

Urban Notes

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GETTING THE INCENTIVES RIGHT

Many government interventions affect the price of housing but little work has yet been done in estimating their costs and benefits, and their incidence. An investigation into Malaysia's Special Low Cost Housing Program has shown that many government regulations tend to raise costs, reduce supply and yield little or no benefit to consumers. The model developed for the Malaysia study is a useful tool for assessing whether government interventions are providing developers with incentives or are merely roadblocks in the housing market.

BACKGROUND

Malaysia requested the Bank in 1988 to undertake a sector study to explain why formal housing costs appeared to be so high. This was so despite the existence of a Special Low Cost Housing Program designed to induce private developers to build low cost housing. The program was innovative in that virtually all the units were to be built by private developers on both private and state-owned land. Developers were permitted to build 60 percent of their units to high standards with high profit margins in order to subsidize the remaining 40 percent. For the low cost units, reduced infrastructure standards and streamlined regulatory approvals were envisioned but these proved to be insufficient. In its first year, the SLCHP fell well short of the target number of low cost housing units it had hoped to build.

The Malaysia Housing Sector Report was the Bank's response to this request. Carried out by a joint Regional/PPR team, the study had three interlocking parts: an analysis of aggregate market and macroeconomic data; an analysis of the costs, benefits and incidence of a wide range of government interventions; and a detailed study of land use regulations.

The analysis of government interventions' effects was carried out on 14 representative housing units--inside and outside the program, formal and informal, owner occupied and rental, and in different locations--demonstrated that the costs of regulatory and pricing restrictions far outweighed the benefits of subsidies and regulatory exemptions. The conceptual model used in the study is quite general and can be applied in other countries.

A SIMPLE MODEL OF REGULATORY COSTS AND BENEFITS

The model starts with the standard economic cost/benefit analysis of a representative investment, and then adds the major interventions with simple assumptions about incidence:

The Economy

+ Market Value of the Unit
- Resource Cost to the Economy

Net Economic Cost-Benefit

The Developer

- Resource Cost to the Economy
+ Land Subsidy
+ Development Period Infrastructure Subsidy
+ Construction Subsidies (Materials, Finance, etc.)
- Cost of Land Use and Building Regulations (Including Delays)
- Land Acquisition, Other Taxes
+ Sales Price

Net Financial Cost-Benefit to Developer

House Purchasers

- Sales Price
- Registration Taxes
- Property Taxes
- Extra Transactions Cost of Program Participation
- + Market Value of the Unit
- + Recurrent Infrastructure Subsidies
- + End User Finance Subsidies

Net Financial Cost-Benefit to Purchaser

Many of the inputs to such a model can vary over some range, especially when more than one "representative investment" is considered. But experience teaches that adding up the best estimates of as many significant interventions as possible yields valuable insights into market behavior.

The relationship between these calculations and market behavior is straightforward. If the economic cost/benefit is positive, the unit is *efficient*. If the developer's cost/benefit is positive, a *supply response* will be observed. If the purchaser's cost/benefit is positive, there will be *demand* for the units.

The analysis can be carried out for different kinds of units, different tenure arrangements, public versus private producers, units in different locations and so on. In each case there are several logical possibilities. An example of a desirable outcome would be a case where a unit is efficient, will be supplied and for which there is demand. An example of an undesirable outcome is the case where a unit is efficient, there is demand but regulatory costs make it unprofitable to produce such units.

The convention used in this model is that an exemption from a regulation which has an identifiable benefit to society similar to its cost is treated as a subsidy. Reductions in regulations which do not yield corresponding benefits are, therefore, pure cost reductions. In other words, there is a baseline of "normal" desirable regulation from which extra regulatory costs are measured.

PRESENT VALUE ANALYSIS OF THE SLCHP

Present value analysis demonstrated why developers found the Malaysian SLCHP less than enticing. Even more importantly, the analysis illuminated why costs were so high for formal units *outside* the program.

Some SLCHP developments received land below market cost from individual states; others received land at closer to opportunity cost or used private land. For this particular representative example, we assumed that state land was used for a nominal charge. The difference between fees charged and estimated market land value yielded a *land subsidy* of about M\$8,000 to the developer (2.5M\$ = 1 U.S.\$ approximately). Charges for infrastructure connections were about M\$1,450 below their estimated cost. A small cement subsidy roughly canceled cement prices above world market prices, and no other significant construction subsidies were found.

But the developer land and infrastructure subsidies were largely offset by other interventions. The costs and benefits of *land use regulations* were estimated using the Bertaud model. The model compares the cost of development under current regulations with the cost of development under some regulatory baseline, adjusted for any benefits which may accrue from the additional regulation.

In Malaysia land use and infrastructure standards are particularly high. The SLCHP produced a new set of lower standards for low cost housing. However, the actual approval of plans utilizing the new standards is given by local authorities who have so far continued to rely on previous, higher standards. The Bertaud model analysis demonstrated the following regulatory costs:

1. The reduction in salable land from numerous requirements for road widths, setbacks and large set-asides for public areas. The estimate of the cost of land use and infrastructure regulation is M\$6,000 per plot which is the difference in cost between the current standard (as little as 25 percent salable land) and the recommended standard (65 percent). This is a conservative estimate. For example, by lowering road design standards, salable land is increased, but surfacing and maintenance costs are also reduced. The latter cost saving is not included.
2. The delay imposed by regulatory procedures which tie up capital and increase risk. In the United States, for example, developers often take a year or more to receive planning permissions. Given estimates of the average delay (compared to some reasonable baseline), the amount of capital tied up, and its opportunity cost, estimating this cost is straightforward. In the example, we used a conservative estimate of M\$1,000.
3. Controls on sale prices are a regulatory cost to the developer but a financial subsidy to the purchaser. The nature and size of the transfer depends on location, since sales prices vary less than market values with location. In this particular example the unit is worth about M\$30,000 but the sales price is M\$25,000, implying a transfer of M\$5,000.
4. Other costs to developers include building codes and standards (judged not large in the present case, since these codes seem roughly in line with the market) and regulations encouraging sale to ethnic Malays and indigenous peoples which are costly to comply with, especially in some urban areas with high Chinese and Indian populations. Compliance lengthens the developer's holding period, and frequently discounts have to be offered to reach the desired mix. These regulations are estimated to add M\$1,625 to developers' average unit costs.

Taxation of housing in Malaysia is fairly light. The main taxes for sales programs comprise acquisition taxes, assumed born by the developer, and property taxes, assumed born by the purchaser. Capital gains taxes are levied on nominal, not real appreciation, on a sliding scale depending on the holding period. In this example we assumed the unit is not sold so no tax is paid. Despite the light tax environment, more work on taxation should be high on the agenda for future model development.

Financial subsidies are estimated by calculating the present value of the subsidized cash flow at unsubsidized rates. In some countries with

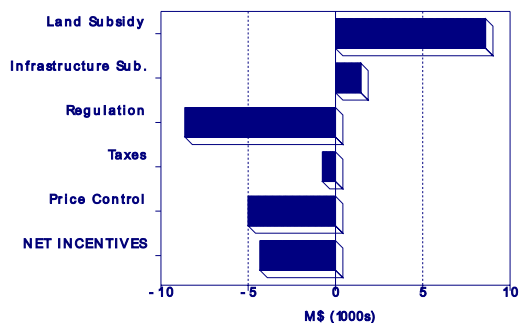
poorly developed financial markets or particularly inappropriate terms (for example, 30 year fixed rate instruments) a baseline unsubsidized rate may not exist; a range of estimated market rates can then be tested. Fortunately in Malaysia's well developed financial system reasonable comparators existed, making the calculation of the financial subsidy straightforward.

Financing is analyzed on the basis of fixed rate self amortizing mortgages. For this example, we have assumed a 25 year loan, a market rate of 12 percent (a conservative assumption--the market rate for such a loan could be as high as 14 percent), a nominal lending rate of 10 percent and a loan to value ratio of 0.95. To calculate the present value of the financial subsidy, deflate the nominal principal and interest payment in real terms, then take the present value of the initial loan followed by the real repayment stream, discounted by the market rate of interest.

SUMMARY OF THE INCIDENCE OF INCENTIVES

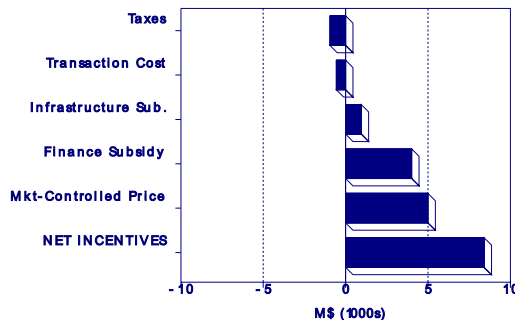
Market valuation of units is straightforward in Malaysia, where there is an active resale market; economic cost was arrived at by subtracting net regulatory costs from financial cost. In the absence of any government interventions, we estimated that the unit would cost about M\$28,100 but be worth about M\$30,000.

Incentives to the Developer SLCHP Unit, Selangor, Current Stds



The first figure summarizes the net incentives and "disincentives" faced by developers of a representative SLCHP unit. The developer receives substantial subsidies through low cost land and reduced infrastructure standards, but these are more than outweighed by the costs of regulations and the pricing restriction that effectively requires the unit to be sold below cost. The net effect of these interventions is to add about M\$4,000 to the developer's cost (the bottom bar) leading to a net loss on each unit of about M\$2,000.

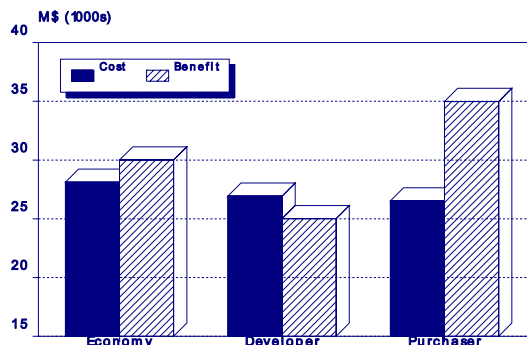
Incentives to the Purchaser SLCHP Unit, Selangor, Current Stds



The second figure tallies the incentives and disincentives to purchasers of a representative SLCHP unit. The estimated subsidy to the purchaser of nearly M\$9,000 is mostly due to below market pricing restrictions and mortgage financing.

The final figure shows how these add up from the point of view of the economy, the developer and the purchaser. This particular unit is efficient, in other words, it benefits the economy more than it costs it. Demand would be strong in the absence of additional purchaser incentives, but would be very high given the additional subsidies involved. But because of regulation, developers lose money, so they would build these efficient units only if forced to do so (for example, to obtain planning permission for other units) or if purchasers paid higher than official prices. In Malaysia, the former predominates but both mechanisms can be studied with such models.

Present Value Model Results SLCHP, Selangor, Current Stds



Analysis of units outside the program was equally instructive in demonstrating how regulations hamstring developers and ultimately consumers. Analysis by location revealed that administrative pricing led to excess demand in some areas, and costly inventories of unsold units in others. Details are available in the Malaysia Housing Sector Report (7292-MA), by Lawrence Hannah, Alain Bertaud, Stephen Malpezzi, and Stephen Mayo.

A TRANSFERABLE PROCEDURE

This analysis of the SLCHP illustrates how to study the net impact of government interventions using present values. While this method is quite standard within the Bank, it is often applied *pro forma*, and at the end of the project cycle rather than in the beginning, when it is most useful to guide policy.

While the conceptual model is quite general, the spreadsheet implementation of it should be customized for each country's policy environment and market conditions, and the available data. Studying previous models is a good way to build a better model in your own country. The Malaysia model has a quite detailed set of interventions, and handles multiple representative investments (up to 15). It is described in *Analyzing Incentives in Housing Programs: Evaluating Costs and Benefits With a Present Value Model* (INU Discussion Paper No. 23, by Stephen Malpezzi). The Bertaud Model is described in *Efficiency in Land Use and Infrastructure Design: An Application of the Bertaud Model* (INU Discussion Paper No. 17, by Alain Bertaud, Marie Agnes Bertaud, and James O. Wright, Jr.)

Other models are also available which demonstrate integration of graphics into such models, a better demand side, more explicit fiscal analysis, treatment of more complicated mortgage instruments, etc. Copies of these models are available from Stephen Malpezzi (x33939). We also solicit examples of such models from regional staff.