rent $R_0$ is charged. The family living in the small apartment $Q_1$ will still prefer more housing space than it has.

4.19 It was hoped that under the rent reforms, there would be some reallocation of housing away from $Q_2$ families, who would choose less space and make additional space available for $Q_1$ families. Barlow (1988) reports on p.27 that, in Yantai, during the first five months of reform, only 1500 households signed up to exchange their large apartments for smaller ones, with the still smaller number of 207 actually making an exchange.

4.20 This result is to be expected. Having a rental market with normal amounts of exchange is inconsistent with rationing unless there are no restrictions on what is done with the rationed commodity. For example, the rationing would be circumvented if tenants were allowed to take a side payment in order to give up their tenancy, without requirement to move into the apartment the payee was evacuating. Market prices would be paid for apartments, with the tenant getting the gain between the capitalized rationed price the payment he receives from the person he gives up his apartment to.

4.21 Under the reform experiments, as the rent calculations of Section II.B suggest, rents are not being allowed to rise to market levels. Rental housing is under-priced relative to a market level and so remains a rationed commodity, the only difference from the pre-reform situation being that it is not so greatly under-priced.

4.22 Fong (1988), p.7, describes the scoring systems and administrative procedures used to allocate housing. There is every indication that these allocation methods are being continued.

4.23 Another indication of the lack of a true rental market is the limited variation in rents being charged. The rent formulas are applied to whole areas and apparently even to whole cities. Narrow differences for apartment quality
are allowed that are far smaller than observed in usual urban rental markets. In Yantai, the maximum allowances are only: 5 percent for location, 3 percent for orientation, 3 percent for toilet, and -4.5 to 2 percent for floor level.

**Rental Re-Allocation Gains vs. Vacancy Rates**

4.24 We wish now to investigate an important issue regarding the benefits of normal rental markets, namely, whether the gains from allocation of housing more responsive to consumer desires would make up for the loss from increased vacancy rates. Vacancies occur in normal rental markets as a part of the search and continual re-adjustments among the thousands or hundreds of thousands of families interested in the same space in an urban housing market.

4.25 A highly approximative example will be presented, using the nine point approximation to the joint distribution of families by basic wage income and housing space that was developed for the wage and rent adjustments in Part II. The nine point distribution was given in Table 2.

4.26 Visualize a demand curve for housing services for each of the nine points or cells in Table 2, each of which has the general downward sloping shape shown in Figure 4. The families in each cell are constrained by rationing to apartments of sizes 16, 32 or 61 m², depending on which column in the distribution is being considered. There is a positive price \( m \) for each cell which would make the families satisfied with their existing housing, in the sense that they would not choose any more housing if they had to pay that price. That price is an estimate of the marginal value of housing to them.

4.27 Now suppose that freely functioning rental markets are introduced. As a result of the joint action of demand by all the groups, a market price would be established in between the extremes of the marginal values among the nine cells occurring under the rationing. Families with large amounts of housing being far down in marginal value under rationing would now face a higher price and choose to give up some of their housing. Families with small amounts of housing would have a high marginal value of housing under rationing above the market price and would choose to have more housing. In this way, under a market system, housing would be re-allocated away from those with large amounts of housing to those with smaller amounts.

4.28 Interpret Figure 4 for the moment as applying to the lower left cell in the nine point distribution in Table 2, which is for people living in small apartments (16 m²) and having relatively high basic wage income (3000 yuan per year). When a rental market is introduced, a new common rental price determined by the demands of all nine groups is established at \( p^* \). People in the cell in question move along their demand curve from 16 m² to the larger apartment size \( Q' \) they will demand at the price \( p^* \). The gain from the increased housing is the sum of the marginal values obtained in the movement and is the area under the demand curve between 16 m² and the new apartment size they choose. On the diagram, the area is \( Q_1m_p^*Q' \).

4.29 Conversely, people such as those in the upper right cell in Table 2, in large apartments with relatively low incomes, will be induced to choose smaller apartments and will have a loss. If Figure 4 is interpreted as depicting
a demand curve applying to them, the loss is equal to the area \( Q_2m_2p_\ast Q' \). The demand schedule would not be in exactly the same position as for the people in the lower left cell considered in the previous paragraph, since income is now lower, but the logic of adjustments relative to a market equilibrium price \( p_\ast \) is not affected.

4.30 Because the loss values for those who choose less space fall below the market price and the gain values for those who expand are above the market price, the gains exceed the losses, implying that there would be a net gain from the rental market re-allocations.

4.31 We are here analyzing the total net gains from the re-allocation and are not going into how these are distributed among people. The distributive consequences will depend on policies followed in conjunction with introducing a rental market, not considered in detail here. It may be noted that wage and price adjustments accompanying introduction of rents will affect the redistributions. These could be arranged, for example, so that there were bigger percentage wage adjustments for lower than higher wage workers. As another possibility, one time payments could be arranged to those tending to choose less space and away from those expanding.

4.32 Against the gain from re-allocating space is the loss resulting from the fact that a greater vacancy rate can be expected in the market situation than under the present system of rationing.

4.33 To ascertain the net gain from having a rental market, taking account of the gains from re-allocations and losses from increase in the vacancy rate, requires finding the market rental price that would prevail \( p_\ast \), which in turn requires specifying more fully the demand schedules applicable to each cell.

4.34 For simplicity, let the demand schedules for each of the nine groups of families in Table 2 be approximated as being linear with common slope, and assume that the demand schedules at any income level, i.e. in any row, all have the same position. Judgmentally assume that the saturation level of housing for the middle row is 80 m². Assume further that the income elasticity of demand for housing with respect to basic wage income for the middle row demand is unity at the center cell quantity of 32 m².

4.35 The demand schedules for the three rows can be represented as \( q_1=a_1-bp \), \( q_2=a_2-bp \) and \( q_3=a_3-bp \) where \( a_1 \), \( a_2 \) and \( a_3 \) are the intercepts of the schedules with the quantity axis, and \( b \) is the common slope. The saturation level assumption given in the previous paragraph implies that \( a_2=80 \).

4.36 Since the demand schedules are parallel, the horizontal distance between the schedules at the positive marginal value associated with 32 m² of space for the middle row demand must be the same as the horizontal distance between the x-axis intercepts. For example, to find \( a_1 \), note that the relative change in quantity is the difference between intercepts divided by 32 m², or \( (a_2-a_1)/32 \). The relative difference in basic wage income is \((2100-1500)/2100\). Since
4.37 The total demand for housing space, call it \( Q \), is the sum of the demands over all nine cells taking account of the relative frequencies in the cells. Since the demand schedules are assumed to be the same for any cell in an income row, the total demand is the row frequency weighted sum of the row demand schedules, or \( Q = f_{10}(a_1-bp) + f_{20}(a_2-bp) + f_{30}(a_3-bp) \), which noting that the sum of the row sums adds to the total of all families or \( f_{10} + f_{20} + f_{30} = 1 \) gives as the total demand

\[
Q = (f_{10}a_1 + f_{20}a_2 + f_{30}a_3) - bp
\]

Meanwhile the supply is the total amount of useable space adjusted for the vacancy rate. Since the total useable space is the column weighted sum of the apartments of different sizes, or \( f_0q_1 + f_0q_2 + f_0q_3 \), the total supply available at any time to demanders is

\[
Q = (1-v)(f_0q_1 + f_0q_2 + f_0q_3)
\]

where \( v \) is the proportion of useable space vacant.

4.38 Equating demand and supply by setting the right sides of (20) and (21) equal to each other and solving for the price, call it \( p^* \), that equates demand and supply, gives

\[
p^* = (1/b)[Q_y - (1-v)Q_s]
\]

where \( Q_y \) is \( f_{10}a_1 + f_{20}a_2 + f_{30}a_3 \) or income weighted saturation useable space, and \( Q_s \) is space weighted useable space, or actual useable space, \( f_0q_1 + f_0q_2 + f_0q_3 \). With the \( f \)'s given in Table 2 and the values of the \( q \)'s of 16, 32 and 61 m², the solution for \( p^* \) becomes

\[
p^* = (1/b)[(81.5) - (1-v)32.85]
\]

or, using a vacancy rate \( v \) of .05, \( p^*=(1/b)(50.29) \).

4.39 The next step is to use \( p^* \) to find the gains from re-allocation using the reasoning about areas under demand curves that was discussed above in connection with Figure 4. That reasoning is applied to all cells, and then the gains and losses are summed to arrive at total net gains from re-allocation. From Figure 4, the area giving gain (or loss) to any group can be written as the sum of a rectangle \( (q^*_{ij} - q_{ij})p^* \) plus a triangle \( (1/2b)(q^*_{ij} - q_{ij})^2 \), where \( q^*_{ij} \) is \( Q^* \), and \( q_{ij} \) is \( Q \) for a gaining group and \( Q \) for a losing group. Now note that if the demand schedule values \( a_i-bp_{ij} \) and \( a_i-bp_{ij} \) are substituted in for \( q^*_{ij} \) and \( q_{ij} \), the \( a_i \)'s cancel out in the subtraction of the \( q \)'s. Making this substitution in the expression for the sum of the rectangle and triangle, expanding the square that appears in the result, making cancellations and then substituting back in expressions for the \( p \)'s using the demand schedule relation \( p=(a-q)/b \), leads to the following expression for the gain or loss to a group:
4.40 Applying this expression to each cell and summing over all cells, weighting by the cell frequencies, gives as the net gain from the re-allocation: \((1/2b)(185.52)\).

4.41 The total value of housing expenditures \(p^*Q\), found by multiplying equation (22) by \(Q\), noting that \(Q\) is \((1-v)Q_s\), is

\[
(1/b)(Q_s - Q)Q
\]

which equals: \((1/b)(1569.43)\).

4.42 Dividing the net gain from the re-allocation by the value of housing expenditures gives the net gain as a fraction of housing expenditures:

\[
\frac{1/2}{(185.57)/(1569.43)} = 0.059
\]

that is, a gain equal to 5.9 percent of the yearly housing expenditures that would occur under market conditions.

4.43 The absolute level of the gains depends on what the price of housing \(p^*\) would be. Suppose \(p^*\) would be in the vicinity of commercial rent, implying neither gross over- or under-supply of amount of housing relative to what would be demanded at the costs of providing the housing. Then from the first column of Table 1, \(p^*\) as the annual price per m² is 12 times 3.50 or 42 yuan. Since \(Q\) is \((1-v)Q_s\) or \((.95)(32.85)\), the value of housing expenditures would be 1310.72 yuan/yr per family in the economy.

4.44 The absolute value of the gains would be 5.9 percent of 1310.72, or 77.3 yuan per family in the economy. This figure amounts to a 2.5 percent gain in the 3138 yuan/yr family income noted in Section II.E.1. It is an extremely large gain to be obtained from a change that results only from a re-allocation of uses requiring no new production.

4.45 The gains from re-allocations far outweigh the losses from the 5 percent vacancy rate assumed in obtaining the solution.

4.46 If equation (24) is summed and solved for \(v\) which makes the net benefits zero, the value of \(v\) required for this condition is found to be 10.5 percent. That is, the vacancy rate would have to be higher than the very unlikely rate of 10.5 percent for the losses from vacancies to outweigh the gains from re-allocation.

4.47 The gains are greater than often found in this type of analysis because the departure from market conditions under the housing rationing makes the triangles large.

4.48 In an approach similar in spirit to the one here, Daniel (1983) and Daniel and Smejen (1987) consider state controls of housing in Hungary, using survey information and including considerable formal detail examining allocations
among units with discrete numbers of rooms. While total consumer surplus from use of the housing stock is considered, and moves to re-allocate space optimally are estimated, the consumer surplus gains and losses from the re-allocations are not estimated, nor is the increase in the vacancy rate if a market were introduced. The estimate that state controls in Hungary cause forced re-allocation of spending away from housing, or spending on other goods that would otherwise be devoted to housing, equal to 22 percent of rent collected is suggestive that the consumer surplus gains from re-allocation would be large.

4.49 The estimate derived above, that gains from allowing market determined rents in China would be 5.9 percent of the value of yearly housing expenditures, may be viewed as a suggestive order of magnitude. Refined results could be obtained by using more than nine cells to approximate the more nearly continuous real joint distribution of basic wage income and useable space, and by adding other dimensions such as family size. The analysis assumes there is enough variation in floor space available to allow the changes to intermediate housing levels, implied by moving along the demand schedules, to take place. The distributions here are based on housing space for urban China as a whole. Strictly, a city by city analysis is called for. While conceivably more accurate, it might nonetheless indicate generally similar gains.

4.50 Housing quality and location differences, not taken account of here, would permit further re-adjustments of demand, and could increase the calculated gains.

D. The Overall Supply of Housing

The Goal

4.51 Whether on not there is more or less urban housing in China than is consistent with demand conditions, when a reasonable price is charged for housing, is moot. That is, in terms of Figure 4, whether on average the points $Q_1$ and $Q_2$ lie to the right or left of $Q'$, is moot.

4.52 The fact that rural housing space per capita is reported to be 14.7 m² per capita by Chu and Kwok (1988), as summarized on p.79 of Barlow (1988), or on the order of twice as high as in urban areas, is suggestive that housing space would increase even at a cost-based price if housing amounts were market determined. On the other hand, land costs and availability are undoubtedly less in urban areas, and could act to restrict living space chosen in urban areas.

4.53 The point $(R_0,Q')$ in Figure 4 is at the intersection of the demand schedule and the supply, or marginal cost, schedule. The marginal cost schedule, which might be upward sloping, is not shown.

4.54 A goal of housing policy could be to have housing stand on its own feet in competing for investment funds with the rest of economy, which is to say the amount of housing would be chosen where the value of the housing is equal to the marginal cost of supplying it, or at the intersection of the demand and supply schedules for housing.
The Market Test

4.55 An advantage of letting rents and housing values be market determined is that precise knowledge about the schedules in Figure 4 is then not needed to make good allocative decisions about housing. Observed market determined rents and housing prices give an indication of the value of housing, which can be compared with the cost of constructing new housing to see whether the value is more, or less, than the cost.

4.56 Following this approach helps decide how much of national investment to devote to housing. Interest rates, indicating the opportunity cost of funds as determined in the market place, play a key role. As the calculations in Section II.B brought out, the interest rate used in calculating rental costs is a dominant determinant of rental costs. Rental costs, when compared with market rents indicating the value people attach to the housing, determine whether a new housing construction project is warranted according to the market test.

4.57 Using a market test approach to the supply of housing would almost surely result in a steadier flow of new construction than provided by the roller coaster experienced in the past. The roller coaster is exemplified by planning decisions taken in the absence of guides as to the worth of housing, that resulted in having little new housing investment for years prior to 1979, then a great surge for almost 10 years after that, and more recently a slowdown.

Application to Individual Projects

4.58 The market test approach is needed to guide individual housing investment decisions. Costs per m2 for supplying new housing running as high as 900, 1200 or even 2,000 yuan have been reported in Yantai, Shenyang and Beijing. On inquiry, these high costs, greatly exceeding the bricks and mortar components of construction costs, are found to occur because of the costs of clearing away old housing and paying for the relocation and living expenses of displaced residents during construction.

4.59 The question arises whether the housing services provided by costs as high as these are justified by the value of the housing services provided. If a housing project in an old in-town neighborhood, where high demolition and displacement costs are encountered, cannot pass the market test, then it is questionable whether building the project represents the best way for new housing funds to be allocated in China.

4.60 Further questions need to be asked about the best micro use of urban space. The well known writer Jane Jacobs has pointed to advantages that may be lost by ignoring the logic that led to spatial configurations in the original development of neighborhoods, to say nothing of heritage and ambiance, if old housing is demolished and replaced by monolithic new high rises.

4.61 In view of these issues regarding high cost and doubtful micro use of space, it may be that rehabilitation of old housing, and construction where there is less demolition and displacement, are more justifiable housing investment alternatives.
E. Incongruous Quality Mix

4.62 An hypothesis, subject to test, is that new housing is built to overly high quality standards in China, that is, housing is built to quality standards that are higher than the marginal value of extra quality as determined by housing demand. People would most likely rather have a lower quality of new housing than is being provided, given its cost, freeing the resources used to produce the extra quality for other things more valued.

4.63 It would be instructive to consider more intensively the quality characteristics of new housing, either in typical new buildings or in projects such as the large urban development project in Shenyang built on a 244 hectare former rubbish site with a planned housing capacity for 30,000 households. Construction was begun in 1987. By the Spring of 1989, 400,000 m$^2$ had been completed, of which 350,000 m$^2$ had been sold. Sales were primarily to 6 large enterprises.

4.64 Attractive 3- to 5-story apartment buildings with modern condo-looking sloped roofs, and with mixed designs of brick and concrete, have been laid out on curved roads. Housing quality standards are higher here than in the city, while the selling price, at 840 yuan/m$^2$, is said to be lower.

4.65 The development contains three types of apartments: 1-room apartments of 40 m$^2$, 2-room apartments of 66 m$^2$, and 3-room apartments of 86 m$^2$. A particularly evident mismatch of supply to demand conditions, that might have been avoided by market research, was evidenced by the fact that few of the 3-room units had been bought, and were still standing empty.

4.66 Being built on a site requiring little or no demolition or displacement, the project as a whole might well pass the market test. In a sense, it does, in that enterprises are willing to buy many of the apartments, but housing services may not have been supplied at least cost, and the costs need to be examined to see if subsidies were involved.

4.67 Constructive lessons for the continuation of this project and for future projects might be learned by considering the benefits and costs, not only of the overall project, but of the details of design including construction quality, room sizes, extra costs borne for aesthetic reasons, and quality of infrastructure services.

F. Under-Maintenance

4.68 A common observation about urban housing in China is that, while new buildings are finished to pristine high quality condition, older housing is generally dilapidated, reflecting a tendency to neglect it once built. As noted in Part I, the neglect may be rooted in ideas that housing is not productive.
At first sight, passing ownership of housing into private hands might appear to solve the maintenance problem by internalizing it. That is, the appearance might be that the owners affected by the maintenance will have responsibility for making maintenance decisions, and will have incentives to maintain buildings to get the most satisfaction out of them.

However, the de facto rights of tenants to long-term occupying already gives incentives to maintain the useable space in an apartment under family control. The more important problem is common area maintenance. In Yantai, it was clearly stated that the individual owner would pay inside maintenance, but common areas would continue to be covered by enterprises. The same is apparently true in Shenyang. On a more puzzling note, central government people in Beijing indicated there are plans to start "maintenance companies."

If communal upkeep is still left to enterprises, to what extent is the maintenance problem solved? Most maintenance may be communal rather than individual, since communal maintenance concerns important items such as roofs, corridors, outside walls, heating, and water and sewage pipes. As a minimum, further clarification and quantification is needed of individual versus communal maintenance, and who will decide on the amounts.

If the most important part of maintenance remains outside of the control of individual owners, then a further reason is obtained for hesitancy to purchase housing.

If full attempts were made to internalize maintenance by having owners decide on communal maintenance, then problems of group decision-making among different owners would arise. The potentiality for conflicts between individual owners desiring greater maintenance, and enterprises as owners of apartments remaining as rental units desiring continued low maintenance, could be great.

While there is awareness in China that some level of maintenance is part of housing costs, the housing reforms do not appear to be grappling with major reasons for under-maintenance. There is some risk that the reforms might tend to perpetuate under-maintenance rather than help solve the problem.

G. Interference With Labor Mobility

Among signs that attempts are being made to promote greater labor mobility, efforts to phase out lifetime employment contracts were begun in 1979. Recruitment of up to 2 million people from rural areas for expanding city employment has been reported. While perhaps less important quantitatively, work fairs for placement of university students have been held, and some unprofitable enterprises, though extremely few, have been allowed to go out of production.

These attempts to promote greater worker mobility do not take account of the interferences with mobility caused by housing arrangements. The fact that changing jobs entails entering a new queue for housing at another enterprise is an impediment to changing jobs. Besides having to weigh wage and working
conditions in deciding whether to take a new job, the problem of availability of rationed housing has to be contended with. The effects include impediments to hiring workers among agencies in Beijing because of lack of ability to offer adequate housing.

4.77 Another question related to labor markets has to do with the effects of housing arrangements on remuneration of different kinds of labor. While seniority is mentioned among the criteria for allocating housing, the extent to which higher skilled and managerial persons can get better housing is not clear. A tentative impression is that these workers may tend to get better housing, but not very much better. Combined with wage differences that probably do not reflect skill differences, housing arrangements may contribute to a distribution of wages that does not reflect differences in marginal products among workers.

4.78 The process of going toward a more market oriented economy, including incentives to acquire work skills and supply labor in line with the contribution of the skills to producing income, may entail widening of the size distribution of wages. The value of the somewhat uniform distribution of housing, when added to the cash wages in arriving at a real income including cash and in kind payments, contributes to the relative lack of dispersion in remuneration.

4.79 The procedure of offering proportionate increases in wages as part of the adjustments to enable payment of rents under the reforms may actually tend to impart somewhat greater dispersion than prior to the reforms, but it is no substitute for a cash wage system more fully reflecting differences in marginal product, allowing workers to choose their own location and amount of housing.

4.80 The connections between housing arrangements and labor mobility need further attention in the design of housing reforms. The hypothesis that labor mobility is deleteriously affected by housing arrangements is supported by a study of Poland by Mayo and Stein (1988). They find that socialized housing has deleterious effects on investment, migration and wage rates, and they conjecture that their results apply to other economies with important housing interventions.

H. The Site Value Problem

4.81 Site values can average 25 to 50 percent of the cost of housing in cities throughout the world. The failure to include site values in Chinese housing reform rent calculations was brought out in Section II.B. The small allowances made for the differences in location of buildings, as deviations from the calculations, hardly even begin to compensate for differences in site values.

4.82 The failure to include site values contributes to a serious misestimation of the cost of housing, which should take into account the opportunity cost of the land used in providing the housing.

4.83 Failure to include site values would be enough to keep rents substantially below market determined rents, even in the absence of the preferential rent calculations that reduce rents even further.
4.84 An implication is that all or most renters under the reform are being subsidized by the lack of inclusion of site values, and that some are being subsidized more than others. Those at the edges of built up areas where urban site values are small or negligible receive little or no subsidy from the neglect of site values, whereas those at the centers of built up areas receive maximal subsidies.

4.85 Meanwhile, there is lack of incentives to economize on the land because of its site value. Bahl and Zhang (1959) have recommended land value taxation that goes in the direction of capturing site values. To obtain the full benefits of this proposal, it is desirable that rents be allowed to rise to market levels reflecting site values. Only in this way can accurate knowledge be obtained about site values, including the very great variation in them that occurs in practice. The revenues from the tax would grow over time as land use changes from its present pattern unresponsive to location incentives to a more efficient pattern that would increase land values.

4.86 The direction proposed in the Bahl and Zhang study is fully compatible, and indeed complementary, with achieving housing reform goals. An effective way for the government budget to benefit from housing reform is to allow market rents to prevail, and then collect all or part of the site value component of the rent through property taxation.

I. Equity

Long-run Equity

4.87 A first equity goal, that may be called the long-run equity goal, has to do with the relation between levels of income among individuals. This goal is concerned with limiting the degree of income dispersion among people, and with ensuring minimums for those having the least amount of income.

4.88 While pursuit of efficiency aims leads to income distribution dispersion in a market economy, the rationing system for housing in China, as well as many other facets of the Chinese economy not considered here, also leads to dispersion. An hypothesis is that there is some correlation between income and housing among families in China and, particularly, that some persons of influence may be able to obtain considerable housing, including second apartments. Some part of the correlation of housing space with income may even be consistent with efficiency goals, since housing provides a way of rewarding higher productivity in a system where only limited dispersion in money wage rates is allowed.

4.89 However, the most overwhelming tendency may be to promote a capricious redistribution of income through housing due to the random happenstance of such factors as work unit availability of housing, historical circumstances of individuals, and use of influence to obtain housing by individuals not particularly meritorious of it on productivity grounds.
4.90 On net, housing arrangements in China lead to redistributions that may make little sense by objective standards, and pose equity problems in addition to the inefficiency problems that have been considered in this report.

4.91 The shortcomings of the redistributional effects of existing Chinese housing arrangements suggest that a concern to preserve existing distributional effects as such need not be a great impediment to undertaking reforms.

4.92 At the same time, the inadequacies of efforts in many other countries to deal effectively with long run equity problems in housing policies, suggests how difficult the task of introducing long run equity considerations in a truly effective manner is. China has a chance to learn from mistakes elsewhere and to make a fresh start.

4.93 A promising possibility is a coupon or voucher system for lower income families. The coupon could be earmarked for spending only on housing or, perhaps even more desirably, have no restrictions placed on how it was spent.

Short-run Equity: Dealing with Windfalls

4.94 A second equity goal concerns the imposition of windfalls on people and may be called the short-run equity goal. This second goal concerns changes in an individual's income, in contrast to the first goal, which concerns levels. This often neglected second goal will be considered in closing this part of the report on the goals of housing reforms.

4.95 The discussion enables completing a strand so far left hanging. In Section III.E, the problem was noted that charging low preferential rents leads to a halfway house perpetuating the co-existence of rationed and unrationed markets, and that difficulties will be encountered in making further wage and rent adjustments once the initial adjustments get built into the system. Meanwhile, earlier Section II.E indicated that the distributional effects of large rises in rents and wages might be very substantial, implicitly suggesting that distributional considerations would militate against rent rises sufficient to do away with the halfway house or multiple market problem. The contrast between the two sections seems to suggest a conflict between the efficiency goal of fostering better functioning housing markets and the equity goal of avoiding large scale windfalls. It will now be possible to complete the discussion of this issue.

4.96 The basic consideration in the second or short-run equity goal is that great weight is often given to avoiding imposing direct and noticeable windfall losses on people. The resistance observed in many countries to raising controlled prices of food or lowering producer prices is a manifestation of this tendency. Failure to sufficiently limit negative windfalls can be an insurmountable barrier to adopting reforms.

4.97 Imposing negative windfalls on poorer families is something universally agreed to be undesirable, and the point applies if some poor families happen for historical reasons to be living in large quarters, such that their
wage adjustment will not be sufficient to pay the increased rent under the reforms. Furthermore, on practical grounds if for no other reasons, imposing large negative windfalls on wider segments of society has its disadvantages, even or indeed especially if negative windfalls impinge on families with higher incomes whose political influence could block the reforms.

4.98 While the simulations in Section II.E indicated that non-negligible redistributions from the reforms can be expected, it was noted that the guidelines for the reforms call for adjustments to be made for hardship cases, particularly among those with low incomes. How great the impact of these guidelines is likely to be in practice, is not clear.

4.99 The apparent unmanageability of the large redistributions that would occur if full commercial or cost-based rents were charged is almost surely a principal reason that lower preferential rents have been chosen in the design of the reforms. The redistributational effects, as between commercial and preferential rents, were compared in Table 3, which brought out the substantial differences in redistributions under the two policies.

4.100 However, a strong argument can be made against the view that large redistributions render commercial or cost based rents impractical. A more explicit program of compensation for windfalls could overcome the redistribution problem.

4.101 Since the reform scheme is to make the increases in total payments of wages and rents equal for the system as a whole, funds are automatically generated by those benefitting from the reforms to compensate those losing. All that is required is to cap the losses that will be imposed on individual families for whom increase in rental payments will exceed increase in wage payments, and to make up the difference between what the losing families would otherwise pay and the capped amount.

4.102 Most desirably, the cap on losses would vary with the income of the losing families. For very low income families, the entire loss could be made up. Some losses after compensation would be permitted for families above a specified minimum income. The losses permitted after compensation would be greater the larger the income of the family, but losses would still be limited to modest amounts.

4.103 A central feature of the proposed reform policy of charging low preferential rents, rather than commercial or cost-based rents, is already to impose losses on some families. Through capturing back some of the gains to those for whom wage increases exceeded rent increases, the monies would be available to achieve the same distributational consequences under a policy of charging full commercial rents as under a policy of low preferential rents. Indeed, following the principle of systematically limiting losses as described in the preceding paragraph, a more desirable set of distributational consequences could in fact be achieved, since compensation would be more closely tailored to distributional objectives.

4.104 Charging full commercial rents would increase the incentives to families to buy their apartments to avoid the rents, thus acting to increase the
purchase price they would be willing to pay and increasing the numbers who would choose to buy at any given purchase price. Since charging full commercial rents with compensation can achieve the same or better distributional objectives as low preferential rents, while achieving better housing objectives, a commercial rent policy would appear definitely to dominate a preferential rent policy.

4.105 Details of the compensation procedures remain to be worked out, but they appear to be quite surmountable. A guiding principle is that the more straightforward the compensation, the better.

4.106 Under a perhaps unduly complicated approach, the compensation might be tied to availability of impounded deposits, which consist as discussed earlier of the excess of wage payment increases over rent increases for the gainers. The funds for the compensation would be obtained either by not allowing large increases in impounded deposits as brought about through limiting the wage increases of gainers, or by tapping the impounded deposits through a tax if the deposits were allowed to build up fully.

4.107 Complications that might need to be dealt with include the fact that the funds for compensation could diminish over time if more gainers than losers chose to purchase their apartments. Impounded deposits would no longer be generated on apartments which have been purchased, and so purchased apartments would not be a source of funds for compensation. At the same time, some families receiving compensation would choose to buy their apartments, at which time their compensation could be terminated. A lump sum payment in lieu of continuation of compensation might be needed at time of purchase, which would in effect be a lowering of purchase price paid in buying the apartment. The situation in terms of savings generated would be no worse than under preferential rents, since as emphasized in Parts II and III, the preferential rents also lower purchase prices people are willing to pay.

4.108 The objection might be raised that the impounded deposits would be used up by the compensation payments and so would not be available for use as down payments. However, this objection does not appear to be valid. Charging full commercial rents would generate more impounded deposits, and the excess of impounded deposits generated by commercial rents over the amount generated by preferential rents would be available for compensation, still leaving the same amount of impounded deposits left over for use as down payments as there would be under the preferential rent policy.

4.109 Whether funds available for compensation from impounded deposits would diminish over time causing problems for the reforms is moot. Any compensatory payments could be limited to the lifetime of the persons who are heads of families receiving compensation at the time the reforms are initiated. The compensatory payments would then automatically phase out over time.

4.110 More wide ranging policy alternatives in the experimental cities could gather evidence to see whether there would in fact be a significant problem in obtaining funds for compensatory payments from impounded deposits. If a problem was indicated, various solutions could be considered. One solution could be to use interest on profits from sale of apartments as a fund out of which
compensation payments could be continued. As another possibility, judicious policies of obtaining funds for compensation through raising wages more than rents could be contemplated. The higher wages could be paid partly out of revenues of profitable enterprises and partly through limited rises in prices permitted for unprofitable ones.

4.111 A way out of all these problems, strongly to be recommended, is to undertake a more straightforward compensation program, not tied to impounded deposits. The compensations to the gainers and losers would be permanent to each affected individual and would be independent of whether apartment purchases were made.

EXAMPLE

Suppose that all families receive the same basic wage and that rent before reforms is zero. If reforms are instituted with a preferential rent of 1 yuan/m² per month, and if usable space for families in average size apartments is 30 m², then their yearly rent is 12 times 30, or 360 yuan per year. The wage adjustment under the reform program is 360 yuan per year, and these families just break even. If a commercial rent of 3 yuan/m² per month is charged, their yearly rent becomes 1080 yuan, with a 1080 yuan per year wage adjustment, and they still break even.

Suppose below- and above-average size apartments have 15 m² and 45 m² respectively of usable space, and that there are equal numbers of them. Under the low rent policy, the yearly gain for those in small apartments is the 360 yuan wage increase less 180 yuan rent, or 180 yuan. The loss for large apartments is 360 less 540, or -180 yuan. Under the high rent policy, the gain for small apartments becomes 1080 less 540, or 540 yuan, with a loss for large apartments of -540 yuan.

By subtraction, the difference or extra gain from the high rent over the low rent policy for those in small apartments is 360 yuan, and the extra loss for those in large apartments is -360 yuan. The calculations are summarized in Table 4.

Suppose a decision is made to implement the high wage policy but to limit individual gains and losses to what they would be under the low wage policy. Workers in the losing families would have payroll supplements of 360 yuan entitled "Adjustment for Loss from 1990's Housing Reform." Workers in the gaining families would have permanent inflation-indexed payroll reductions amounting to 360 yuan per year entitled "Adjustment for Gain from 1990's Housing Reform." Attractive terms would be offered for paying off the adjustments the windfall gains early so they would no longer be needed.
### TABLE 4. EXTRA GAINS AND LOSSES FROM HIGH RENT POLICY (YUAN)

<table>
<thead>
<tr>
<th>Rent (m²/month)</th>
<th>Yearly rent bill</th>
<th>Wage Adjustment</th>
<th>Yearly gain or loss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Apartments (15 m²)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>180</td>
<td>360</td>
<td>180</td>
</tr>
<tr>
<td>3</td>
<td>540</td>
<td>1080</td>
<td>540</td>
</tr>
</tbody>
</table>

Extra gain from 3 yuan rent: 540 - 180 = 360

| **Large Apartments (45 m²)** | | | |
| 1 | 540 | 360 | -180 |
| 3 | 1620 | 1080 | -540 |

Extra loss from 3 yuan rent: -540 - (-180) = -360
The payroll adjustments would tend to be revenue neutral and would in any case be self-liquidating, as those working at the time of the housing reforms eventually passed out of the labor force.

4.112 The call for special adjustments for hardship cases enunciated in the housing reform guidelines is an encouraging recognition of the windfall problem. This recognition could be used as a wedge to explore more fully the possibilities for larger rent and wage increases accompanied by compensation along the above lines. The way would be opened to realizing the more ultimate goals of housing reform.
V. CONCLUSIONS

A. Major Problems with Present Reform Approach

5.1 The biggest problem with the initial steps being taken in Chinese housing reform is that they are not being adequately related to long run housing goals.

5.2 The steps being taken could actually increase the difficulty of getting to long run goals, because an even more complex set of wage, rent and management procedures than exists at present would have to be overcome. A danger is that China will be permanently stuck with a cumbersome halfway house that is little or no better than the pre-reform situation, and might in some ways be worse. Major problems with current efforts are as follows.

Overhang of Rationed Rental Market

5.3 The existence of a rationed rental market fundamentally affects the privatized housing market. Low rents reduce the price people are willing to pay to purchase a home, which is to say low rents reduce housing values.

5.4 Because housing value tends to be proportional to the difference between rent and yearly operating costs, housing value is reduced more than in proportion to any reduction in rents. In the example in Section III.B.1, reducing rents to a third of the true yearly cost of providing housing reduced housing value to only 15 percent of a cost-based housing value.

5.5 Continuation of low rents implies a rationed rental market with an indefinite commitment to sell houses below cost. To do so is the counterpart, for people who choose to buy, to paying some portion of wages as in-kind rent, which is also a consequence of charging low rents.

5.6 The magnitude of the in-kind rent component will almost surely vary over time. No plans have been heard to change rent charges and the wage adjustment allowed for rents in the future, which would be necessary to keep them the same in real terms in view of inflation. Even without inflation, with the passage of time, as wages are changed with changing conditions such as brought on by economic growth, and as real housing costs change, the connection between rents and some component of wages meant to enable payment of the rent, will become increasingly blurred.

5.7 The work units will end up finding that as one of their costs of production, they are required to sell houses at a loss which varies unsystematically over time. This situation will represent yet an additional housing burden over and above supplying in-kind housing to renters. Housing may become an even greater interference than it is now with the main activity of the work units, namely, production of goods and services for sale in the rest of the economy. Wage negotiations and wage calculations will be forever more complicated.

5.8 Meanwhile, low rents act as a depressant to the demand of families to buy new apartments at cost, as the analysis of excess demands in Section III.E
showed. The low rents and consequent low purchase price for existing units add to problems of keeping people who purchase housing at low cost in the rationed sector from re-selling them at full commercial prices.

5.9 The picture that emerges is of a permanently distorted rationed rental market in which the benefits of market allocation are lacking, as discussed in Part IV, with losses on housing sales extending into the indefinite future and with chronic tensions between the rationed and unrationed markets.

Inflationary Credit Arrangements

5.10 Credit arrangements are in part contradictory. High down payment requirements and short repayment periods strain savings, discouraging home ownership. Low interest mortgages reduce the cost of borrowing below its true cost, encouraging home ownership.

5.11 The analysis of borrowing terms in Section III.B.2 suggested that the net effect of the credit arrangements was to raise the purchase price people would be willing to pay from 266 to 324 yuan per m², if commercial rents were charged. The result indicates that the interest subsidy effect outweighs the high down payment and shortened repayment period. These credit arrangements have less effect than the practice of charging low preferential rents, below commercial rents, which was estimated to reduce willingness to pay to only 49 yuan per m².

5.12 The most important consequence of the credit arrangements may be the encouragement that the interest rate subsidy gives to inflation. The encouragement to inflation works against, and perhaps completely defeats, the housing reform goal of combatting inflation.

5.13 Parameterized values in the analysis of national savings in Section III.E.4 indicated that savings decreases by those subsidized by low interest rates, who would purchase housing in the absence of the subsidy, substantially exceed the savings increases by those induced to purchase housing by the subsidy. On top of the net decrease in savings by home purchasers brought about by the interest rate subsidy, the possibility arises that the subsidy would be financed in part through government funding that would contribute still more to inflationary pressures.

Stifling of Further Transition

5.14 It will be difficult to move beyond the first step of charging preferential rents, which may be on the order of only a third of commercial rents. This outcome would be a pity because it would preclude ever realizing the more ultimate benefits of housing reform, which were outlined in Part IV.

5.15 If a further round of wage and rent adjustments is attempted beyond the first one, the workers who have already purchased apartments will be given windfall gains, since they will receive a wage increase even though they do not need it to cover the increase in rents. The windfall gains would come at the expense of net costs imposed on the work units, with all the difficulties that implies.
5.16 An alternative would be to selectively deny wage increases to workers who have already purchased apartments. But this would be evidence that the government is prepared to discriminate against home owners. It would discourage confidence in home ownership, which sorely needs encouragement, not discouragement.

**Increased Bureaucratization**

5.17 It would be surprising if the way to privatization, which implies greater scope for freedom of choice, were to involve increasing governmental controls. Yet that is the implication of the present course.

5.18 The rent adjustments, wage adjustments and setting of selling prices of existing apartments all involve new centralized interventions in decisions. The same is true of credit arrangements including subsidized interest rates.

5.19 The controls involve trying to put economic variables at levels substantially away from market levels. Variations among apartments are proposed for rents and selling prices to allow for differences in quality of housing. The variations appear to understate values attached to the differences.

5.20 The controls presume an ability to fine tune policies that apparently far exceeds knowledge capabilities. Evidence is the choice of variables to date that have failed to result in selling many apartments. The controls could represent a morass which it would be very difficult to change or extricate from.

**Lack of Vision**

5.21 The basic purpose of housing is to satisfy housing needs. Emphasis on savings and inflation in the housing reform proposals has precluded moves toward meeting the important long run housing needs outlined in Part IV. The needs for improvements in housing that are being precluded include: better use of the housing stock if a freely functioning rental market were allowed, improved overall supply of housing, improved quality mix, correction of under-maintenance, reduced impediments to labor mobility, allowance of site values to guide economizing on land use, long-run housing inequities.

**B. Suggestions for Improvement Within the Present Approach**

5.22 Constructive possibilities for proceeding with housing reform will be discussed in closing. Immediate steps that could be taken in the context of the present general approach were summarized in Section III.F, with further analysis of redistributional problems in Section IV.I. Major points may be brought together as follows.

**Attack the Causes of Slow Sales**

5.23 Analysis is needed of a more diverse combination than so far considered of rents, selling prices, and ancillary conditions including borrowing terms and property rights affecting tenure choice. This would aid in finding a combination of conditions leading to more apartment sales.
Charge Market Rents

5.24 Charging market rents would eliminate the need for rationing of apartments, leading to more efficient allocation of housing space. The tensions between rationed and unrationed housing markets arising under the proposed low preferential rent policy would be eliminated. A needed link between the value of housing services and the cost of providing housing would be established, giving guides to needs for new housing. In short, many of the longer run goals of housing reform reviewed in Part IV would come nearer to attainment.

5.25 The practical program of compensation discussed in Section IV.I.2 could be used to limit the distributional consequences, reducing negative windfalls to acceptable levels.

Provide Credit on Competitive Terms

5.26 The availability of sound mortgage instruments in the banking system needs to be nurtured, along with banking personnel to aid in making mortgage loans. To ensure wise use of the nation's savings and avoid inflationary finance, no interest subsidies should be given.

Improve and Clarify Property Rights

5.27 The codification of property rights reported to be in progress may help in the sale of apartments. It is to be hoped that unencumbered rights of re-sale will be incorporated, and that owners' rights to rent out apartments will be protected. A limit of say three apartments owned by an individual could allay fears about re-emergence of a landlord class. Tenants would not have rights to indefinite occupancy, but it is in the interest of both tenants and owners for tenants to have reasonable security.

Undertake More Varied City Experiments

5.28 Experiments suggested earlier include: wider variation in rents, credit terms and property rights; at least one experiment where rents and selling prices are market determined; several experiments where houses are auctioned; experiments offering apartments for sale without any rent and wage adjustments, with particular attention to estimation of pent up demand; experiments with compensation procedures.

Strengthen the Knowledge Base

5.29 Throughout this report, studies have been described that would lead to more informed choices. The studies should be undertaken as rapidly as possible.
C. A Fundamentally Different Reform Approach: Divorce Housing From Work Units

5.30 Beyond these immediate steps to improve present efforts, a fundamental re-consideration of housing reform is needed, which will be discussed as a final topic. A Commission, or Temporary Institute, or Senior Task Force, could be established to deal with more full fledged housing reform. Its first task would be to spell out comprehensive and appropriate long run housing reform goals. The aim would be to make housing a fully functioning contributor to the national economy, correcting the major deficiencies noted in Part IV. With comprehensive housing aims clearly stated, ways of moving to accomplish them would be considered. This procedure would be a departure from the present approach that has been concerned more narrowly with savings and inflation objectives.

5.31 Without attempting to guess exactly where this procedure would lead, some comments may be offered. A consideration that stands out is that effective housing arrangements in the long run are not likely to involve direct control and management by either work units or government bureaus.

5.32 One possibility is to spin off all housing into newly created companies that initially own one or several apartment buildings, as appropriate to a managerial staff. This spin off would accomplish the important objective of getting work units out of the housing business, enabling them to concentrate on the goods and services they are charged with producing.

5.33 At the instant of the spin off, all housing would be owned by the new companies, who would rent out apartments at market determined rent levels paid for by wage increases made possible by the complete elimination of need for the work units to bear any housing expenses. The compensation approach outlined in Section IV.I, enabling charging of market rents while still limiting windfalls, would be instituted. From this starting point, the new companies would stand ready to sell apartments, as well as continue to rent them out. Gradually, more and more apartments would be sold, as people became more familiar with what ownership means and as younger families made life financial plans including housing savings during their earning years.

5.34 As an alternative possibility, the "companies" to whom ownership was spun off could be the present occupants. All would become owners immediately, either through individual ownership or some sort of condominium or co-operative arrangement for each building or group of buildings. Over time, some occupants would choose to sell their units to others and become renters if they liked, which would be allowed as part of a policy of freedom of choice. The resources presently devoted by the work units and housing bureaus to upkeep might be transferred to the new owners in the form of wage increases, much along the lines of the proposed wage adjustments under the present proposed reforms. Since there appears to have been chronic under-maintenance, the individuals as owners might undertake more maintenance than covered by the wage adjustments, which would be anti-inflationary in taking expenditures away from other things.
5.35 Conceivably, a modest tax lasting for a few years might be imposed as a way of recouping payments for the apartments, which would amount to forced savings further helping to combat inflation. On the other hand, the best procedure might be to impose no such tax. Transferring ownership free and clear to occupants, who have many de facto ownership rights anyway, would be a small price to pay for relieving the work units and housing bureaus of the burden of supplying housing, and for achieving the long run goals of efficient housing arrangements.

5.36 With rents and housing prices allowed to find market levels and with housing divorced from work units, there would be hope of fully realizing the fundamental gains from housing reforms discussed in Part IV.

5.37 These comments illustrate how a wider focus could affect housing reform efforts, but the comments are far from complete, either on details of the possibilities mentioned or on further reform possibilities.

5.38 China is commendably looking at the housing experience of other nations. Systematic contemplation of the lessons from other countries could yield positive ideas, as well as revealing that China has a chance to avoid problems that have resulted from some housing interventions elsewhere. The end result is likely to be different from that in countries in the West, or in the Eastern Bloc, or in neighbors like Hong Kong and Singapore, which are smaller and more homogeneous making their experience—which has its pros and cons—not fully applicable to China's unique circumstances.
REFERENCES


Gyourko, Joseph and Han, Jaehye Kim, "Housing Wealth, Housing Finance, and Tenure Choice in Korea," forthcoming in *Regional Science and Urban Economics*.


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