The Location Efficient Mortgage:

A Strategy For Promoting Transit-Supportive Housing

A Case Study of San Juan, P.R.

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A. Research Background

Recently, three non-profit organizations have jointly created a new form of mortgage, the Location Efficient Mortgages (LEM), as a tool to promote transit-oriented living. The LEM is a financial incentive to encourage home-ownership and discourage auto-ownership in transit-oriented neighborhoods. By taking into account the amount of money a family can save if it replaces part or all of the auto trips with transit and walking trips while living in a transit-oriented neighborhood, the LEM assumes a greater mortgage borrowing capacity of the family. This increased borrowing capacity would then allow the family to qualify for a mortgage loan which they otherwise may not be eligible for.

The LEM is a new idea, which is still in its initial stage of experiment in Chicago. Consequently, the LEM may provide a useful tool to policy makers in San Juan, but significant care should be used in anticipating its full benefits until preliminary results are forthcoming from Chicago.

B. Research Objectives

This research focuses on exploring the potential use of such an incentive in San Juan, Puerto Rico, where a heavy rail system is being constructed to provide a viable travel alternative to the auto-oriented residents.

Based on the theories behind the LEM, this study seeks to develop a framework to conduct a preliminary feasibility analysis of introducing the LEM. Using the framework developed, it then evaluates the metropolitan area of San Juan with respect to introducing the LEM. The study also aims at analyzing potential benefits of implementing the LEM in San Juan. Such an implementation in San Juan will not be free of barriers; this study attempts to identify the major challenges. Finally it proposes corresponding strategies to help overcome the hurdles.

C. Motivation

Similar to other regions in the mainland United States (U.S.), the San Juan Metropolitan Area (SJMA) relies heavily on the use of automobiles in passenger travel. The 90.5 percent mode share of driving clearly indicates the imbalance between the use of cars and public transportation. This is the consequence of many forces which reinforced the effects of each other over the past forty years. Such forces include the continuous investment in roadway expansion, the decline in transit services, and the development of single-family houses in outskirts, among others. These forces resemble those on the mainland. The resulting problems confronting the Commonwealth also parallel those plaguing the Continental U.S.—traffic congestion, degradation in

environmental quality, limited accessibility and mobility for certain groups of the population. But, there is one problem unique to the Commonwealth—the heavy financial burden of driving borne by many Puerto Rican households. Not only do these problems negatively affect the lives of many individuals, they also present as constraints on the future health and prosperity of the island.

The need to solve these problems is obvious and urgent, both on the mainland and the island. Indeed, many are taking different approaches. For instance, innovations in information technology have allowed the development of Intelligent Transportation System (ITS), which has a role in relieving traffic congestion. The LEM, combining transportation, housing, and land-use components, distinguishes itself as a different mechanism to solve transportation-related problems.

The $1.5-billion Tren Urbano represents a major transit investment in the SJMA, which brings along opportunities for re-configuring the land-use pattern; it also represents an excellent opportunity to modify the automobile-oriented travel behavior of Puerto Ricans. Introducing the LEM in San Juan now may allow these opportunities be captured.

D. Research Methodology

Data Collection

The intricate relationships between transit ridership and various components of urban form serve as the theoretical backbone of the LEM. In light of this, these relationships are used to derive the requisites a region needs to meet for introducing the LEM. To evaluate the SJMA's conditions with respect to the derived requisites, two

types of information are collected from San Juan. The first type is related to the existing and future transit system infrastructure and services, which is primarily obtained from the Tren Urbano GMAEC office. The second type is related to the existing land-use pattern, both at a micro level (i.e:, within the close proximity of future Tren Urbano stations) and at a macro level (i.e., regional). Past student theses, the Final Environmental Studies, and different studies available from the GMAEC office and planning offices of the local municipal government are used. Field-notes from the January site-visit are used to fill the gaps.

Scenario Development

To generate scenarios to illustrate the possible use of transportation savings in home mortgages, different steps are taken. First, to estimate the amount of household savings resulting from switching transportation mode, data from the Federal Highway Administration (FHWA) and the American Automobile Association (AAA) are employed.

With adjustments made to reflect the costs difference in the SJMA. The adjustments are primarily from two sources: (1) Craighead Country Report, and (2) informal surveys of UPR students and current employees of Tren Urbano GMAEC. Second, to determine the mortgage loan structure, more than ten mortgage lenders are consulted (either by phone or facsimile). Third, to determine housing value and household income, the 1990 Census data are used.

Identification of Potential LEM Sites in San Juan

The research also tries to identify several targets of opportunities for the implementation of the LEM. A series of Geographic Information System (G.I.S.) analyses using data from the Census Bureau are performed to gain a better understanding of the demography and housing conditions within the half-mile radius of the 16 Tren Urbano stations. The primary source of land-use data is Guia Urbana del Area Metropolitana[1], which provides data at parcel level. Other sources include studies performed by past students and GMAEC staff.

To analyze potential benefits, different beneficiaries are first identified, based on how a LEM program would work. Challenges of the LEM program are synthesized by an understanding of the mechanisms of the LEM program and the context in the SJMA. Strategies are devised based on the cause(s) of each challenge.

E. FINDINGS

While the concept of the LEM sounds promising as an incentive to encourage transit-oriented lifestyle, it cannot be implemented anywhere. In order for the LEM to work, a place must meet four requisites.

- A transit system providing adequate and reasonably comprehensive transit services must be in place.
- Sufficient employment opportunities along transit corridors such that prospective LEM borrowers can take advantage of the transit system to travel to work.
- A mix of land uses along transit corridors, allowing prospective LEM borrowers to take transit for non-work trips, which account for about two-thirds of all trips.
- A general readiness to accept high residential density.

[1] Published by Metro Data in 1997.

An analysis of the SJMA's existing and future transit infrastructure and land-use characteristics shows that the region does not meet the first requisite, the presence of an adequate and comprehensive transit system. It does meet all the other three requisites at present. However, with the coming of Tren Urbano and other forthcoming transit system improvements, the SJMA is very likely to satisfy the first requirement in the near future.

Using data from the Federal Highway Administration and the American Automobile Association with adjustments to costs reflecting the situation in Puerto Rico, it is estimated that the net savings resulting from switching transportation mode ranges from a low of about $2,000 to a high of roughly $4,000 per family per year.[2] If 38 percent of this savings is applied in housing, a family can borrow approximately $8,000 to $12,300 more than under normal situation. This amount is quite significant in buying a home in Puerto Rico, where two-thirds of the properties are under $100,000. It should be noted though, that this level of savings could be accomplished if car-ownership of a household is actually reduced. If a household replaces part of the auto trips with transit trips without disposing a car, the amount of savings this household can achieve would be much smaller.

With respect to the current housing condition and household characteristics within the Tren Urbano corridor and the SJMA, three types of LEM program could possibly work: a regular LEM loan program for home-buyers, a LEM rehabilitation loan program for property owners of deteriorating structures, and a LEM refinance program for home-

[2] Many assumptions are used to arrive at these numbers. The biggest one is that a household will dispose one auto, which may be quite difficult to achieve in reality, at least in the short-run. Other assumptions include using debt to finance a new car, which may not apply to every auto-buyers. For details, please refer to Chapter 6 of my thesis.

owners to "retrofit" their conventional loans. The regular LEM loan program should be the first to be introduced.

Four criteria are recommended as the basis for selecting a few Tren Urbano stations as the testing ground for the regular LEM loan program.

- Sufficient new or vacant for-sale housing units of high-density within a half-mile radius from the station in the future
- Strong mix-use characteristics
- Good transit connection
- Non high-income area

The LEM programs have potential to offer an array of benefits when implemented successfully in the San Juan region. Prospective home-buyers and some current home-owners in transit-oriented neighborhoods are likely to enjoy the augmented borrowing capacity in mortgage or rehabilitation loans. Some older inner-city neighborhoods along the Tren Urbano corridor may benefit from potential reinvestment interest spurred by the LEM. Tren Urbano, as well as buses and públicos, are likely to receive increased farebox revenue; Tren Urbano may even enjoy higher revenue from joint development projects.

Individuals and organizations aside, the LEM programs will help relieve traffic congestion, saving time and energy. The programs will also bring to the region the environmental benefits associated with reduction in vehicle-mile-traveled (VMT). Besides, it will improve safety of travelers, since the LEM is supposed to transfer some auto trips to transit trips, which are generally considered as being safer. Equally important, the longer-term effects of the LEM on urban form and transit services will enhance accessibility of those unable to own or operate vehicles. The overall quality of life in the San Juan region will be improved as all these benefits are realized.

The realization of all these benefits depends on the success of the LEM program implementation, which will not be free of challenges. There are five major hurdles, which need to be overcome.

- The strong culture of driving and the poor image of transit in the SJMA, which make it difficult to ask Puerto Ricans to take transit instead of driving.
- Gaining recognition and support from the housing finance industry. The housing finance industry will not endorse the LEM loans unless it believes that Puerto Ricans will indeed change their travel behavior.
- The general housing preference of home-owners in single-family detached units over units in higher density.
- Inadequate supply of high-density residential development in transit-oriented neighborhoods, as the demand for it is not strong presently.
- The monitoring of automobile ownership of the LEM borrowers could be tricky once the program has been established.

Fortunately, there are myriad of actions and policies which one may take or implement to help overcome some of these hurdles. To overcome the first hurdle of popularity of driving and the relative inferior position of transit, an array of transportation demand management strategies could be introduced, in conjunction with enhancement of pedestrian walkways and bike paths to make walking trips to/from transit safer and more pleasant. At the same time, aggressive transit marketing can be launched. If successful, these programs will lure motorists out of their cars. The second issue of having the housing finance industry to believe in the promises of LEM will be easier to deal with.

With regard to the decentralization trend, Puerto Ricans' general favor in low-density development, and the limited supply of high-density for-sale housing near transit, the LEM could be coupled with a variety of government initiatives and policies. These may include a demand-side approach, such as creating housing programs favoring transit-supportive home-ownership; it may also consists of a supply-side approach, such as provision of government assistance to developers interested in transit-supportive housing.

These two are targeted to counteract the forces of decentralization of population and the preference for low-density housing. To stop decentralization of employment, programs favoring location of businesses near transit could be initiated. Further, land-use policies, the framework within which future development occurs, need to be crafted to contain sprawl and encourage infill-development.

Recommendations and Policy Considerations

Obviously, Tren Urbano, as a transit agency, will not be able to take all of these actions to facilitate the implementation of the LEM. The Puerto Rico Department of Housing, the Puerto Rico Planning Board, as well as municipalities will need to make strong commitment. Thus, the implementation should be a joint effort of the Puerto Rico Highway and Transportation Authority and the agencies identified.

Even with the participation of other agencies, there are still inherent uncertainties in the outcome of the potential LEM implementation in the SJMA. The idea is new; the program has not been tested anywhere yet. An experiment is scheduled to start in the spring of 1998 in Chicago, which will be the first test site of the LEM. As such, the LEM remains a conceptual policy with a certain degree of uncertainty.

Even though many of the potential benefits of the LEM are unlikely to be realized in the short-run, and that there are uncertainties involved, it is recommended that the SJMA cautiously pursue the LEM now. There are several reasons for this. First, the long-term positive effects of the LEM could have significant implications to the region, as well as to the transit systems. Besides, the improvements in the public transportation system are drawing public attention and are creating a fresh image of transit in the SJMA;

introducing the LEM now would allow one to capitalize on the publicity generated. Another reason is that it will take time to build up popularity of the LEM among the public and the credulity of the mortgage among the housing finance industry. Also, it may take a rather long time before Chicago realizes the full impacts of the LEM; waiting to see the positive outcomes before taking any action in the SJMA may imply significant delay in realizing the benefits in San Juan. Also, even if the LEM in Chicago fails to achieve all the expected benefits, it does not necessarily mean that the outcomes would be the same in the SJMA, since there are certain aspects making the region rather unique. However, it cannot be denied that lessons could be learned from Chicago if the SJMA waits before taking any action.

It is recommended that Tren Urbano collaborate with other government agencies to pursue the LEM. The long-term benefits likely to be experienced by Tren Urbano outweigh the costs associated with starting an LEM program. Indeed, the pre-implementation research process is the only stage when Tren Urbano would have to invest; the implementation of the LEM will not add much financial burden, if any at all, to Tren Urbano. Once the necessary research is completed and the LEM is in the market, the only commitment required from Tren Urbano is probably staff time, needed to coordinate with other institutional partners.