All That's Old is New Again: Capital Controls and the Macroeconomic Determinants of Entrepreneurship in Emerging Markets

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Content

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Introduction

"Countries need the latitude to impose capital controls that meet their particular needs, and it is a relief to see that they are finally getting it after a long period of debilitating neoliberal ideology."[1]

Ilene Grabel and Ha-Joon Chang

Over the past two decades, the role of entrepreneurship in driving economic growth has become an important research topic in economics, and governments around the world have enacted policies to enable entrepreneurship and spur innovation. With metrics such as the World Bank's *Doing Business* report highlighting a country's ease of starting (and closing) a business, countries have increasingly focused on improving their investment climate as a way to foster entrepreneurship; this has been done in tandem with traditional "innovation" policies such as investment in research and development (R&D), supporting incubators and innovation clusters, and investing in education and human capital development.

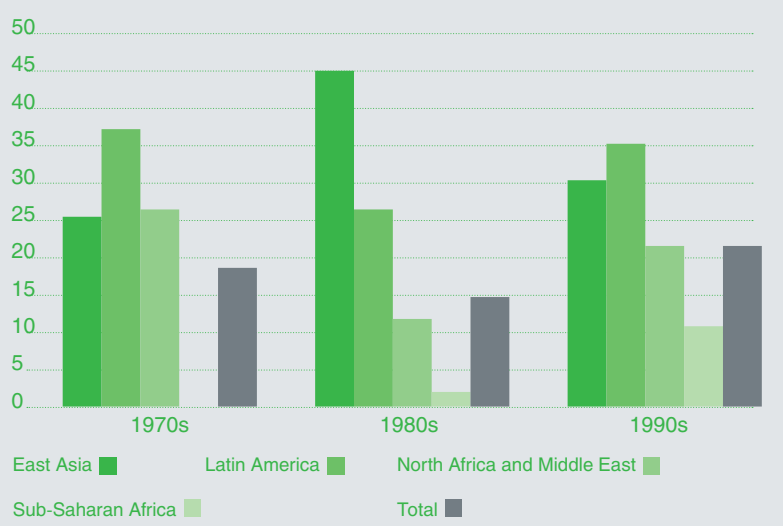
However, a rising wave of financial protectionism threatens to derail the progress made in improving business entry in emerging markets. As the quote above shows, there is an accelerating trend in favor of capital controls that began with the collapse of the Icelandic economy in 2008. The use of controls in Iceland, explicitly supported by the International Monetary Fund (IMF) as a way to stem capital flight, has given intellectual cover for policymakers, and emerging markets throughout the world have contemplated or implemented controls:

- In March 2009, Ukraine ordered banks to buy and sell its currency at a rate no weaker than a floor policymakers set each day (with the first day's floor much higher than the prevailing market rate). This was done ostensibly to prevent the rapid depreciation of the currency from turning into a rout.
- Brazil, which saw its currency appreciate by 36% against the US Dollar in 2009, imposed a 2% tax in October 2009 on money entering the country exclusively for investing in equities and fixed income instruments, doubling the tax to 4% in October 2010.
- Also in late 2009, Taiwan banned foreigners from putting money into time deposits.[2]
- Thailand, following in the footsteps of Chile in the 1990s, enacted a 30% unremunerated reserve requirement (URR) in December 2006 on all new inflows. Much as in Taiwan, a further 15% tax on foreigners holding Thai government and state-owned bonds enacted in October 2010 was called a "withholding tax."

Several other countries across the development spectrum, from Indonesia to South Korea, have also increased the regulations and rules regarding

1/ From their article, "Why Capital Controls Are Not All Bad," *Financial Times*, October 25, 2010.

FIGURE 1/ Percentage of Countries with Open Capital Accounts, 1970–2000



Source: Based on data from Asiedu and Lien (2004)

2/ Interestingly, perhaps knowing what the term "capital controls" means to the market, the head of the Financial Supervisory Commission's Foreign Exchange Department publicly stated, "We are not imposing any capital control, at least for now… [investors] should buy stocks or bonds… rather than parking the money in time deposits." Spencer Lin, quoted in "Taiwan Regulator Moves to Curb 'Hot Money'," *Agence France Presse*, November 10, 2009, available on-line at: http://news.malaysia.msn.com/business/article.aspx?cp-documentid=3699482.

investment. Indeed, even as some authors claim that "debilitating neoliberal ideology" removed the leverage for capital controls in emerging markets, Figure 1 shows that this actually has not been the case; a majority of countries have retained some form of control, even through the supposed free-wheeling 1990s, and some have even seen their economic conditions improve while continuing to have controls.

While a growing amount of economic evidence has emerged that capital controls as a tool may both be ineffective for many of their stated purposes, there has been little examination of their long-term effects that can harm rather than help entrepreneurship in emerging markets. The purpose of this paper is to fill this gap and examine capital controls in both a historical and recent context, ascertaining their possible effect on firms and entrepreneurship in emerging markets in coming years. What will the impact be on emerging markets and firms in developing countries if capital controls continue to gain credibility? How has the rebirth of controls in the wake of the global financial crisis affected entrepreneurship in emerging markets?

This paper will proceed in the following manner: the following Section will define capital controls and examine how they can affect entrepreneurship in theory and in practice (including examining the case studies of Chile and Malaysia). Section II will introduce new evidence and analysis on the broader effects of controls at the microeconomic level, updating previous work to include the effects of controls during the global financial crisis. Finally, Section III will conclude with some thoughts about the future of capital mobility and the prospects for entrepreneurship in an increasingly protectionist world.

CAPITAL CONTROLS AND ENTREPRENEURSHIP: THEORY AND EVIDENCE

1

"In 1997-98, the words 'capital controls' were forbidden and stigmatized. Now the problem of capital is so systematic and huge globally, it has now become universally acceptable to have a certain type of temporary capital controls."[3]

World Bank Managing Director Sri Mulyani

WHAT EXACTLY IS A "CAPITAL CONTROL"?

In order to ascertain the effects of capital controls on entrepreneurship, the first issue we run up against is definitional. In reality, the term "capital controls" refers to not just one policy or administrative lever, but to a series of different mechanisms that range from the minor to the draconian, all with the goal of slowing (or halting) capital movements into or out of a country. Diverse in their conception as well as their execution, the various controls can be grouped as either "administrative," or direct controls, and "transaction-based," or indirect controls, depending on how they are implemented (see Table 1).[4] More importantly, the differing instruments used to distort capital flows are not of uniform stringency, and the by-no-means–exhaustive list shown in Table 1 shows a wide variation in terms of pressure and compliance that capital controls can require.

TABLE 1/ TYPES OF CAPITAL CONTROLS

Administrative	Transaction-based
Threshold investment requirements	Non-interest bearing reserve requirements
Approval procedure required for cross-border transactions	Taxes on portfolio flows (e.g. a Tobin Tax)
Quantitatitve limits and/or quotas on investment	Discriminatory and disparate taxes on income resulting from foreign assets
Outright prohibition of repatriation or non-convertible currency.	Credit rating requirements for borrowing abroad
	Time requirements, including stipulations that incoming funds have to stay in the country for a certain amount of time
	Multiple exchange rate systems
	Increased and discriminatory reporting requirements

Source: Based on information from Ariyoshi et. al (2000)

3/ Quoted in "Asia May Need Capital Controls," *the Jakarta Post*, November 11, 2010, available on-line at: http://www.thejakartapost.com/news/2010/11/10/asia-may-need-capital-controls-sri-mulyani.html.

Similarly, while these various instruments work at different levels of implementation, they also have different intended effects and are targeted at different types of capital movements. Table 2, based on work done by Christopher J. Neely of the St. Louis branch of the Federal Reserve Bank in 1999, shows what he identifies as the ten most common reasons for capital controls, broken down by the type of capital flow that they target (inflows or outflows).

TABLE 2/ TARGETING OF CONTROLS

Purpose of Control	Capital Flow Targeted: Inflows	Capital Flow Targeted: Outflows
	Correct a Balance of Payments Surplus	Generate Revenue/Finance a War Effort
	Prevent Potentially Volatile Inflows	Financial Repression/Credit Allocation
	Prevent Financial Destabilization	Correct a Balance of Payments Deficit
	Prevent Real Appreciation	Preserve Savings for Domestic Use
	Restrict Foreign Ownership of Domestic Assets	Protect Domestic Financial Firms
	Protect Domestic Financial Firms	

Source: Neely (1999)

EFFECTS OF CONTROLS ON ENTREPRENEURSHIP: THE THEORY

As this brief discussion shows, the manner in which controls are applied and the areas they target are mostly macroeconomic in nature, with effects on individual firms often subsumed as a second- or third-order effect (i.e. by creating stability and protecting financial sector institutions, firms in the real economy

4/ In the literature, the term "market-based" is also utilized but has been eschewed in favor of "transaction-based" so as to differentiate between the actual channels in which implementation is effected. In the author's view, the term "market-based" is also somewhat misleading, as all capital controls are meant to distort the market; the term "transaction-based" thus more completely captures the fact that certain controls are meant to increase transaction costs.

will benefit). However, a more in-depth look at capital controls highlights their potentially deleterious effects for entrepreneurship.

In one sense, the theory on the effects of capital controls on firms is fairly clear: any regulations that make it more difficult to obtain financing or allow investment in a country should inhibit entrepreneurship and firm expansion[5]. As two authors exploring the effect of controls in Chile note, theories of corporate finance also formalize this idea in an investment-specific context:

…in the absence of financial restrictions and corporate agency problems, firm investment depends exclusively on the (marginal) value of the firm relative to its replacement value. However, to the extent that the firm faces constraints on external financing, its investment will be determined by its internal resources, namely, retained cash earnings.[6]

Researchers at the IMF expand on this point, noting that "capital controls can substantially limit access to, and raise the cost of, foreign currency debt, especially for firms without foreign currency revenues." [7] This is an important fact, for many developing countries have undeveloped capital markets (indeed, many countries are developing precisely because of the low pool of savings and financial intermediation for the private sector to draw upon), and thus in order to expand need to tap foreign funding; capital controls would thus inhibit this flow of finance. Moreover, limited access to finance would also impact firms disparately, as larger firms tend to have an easier time securing bank lending (or utilizing internal funds), and indeed, researchers have found that countries with less capital account restrictions tend to have more small firms than those that do not. [8]

Beyond the direct investment effects, instituting discretionary controls and going through cycles of enacting and then repealing them engenders the exact type of volatility and uncertain expectations that controls claim to redress.[9] A start-stop approach to capital flows can scare investors away over the longer-term, as well as leave domestic firms uncertain about the structure of their financing if they borrow internationally. The uncertainty about capital account liberalization can also drive up the risk premium for doing business in a particular country, making the cost of capital (when it is available) more expensive and dampening borrowing. Thus,

5/ Interestingly, some authors note that these restraints must actually be binding to influence financing. As Edison and Warnock (2003) discover, capital inflows only increase after a relaxation of capital controls that are rigidly enforced and monitored. Controls that are more observed in the breach than in the practice thus are not much of controls at all.

6/ See Gallego and Loayza (2000).

7/ Prati, Schindler, and Valenzuela (2009).

8/ Alfaro and Charlton (2008).

9/ This is a major point that proponents of capital controls argue – that controls bring stability. Authors such as Dani Rodrik have noted that high capital mobility can increase the likelihood of financial crises, which thus in turn reduces entrepreneurship.

with policymakers always having the lever of controls available, there is a real threat that the business environment suffers due to volatility, leading to less future investment and a real lower standard of living in the country as a whole.

Another area theoretically where controls would harm firms in the host country is in diffusion of technology. An early point made in the debate on capital account liberalization noted that investment, especially in the form of foreign direct investment (FDI), allows for a transfer of technology and knowledge (meaning emerging market firms do not have to re-invent the wheel). While controls are normally designed to only target short-term or portfolio flows, the effect they can have is to slow all forms of investment, thus making it less likely that long-term investors will enter the country. However, some have argued that this may be a good thing in terms of fostering home-country entrepreneurship; according to research done in the 1980s, international capital flows, and in particular FDI, can lead to a crowding out of the domestic entrepreneurial class as foreign firms come to dominate. [10]

Finally, from a public choice perspective, the creation of capital controls also imposes regulatory burdens on firms that feed uncertainty. In particular, direct administrative controls such as foreign investment approval processes can be highly discretionary, fostering uncertainty amongst investors, as it results in the political allocation of capital rather than market-based allocation. This can also lead to rent-seeking opportunities and corruption, especially at lower (and lower-paid) levels, where applications must typically be lodged (empirically, Dreher and Siemers (2005) have shown that this is the case, noting that higher corruption is associated with more restrictions on the capital account).

This concentration of power to "pick winners" also wastes the time of investors and firms seeking capital, as the burden of firms means they must invest more time on succeeding in the process of investment approval than in the investment itself. This is, of course, if firms actually decide to go the legal route; studies done on both developing and developed country firms show a myriad of ways how businesses avoid capital controls. An OECD catalogue of some of the measures business do to circumvent controls includes: falsification of invoices in trading, leads and lags in paperwork, substitution of exempted flows with restricted flows, and illegal methods (such as bribery and smuggling).[11] Beyond those methods, even financial instruments that are legal under a control regime such as derivatives have been utilized to circumvent capital controls – and the longer the controls are in place, the better the private sector gets at avoiding them. [12]

10/ See Grossman (1984) for a fuller explanation.

11/ Blondal and Christiansen (1999) provide a fuller listing of ways that firms use to circumvent controls.

12/ See especially Garber (1998).

EFFECTS OF CONTROLS ON ENTREPRENEURSHIP: THE EVIDENCE THUS FAR

Examining the effects of capital controls on entrepreneurship is a difficult task, as it is often hard to disentangle the effects of the controls themselves from other macroeconomic variables and policies (indeed, countries that tend to institute controls have other distortions that can also exert an influence on firm entry). This issue is compounded by the fact that, as noted above, capital controls are generally instituted to influence macroeconomic variables; thus, much scholarship has been produced examining the efficacy of capital controls at a macroeconomic level, with little done on microeconomic effects.

A notable exception to this rule comes from a paper published by Harvard Business School, which stands out as an excellent cross-country examination of capital controls and entrepreneurship. Using a dataset for 98 countries over three years (1999, 2004, and 2007), the paper finds that "countries with more relaxed capital controls (de jure integration) or receiving a higher volume of foreign capital (de facto integration) were on average more likely to experience greater entrepreneurship proxied by increased activity among new and small firms."[13] Another study from the Swiss National Bank surveying 9,655 firms in transition countries shows that a lack of capital controls encourages small firms to borrow internationally in order to reach their financing needs.[14] Other notable research has focused on specific countries, such as India, showing that capital controls impede efficient pricing for domestic shares.[15]

However, the most rigorous empirical work in the area of microeconomic effects of capital controls has focused at the country level on the two most famous users of controls, Chile and Malaysia, and these lessons merit a closer look below. Additionally, given the size of its economy and its extensive array of controls, China also deserves to be examined; while scholarship is fledgling on the effects of capital controls on entrepreneurship in China, the work that has been done offers an excellent glimpse into issues that all emerging markets may face in this area.

13/ Ibid.

14/ Brown, Ongena, and Yesin (2009).

15/ Stigler, Shaw, and Patnaik (2010).

The Chilean Encaje

Perhaps more than any other country, Chile is repeatedly invoked as the model of getting controls right. While many developing countries feared the drastic effects of sudden capital outflows (with the effects of the debt crisis of 1982 still prominent in policymakers' minds), Chile's restrictions were focused on moderating inflows. Starting in 1991 and lasting until 1998, Chile's *encaje* (meaning "strongbox" in Spanish) was a series of capital account restrictions originally utilized as a way to control exchange rate pressures, as, perhaps ironically, liberalization in the Chilean economy in the early 1990s led to capital inflows that in turn led to a steadily appreciation of the peso. The centerpiece of the encaje was an unremunerated reserve requirement (URR) that required a fraction (at first, 20%) of portfolio inflows to be deposited at the Central Bank for a fixed term in a non-interest bearing account.[16] Additionally, seemingly to favor longer-maturity capital, the requirement (made in 1982) that direct investment must remain in-country for 10 years was reduced to 3 years in 1991. As Neely (1999) notes, the restrictions served to lower the rate of return of portfolio investments, and thus dampen inflows at the margin that were seeking to take advantage of the interest rate differentials between Chile and other developed nations (notably the United States).

How well did these controls work to reach the policy goals set out by the Chilean government? There is a notable lack of clear-cut evidence on the benefits of the controls; according to Massachusetts Institute of Technology (MIT) Professor Kristin J. Forbes, most of the economic analyses of Chile's restrictions "conclude that the capital controls shifted the composition of capital inflows to a longer maturity and provided a small increase in monetary policy flexibility, but had minimal effect on other variables (such as the total volume of capital inflows or exchange rate)." [17] Perhaps more importantly, the evidence is solidly against the controls' effect on exchange rate appreciation (the original justification for the controls), as several authors note that the exchange rate continued its appreciation, rising 28 percent over the period of capital controls.

Although it is often claimed that the *encaje* was able to minimize the negative consequences of controls, the restrictions did not come without a cost to Chile. The administration of the controls took a lot of time and effort

16/ As Thin (2009) notes, the deposit requirement fluctuated between 10 and 30% and penalties for withdrawal between 1-3%, as policymakers continually attempted to fine-tune and "close loopholes."

17/ Forbes (2003), p. 1. Even the evidence that longer-term maturities were encouraged is disputed, however, as Bank for International Settlements (BIS) data shows that, during the time of the URR, short-term debt in Chile actually increased; see the IMF's Joshua Feldman's presentation from 2007, where he examined the effects of the controls.

from the government, especially as the private sector continued to find ways to evade them (a key factor behind the rise in the URR from 20% to 30% in 1992 and the requirement instituted in 1995 that all URRs had to be deposited in US dollars, raising their real cost). Perhaps most importantly, both Forbes and Gallego and Hernandez (2003) found that the encaje substantially increased the cost of financing for smaller Chilean firms, with Forbes performing an analysis that shows in 1996-97, larger firms had investment costs of 7-8% on average, while small firms had costs of over 20%. While smaller firms typically face higher lending costs, the controls exacerbated their plight by creating a pool of longer maturity investment (harder for small firms to access) and increased scrutiny for banks (which smaller firms rely on more heavily than larger firms). Further econometric evidence from Forbes notes that "there is no evidence of financial constraints for either smaller or large firms for the period after the encaje was lifted, nor any evidence of a significant relationship between firm size and financial constraints."[18] While at the macro level Chile may not have suffered as a result of its capital controls, there definitely were losers after the imposition of the *encaje*.

Malaysia and the Asian Crisis

Malaysia in 1998 is the case offered second only to Chile as the exemplar of the beneficial nature of capital controls, and indeed was the case that brought serious intellectual debate on controls to the forefront of economic policymaking. While Malaysia had liberalized its capital account beginning in 1968 as part of its accession to the IMF, with a slow period of relaxation accelerating in 1986-87 (although it reintroduced controls temporarily in 1994 to stem the inflow of short-term capital, much as in Chile), [19] the Asian crisis of 1997-98 and its effects on Malaysia led to the imposition of controls on September 1, 1998.

Unlike Chile, the Malaysian capital control regime was comprehensive and overpowering from the beginning, hoping to perform a financial "shock and awe" that would completely insulate the economy from any capital movements. The key pieces of the controls were:

- A fixed exchange rate of 3.8 Malaysian ringgit to the US dollar;
- The ringgit was declared no longer legal tender outside Malaysia;
- Offshore trading in Malaysian shares was banned;
- Repatriation of foreign owned investments was banned for one year;
- All trade settlements had to be made in foreign currency and not in ringgit;
- Approval was required to transfer capital abroad; and

18/ Forbes (2003), p. 23.

19/ See Johnson *et. al* (2006) for more information on the progress of Malaysia in liberalizing pre-1992.

- All ringgit assets held abroad had to be repatriated.[20]

In a press release from the Central Bank of Malaysia accompanying the imposition of controls, monetary authorities noted that the explicit goal of the controls was:

i. "To limit the contagion effects of external developments on the Malaysian economy;
ii. To preserve the recent gains made in terms of the policy measures to stabilise the domestic economy; and
iii. To ensure stability in domestic prices and the ringgit exchange rate and create an environment that is conducive for a revival in investor and consumer confidence and facilitate economic recovery."[21]

As with Chile, Malaysia's controls also had an impact on firms within the country, albeit in a different manner than under the *encaje*. On the positive (or, more accurately, neutral) side, IMF researchers noted that, while "there is no evidence in the data to suggest that capital controls made a visible difference in Malaysia's recovery process… at the same time, there is no evidence that controls had lasting costs through affecting Malaysia's access to international portfolio capital." [22] From the standpoint of foreign investors, Malaysia remained an attractive destination for investment (due mainly to its better governance), although FDI did decline relative to other Asian countries and Malaysia's own prior performance.

Counterbalanced against this macro assertion were tangible effects at the micro level. One of the charges leveled against Malaysia and, indeed, one of the alleged causes of its economic problems was "crony capitalism," or the fact that several firms within the country appeared to benefit from government largess to the exclusion of others. Research from Johnson *et. al* (2006) and Mitchell and Joseph (2010) found that government-owned firms or firms that were publicly tied in some way with the rulers (specifically Prime Minister Mahathir Mohammad) both benefited more from the capital controls (in terms of their stock returns) and were harmed more by their removal. [23] While some authors have argued that politically-connected firms weren't helped *exclusively* (Cozzi and Nissanke (2009) claim that, because currency stability

20/ This list is based on work done by Mitchell and Joseph (2010), who elaborate on many of the restrictions imposed by Malaysia.

21/ The press release by Bank Negara Malaysia was entitled "Measures to Regain Monetary Independence," although this is only at best given as a peripheral reason. The release is still available on-line at: http://www.bnm.gov.my/index.php?ch=8&pg=14&ac=482&print=1.

22/ Johnson *et. al* (2006).

23/ Mitchell and Joseph also make the point that government-owned firms already tended to be larger than the average Malaysian firm, which could also point to less of a need for foreign capital; hence, a willingness to support controls.

was enforced under the controls, all industries in the tradable sector benefited), the evidence shows that being politically-connected eased the burden of capital controls, while not having connections led to poorer performance and the problems with financing one would expect with restrictions.[24]

China and the Future

In contrast to Chile and Malaysia, China's experience with capital controls differs in that it has never had a really "open" capital account, instead instituting a complex series of controls that have only very gradually (and recently) moved towards liberalization. Thus, in terms of their effect on entrepreneurship, there really isn't a "before" and "after" that can be examined, and counterfactuals are more theoretical than empirical. Despite this limitation, however, several studies have attempted to study entrepreneurship in China, making reference to the business environment that firms face, including the presence of capital controls.

A key component of Chinese capital controls that can have an effect on entrepreneurship relates to domestic financial repression, as state-owned banks hold an effective monopoly on funds, and thus have a great say in who receives financing and who doesn't. The result of this political allocation of financing in China has been an interesting inversion of an argument made by some proponents of capital controls; recall above that many authors have claimed that liberalization of capital flows would advantage foreign firms over domestic ones, leading to crowding out of domestic entrepreneurs. In China, the "crowding-out" effect has been seen, but the winners are state-owned firms and the cause has not been liberalization, it has been a direct result of the controls. Simply put, political considerations from the ruling Chinese Communist Party (CCP) favor state-owned firms for financing, leading to a weakening of entrepreneurship from Chinese firms. In the words of researcher Yasheng Huang, there is "a systematic, pervasive, persistent bias in financial policies in favor of the least efficient firms in the Chinese economy—[state-owned enterprises or] SOEs—at the expense of the most efficient firms," specifically "China's small, entrepreneurial, and private enterprises."[25] This effect has been identified by entrepreneurs themselves as a binding constraint on obtaining finance: in the World Bank's Enterprise Survey from 1999-2000, covering

24/ Cozzi and Nissanke (2005:2) also note a more discriminatory reason for the capital controls: "Interviews conducted with Malaysian government officials also suggest that the imposition of capital controls enabled them to continue implementing affirmative pro-Malay policies without external interference and maintain the domestic ownership of Malaysian firms." Thus, the controls actually were designed to harm the prospects of some firms for the benefit of others.

25/ See Huang (2005).

a sample of entrepreneurial firms in the non-state sector in China, 66.3% of the firms polled considered financing constraints to be a "major obstacle."[26] As the World Bank has noted, the political control of credit has led to "poor performance of the banking sector" and stifled innovation as, "with high barriers of entry and exit, new ideas and new capabilities regarding bank management, products and market reach cannot prevail."[27]

Beyond financing constraints, the full effect that controls will have on Chinese firms may not be known until the controls are lifted. A paper from Sweden attempts to forecast the results of that eventuality, predicting that when China lifts its array of capital controls, Chinese firms will be severely disadvantaged by their lack of exposure to and knowledge of the global economy.[28] This performance will most likely be exacerbated (and highlighted) by the differences between mainland Chinese firms and firms from Hong Kong, where firms have had a longer exposure to international competition and, more importantly, the former colony has fostered entrepreneurship via appropriate investment climate policies. This has been reflected in the entry density of firms (newly registered corporations per 1,000 working-age people) in Hong Kong *vis a vis* most of the world: compared with China, which has an entry density estimated by the World Bank at less than 1 new firm per 1,000 people, Hong Kong has consistently had entry densities over 10 (with it actually increasing during the global financial crisis to a high of 19 (19 firms per 1,000 people in 2009). Clearly, some of the same issues seen in Malaysia and Chile in regards to their capital controls and their effects on entrepreneurs seem to happening in today's China as well.

26/ Referenced in Dorn (2006).

27/ Bai (2006).

28/ Oxelheim (2008).

CAPITAL CONTROLS AND ENTREPRENEURSHIP: THE GLOBAL FINANCIAL CRISIS AND NEW EMPIRICAL EVIDENCE

2

As noted in the previous section, cross-country evidence on the effects of financial controls and entrepreneurship has basically been limited to one important study from Harvard, with the bulk of the work concentrating on macroeconomic effects of controls and country-specific studies. This section will attempt to rectify this macro-bias and present new evidence on the effects of capital controls on entrepreneurship from a cross-country perspective, including examining the effect of controls during the global financial crisis. This approach will hopefully lend a new dimension to the still-raging debate on the use of capital controls.

DATA AND METHODOLOGY

While prior research noted in Section I has confirmed some of the theoretical negative effects of controls on firm entry, for the most part they end before the global financial crisis began. This paper will seek to extend the analysis done in Alfaro and Charlton (2008) and see if there is a continued (or even stronger) relationship between controls and firm entry during the GFC.

The data on firm entry to be used in this paper comes from the World Bank Group's Entrepreneurship Snapshots database, which contains data on firm entry for 112 developing and industrialized countries from 2004-09.[29] The key indicator that the database compiles is "entry density," defined as the number of newly registered corporations per 1,000 working-age people (aged between 15 and 64). This weighted indicator of firm entry takes into account differing population sizes of countries (it would be pointless to compare number of new firms in India versus Bhutan, due to their enormously different size), while also scaling appropriately for the size of a country's labor force. Thus, entry density will be the dependent variable we are seeking to explain, focusing on the effects of capital controls on entry density.

One issue that has been noted by other researchers is the difficulty of measuring capital controls in an empirical sense. As IMF staff have noted, "finding a significant link between capital controls and economic outcomes is made difficult also by the fact that some of the most widely used capital controls indicators are crude, binary indicators which ignore variations in the degree of capital account restrictiveness."[30] To avoid this problem, this paper utilizes an indicator that has become somewhat standard in the literature, the Chinn-Ito indicator of financial openness. This indicator, detailed in Chinn

29/ Alfaro and Charlton (2008) use a much more comprehensive database on company details, the Dun & Bradstreet WorldBase. However, the World Bank database provides data from the policymakers' point of view (taken from company registries), and its emphasis on firm entry rather than operations makes it a suitable substitute in this paper.

30/ Prati, Schindler, and Valenzuela (2009).

and Ito (2007) is constructed as the first standardized principal component of four separate variables for a country taken from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER):

- the presence of multiple exchange rates;
- restrictions on current account transactions;
- the share of a five-year window (encompassing year t and the preceding four years) that capital controls were not in effect; and
- the presence of a requirement to surrender of export proceeds.

This index takes on higher values the more open the country is to cross-border capital transactions, and the latest version of the index covers 182 countries from 1970 through 2008. The use of the Chinn-Ito indicator distinguishes this study from the Alfaro and Charlton analysis, which uses the average of the AREAER indicators as the measure of capital control restrictions for each country. By utilizing the Chinn-Ito indicator, we hope to show more "economic" content in terms of restrictions beyond a simple averaging.

As controls for the capital openness indicator, this paper will utilize a similar approach as Alfaro and Charlton (2008) and also examine the effects of the level of GDP per capita (in thousands of US constant dollars, to proxy for a country's development level), GDP growth (to proxy for current economic activity), the level of GDP (in billions of US constant dollars, to capture scale effects from larger markets), the extent of domestic credit to the private sector (as % of GDP), and a series of variables on institutions. The institutional variables come from the International Country Risk Guide (ICRG) and, as in the HBS paper, include rankings on corruption, bureaucratic quality, and law and order; these variables are presumably important in the decision of an entrepreneur to start a business or not. These variables are coded from 1 to 6, with 6 being the highest quality, most law and order, or least corruption. Unlike the earlier paper, however, we will utilize the change in these institutional variables (rather than their level) to see how institutional change affected firm entry. [31]

RESULTS

Table 3 shows the results of several combinations of variables in order to ascertain the effect of capital controls on firm entry (a more detailed explanation of the methods utilized are shown in the Technical Appendix). The first column

31/ The econometric reason for using change rather than levels is explained in the technical appendix. Additionally, while Alfaro and Charlton use log transformations for their GDP variables, this approach is eschewed here for two reasons. The first is that we are not interested in elasticities as much as the direction of effect. The second and more important concerns the stationarity tests shown in the technical appendix: in order to remove the unit root from some of the GDP variables, differencing would have to be used. However, differencing the logs of the GDP level variable would make it identical to the GDP growth rate, meaning a duplication of variables and multicollinearity. Thus, GDP per capita and GDP are used at their levels but differenced to remove the unit root.

shows the entire model, with all variables included; of these variables in this specification, only GDP growth rate and capital openness enter as significant explanators for entry density, with capital account openness being the most significant both statistically and economically. The lack of significance of the institutional variables do not necessarily mean a lack of correlation between institutions and firm entry; rather, it signifies that over this time period and across all countries, changes in institutions were less of a factor in determining the number of firms per capita entering the marketplace. This could be due to many reasons, including the shorter time-span of this database and the fact that institutional variables change very slowly (and even if they do change it make take time for expectations to change and their effects to filter through the economy).

TABLE 3/ RESULTS OF THE ANALYSIS, ENTRY DENSITY VS. CAPITAL OPENNESS AND CONTROLS

	Regression			
Variable	**1**	**2**	**3**	**4**
Δ GDP	0.006	-0.010		
	0.79	*0.59*		
Δ GDP per capita	-0.160	2.70		2.05
	0.39	*1.43*		*1.99**
GDP growth rate	0.04	-0.02		
	*2.49**	*0.53*		
Domestic Credit to the Private Sector	0.03	0.06		0.06
	1.51	*2.00**		*2.21**
Δ Bureaucratic Quality	0.78	0.50		
	1.44	*0.88*		
Δ Law and Order	-0.32	-0.14	-0.48	
	1.47	*0.55*	2.43*	
Corruption	-0.03	0.04		
	0.17	*0.17*		
Capital Openness	0.73	0.53	0.91	0.52
	*2.55**	*2.75***	*2.72***	*2.51**
Constant	0.79	-1.17	2.50	
	0.53	*0.74*	*6.52***	
N	287	234	362	267
R-squared	0.32	0.25	0.12	0.27

Absolute values of t-statistics are under the coefficients. * denotes significance at the 10% level, while ** denotes significance at the 1% level.

While level of GDP per capita is used in the HBS paper to proxy for development, it may be easier to simply separate out countries that are "emerging markets" and re-run the model using only these countries (the level of GDP per capita is retained to show the difference in development levels amongst emerging markets). The second column of Table 3 shows the result of the analysis including only emerging market countries, and the results shift somewhat; while the magnitude of the effect is slightly smaller, capital account openness is the most significant variable statistically in determining the entry density of firms in a specific developing country, while domestic credit enters at marginal significance.

However, given that the institutional variables appear to be less of a factor than capital openness and GDP growth (across all countries) or domestic credit (for emerging markets), we will next employ an approach popularized by Hendry (1995): the "general to specific" approach. This method involves narrowing down a model to its most parsimonious form via an iterative process, leaving us with only the most important variables within the current model framework (there is always a danger of omitting variables in any model, thus results must be treated with the standard modicum of caution). Using this approach, we see in column 3 of Table 3 that the most important variables for firm entry across all countries remains capital account openness, while GDP growth loses its significance; this may signify that firms start in good times and bad, but it is the availability of capital rather than a momentum effect that actually determines if a firm is started or not. More interestingly, this approach isolates an institutional effect heretofore not captured, and changes in law and order enter into the equation significantly and negatively. This negative relationship may perhaps proxy for government size, for as a country increases its level of law and order, it most likely also generates a larger bureaucracy to deal with it; thus, more law and order can discourage entrepreneurs, who shy away from large amounts of red tape.

As a final check, the "general to specific" approach was also utilized on the sub-set of emerging market economies, shown in Column 4 of Table 3. GDP per capita now enters the equation as significant and positive, signifying perhaps that differences amongst development levels within emerging markets also influence entrepreneurship (and that perhaps there is a threshold level of development that is more conducive to firm creation). Law and order is not significant in this sub-group, lending more credence to the theory that higher levels of law and order may correlate with more bureaucracy. Finally, as in the earlier regressions, domestic credit and capital openness remain highly statistically significant for firm entry. These results once again suggest that capital controls do indeed place a capital constraint on firms in emerging markets that they are not able to fill domestically, and foreign capital allows more firms to enter the market.

CONCLUSION

3

"China has had capital controls on short-term flows that have worked, not perfectly, but have worked to stabilize these short-term flows. But at the same time, it's been very open to long-term investments… where I do have a worry is countries like India, where they are debating how much intervention in the market we should have. And there are people who say in India we shouldn't have capital controls, even though Brazil's done it, China's done it."[32]

Joseph Stiglitz

While capital controls may afford a government some "breathing space" for its macroeconomic policies, an ever-growing body of evidence has shown that capital controls have a real and enduring cost for the real economy in countries that enact them, especially at the microeconomic level. This paper has built upon both country-specific and cross-country studies from the literature, extending the analysis to include the first year of the global financial crisis, finding that countries with more open capital accounts fared better in terms of entrepreneurship than those that closed up tight. This result holds for both developed and emerging market economies over the period 2004-08, with firm entry strongly influenced by economic activity, domestic credit availability (for emerging markets), and the availability of foreign capital.

Of course, this analysis has been far-from-comprehensive, as there are many determinants of entrepreneurship in a country beyond mere macroeconomic and (formal) institutional variables. Culture, societal attitudes and obligations, and other micro issues (such as industry exigencies or competitive environment) can all influence the individual's decision to start their own business. However, the results of this paper show that while the desire to open a business may differ from country-to-country, actually opening a business successfully is tempered by its ease. Capital controls simply make it harder for businesses to start by restricting available capital, as well as engendering other distortions (including bureaucracy) that are correlated with low firm creation (as shown in the full sample model in Table 3).

In this sense, capital account openness may be indicative of other issues with a government's entrepreneurial policies, as very rarely are controls instituted by a government that has been non-interventionist in the past. More likely, a country that institutes capital controls has also committed to other policies and regulations that can harm entrepreneurs, whether through administrative barriers to starting a business or policy decisions regarding exchange rates or international trade. Capital account openness can thus be taken as a

32/ Quoted in "Stiglitz Urges Capital Controls to Curb 'Hot Money'," November 11, 2010, available on-line at: http://www.reuters.com/article/2010/11/11/us-stiglitz-idUSTRE6AA15Z20101111.

proxy for a government's general attitude towards business and the proper role of government in an economy.

Seen through this lens, enacting capital controls may be the worst remedy for governments seeking to pull their country out of a recession and stimulate entrepreneurship (indeed, unlike Grabel and Chang's assertion shown in the introduction, it is a debilitating *anti-liberal* ideology that is doing harm to countries and the businesses therein). Rather than focusing on building barriers, governments should play the role of facilitator, encouraging entrepreneurship across a broad variety of fronts; while traditional innovation policy, including support of innovation centers and incubators, investment in R&D, and support for education and human capital development, can yield targeted dividends, attention must also be paid to investment climate issues such as capital openness. Concentrating on getting the macroeconomic fundamentals right will encourage stability and create an environment that will allow entrepreneurs to realize their plans.

Technical appendix

This Appendix will delve more fully into the technical aspects of the model utilized in Section II.

Regarding the underlying data, a crucial issue that was not included in the earlier Alfaro and Charlton (2008) work was a test of the stationarity of data. In particular, GDP levels and GDP per capita are notorious for having a unit root; that is, for exhibiting an upward drift over time, thus leading to spurious regression results if they are included at their levels. An augmented Dickey-Fuller test (Tables A.1 and A.2) confirms that, in this database, both GDP at its level and GDP per capita are non-stationary: the statistics reported have a null hypothesis that all panels contain unit roots, which cannot be rejected in either case). Thus, the variables must be differenced in order to remove the unit root (not shown are the results of the first differencing, which confirms that the two series are integrated of order I(1)).

TABLE A.1/ UNIT ROOT TEST FOR GDP

GDP level		Statistic	p-value
Inverse chi-squared(202)	P	128.728	1.0000
Inverse normal	Z	3.8458	0.9999
Inverse logit (484)	L*	4.1804	1.0000
Modified inv. chi-squared	Pm	-3.6454	0.9999

TABLE A.2/ UNIT ROOT TEST FOR GDP PER CAPITA

GDP per capita		Statistic	p-value
Inverse chi-squared(202)	P	151.07	0.9970
Inverse normal	Z	3.6785	0.9999
Inverse logit (494)	L*	4.1087	1.0000
Modified inv. Chi-squared	Pm	-2.5341	0.9944

Obtained using STATA 11, command xtunitroot fisher [varname], dfuller, with zero lags

A similar exercise is undertaken on the ICRG variables, which also have a tendency towards non-stationarity due to their bounding and, for the most part, time trends. While this database is over a smaller period of time, and thus we would expect non-stationarity to be less of a problem, a similar test (Table A.3) shows that both bureaucratic quality and law and order exhibit a unit root and must also be differenced (corruption is stationary at its level and can be retained as is).

TABLE A.3/ UNIT ROOT TESTS FOR INSTITUTIONAL VARIABLES

		Bureaucratic Quality		Law and Order		Corruption	
		Statistic	**p-value**	**Statistic**	**p-value**	**Statistic**	**p-value**
Inverse chi-squared	P	72.388	1	142.094	0.978	340.802	0
Inverse normal	Z	-1.575	0.058	-2.892	0.002	-2.913	0.002
Inverse logit	L*	-7.643	0	-6.307	0	-11.214	0
Modified inv. Chi-squared	Pm	-5.672	1	-1.903	0.972	8.629	0

Obtained using STATA 11, command xtunitroot, fisher [varname] dfuller, with zero lags

Finally, the appropriate econometric method to analyze the data was chosen as a fixed effects model (rather than random effects) utilizing a generalized least squares estimator. In cross-country, cross-time datasets such as this, it is common to utilize a fixed-effects model, and the results of a Hausman test performed on the two variations showed a significant difference between the two specifications (results reported in Table A.4 below, which rejects the null hypothesis that the difference in coefficients is not systematic).

Given these econometric issues, the full model utilized in the regression shown in Table 3, Column 1 considers entry density as a function of both macroeconomic variables and institutional impediments:

$$ED_{it} = \alpha \Delta GDP_{it} + \beta \Delta GDP\ per\ capita_{it} + \gamma GDP\ growth_{it} + \delta DomesticCredit_{it} + \theta \Delta Bureaucratic\ Quality_{it} + \upsilon \Delta Law\ and\ Order_{it} + \varrho Corruption_{it} + \sigma Capital\ Account\ Openess_{it} + \mu + \varepsilon_{it}$$

In this specification, μ represents the fixed effect. Additionally, robust standard errors were utilized, to correct for possible heteroskedasticity arising from the time-series data.

Finally, the application of the "general to specific" model was utilized through stepwise elimination of the least significant variable in the preceding regression. F-scores were then compared for goodness of fit of the successive models until only significant variables were left within this model. As noted in the main text, the danger in this approach comes through omitted variable bias, which has somewhat been corrected for through use of robust standard errors. However, more research is called for to create a complete model of firm entry.

TABLE A.4/ HAUSMAN TEST RESULTS, FE V. RE FOR FULL MODEL

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	**random**	**Difference**	**S.E.**
D.GDP	0.006	0.002	0.004	0.001
D.GDPcap	-0.16	0.008	-0.168	0.081
GDP_Grow	0.04	0.039	0.001	0.010
Domestic Credit	0.027	0.035	-0.008	0.006
D.BurQual	0.778	0.59	0.188	0.108
D.LawOrder	-0.324	-0.282	-0.042	0.042
Corruption	-0.034	0.458	-0.492	0.243
KAOpen	0.732	0.677	0.055	0.189
	chi2(7)	18.56		
	Prob>chi2	**0.017**		

Obtained using STATA 11, command Hausman on stored estimates from RE and FE regressions

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