Equity Participation Contracts and Investment: Some Theoretical and Empirical Results

Abdel-Hameed M. Bashir and Ali F. Darrat

Profit-sharing contracts have recently captured the attention of academicians, bankers, and policymakers, particularly those in the Middle East. These contracts are characterized by risk sharing, an element that forces the contracting parties (especially the financier) to fund only sound projects. The theoretical analyses of such contracts have received a major boost from a variety of models, including Khan (1986) and Haque and Mirakhor (1986), and empirical support from, for example, Darrat (1988) and Bashir et al. (1991). The bold claim of these models is that if the interest payment on financial capital were to be replaced by the profit-sharing arrangement, the level of investment would be enhanced instead of weakened.

A commonly used profit-sharing financial contract is known as *mushārakah* (equity participation). This contract is a limited partnership in which the investor(s) and the entrepreneur pool their capital to finance a specific investment project. Another version of *mushārakah* involves the investor participating in an existing enterprise by contributing capital. In both cases, the pro-rata distribution of profit is stated in the contract and losses are shared according to capital contribution. The investor is eligible to participate in the project's management, but may also waive this right.[1]

A *mushārakah* arrangement can be modeled as a two-person, two-period partnership game. In this setup, each player's utility depends on the other player's action through a commonly observed consequence (profit), which is itself a function of both players' actions and an exogenous stochastic environment. The game is thus one of decentralized decision making in which individual optimizers

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Abdel-Hamid M. Bashir is an associate professor of economics at Grambling State University, Grambling, Louisiana. Ali F. Darrat is a professor of economics and finance at Louisiana Tech University, Ruston, Louisiana.

[1]This waiver, nevertheless, may raise an incentive problem. The entrepreneur may misreport the outcome and/or exert less effort in maximizing the net returns of the project (moral hazard problem).

select their decisions so as to maximize their lifetime utilities. The game's outcome depends on these decisions.

This paper analyzes an equilibrium model of a *mushārakah* contract and investigates the effects of the contractual agreement on the consumption-investment decisions of the contracting parties. In particular, we focus on the effects of the profit-sharing ratio and the amount of internal finance (the equity share retained by the entrepreneur) on the amount of capital contributed by the investor (outside finance).[2] The analysis is carried out in a noncooperative game framework, for they make their decisions on the basis of different information and try to protect themselves by maximizing separate lifetime utilities. Two noncooperative games are considered: Cournot and Stackelberg. The noncooperative behavior is motivated by information asymmetry and short-lived partnership (Radner 1986). The method of analysis employed closely follows that of Myers and Majluf (1984) and Gale and Hellwig (1985). Our model, however, differs by relying on equity (rather than debt) to raise outside finance. In addition, the resultant theoretical model is subjected to empirical testing against actual time-series data obtained from an Islamic investment bank.

The paper's arrangement is as follows: the formal model's construction; a description of its solution; a statement of some testable implications along with a description of the data used, a summary of empirical findings, and concluding remarks.

The Model

Consider a competitive financial market. Here, investors and entrepreneurs negotiate the undertaking of equity-financed (no debt) projects in the first period and then divide the proceeds at the beginning of the second period. Each player is given an amount of capital in the first period but receives no capital in the second period. Each project needs a minimum amount of capital to be activated, but entrepreneurs do not have sufficient funds to activate their projects. Thus, an entrepreneur must issue common stocks (equity) to raise part of the cash needed to activate the project. If the project is not undertaken, the opportunity will evaporate. The investment portfolios of the investors are, based on their size and diversification, assumed to be at the level of perfect risk pooling. We assume that any capital not invested or consumed during the first period is subject to zakah (a 2.5 percent wealth tax on hoarded capital). Furthermore, since no debt contracts are allowed, attempts to sell equity may not convey a negative signal

[2]These two actions have been proposed in the finance literature as useful signals for the underlying value of the firm. See D. Downes and R. Heinkel, "Signalling and Valuation of Unseasoned New Issues," *Journal of Finance* 37 (May 1982): 1-10.

about the firm's (entrepreneur's) quality (Stiglitz and Weiss 1984). The equity market treats all those seeking equity similarly. Hence, any pair of investor and entrepreneur would have an interest in reaching an agreement, provided that both parties behave rationally.[3]

Now, let each player be given y^i units of capital and contribute $K^i \geq 0$ to the project, where i=I=investor and i=E=entrepreneur. If $K=K^I+K^E$ is the amount pooled to activate the project, and λ, $0<\lambda<1$, is the sharing ratio that goes to the investor, then the contract would be the array (K, K^I, K^E, λ). Let the risky project's return be described by a simple model of production in an environment of uncertainty and asymmetric information. Formally, let the production function be F(K,S), where K is as defined above, and S is the state of nature. We assume that the production function satisfies the following conditions:

(i) F (k, s) is strictly a concave function of K and S.

(ii) $F(0, S) = F(k, 0) = 0$

(iii) $F_k > 0, F_{kk} < 0$

At date 1, only the entrepreneur knows S, but at date 2, the state is observed free of charge. Without any loss of generality, let E(S)=1 and $Var(S)=\sigma^2$. Since the investor does not know S, the level of investment is necessarily state-independent, whereas the impact of asymmetric information is reflected in the distribution of profit between the investor and the entrepreneur in each state of nature.

In the absence of information asymmetry or what amounts to the same thing, the costs of observing the state, there would be no problem in achieving the first-best level of investment. This would be K^*, which maximizes the expected profit from the venture:

$$K^* \in \underset{K \geq 0}{argmax}\, E\,(F\,(k,\,S) - K^I - K^E) \tag{1}$$

Given (i), (ii), and (iii) above, it is clear that if K^* exists, it will be unique.[4]

[3]When the investor and the entrepreneur get together to write the contract, they decide the amount to be invested in a risky project, how the total investment is to be divided, and how the revenue is to be shared.

[4]In a frictionless market, it does not matter how K is raised (Modigliani-Miller). However, in an imperfect capital market, a firm's financing decisions act as signals conveying information to investors about the firm's business risk and profitability. See S. Myers, "Determinants of Corporate Borrowing," *Journal of Financial Economics* 5 (1977): 147-75.

However, since it is costly for investors to observe S and due to the fact that entrepreneurs cannot be entirely straightforward about their projects,[5] only the second-best solution may be possible. Since the entrepreneur is interested in convincing the investor to provide the required amount of capital to activate the project, he/she has to gain the investor's financial support through information transfer.[6] One way to do this is for the entrepreneur (person with inside information) to show his/her own willingness to invest in the project. Such willingness may serve as a signal to the financial market about the project's quality (Leland and Pyle 1977). However, the contract should be structured in such a way that the entrepreneur has no incentive to cheat (it should be incentive compatible).

As can be seen from equation (1), the profit is realized after each party receives its initial capital contribution (no dividends can be distributed before all obligations [payments] are fulfilled). Then, given the sharing ratio, the profit is shared. As the players are risk-averse, each will select an optimal decision in order to maximize his/her two-period expected utility. Formally, given λ, the problem is to choose K^i to solve:

$$\max U^i = E\,(C_1^{\,i}\, C_2^{\,i})^{\,1/2} \qquad \textbf{(2)}$$

subject to the constraints:

$$C_1^{\,i} \leq (y^i - K^i) \qquad \textbf{(3)}$$

$$C_2^{\,I} = K^I + \lambda\, E\,(F\,(k, S) - K^I - K^E\,) \qquad \textbf{(4)}$$

$$C_2^{\,E} = K^E + (1 - \lambda)\, E\,(F\,(k, S) - K^I - K^E\,) \qquad \textbf{(5)}$$

$$U\,(C_j^E \geq U\,(C_j^{E\,\prime}), j = 1, 2 \qquad \textbf{(6)}$$

where

$$C_1^{E\,\prime} \leq (y^i - k^{E\,\prime}) \text{ and } C_2^{E\,\prime} = K^{E\,\prime} + (1 - \lambda)\, E\,(F\,(k', s) - K^I - K^{E\,\prime}), \text{ with } K^E \geq K^{E\,\prime} \qquad \textbf{(7)}$$

$$K^i \geq 0, \quad i = I, E, \quad 0 < \lambda < 1 \qquad \textbf{(8)}$$

where U^i is strictly concave and increasing in its arguments $C_j^{\,i}$, j=1,2 is the

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[5]There may be substantial rewards for exaggerating positive qualities (an adverse selection problem).

[6]Note that transmitting information is assumed to be costly.

consumption of player i in period j, and y^i is initial endowment. The choice variable will be the investment level contracted in period one by player i or, equivalently, the consumption level C_1^i (since $C_1^i = y^i - K^i$).

Constraint (3) is a budget constraint which shows the initial endowment's division between consumption and investment. Note that from this constraint, investment is non-negative. Constraints (4) and (5) show that if the project succeeds, the next period's consumption will be the sum of the capital contributed (amount invested in the first period) plus the share of the profit generated from the project. However, in the case of loss, the next period's consumption may fall below the amount invested. Equation (6) is a constraint which shows that the entrepreneur will be better off if he/she retains more equity (investing in the project). Without any loss of generality, equation (6) is assumed to be an incentive compatibility constraint. As the entrepreneur maximizes his/her utility subject to his/her incentive constraints, constraint (6) is binding and can be dropped.

Since our purpose is to determine how the sharing ratio affects investment decisions, the utility function selected is maximized when the consumption in the two periods is equal, which makes consumption (and hence investment) in the two periods equally preferable. Given this structure, we will solve for the equilibrium values of consumption and investment using the two noncooperative games mentioned above.

The Cournot Solution

In the Cournot game, each player chooses his/her capital contribution K^i to maximize (2), believing that his/her partner will not be influenced by his/her choice. In other words, each player takes the other player's investment as invariant. Equilibrium will occur when the reaction curves intersect.

Solving for the equilibrium values of investment (capital) and consumption, we have:

The Investor Case:

The equilibrium investment is:

$$K^{*I} = \frac{1}{(2-\lambda)}\left((1+\lambda)\, y^I + \lambda y^E - 2\lambda\, EF\right) \qquad (9)$$

Substituting this value in equations (3) and (4), we have

$$C_1^{*I} = \frac{1}{(2-y)}\left(2\lambda\, EF + (1-2\lambda)\, y^I - \lambda y^E\right) \qquad (10)$$

$$C_2^{*I} = (1-\lambda)\, K^I + \lambda\, E\,(\mathrm{F} - K^E) \qquad (11)$$

For investment to be positive, λ should satisfy:

$$\frac{1 + \lambda}{2\lambda} y^I + \frac{1}{2} y^E > EF \tag{12}$$

Constraint (12) says that, for the investor's share in invested capital to be positive, the weighted sum of the initial endowments should exceed the expected future return of the project. Most probably this constraint will be satisfied for all values of λ.

The Entrepreneur Case

Solving for the equilibrium values of the entrepreneur, we obtain:

$$K^{*E} = \frac{1}{(1 + \lambda)} \left(y^E - \frac{(1 - \lambda)}{2 - \lambda} y^I - 2 (1 - \lambda) EF \right) \tag{13}$$

while the levels of first and second year consumption are:

$$C_1^{*E} = \frac{1}{(1 + \lambda)} \left(\lambda y^E - \frac{2 (1 - \lambda)}{2 - \lambda} EF \right) \tag{14}$$

$$C_2^{*E} = \lambda K^{*E} + (1 - \lambda) E (F - K^{*I}) \tag{15}$$

For the level of investment contributed by the entrepreneur to be positive, λ should satisfy:

$$\frac{1}{2 (1 - \lambda)} y^E + \frac{1}{2 (2 - \lambda)} y^I \geq EF \tag{16}$$

In both cases, the resulting investment levels require that the amount of expected revenue generated from the joint venture be less than the weighted sum of the initial endowments. This requirement will probably be satisfied, especially in the limiting case, when λ approaches zero or one. The condition will be met, particularly if the two partners contribute small amounts of capital, and so the expected revenue will be small.

If the investment level is positive in the Cournot game, the above results suggest that each player's contribution to the joint venture will depend on his/her initial endowment, his/her partner's endowment, the expected revenue, and the sharing ratio. The two players will invest more (consume less) as the difference between the weighted sum of their initial incomes and the expected revenue increases.

In summary, when the two partners (each acting as a follower) play a two-period Cournot game, the expected revenue will be smaller, for each one will contribute a small amount of capital.

The Stackelberg Solution

In the Stackelberg game, the entrepreneur is supposed to be the leader, while the investor acts as a follower. When selecting his/her contribution (equity share), the investor assumes that the entrepreneur's action is fixed and unresponsive to his/her choice. The entrepreneur's contribution (retained equity) serves as a signal to the investor and, since the entrepreneur is assumed to possess inside information about the project, his/her leadership behavior can be interpreted as communication. Communication is particularly important in this game, since its absence could result in no projects being undertaken.[7]

When maximizing his/her utility, the entrepreneur takes into consideration the investor's reaction function. The equilibrium investment values in this game are:

$$K^{*E} = \frac{1}{2}\left[\,(2-\lambda)\,y^E + (1-\lambda)\,y^I - 2\,(1-\lambda)\,EF\,\right] \tag{17}$$

$$K^{*I} = \frac{1}{2}\left[\,(1+\lambda)\,y^I + \lambda y^E - 2\lambda EF\,\right] \tag{18}$$

In this game, the lender assumes that his/her partner acts as a follower, and so maximizes his/her utility based on his/her partner's reaction function. The follower, on the other hand, obeys his/her reaction function and adjusts his/her investment (or consumption) to maximize his/her utility given the decision rule of the leader. For the levels of investment to be positive, the sharing ratio should satisfy the following conditions:

For the leader:

$$\frac{(2-\lambda)}{2\,(1-\lambda)}\,y^E + \frac{1}{2}\,y^I \geq EF \tag{19}$$

while in the case of the follower:

$$\frac{(1-\lambda)}{2\lambda}\,y^I + \frac{1}{2}\,y^E \geq EF \tag{20}$$

As the the difference between the left- and right-hand sides of the above inequalities become greater, the level of investment increases. Because the entrepreneur assumes a leadership position, he/she can act on additional information that is not available to the investor. Thus, his/her investment level (K^E) increases as the value of λ decreases. On the other hand, since the investor

[7]Note that λ, the sharing ratio, also conveys a signal to the investor. A high λ may, on average, mean a greater degree of risk. For similar arguments, see J. Stiglitz and A. Weiss, "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71 (June 1981): 393-410.

is assumed to be less informed and acts as a follower, his/her investment level increases as the value of λ increases. Such implications of the theoretical model appear to be empirically testable. Comparing the equilibrium values in the two solutions, the levels of investment will be lower in the Stackelberg solution. Note that the analysis in this paper assumes no fixed rate of return on capital, no time preference, and a special form of the utility function. Allowing for some discounting between the two periods may, of course, change the results stated above.

Specification and Data

Most of the theoretical models in business investment, such as those of Stiglitz and Weiss (1981, 1984) and Gale and Hellwig (1985), for example, have argued that market imperfection hampers the level of investment due to credit rationing. Incentive problems become particularly severe when equity is used as the method of finance. Asymmetric information can have significant cost disadvantages for providers of external finance. Consequently, equity holders would likely demand a premium to purchase the shares of relatively good firms. This premium can raise the cost of new equity finance above the opportunity cost of internal finance (Fazzari et al. 1988). Recently, Kahn (1990) empirically demonstrated that incorporating incomplete risk sharing into asset pricing (stocks and equity) can help rationalize the behavior of asset returns. His results suggest that allowing for incomplete markets may contribute to resolving the equity premium puzzle.

In what follows, we investigate the behavior of investment under equity participation when the sharing ratio (return to equity) is stated a priori. Specifically, we examine the effects of market signals (λ and K^E) on the level of outside finance (K^I). Given the equilibrium solutions, an equation is formulated in order to relate these market signals, initial endowments, and expected profits to the level of outside finance. The basic function is:

$$K^I = f(K^E, \lambda, y^I, y^E, EF, Z) \qquad \textbf{(21)}$$

where:

K^I = amount of equity invested by the investor (outside finance) amount of equity retained by the entrepreneur
K^E = amount of equity retained by the entrepreneur
λ = the profit-sharing ratio (percentage) accruing to the investor
y^I = investor's endowment

y^E = entrepreneur's endowment (This can be interpreted as the firm's financial slack, which is the sum of cash in hand and the amount invested in the project.)
EF = expected future returns
Z = amount of zakah payable on uninvested capital

Since the model features asymmetric information, we expect the entrepreneur's equity in the project (K^E) to induce the investor to increase his/her contribution. Further, in a limited liability framework, a higher endowment (financial slack) on the part of the entreprenuer can have a positive effect on external finance (external equity), for this cash leverage can work as a cushion in cases of low returns. Note that the financial slack is not a signal; in fact, it is an observable characteristic at the time of contracting. As Leland and Pyle (1977) have shown, it is costly for the entrepreneur to retain a significant ownership interest in the firm, since by doing so he/she forgoes diversification of his/her personal portfolio. Therefore, he/she would retain a significant equity only if he/she expects high future returns. Thus, the rational investor would view the equity retained as a signal for worthy projects. We expect a higher K^E to have positive effect on K^I.

Moreover, since λ (the profit-sharing ratio) is set by bargaining, a higher λ could motivate the investor to increase his/her equity contribution. In particular, if the entrepreneur takes an action that might turn out to be costly if the project fails, investors may infer from this that the project's return is expected to be high. Such actions serve as signals of motivation. On the other hand, the entrepreneur who offers a high λ may be viewed as one willing to take a high risk. This may lead the investor to contribute less to the project. Therefore, λ may have a positive or negative effect on K^I.

The investor's income (y^I) and the level of zakah (Z) should induce more participation, since any unconsumed income is subject to zakah (wealth tax). As can be seen from both equations (9) and (18), expected returns (EF) can have either a negative or a positive effect on K^I depending on the static versus the dynamic solutions of the equilibrium values.

The key proposition tested in this paper is whether the level of investment (K^I) is related to either of the two prime signals: the profit-sharing ratio (λ) and the level of internal equity (K^E). In our empirical model, we will use data from the balance sheet of the Kuwait Finance House. The initial entrepreneur's endowment (y^E) is represented by the sum of the shareholders' capital and continuous investment accounts. The initial investor endowment (y^I) is proxied by the total funds in the savings accounts. The entrepreneur's capital contribution (K^E) is represented by the total equity (share capital plus total reserves), while the outside contribution (K^I) is represented by 60 percent of all savings accounts.[8] The expected future profit is approximated by the total annual profits realized in various activities before such profits are distributed. The rationale for using data from the bank balance sheet is that depositors (savers) in such institutions are considered equity holders who entrust their savings to the bank. The bank, in turn, then acts on their behalf by investing these deposits. The investor's returns would thus vary with those of the bank.

Empirical Results

Time-series (annual) data spanning the period 1978-88 were compiled from various annual reports of the Kuwait Finance House. It is obvious that such a small sample (eleven observations) will not produce reliable estimates. However, as more annual data or quarterly times-series figures are unavailable, the annual data were interpolated to distill the corresponding quarterly figures. In so doing, we used the interpolation procedure available in the Regression Analysis of Time Series (RATS), version 3.1.[9]

Equation (21) can be rewritten in the following estimatable form:

$$Ln\,K_t^I = \beta_0 + \beta_1\,Ln\,K_t^E + \beta_2\,Ln\,\lambda_t + \beta_3\,Ln\,y_t^I + \beta_4\,Ln\,y_t^E + \beta_5\,Ln\,EF_t + \beta_6\,Ln\,Z_t + u_t \tag{22}$$

where variables are defined as before; u_t is a white noise disturbance term with the usual classical properties; Ln indicates natural logarithm; t indicates time in quarters; and β_i's (i=1,2,3,4,6) are the parameters to be estimated. The logarithmic form is used for its convenience, since the estimated parameters become direct measures of elasticities. Moreover, imposing a logarithmic form on the regression may serve as a corrective for any potential heteroscedasticity of the error term.

Before presenting the empirical results from equation (22), we must note that any economic or financial research employing economic data on Kuwait during the 1980s should make allowances for that country's stock market crash which began in the third quarter of 1982 and lasted through the third quarter of 1984.[10] Given its far-reaching economic effects, the investment equation includes a (0,1) dummy variable (DUM) which takes the value unity for 1982:Q3 to 1984:Q3 and takes the value zero otherwise.

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[8] In this analysis, we consider the bank as an insider since, by depositing their money in a profit-sharing account, depositors enter in a sharing arrangement with the bank, which then lends and/or invests these funds in another profit-sharing arrangement. Thus, the bank in this model is viewed as the entrepreneur.

[9] All series data are available from the authors upon request.

[10] See several issues of the Annual Budgetary Reports of the Kuwait Finance House.

Based on the quarterly data from 1978:Ql to 1988:Q4 and using the Ordinary Least-Squares (OLS) method, the empirical estimates from equation (22) are:

$$
\begin{aligned}
Ln\, K_t^I = {} & \underset{(4.98)}{-142.481} \;\; \underset{(1.76)}{-0.257\, Ln\, K_t^E} \;\; \underset{(4.90)}{+0.308\, Ln\, \lambda_t} \;\; \underset{(1.03)}{+0.175\, Ln\, Y_t^I} \\
& \underset{(4.54)}{+1.187\, Ln\, Y_t^E} \;\; \underset{(3.13)}{+0.025\, Ln\, EF_t} \;\; \underset{(1.73)}{+3.349\, LnZ_t} \\
& \underset{(3.51)}{-0.415 DUM}
\end{aligned}
\qquad \textbf{(22)}'
$$

$$\bar{R}^2 = 0.96 \,,\; SE = 0.2423 \,,\; \nu = 0.04 \,,\; D4 = 2.16 \,,$$

$$Q8 = 14.60 \,,\; Q10 = 8.15$$

where the numbers in parentheses below the coefficient's estimates are the absolute values of the t-ratios, and

- $\bar{R}^2$ = the coefficient of multiple determination adjusted for degrees of freedom
- SE = the standard-error of the regression
- ν = the modified Von Neuman ratio (as modified by Press and Brooks)[11] to test for first-order autocorrelation of the error term
- $D4$ = the Wallis statistic to test for fourth-order autocorrelation
- $Q8$ = the Box-Ljung statistic to test for eighth-order autocorrelation
- $Q10$ = the Box-Ljung statistic to test for tenth-order autocorrelation of the error term.

Since time-series models are quite sensitive to the presence of significant autocorrelation (Granger and Newbold 1974), it is advisable that a battery of alternative tests of autocorrelation be applied when estimating such models. Thus, in addition to the von Neuman test for first-order autocorrelation, the Wallis test, which is particularly important in quarterly estimated equations, is also applied. Besides first-order and fourth-order autocorrelation, the Box-Ljung procedure is performed to assess whether higher-order autocorrelation processes are present in the estimates. None of these alternative tests indicates the presence of significant serial correlation. This finding implies that the regression results reported in equation (22)′ are statistically reliable and that the t-values obtained are true measures of the statistical significance (or lack thereof) of the estimated parameters.

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[11]On this, see G. S. Maddala, *Introduction to Econometrics* (New York: Macmillan Pub. Co., 1988).

The empirical results suggest that the proposed model fits the data quite well, as evidenced by the high value of the adjusted R-squared (=0.96). Most of the estimated coefficients have the correct signs as predicted by the underlying theory. Moreover, the majority of these coefficients are statistically significant. Interestingly, the estimated coefficient on the dummy variable representing the Kuwaiti stock market collapse of 1982-84 is significantly different from zero; it is negative. This suggests that the financial panic resulting from the stock market crash appeares to have hampered investment activities in Kuwait.

As discussed earlier, the primary focus of this paper is on the possible effects of internal equity (K^E) and the profit-sharing ratio (λ) on the level of investment (K^I). The results reveal that K^E has a negative effect, though this is significant only at the 10 percent level. While the underlying theory expects the effect of K^E to be positive, the negative sign can nevertheless be rationalized. For those cases requiring funds for projects known a *priori* to be risky, an increase in the entrepreneur's financial contribution would imply a decrease in the investor's financial contribution. In other words, when the entrepreneur has a large financial slack and holds an optimistic view about future prospects, only limited external finance is needed.

Perhaps more important, the empirical results clearly show that the profit-sharing ratio (λ) exhibits the expected positive effect on the level of investment. Such an effect is highly significant at better than the 1 percent level. The results suggest that a 10 percent increase in this profit-sharing ratio could stimulate the level of investment by more than 3 percentage points. Sizable (positive) elasticities are also found for the remaining proposed regressors, particularly for the entrepreneur's endowment (y^E), with a unitary elasticity.

Conclusion

This paper constructs an equilibrium theoretical model of investment under the general principle of a profit-sharing arrangement known as *mushārakah* or equity-participation. The analysis is conducted in a noncooperative game framework in which the project participants have different information. Each attempts to maximize his/her own lifetime utility based on the information they have received. Two alternative noncooperative games are examined: Cournot and Stackelberg. The resultant theoretical model is then tested using quarterly data from the Kuwait Finance House, a profit-sharing investment bank. Among a number of possible investment determinants, the model highlights the effect of the profit-sharing ratio and the amount of internal finance (the entrepreneur's endowment) on investment. The empirical results concur with the underlying theoretical model in that the profit-sharing ratio, in particular, plays a stimulative and highly significant role in determining the level of investment in the context of profit-loss sharing contracts. These theoretical and empirical results provide further supportive evidence that the replacement of a (fixed) interest payment on financial capital by a profit-sharing arrangement will enhance (rather than hamper) investment activity.

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