CAPITAL MARKET IMPERFECTIONS AND FINANCIALIZATION OF REAL SECTORS IN

EMERGING MARKETS: PRIVATE INVESTMENT AND CASH FLOW RELATIONSHIP REVISITED

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ABSTRACT

The paper analyzes the impacts of cash flow from multiple investments in real and financial sectors on the new fixed investment spending of real sector firms. The empirical results based on the Euler equation approach and semi-annual firm level data from two major emerging markets, Mexico and Turkey, suggest that profits and rates of returns from fixed and financial assets have differential effects on fixed investment spending of real sector firms. Accordingly, increasing availability *and* accessibility of alternative investment opportunities in financial markets can become instrumental in channeling real sector savings to short-term financial investments instead of long-term fixed capital formation and thus lead to deindustrialization.

Keywords: Financial Liberalization, Private Investment, Financing Constraints, Financialization, Mexico, Turkey

JEL Classification Codes: E22, E44, O16, G11

1. INTRODUCTION

What are the determinants of fixed investment under capital market imperfections? This question has been at the center of a growing number of research following the financial liberalization wave of the 1990s that reshaped the economic landscape of a majority of developing countries. According to the proponents of this global move towards liberalized financial markets, the radical surge in capital flows combined with increasing competition and removal of barriers of entry in domestic asset markets are expected to eliminate capital market imperfections that limit developing country investment performance.[1] This positive view of financial liberalization, however, has been challenged given the declining fixed capital formation rates in major emerging markets during the 1990s amid comprehensive liberalization programs (UNCTAD, 2003). Accordingly, financial liberalization has been criticized for causing increasing uncertainty and volatility, boom-bust cycles and financial crisis episodes, persistence of capital market imperfections, and reverse flow of funds from developing to developed countries (Diaz Alejandro, 1985; Stiglitz, 2000; UNCTAD, 2003, 2006, 2007; Weller, 2001). Furthermore, 'the financialization view' has questioned the allocative efficiency-gain arguments by pointing out the portfolio choice problem faced by real sector firms between *irreversible* fixed and *reversible* financial investments after financial liberalization. Accordingly, increasing volatility and uncertainty, increasing real interest rates and lack of credit availability, and increasing product market competition when combined with the availability of higher rate of returns in the financial markets may hinder real investments while favoring short-term financial investments (see. Crotty, 2005; Demir, 2008a; Dumenil and Levy 2005; Epstein and Jayadev 2005; Orhangazi, 2008; Stockhhammer, 2004). In this respect, increasing share and importance of financial investments in the portfolios of real sector firms is pointed out as one of the main reasons behind the disappointingly low fixed capital formation rates during the 1990s and 2000s.

On the other hand, the *financialization* of real sector investments may not necessarily be a negative development for real sector firms. Accordingly, given that rate of return on financial assets is an increasing function of risk, real sector firms may choose to exploit such investments to hedge against uncertainties regarding their operations as suggested by the standard portfolio theory of capital. As a result, financial investments may have a positive impact on the overall profitability of private firms and therefore on new fixed investment spending under credit constraints.

The central motivation of this paper is to combine these opposite views of financial liberalization when analyzing the determinants of fixed investment under credit constraints. In particular, we explore the net effect of

internal funds on new fixed investment spending of real sector firms in the presence of multiple investment options in real *and* financial sectors. In this respect, building on the financialization view, the article revisits the findings of previous research on the relationship between cash flow and private investment under credit constraints by suggesting that the availability of internal funds may be a necessary but not sufficient condition for financing real investment projects. Accordingly, profits from fixed and financial assets, and their respective rates of returns may have different effects on new fixed investment decisions.

Given the lack of micro-level analysis of developing country experiences, we tested the above hypothesis using micro evidence from two major emerging markets, Mexico and Turkey. The dataset we employed is unique and can be expected to advance the existing debate on the determinants of private investment under financial liberalization. Briefly, we developed a highly detailed semi-annual panel of all publicly traded industrial firms in Mexico and Turkey using comprehensive balance-sheet and income statement data.

The choice of these two countries is of no coincidence. Briefly, Mexico, and Turkey have been among the forerunners of financial liberalization and their experiences occupy a central place in policy discussions regarding the effectiveness of liberalization programs in developing countries.[2] However, despite being portrayed as success stories at the early stages of comprehensive liberalization programs, their ensuing economic performances were far from initial expectations. In particular, despite the radical increases in capital inflows during the 1990s and 2000s, low fixed capital formation rates remain an important problem and a significant source of puzzlement for policy makers in both countries (UNCTAD, 2003, 2006).[3]

The empirical results based on the Euler equation approach provide support to the main hypothesis while identifying certain differences between Mexico and Turkey. Briefly, in both cases we found that capital market imperfections continue to persist under financial liberalization. More importantly, we discovered that profits from real and financial sector investments have quite different effects on private fixed investment spending. Accordingly, profits from financial investments appeared to provide a hedging mechanism by providing additional cash flow in the subsequent periods. In both Mexico and Turkey, however, the positive effect was much weaker than the one from operating profits. The net effect of cash flow from financial investments is actually negative in the case of Mexico, and even though it is positive in Turkey, the economic effect is significantly smaller than that of operating profits. However, once controlled for the (negative) effect of rates of return on financial assets, the cash flow from financial investments is found to have a positive effect on fixed investment spending in both countries. Furthermore,

comparing differential impacts of cash flow on small and large firms, we found that large firms faced an increasing credit squeeze during the 1990s. More interestingly, unlike large firms our findings indicate a positive effect of financial profits on fixed investment spending of small firms in both countries.

The paper is organized as follows: the next section presents a brief review of the literature on the effects of financing constraints and financial liberalization on investment. The third section introduces the financialization hypothesis followed by the theoretical model in section four. The fifth section introduces the data, methodology and estimation methods. The sixth section presents the main results. The final section concludes the paper.

2. FINANCIAL LIBERALIZATION, CAPITAL MARKET IMPERFECTIONS AND VOLATILITY

Under the assumption of perfect capital markets with firms having equal and unlimited access to investment finance at an exogenously determined cost, financing decisions or capital structure of firms should not have any impact on private investment spending (Modigliani and Miller, 1958).[4] However, this assumption has long been challenged, first by the empirical research that consistently found liquidity variables such as cash flow as significant determinants of firms' investment decisions (e.g. Bond and Meghir 1994; Devereux and Schianterelli, 1990; Fazzari et al., 1988). Secondly, on the theoretical front, it is argued that under the presence of capital market imperfections private firm investments may be constrained by the availability of internal funds.[5] For example, in the case of hierarchy of finance approach firms are not indifferent between internal and external sources of funds since the former costs less than the latter due to information asymmetries and agency costs (Stiglitz and Weiss, 1981).

Given imperfect capital markets, therefore, financial liberalization was expected to generate capital market deepening, reduce agency costs and asymmetric information, and increase efficiency while directing savings to more efficient investment projects. Yet, on purely theoretical grounds the net effect of financial liberalization on total pool of loanable funds is ambiguous. Initially, its effect on increasing household savings was seen as one of the key components of the reform programs. However, financial liberalization may indeed negatively affect savings, first by decreasing total amount of precautionary savings as a result of increasing risk sharing across capital markets (Devereux and Smith, 1994). Secondly, when financial liberalization includes capital account liberalization capital outflows may actually outweigh capital inflows. Thirdly, the degree of credit availability is constrained by the interest rate, which depends on its previous level under autarky.

Regarding the net effect of financial liberalization on the efficient allocation of loanable funds, there is also some ambiguity. Given that liberalization is expected to increase total funds available for more risky investments, it

may negatively affect banking sector portfolios by encouraging credits to more risky borrowers (IMF, 1995). Furthermore, Laeven (2003) for 13 developing countries, and Gelos and Werner (2002) for Mexico, found that financial liberalization affected small and large firms differently by releasing financial constraints for the former and increasing for the latter. Moreover, there are also serious questions over the net contribution of foreign banks to capital accumulation and financial stability (Goldberg et al., 2000).

In terms of credit availability, like in several developing countries, private firms in Mexico and Turkey continue to face credit rationing and are forced to finance investments mostly from internal sources and short-term borrowing (EIU, 2008a, 2008b; Guncavdi et al., 1998; UNCTAD, 2003; World Bank, 2005). For example, as of 2005 the share of short-term debt in total debt of top 500 manufacturing firms in Turkey was around 70% with an average of 72% between 1997-2005 (ISO). Furthermore, average total bank credit to the private sector as a share of GDP in both Mexico and Turkey has been depressingly low: 15% and 18% in 1980-89, 25% and 20% in 1990-99, and 16% and 20% in 2000-2005 respectively, which are well below the high-income OECD average of over 160%. The low level of credit generation is even more striking and suggests structural problems given the increasing share of foreign banks reaching 82% and 36% of total equity in Mexico and Turkey in 2006. Regarding capital market deepening, both Mexico and Turkey have developed money markets mostly in short-term government papers, while capital markets in private securities remained underdeveloped (Rojas-Suarez and Weisbrod, 1996; SPK, 2004). As of 2004, for example, more than 98% of secondary market transactions were of government securities in Turkey (SPK, 2004).

Financial liberalization, while failing to eliminate capital market imperfections, also led to sharp macroeconomic fluctuations in developing countries. Kose et al. (2003), for example, found an increase in consumption volatility in emerging markets during the 1990s. Furthermore, Gabriele et al. (2000, p.1051) pointed out the 'high, rising and unpredictable" volatility of capital flows to developing countries during the 1990s compared to late 70s and 80s. Increasing capital flow volatility is also shown to raise inflation and exchange rate uncertainty that encourage speculative financial investments (UNCTAD, 2006). The volatility of real Short-term Capital Flows in Mexico and Turkey has also substantially increased following financial liberalization as seen from the 2 and 3 folds increase in the average coefficient of variation of such flows from 1982-1989 to 1990-2005. The empirical evidence also shows an increase in the volatility of stock markets and the sales and earnings of firms for the last three decades (Comin and Mulani, 2006; Grabel, 1995). In the case of growth volatility, although it has

declined across developed countries during the 1990s, the results are not uniform in developing countries with an overall volatility twice higher than the developed ones (Montiel and Serven, 2004). In addition, capital flows are shown to have significantly negative effects on investment in tradable goods sectors through changing relative prices, which partly explain decreasing business savings and employment contraction in these sectors (Frenkel and Ros, 2006). Furthermore, excess volatility in exchange rates raises inflation uncertainty and encourages financial investments by real sector firms (Demir, 2008a; Felix, 1998; UNCTAD, 2006, 2007).

Overall, increasing volatility can also become self-exacerbating as the investors shorten their time horizons either to benefit from speculative gains or to avoid excess risk (Grabel, 1995; Keynes, 1964, Ch.12). On the other hand, from a Minskian perspective, uncertainty and financial fragility in a market economy can be considered an endogenous process where "periods of successful completion of financial commitments [lead] to an increasing uncertainty of completion". Thus, even a stable, complete and perfect financial system produces increasing fragility, which becomes increasingly more susceptible to major disruptions. (Kregel, 2007, p.4, 1997, pp.543-548; also see Taylor and O'Connell, 1985; and Taylor, 2004, Chs. 8 and 9).

In the case of the effects of uncertainty and volatility on investment performance, the existing empirical research suggests an unambiguously direct link. In both developed and developing countries (including Mexico and Turkey), uncertainty and volatility in key macro and micro prices (including different measures of uncertainty in real GDP growth, real exchange rate, inflation, etc.) are found to have an economically and statistically significant investment and growth reducing effect (Aizenman and Marion, 1999; Demir, 2008a, 2008b; Driver and Moreton, 1991; Federer, 1993; Pindyck and Solimano, 1993; Serven, 1998; also see Taylor, 2004, Chs.4 and 9).

3. THE FINANCIALIZATION SYNDROME

The portfolio choice problem is not a new topic in the economics literature. Tobin (1965), for example, already pointed out the substitutability of real and financial assets in portfolio balances. Accordingly, depending on the respective rates of returns investors decide how to allocate their portfolios between real and financial assets. Likewise, Felix (1998), Taylor (1998), Tornell (1990), UNCTAD (2006) argued that under increasing uncertainty, real sector firms may prefer to invest in liquid *reversible* assets in the financial sectors that also offer comparable or higher rates of return on their investments rather than on *irreversible* fixed assets. There is now a growing body of empirical and theoretical research exploring exclusively this issue that can be referred to as the *financialization* literature that focuses on the following key points: i) increasing rates of return on financial capital over and above

those on fixed capital, ii) increasing acquisition of short term financial assets by real sector firms, and iii) decreasing fixed investment rates. Accordingly, Crotty (2005), Demir (2008a), Dumenil and Levy (2005), Epstein and Jayadev (2005), Felix (1998), Orhangazi (2008), Stockhammer (2004) provide empirical evidence on this structural change in the portfolio allocation decisions of non-financial corporations. Building on this strain of financialization literature, we argue that increasing uncertainty and volatility when combined with persistent capital market imperfections and booming financial markets with large spreads between returns on financial and real sector investments results in the financialization syndrome among real sector firms as the investors shorten their time horizons, either to benefit from speculative gains *or* to avoid excess risk.

In order to show the profitability of financial investments, we looked at the average rate of return in financial markets using the net arbitrage gain as a proxy (calculated using the uncovered interest parity condition as the difference between domestic monthly T-bill rates deflated by the next period average depreciation of domestic currency, and the US T-bill rate). Accordingly, the annual average financial rate of return gap on domestic financial assets (over foreign ones) has been two and sometimes three digit numbers reaching an average of 11% in Mexico and 22% in Turkey during 1991-2005. The average real interest rates also remained very high at 4.2% in Mexico and 9.4% in Turkey during 1991-2005 with annual peaks being at 9.4% in 1999 and 23.8% in 2002 respectively.

The presence of such high returns appears to be one of the main reasons why both real and financial sector firms prefer to invest in short-term financial assets, especially in the form of government debt securities.[6] This process also leads to serious currency and maturity mismatch in the balance sheets of real and financial sector firms as a result of borrowing from abroad in foreign currency with short-term maturities at lower interest rates and then lending to the government (and consumers). In addition to limiting credit availability, the high interest rates also cause currency appreciation that hurt firm competitiveness and further contribute to the financialization syndrome (UNCTAD, 2003, 2006, 2007). The real sectors join this cycle either through buying debt securities or via repurchase agreements intermediated through banks. For example, as of 2005, more than a quarter of total assets and around 37% of total interest income of private commercial banks in Turkey came from public sector securities. Moreover, the average share of financial revenues in total profits of top 500 manufacturing firms increased from around 23% between 1982 and 1989 (pre-liberalization period) to around 112% between 1990-2002 (post-liberalization period) (ISO).

The existing evidence also supports the presence of such a structural change in the real sectors of developed countries. In the case of the US, for example, the ratio of profits of financial corporations to those of non-financial corporations (NFC) rose from around 15% in the early 50s and 60s to around 50% in 2001 (Crotty 2005, p.85). During this period, the ratio of NFC portfolio income to cash flow also rose from around 14% in 1960s to around 37% towards the end of 90s (Crotty, 2005, p.107). In the case of increasing cost of external financing, Dumenil and Levy (2005) estimated that about 2.4 and 1.7% of profits in France and the US respectively were lost to interest payments since the mid 1980s. Likewise, Epstein and Jayadev (2005) estimated that the income share of firms engaged primarily in financial activities has risen over and above that of non-financial sector averages in all OECD countries between 1960s and 1970s, and 1990s. In the case of firm level studies, using panels of publicly traded industrial firms in Argentina, Mexico and Turkey, Demir (2008a) find an economically and statistically significant positive (negative) effect of the rates of return gap between fixed and financial assets on fixed investments (financial investments) in all three countries. Likewise, in the case of US Orhangazi (2008) finds a significantly negative effect of financialization on real investments of non-financial firms.

Turning to our dataset, we found a sharp decline in the median operating profit margins of Mexican and Turkish firms from 13% and 20% during early and mid 1990s to around 8% and 4% in 2003 respectively (Figure 1).

<p align="center"><Figure 1 here></p>

Next, we examined the changes in the volatility of operating profits in Mexico and Turkey and compared them with the changes in the share of financial investments in the asset structure of firms. We found some evidence of hedging motive behind firms' portfolio diversification between fixed and financial assets. Accordingly, the simple correlation and covariance of volatility of operating profits and the share of financial assets in total assets is found to be positive. The covariance between rates of returns on fixed and financial assets also lends support to the financialization view. Accordingly, we found a very low yet positive covariance between these two rates of returns in Mexico (0.03). It is however, negative in the case of Turkey (-0.26) as would be expected under the portfolio theory of capital.

The overall picture of Mexican and Turkish economies during the 1990s is also consistent with the insights of financialization view. During this period, despite booming financial markets both countries experienced declining fixed capital formation rates that led UNCTAD (2003) to include them in a group of reindustrializes among other emerging markets. While the gross fixed capital formation as a percentage of GDP fell from an average of 21% to

19% between 1980-89 and 2000-05 in Mexico, it stayed at the same level of 22% in Turkey, both of which are below the 25% minimum that UNCTAD (2003, p.61) identified as the required threshold to generate high and sustained growth in middle-income developing countries.

4. THEORETICAL FRAMEWORK

In order to test the capital market imperfections and financialization hypotheses, we adopt the Euler model of investment, which allows for financial frictions and is based on Bond and Meghir (1994) and Laeven (2003). As discussed by Blundell et al. (1992), Bond and Van Reenen (1999) and Laeven (2003), the Euler equation approach has a number of advantages over other methods such as the q-model of investment or the Abel and Blanchard (1986) model. Accordingly, the Euler model (as developed by Abel, 1980) avoids the use of share price data and "the economic structure characterizing the investment decision may be investigated without imposing the auxiliary assumptions that have been used to measure the shadow value of capital" as is the case in the q-model or Abel and Blanchard (1986) (Blundell et al., 1992, p. 399). For simplicity, any bankruptcy costs and taxes, which were initially included in Bond and Meghir (1994) are excluded.

We assume that a firm's main target is to maximize its present value (V_t) subject to capital accumulation and external borrowing constraints. We incorporate financial frictions by assuming that debt is the marginal source of external finance and risk-neutral debt holders demand an external finance premium, $\eta_t = \eta(B_t)$ where $\partial \eta / \partial B > 0$ due to agency costs and asymmetric information, which forces heavily indebted firms to pay an increasing premium on their borrowing. The gross required rate of return on debt is assumed to be equal $(1+r_t)(1+\eta(B_t))$, where r_t is the riskless rate of return and given our assumption of risk neutral share holders, it is equal to the interest rate on default-free bonds and is given exogenously to the firm. Also a non-negativity constraint is enforced on dividends in order to have debt rather than equity to be the firm's marginal source of finance (i.e. $D_t \geq 0$). The advantage of this modification is that the optimal path for investment remains unaffected by the introduction of debt finance into the model and makes it unnecessary to make any assumptions about the firm's optimal borrowing policy.

The profit function is then given by $\Pi_t = \Pi(K_t, L_t, I_t)$, where L_t is a vector of variable inputs and I_t is the gross investment at time t. The owner of the firm then tries to maximize (E is the expectations operator):

$$V_t = E_t[\sum_{J=0}^{\infty} \beta_{t+J}^t D_{t+J}] \tag{1}$$

where $\beta_{t+J}^t = \prod_{i=1}^{J} 1/(1+r_{t+i-1})$ for $j \geq 1$, and $\beta_1^1 = 1$

subject to:

$$D_t = \Pi_t + B_t - (1+r_{t-1})(1+\eta(B_{t-1}))B_{t-1} \tag{2}$$

$$K_t = (1-\delta)K_{t-1} + I_t \tag{3}$$

$$D_t \geq 0 \tag{4}$$

Substituting (2) into (1) for D_t and eliminating I_t from $\Pi_t(\ )$ by using (3), we get the following maximization problem for capital K_t:

$$\underset{\{K_{t+j}, L_{t+j}, I_{t+j}, B_{t+j}\}}{Max} E_t[\sum_{j=0}^{\infty} \beta_{t+j}^t \{(1+\lambda_{t+j})(\Pi_{t+j}(K_{t+j}, L_{t+j}, K_{t+j} - (1-\delta)K_{t+j-1}) + B_{t+j}$$
$$- (1+r_{t+j-1})(1+\eta(B_{t+j-1}))B_{t+j-1})\}] \tag{5}$$

where λ_{t+j} is the shadow cost of internal funds (i.e. non-negativity constraint on dividends).

Solving this standard maximization problem yields the following empirical Euler equation under the null hypothesis of no financial frictions (see Bond and Meghir, 1994 and Laeven, 2003 for a full derivation):

$$\left(\frac{I}{K}\right)_{t+1} = c(1-\phi_{t+1}) + (1+c)\phi_{t+1}\left(\frac{I}{K}\right)_t - \phi_{t+1}\left(\frac{I}{K}\right)_t^2 + \frac{\phi_{t+1}}{b(\varepsilon-1)}\left(\frac{Y}{K}\right)_t - \frac{\phi_{t+1}}{b\alpha}\left(\frac{CF}{K}\right)_t +$$
$$\frac{\phi_{t+1}}{b\alpha} J_t + V_{t+1} \tag{6}$$

where $\phi_{t+1} = (1+\rho_{t+1})/(1-\delta)$ with $\rho_{t+1} = (1+r_{t+1})(p_t / p_{t+1}) - 1$ being the real discount rate, $(CF/K)_t = (p_t Y_t - w_t L_t)/(p_t K_t)$ is the ratio of real cash flow to the capital stock. $J_t = (p_t^I / p_t)\{1 - p_{t+1}^I(1-\delta)/[(1+r_t)p_t^I]\}$ is the user cost of capital, $Y_t = F_t - G_t$ is net output, V_{t+1} is an error term, p_t is the price of firm's output, w_t is the vector prices of the variable inputs L_t and p_t^I is the price of investment goods.

Equation (6) is commonly used in empirical research for testing financing constraints in the presence of one type of investment in the portfolio of the firm. If, however, the financialization hypothesis is correct, then the availability of financial investments and their rates of returns will need to be taken into account in the empirical estimations. In theory, if we assume that r_t is equal to the rate of return on financial investments, equation (6) implicitly includes the impact of the profitability of financial investments through the discount rate that the firm uses

in discounting its future dividends. Thus the higher the rate of return on alternative (i.e. financial) investments, the higher the opportunity cost and therefore the discount rate of fixed investment projects. This will eventually lead to lower net present value of fixed investment projects, and thus lower investment spending.

(a) Empirical testing

Following equation (6) the presence of financing constraints is then tested by the following reduced form specification for Mexico and Turkey separately:

$$\left(\frac{I}{K}\right)_{it} = \beta_1\left(\frac{I}{K}\right)_{i,t-1} + \beta_2\left(\frac{I}{K}\right)_{i,t-1}^2 + \beta_3\left(\frac{Y}{K}\right)_{i,t-1} + \beta_4\left(\frac{CF}{K}\right)_{i,t-1} + d_t + f_i + v_{it} \tag{7}$$

where d_t and f_i are time and firm specific effects correspondingly with subscripts i and t referring to the firm and (semi-annual) time period. Under the null hypothesis of no financial frictions, $\beta_1 > 1$, $\beta_2 < -1$, $\beta_3 \geq 0$, and $\beta_4 < 0$. In this specification, if we find $\beta_4 > 0$ that is increasing cash flow has a positive effect on investment, the firm is assumed to be financially constrained.

Besides testing for financial frictions, we also test whether cash flow from different types of assets (and respective rates of returns) have different effects on fixed investment decisions. Accordingly, as discussed in the previous section, we contend that in the presence of multiple investment options, the sign on β_4 might be indeterminate. In particular, real sector firms under uncertainty may prefer to invest in liquid reversible assets (I_t^f) that also offer comparable or higher rates of return on their investments rather than in irreversible fixed assets (I_t^k). If this is the case real sector firms may have financial investments (I_t^f) that is positively related to the interest rate, which is positively related to the external borrowing cost.

Therefore, the definition of cash flow can make a significant difference especially given the lack of any consensus regarding its measurement in the empirical research. Surprisingly, however, the construction of cash flow variable in investment equations varies without any consistent approach to what constitutes available internal funds for fixed investment. The data availability rather than theory seems to be the dictating rule (see, for example, Bond and Meghir, 1994; Eisner, 1978; and Gelos and Werner, 2002). Given the endogenous nature of portfolio allocation decision, what the previous research omitted in the measurement of cash flow is the interdependent relationship between fixed and financial capital. As a result, when measured by financial rather than operating profits the coefficient β_4 may have a positive or negative sign (or the same sign but different magnitudes) depending on the

effects of financial profits on fixed investments, especially if there are any frictions within the firm between different departments in charge of investment planning. Thus, we may get a negative sign not because of a lack of financial frictions but because of a possible negative relationship between financial profits and fixed investment decisions to the extent that increasing financial profits signal increasing rates of return on financial assets while raising the discount rate in equation (6). Or, in the opposite case, we may conclude that financial investments are used as a hedging mechanism and as such have a welfare enhancing effect in developing countries. Yet, even then we may have differential economic impacts depending on the source of profits and departments in charge of decision making within the firm. In both cases, however, if there are no internal frictions within the firm we expect to find a positive relationship between cash flow variables and fixed investment once controlled for their respective rates of returns.

In addition to testing for financial frictions and differential impacts of cash flow from different sources, we also separate expected profitability rates from cash flow by looking at the effects of the profitability of different types of investments. If both financial and operational profitability variables have a positive impact on new fixed investment decisions, this may suggest that real sector firms use financial investments as a hedging tool and use expected profits from such activities the same as from operational activities despite a higher discount rate in equation (6). However, if we fail to find a positive relationship between rates of return on financial investments and fixed investment spending, this will imply that high return alternative investments in non-operational activities may result in a low-level equilibrium with lower fixed investment rates.

(b) Estimation

We measure the financial profits variable as the realized financial income net of financial expenses.[7] Namely, it includes dividend income from subsidiaries and affiliates plus interest income and other dividends, plus net gain from foreign exchange transactions, plus other income from other operations (such as from financial derivatives) net of losses and expenses from such operations. The operating profits are defined as net-operating revenues minus cost of goods sold, minus operating expenses. The financial assets include current assets (cash, bank deposits, etc.) and short-term investments (treasury bills, repo, bonds, etc.), while net fixed assets include all existing fixed capital stock net of land and depreciation. A detailed discussion of the variables is presented in the appendix. For convenience we have re-written equation (7) as follows:

$$I_{i,t} = \beta_1 I_{i,t-1} + \beta_2 I_{i,t-1}^2 + \beta_3 KO_{i,t-1} + \beta_4 CF_{i,t-1} + d_t + f_i + v_{it} \qquad (8)$$

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where I_{it} is measured as the real net fixed investment of firm i in period t and is measured by the logarithmic difference of net fixed capital stock at constant prices (Δk_{it}).[8]

$(Y/K)_{it}$ is measured by the capital-output ratio *(i.e. KO that is the inverse of Y/K)* and controls for the presence of imperfect competition, and the proportionality of capital and output. Hence, a decreasing *KO* is expected to increase new investment. Also, the lag in the response of investment spending to capital/output ratio result from the role of expectations, and adjustments costs and delivery lags (Abel and Blanchard, 1986).

CF_{it} is a set of cash flow and profitability variables controlling for the effects of the availability of internal funds and expectations about future profitability, and the opportunity cost of fixed investment including: a) current and lagged ratios of financial and operating profits to beginning capital stock (*FK* and *OK* respectively), which capture the effects of financial and liquidity constraints as well as of the cash flow from financial investments and, b) rates of return on fixed (r^k) and financial (r^f) assets where the latter captures not only the market signals regarding future profitability in non-real sector activities but also the opportunity costs.

If Modigliani and Miller (1958) were correct, cash flow should not have any effect on fixed investment decisions. On the other hand, in the presence of capital market imperfections the previous research assumed that total profitability has a uniform effect on investment decisions independent of its subcomponents since the primary source of profits is presumed to be operational activities. In other words, for a real sector firm operating profits and r^k is assumed to have the same positive effect on fixed investment as financial profits and r^f. However, as discussed earlier the sign on financial profitability measure is indeterminate: a positive operating profits (including r^k) and financial profits (including r^f) coefficient would suggest that financial constraints are important and both profit variables have the same positive effect on investment decisions. If this was the case, then financial investments by real sectors firms would indeed have a positive impact on capital accumulation by providing additional funds. If, however, we found a positive operating profits (*OK*) and r^k, and a negative financial profits variable (*FK*) and r^f, this would suggest that a short-term distortion might have long-term consequences by inducing deindustrialization. To the extent that the rate of return on financial assets reflects the opportunity cost of fixed investment as well as future profitability of such assets, it is expected to have a negative coefficient.

5. DATA AND METHODOLOGY

(a) Data

The datasets are from the audited financial accounts of publicly traded industrial firms and are unbalanced. The period analysed is semi-annual and cover 1990:2-2003:2 for Mexico and 1993:1-2003:2 for Turkey. The primary reason for using semi-annual data is to capture the effects of sudden changes in profitability and risk conditions in the market on the investment positions of the firms (especially regarding financial investments and profits). Given the highly liquid nature of short-term financial investments, annual end-of-year values would be highly biased in presenting the changes in both stock and flow values of financial assets and profits during the year.[9]

The firm level data for Mexico mostly came from Economatica, a commercial database providing financial statement data for publicly traded Latin American companies. For Turkey the data were obtained from the Istanbul Stock Exchange Market online database. In some cases Worldscope International and original firm financial statements are also used for robustness and completeness. We have eliminated those firms with less than 8 consecutive time series from the dataset as well some extreme outliers. In the case of Mexico, there are 79 firms in the final dataset with 63 in manufacturing (ISIC 15-37), 4 in mining (ISIC 10, 12, 13, 14) and 12 in construction (ISIC 45). For Turkey, there are 172 firms all in manufacturing (ISIC 15-37). The manufacturing firms in the dataset represent 36% and 22% of total manufacturing sales in Mexico and Turkey in 2003 respectively. A description of the data and measurement issues are provided in the appendix.

(b) Methodology

The samples consist of non-random stock market quoted firms, which may receive market listing only if they satisfy certain conditions. Therefore, in order to control for parameter endogeneity resulting from the presence of unobserved firm-fixed effects as well as to correct for the correlation between the lagged I_{it} and firm specific effects and the error term, we used a Generalized Method of Moments (GMM) estimator by Arellano and Bond (1991)'s first differencing transformation that is widely applied to have a consistent estimate for dynamic panel equations. The first differencing is assumed to remove the individual firm-specific effects while the GMM estimation corrects for any remaining endogeneity as well as the correlation between Δv_{it} and Δy_{it}:

$$\Delta y_{it} = \alpha \Delta y_{it-1} + \beta' \Delta x_{it} + \Delta v_{it} \qquad (9)$$

In this transformation, if x_{it} is serially uncorrelated then $x_{i,t-s}$ will be uncorrelated with x_{it}^* for $s \geq 2$. This means that if the error term in the investment equation is serially uncorrelated, lagged values of the transformed (or

untransformed) dependent variable and other right-hand side variables dating *t-s* will be uncorrelated with the transformed error term as long as *s ≥ 2*. Since remote lags are not likely to provide much additional information we did not include all moment restrictions (we used $2 \leq t \leq 3$ lagged values of right hand side variables and time dummies at levels as instruments). The validity of the instruments and the estimation are tested by two specification-tests (Arellano and Bond, 1991). The first one is the Sargan-test of over-identifying restrictions for testing the validity of instruments used. The second one is the m_2 test that is a second-order serial-correlation test of the residuals from the first-difference equation given that the use of endogenous *t-2* dated variables is valid only if there is no serial correlation in the error term of order 2.

6. RESULTS

<Table 1 here>

The results from Table 1 on the cash flow variables (β_4) both confirm and to some extent challenge our initial hypothesis. Accordingly, in the case of Mexico a negative relationship is found between current financial profits and fixed investment spending at a significant level. In contrast, the current and lagged operating profits variables are found to be significantly positive suggesting the presence of capital market imperfections in line with Gelos and Werner (2002). In contrast, the lagged values of financial profits are found to be positive although with a much weaker economic effect compared to the operating profits. Furthermore, when analyzing the joint effect of current and past values of financial and operating profits, we found a negative and insignificant effect of FK_t and FK_{t-1} as revealed by the sum of the coefficients and a positive effect of OK_t and OK_{t-1}. In the case of Turkey, however, we found a positive relationship between both current and past financial profits and fixed investment spending as implicitly assumed by the previous research (Blundell et al., 1992; Bond and Meghir, 1994; Fazzari et al., 1998; Gelos and Werner, 2002; Laeven, 2003). Similarly, the current and past operating profits variables are also found to have a significantly positive effect on new fixed investments as in Mexico suggesting the presence of capital market imperfections. Comparatively speaking, however, the joint effect of current and past financial profits is found to be four and a half times smaller than the operating profits.

The results suggest that financial profits do actually have different effects on fixed investment decisions of real sector firms compared to operating profits, especially with respect to current period cash flow variables. Yet, financial profits also appear to provide a hedging mechanism by providing additional cash flow in the subsequent periods as shown by the positive coefficient on the lagged *FK* variable. In both cases, the positive economic effect is

found to be much smaller than the one on *OK* and is indeed negative on a net basis in Mexico. The reason for the positive financial profits variable in Turkey may be the fact that financial profits and financial investments account for a larger share of the profit and capital structure of Turkish firms than Mexican counterparts. Accordingly, as of 2001 the financial revenues to net profits ratio was 547 with an average of 112 between 1990 and 2002 for the top 500 manufacturing firms (ISO). According to our sample, the average annual financial profits to net sales ratio in Turkey (Mexico) fluctuates from around 10% (1%) to as high as 30% (10%) with spikes during times of financial turmoil. Also, Turkey has a higher financial assets (I^f/K) and FK_{it} ratios compared to Mexico (Table 4).

Moreover, the results from Table 1 show that investment is not exactly following the functional form in (6) given that β_1 or β_2 do not follow the projected investment paths.[10] On the other hand, β_3 appeared with the expected sign at statistically significant levels in both countries.

In addition, we also examined the effects of profitability expectations as measured by the past rates of returns on fixed and financial assets (i.e. r^k_{t-1} and r^f_{t-1} respectively). The question we asked is whether increasing cash flow, apart from releasing financial constraints, also signals the firm's future investment opportunities and therefore affects the results in Table 1. The results in Table 2 show that in Mexico past rates of return on financial assets have a significantly negative effect on current period's fixed investment spending. In contrast, the rate of return on fixed assets is found to have a significantly positive effect. On the other hand, in the case of Turkey both variables appeared with a positive sign suggesting that expected financial investment profitability has the same effect on fixed investment spending as the profitability of real sector activities. A closer look, however, reveals that the size of r^f is 480 times smaller than the r^k, suggesting significant economic differences in their respective effects on fixed investment spending.

<center>**<Table 2 here>**</center>

On the other hand, if there were no frictions within the firm that prevent resource pooling, there would be no reason why a particular firm cannot pull all of its cash flow from real and financial sector activities together and reallocate the aggregate cash flow to investments in different types of assets. If this is the case, then the coefficient on financial profits variable in Table 1 may be reflecting only the differential impacts of the rates of return on fixed and financial assets. Therefore, once controlled for the rate of return, the cash flow from financial investments can be expected to have the same sign as that from fixed investments. In column (3) of Table 2 we checked for this possibility by controlling the effect of rate of return on financial assets when re-examining the effects of cash flow.

The results show that once controlled for the negative effect of rate of return on financial assets, the cash flow from financial investments has a robust positive effect in both countries (though statistically significant only in Turkey).

In order to see if there are any differences between small and large firms in their investment response to financial and operating profits, we have divided the sample into two using firm size based on the median sales in the sample. We then constructed a small-firm dummy that took the value of one if real net sales at time t were smaller than the sample median. Consistent with Laeven (2003) the results from Table 3 suggest that large firms in both Mexico and Turkey faced an increasing credit squeeze during the 1990s as shown by their higher sensitivity of fixed investment to operating profits. In other words, large firms are found to be more dependent on internal funds than small firms that may be due to the elimination of directed credits after financial liberalization.

<Table 3 here>

We also found that increasing financial profits have a larger fixed-investment depressing effect in large Mexican firms. In fact, financial profits appear to have a positive effect on fixed investment spending of small Mexican firms. Similarly, in the case of Turkey financial profits have a more positive effect on fixed investment spending of small firms. We can offer two contesting arguments to explain such differences between small and large firms in both countries: a) the effect of financial profits on fixed investment may be smaller for large firms since they already had better diversification of their investment portfolios prior to financial liberalization; or b) while small firms use cash flow from financial investments as an extra source of funding, large firms utilize such profits for acquiring new financial investments (given their better access to such investment options) to the extent they reflect increasing opportunity cost of real sector activities. The fact that financial profits actually have a negative coefficient for large Mexican firms provides more support to the second explanation, which suggests that large firms are less likely to use profits from such investments to finance fixed investment projects.

7. CONCLUSION

The financial liberalization wave of the 1990s and the following integration of global capital markets opened new venues for portfolio diversification of real sector firms including the possibility to invest in non-real sector activities such as those in financial markets. Given this observation, the current paper revisited the capital market imperfections debate using some of the insights of portfolio theory of capital and the financialization view. Accordingly, we have tested the impacts of the financialization of real sectors as well as the persistence of capital market imperfections in two major emerging markets after financial liberalization. The empirical results using firm

level data confirm the findings of other papers by showing the persistence of credit constraints. In addition, the key contribution of this paper has been to show that in the presence of multiple investment options the availability of internal funds is a necessary but not sufficient condition for financing fixed investments. Accordingly, the source of funds is as much important as the availability of funds themselves given the differential impacts of profits and rates of return from fixed and financial assets. Although, theoretically speaking, increasing share of financial assets in the portfolios of real sector firms may play a positive role in hedging risks and increasing profitability, and therefore in increasing overall efficiency, our results provide mixed evidence for this conclusion. Accordingly, past profits from financial investments are found to be providing additional funds (as operating profits) to support new fixed investment spending. However, the net economic effect is found to be weaker than that of operating profits, and indeed becomes negative in the case of Mexico. Furthermore, we find that the past rates of return on fixed and financial assets have exactly the opposite effect on new fixed investment spending of private real sector firms in Mexico, that is positive for the former and negative for the latter. In contrast, we find both rates of return to have a positive effect on new fixed investments in Turkey, although with a 480 times stronger economic effect for the rate of return on fixed assets than financial ones. However, after controlling for the rates of return on both types of assets, cash flow from both fixed and financial investments are found to have a positive effect on new fixed investment spending in both countries (though statistically significant only in Turkey).

The findings indicate that the financialization of real sector investments may be behind the slowing down of capital accumulation leading to deindustrialization in developing countries. Accordingly, in contrast to the expectations of the proponents of uncontrolled financial liberalization and deregulation, increasing availability and accessibility of financial investments to real sector firms may actually be detrimental to long term investment and growth prospects of developing countries. Given these findings, some policy recommendations to increase real investment rates in developing countries include: a) elimination of capital market imperfections in the form of opening up of long-term credit channels for fixed investments, b) providing macro and microeconomic stability that helps reduce market volatility and real interest rates (through risk premium), and increase planning horizons of real sector firms, c) reducing real interest rates that not only depresses real investment but also lures firms to engage in financial investments, d) avoiding misalignment of exchange rate that hurt the competitiveness of real sector firms and overall trade performance, e) reducing public deficits and borrowing requirement that contribute to high interest rates.

Finally, financialization of real sector activities encompass a broader set of questions and policy debates including the role played by international capital flows in limiting the policy choices available to developing (and developed) countries. In particular, given that financial liberalization has been the Pandora's Box, we suggest that there is an urgent need to reform both the domestic and the international financial system so that domestic and foreign savings are directed towards productive investment rather than speculative and highly volatile financial ones. To achieve this, the excess volatility in capital flows should be curbed using capital controls as recommended by UNCTAD (2006). This will not only help reduce boom-bust cycles, but also decrease economic uncertainty and volatility in key macro and micro prices including the inflation and the exchange rate. Given that currently under liberalized financial markets the monetary policy is mostly limited to the control of short-term interest rates, restoring control to financial markets would free central banks from the pressure to raise interest rates to curtail financial speculation and avoid capital flow reversals. This would also release the pressure from real sectors by reducing the opportunity cost of fixed investment projects, both by lowering the cost of external financing and by reducing the rates of returns on alternative investments in the financial markets.

ENDNOTES

[1] Annual foreign exchange trading to world trade ratio increased to 90/1 in 2004 from 2/1 in 1973 (BIS, 2004).

[2] For a review of the liberalization experiences of Mexico and Turkey, see Demir (2004), Lustig and Ros (1999) and Yeldan (2006).

[3] The net real short-term capital inflows (in 2000 prices) to Mexico and Turkey between 1990-2005 reached $147 and $120 billion compared to -$64 and $6 billion respectively between 1982-89. Similarly, the real FDI inflows were $203 and $26 billion between 1990-2005 compared to $20 and $2 billion between 1982-1989.

[4] For a critical and thorough analysis of this line of literature see Taylor (2004), Chs.6, 8.

[5] For a review, see Blundell et al. (1996) and Hubbard (1998).

[6] Besides public sector indebtedness, there are structural factors causing persistently high real interest rates in these and other developing countries. In particular, restrictive monetary policy is used as a means both to fight against inflation (through aggregate demand and exchange rate policies) and to attract foreign capital flows (especially given increasing volatility of capital flows and exchange rate volatility) (UNCTAD, 2003, 2006, 2007). For a thorough analysis of inflation targeting and its effects on interest rates and exchange rate, see the special issue of *International Review of Applied Economics, 22*(2), 2008.

[7] Cost of borrowing, which is the interest cost, is excluded from the financial profit calculations given that the amount barrowed might be used for financing fixed investment as well as financial investments. Therefore it cannot be taken as a financial or operational cost account in calculating the net profits variables.

[8] $\Delta k_{it} = \log[K_{it} / K_{i,t-1}] = \log[1 + \Delta K_{it} / K_{i,t-1}] \cong \Delta K_{it} / K_{i,t-1} \cong I_{it} / K_{i,t-1} - \delta$

where δ is the depreciation rate.

[9] Given the highly liquid nature of financial investments, a better choice would be to use quarterly data. Yet, given that quarterly financial statements are not subject to independent auditing in any of the two countries, we use semi-annual statements.

[10] A similar problem is encountered by Laeven (2003).

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Table 1: Fixed Investment and Cash-flow Relationship

	Mexico						Turkey					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
I_{t-1}	-0.241***	-0.25***	-0.238***	-0.212***	-0.23***	-0.213***	-0.086***	-0.091***	-0.091***	-0.073***	-0.095***	-0.078***
	(0.022)	(0.019)	(0.023)	(0.023)	(0.023)	(0.022)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.003)
I^2_{t-1}	0.014	0.020**	0.029*	0.012	0.015	0.017	-0.010***	-0.009***	-0.010***	-0.013***	-0.018***	-0.01***
	(0.014)	(0.009)	(0.016)	(0.017)	(0.017)	(0.016)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
KO_{t-1}	-0.043***	-0.048***	-0.047	-0.038***	-0.04***	-0.037***	-0.074***	-0.076***	-0.077***	-0.06***	-0.051***	-0.051***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)
FK_t	-0.05***		-0.05				0.01***		0.004***			
	(0.024)		(0.05)				(0.001)		(0.001)			
FK_{t-1}		0.015*	0.008					0.013***	0.012***			
		(0.008)	(0.036)					(0.001)	(0.001)			
OK_t				0.149***		0.121***				0.045***		0.05***
				(0.028)		(0.047)				(0.002)		(0.003)
OK_{t-1}					0.059	0.066***					0.033***	0.022***
					(0.041)	(0.024)					(0.001)	(0.001)
sargan	1	1	1	1	1	1	0.999	0.999	0.999	0.999	0.999	1
m1	0	0	0	0	0	0	0	0	0	0	0	0
m2	0.944	0.944	0.83	0.807	0.864	0.846	0.362	0.352	0.351	0.317	0.341	0.321

Note: Arellano-Bond dynamic panel-data estimation two-step GMM results (using Stata 9.2's xtabond command) with robust standard errors in parenthesis. The dependent variable is the I_{it} from equation (8). I_{t-1} is net fixed investment by firm i at time $t-1$, KO is capital-output ratio measured as inverse of Y/K, FK and OK are financial profits and operating profits to capital stock ratios. All regressions include a set of (unreported) time dummies. *Sargan* is Sargan-test for overidentifying restrictions. *m1* and *m2* are is first and second-order serial correlation tests. Standard Errors (in parenthesis) are heteroskedasticity consistent. (***), (**), (*) refer to significance at 1%, 5% and 10% level respectively.

Table 2: Rates of Return and Fixed Investment

	Mexico			Turkey		
	(1)	(2)	(3)	(1)	(2)	(3)
I_{t-1}	-0.223***	-0.233***	-0.239***	-0.073*	-0.077***	-0.082***
	(0.021	(0.021)	(0.021)	(0.004)	(0.004)	(0.005)
I^2_{t-1}	0.013	0.03	0.033	-0.007**	-0.012***	-0.011***
	(0.013)	(0.024)	(0.021)	(0.003)	(0.002)	(0.004)
KO_{t-1}	-0.039***	-0.044***	-0.046***	-0.042*	-0.067***	-0.074***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
r^k_{t-1}	0.109***			0.048*		
	(0.035)			(0.002)		
r^f_{t-1}		-0.004***	-0.004***		0.0001***	-0.0001
		(0.001)	(0.001)		(0.00003)	(0.0001)
FK_{t-1}			0.036			0.006***
			(0.038)			(0.001)
sargan	1	1	1	0.999	0.999	1
m1	0	0	0	0	0	0
m2	0.864	0.907	0.911	0.289	0.311	0.302

Note: r^k_t and r^f_t are the rates of return on fixed and financial assets. For other variables refer to Table 1.

Table 3: Fixed Investment and Cash-flow Relationship in Small versus Large Firms

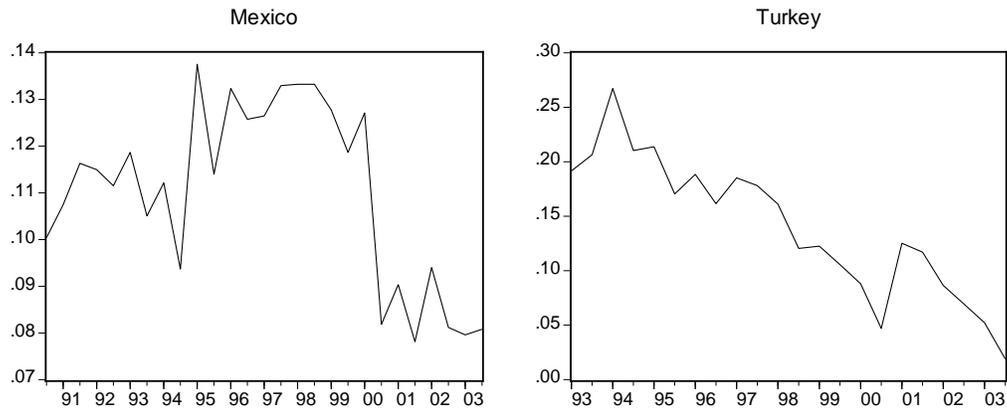|	Mexico		Turkey	
	(1)	(2)	(1)	(2)
I_{t-1}	-0.244***	-0.242***	-0.102***	-0.098***
	(0.024)	(0.023)	(0.004)	(0.003)
I^2_{t-1}	0.018	0.015	-0.019***	-0.008***
	(0.018)	(0.015)	(0.004)	(0.002)
KO_{t-1}	-0.043***	-0.046***	-0.065***	-0.08***
	(0.005)	(0.005)	(0.006)	(0.005)
OK_{t-1}	0.189*		0.043***	
	(0.101)		(0.002)	
$(OK{*}D^{Small})_{t-1}$	-0.045		-0.019***	
	(0.077)		(0.003)	
FK_{t-1}		-0.054		0.009***
		(0.124)		(0.001)
$(FK{*}D^{Small})_{t-1}$		0.122		0.007***
		(0.125)		(0.001)
sargan	1	1	1	1
m1	0	0	0	0
m2	0.748	0.896	0.352	0.378

Note: For variable definitions refer to Table 1. D^{small} is a size dummy that takes that takes the value of one if net sales at time t are smaller than the sample median.

Table 4: Summary Statistics

Mexico	*I*	*KO*	*OK*	*FK*	r^k	r^f	I^f/K
Mean	0.012	1.963	0.110	0.015	0.107	-0.242	14.328
Median	-0.001	1.568	0.071	0.004	0.071	0.037	8.041
Maximum	2.150	16.561	4.589	3.936	3.377	11.018	92.120
Minimum	-1.289	0.032	-2.323	-1.304	-2.387	-22.415	0.075
Std. Dev.	0.238	1.602	0.302	0.171	0.278	1.779	17.490
Turkey	*I*	*KO*	*OK*	*FK*	r^k	r^f	I^f/K
Mean	0.013	0.607	0.492	0.244	0.530	1.532	0.211
Median	-0.002	0.421	0.297	0.077	0.328	0.385	0.145
Maximum	2.176	8.545	8.402	14.564	8.053	92.684	0.926
Minimum	-2.554	0.005	-5.252	-4.696	-5.153	-53.798	0.000
Std. Dev.	0.255	0.658	0.773	0.808	0.754	6.725	0.197

Note: *I* is net fixed investment, *KO* is capital-output ratio *OK* is operating profits to capital stock ratio, *FK* is financial profits to capital stock ratio, r^k and r^f are rates of returns to fixed and financial assets, I^f/K is the financial assets to financial assets plus net fixed assets ratio.

Figure 1: Operating Profitability

Note: Operating profitability is defined by the operating profits to net sales ratio.

1. MEASUREMENT ISSUES AND GENERAL ACCOUNTING PRINCIPLES (GAAP)

Since 1984 Mexican GAAP requires firms to apply inflation accounting in balance sheets and income statements to correct for the effects of inflation. As a result of the price-level inflation accounting system, average Consumer Price Index (INPC) is used in calculating semi-annual values for each period. In converting to constant prices, Producer Price Index (INPP) period averages are used for net sales, operating profits, net profits before taxes and financial profits in the income statements, while INPP end-of-period values are used for net fixed and financial assets in the balance sheets. For Turkish manufacturing firms, in converting to constant prices, manufacturing price index end of period values are used for financial and fixed assets in the balance sheets while period averages are used for net sales, operating profits, and financial profits in the income statements. Further details on measurement issues and GAAP for both countries are available from the author.

2. DATA DEFINITIONS AND SOURCES

FA_{it}: Financial Assets represents end of period financial assets the firm holds and includes current assets (cash, bank deposits, other current assets, cheques) and short-term investments (Treasury bills, government bonds, private sector bonds, REPO and other short term investments).

FK_{it}: $FP_{it}/K_{i,t-1}$

FP_{it}: Financial Profits

I^f/K_{it}: $FA_{it} / (FA_{it} + K_{it})$

K_{it}: Net Fixed Assets.

KO_{it}: Capital-output ratio measured as K_{t-1}(beginning fixed capital stock)/net sales

OK_{it}: Operating Profits/$K_{i,t-1}$

r^k_{it}: Rate of Return on Fixed Assets measured as end of period operating profits (calculated as net sales minus cost of goods sold minus operating expenses) divided by net fixed assets (using the average of period beginning and ending net fixed assets as the denominator).

r^f_{it}: Rate of Return on Financial Assets calculated as FP_{it}/ FA_{it} (period averages).

(a) Mexican firm level variables

All data are converted to fixed prices using the INPP at 2003 December prices from Banco de Mexico.

FA_{it}: Includes cash, short-term investments, and investment in other companies. In the company accounts, long term investments in other companies (not affiliates) are restated for inflation (based on INPC) and recorded at current prices. The sum is expected to reflect total marketable and liquid monetary assets held by the firms.

FP_{it}: Includes net foreign exchange gain, financial income, and income from other financial operations. The income (net) from other financial operations includes gains (losses) from marketable securities and short term investments, profits (losses) from selling of shares on other companies, etc.

K_{it}: Includes net property, plant and equipment and land given that land is not disclosed separately in the Economatica database. The data are at replacement cost till 1997 and at current prices since then. During the estimation, several methods, which are available from the author upon request, are applied to test for the consistency of this variable because of the change in its measurement.

(b) Turkish firm level variables

All data are converted to fixed prices using Manufacturing Price Index at 1995 January prices from the Central Bank of Turkey.

FA_{it}: Includes current assets (cash, bank deposits, other current assets, cheques) and short-term investments (stocks, treasury bills, government bonds, private sector bonds, REPO and other short term investments). We did not include long-term financial investments in other firms given that under Turkish GAAP the long-term financial fixed assets are recorded at historical cost.

FP_{it}: Includes dividend income from subsidiaries and affiliates plus interest income and other dividends, plus other income from other operations, net of losses and expenses from other operations. Other income from other operations account included gains from foreign exchange fluctuations as well as other types of income such as from swaps etc.

K_{it}: Includes all existing capital stock net of depreciation and land (which is not subject to depreciation and is recorded at historical cost without revaluation).

<Table 4 here>