

Can an Islamic Model of Housing Finance Cooperative Elevate the Economic Status of the Underprivileged?

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MOTIVATION:

The profound argument made by Stiglitz (1994) is that market failure is a fundamental cause of poverty and financial market failures, which mainly arise from market imperfections, asymmetric information and the high fixed costs of small-scale lending, limit the access of the poor to formal finance, thus pushing the poor to the informal financial sector or to the extreme case of financial exclusion. In addition, it is argued that improving the access of the poor to financial services enables these agents to build up productive assets and enhance their productivity and potential for sustainable livelihoods (World Bank 2001). Hence the bottom line argument is that improving the supply of financial services to the poor can directly contribute to poverty reduction (Jalilian and Kirkpatrick, 2002).

(Green, Kirkpatrick and Murinde, 2005, p. 19)

IMPORTANCE OF AN EFFICIENT HOUSING FINANCE SYSTEM:

Housing plays a vital role in the economy due to its following attributes (see Sheng, 1997):

First, a home is both consumption good as well as an investment (see Malpezzi, 1990). The investment aspect of homeownership helps to *increase* wealth (i.e., *reduces* poverty – see Buckley, 1994; Englehardt, 1994; Sheng, 1997; Haurin et al., 2002).

Second, Homeowners support their neighborhood more than renters, as they participate in crime prevention and support public schools. They are better citizens and vote at a higher rate (see Haurin *et al.*, 2002). Homeownership fosters investment in local amenities and social capital, thus enhancing the quality of the community (see DiPasquale and Glaeser, 1999).

Policy makers therefore have an obligation of ensuring access to this indispensable asset through an *efficient* financial intermediation system.

Rationale: The financial intermediation system has the capacity of rendering the economy vulnerable to risk, as it connects real estate prices with the macro-economy (see Glaeser, 2000).

The Ongoing Subprime Mortgage Crisis ["Market Failure"]

- The poor and minorities found themselves excluded from prime lenders due to being perceived as risky.
- In efficient capital markets, the only access to financing for them was via an Exploding Adjustable Rate Mortgage with low introductory "teaser" rates, which reset to higher ones on expiration.
- The poor, thus, received a rude shock as property prices also fell prior to the expiration of the introductory rates. This reduced their chance of refinancing and subject them to higher rates at expiration of the teaser rates. This caused them to fall behind their mortgage obligations and subject to foreclosure proceedings.
- Estimates are that around 9 million American families will lose their homes, thereby wiping out their meager live savings (in the form of equity) (Economist, 2007a; Gapper, 2007; and Mason and Rosner, 2007).

Repercussions of the subprime "woes"

- Total losses and write-downs are anticipated to reach \$2.2 trillion thereby devastating the capital bases of major financial institutions on both sides of the Atlantic (Wolf, 2009).
- Failure of more than 40 subprime lenders (Authers, 2007).
- Increase in supply of homes for sale (due to repossessions), depressing the prices of homes, sales of durable goods and construction activity (Economist, 2007b; Spector, 2007).
- Inability of U.S. government sponsored agencies (such as Fannie Mae and Freddie Mac) to provide some relief as they themselves are in a precarious financial situation and have been placed under conservatorship (Crutsinger, 2008).
- Scrutiny of the remaining subprime lenders from state and federal regulators (Ip and Paletta, 2007)
- Tightening of credit to firms in other industries has initiated a recession and has led to a decline in the value of U.S. assets (White *et al.* 2007).
- Spreading of systemic problems from the U.S. has increased global capital market volatility, and is anticipated to "crimp" world growth (Economist, 2007b; Gapper 2007).

OUR GOALS:

Propose a radical way of home financing using leverage *endogenously* amongst underprivileged aspiring homeowners (via cooperatives) and contrast it with that of a formal interest bearing mortgage (using leverage *exogenously*).

Rationale Behind Our Proposal:

- The formal system is onerous to the underprivileged (as they are perceived as risky) and has thus failed them even in developed countries such as the U.S.
- Inflationary shocks on formal mortgages create a *tilt* in real payments to make aspiring home owners ineligible by financial institutions (Buckley, 1994).
- Formal intermediaries are *not* used by more than 70%-80% of home owners in the developing world (see Okpala, 1994; Ferguson, 1999).
- The proposed form of home financing is practiced in a limited way by clans in Oman in the form of *jamaiyah* (associations) to fund the purchase of their poor with gratuitous loans (*qard hasan*). This practice is endorsed in the holy Qur'an, which exhorts Muslims to lend without interest, classifying it as a loan to God Himself.
- The above ad hoc practice mitigates risk and reduces transaction costs and is in accordance of the prognosis of King and Levine (1993) and Levine (1997).

Specific issues addressed:

- (i) Can a specialized circuit (in the form of a housing finance cooperative – using *endogenous* leverage) alleviate credit risk better than the formal mode of financing (using *exogenous* leverage)?
- (ii) Can it alleviate inflation risks better than its formal counterpart?
- (iii) Can it be pareto-optimal over its formal counterpart, thereby uplifting the economic status of the underprivileged and stimulating economic development?

THE DILEMMA:

The *three* interrelated issues (stated above) encompass the optimal pricing of loans. This is a formidable task as capital structure (i.e., choice of debt-equity) constitutes a major puzzle in finance (see Harris and Raviv, 1991).

Typically, financial institutions price their (prime sector – fixed rate) loans in an ad hoc manner, using credit rationing (in the form of initial loan-to-value (LTV) ratio and income ratio – see Jaffee and Stiglitz, 1990). This is not efficient, as empirically demonstrated by the literature on banking crises and real estate cycles (see Herring and Wachter, 1999; and Malpezzi and Wachter, 2002).

Furthermore, it exacts a huge toll on the macro-economy, as Renaud (2003) and Hoshi and Kashyap (2004) estimate the costs of real estate crisis in Indonesia, Thailand, Japan and United States to be roughly 65%, 45%, 20% and 3% of the GDP respectively.

SOME DEFINITIONS:

A Rotating Savings and Credit Association (ROSCA) is basically an informal association of individuals, who pool in their resources to save. Members commit to contributing a fixed amount of money in a fund for each period in the tenure of the ROSCA. At each meeting, the entire fund is allocated to a particular member. The meetings continue with a different member of the group being granted the fund at each date. This process continues until every member of the ROSCA has received the fund once. The allocation of the fund is either through a lottery (*Random ROSCA*) or an auction (*Bidding ROSCA*).

ROSCAs are found in many parts of the world under different names such as *chit funds* in India, *jamaiyah* in Oman, *hui* in Vietnam, *kye* in Korea, *pasanakus* in Bolivia, *paluwagon* in Philipines, *susu* in West Africa, *tanda* in Mexico, and *tontine* in Senegal, among others.

A housing cooperative is basically an Accumulating Savings and Credit Association (ASCRA) inter-related to a ROSCA. It involves a group of people, who form a society to enable them to raise funds endogenously (among themselves). It serves as a specialized *mutual* bank for facilitating the purchase of a lumpy good (i.e., a house) for the members of the cooperative. The member (for whom the house is being purchased) responds in kind by lending simultaneously to the cooperative. This simultaneous action allows members to offset the cost (of borrowing) with the benefit (of lending), thus, yielding a facility with a *zero* interest rate (assuming negligible administrative costs).

METHODOLOGY:

We blend *two* streams in the economics literature

First, we focus on Security (Mortgage) Design, which espouses that secured debt reduces agency costs and enhances firm value (see Scott, 1977; and Stulz and Johnson, 1985). An extension of this is Ebrahim and Mathur (2007), which hypothesizes that real estate mortgages have to be priced meticulously by adequately collateralizing them with the underlying tangible assets and income of borrower.

Second, we focus on housing cooperatives (described further below), as they are interrelated to Rotating Savings and Credit Associations (ROSCAs), which have served as a precursor to the Savings and Loans Associations in the United States (see Grossman, 1992). ROSCAs are appealing, as they provide a pareto-superior solution to the problem of purchasing an indivisible (lumpy) good (such as a home – See Besley *et al.* 1993).

PRICING MORTGAGES:

Assumptions

We implicitly assume the existence of an information architecture, where property rights, foreclosure procedures (needed for real estate to serve as collateral) and accurate method of valuing property are clearly defined and protected by law in the economy (Levine et al. 2000).

We resort to a *nearly* risk-free mortgage, as it is pragmatic to do so. That is, the mortgage is adequately collateralized by a large fraction of underlying collateral and by the income of the homeowner. This is as good as a risk-free mortgage as homeowners do not "ruthlessly" default as soon as they go "underwater". They normally wait until the negative equity on their home is extremely large (see Lacour-Little and Malpezzi, 2003). This yields:

$$\text{Max. } \frac{\text{Log}(\bar{P}_t) - \text{Log}(Q_t)}{\sigma\sqrt{t}} \geq \alpha$$

(in t)

$$\frac{\text{Income of Borrower (y)}}{\text{Mortgage Commitments}} \geq \text{Income Multiplier (b)}$$

We assume that home prices follow a geometric Brownian motion (also known as a Lognormal Random Walk). This assumption is consistent with the real estate finance literature (see Szymanoski, 1994; Gau, 1987). This implies that the percentage changes of property prices are independent and identically distributed (iid). This further implies that future price changes are independent of past price movements and dependent only on current price. That is, this requires all past information to be captured by the present price of a home, which is a consequence of the efficient market hypothesis. This assumption helps us model the expected property price at time t (given in months) as follows:

$P_t = P_0 e^{(\mu - (\sigma^2/2))t}$, where μ and σ are the mean and standard deviation of the annual appreciation of the property (see Figure 2).

Note: In normal times, $\mu > 0$. This gives us the trivial corner solution.

FIGURE 1
Formal (Fixed Rate – Prime Sector) Mortgage Design
Payments over time

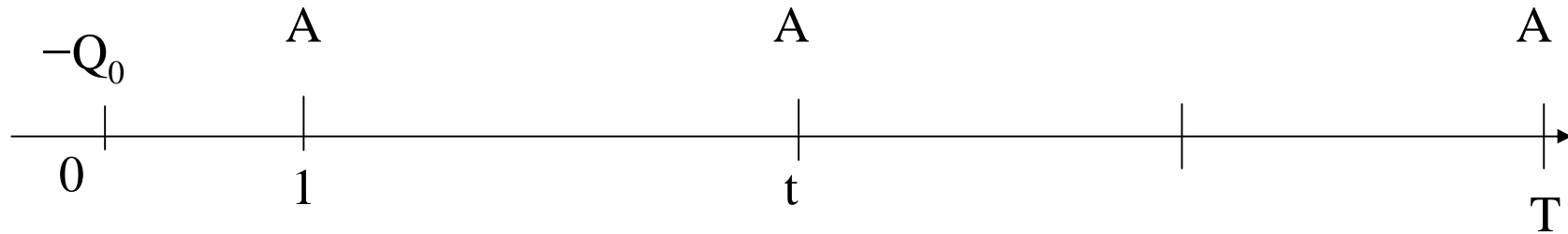


FIGURE 2
Formal (Fixed Rate – Prime Sector) Mortgage Design
Asset/ Lien Value over time

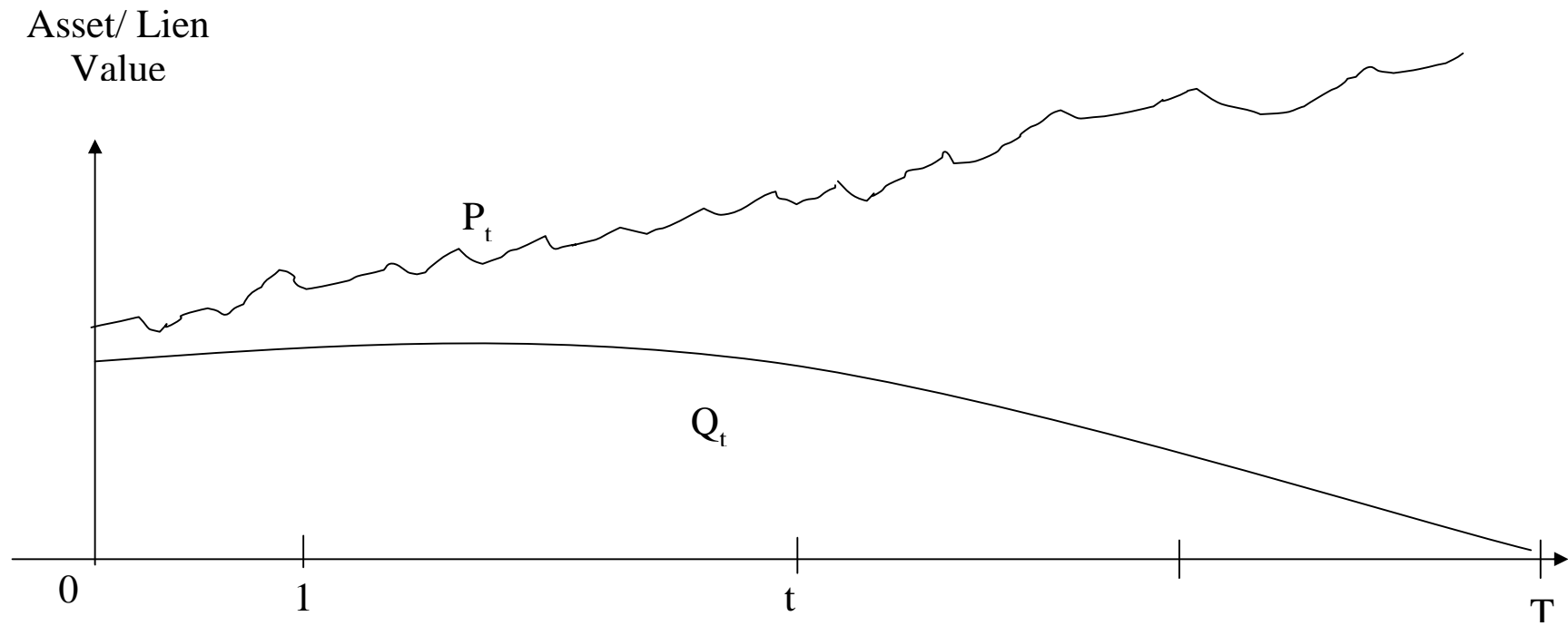
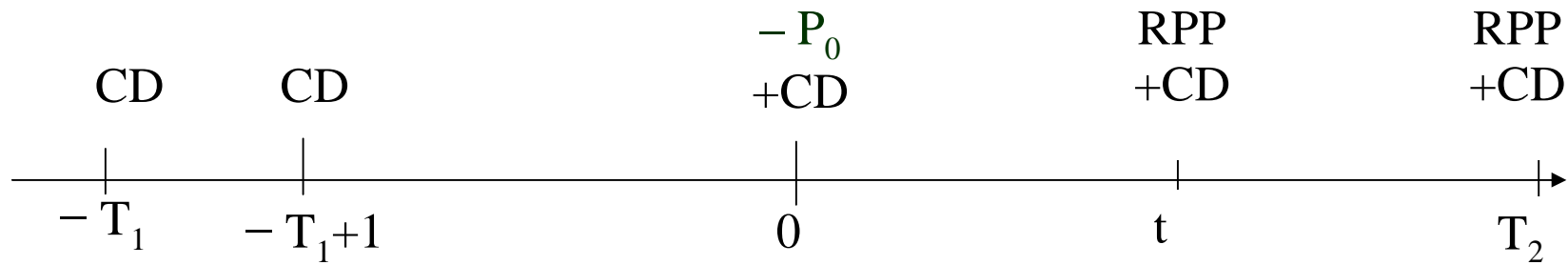


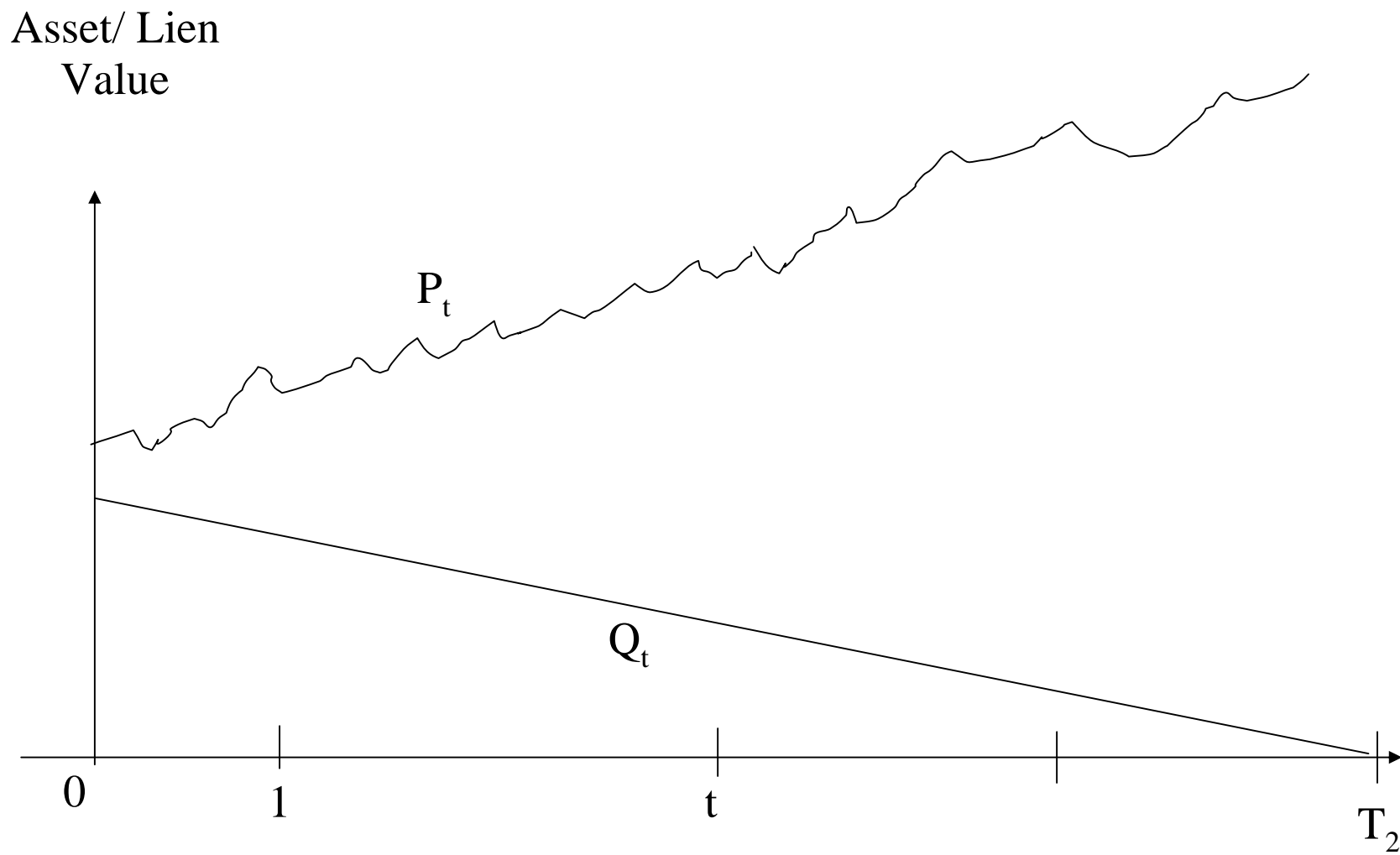
FIGURE 3
Cooperative Home Mortgage
Payments over time



Note: Cooperative Dues = $CD = \left(\frac{S}{T_1 + T_2 + 1} \right)$,

Regular Principal Payment = $RPP = \left(\frac{P_0}{T_3} \right)$

FIGURE 4
Cooperative Home Mortgage
Asset/ Lien Value over time



OUR RESULTS:

First, we optimally price the formal and cooperative mortgage. The term "price" in our paper is used in a broad sense (consistent with Baltensperger, 1978) to include not only the interest rate (as in the formal mortgage) but also the loan-to-value ratio as well as the tenure of the facility. Our pricing algorithm is more scientific than the ad hoc credit rationing constraints used currently by banks. Risk control at the micro-level is important to arrest the volatility at the macro-level, in accordance with the prognosis of Sheng (1997) and Renaud (2005).

Second, we realize that the lien profile of a mortgage issued by a housing finance cooperative is linear in contrast to the concave lien profile of a formal intermediary. This helps in reducing the tenure of the *endogenous* mortgage, building up an "equity cushion" faster, thus alleviating credit risk, and the overall cost of financing.

Third, a housing finance cooperative is also able to control interest rate risk better than its formal counterpart. The *endogenous* use of leverage ensures that any increase in the cost of borrowing is offset by the benefit of lending. Inflationary shocks thus impact on the tenure of the cooperative facility instead of pricing out the prospective homeowner by increasing the front-end costs of owning a home (as in a formal mortgage).

Finally, we conclude that gains from intertemporal trade make home financing through cooperatives *pareto-superior* [*pareto-inferior*] over its formal counterpart depending on the characteristics of a home, that of the borrower and the underwriting standards adopted. This verifies the claim of Besley *et al.* (1994) and Hart and Moore (1998) that efficiency of a cooperative is *mixed* when contrasted with formal credit markets. These results do not incorporate the lower transaction costs of a cooperative stemming from their very nature as a non-profit entity. If we were to do so, the results would tilt in their favor. Nonetheless, it is a responsibility of a cooperative manager to structure its portfolio by catering to the disadvantaged (with *low* income), aspiring to purchase a home (with *low* initial value and *medium* to *high* risk) and using the following underwriting constraints: *medium* income multiplier and *high* confidence level. This would suffice in internally generating a capital surplus critical for sustaining its growth and ultimately improving the status of the underprivileged.

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