ECONOMIC EFFECTS OF HOUSING INVESTMENT

by

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CHAPTER I
EXECUTIVE SUMMARY

This paper reviews the theoretical arguments and empirical evidence concerning the economic effects of housing investment in developing countries. It attempts to summarize, integrate, and update the work of authors such as Grimes (1976), Burns and Grebler (1977), Wegelin (1978) and Strassmann (various years). In addition, it uses the information obtained from these and other studies to address the question of whether housing investment is a productive activity. Although this paper emphasizes the macroeconomic effects of housing investment, much of the supporting evidence comes from micro-level studies. Furthermore, because past studies have generally focused on low-income housing in urban areas, this paper has a similar bias.

- The broader economic gains of housing investment can be expected to vary by type of housing investment.

Housing investment in developing countries can take many forms ranging from the simple upgrading of units to the construction of luxury high-rise units. These differences directly affect the size of the broader economic gains generated.1 For example, low-cost housing appears to generate more employment than high-cost housing because of its low import content and low skill requirements.

- The available evidence suggests that the employment and income generating capability of housing investment is comparable to other sectors and, in some instances, is relatively favorable compared to other sectors.
Increased housing investment can influence employment and income in several ways. For example, housing construction creates jobs directly through on-site employment and indirectly through backward linkages with industries that produce building materials and related products. Several studies suggest that residential construction can generate a relatively high amount of employment for a given investment compared to other sectors. Some additional evidence suggests that low-cost housing generates more employment than high-cost housing. As a corollary to its favorable employment effects, housing has what is generally considered to be a favorable income multiplier. Estimates of income multipliers for housing investment for Colombia, Korea, Pakistan, India and Mexico tend to be around two. Increased housing investment may also allow some households to generate income by operating small home-based businesses and renting rooms; whether this represents an increment to aggregate income depends on the supply of such services in the absence of increased investment. Increased housing investment can also lead to a higher utilization of the labor force and may contribute to skill development among workers. While it is true that informal job training possibilities within the housing sector are largely limited to the construction phase (whereas in other sectors informal job training may continue in the operating phase), the residential construction sector may be a more effective user of low-skilled labor.

Housing investment also produces benefits over time, beyond the consumption of housing services. Increases in labor supply, school attendance, and productivity have been suggested to result from the improved health status of occupants. The available evidence neither
conclusively proves nor disproves this hypothesis. On the other hand, past studies involving the rehousing of households seem to indicate that improved housing positively influences health status.

- The net import content of housing is likely to vary across locations depending on the resource endowment, technological capabilities, legal environment (with respect to building codes), and tastes of countries; while a minimal balance of payments effect is quite possible, it cannot be taken for granted.

Increased housing investment can affect the balance of payments in several ways. Because a portion of housing investment is usually comprised of imports, housing investment can contribute to trade deficits. In addition, in the case where other sectors use some of the same inputs that housing uses, increased housing investment may absorb a greater share of the domestic production of these inputs and thereby cause an increase in the imports of inputs in these other sectors.

Housing investment may also divert resources away from exporting sectors. In general, housing does not generate foreign exchange; on the other hand, to the extent that housing increases the productivity of the labor in export industries it may contribute to foreign exchange earnings.

- In the short run, increased demand for residential inputs can cause inflation in the price of inputs; however, it is not likely that these higher prices can be sustained in the long run.

Housing investment can also influence the domestic price level. In the short run, increased housing investment may cause bottlenecks in the supply of building materials and construction labor which could put upward pressure on the general price level. However, in the long run it is unlikely that the price increases in residential building inputs could be sustained since high profits would attract new suppliers.
We do not know the extent to which appropriate financing arrangements could increase effective demand for housing and stimulate ex-ante saving.

The desire and opportunity to buy or upgrade a house can provide a powerful incentive to save. Regardless of income, appropriate financing arrangements could increase effective demand for housing and stimulate ex-ante saving. To the extent that this represents a net addition to aggregate domestic savings, national investment rises and inflationary pressures will be reduced. Unfortunately, it is not known how much of a net increase in savings could be generated this way.

Measurement and interpretation problems make the incremental capital-output ratio an inappropriate tool for allocating capital between housing and other types of investment.

It is often argued that housing investment should be discouraged because the housing sector has a relatively high incremental capital-output ratio (ICOR) and, hence, a relatively longer capital recapture period compared to other sectors. Measurement and interpretation problems, however, cast doubt on the usefulness of the ICOR as a guide for allocating scarce capital.

A more promising tool is social cost-benefit analysis; it has the potential to overcome some of the shortcomings of the ICOR because it can explicitly take into account the direct and indirect benefits of housing. In addition, it is especially well-suited for the measurement of the long-term benefits which result from the flow of housing services produced by housing investment. This technique has been applied to low-income housing on a case study basis in several developing countries as well as the United States. Although their methodologies vary tremendously with respect to items such as point-of-view, relevant
benefits and costs, and choice of discount rate, these case studies generally show that housing investment can generate positive net benefits and competitive rates of return.\textsuperscript{7} 

Based on the empirical findings reported in this paper, it is evident that housing investment can generate benefits that exceed those of other types of investments. What these findings suggest is that housing investment is capable of outperforming other investments in certain key areas that positively influence the overall productivity of investments. Hence, one can only conclude that housing investment could be more productive than other types of investment depending on the country. In the virtual absence of case-studies that examine housing investment from the viewpoint of the efficient allocation of resources, one is forced to rely on scattered evidence from a variety of countries to draw conclusions regarding the relative productivity of housing.\textsuperscript{8}
CHAPTER II
INTRODUCTION

While it is by now well established that housing investment can be justified on grounds other than those which are purely economic, there remains a need to develop a clear economic rationale for housing investment. An economic justification for housing investment is important because the allocation of scarce resources between housing and other investments remains a controversial issue in many developing countries. Housing, as a heavy user of capital, must defend its position in the broad context of economic development. This requires an understanding of those productive aspects of housing which go beyond the simple provision of shelter. The definition of productivity used in this paper takes into account housing investment's direct and indirect contributions to output. Housing investment is directly productive in that it generates income which accrues to investors and those employed in the residential construction sector and housing-related industries. To the extent that improved housing increases the productivity of workers, housing investment contributes more broadly to increased output.

The theoretical framework for investigating the connection between housing and economic development in developing countries has been well established. The work of Abrams (1964) was particularly influential in establishing the direction and tone of subsequent investigations. Noticeably absent from these early works was quantitative data verifying the claims of housing advocates. Grebler (1963) offered the following challenge to economic researchers:
One significant question (has been) left unanswered. Do we know that improved housing conditions can advance the productivity of the labor force and the quality of human resources? It is not enough to have a vague idea on the subject or even the consensus of reasonable people. That would make slight impression on the hard-boiled decision-makers who must balance housing investments against factories, port improvements, roads, agricultural implements, and so forth, just as the past arguments for better housing to improve "welfare" and "social development" have had slight impact. We must learn more about the specifics of housing's influence on human productivity and try to demonstrate, exemplify, assess, and measure it."

The authors of the International Housing Productivity Study were among the few who accepted this challenge during the 1960's. This study represents one of the most comprehensive attempts to measure and verify the relationship between housing and other factors such as productivity, health and school performance.

Included among the more recent studies addressing the role of housing in economic development are those of Grimes (1976), Burns and Grebler (1977), Wegelin (1978), and Strassmann (various years). The distinguishing feature of these works was that they drew upon available quantitative evidence to assess the claims of housing proponents. To varying degrees, these studies found support for the hypothesis that housing investment can contribute positively to economic development.

Unfortunately, many of the works cited by these studies have become dated, and their relevance to current housing policies in the Third World can be questioned. For example, these studies often examined the impact of conventional new construction programs which yielded dramatic improvements in beneficiaries' housing. In light of the current emphasis on incremental improvements to housing in many developing nations (i.e., sites and services and upgrading), it is possible to
debate the relevance of some of these earlier findings. Nevertheless, the works mentioned above still contain meaningful results and continue to provide useful insights into the productive aspects of housing investment.

This paper represents an attempt to summarize, integrate and update some of the key findings of these and other studies. It should be noted that past studies have generally focused on low-income housing in urban areas; as a result, this paper has a similar bias. The reader should also be aware that while this paper emphasizes the macroeconomic effects of housing investment, much of the supporting evidences comes from micro-level studies.

The remainder of this paper consists of three main parts. The first section briefly notes the existence of several types of housing investment while emphasizing how the benefits of housing investment are likely to vary by type of investment. This section also looks at the extent of resource allocation to housing, and examines two guides for allocating capital: social cost-benefit analysis and the incremental capital-output ratio (this latter technique is elaborated on in an annex). The next section discusses the major economic effects of housing investment, which, for the purposes of this paper, have been placed into four broad categories: employment and income effects, price effects, balance of payments effects, and savings effects. The final section offers some guidelines for assessing the impact of housing investment in developing countries. In addition, it summarizes key findings and applies them to the issue of housing investment as a productive activity.
CHAPTER III
PRELIMINARY CONSIDERATIONS

Types of Housing Investment

Housing investment in developing countries can include the construction of conventional new units, the upgrading of existing units, or the provision of sites and services. In addition, housing investment can occur in lower-income units or luxury units. From the perspective of a policymaker, the qualitative differences between these types of housing investment are not trivial since the broader economic gains from housing investment can be expected to vary by type of investment. Hence, policymakers need to assess the relevance of arguments favoring increased housing investment in the context of their current housing policies which may emphasize one type of housing investment over another.

The importance of this point can be illustrated by contrasting the potential employment effects of new construction with those of upgrading. One of the commonly cited benefits of housing investment is its employment-generating capability. Some studies have shown the employment-generating capability of housing investment to be relatively favorable compared to that of alternative investments. These studies, however, usually focus on the employment effects stemming from conventional new construction. Whether similar gains can be achieved through investment in upgrading projects is an empirical question. Upgrading projects in a country may, for example, stress the provision of infrastructure and services over structural improvements to
dwellings. Such projects might call for the construction of access roads, the improvement of drainage, the installation of street lighting and electrical connections, or the building of water and sanitation facilities. These activities may require a mix of labor and other inputs that differs markedly from that of new construction projects. One possibility is that the proportion of required skilled labor is higher in upgrading projects than it is in conventional new construction projects. Other things being equal, projects utilizing relatively larger amounts of unskilled labor will have the greater net impact on aggregate employment because the opportunity cost of unskilled labor is likely to be lower than that of skilled labor. Another possibility is that the materials used in upgrading projects may have a relatively high import content. Whereas imports may make up only a small portion of the total housing investment in a dwelling unit, they may comprise a substantial share of some of the incremental investments mentioned above. Leakages due to imports will reduce the employment effects of housing investment.

Table A presents cost and employment estimates associated with the construction of specific components of a core house in Colombia. Of particular interest are the entries for the plumbing and electrical components since they are possible upgrading candidates in our example. The number of unskilled workers employed per skilled worker for each of these components is only slightly lower than the ratio applicable to the unit as a whole. Excavating and trenching involves by far the greatest use of unskilled labor with fifteen unskilled employed per skilled worker. Importantly, the table also shows that the
# Table A

<table>
<thead>
<tr>
<th>Component</th>
<th>Unskilled Employed per Skilled Worker</th>
<th>Employment</th>
<th>Cost</th>
<th>Ratio of Employment To Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Preparation</td>
<td>1.0</td>
<td>1.5</td>
<td>89</td>
<td>0.017</td>
</tr>
<tr>
<td>Excavation and Trenching</td>
<td>15.0</td>
<td>5.7</td>
<td>40</td>
<td>0.143</td>
</tr>
<tr>
<td>Shell</td>
<td>1.23</td>
<td>66.3</td>
<td>1,455</td>
<td>0.046</td>
</tr>
<tr>
<td>Carpentry</td>
<td>1.00</td>
<td>8.6</td>
<td>458</td>
<td>0.019</td>
</tr>
<tr>
<td>Painting</td>
<td>0.20</td>
<td>7.4</td>
<td>96</td>
<td>0.077</td>
</tr>
<tr>
<td>Plumbing</td>
<td>0.60</td>
<td>12.1</td>
<td>251</td>
<td>0.048</td>
</tr>
<tr>
<td>Electrical</td>
<td>1.00</td>
<td>7.4</td>
<td>140</td>
<td>0.053</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>1.112</strong></td>
<td><strong>109.0</strong></td>
<td><strong>2,530</strong></td>
<td><strong>0.043</strong></td>
</tr>
</tbody>
</table>

Notes:
- a. Figures based on a volume of 100 units
- b. Workdays
- c. U.S. dollars, 1979 prices

Source: Strassmann (1982, Table 5-18, p. 98). The ratio of employment to cost was calculated from the data in this table.
construction of the shell provides over half of the total employment—an amount over four times greater than that of plumbing which absorbs the next largest amount of labor. Despite this, the ratio of employment to cost differs little among the shell, plumbing, and electrical components and the entire structure. (On the other hand, this ratio shows considerable variation among the remaining components.)

These findings, of course, do not imply that an expenditure for a plumbing or electrical upgrading program would generate about as much direct employment as a similar expenditure on a core unit program. Indeed, upgrading is fundamentally different from new construction and requires somewhat different methods to accomplish similar ends; undoubtedly, it is easier to install plumbing and electrical connections while building homes than it is to install them afterwards. Furthermore, because these estimates were made by a single firm in a single city for a specific core house design, generalizations to other situations are nearly impossible. While the implications of these estimates for upgrading are highly questionable, the table nevertheless highlights the importance of linking benefits to specific housing components.

The incremental nature of upgrading is what differentiates it from other types of housing investment. Housing is commonly defined as a "bundle of services" which includes not only shelter, but neighborhood amenities and access to employment and facilities as well. This bundle also includes the services provided by basic infrastructure investments in water supply and sanitation. Thus, it follows that investment in new housing generates benefits that exceed housing's value as shelter.
alone. Investment in upgrading projects, however, produces incremental benefits which add to an existing bundle of services already being consumed by a household. These incremental gains will vary according to the specific housing features that are invested in.

The concept of an incremental investment is relevant to sites and services projects as well, albeit in a different manner. Under a sites and services scheme, a considerable amount of investment occurs after occupancy through a process that includes gradual construction and self-help. The relatively low initial capital outlays associated with sites and services projects have made them a popular policy instrument for housing low-income households in developing nations. It would be incorrect to assume, however, that gradual construction and self-help lower costs. Differences in factors such as building techniques and labor productivity could cause the final total investment in a sites and services project to be higher, lower, or equal to that of a conventional new construction project of comparable scale. This final amount should be used for comparisons between investment in sites and services and other investments. Similarly, the effects resulting from investment in sites and services should be related to this final amount. A key difference between investment in upgrading and investment in sites and services is that the housing scheduled for upgrading represents a historical or sunk cost, which is not relevant to new investment decisions. In a sites and services project, investment becomes a sunk cost as value is added in each phase of construction.

Housing investment can also be distinguished by whether it occurs in low-cost units or high-cost units. High-cost housing generally
requires more materials (including more imports) and more skilled labor than low-cost housing. Therefore, one can expect the effects from a given investment in high-cost housing to differ from the effects of a similar investment in low-cost housing.5

Resource Allocation to Housing

Housing plays an important role in the economy of developing countries. In most developing countries, the share of gross domestic product (GDP) consisting of housing investment is roughly 2 to 5 percent. Such figures probably understate the true extent of housing investment since informal housing construction often is underreported. In addition, this sectoral approach to measuring the magnitude of housing investment fails to capture housing-related investment in infrastructure and public facilities. Housing expenditures may also be viewed from a consumption perspective. Housing expenditures comprise a large share of total household expenditures, and typically are exceeded only by food expenditures.6

The ratio of housing investment to GDP is a measure of additions to the housing stock. The housing stock must be distinguished from the flow of housing services which it produces. The economic effects of housing investment are linked to both the stock and flow concepts. For example, the creation of the housing stock produces an immediate but relatively short-term impact on factors such as employment, prices, and trade balances. However, other effects of housing investment, such as improved health, stem from the flow of housing services, and consequently last for much longer periods of time. Furthermore, the flow of benefits derived from the housing stock is likely to be
particular large when housing quality rises dramatically from low levels.

**Social Benefits and Costs**

In the past, countries have often used the sectoral incremental capital-output ratio (ICOR) to allocate resources among various sectors. It was often argued that the housing sector has a relatively high ICOR and, hence, a relatively longer capital recapture period compared to other sectors. Thus, it follows that developing countries seeking to maximize output would be better off discouraging investment in housing while encouraging investment in sectors with lower ICOR's. The ICOR, however, has fallen into disfavor among economic planners as a criterion for resource allocation. The ICOR suffers from measurement and interpretation problems, especially with respect to housing (see annex for details). Currie (1981) notes that, "For recommendations bearing more directly on allocation of resources, especially specific projects, the criterion of cost-benefit analysis is now generally followed."^7

Social cost-benefit analysis has the potential to overcome some of the shortcomings of the capital-output ratio because it can explicitly take into account the direct and indirect benefits of housing. In addition, because cost-benefit analysis utilizes a present value concept, it is well-suited for the measurement of the long-term benefits which stem from the flow of housing services produced by housing investment. This technique has been applied to low-income housing on a case study basis in several developing countries as well as in the United States.^8 Although their methodologies vary tremendously with
respect to items such as point-of-view, relevant benefits and costs, and choice of discount rate, these case studies generally show that housing investment can generate positive net benefits and competitive rates of return.

A problem inherent in such studies is that they are intended to have a bearing on future resource allocation and are therefore surrounded by a large extent of uncertainty. Clearly, one is on firmer ground when an ex-post evaluation is carried out. The results of such a study, in addition to shedding some light on the quality of investment decisions taken in the past, may provide some guidelines for future allocation of resources to the low-income housing sector and perhaps also indicate roughly what the structure of this housing sector should be like in terms of types of development, location, financial arrangements, etc. It should be stressed that this may well be quite different from country to country, depending on aggregate income levels, overall development aims and policies, resource availability, climatic conditions and other particular characteristics of the country concerned (obviously, there is a world of difference between housing options which are relevant to the tiny but relatively rich island state of Singapore and options available to a huge poor country like India). In other words, the developmental context of any case-study is an important factor and this greatly limits generalization possibilities, perhaps more so than many current studies on the Third World housing problems seem to suggest. (Wegelin, 1978, pp. 5-6)

Several cost-benefit analyses originated from the International Housing Productivity Study conducted by the University of California at Los Angeles, which attempted to systematically measure the impact of improved housing on health, worker productivity, and school performance as well as other factors. This study and a case study of Peninsular Malaysia by Wegelin (1978) are particularly significant in that they consisted of ex-post analyses which compared households before and after they were rehoused and which utilized test and control groups. However, findings from these studies were clouded by methodological and interpretative problems and are far from conclusive. Still, the studies
give some indication of the potential impact of improved housing on some of the factors mentioned above. Some of these findings will be reported in subsequent sections of this paper.
CHAPTER IV
THE EVIDENCE

Employment and Income Effects

In this discussion of employment and income effects, it is particularly important to recognize the stock and flow aspects of housing investment. The physical creation of the housing stock has a relatively short-term impact on employment and income in the residential construction sector and in housing-related industries. On the other hand, long-term effects such as increased productivity gains from improved health and income generation from home-based businesses (to the extent that they exist) are attributable to the flow of housing services produced by housing investment.

Investment effects

Housing construction creates jobs directly through on-site employment and indirectly through backward linkages with industries that produce building materials and related products. Additionally, employment is indirectly generated by housing-induced spending on consumer goods such as home furnishings. Compared to other industries, housing construction is believed to generate a relatively high amount of employment for a given investment. In a study of Mexico that examined direct and backward-linked employment, construction appeared sixth on a list that ranked fifteen industry sectors on the basis of man-years of work generated per million pesos invested. Importantly, construction ranked fifth in generating low-skilled employment.1 The National Planning Office of Colombia, in a study published in 1972, reported that
the employment creation rate of housing construction exceeded that for manufacturing; it estimated that approximately seven additional jobs would be generated for each US $10,000 spent on housing construction.² (It is not clear, however, whether this estimate included indirect employment. Furthermore, in many of the studies examined in this section, it is unclear to what extent permanent jobs are created; it is likely that many jobs exist only during the construction period.)

Some evidence exists that total employment for a given expenditure will vary according to building type. In particular, studies of Mexico, Colombia, and Peru suggest that less expensive and single-family housing generate more employment than more expensive and multi-family, multi-story dwellings.³ Data from Mexico shows that low-cost housing, whether single-family or multi-family, generates somewhat more total employment than high-cost housing. However, when direct employment is analyzed separately from indirect employment (i.e., the labor embodied in building materials) it becomes clear that high-cost housing generates less direct employment, but more indirect employment, than low-cost housing. This is due to the larger amount of materials used in the construction of luxury, multi-story, and multi-family housing.⁴ This pattern of high-cost, high-rise housing generating more indirect employment but less total employment than low-cost, low-rise housing has also emerged in studies of Peru and Brazil.⁵ Studies of single-family dwellings in Colombia, Mexico, and Venezuela lend some support to the hypothesis that investments in low-income housing generate more employment than similar-sized investments in higher-income housing. These studies suggest that an annual housing subsidy of
US$12,000, given to families earning less than US$2,000 per year during 1969-1971, would have generated approximately 5 man-years of work; a similar subsidy given to families with annual incomes exceeding US$7,000 would have generated only about 2 man-years of work.6

As a corollary to its favorable employment effects, housing investment has what is usually considered to be a favorable income multiplier. Estimates of income multipliers for housing investment made for Colombia, Korea, Pakistan, India, and Mexico tend to be around two.7 Thus, in these countries, a given expenditure for new housing will generate a total output roughly double the size of the initial outlay as the result of backward linkages and successive rounds of spending out of factor income. Of course, the income generating benefit of housing investment relative to other investments is limited to the difference between the amount of income generated by a given outlay for housing and the amount of income generated by a similar investment in a competing sector. In Peninsular Malaysia, the income multiplier for housing investment exceeded that of aggregate investment (multipliers of 1.6 and 1.35, respectively).8 In Lima, Peru, the multiplier effects from construction expenditures (which included those on residential construction) on the income of the residents of the pueblos jóvenes ranked in the top third of the sectors analyzed.9 The size of the multiplier for housing investment has been primarily attributed to the relatively high labor intensity and relatively low import content of housing.10

The employment and income effects of housing investment have not gone unnoticed in developing countries. Indeed, at least one country
has used housing to promote overall economic development. In 1971, Colombia adopted a development plan called "the Plan of the Four Strategies". This plan "emphasized increasing exports, increasing agricultural productivity, redistributing income (mainly through a progressive tax system and public expenditures on services) and the promotion of building activities in urban areas to generate employment." Thus, construction was selected as a leading sector in Colombia's development strategy. Housing production was encouraged by the Central Mortgage Bank through the indexation of deposits and mortgages (via the UPAC indexed saving and housing finance system).

The World Bank (1984) summarized the potential impact of housing investment in Colombia:

The allocation of investment can also strongly affect outcomes: higher levels of construction activities could stimulate growth. In particular, given the existing unfulfilled demand for housing, effort in this area could be effective in raising the growth rate without adding to fiscal and monetary problems, provided the indexed saving and housing finance system (UPAC) continues to mobilize additional resources for this purpose... To the extent that construction activities draw primarily on domestically produced resources with excess capacity or high supply elasticities, and incomes thus generated go in good measure (in the first round) to relatively lower income people with low income elasticities for imported goods, major negative impact on balance of payments can be reduced... Even if the first round effect of more construction activities may not be large, the full impact after accounting for all multiplier affects, extending beyond the narrowly defined sector itself and also after spilling into imports, can be substantial as already implied in the foregoing discussion. (p. 11)

Although the construction sector suffered a setback from new restrictions imposed on the UPAC finance system during the mid-1970's, it is anticipated that the Colombian government will renew the role of construction as a leading sector in the mid-1980's as part of a general
strategy for stimulating growth. Once again, housing construction is expected to be generated using the UPAC finance system. Based upon the experience of Colombia, it appears that housing can play a significant role in the development strategy of a developing nation.

Housing may also contribute to a higher utilization of the labor force. The construction industry has often been viewed as a stepping stone for unskilled rural migrants seeking employment in the urban manufacturing and service sectors; it offers employment opportunities when other jobs in the urban sector are unavailable. The building industry is also considered to be a source of off-season employment for agricultural workers. Additionally, because residential construction is mildly countercyclical even in developing countries, investment in this sector may lead to greater use of labor over the business cycle.

Despite the volatility of the construction industry, many skilled workers in Manila have displayed a commitment to it. To cope with the instability of employment, they have adopted a circular migration pattern where they work in the Greater Manila Area for a few weeks at a time and then return to their home towns until they hear about more work.

Housing investment may also lead to skill development among the labor force. Unskilled laborers can develop simple construction skills in a relatively short time through on-the-job training. These laborers can then acquire over a longer period of time more specialized skills under the guidance of more skilled workers. For example, in Peninsular Malaysia it was estimated that it takes about two years of on-the-job training to turn an unskilled construction worker into a semi-skilled
The opportunity for such training, however, may be constrained by ethnic barriers or by the practices of independent foremen who may show favoritism towards relatives and friends. It is further constrained by the instability of the industry. Workers who do not have a chance to develop skills tend to leave the industry after a short time.

Housing construction, of course, is not the only industry where informal skill development opportunities exist. Wegelin (1978) makes the following observation:

It should be noted that in the case of housing investment this informal training is almost completely limited to the construction phase: during the operating phase only management, repair and maintenance of housing schemes may offer some learning-by-doing possibilities. In this respect housing contrasts unfavorably to the construction of industrial plants, where on-the-job training is important during both the construction and the operating phases (even though in the case of industrial schemes operating skills may be more difficult to acquire and would often require formal education). (p. 80)

In addition, construction skills are not very transferable to other industries.

It has often been assumed that the low-income areas of countries, particularly in rapidly growing cities, contain vast pools of unemployed and underemployed labor which can be channeled into the production of housing, either for the workers themselves or for others. Recent studies have challenged this assumption, noting that low-income people could not survive for long in cities unless they engaged in some kind of work. The World Bank's experience with self-help housing appears to support this notion:
What is being observed is that households are taking on some of the contractual and managerial responsibilities, such as design and organization of materials, but are contracting out much of the labor. The economies to be realized from the division of labor and from specialization apply as well in low-income communities as elsewhere. A householder whose main occupation is street vending is much more likely to increase the time spent selling than to use this time to build his shelter. His opportunity cost as a mason or plumber is obviously higher than it is as a street vendor. The pattern appears to be fairly typical; householders are often engaging others in the community who have the appropriate skills to provide the labor needed for construction of shelter. The aggregate employment effects are the same and efficiency is greater. (World Bank, 1980, pp. 20-21)

In a study of twenty-six upgrading and site and services projects, the World Bank noted that between forty and eighty percent of the families (in sites and services projects) hired small contractors to perform the major building tasks.23 A recent survey of self-help housing in Tanzania found that owners seldom built all or most of their homes. For example, in one project, only three out of twenty-two houses were built all or mostly by their owners.24

Hence, it appears that in many instances, the opportunity cost of low-income households already residing in urban areas is higher than previously thought. What is relevant from the standpoint of aggregate employment and income generation is whether those who ultimately perform the construction work have a low or high opportunity cost. Since unemployed workers in urban areas are most likely to be recent migrants, the degree to which housing can utilize this labor source will largely determine the extent to which housing investment will increase aggregate employment and income. As was noted earlier, the construction industry does appear to make effective use of this source of labor.
Opportunity costs are also attached to inputs other than labor. Housing competes with other sectors for both capital and land. The cost of these inputs with respect to housing should always reflect the value of the activities foregone in other sectors. Failure to recognize these costs will result in a misallocation of resources.

**Flow-of-services effects**

Housing investment may also improve the productivity of labor through better health. It is this aspect of housing that places it in the category of social overhead capital, along with sectors such as health and education. Social overhead capital is distinguished from production capital by its relatively high proportion of externalities. Because the returns from investments in social overhead capital are not entirely realized by the investor, the private rate-of-return on such investments understates the benefits accruing to society as a whole.25 Improved housing is believed to positively influence both the physiological and psychological well-being of individuals. By reducing the incidence of illness and accidents (thereby reducing worker absenteeism) and improving the motivation of workers, improved housing is expected to increase productivity.26

The literature on the housing-health connection, to say the least, is vast.27 Much of the research on this topic has focused on developed nations where the results have been mixed. Many of these studies discovered a correlation between poor housing and poor health, but failed to establish a causal relationship between these factors. Needless to say, studies examining the relationship between poor housing and social disorders often suffered from this same problem. When
adequate statistical procedures were adopted to control for this type of problem, the results were often less dramatic than anticipated and still somewhat ambiguous. Developing countries provide a useful setting to explore the housing-health relationship. Indeed, our understanding of this relationship has been enhanced by the opportunity we have had to observe the impact of dramatic changes in housing conditions as opposed to the impact of the relatively marginal housing improvements occurring in more developed nations. The AID Office of Housing and Urban Programs recently completed a report summarizing studies of the relationship between housing and health that were applicable to low-income shelter in developing countries. Exhibit A presents some excerpts from the highlights of the report. This report is significant in that it links specific health disorders to physical planning and design criteria and notes how strongly these various disorders and criteria are associated. The report goes on to say:

The provision of water supply, sanitation, roads and storm drainage, and electricity and street lighting comprise on average about 50% of total low-income housing project costs ... However high that percentage might be or appear to be, there is a great opportunity for significantly affecting health conditions by three of these services (water, sanitation, drainage) and thus they can be justified in cost-effective terms. (AID, 1981, p. 34)

The report also notes that because planners have less control over site planning and design criteria in upgrading programs than they do in sites and services programs, health effects may be less pronounced. However, the study adds: "Since squatter upgrading projects may receive a high standard of service infrastructure, their impact on health could be equal to that of sites and services projects." (p. 36)
1. It is almost impossible to attribute a specific health condition to housing alone.

2. Some specialists contend that enough is known about the housing-health relationship to curtail new research in that area.

3. Some paradoxes are found in the evidence on the housing-health association: e.g., new housing can actually be associated to a decline in health conditions.

4. Examination of the links between specific planning and design criteria and the diseases and pathological conditions with which they are most closely associated, lead to a few preliminary conclusions.
   a. Health authorities consider that no single factor approaches the significance of a safe, adequate water supply in reducing disease.
   b. However, the reduction of disease is primarily associated with access to adequate quantities of water, with less importance attached to its purity.
   c. Most evidence does not isolate the effects of sanitary excreta removal from other water and sanitation measures.
   d. The only clear linkages found between standard (vs. substandard) housing are psychological well-being and the reduction of accidents.
   e. Although crowding is associated with disease, there is relatively little that housing planners can do to reduce crowding.
   f. Contamination of foodstuffs and of water receptacles has been implicated in cases where good water quality did not result in reduced rates of gastroenteritis.
   g. Nutritional deficiencies are often associated with urbanization and moving from rural to urban housing as migrants are cut off from customary food sources.

5. The clearest housing-health associations -- except accidents -- are categories of diarrheal and respiratory and other infectious diseases.

6. Most of the interventions that have a greater correlation with health improvements are planning -- not design features.

Notes: (a) The term "planning" as used here includes the provision of basic infrastructure and services.

Source: AID, Office of Housing and Urban Programs (1981, p.1)
With these findings in mind, it is worth examining some results from the International Housing Productivity Study mentioned earlier. Based on evidence gathered from rehousing schemes in Hambaek, Korea; Zacapu, Mexico; Pine Ridge, South Dakota, U.S.; and Limuru, Kenya, the authors of this study concluded that, for these sites, improved housing had a positive effect on health when health is measured by the rate of outpatient visits and inpatient days to a free medical facility. In Hambaek, for example, medical costs were reduced an average of US$13.94 (in 1963 prices) per family during the first year following rehousing. However, of the three sites (Hambaek, Zacapu, Pine Ridge) where attempts were made to measure the effects of rehousing on productivity, only one, Hambaek, showed benefits in the second year after rehousing. Significantly, improved housing did not reduce absenteeism from work due to illness at any of the test sites (Zacapu; Ciudad Guayana, Venezuela; Limuru) where the hypothesis that absenteeism would decrease was tested. The authors noted that absenteeism from work may actually be due to factors other than illness and suggested that the rate of medical facility utilization might be a better proxy for health.

Wegelin has attempted to measure the impact of squatter rehousing on productivity for four locations in Peninsular Malaysia. In three of the four cases, increases in overtime and bonus payments were associated with rehousing; in the remaining case no change was observed. Wegelin, however, acknowledges that the higher income may have been necessary to support higher housing payments. Interestingly, this study, like the International Housing Productivity Study, did not identify any significant changes in absenteeism from work. In addition, the impact
of rehousing on medical facility utilization in five cases was mixed. With respect to outpatient visits, the study found a decrease in two cases, no change in two other cases, and, somewhat surprisingly, an increase in the remaining case. Data for two of these cases showed days of inpatient treatment decreasing after rehousing, but in one case the result was not significant. 31

It is extremely difficult to measure the relationship between improved housing and productivity because one must control for many possible outside influences. Matters are complicated by the fact that housing is indirectly linked to productivity via health. 32 Past studies involving the rehousing of households seem to indicate that improved housing may positively influence health. Furthermore, it appears that improved health is most likely to result from the provision of specific features of housing such as water supply, sanitation, and drainage. There is, however, no guarantee that improved health resulting from housing improvements will be translated into higher productivity.

Increased housing investment may also allow some households to generate income by operating small home-based businesses and by renting rooms; 33 whether this represents an increment to aggregate income depends on the supply of such services in the absence of increased investment. Home-based businesses are probably more common among poor households than other households. One study revealed that about twenty percent of the households residing in the barrios of Bogota had some form of home-based business, whereas only five to ten percent of the households city-wide were engaged in similar activity. 34 Rental income in some instances can be substantial. In addition to building housing
for themselves, settlers in Malawi's Traditional Housing Areas (sites and services projects with unusually large house plots) often build rental accommodations for at least one or two tenant households. The rents received by these plot holders have often been large enough to allow them to recapture the cost of building both the rental rooms and their own accommodations in just over five years. This, of course, is an extreme case—but nevertheless one made possible, in part, by government policy which provided for large plots.

In general, the level of economic activity originating in home-based businesses will be affected by policy decisions and existing legal arrangements. Security of tenure, availability of space, and electrical and water connections are major contributors to the development of most home-based enterprises. If upgrading and sites and services projects are accompanied by tightened restrictions on informal sector economic activities, this type of income generation will decrease in importance.

Based on evidence from Lima, Peru, Strassmann (1984) concluded that earlier installation of infrastructure may lead to faster improvements in housing conditions. He suggests that owner occupants with access to water and sewerage systems make improvements to their housing at a rate roughly double that of owner occupants without access to such infrastructure. Furthermore, he notes that the incentive provided by the opportunity to establish a home-based business may also contribute to these improvements. This is an example of how the ability to coordinate housing investment with other investments at the project level could raise the returns to investment above the level that could be achieved if the investments were not coordinated. One can easily
envision how this argument might apply to the coordination of housing investment with other investments such as those in other utilities, public facilities, transportation, and commercial and industrial sites. While this concept is intuitively appealing, it should be kept in mind that synergistic outcomes are extremely difficult to measure and interpret.

**Price Effects**

Housing investment in developing countries has often been labeled inflationary. In this section, only a few of the more salient theoretical issues and empirical results regarding the relationship between housing investment and the domestic price level are presented.

The impact of increased demand for housing is reflected in the price of housing itself, the price of housing inputs, and the price of other goods and services. The extent to which increased investment will influence the price level will depend on the supply elasticities of inputs and on whether the increased demand is domestically financed or externally financed. The importance of this latter point is that if housing is domestically financed, and prices in other sectors are flexible, then price increases resulting from increased demand for housing will probably be offset to some degree by falling prices in those sectors where demand shrinks. On the other hand, if the housing is externally financed, this price offset need not occur.

Increased housing investment in the short run may cause bottlenecks in the supply of building materials and construction labor. If, in the case of building materials, suppliers are operating at or near full capacity and new firms cannot readily enter the market, prices of
materials are likely to rise. As noted earlier, if the housing is
domestically financed, these price increases may be offset to some
degree; however, if prices in other sectors are downward inflexible,
this need not happen. In general, under the conditions of low supply
elasticities and downward inflexibility in prices and wages—conditions
that may well exist in developing countries — an increase in housing
investment will put upward pressure on the general price level.\textsuperscript{40} On
the other hand, if a country is in the downswing of a business cycle and
there is slack in its economy, inflationary pressures may be minimal.

Inflation may also be the result of labor shortages which are more
likely to involve skilled labor than unskilled labor. Shortages of
skilled labor are hard to overcome in the short run because it takes
time to train people in skilled, technical, and professional areas.\textsuperscript{41}
It also takes time to develop technologies which could lead to factor
substitution (though low skilled labor is more likely to be substituted
for). The domestic price level, however, is probably not affected much
by such shortages because skilled labor usually represents only a small
share of total dwelling cost. For example, in Peninsular Malaysia,
professional and semi-professional labor accounted for roughly 1.5
percent of residential construction cost while other skilled labor
accounted for about 14 percent.\textsuperscript{42}

To date, the most ambitious attempt to quantify the impact of large
scale housing programs on price levels occurred as a part of the
International Housing Productivity Study. For Mexico it was estimated
that the general price level would rise only about 0.2 percent as the
result of a housing program encompassing 120,000 new low-cost dwellings
averaging US$2,400 each. In Korea, a program involving 72,000 units at an average cost of US$1,500 per unit was expected to cause a general price inflation of just over 1.5 percent. (The prices mentioned here appear to be for housing programs initiated during the 1960's.) Based on these results, housing investment in low-cost housing appears to have only a moderate short-run impact on prices.43

In Egypt, inflationary pressures appear to have been generated by increased demand for real estate resulting in part from an inflow of income from workers employed abroad. A lack of "safe" alternative investment opportunities is believed to be responsible for the channeling of repatriations into land and buildings. Thus, both higher incomes and speculation have fueled the demand for real estate in Egypt. Land values in particular seem to have been affected by repatriations, suggesting that supply bottlenecks are relatively unimportant.44

It should be emphasized that the arguments presented in this section are for the short run only. In the long run, it is unlikely that price increases in residential building inputs could be sustained since high profits would attract new suppliers.

Effects on the Balance of Payments

Increased housing investment can affect the balance of payments in several ways. Because a portion of housing investment is usually comprised of imports, housing investment can contribute to trade deficits; in particular, luxury housing is likely to have a greater import content than low-income housing. In addition, housing investment, when domestically financed, may divert resources away from
export producing sectors. Housing generally is not exportable and, hence, does not earn foreign exchange. On the other hand, to the extent that housing investment increases the productivity of labor in export industries, it may indirectly contribute to foreign exchange earnings.

In the case where other sectors use some of the same inputs that housing uses, increased housing investment may absorb a greater share of the domestic production of these inputs and thereby cause an increase in the imports of inputs in these other sectors. It should also be noted that housing-induced inflation under inflexible exchange rates will decrease demand for a country’s exports and increase its demand for imports.

The import content of housing is made up of directly and indirectly imported materials. Indirectly imported materials are those embodied in domestically produced inputs (e.g., the imported cement that goes into domestically-produced concrete blocks). The accumulated (direct and indirect) import content of construction for developing countries with an annual per capita GNP of US$100 (1969? prices) is believed to be about 32 percent. Lower figures have been found for Mexico and Korea (roughly 7 and 10 percent, respectively), but these estimates may not have taken indirect imports into account. Still it should be noted that these estimates were made for total construction and that the figures for housing are likely to be lower. Relative to other sectors, the estimate for Mexico was relatively high while the estimate for Korea was near the median. In Peninsular Malaysia, during 1969-1972, the accumulated import content for residential construction was about 22
percent (direct imports amounted to 12.2 percent) whereas the import content of aggregate domestic expenditures was around 46 percent.\textsuperscript{50}

Attempts have been made to estimate the overall import content of housing in a manner that takes into account the accumulated import content of housing inputs, the diversion of inputs from exporting sectors, and the importing of inputs in other sectors [e.g. if other sectors use some of the same inputs that housing uses, and they face a shortage of these inputs (that are normally available domestically)]. When the impact of all of these effects were considered for Peninsular Malaysia, the total "tradeables" content of housing was estimated at 33 to 39 percent.\textsuperscript{51} Similar estimates for Kenya range from 29 to 40 percent for a variety of housing types.\textsuperscript{52} It should be noted that estimates such as these are extremely difficult to carry out. Although they indicate that housing may have a net import content which is higher than the amount indicated by simpler measures, comparable data for other sectors must be assembled before valid comparisons between sectors can be made.

In Africa, basic construction materials such as wood products, cement, quarry materials, and cement products, were observed to have import contents ranging from 14 to 35 percent. (It is not clear whether these estimates included indirect imports.) However, certain other building materials including electrical fixtures and iron and steel products, for the most part, had to be imported.\textsuperscript{53}

Although it does not do so directly, housing investment may indirectly contribute to foreign exchange earnings by increasing the productivity of labor in export industries. The International Housing
Productivity Study tried to estimate the impact of large-scale low-cost housing programs on trade balances under the assumption that housing investment would substantially increase productivity in exporting sectors. The implementation of this assumption lowered the estimate of the ratio of imports to construction investment from about 0.07 to 0.02 for Mexico and actually led to an improvement in the balance of payments in Korea. These examples, while based on strong assumptions, illustrate the potential offsetting effect of improved housing resulting from increased housing investment.\textsuperscript{54}

The basic picture that emerges from all of these findings is that the import content of housing will vary across locations, perhaps dramatically, depending on the resource endowment, technological capabilities, legal environment (with respect to building codes), and tastes of countries. The idea that housing has a relatively low import content is supported to some degree by the empirical evidence. Nevertheless, estimates of "tradeables" content in Kenya and Peninsular Malaysia demonstrate the importance of examining the impact of housing investment on imports in other sectors. These estimates suggest that a minimal balance of payment effect stemming from increased housing investment cannot be taken for granted.\textsuperscript{55} On the other hand, it is important to recognize that countries which import relatively large amounts of construction materials may eventually reach a threshold at which they can support their own building material industries.

**Savings Effects**

Large-scale housing investment programs cannot be accomplished without some form of long-term financing. Although financial
institutions exist in all developing countries, they tend to be more effective at mobilizing the savings of middle- and upper-income households than those of low-income households. Nevertheless, these institutions offer a means of saving which is a preferable alternative to the holding of unproductive assets such as gold, cash, and jewelry. Funds generated by the conversion of unproductive assets into financial assets can subsequently be made available to investors.

The desire and opportunity to buy or upgrade a house can provide a powerful incentive to save. Regardless of income, appropriate financing arrangements could increase effective demand for housing and stimulate ex-ante saving. To the extent that this represents a net addition to aggregate domestic financial savings, national investment rises and inflationary pressures will be reduced. Unfortunately, it is not known how much of a net increase in savings could be generated this way. Although it is well-known that mandatory housing finance systems and contractual savings schemes can increase the amount of funds available for housing investment, the extent to which the savings generated under these programs make a net increment to overall savings remains unknown. However, even if there is no net increase in savings, these mechanisms can change the consumption pattern of households such that households will spend more of their income on housing, a durable good, and less on other consumption goods.

Several additional points should be made about housing and savings. First, the issue of resource mobilization (which is not dependent on the existence of a housing finance system per se) should be distinguished from the issue of whether the possibility of owning a home
can stimulate ex-ante savings among households. Secondly, Renaud (1984) observes that "when considering the savings propensity of very low-income groups at any given time, one should differentiate between the ability of a minority of poor households to mobilize savings for housing and the fact that, as a group, households in low-income deciles are not able to save much even in the form of non-financial assets." A final, more general, point is that to the extent that housing investment contributes to overall economic growth, aggregate savings are likely to rise in absolute terms, although not necessarily in proportion with their historic share of GDP.
This chapter is composed of three sections which incorporate evidence from the preceding chapters. The first section establishes some guidelines that can help policymakers think through the effects of housing investment in different countries. The second section highlights some of the main conclusions that can be drawn from the available evidence, and the final section applies these findings to the issue of housing investment as a productive activity.

**Evaluating the Impact of Housing Investment**

Any attempt to systematically place the economic effects of housing into a coherent policy framework is likely to meet with failure. This was evident to Drakakis-Smith, who stated:

> If pragmatic policy implications can be drawn from the recent advances in conceptual theory, it is tempting to ask whether it is possible to devise a framework for housing investment which identifies appropriate policies in specific circumstances. However, the evidence suggests that the mix of circumstances and motives is far too complex for such ideal solutions to be possible. Similar policies are pursued for a variety of reasons, while comparable political, social and economic conditions can give rise to a wide range of policy motivation.

As an alternative to such a framework, this section will make a modest attempt at providing a way to think about the economic effects of housing investment. This is done with the full understanding that individual situations vary enormously and that not all generalizations will apply to all countries.
As a starting point, the economic effects of housing investment can be classified into four broad categories: employment and income effects; price effects; savings effects; and, balance of payments (trade balance) effects. At this level, these broad effects can most easily be linked to macro-economic goals and objectives which may, for example, include reducing trade deficits, generating employment, slowing inflation, or increasing savings. In addition, long-term effects on factors such as health, productivity and utilization of the work force may be singled out. These, too, can be linked to specific goals and objectives, but they are more commonly viewed as influences on the four broader categories. The importance of all of these effects will vary depending upon the specific goals and objectives of a country and the magnitude of the effects. There is no escaping the fact that all of the effects are interrelated. Indeed, because these effects are so strongly intertwined, the distinctions made here may seem arbitrary to some. However artificial it may appear, the structure presented here is based on the various approaches taken by those who have analyzed the economic effects of housing investment.

Several factors which are repeatedly found to influence the size of the economic effects of housing investment can be identified in the literature. Exhibit B lists each factor along with a brief description of the characteristic of that factor which tends to produce a larger positive economic effect. Two factors, the scale of housing investment and the source of housing financing, have ambiguous effects. Obviously, a large housing investment program can have a large positive or negative effect on an economy depending on the size of the net benefits.
EXHIBIT B

FACTORS INFLUENCING THE SIZE OF THE ECONOMIC EFFECTS OF HOUSING INVESTMENT

<table>
<thead>
<tr>
<th>Factor</th>
<th>A larger positive economic impact usually occurs when:</th>
</tr>
</thead>
<tbody>
<tr>
<td>the type of housing investment</td>
<td>low-cost housing is constructed</td>
</tr>
<tr>
<td>the scale of housing investment</td>
<td>ambiguous effect*</td>
</tr>
<tr>
<td>the import content of housing investment</td>
<td>the import content of building materials is low</td>
</tr>
<tr>
<td>the opportunity cost of housing inputs</td>
<td>the value of housing inputs in alternative uses is low</td>
</tr>
<tr>
<td>the source of housing financing</td>
<td>ambiguous effect*</td>
</tr>
<tr>
<td>the time horizon of housing investment</td>
<td>larger long-term benefits are produced by the investment</td>
</tr>
</tbody>
</table>

* Note: See text for explanation.*
For example, a large investment program could generate substantial employment and income, but could also drive up prices as the result of bottlenecks in the supply of building materials and construction labor. The source of financing also has an ambiguous effect since the diversion of resources from other sectors (that can occur when housing is domestically financed) has a country-specific impact that is determined in part by the returns on alternative investments. Thus, in both cases it is hard to make generalizations about the type of effect that can be attributed to these factors.

Because they operate through different channels, some of these factors have a larger impact on some of the effects than on others. For example, the scale of housing investment strongly influences capital requirements and the potential for supply bottlenecks and economies of scale. Thus, it tends to have a strong impact on prices and balance of payments. On the other hand, the type of investment (e.g., new construction, sites and services, upgrading, low-cost, luxury, etc.) determines to a large degree what kind of inputs and construction procedures are involved and as a result, has a profound impact on all of the effects.

The import content of housing—which represents leakages from the economy—might be anticipated to have a strong impact on employment and income, as well as on trade balances. Meanwhile, the source of financing dictates whether investment in other sectors is displaced. This diversion of resources could have a significant impact on all effects. And finally, the opportunity cost of housing inputs and the span of time over which housing investment generates benefits are
important for assessing the stream of benefits and costs associated with all of the effects.

Therefore, to evaluate the impact of housing investment, policymakers should try to determine how each of the factors listed above is likely to influence each effect they are concerned with. They could then isolate those effects that are likely to be important and those that are not. Although it is unrealistic to think that the impacts of these various factors can be quantified in all (or even most) cases, this exercise forces one to consider at least the direction of the impacts. Information obtained in this manner can help create a basis for the evaluation of housing investments. This procedure is more sound than the open acceptance of gross generalizations based on the findings of studies such as those referred to in this paper (although the authors of these studies invariably warn against this).

Major Conclusions

Exhibit C displays the broad conclusions that can be drawn from the literature reviewed. This section briefly elaborates on some of these key points.2

The allocation of resources between housing and other investments remains a controversial issue in many developing countries. Since measurement and interpretation problems cast doubt on the usefulness of the incremental capital-output ratio as a guide for allocating capital, the more promising tool is social cost-benefit analysis. It has the potential to overcome some of the shortcomings of the incremental capital-output ratio because it can explicitly take into
EXHIBIT C

MAJOR CONCLUSIONS

- The broader economic gains of housing investment can be expected to vary by type of housing investment. For example, low-cost housing appears to generate more employment than high-cost housing because of its low import content and low skill requirements.

- The available evidence suggests that the employment and income generating capability of housing investment is comparable to other sectors and, in some instances, is relatively favorable compared to other sectors.

- Housing investment can lead to a higher utilization of the labor force and may contribute to the skill development of workers.

- Available evidence neither proves nor disproves the hypothesis that improved housing leads to increased productivity.

- In the short run, increased demand for residential inputs can cause inflation in the price of inputs; however, it is not likely that these higher prices can be sustained in the long run.

- The net import content of housing is likely to vary across locations depending on the resource endowment, technological capabilities, legal environment (with respect to building codes), and tastes of countries; while a minimal balance of payments effect is quite possible, it cannot be taken for granted.

- We do not know the extent to which appropriate financing arrangements could increase effective demand for housing and stimulate ex-ante saving.

- Measurement and interpretation problems make the incremental capital-output ratio an inappropriate tool for allocating capital between housing and other types of investment.
account the direct and indirect benefits of housing, as well as the long-term benefits derived from the flow of housing services.

Increased housing investment can influence employment and income in several ways. Through multiplier linkages, housing investment generates increases in employment and income in sectors producing housing-related inputs. Several studies (Mexico, Colombia) suggest that residential construction can generate a relatively high amount of employment for a given investment compared to other sectors. In addition, other studies (Peninsular Malaysia, Peru) indicate that the income multiplier for housing investment may exceed that of other sectors. Increased housing investment can also lead to a higher utilization of the labor force and may contribute to skill development among workers. While it is true that informal job training possibilities within the housing sector are largely limited to the construction phase (whereas in other sectors informal job training may continue in the operating phase), the residential construction sector may be a more effective user of low-skilled labor.

The flow of services resulting from housing investment can lead to increased productivity, but the available evidence neither conclusively proves nor disproves this hypothesis. On the other hand, past studies involving the rehousing of households seem to indicate that improved housing may positively influence health.

Increased housing investment will have some impact on trade balances. While in some cases the net import content of housing may be quite low relative to other sectors, a minimal balance of payments effect cannot be taken for granted. For example, in Peninsular Malaysia
the accumulated important content for residential construction was half that of aggregate domestic expenditures; however, in Mexico an estimate of the import content of construction investment was high compared to other sectors. (This estimate, however, was made for total construction; the figure for housing is likely to be lower since housing probably requires fewer imports.)

Housing investment may affect the domestic price level. In the short run, increased housing investment may cause bottlenecks in the supply of building materials and construction labor which could put upward pressure on the general price level. However, in the long run it is unlikely that the price increases in residential building inputs could be sustained since high profits would attract new suppliers.

Another important point is that, while the desire and opportunity to buy or upgrade a house can provide a powerful incentive to save, it is not known to what degree appropriate financing arrangements could increase effective demand for housing and thereby stimulate ex-ante saving.

Finally, housing investment can take many forms in developing countries ranging from the upgrading of existing units to the construction of luxury high-rise units. The type of housing investment determines to a large degree what kind of inputs and construction procedures are involved and therefore strongly influences all of the effects of housing investment mentioned above.

Is Housing Productive?

It is often asked whether housing investment is a productive activity. As a matter of definition, the answer must be yes, since
housing investment produces an output in the form of housing services which is measured as rent. The more relevant question, of course, is whether housing investment is productive compared to other types of investment when all direct and indirect benefits and costs are taken into account. This question is not an easy one to answer because it is impossible to come up with a response that would not be a gross generalization. The only meaningful answer to this question, in light of the empirical evidence, is that in some cases housing investment may be more productive than other kinds of investments and in other cases it may not.

Based on the empirical findings reported in this paper, it is evident that housing investment can generate benefits that exceed those of other types of investments. For example, in Colombia, the employment creation rate of housing construction exceeded that for manufacturing, while in Peninsular Malaysia, the income multiplier for housing investment was higher than that of aggregate investment. In the latter location, the accumulated import content of residential construction was relatively low compared to that of aggregate domestic expenditures.3

What these and other findings suggest is that housing investment is capable of outperforming other investments in certain key areas that positively influence the overall productivity of investments. Hence, one can only conclude that housing investment could be more productive than other types of investment depending on the country. There is simply not enough information to generalize any further than this, largely because there are not enough in-depth case studies available that examine housing investment from the viewpoint of the efficient
allocation of resources. In the virtual absence of such studies, one is forced to rely on scattered evidence from a variety of countries to draw conclusions regarding the relative productivity of housing.

Despite evidence to the contrary, it is sometimes argued that housing investment is a consumptive rather than a productive activity. The main issue is whether housing is an intermediate good that contributes to output by increasing the productivity of the labor force or a final output that is consumed solely by individuals. Although housing does not fit neatly into either category, it is often labeled a consumption good based on the statistical convention that housing (more correctly, housing services) is purchased by individuals. This classification problem exists, however, for all purchases of consumer goods and services.

Expenditures by persons for food, clothing, transportation, medical care, and even recreation are in part necessary to the performance of their jobs as producers in the economy. Therefore, in a sense, at least some of these expenditures are really for intermediate product, but it is impossible to draw a line of separation ... We thus see that final product is not a definite quantity that lies plainly revealed, simply awaiting measurement by the technicians. On the contrary, it is whatever economists see it to be, and not all see it as the same thing. (Shapiro, 1970, p. 92)

Klaassen and Burns (1963) offer some concrete examples and warn against the strict classification of expenditures:

The literature of economics customarily distinguishes between two sorts of capital: that used for production and that for consumption. There is little difficulty in mentioning clear-cut examples of each kind of capital but an exhaustive classification of all economic goods into either of the two groups is indeed a challenge. A refrigerator, no doubt, can be classified as a consumption good and a steel mill or dam represents productive capital. The operating costs for a private automobile represent consumption expenditures by the owner, while the car itself contributes to the owner's productivity by shortening his travel time to and from work, shopping, and recreation. The automobile is but one of the
numerous economic goods that may be placed in the consumption category only by the narrowest definition of the term. In the more important macro-economic sense, the good makes a positive contribution to production and hence to income. When one considers the myriads of goods which are normally attributed to consumption, but which in fact increase real incomes, the distinction between consumption and production capital becomes little more than a semantic will-o’-the wisp...Furthermore, a precise distinction between two kinds of capital is not only difficult but often unnecessary and perhaps even dangerous. To frame public policy on such a strict dichotomization may well overlook the possibilities for income generation implicit in a good classified in the "consumption" inventory.6

Clearly, housing investment lies somewhere between those activities which are "purely" productive and those which are "purely" consumptive. Debates centered on semantics or statistical conventions lead us nowhere, and failure to recognize the productive aspects of housing will lead to a misallocation of resources. More is to be gained by acknowledging the position articulated by Burns (1963): "Housing is justified, along with alternative investments, for its contribution to economic development."7
ANNEX

The Incremental Capital-Output Ratio and Its Limitations

Considerable controversy surrounds the use of the sectoral incremental capital-output ratio (ICOR) as a criterion for resource allocation. The ICOR is a single factor measure of productivity; that is, it relates an incremental output in a sector to a single factor of production—in this case capital. It is often argued that the housing sector has a relatively high ICOR and, hence, a relatively longer capital recapture period compared to other sectors. Thus, it follows that developing countries seeking to maximize output would be better off discouraging investment in housing while encouraging investment in sectors with lower ICOR's.

An important distinction must be make between the ICOR of the construction industry and the ICOR of the "ownership of dwellings" or "housing services" industry. Estimates of ICOR's for construction are usually much lower than those for housing services and in some cases are lower than aggregate ICOR's. This is related to the fact that labor's contribution to the final output of the housing services industry is relatively small compared to its contribution to the final output of the construction industry. Whereas the output of the construction industry is measured by the value added during the creation of the structure, the output of the housing services industry is usually measured by the rent or imputed rent of a dwelling.

Most of the criticism leveled at the ICOR for housing services pertains to the measurement of output. It is often argued that housing provides more than just shelter, access, and neighborhood amenities and
that rent inadequately measures these benefits. For example, housing investment will contribute to the growth of an economy through employment and income multiplier effects and may also contribute to improved health and education, and hence a more productive labor force. In addition, housing may produce a host of intangible benefits such as a sense of community and pride. To the extent that rent fails to capture these aforementioned direct and indirect benefits, housing output will be understated and the ICOR for housing investment will be biased upwards.

It is also argued that the ICOR's of other sectors such as manufacturing may appear to be lower than they actually are because complementary investments in industrial infrastructure (e.g., roads, highways, utilities) and social overhead (e.g., health, education, housing) sectors, which contribute to the productivity of investments in other sectors, are excluded from the numerator. However, this same type of argument applies to infrastructure supporting housing. Expenditures on public transit, public facilities, utilities, and other housing-related items should be taken into account as well. Still, it is quite possible that infrastructure expenditures are reflected in ICOR's for housing to a greater degree than they are in ICOR's for other sectors. It is not uncommon for housing developers to provide a sizeable amount of housing-related infrastructure. When this occurs, total housing investment usually reflects expenditures on infrastructure. However, it is less clear what share of industrial investment, if any, goes towards infrastructure.
Data problems in developing countries limit the usefulness of ICOR's computed for the sector as a whole. In many countries, residential capital is measured using cost and design information contained in building permits. This technique has several serious flaws. For example, cost information on permits seldom corresponds to actual costs, and coverage is often limited to formal sector housing. In addition, there is a lag between the time a permit is issued and the time a unit is constructed; in many instances permits remain unused. In an effort to compensate for these shortcomings, some countries have developed adjustment factors based on follow-up studies.\(^9\)

An alternative method of estimating residential capital is the "commodity flow" method. This technique relates total residential construction value to the cost of certain residential materials (or, alternatively, the cost of labor). Thus, by estimating the value of key materials such as steel, cement, bricks, tiles, and sanitation fixtures, which go into residential construction, one can derive an estimate of the total value of residential construction. The reliability of this approach depends on the ability to account for uses of materials in activities other than construction as well as the ability to adjust for the lag between the time materials are produced or imported and the time construction takes place. The commodity flow technique is of little use in countries where housing contains very few industrially produced materials, or where the data needed to calculate reliable mark-up factors is unavailable.\(^{10}\)

Another measurement problem concerns the valuation of housing services. Unless corrected for, rent controls and government subsidies
may suppress rent levels. Perhaps more importantly, it is not unusual for imputed rents to be calculated as some fraction of the value of owner-occupied dwellings. This fraction, of course, is essentially an "assumed" capital-output ratio. In these cases, the value of housing services is not measured independently from the value of capital, and the ICOR's take on the characteristics of a self-fulfilling prophecy.

Even if the measurement problems discussed above are resolved, the question remains as to whether the ICOR is an appropriate tool for economic planning. One complaint is that the magnitude of ICOR's varies considerably among countries and over time. Furthermore, Leibenstein (1966) has demonstrated that, in the short run, ICOR's tend to be inversely related to growth rates. His analysis suggests that causality runs from growth rates to ICOR's instead of the opposite. He argues that "it is the consequences of economic behavior and, to some extent, the consequences of other aspects of the planning machinery, which determine the incremental capital-output ratio, rather than the other way around."

Finally, perhaps the most obvious weakness of the ICOR is that it ignores the contribution of other non-capital inputs to output. Its practical use depends on the assumption that other inputs will be available at prevailing rates and that shifts among the factors of production that could lead to substitution will be absent or negligible. Its validity also rests on the assumption that the market will exist for the product at the envisioned production level.

Much effort has been directed towards discrediting the use of ICOR's for allocating capital. The popularity ICOR's have enjoyed in
the past seems to stem from the relative ease with which they could be
calculated and the notion that capital—not labor—is the factor which
is in short supply and therefore in need of rationing. Although the
ICOR for housing services clearly suffers from measurement and
interpretation problems, few would argue that the ICOR should be the
sole criterion for allocating scarce capital anyway. Most policymakers
realize that it may be necessary to invest in certain "unproductive"
activities in order to achieve specific goals. For example, investment
in activities with high ICOR’s may be necessary to relieve supply
bottlenecks in crucial sectors of an economy or to generate foreign
exchange earnings. Ironically, the high ICOR’s found for housing seem
to have stimulated such a furor that they have actually helped establish
the importance of housing. The numerous attempts to discredit the ICOR
have undoubtedly contributed to our understanding of the broader role of
housing in economic development.
NOTES

CHAPTER I

1. See main text for details and references: Chapter III, Types of Housing Investment

2. See main text for details and references: Chapter IV, Employment and Income Effects

3. See main text for details and references: Chapter IV, Effects on the Balance of Payments

4. See main text for details and references: Chapter IV, Price Effects

5. See main text for details and references: Chapter IV, Savings Effects

6. See Annex for details and references.

7. See main text for details and references: Chapter III, Social Benefits and Costs

8. See main text for details and references: Chapter V, Is Housing Productive?

CHAPTER II


2. See Burns (1966), pp. 11-17.


5. The International Housing Productivity Study is summarized in Burns, et. al. (1970).

CHAPTER III


4. Ibid., pp. 22-23.

5. See Chapter IV for an elaboration of these points.


9. The International Housing Productivity Study is summarized in Burns et. al. (1970).

CHAPTER IV


6. Strassmann (1976), p. 623. These results concerning the relative employment effects stemming from investment in low-income or high-income housing must be cautiously viewed. Notably, shifts in factor prices over time could lead to substitution, and the size of various undertakings could invoke economies of scale. Each of these could alter the results presented above (Strassmann, 1976, p. 630).


8. Wegelin (1978), pp. 75-78. Wegelin also cites additional estimates by Roest [W. Roest, "Bouw en economische groei," (1973, pp. 110-111)] for the Netherlands (a multiplier of 2 for construction compared to one of 1.5 for machinery and transportation) and by Lubell [H. Lubell, "Calcutta, its urban development and employment prospects," (ILO, 1974, pp. 68-70)] for Calcutta (a multiplier of 1.6 for construction of urban infrastructure).


11. Hardoy and Satterthwaite (1981), p. 128. See Currie (1974) for the theory underlying these policies. A historical perspective on the Plan of the Four Strategies is provided by Currie (1981, pp. 41-52). During the late 1960's and early 1970's, Singapore was engaged in a large housing construction program which had a substantial effect on its economy. As a result, Singapore is sometimes cited as an example of a country where housing construction was a driving force in the economy. While a good deal of residential construction did take place, it does not appear to have been an integral part of an economic development strategy (Currie, 1974, pp. 15-16; Currie, 1975, p. 37). Instead, this construction boom seems to have coincided with an overall economic boom then occurring in Singapore. Nevertheless, the economic growth experienced by Singapore during this period can be interpreted as following Currie's leading sector model of growth, which was the foundation of Colombia's development plan in 1971 (Currie, 1974, pp. 15-16). For an overview of Singapore's experience with housing during this period, see Yeh (1975).


37. For a discussion and examples of some of the difficulties of coordinating basic housing projects with industrial and commercial sites, see LaQuian (1983), pp. 93-96.


40. Ibid., pp. 199-200. However, Burns and Grebler note that LDC’s may have greater downward price and wage flexibility than developed nations.


43. Burns, et. al. (1970), pp. 128-134. These findings, which were based on regression analyses, must be interpreted carefully, however. The regressions merely revealed an association between construction output and the wholesale price index of building materials; they did not prove causality. The resulting problem of interpretation can be illustrated by the experience of Peninsular Malaysia. During the 1972-1973 period a boom in domestic construction coincided with a boom in international commodities. Exports of key building materials such as sawn timber, iron, and steel rose dramatically and led to supply problems in the construction industry. During this period, increases in the prices of major building materials averaged 25 percent whereas the increase in consumer prices was only 10.5 percent. While there was clearly a pronounced inflation in construction materials, it is hard to separate the price effect of the construction boom from that of the international commodity boom (Wegelin, 1978, p. 83).

The causality issue can also be viewed another way. It is not unusual for households to try to purchase housing as a hedge against inflation in inflation-prone economies. While this increased demand for housing may cause further increases in price levels, housing investment is not necessarily responsible for the inflationary tendencies which spurred housing demand in the first place (Grimes, 1976, p. 38).


51. Ibid., p. 86.


60. See Renaud (1984), pp. 41-42.
CHAPTER V


2. To conserve space, footnotes will not be repeated here. Please refer to the main text for sources.

3. Please refer to the main text for sources.


ANNEX

1. The ICOR is sometimes referred to in the literature simply as the capital-output ratio. The reader should be aware that many alternative formulations of the capital-output ratio exist. An elaborate treatment of these variations would not add much substance to the arguments presented in this section. For this discussion, a fairly generic definition is adopted from Wegelin (1978), p. 70:

   \[ \text{ICOR} = \frac{\text{Net or gross sectoral investment per period}}{\text{Increase in sectoral output (value added) during the same period}} \]


3. Wegelin (1978), p. 71 citing a study by Roest [W. Roest, "Bouw en economische groei," (1973, pp. 120-122)], notes that "the ICOR for housing services can roughly be put at four to seven times the ICOR for manufacturing and at two to three times the ICOR for all sectors aggregated together." For additional estimates of ICOR's for housing services see Han (Ki Choon Han, "Capital-Output Ratio in Korea - A Trial, "Quarterly Economic Research, Economic Planning Board, Republic of Korea, June 1964), cited in Burns et. al. (1970), p. 77 (Korea), Leontief, et. al. (1953), pp. 220-221 (U.S.), Wegelin (1978), p. 72 (Peninsular Malaysia), Palvia (1980), p. 128-129 (various developed and developing countries), and Leibenstein (1966) (various western countries).

5. See, e.g., Wegelin (1978), p. 72, Table 3.6.
8. Ibid., p. 31.
10. Ibid., pp. 58-60.
17. See Burns (1966), 11-12.
REFERENCES


