Financial Liberalization, Private Investment and Portfolio Choice: Financialization of Real Sectors in Emerging Markets

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Abstract

Using firm level panel data, we analyze the impacts of rates of return gap between financial and fixed investments under uncertainty on real investment performance in three emerging markets, Argentina, Mexico and Turkey. Employing a portfolio choice model to explain the low fixed investment rates in developing countries during the 1990s, we suggest that rather than investing in irreversible long term fixed investments, firms may choose to invest in reversible short term financial investments depending on respective rates of returns and the overall uncertainty in the economy. The empirical results show that increasing rates of return gap and uncertainty have an economically and statistically significant fixed investment reducing effect while the opposite is true with respect to financial investments.

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1. Introduction

The effects of uncertainty, risk and volatility on the investment performance of developing countries have been of particular interest in the recent economics literature especially given the declining fixed capital formation rates in major developing countries during the 1990s (UNCTAD, 2003). In this respect, the empirical work so far suggests a general consensus regarding their negative effects on private investment performance in both developed and developing countries. Nevertheless, there are relatively few empirical studies exploring the channels through which uncertainty and risk affect investment. In particular, the interactions among fixed investment, uncertainty, and portfolio choice remain an unexplored field of research. The absence of empirical work on the portfolio choice problem of real sector firms is particularly surprising given the increasing integration of international goods and capital markets and the widening gap between the real and financial sector transactions.[1]

The current paper is the first empirical study that looks into the portfolio choice real sector firms in developing countries face between real and financial sector activities. Accordingly, the current paper argues that following financial liberalization real sector firms face a portfolio choice problem in their investment decisions between two broad categories of assets: fixed and financial. In the face of these two investment options, increasing risk and uncertainty when combined with capital market imperfections, higher real interest rates, and increasing rates of return in the financial markets, may encourage short-term financial investments over long term fixed investment projects. In other words, increasing availability *and* accessibility of alternative investment opportunities in financial markets when combined with domestic market rigidities and uncertainty can become instrumental in channelling real sector savings to short-term financial investments instead of long-term fixed capital formation and thus lead to deindustrialization in those economies.

The portfolio choice problem and the optimum allocation of resources under multiple investment options 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,

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[1] The annual foreign exchange to world trade ratio reached 90/1 in 2004 from 2/1 in 1973 (BIS, 2004).

depending on the respective rates of returns investors decide how to allocate their portfolios between real and financial investments. Likewise, Tornell (1990) argued that given the uncertain environment in developing countries, real sector firms may prefer to invest in more 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. However, despite such insights, there was no empirical study looking into this question of substitution between real and financial assets by real sector firms. Only recently, there is a growing body of research exploring 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, using macroeconomic data, Stockhammer (2004), Crotty (2005), Dumenil and Levy (2005), Epstein and Jayadev (2005) provide empirical evidence on this structural change in the portfolio allocation decisions of non-financial corporations in high-income OECD countries.

In contrast, the empirical research on financialization in developing countries is virtually non-existent. Startlingly, the same is true for the empirical studies on uncertainty and investment relationship in emerging markets especially with regard to the portfolio approach to investment. Therefore, while the current paper extends these two lines of research along the portfolio choice, and investment-uncertainty relationship, it is unique in its approach on three points. First of all, it is the first study that focuses on developing countries using empirical evidence from three major emerging markets that are Argentina, Mexico and Turkey. Secondly, unlike others it explores the above questions using firm-level data that not only allows for the analyses of the portfolio allocation decisions of real sector firms at the micro level but also enables the measurement of firm specific investment and profitability rates. And finally, the paper employs semi-annual data that helps capture the immediate effects of changes in the profitability rates and uncertainty on the investment decisions and portfolio allocation of firms, especially with regard to financial investments.

The empirical analysis using firm level panels for each country separately provides strong support to the main hypothesis while identifying certain differences across countries. Briefly, in all three cases, we find that growing rates of return gap between financial and fixed investment assets, and increasing macroeconomic uncertainty and risk have an economically and statistically significant fixed investment retarding effect. In addition, we also find that rising rates of return on financial assets over and above those on fixed assets encourage financial investments over fixed investments at an economically and statistically significant level. On the other hand, the effect of uncertainty and country risk on the share of financial investments in total assets, although economically and statistically significant, appeared to be a heterogonous one across countries. We believe these factors are of significant importance in explaining the deindustrialization process observed by UNCTAD (2003) in most Latin American countries and in Turkey for the last two decades.

The choice of these three countries is of no coincidence. Briefly, Argentina, Mexico, and Turkey have been among the forerunners of economic liberalization in developing countries starting from the early 1980s and their experiences occupy a central place in policy discussions regarding the effects of liberalization programs. The following figures also help emphasize their relative importance among other emerging markets: Argentina and Mexico attracted 42% of total Foreign Direct Investment (FDI) flows and 56% of total International Monetary Fund (IMF) credit to Latin America between 1980-2000. Furthermore, between 1990-2000 Argentina, Mexico and Turkey together received 38% of total portfolio flows to middle and lower income countries. Moreover, Turkey is currently the largest debtor of IMF accounting for 46% of the total outstanding credits and loans.

However, despite being portrayed as success stories at the early stages of reforms in the midst 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 all three countries (UNCTAD, 2003:XI).[2] In fact, the steadily declining fixed capital formation rates led UNCTAD (2003) to include Argentina, Mexico and Turkey in a group of deindustrilizers among other developing countries. In fact, the gross fixed capital formation as a percentage of GDP fell from an average of 20% and 21% to 17% and 19% between 1980-89 and 1990-05 in Argentina and Mexico respectively, while stagnating at the same level of 22% in Turkey that are all below the 25% minimum that UNCTAD (2003:61) identified as the required threshold to generate high and sustained growth in middle-income developing countries.[3]

The current study focuses on three key elements of the recent development experience in these countries that we think have significant explanatory power in understanding such disappointing investment performances amid comprehensive reform programs. The first one is the effects of alternative investment opportunities in the financial markets, where rate of returns has at times exceeded those from long term fixed investment projects. The second element is the reaction of private sector investments to uncertainty and risk in the face of alternative investment opportunities in financial sectors. And the third one is the persistence of capital market imperfections.

The next section presents a brief review of the literature on the effects of financial liberalization, capital market development, and uncertainty on private investment. The third section introduces the theoretical model and key hypotheses of interest followed by a discussion of the data, methodology and estimation issues. The fifth section presents the empirical results. The final section offers an overall discussion of the findings and concludes the paper.

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[2] The net real short-term capital inflows (RSCF) to Argentina, Mexico and Turkey between 1990-2005 reached $63, $147, and $120 billion compared to -$20, -$64 and $6 billion respectively between 1982-89. Similarly, the real RFDI inflows were $97, $203 and $26 billion between 1990-2005 compared to $6, $20 and $2 billion between 1982-1989.

[3] Following liberalization, the share of public investment in GDP also fell drastically. By 2000 it dropped to less than 2% in Argentina, Mexico and Turkey from its 1980 levels of 6%, 11% and 4% respectively.

2. Analytical framework

2.1. Financial liberalization, uncertainty and private investment

In most emerging markets financial liberalization has been accompanied by sharp fluctuations in key macro and micro prices together with increasing uncertainty. Consumption volatility, for example, has increased in emerging markets during the 1990s (Kose et al., 2003). Likewise, capital flows to developing countries during the 1990s compared to late 70s and 80s are found to be 'high, rising and unpredictable" (Gabriele et al., 2000: 1051). The existing evidence also shows an increase in the volatility of stock markets as well as sales and earnings of firms in both developed and developing country markets for the last three decades (Grabel, 1995; Comin and Mulani, 2006). In the case of growth volatility, although it has declined across developed countries during the 1990s, Montiel and Serven (2004) reported an increase in one third of 77 developing countries with an overall volatility being twice higher across developing countries.   In addition, capital flows can have significantly negative effects on investment in tradable goods sectors through changing relative prices, which partly explain the decreasing business savings and employment contraction in these sectors (Frenkel and Ros, 2006). In addition, excess volatility in exchange rates raises inflation uncertainty and encourages financial investments by real sector firms (Felix, 1998; UNCTAD, 2006). Overall, increasing volatility may also become self-exacerbating as the investors shorten their time horizons either to benefit from speculative gains or to avoid excess risk (Grabel, 1995).

In the case of Argentina, Mexico and Turkey, the radical increase in short term capital inflows and their volatility[4] can partly be explained by the availability of large arbitrage-gains in the financial markets with potentially dire consequences for fixed capital formation rates. Using the uncovered interest parity condition, we calculated the net arbitrage gain as the difference between domestic interest rates (i.e. 3-month T-bills) deflated by the average depreciation of domestic currency against the US dollar, and the corresponding U.S. interest rate. As a simple proxy, it shows the rate of return

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[4] From 1982-1989 to 1990-2005, the coefficient of variation of annual RSCF to Argentina, Mexico and Turkey increased by 3, 2 and 3 folds respectively.

on domestic short-term financial assets as opposed to foreign ones. Accordingly, the monthly arbitrage gains increased as high as 156, 259 and 482% in Argentina, Mexico and Turkey in March 2003, March 1995, and May 1994 respectively. Likewise, the annual average gains has been two and sometimes three digit numbers with averages of 9, 11, and 22% during 1991-2005 respectively. The real interest rates also remained very high at 6.2, 4.2 and 9.4% on average during 1991-2005 with annual average peaks being at 23, 9.4 and 23.8% in 2001, 1999, and 2002 respectively. The presence of such high real interest rates appear to be one of the key reasons why both real and financial sector firms may prefer to invest in short-term financial assets, especially in the form of government debt securities. This process, which is most visible in Turkey, 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.[5] The real sectors join this cycle by either directly buying debt securities or via repurchase agreements intermediated through banks.

Regarding the effects of uncertainty and volatility on investment, the empirical research suggests an unambiguously direct link. In both developed and developing countries, uncertainty and volatility in key macro and micro prices (including real GDP growth, real exchange rate, inflation, etc.) are found to have economically and statistically significant investment and growth reducing effects (Driver and Moreton, 1991; Federer, 1993; Pindyck and Solimano, 1993; Ramey and Ramey, 1995; Serven, 1998; Aizenman and Marion, 1999; Grier and Grier, 2006).

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[5] In 2005 37% of total interest income of private commercial banks in Turkey came from public sector securities (TBB). Large public sector borrowing with high real interest rates in Argentina and Turkey suggest that the public was more credit constrained than the private sector. Therefore, if the rates of return from public investments were higher than those on private (Demetriades and Mamuneas, 2000) and if the borrowed funds were used for financing public investments, then we could have observed a net increase in total investments thanks to domestic firms working as simple arbitrageurs. However, as discussed earlier the data show a radical decline in public investments in all three countries.

2.2. Credit market development and private investment

In presence of capital market imperfections, financial liberalization is expected to generate capital market deepening, reduce agency costs and asymmetric information, and increase efficiency while directing domestic and foreign savings to more efficient investment projects at lower costs (McKinnon, 1973; Shaw, 1973) that are expected to boost investment and growth.[6] Nevertheless, in the case of Argentina, Mexico and Turkey, there is no robust evidence of efficiency gains for real sector firms following financial liberalization despite increasing foreign bank presence that reached over 80% in Mexico, and 50% in Argentina and Turkey (Goldberg et al., 2000; Peek and Rosengren, 2000). In fact, following financial liberalization, private firms continued to face strict credit rationing and as a result had to finance their investment spending mostly from internal sources or short term borrowing (Fanelli et al., 1998. p.41; Guncavdi et al., 1998; EIU, 2003a, p.13, 2003b, p.37). [7] As of 2005, for example, the share of short-term debt in total debt of top 500 manufacturing firms in Turkey was around 70% (ISO). The total bank credit to the private sector as a share of GDP actually declined in Argentina from an average of 26% in 1980-89 to 19% in 1990-99 and further to 16% in 2000-2005. In the case of Mexico and Turkey, it was 15% and 18% between 1980-89, 25% and 20% in 1990-99 and back to 16% and 20% in 2000-2005 respectively, which are all well below the high income OECD average of over 160% (WB, 2007). Moreover, regarding capital market deepening, several Latin American countries, especially Mexico, developed money markets mostly in short-term government papers rather than private securities (Rojas-Suarez and Weisbrod, 1996). Similarly, on average 88% of secondary market transactions were of government securities in Turkey during the 1990s (SPK, 2004).

[6] For a critical review of this literature see Demetriades and Hussein (1996).

[7] The stylized facts suggest that small and medium sized enterprises (SME) faced higher credit constraints. Accordingly, commercial bank credit accounts for only 17% of SME finance in Mexico as opposed to 21% for large firms. Similarly, only 4% of bank credits to the private manufacturing sector go to SME in Turkey. Likewise, in Argentina the percentage of SME with 0% bank financing in fixed investments is 42% as opposed to 26% among large firms (Kozak, 2007; OECD, 2004, 2007).

3. Portfolio choice and changing patterns of specialization in the real sectors

The reason why domestic and external financial liberalization did not lead to investment

growth in real sectors can be answered with a combination of all the factors discussed above.

Accordingly, we suggest that following the liberalization wave of the 1980s and 90s private real sector

firms, in particular those with access to financial markets, adopted a portfolio view of investment and

started to take into account the availability of relatively quick and high returns in the booming

financial markets and in government debt instruments, especially in the presence of increasing

volatility and uncertainty, and credit bottlenecks. In this picture, the existence of large public debts

(especially in Argentina and Turkey) that are financed through domestic capital markets at high real

interest rates further contributed to the rise of this new class of investors who chose (quite rationally)

short-term reversible financial investments over risky long-term fixed investment projects. In the case

of Turkey, for example, the average ratio of financial revenues in total profits of top 500

manufacturing firm increased from around 23% between 1982 and 1989 to around 112% between

1990-2002, with a peak of 546% in 2001 (ISO).

There is growing evidence showing this transformation leading to the rise of financialization

in developed countries. In the case of the US, for example the ratio of profits of financial corporations

over those of non-financial corporations (NFC) rose from around 15% in the early 1950s and 60s to

around 50% in 2001. During this period, NFC portfolio income to cash flow ratio also rose from

around 14% in 1960s to around 37% towards the end of 90s (Crotty, 2005). Likewise, profits earned

by financial firms have risen over and above those of non-financial sector averages in OECD countries

between 1960s and 1990s (Epstein and Jayadev, 2005).

3.1. A simple model of portfolio choice

Using a modified version of Huang and Litzenberger (1988) and Le and Zak (2006), and

adopting the analytical framework of Tobin (1965) and Tornell (1990), we apply a portfolio choice

model to our analysis of investment allocation between fixed and financial assets by real sector firms.

Accordingly, the model includes a large number of identical agents living in a developing country

where they consume their returns from wealth invested in one-period investment projects in fixed (i.e. machinery) and financial assets (i.e. T-bills). For simplicity there is only one type of investment in each type of assets that can be considered as the sum of multiple investments. We also assume a single homogenous good, and the immobile population is normalized to one with a zero growth rate.

Let I_t^k be the fixed investment assets at time t with a rate of return r_t^k. Investment in fixed assets is risky, $r^k \sim N(\mu, \sigma^2)$ (i.e. because of uncertainty regarding future profitability as well as irreversibility problem and adjustment costs). Agents can also invest I_t^f in financial assets with a risk-free time-invariant rate of return r^f (that is equal to riskless rate of return on financial assets such as 3-month T-bills). This can also be interpreted as riskless financial asset return plus exchange rate risk and country risk (an increase in either of these risks increases r^f). Both types of investments are undertaken at the beginning of time t using the initial wealth of W_0. The standard maximization by a representative firm of the expected utility from such investments gives us the following problem:

$$\underset{W_t}{Max}\, E \sum_{t=0}^{\infty} \beta^t U(W_t) \tag{1}$$

subject to

$$W_t = (1 + r_t^k)I_t^k + (1 + r^f)I_t^f \tag{2}$$

if the initial wealth at time 0 is $W_0 = I_t^f + I_t^k$ then $I_t^f = W_0 - I_t^k$ that gives us (2'):

$$W_t = (1 + r_t^k)I_t^k + (1 + r^f)(W_0 - I_t^k) \text{ that is}$$

$$W_t = W_0(1 + r^f) + I_t^k(r_t^k - r^f) \tag{2'}$$

where *U(W)* is strictly increasing, continuous and concave.

Using (1) and (2') and applying the Stein's Lemma[8] the optimum allocation becomes:

$$I_t^{k*} = \frac{E(r_t^k - r^f)}{\gamma Var(r_t^k)} \tag{3}$$

taking natural logs of (3) at time *t* yields:

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[8] That is *Cov(g(x), y) = E (g'(x))Cov(x, y)*.

$$\ln(I_t^{k*}) = \ln(E(r_t^k - r^f)) - \ln \gamma - \ln(Var(r_t^k)) \tag{3'}$$

where $Var(r_t^k)$ is the variance of the rate of return on fixed investment that is interpreted as economic

uncertainty, and $\gamma \equiv -(E[U''(W_t)]/E[U'(W_t)])$ is the risk aversion that is assumed to be constant.

Equation (3') suggests that new fixed investment spending of firms is a positive function of

rates of return gap $(r_t^k - r^f)$, between fixed and financial assets, and a negative function of economic

uncertainty (assuming constant risk aversion).

In addition, the aggregate capital K_t^a invested in the economy includes both fixed and financial

capital and therefore:

$$K_t^a = I_t^{k*} + I_t^f \tag{4}$$

where I_t^f denotes the total financial investments that comes out of equation (3).

Rearranging (4) and substituting I_t^{k*} from (3) gives us the equilibrium level of I_t^f:

$$I_t^f = K_t^a - \frac{E(r_t^k - r^f)}{\gamma Var(r_t^k)} \tag{5}$$

After dividing both sides of equation (5) by K_t^a, and taking the natural log of both sides and

approximating $log(1-x)$ with $log(-x)$, we get:

$$\ln(\frac{I_t^f}{K_t^a}) = -\ln(E(r_t^k - r^f)) + \ln(\gamma) + \ln(Var(r_t^k)) + \ln(K_t^a) \tag{5'}$$

which shows that the share of financial assets in aggregate capital increases as: a) rate of

return gap between fixed and financial investments $(r_t^k - r^f)$ decreases, and b) economic uncertainty

$(Var(r_t^k))$ increases (assuming constant risk aversion).

Based on (3') and (5') the following hypotheses are to be tested separately for each country.

3.2. Hypothesis 1

We first test the effects of the profitability of different types of investments, and

macroeconomic risk and uncertainty on new fixed investment spending of private real sector firms in

the face of multiple investment options. Rather than employing a proxy variable here, we in fact

calculate the profitability rates of both fixed and financial investments for each firm in the sample using detailed balance-sheet and income statement data.

The hypothesis regarding the portfolio choice problem can alternatively be analyzed using the standard theory of capital where investors face two types of costs: i) systemic risk from fixed investments that are subject to adjustment costs and profit uncertainty, and ii) liquidity premium and opportunity cost of fixed investment (that can be proxied by the rate of return on financial investment). Unless rates of return from fixed investments are higher than other types (i.e. $r_t^k \geq r^f$), firms are expected to postpone their fixed investments.

In the empirical specification, using (3') we adopted a dynamic model including delivery lags and adjustment costs[9]:

$$I_{it}^k = \alpha_1 I_{it-1}^k + \alpha_2 KO_{it-1} + \alpha_3 Rgap_{it-1} + \alpha_4 Risk_t + \alpha_5 V_t + d_t + \varepsilon_{it} \tag{6}$$

where $i=1, ..., N \text{ and } t=1, ..., T$ respectively refer to the cross section and semi-annual time series elements of the data. Here d_t is time fixed effects, and ε_{it} is the error term.

I_{it}^k is the real net fixed investment of firm i in year t and is measured by the logarithmic difference of net fixed capital stock at constant prices (Δk_{it}).[10]

KO_{it} is the Capital/Output ratio from the standard investment theory where a decreasing KO ratio is expected to increase new investment. The lags result from the role of expectations, adjustments costs and delivery lags (Abel and Blanchard, 1986).

$Rgap_{it}$ is the rates of return gap between fixed and financial assets ($r_{it}^k - r_{it}^f$) where the latter captures not only the market signals regarding future profitability in non-operational activities but also the effects of opportunity costs of fixed investment. Increasing profitability of financial investments (r^f) is expected to divert resources away from long-term fixed investment projects and reduce new

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[9] For alternative investment equations see Blundell et al. (1992) and Rama (1993).

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

where δ is the depreciation rate, and K_{it} is the net fixed assets.

fixed investment spending. Thus, we expect *Rgap* to have a positive coefficient suggesting that rising

rate of return gap in favor of fixed assets leads to higher levels of new fixed investment spending. The

use of lagged variable is due to the fact that the data are semi-annual and it is expected to take at least

one period for the profitability signals to have an effect on long term fixed investment planning. It is

worth noting that all the previous research on the determinants of private investment assumed a

uniform effect of overall profitability on fixed investment decisions independent of its components

since the primary source of profits was presumed to be operational activities. In other words, for a real

sector firm, r_{it}^f was implicitly assumed to have the same positive effect on fixed investment as r_{it}^k.

However, the sign on financial profitability measure may in fact be negative given that it not only

represents the opportunity cost of fixed investment under uncertainty and irreversibility problem but

also the expected profitability of such investments in the future.

$Risk_t$ refers to a vector of different country risk and macroeconomic uncertainty measures (i.e.

$Var(r_t^k)$) (which are discussed in detail in section 4.2) with an expected negative coefficient.

V_t refers to a vector of control variables for sensitivity analysis including: i) Cr_t that is total

credit from the banking sector to the private sector as a share of GDP to control for the effect of capital

market imperfections and credit availability. We expect increasing credit availability to enable and

encourage new capital accumulation and thus the expected sign of the coefficient is positive. ii) Real

GDP growth rate (*GDP*) to control for changes in aggregate demand and investor expectations. It is

expected to be positively related with I_{it}^k suggesting that increasing aggregate demand and positive

growth expectations encourages firms to allocate more of their resources towards fixed assets.

3.3. Hypothesis 2

Hypothesis (1) and equations (3') & (5') suggest that: rising rates of return in financial

markets, and increasing macroeconomic uncertainty and risk encourages reversible financial

investments over irreversible fixed investments:

$$\left(\frac{I^f}{K^a}\right)_{it} = fk_{it} = \alpha_1 fk_{it-1} + \alpha_2 fk_{it-2} + \alpha_3 K_{it}^a + \alpha_4 Rgap_{it-1} + \alpha_5 Risk_t + d_t + \varepsilon_{it} \qquad (7)$$

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where $i=1, ..., N$ and $t=1, ..., T$ respectively refer to the cross section and semi-annual time series elements of the data. Here d_t is time fixed effects, and ε_{it} is the error term.

fk_{it} is the financial assets to aggregate capital ratio measured by the net financial assets over net financial assets plus fixed assets ratio as in (5') representing the portfolio allocation decisions of real sector firms between these two types of assets. The lags in the empirical specification are included to control for the dynamic nature of such liquid investments, especially in a semi-annual dataset.

K^a_{it} is the aggregate capital stock measured as net financial assets plus net fixed assets and according to equation (5') is expected to have a positive coefficient.

$Rgap_{it}$ refers to the rate of return gap as in (6). We expect to find a negative coefficient suggesting that increasing rate of return on gap in favor of financial assets encourage firms to divert more of their investments towards financial assets.

$Risk_t$ is the same as in equation (6) with an expected positive coefficient. Accordingly, with increasing (decreasing) risks and uncertainty firms reallocate more (less) of their assets towards liquid financial assets rather than fixed assets. We use the current period risk measures rather than lagged ones in both equations given that changing levels of risk have an immediate effect on expectations, investment planning and portfolio decisions of firms. In contrast, the realized profitability of investments is not readily available before the end of the period when the income statements are prepared or when the planned investments are finished and added to the existing capital stock.

4. Data, measurement and methodology

4.1. Data

The datasets are from the audited financial accounts of all publicly traded industrial firms in Argentina, Mexico and Turkey and are unbalanced. The period analyzed is semi-annual and based on availability cover 1992:2-2001:2 for Argentina, 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 on the investment positions of the firms especially with regard to financial investments. 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 three countries, we used semi-annual statements. The data for Argentina and Mexico are mostly from Economatica, a database providing balance sheet data for publicly traded Latin American companies. For Turkey the dataset is from the Istanbul Stock Exchange online database. In some cases Worldscope and Datastream databases and original firm balance sheets are also used for robustness and completeness. The firms included are all industrial firms with majority of them in manufacturing. For Mexico and Turkey, we dropped those firms with less than eight consecutive time series from the dataset. For Argentina, we kept the minimum threshold level at five because of smaller number of cross sections. For Argentina there are 65 firms in the final dataset with 51 in manufacturing (ISIC 15-37), 4 in construction (ISIC 45), 4 in mining (ISIC 10-14), and 6 in electricity power generation (ISIC 40). In the case of Mexico, there are 79 firms 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 177 firms with 2 in electricity and gas generation (ISIC 40, 41), and 175 in manufacturing (ISIC 15-37). The firms' sizes in the sample are relatively large accounting for 23%, 36%, and 22% of total manufacturing sales in Argentina in 2001, and Mexico and Turkey in 2003 respectively.[11] A detailed description of the data and variable definitions are provided in the appendix.

4.2. Measurement of macroeconomic uncertainty and risk

Regarding uncertainty and risk variables, there is no consensus in the literature over the difference between uncertainty and sample variation. While the former is caused by unpredictable innovations to the variable of interest, the latter includes predictable innovations from past behavior as

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[11] Given the large size of firms in the dataset, we cannot generalize the findings to SMEs. However, although SMEs in manufacturing account for 99% of all enterprises in all three countries, given that they account for only 26% of value added in Turkey in 2000, 31% and 36% of output in Mexico and Argentina in 1993, we can argue that the findings are of significant importance for the overall economy. Moreover, *financialization* is more likely to prevail among large firms than SME due to their better knowledge of and access to financial markets and different investment options.

well. Therefore, we included both sample variation and uncertainty as control variables and calculated

them for manufacturing inflation, which is used as a proxy for overall macroeconomic risk, and for

real exchange rate that is more directly related with the profitability risk of investment. The variables

are measured by: i) semi-annual average standard deviations of the monthly variables, ii) semi-annual

average standard deviations of monthly innovations to a forecasting equation based on an AR (1)

process, and iii) semi-annual average monthly conditional variance from a GARCH (1,1) process

based on the following equation:

$$x_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{11} \lambda_i d_t + \alpha_2 x_{t-1} + \varepsilon_t$$

$$h_t^2 = \beta_0 + \beta_1 h_{t-1}^2 + \beta_2 \varepsilon_{t-1}^2$$

(8)

where X is the variable of interest (i.e. real exchange rate, and manufacturing inflation), t is time trend,

d is a monthly dummy variable, h_t^2 is the conditional variance of ε_t, and is our uncertainty measure.

In the estimation results we reported only those from the GARCH estimation method given that it is

closer to the true meaning of uncertainty. However, the results with other measures were not

significantly different from those reported. Furthermore, as a robustness test we also employed an

overall country risk variable, Political Risk Services' International Country Risk Guide Composite

Risk Index (ICRG), to control for the cost of risk premium and overall riskiness of investment. ICRG

is a weighted composite index of political and economic risk and ranges between 0 and 100, with 100

representing the least risky country (thus an increase represents decreasing risk).

4.3. Methodology

The dataset consists of non-random stock market quoted firms, which may receive market listing only

if they satisfy certain conditions. Therefore, in order to correct for parameter endogeneity resulting

from the presence of unobserved firm-fixed effects as well as to correct for the correlation between the

lagged dependent variable and firm specific effects and the error term, we used the Arellano and Bond

(1991) difference GMM estimator that employs lagged levels of the dependent variable and the

predetermined variables and differences of the strictly exogenous variables as instruments for the first

difference equation in (9)[12]:

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

In this transformation, if the error term in the investment equation is serially uncorrelated,

lagged values of the untransformed dependent variable and other right-hand side variables dating *t-s*

are uncorrelated with the transformed error term as long as $s \geq 2$. Since remote lags are not likely to

provide much additional information they are not included in the estimations. Instead, 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 assumptions underlying the difference estimator are tested by the Sargan-test of over-

identifying restrictions (for testing the orthogonality between the instruments and the residuals), and

the usual 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 of order *2*) (Arellano and Bond, 1991).

4.4. Descriptive statistics and general trends

<Figure 1 Here>

Figure 1 shows the median rate of return gap (*Rgap*) and the share of financial assets in

aggregate capital (I^f/K^a) among Argentine, Mexican and Turkish firms in the dataset. Accordingly, the

Rgap was negative among Mexican firms up until 1994 crisis that overlaps with the findings of

previous studies showing declining profitability in the tradable goods sectors (partly due to overvalued

peso) during this period. Overall, the median of *Rgap* is found to be positive (0.08) among Mexican

firms as opposed to the -0.03, and -0.02 in Argentina and Turkey respectively and may help explain

the comparatively lower share of financial assets (I^f/K^a) among Mexican firms. Given that real interest

rates and the net arbitrage gap as well as public deficits were much lower in Mexico than in Argentina

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[12] 2-step method is used for weighting matrices to correct for the finite sample bias.

and Turkey[13], the rate of return gap in favor of fixed assets is probably of no coincidence. Similarly, the data show that the share of financial profits was never higher than 6% on average among Mexican firms for the period analyzed suggesting structural differences with Argentina and Turkey. Among the three, financial investment and profit shares were the highest among Turkish firms. Accordingly, the median share of financial assets in aggregate capital (i.e. I^f/K^a) is around 15% in Turkey, twice higher than that of Argentina and Mexico. We also see that despite a decline in the share of financial investments in the second half of 1990s, it remained higher in the Turkish case, which was above 10% as of 2003. We also observe sudden jumps in the I^f/K^a ratio following financial distress in these three markets (i.e. 1994-95, 1997-8, and 2001). In terms of the average share of profits from financial investments, their peaks in Argentina and Turkey were realized during 2001 (when the financial profit to fixed asset ratio jumped to 40% and 30% respectively) that marked the most serious financial crisis in their recent history with overnight interest rates reaching three digit levels.

According to Figure 2, we also see a steady decline in the operating profitability of Argentine firms starting from around 6% in mid 1990s to less than 3% in 2001, and of Mexican firms from 13% to around 8% in 2003 respectively (Figure 2). We see a similar trend in Turkey where the profitability margin dropped from around 20% in 1993 to less that 4% in 2003. The average (median) for the whole period is found to be 5% (5%) in Argentina, 9% (11%) in Mexico, and 13% (14%) in Turkey. The declining operating profit margins are likely to result from increased market competition caused by the entry of new firms, elimination of barriers of entry of foreign firms, and import competition. We also analyzed the changes in the volatility of operating profits using the coefficient of variation of *t -/+2* moving standard deviation of operating profits at constant prices. Accordingly, the coefficient of variation steadily fell in Argentina and Turkey till 1996-1997 and then started to increase back to its early 1990s levels. In contrast, it increased radically in Mexico till 1994-1995 peso crisis and since then displayed a steady decline and was the lowest among the three with an overall average of 0.31 as

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[13] The consolidated budget balance was a positive 1% in Mexico as opposed to negative 1% and 8% in Argentina and Turkey between 1991 and 2002.

opposed to 0.48 in Argentina and Turkey. The differences in operating profits volatility between

Mexico, and Argentina and Turkey also hint some structural differences among them in terms of the

macroeconomic environment firms are operating in.

<div align="center">**Figure 2 Here>**</div>

Finally, while the correlation coefficient between net profits to net sales ratio, and the

operating profits to net sales ratio is 0.56 for Mexico, it is 0.48 in Turkey, and 0.30 in Argentina that

suggests the importance of non-operational activities and financial costs in the overall profitability of

the firm. Another interesting result is that the gap between operating profit and net profit ratios was the

largest during times of crisis such as those in 1994 and 2001 in Turkey (where they actually went in

opposite directions), 1994:1 and 1997-1999 in Mexico, and 1995:2 in Argentina.

5. Empirical results

The regression analysis from Table 1 provides strong support to our key hypothesis of interest

regarding the portfolio choice of real sector firms. Accordingly, looking at the effects of the

difference between rates of returns on fixed and financial assets (*Rgap*), we have found a significantly

positive relationship (at 1% level) between the *Rgap* and fixed investment spending in all three

countries suggesting that increasing rates of return gap in favor of financial assets reduces new fixed

investment spending of private industrial firms. The finding is robust to different control variables as

shown in columns (1)-(5) in Table 1 and yields quite similar coefficients on the *Rgap* variable under

different specifications. [14] Economically speaking, the point estimates indicate that after controlling for

the effect of uncertainty a one percentage point increase in *Rgap* increases annual investment rates by

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[14] We also tested for any heterogeneous response among relatively small and large firms to *Rgap* due

to different degrees of internal cash flow. Accordingly, we created a small firm dummy, which took

the value of one for firms with net sales at time *t* less than the median sales, to identify those firms that

may be more credit constrained. We then repeated estimations in the columns (1)-(3) of Table 1 after

adding an interaction term of *Rgap* and the dummy variable. The results suggest that *Rgap* has a

stronger positive effect on fixed investment spending of smaller firms in all three countries.

around 4%, 0.6% and 0.2% in Argentina, Mexico and Turkey respectively, which are also economically significant.

<div align="center">**<Table 1 Here>**</div>

The results from Table 1 also highlight the negative effects of uncertainty and risk on new fixed investment decisions under multiple investment options. Accordingly, as suggested by equation (3') we have found a significantly (at 1% level) negative effect of real exchange rate and inflation uncertainty on private fixed investment spending in all three countries. Increasing country risk is also found to have a both statistically (at 1% level) and economically significant negative effect on fixed investment in all three cases (a 10% decrease in country risk increases fixed investment spending by 8%, 14%, and 2% respectively).

Regarding other variables of interest, capital/output ratio (*KO*) is found with the expected negative sign at a statistically significant level in all three countries. Furthermore, we also found a significantly positive (at 1% level) effect of domestic credit availability (*Cr*) on fixed investment spending of real sector firms in all three cases (a 10% increase in credit growth increases fixed investment by 9.9% in Argentina, while a 10% increase in the level of annual credit increases fixed investment rates by 11% and 1% in Mexico and Turkey). Lastly, economic growth (GDP) is found to have an economically and statistically significant positive effect on new fixed investment spending in all three countries (i.e. according to point estimates, a 10% increase in real GDP growth increases fixed investment spending by 9%, 23%, and 6% in Argentina, Mexico and Turkey respectively).

Turning to Hypothesis 2, the results from Table 2, consistent with equation (7), suggest a significantly negative relationship (at 1% level) between the rate of return gap (*Rgap*) and the share of financial assets in total assets in all three countries. Furthermore, the rate of return gap appeared to have five to ten times stronger economic effect on financial investments than on fixed investments in all three cases. This result may stem from the structural differences between the nature of fixed and financial investments where the former suffers from delivery lags, adjustments costs and the irreversibility problem, while the latter faces few such constraints. Therefore, a short-term change in

Rgap can have a stronger impact on the share of financial investments than on fixed investments. In terms of its economic significance, a one percentage point increase in *Rgap* is predicted to reduce the annual average share of financial investments by around 16%, 6% and 2% respectively.

<Table 2 Here>

On the other hand, regarding the effects of uncertainty and country risk we have found heterogonous results that highlight diversity in investor behavior. Accordingly, in both Argentina and Turkey *decreasing* exchange rate and inflation risk as well as country risk have been found to increase financial investment shares. One possible explanation for this finding may be related with the effect of decreasing macroeconomic uncertainty and country risk on financial market returns in these countries where such improvements are generally accompanied by increasing returns. In the case of Mexico, however, we found a positive relationship between macroeconomic uncertainty and country risk variables on the one hand, and financial investments on the other as predicted by equation (7). This result, although being beyond the scope of the current study, calls for further research on the differences among these developing countries in terms of investor reaction to risk and uncertainty.

In both Table 1 and 2, the Sargan specification test confirms the validity of instruments and the AR(2) test indicate no strong sign of second-order serial correlation.[15]

5.1. Sensitivity analysis

In order to test for the robustness of the empirical results, we undertook the following sensitivity tests: i) First we examined the residuals from each of the estimated equations and dropped those observations with residuals that exceeded two standard deviations from zero and re-estimated each accordingly. ii) We repeated the estimations using alternative uncertainty variables as discussed in section 3.4 and an alternative country risk variable that is Institutional Investor Composite Country Risk Index. iii) We included additional control variables borrowed from the determinants of

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[15] Although the Sargan test does not reject the hypothesis that the instruments are uncorrelated with the residuals, we conducted a robustness test by reducing the matrix of possible instruments to a minimum. The tests statistics indicate that additional restrictions in the estimated model are valid.

investment literature including cash flow, relative cost of capital goods, and net sales growth to test for the robustness of *Rgap* coefficient. In all these cases the results were similar to those reported.

6. Conclusion

The empirical findings in this study suggest that real sector firms in developing countries take into account alternative investment opportunities in financial markets when making their decisions on physical investment. Accordingly, rather than investing in irreversible long term fixed investment projects, firms may choose to invest in reversible short term financial investments depending on respective rates of returns, the overall uncertainty and risk, the presence of credit bottlenecks, and profitability squeeze). This finding also provides some empirical support to the view that successful development strategies require mechanisms to "both encourage and discipline private investors by raising profits above those generated by *competitive market forces*, and active policies to ensure those profits found *outlets* that would add to productive capacity, create jobs and help technological progress" (UNCTAD, 2003, p.64, emphasis is ours). The results also underline certain differences across emerging markets regarding the determinants of fixed and financial investment decisions of real sector firms as well as the presence of financialization.

Overall, the experiences of Argentina, Mexico and Turkey suggest that the policy makers in all three countries may need to consider a new strategy to link short-term distortions or disequilibria with the medium and long-term domestic development objectives with special attention given to the determinants of productive investment. In particular, we suggest that there is a need to reorganize the financial system in such a way that domestic (and foreign) savings are directed towards productive investments instead of financial ones. For this objective, our key policy recommendations include: a) providing macro and microeconomic stability; b) reducing real interest rates; c) opening up long-term credit channels for fixed investment; and d) eliminating public finance problems.

For further research, we need to repeat the analysis with other countries to determine whether the findings are limited only to these three countries and whether there are any differences between developed and developing countries with respect to the portfolio approach to investment.

Appendix

1. Measurement under generally accepted accounting principles (GAAP)

a) Argentina: Until August 31, 1995, and after December 31, 2001 Argentine GAAP required the firms to apply inflation accounting on financial statements. Therefore, in calculating nominal semi-annual values, consumer price inflation period averages are used. Furthermore, as a result of new accounting standards, the comparison of fixed assets and investments before and after 2002 became impossible which is why our dataset stops in 2001:2. b) Mexico: Since 1984, Mexican GAAP requires the firms to apply inflation accounting on financial statements. Therefore, in calculating nominal semi-annual values consumer price inflation period averages are used. c) Turkey: Inflation accounting was not used in Turkey during the period analyzed.

For measuring variables in constant prices in all three countries, we used Producer Price Index (PPI) (and Manufacturing Price Index in the case of Turkey) period averages for sales, operational profits, net profits before taxes and financial profits while the end of period values for fixed and financial assets.

The details on measurement issues and GAAP for all three countries are available from the author.

2. Data definitions and sources

2.1. Common variables

Cr: Total credit to the private sector as a share of GDP.

π^f: Financial profits and includes dividend income from subsidiaries and affiliates plus interest income and other dividends, plus other income from other operations including gains from foreign exchange transactions net of losses and expenses from such operations.

I^f/K^a: Total financial assets to aggregate capital ratio measured as $(I^f/I^f + K)_t$ using period averages.

I^f: Total financial assets including current assets (cash, bank deposits, other current assets, cheques) and short-term investments (stocks, t-bills, government bonds, private sector bonds, REPO and other short term investments). The sum reflects total marketable and liquid monetary assets held by the firm.

ICRG: ICRG scores can be interpreted as probabilities, which then allows a logistic transformation on the credit rating that is equal to $\ln((ICRG/100)/(1-(ICRG/100)))$.

KO: Capital-output ratio measured as beginning fixed capital stock/net sales at constant prices.

K: Net fixed assets measured as end of period fixed capital stock net of depreciation and land.

r^f: Rate of return on financial assets $(\pi^f/I^f)_t$ using period averages.

RGDP: Real GDP growth measured as annualized log differences.

r^k : Rate of return on fixed assets measured as end of period operational 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).

Real interest rate: Monthly averages of 3-month T-bill rate deflated by next period consumer inflation.

RFDI: Real foreign direct investment inflows by nonresidents from the International Financial Statistics (IFS) of IMF using the 2000 US WPI

RSCF: Real short-term capital inflows defined as portfolio investment liabilities plus other investment banks liabilities plus other investment other sector liabilities from the IFS of IMF using the 2000 US PPI.

2.2. Country specific variables

2.2.1. Argentina

All variables are converted to 1995 constant prices by Producer Price Index (PPI). The macro data are from International Financial Statistics of IMF (IFS), and Central Bank of Argentina.

I^f: Includes cash and short-term investment accounts. Long-term financial investments in other firms are not included given that this variable is reported as a total including the investment in subsidiaries. Because of certain inconsistencies in the reporting of the data and in the classification of different cash items the measurement of I^f_t is underestimated (the details are available from the author upon request).

K: Fixed capital stock including net property, plant and equipment.

π^f: Under Argentine GAAP there are several problems with the listing of different financial income/expenditure accounts according to the above classification. To avoid certain accounting problems and inconsistencies in reporting, four different financial profits variables are calculated: a) Interest revenue, b) Interest revenue plus net foreign exchange revenue plus other revenues from financial assets, c) interest revenue plus net foreign exchange revenue, d) interest revenue plus other financial revenues from assets. The same methodology is adopted for calculating the rate of return on financial assets. In the final specification, (a) is used as the financial profits measure due to more reliable and robust measurement. As a result, the financial profits measure is underestimated compared to Mexico and Turkey.

RER: Natural log of real exchange rate index based on US and Argentine producer prices.

RiskInf: Annualized average PPI inflation (calculated as log differences) uncertainty using Garch (1, 1) method and is calculated for 1991:1-2001:12.

RiskRer: RER uncertainty using Garch (1, 1) method and is calculated for 1991:1-2001:12.

2.2.2. Mexico

All variables are converted to 2003 December prices using Producer Price Index (INPP). The macro data are from IFS and Banco de Mexico.

I^f: Includes cash, short-term investments, and investment in other companies. The investments in other companies (not affiliates) are restated for inflation and recorded at current prices.

K: Net fixed assets including property, plant and equipment net of depreciation together with land given that it is not disclosed separately.

π^f: Includes net foreign exchange losses (gains), financial income (loss), and income (loss) 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.

RER: Natural log of real exchange rate index with respect to 111 countries.

RiskInf: Annualized average INPP inflation (calculated as log differences) uncertainty using Garch (1, 1) method and is calculated for 1981:1-2003:12.

RiskRer: RER uncertainty using Garch (1, 1) method and is calculated for 1981:1-2003:12.

2.2.3. Turkey

All firm data are converted to 1995 January prices using Manufacturing Whole Sale Price Index while the macro variables are by Wholesale Price Index (WPI). The data are from IFS and Central Bank of Turkey.

I^f: Includes current assets and short-term investments. We did not include long-term financial fixed assets in other firms given that under Turkish GAAP they are recorded at historical cost.

K: Net fixed assets including fixed capital stock net of depreciation excluding land.

π^f: 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, swaps etc.

RER: Natural log of real exchange rate index based on multilateral trade weights.

RiskInf: Annualized average manufacturing wholesale price inflation (calculated as log differences) uncertainty using Garch (1, 1) method and is calculated for 1978:1-2003:12.

RiskRer: RER uncertainty using Garch (1, 1) method and is for 1978:1-2003:12.

3. Descriptive statistics
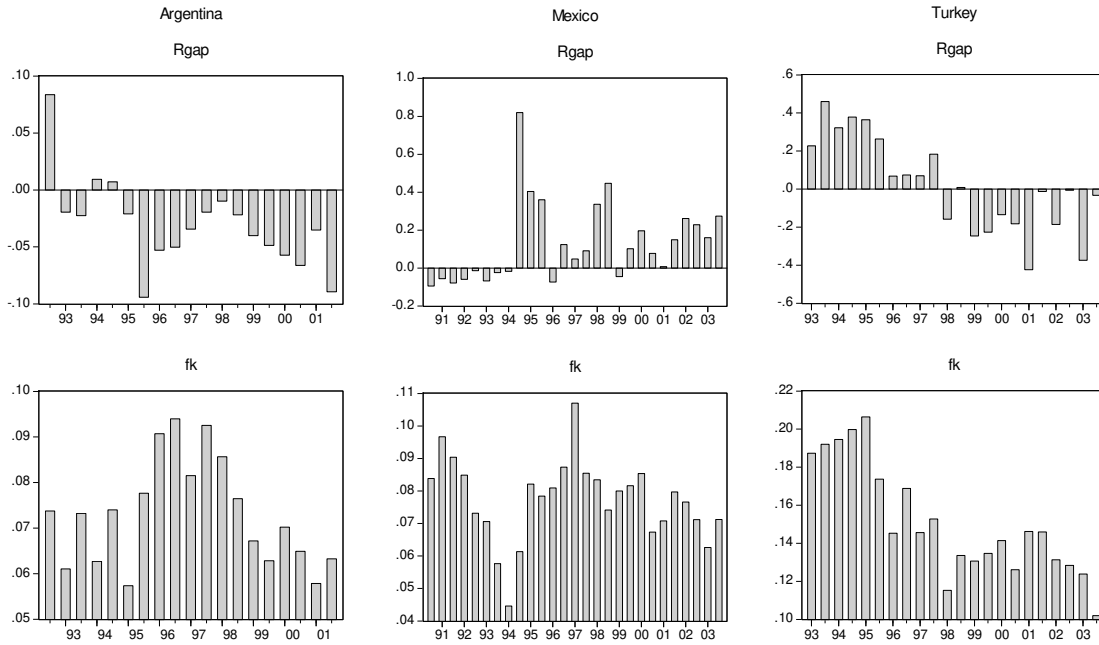
<center>**<Table 3 & 4 Here>**</center>

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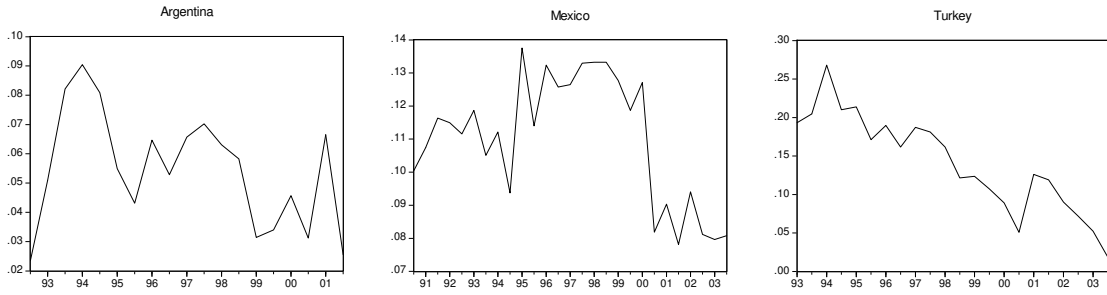Graph 1: Rate of return gap (*Rgap*) and financial assets to aggregate capital ratio (*fk*)

(Medians)

Source: Author's calculations.

Notes: *Rgap* is the difference between rate of return on fixed (r^k) and financial assets (r^f) in percentage points.

Graph 2: Median operating profitability

Source: Author's calculations.

Notes: Operating profitability is defined as operating profits to net sales ratio.

Table 1: Effects of rate of return gap and risk on I^k

	Argentina					Mexico					Turkey				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
I^k_{-1}	-0.277***	-0.267***	-0.32***	-0.303***	-0.28***	-0.206***	-0.203***	-0.283***	-0.303*	-0.14***	-0.252***	-0.256***	-0.225***	-0.26***	-0.28***
	(0.004)	(0.006)	(0.007)	(0.004)	(0.008)	(0.002)	(0.004)	(0.026)	(0.03)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
KO_{-1}	-0.184***	-0.17***	-0.165***	-0.18***	-0.195***	-0.12***	-0.12***	-0.192***	-0.21*	-0.132***	-0.24***	-0.24***	-0.204***	-0.22***	-0.22***
	(0.004)	(0.004)	(0.004)	(0.002)	(0.001)	(0.002)	(0.002)	(0.017)	(0.014)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
$Rgap_{-1}$	0.014***	0.022***	0.025***	0.02***	0.02***	0.003***	0.003***	0.002***	0.003*	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.001)	(0.0001)	(0.001)	(0.0001)	(0.001)	0.0001	(0.0002)	(0.001)	(0.001)	(0.0001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)
RiskRer	-1304***					-16.41***					-7.31***				
	(21.9)					(0.082)					(0.46)				
RiskInf		-24.23***					-0.48								
		(0.64)					(0.003)								
$RiskInf_{-1}$												-0.0003			
												(0.001)			
ICRG			0.83***					1.44***					0.18***		
			(0.004)					(0.184)					(0.002)		
Cr				0.99***					4.93***					0.552***	
				(0.02)					(0.397)					(0.01)	
GDP					0.92***					2.296***					
					(0.02)					(0.01)					
GDP_{-1}															0.634***
															(0.005)
Obs	726					1479					2830				
Sargan	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99
m1	0.03	0.04	0.06	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m2	0.36	0.42	0.16	0.23	0.67	0.91	0.85	0.35	0.58	0.62	0.19	0.27	0.18	0.48	0.68

Notes: Arellano-Bond dynamic panel-data estimation two-step GMM results (using Stata 9.2's xtabond command) with robust standard errors in parenthesis. The year fixed effects are not reported. (***), (**), (*) refer to significance at 1%, 5% and 10% level respectively. (-1) refers to lag-1. I^k is net fixed investment spending, *KO* is capital-output ratio in natural log, *Rgap* is rate of return gap ($r^k - r^f$), *RiskRer* and *RiskInf* are real exchange and inflation uncertainty measured by GARCH (1,1) method, *ICRG* is International country risk guide composite risk index in natural log transformed as described in the data appendix. *Cr* is credit to private sector as a share of GDP (except for Argentina where it is measured as the growth rate of total real credit to the private sector). *GDP* is real GDP growth rate measured by log differences. Obs is number of observations. Sargan is the test of over-identifying restrictions, m1 and m2 are AR(1) and AR(2) tests. All test statistics are given by their p-values.

Table 2: Effects of rate of return gap and risk on FK (I^f/K^a)

	Argentina			Mexico			Turkey		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FK$_{-1}$	0.727***	0.707***	0.703***	0.93***	0.943***	0.941***	0.89***	0.88***	0.89***
	(0.01)	(0.01)	(0.007)	(0.01)	(0.012)	(0.017)	(0.003)	(0.004)	(0.003)
FK$_{-2}$	-0.255***	-0.248***	-0.257***	-0.445***	-0.444***	-0.449***	-0.33***	-0.325***	-0.326***
	(0.012)	(0.003)	(0.008)	(0.014)	(0.012)	(0.013)	(0.002)	(0.002)	(0.002)
K^a	-0.1	-0.11***	-0.136***	0.003	0.013	0.046**	0.12**	0.235***	0.219***
	(0.066)	(0.047)	(0.032)	(0.025)	(0.02)	(0.019)	(0.008)	(0.013)	(0.013)
Rgap$_{-1}$	-0.078***	-0.075***	-0.078***	-0.027***	-0.027***	-0.027***	-0.01***	-0.01***	-0.01***
	(0.008)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.0001)	(0.0002)	(0.0002)
RiskRer	-1535.2***			1.653***			-0.048***		
	(189)			(0.455)			(0.291)		
RiskInf		-12.27***			0.049***			-0.365**	
		(1.386)			(0.011)			(0.012)	
ICRG			0.315***			-0.072			0.25***
			(0.02)			(0.024)			(0.011)
Obs	733			1294			2532		
Sargan	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
m1	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
m2	0.48	0.39	0.45	0.48	0.44	0.50	0.51	0.52	0.52

Notes: (-1) and (-2) refer to the first and second lags. *FK* is the financial assets to aggregate capital ratio in natural log (i.e. $ln(I^f/K^a)_{it}$), K^a is the aggregate capital in natural log as in Equation (7), for other variables refer to Table 1. The specification for Mexico and Turkey include unreported lags of dependent variable in the order of four and three respectively. For sensitivity analysis we also tested the results using fixed effects method as well as without the lagged endogenous variable on the right hand side. The coefficients were similar to those reported.

Table 3: Correlation matrix

Argentina	I^k	I^f/K^a	Rgap	RiskRer	RiskRer	ICRGP	KO
I^k	1						
I^f/K^a	0.068	1					
Rgap	0.087	0.169	1				
RiskRer	-0.135	-0.012	0.014	1			
RiskInf	-0.099	-0.010	-0.072	-0.183	1		
ICRG	0.172	0.004	0.071	-0.162	-0.037	1	
KO	-0.141	-0.296	-0.115	0.005	-0.005	-0.0002	1
Mexico	I^k	I^f/K^a	Rgap	RiskRer	RiskRer	ICRGP	KO
I^k	1						
I^f/K^a	-0.009	1					
Rgap	-0.070	-0.076	1				
RiskRer	-0.336	-0.003	0.076	1			
RiskInf	-0.344	-0.004	0.073	0.997	1		
ICRG	0.186	-0.001	-0.040	-0.387	-0.403	1	
KO	-0.206	-0.273	0.101	0.093	0.099	0.024	1
Turkey	I^k	I^f/K^a	Rgap	RiskRer	RiskRer	ICRGP	KO
I^k	1						
I^f/K^a	0.017	1					
Rgap	0.054	0.170	1				
RiskRer	-0.116	-0.008	-0.038	1			
RiskInf	0.113	-0.039	-0.037	-0.543	1		
ICRG	0.125	0.054	0.073	0.116	-0.370	1	
KO	-0.128	-0.313	-0.116	0.049	0.045	-0.111	1

Table 4: Summary statistics

Argentina	I^k	I^f/K^a	Rgap	RiskRer	RiskInf	ICRG	KO
Mean	-0.030	0.164	-0.16	0.00005	0.035	0.914	2.374
Median	-0.007	0.073	-0.032	0.00004	0.036	0.920	1.594
Maximum	2.120	0.942	7.647	0.00013	0.036	1.144	30.810
Minimum	-3.961	0.0002	-12.124	0.00004	0.033	0.619	0.003
Std. Dev.	0.312	0.203	1.016	0.00002	0.001	0.145	2.710
Mexico	I^k	I^f/K^a	Rgap	RiskRer	RiskInf	ICRG	KO
Mean	0.012	0.143	0.349	0.002	0.058	0.863	1.963
Median	-0.001	0.080	0.08	0.001	0.013	0.867	1.568
Maximum	2.150	0.921	22.443	0.031	1.065	1.040	16.561
Minimum	-1.289	0.001	-10.948	0.001	0.002	0.645	0.032
Std. Dev.	0.238	0.174	1.785	0.006	0.198	0.102	1.602
Turkey	I^k	I^f/K^a	Rgap	RiskRer	RiskRer	ICRG	KO
Mean	0.013	0.217	-0.959	0.002	5.768	0.324	0.614
Median	-0.001	0.148	-0.018	0.001	5.871	0.301	0.423
Maximum	2.176	0.948	53.525	0.012	5.877	0.682	8.545
Minimum	-2.554	0.0002	-92.167	0.0002	4.357	-0.050	0.005
Std. Dev.	0.255	0.203	6.737	0.003	0.342	0.197	0.674

Notes: For variable definitions refer to Notes of Table 1 and 2. Unlike in regression estimations, all variables are at levels without natural logs.