ESSAYS IN INSTITUTIONS, ECONOMIC POLICY AND DEVELOPMENT

by

Silviu Dochia
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Committee:

Richard E. Wagner — Director

Tyler Cowen

Gerald P. Dwyer

Phillip Rothman — Department Chairperson

Richard E. Wagner — Program Director

Jamie S. Cooper — Dean, College of Humanities and Social Sciences

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By

Silviu Dochia
Master of Arts
George Mason University, 2005

Director: Richard E. Wagner, Professor
Department of Economics

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ABSTRACT

ESSAYS IN INSTITUTIONS, ECONOMIC POLICY AND DEVELOPMENT

Silviu Dochia, PhD

George Mason University, 2008

Dissertation Director: Dr. Richard Wagner

This thesis consists of three essays examining the relationship between institutions and economic development.

Essay one focuses on private participation in infrastructure. Over the past decade private involvement in the provision of infrastructure services has grown increasingly common in a large number of countries around the world. Increased activity brought along a good deal of controversy, most frequently relating to the cancellation of high profile projects. This paper analyzes this phenomenon empirically, using project level panel data from the 1990-2005 period. My first finding is that, contrary to popular belief, infrastructure project cancellations are rare. Second, contract cancellations are not randomly distributed, but seem correlated with a number of factors. I find that cancellation rates are higher for water sector projects, countries with a poor track record of protecting property rights and those with more effective local bureaucracies. Neither the level of GDP per

capita nor its growth rate seem to be important factors, but larger current account deficits are correlated with more cancellations. Essay two examines the economic rationale for industrial policies aimed at supporting small firms with the intention of improving the rate of innovation and economic growth. I argue that such policies, while very common in the last few decades, frequently ignore two fundamental facts. First, a firms' size is largely determined by the economic environment surrounding it, and in particular by the uncertainty it must face. Attempts to actively micromanage the mix of small to large firms while ignoring the environment they operate within is more likely to be harmful than helpful. The second often overlooked observation is that small and large firms often play complementary roles in the process of innovation. Instead of attempting to actively pick winners with certain characteristics, policymakers' efforts are better spent on building a framework which is conducive to all innovation, wherever it may originate.

In the third paper I analyze the real world impact of direct financing programs for small and medium enterprises. I base my analysis on two specific SME financing schemes implemented in Romania between 1998 and 2004, but my findings are broadly applicable. I argue that direct funding programs can suffer from two major flaws: a failure to address the financial system's binding constraints, and a difficulty in dealing with imperfect information. I find that both problems were acutely relevant in Romania, where they created programs that appeared successful at the firm level but in fact had very limited impact.

1. Private participation in infrastructure: cancelled projects

Introduction

A large literature suggests infrastructure is in many countries a key constraint on economic growth. In the early 1990s this body of evidence was integrated in the Washington Consensus reforms to prescribe private participation in infrastructure as an important pro-growth policy (Williamson, 2000). Private involvement was seen as alleviating pressure on government budgets and greatly increasing efficiency in all economic areas, including traditional industries but also infrastructure, healthcare, education and law enforcement. In developing countries this led to boom of privately operated infrastructure projects that peaked in the late 1990s.

This period of rising private involvement was followed by a sharp slowdown. Hall, Lobina and Motte (1999) summarize the changing mood at the start of the new millennium:

> *Private-sector investment in developing countries is falling, multinational companies have failed to make sustainable returns on their investments, and the process of privatisation in water and energy has proved widely unpopular and*

encountered strong political opposition. […] Local civil society has successfully mobilised highly effective political activity, its opposition being based on the perceived conflicts between privatisation and equity, and over the role of the state and community in these sectors.

This paper attempts to contribute to the debate over private involvement in infrastructure by analyzing the problem of project cancellations empirically. I use project level data from the World Bank's PPI database covering 149 developing countries for the 1990-2005 period.

My first finding is that, contrary to frequently gloomy perceptions, contract cancellations are in fact quite rare in infrastructure. For the 1990-2005 period only 148 service provision contracts were cancelled in developing countries, out of a total of 3265 awarded projects.

My second finding is that contract cancellations are not randomly distributed. As previous authors postulated, water and sewage contracts are more prone to cancellations (Hall, Lobina and Motte, 1999). This effect is large, as water sector projects are about twice as likely as those in other sectors to be cancelled. I also find that the size of the current account, a useful proxy for inflationary expectations, is correlated with higher project cancellation rates. Ceteris paribus, countries with more secure property rights have fewer cancellations. Somewhat surprisingly, a more effective government bureaucracy is associated with higher cancellation rates.

1.1 Background and existing literature

Infrastructure and development

> Good roads, canals and navigable rivers, by diminishing the expense of carriage, put the remote parts of the country more nearly upon a level with those in the neighbourhood of the town. They are upon that account the greatest of all improvements. They encourage the cultivation of the remote, which must always be the most extensive circle of the country. They are advantageous to the town, by breaking down the monopoly of the country in its neighbourhood. They are advantageous even to that part of the country. Though they introduce some rival commodities into the old market, they open many new markets to its product. Monopoly, besides, is a great enemy to good management, which can never be universally established but in consequence of that free and universal competition which forces everybody to have recourse to it for the sake of self-defence. (Adam Smith, *The Wealth of Nations* 1776, Pelican edition 1970, p. 251)

Smith's insightful words on the importance of infrastructure for trade and development still ring true to many economists today. Boucheas, Demetriades and Mamuneas (2000), for example, provide us with a close interpretation of Smith using Romer's (1987) endogenous growth model and defining infrastructure as a cost reducing technology. This

lower cost method of production is shown to raise long term growth through increased specialization and trade, very much in the spirit of Smith's original work.

Other authors suggest slightly different channels through which infrastructure can help economic growth. Better communications and transport networks, for example, can make credit more easily available and relieve financing constraints, especially in remote rural areas. Better infrastructure can also improve healthcare and education, both with an effect on human capital and productivity (Agenor and Moreno-Dodson, 2006).

The claim that good infrastructure in a precondition to growth has been tested empirically in a large number of studies. Aschauer (1989) wrote the breakthrough study in the field and found a large effect of the stock of infrastructure on total factor productivity. Aschauer's (1989) findings were seen by many researchers as implausibly large (Gramlich, 1994, provides a good survey of critics), and spurred a number of efforts for better estimates. More recent studies seem to confirm a positive influence of infrastructure on development. Demetriades and Mamuneas (2000), for instance, examine the impact of public infrastructure on output in 12 OECD countries and find a significant long term effect in all cases. Canning (1999) and Roller and Waverman (2001) find that telecom infrastructure is particularly important. Calderon and Serven (2003) focus on Latin America and find positive and significant output contributions for telecommunications, power and transport infrastructure.

Micro level evidence from a number of new studies seems to reinforce these findings. Carlin, Schaffer and Seabright (2003), for example, find that infrastructure plays a distinct role in the firm's decision to innovate and expand.

Taken individually, empirical studies can generally be dismissed as inconclusive[1]. As a joint body of evidence however, these findings seem to indicate that a significant number of countries currently operate at a margin where infrastructure constitutes an important growth constraint.

Poor infrastructure is of more concern in developing countries, where incompetent or corrupt governments, insufficient administrative capacity, increased uncertainty and lack of funding all add to the problem. Some authors have gone as far as to argue that poor infrastructure, combined with geographical and resource endowment characteristics can leave some countries stuck in a "poverty trap" (Sachs, 2003).

Private participation in infrastructure

The realization that infrastructure is often an important growth constraint raises questions about the appropriate way to tackle this problem. Traditionally, infrastructure services were considered to have strong public good characteristics, and were provided by governments. Excludability is sometimes difficult and, as its been pointed out many times

[1] Rodrik (2005) discusses the problem with cross country regressions, for example.

since the days of Adam Smith, positive externalities from good infrastructure might mean private supply is inadequate.

More recently however, a new focus towards private sector participation in the sector has emerged. This change was initially implemented by Great Britain in the 1980s, and then spread across to developing countries as part of the 1990s "Washington Consensus" economic reform package (Williamson, 2000).

Proponents of private involvement in infrastructure typically focus on the efficiency gains from private management. In developing countries a second powerful reason for co-opting the private sector exists: the public sector simply cannot afford to finance necessary infrastructure investments. Demand for infrastructure rose faster than GDP in many countries (see table for an example with energy consumption), making it hard for local governments to keep pace using taxation alone. This trend is projected to continue, and even accelerate. Fay and Yepes (2003), for example, argue that based on current population and output growth rates, consumer infrastructure demand will grow exponentially in developing countries for the next decade. Private sector investments in infrastructure are poised to continue growing.

Table 1: 1990-2003 energy consumption

	Increase in GDP	Increase in Energy Consumption
OECD	35%	30%
Africa (excluding RSA)	49%	84%
Asia (excluding China)	37%	69%
South America	60%	132%

Source: International Energy Authority.

Private involvement in the infrastructure sector, while increasingly common, carries significant risks. Private companies, through their focus on lowering costs and rising revenues, are frequently opposed by both poor consumers and labor groups. This puts pressure on local governments to renegotiate or even cancel previously awarded contracts. This threat is particularly important in projects with large up-front sunk costs in non-tradable assets which are particularly vulnerable to regulatory and political risk. The highly specialized nature of investments opens up the possibility of ex-post opportunistic behavior on the part of governments (Williamson, 1979, 1985).

Recent empirical studies on private infrastructure provision often take a broad view of the factors influencing such projects. Of particular interest in this literature is the importance of institutions. These studies recognize private involvement does not happen in a vacuum, and ask a number of important questions as to the conditions which facilitate private sector involvement.

Most studies on institutions and private infrastructure provision focus on a single sub-sector. Jensen and Blanc-Brude (2006), for example, look at the determinants of the number of water and sanitation projects per country between 1990 and 2004. They find that measures for the security of property rights and the quality of the bureaucracy are the most important institutions in attracting private sector participation.

The only major study I am aware of that analyzes the importance of institutions for private participation in infrastructure and covers all sub-sectors is Banerjee, Oetzel and Ranganathan (2006). The authors use the 1991-2000 PPI dataset to argue that country level institutions characteristics play an important role in determining where private companies decide to invest. The study finds that property rights and bureaucratic quality are significant factors. Perhaps surprisingly, higher levels of corruption also seem to be correlated with more private participation.

My paper comes to complement these recent studies by asking the question of what happens next: which private infrastructure projects fail, and are there any factors in particular that seem to matter for a projects' fate?

1.2 Hypotheses

The null hypothesis I will test for is that project cancellations are randomly distributed, and independent of project characteristics, macroeconomic and institutional variables.

A. Strong institutions help lower project cancellation rates

Conjecture one: **Higher levels of corruption increase the rate of project cancellation.**

Shleifer and Vishny (1993) famously argued that opportunistic behavior will be a large problem in regions with highly corrupt officials and weak governments. Running a business in such an environment is more difficult, and more projects may be expected to fail. Louis and Rafiq (2006) offer a good collection of many real world examples of foreign investors running into trouble with corrupt officials.

At the other end of the spectrum, a number of authors have suggested an "efficient grease" theory implies corruption can in fact help in an environment of heavy regulation (Kaufman and Wei, 1999). Arguments along this line of reasoning might indicate that corruption should have a positive impact by lowering the rate of project cancellations. The "efficient grease" view does not seem to be backed by as much empirical evidence as its counterpart. A notable exception are the results of Banerjee, Oetzel and Ranganathan (2006), who find that more corrupt countries seem to attract more private participation in infrastructure.

Conjecture two: **Higher regulatory quality lowers the likelihood of project cancellation.**

Bureaucratic quality should matter for two reasons: initial contract design and subsequent regulation.

Good contract design is essential to avoid future problems, and an effectively run government is in a better positioned to draw up such contracts. No contract will be able to cope with every future contingency, but obvious design flaws will almost certainly be fatal. For example, some contracts indexed tariffs to the local currency but require yearly investments/concession fees that were tied to foreign currencies. In Argentina this contract design flaw was exposed when the Peso was devalued in 2002, leading to a number of cancellations and international litigation cases.

Regulatory quality matters greatly even where good contracts are already in place. This is important since regulators are more than benevolent extra-economic agents operating in a vacuum. As argued by Wagner (2006), governmental structures, much as regular "markets", are best understood as arenas in which self interested agents interact with each other. This means regulators are subject to pressure from operators, interest groups, consumers and politicians. In a well functioning society regulatory agencies can facilitate dialogue between these groups. A poorly functioning regulatory agency, on the other hand, can fail to defuse tensions, forcing actors to opt for alternative solutions which include revoking licenses or outright expropriation after mass protests on the part of consumers. Box one presents a case that illustrates a mix of poor program design subsequently exacerbated by a poorly functioning regulatory agency.

Conjecture three: **Projects in countries with better contract enforcement / court systems are likely to have fewer project cancellations.**

An environment in which contracts are generally respected and enforced is likely to have a positive effect on the relationship between operators and their suppliers and customers. A common problem with infrastructure supply, for example, is a rate of fee collection. This issue should be far worse in areas where customers are used to not respecting contracts and aware that local authorities lack the means and the will to enforce them.

The relationship between local governments and the private operators is also likely affected by the overall level of contract enforcement. Reputation is an important deterrent for governments reneging on existing contracts, and is likely to matter far more in countries that are trying to maintain a good standing. An already tarnished reputation, in contrast, is unlikely to provide much of a deterrent.

Conjecture four: **Governments with higher democratic accountability scores are more likely to have lower project cancellation rates.**

Democratic accountability helps legitimize reform programs and private markets (Rodrick, 2004). This link has been empirically studied by Dethier, Ghanem and Zoli (1999), who did find that democratization helped structural reforms and privatization campaigns "stick" in Eastern Europe and Russia.

Conjecture five: **Political instability expected to increase the chance of re-negotiations and cancellations.**

Projects located in countries whose governments are more likely to be overthrown through unconstitutional means clearly face higher uncertainty. On the other hand, countries with a long tradition of stable politics should result in fewer cancellations.

B. Project characteristics influence cancellation rates

Conjecture six: **Energy and water sector projects are more likely to be cancelled than those in other sectors.**

As discussed by Hall, Lobina and de la Motte (2005), in many countries privatization of water and energy services remains a very unpopular reform. Consumer groups, non profit organizations such as Public Citizen, and worker's unions often waged successful campaigns to discredit privatization plans. In a number of cases these opposition groups staged mass demonstrations to oust the private operators (see Table 2 for a brief description of the famous Cochabamba water concession in Bolivia). For their part, private operators frequently found returns in the sector were lower than expected due to low bill collection rates, high maintenance costs and tariff inflexibility.

These concerns can in principle be alleviated by government subsidies and regulation. In reality, in developing countries governments often lack the ability to effectively regulate

and monitor private operators, as well as properly structure and design the initial contracts. Such governance shortcomings are likely to be far more important in the sensitive water sector than in the highly commercial telecommunications field.

Table 2: Cochabamba water and sewage system

In October 1999, the municipality of Cochabamba, Bolivia, awarded a 40-year exclusive concession to supply potable water and sewer services for the city to international consortium Aguas del Tunari. The consortium took over the assets of former municipal water operator Semapa. In 1999 local authorities were unhappy with the performance of Semapa, which had only achieved a coverage rate of 60% of the 600,000 Cochabamba inhabitants for water services and 50% for the sewerage system. Network losses were high and water shortages were common, as only 23% of consumers had a 24-hour supply. The concession with Aguas del Tunari was intended to address these shortcomings.

The terms of the 40 year concession were directly negotiated between Aguas del Tunari and the Cochabamba municipality. The direct negotiations came after an open international tender that failed when the sole bidder was Aguas del Tunari. The 1999 contract granted Aguas del Tunari exclusive property rights over all water sources in the Cochabamba Valley, including the ground water from all area wells, previously used for free by locals. Water tariffs were set by a formula that was intended to provide Aguas del Tunari a return on investment of 15%. Aguas del Tunari committed to invest $320 million over the concession's lifetime to improve the local water and sewage infrastructure. Some $180 million were to be invested in the first 5 years of the contract, so that 93% of the city's population would be connected to the water and sewerage systems by 2004. Aguas del Tunari also committed to build a 40 MW hydro power plant on the Misicuni river.

The Aguas del Tunari consortium was 50% owned by International Water (a joint venture of Bechtel and Edison SpA of Italy). Abengoa of Spain held a 25% stake in Aguas del Tunari and four Bolivian investors held the last 25%: Sociedad Boliviana de Cementos, ICE Ingenieros, Compania Boliviana de Ingenieria and Constructora Petricevich S.A.

In January 2000 Aguas del Tunari started operating the Cochabamba water systems. The consortium immediately announced an average tariff increase of 35%, in line with the terms of the contract, and as approved by the municipal Regulator. Water was also no longer free for irrigation, as Aguas del Tunari started to charge farmers that owned wells for the use of groundwater. This generated widespread objection among farmers. Some sources indicated that for many consumers water bills doubled and in some cases went up by as much as 200-300%. The rate increases, coupled with broader discontent in Bolivia over a nationwide crackdown on illegal coca production, police salary protests, and opposition to a controversial new water law unrelated to this project, sparked mass-protests, road blockades and a general strike in the city of Cochabamba in early 2000.

In April 2000, during the widespread civil unrest, the managers of Aguas del Tunari left Cochabamba and President Banzar of Bolivia cancelled the concession contract on the basis that they had abandoned the project. In November 2001, Aguas del Tunari applied for arbitration at the World Bank's International Centre for Settlement of Investment Disputes (ICSID), seeking $25 million in damages from the Bolivian Government for their termination of the contract.

Conjecture seven: **Projects with high levels of initial commitments are less frequently cancelled.**

The size of the initial commitments should matter for a number of reasons. The private operators undertaking large infrastructure projects are typically larger than those awarded small local contracts. This means they might have considerably more experience with similar projects. This should help forecast future earnings and costs, but also insist on better contract design.

A counterpoint to this argument is that smaller companies may have better local knowledge and connections. Such projects also attract less public scrutiny, which may in some cases translate in less pressure on regulators to renegotiate/cancel signed contracts.

C. Macroeconomic variables are important in determining project cancellation rates

Conjecture eight: **Volatility of the national currency is correlated with higher rates of cancellation.**

There are two main measures of currency volatility: inflation and foreign exchange rates. A variety of authors suggest inflation increases risk and lowers overall investments in

developing countries (for instance Cardoso, 1993, Larrain and Vergara, 1995). Volatility is likely to matter even more for the infrastructure sector, where tariffs are typically collected in local currency and closely regulated. Derivative contracts can, in principle, help lower this risk, but in developing countries forward markets are usually underdeveloped and diversification of risk is more difficult (Clark, Tamirisa and Wei, 2004).

Conjecture nine: **Large current account imbalances are linked to higher rates of project cancellation.**

I will use the current account as a proxy for investor's expectations of future exchange rate fluctuations. The link between a current account deficit and currency crises has been explored by a number of authors. Fischer (2003), for example, argues that large current accounts present imminent current and future dangers for macroeconomic stability.

Fischer's interpretation is contested by some authors who point out that large current account deficits are not detrimental when driven by growth enhancing foreign investments. Frankel and Rose (1996), for example, argued that even significant deficits do not increase the probability of a currency crisis. This means to get a "clean" impact of the current account on cancellation rates I will need to control for GDP growth.

Conjecture ten: **Growing economies are likely to have fewer cancellations.**

A thriving environment typically translates in better collection rates and revenue, and, in principle, lowers the rate of cancellations.

The opposite conjecture could be plausible here as well: favorable conditions can lead to rates of return considered too high by local governments, which can lead to project renegotiation and in some cases cancellation. A number of projects awarded in China in the late 1990s, for example, guaranteed minimum rates of return for the private operators. In 2002, after a period of sustained high economic growth and with soaring foreign investments, the Chinese government passed a law outlawing revenue guarantees, causing a number of projects to be cancelled.

1.3 Empirical model and variables

To test my hypotheses I use a probit model with the following basic form:

$$\Pr(CANCEL=1 \mid X, Y, Z) = \varphi(\alpha+\beta X+\gamma Y+\delta Z+\varepsilon),$$

where φ is the cumulative standard normal distribution function, and X, Y and Z are vectors of project-specific, macroeconomic and institutional variables, respectively.

A. Dependent variable

My dependent variable CANCEL is a binary construct built from the World Bank's PPI database. It takes the form:

CANCEL = 1 if a project has been cancelled.

CANCEL = 0 if a project has not been cancelled.

The "CANCEL" variable does not include distressed or renegotiated contracts. I make this choice because, in contrast to renegotiations, cancellations are operationally easier to track, define and quantify in a meaningful fashion.

The dataset I constructed is built on the 1990 to 2005 PPI database. For this timeframe the database contains a total of 3268 infrastructure projects that meet the following set of criteria[2]:

- The "infrastructure" name covers basic transport services (roads, railways, ports and airports), water and sewage treatment and distribution, energy generation and distribution, and telecommunications.
- They must take place in a developing country, as classified by the World Bank in 1998.
- The project must have reached successful financial closure to be included.

[2] For full details on the PPI methodology see http://ppi.worldbank.org/resources/ppi_methodology.aspx .

- The private partner must at the minimum bears some operational risk. (This covers management and lease contracts, greenfield projects, concessions and divestitures, but does not include turn-key or maintenance contracts, where the private party does not share in the operational decisions and risks, and the service is essentially provided by the state.)
- The project must "serve the public". This means that captive facilities, such as a power plant that only supplies electricity to a factory, are not included.

The geographic and sector distribution of cancelled projects in my sample is presented in Tables 3 and 4 on the following page. The peak activity in PPI projects was reached in the late 1990s (Kerf and Izaguirre, 2007). The median cancelled project is five years old. (Figure 1)

Table 3: The distribution of cancelled projects by sector

	Primary Sector				
Project Status	Energy	Telecom	Transport	Water and sewerage	Grand Total
Not Cancelled	1282	704	787	344	3117
Cancelled	37	30	45	36	148
Grand Total	1319	734	832	380	3265

Table 4: The geographic distribution of cancelled projects

Project status	Region						
	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa	Grand Total
Not Cancelled	805	671	1059	83	251	248	3117
Cancelled	54	13	47	5	4	25	148
Grand Total	859	684	1106	88	255	273	3265

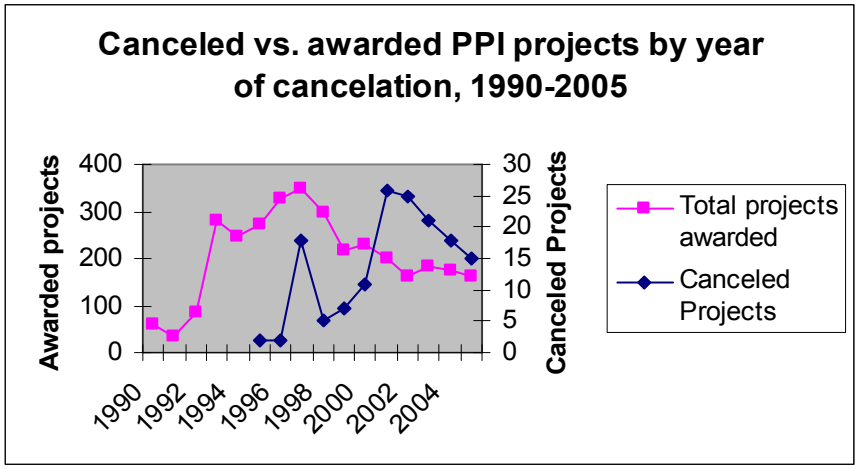

Figure 1: Cancelled vs. awarded PPI projects, 1990 – 2005.

B. Independent variables

For my **institutional variables** I use the World Bank's 2005 Worldwide Governance Indicators (WGI)[3]. The data is available for 1996-2005 and covers all countries in my dataset. The main substitute measure of institutional quality is the International Country

[3] Available at http://info.worldbank.org/governance/kkz2005/

Risk Guide (ICRG). This alternative set goes back to 1980 and is excellent for time-series analysis, but is not the best choice for my study, as it misses a large number of countries with PPI projects.

The WGI reports institutional scores varying between -2.5 and + 2.5, with higher scores representing better outcomes. The database is constructed from a variety of sources including surveys of firms and individuals and the assessments of commercial risk rating agencies, non-governmental organizations, and a number of multilateral aid agencies (Kaufmann, Kraay and Mastruzzi, 2006). At the country level institutional scores are relatively stable between 1996 and 2005. I use the average score during this period for the following WGI variables:

- **Corruption**, defined as the extent to which government officials use public office for personal gain. (CORR)
- **Rule of law**, measuring the degree of contract enforcement, the quality of the police force and the courts system, and the general level to which agents abide by social rules. (ROL)
- **Regulatory quality**, a variable that attempts to quantify the ability of the government to pass and enforce sound policies that support the private sector. (REGQ)
- **Bureaucratic effectiveness**, defined as the quality of public services and the ability of public servants to stay independent from political pressures. (EFF)

- **Political stability,** a measure of the likelihood the government will be overthrown by extra-constitutional / violent means. (STAB)
- **Democratic accountability,** measuring freedom of expression and association as well as the degree to which citizens are able to choose their government. (ACCT)

The second group of independent variables consists of a series of **project level characteristics**. These are taken from the World Bank's private participation in infrastructure database, and include:

- The **sector of infrastructure** a project operates in: water and sanitation, transport, energy or telecom. (SECTOR, WATER, TRANSPORT, TELECOM, ENERGY)
- The size of the project's **total initial investment commitments,** measured as the sum of money to be paid to the government and the committed investments in facilities. For future payments/investments the PPI database uses a present value figure. (TOTAL)
- The **type of contract** signed between the private operator and the government. Contracts are divided into divestitures, greenfield projects, concessions and management and lease agreements. (CONTRACT)

My **macroeconomic variables** are taken from the September 2006 version of the International Monetary Fund's "World Economic Outlook" report[4]. This data is available

[4] Available at http://www.imf.org/external/pubs/ft/weo/2006/02/data/index.aspx .

for the entire 1990-2005 years, for most of the countries in my sample[5]. The macroeconomic variables I control for are:

- **The logarithm of per capita gross domestic product**, calculated at purchasing-power-parity. (LOG_PPPC)
- **Inflation**, measured as the average annual percentage change in prices. (PCPIPCH)
- **Current account balance as a percent of GDP**, a useful proxy for future inflationary expectations. (BCA_NGDP)
- **Foreign exchange rate fluctuations,** calculated as the percent variance in yearly exchange rates. (FX_NSTD)

Finally, I will test for systematic geographical differences by including the logarithm of the host country's population, and dummy variables for the projects' country, and the area it belongs to (East Asia Pacific, Europe and Central Asia, Latin America and the Caribbean, South Asia and Sub Saharan Africa).

[5] In a small number of cases I had to use data from alternative sources that was missing in the IMF's report. For example, the report contained no data on exchange rates for Serbia or Uzbekistan. I used market rates from http://fxtop.com and http://www.oanda.com instead.

1.4 Results

Table 5: Empirical Results

probit	cancelation	rol_avg	eff_avg	water	total	contract
	LOG_PPPPC	pcpipch	bca_ngdpd	fx_nstd	lp	REGION_N

Iteration	0:00	Log likelihood =	-602.337
Iteration	1:00	Log likelihood =	-573.909
Iteration	2:00	Log likelihood =	-573.008
Iteration	3:00	Log likelihood =	-573.007
Iteration	4:00	Log likelihood =	-573.007
		Number of obs =	3262
		LR chi2(11) =	58.66
		Prob > chi2 =	0
		Pseudo R2 =	0.0487
Log likelihc	-573.007		

cancelatior	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
rol_avg	-0.64683	0.205956	-3.14	0.002	-1.0505	-0.24317
eff_avg	0.459893	0.228733	2.01	0.044	0.011585	0.908201
water	0.457411	0.105001	4.36	0	0.251613	0.66321
total	0.000233	7.66E-05	3.04	0.002	8.28E-05	0.000383
contract	0.061102	0.047536	1.29	0.199	-0.03207	0.15427
LOG_PPP	-0.07052	0.041323	-1.71	0.088	-0.15152	0.010467
pcpipch	0.000153	0.000134	1.14	0.254	-0.00011	0.000417
bca_ngdpc	-0.02079	0.00904	-2.3	0.021	-0.03851	-0.00307
fx_nstd	-0.02651	0.203343	-0.13	0.896	-0.42506	0.372029
lp	-0.0052	0.002727	-1.91	0.056	-0.01055	0.000142
REGION_N	0.025514	0.032532	0.78	0.433	-0.03825	0.089275
_cons	-1.75793	0.307458	-5.72	0	-2.36054	-1.15533

A. Institutions

Institutions clearly matter for the cancellation rates of privately operated infrastructure projects. Taken as a group, institutional variables have a high Wald test score and appear statistically significant at the 99.45% level.

The most significant institutional variable is the **rule of law** index, which is statistically significant in a number of plausible model specifications. This result is in line with my prior expectations and the findings of previous studies (quote): better enforcement of property rights enforcement through more efficient courts and police departments is associated with fewer cancellations of privately operated infrastructure projects. The effect is fairly large: an improvement of one standard deviation in a country's rule of law score is predicted to roughly halve the cancellation rate.

The second relevant finding from my set of institutional variables is that higher **bureaucratic effectiveness** is correlated with more cancellations. Banerjee, Oetzel and Ranganathan find that higher levels of publicly provided infrastructure seem to crowd out private participation in infrastructure (2006, pp 16). My finding goes further and suggests that, even when private companies start infrastructure projects in countries with effective bureaucracies, they are more likely to be subsequently cancelled.

The positive sign on bureaucratic effectiveness can be interpreted in a number of ways. One possibility is that governments that are relatively efficient at providing public services are more confident to step in and take over operations in controversial infrastructure projects. A second interpretation is that private provision in countries where infrastructure is not a binding constraint on growth may be cancelled more frequently. The ICRG index of bureaucratic quality is a score of the "quality of public services", which include infrastructure provision.

The possibility that more contracts get cancelled when infrastructure is not a binding constraint fits with the observations of Rodrik et al (2005). In a first best world a long list of policies could be adopted simultaneously. In the real world this is never an option: even when well intended, policy makers operate under political constraints. This means where and how political capital is spend matters. It may be impossible, or at least counter-productive, for a government to insist on a highly unpopular water service privatization with little impact on growth. Sequencing matters for building support for future reforms. Ceteris paribus, countries with high scores for bureaucratic effectiveness could have other more pressing constraints on development, and local governments may be under more pressure to cancel those contracts.

Corruption, regulatory quality and political stability scores do not appear to be statistically significant. This finding could be deceptive however, as all institutional variables in my dataset are highly collinear: pair-wise correlation coefficients range between 0.63 and 0.93.

B. Project characteristics

As postulated by Hall, Lobina and de la Motte (2005), w**ater and sewage** projects are considerably more likely to get cancelled. The predicted cancellation rate for water projects is 8.4 percent, the highest for any sector.

Hall, Lobina and de la Motte (2005) suggest **energy** projects also create a lot of controversy and may be prone to subsequent cancellation. My findings are that, in fact, energy is the sector with the lowest cancellation rate. Only 2.35 percent of all awarded energy projects were cancelled for the 1990-2005 period.

The second result from my study is that larger **investment commitments** seem to be associated with a higher rate of project cancellation. The effect is even stronger when management contracts, where usually the private operator does not commit to invest anything, are excluded.

Table 6: Cancelled project by contract type

Cancelation	Concession	Divestiture	Greenfield project	Management and lease contract	Grand Total
0	639	713	1607	158	3117
1	40	18	79	11	148
Grand Total	679	731	1686	169	3265

C. **Macroeconomic variables.**

Inflationary expectations matter. A large **current account deficit** relative to GDP seems to be correlated with a higher rate of project cancellations. This finding lends some

support to the thesis that a large current account deficit may be perceived by investors as source of future macroeconomic instability (Fischer, 2003). The effect I find remains statistically significant even after controlling for historical inflation rates, national currency volatility and GDP growth.

This finding may be an indication of a weakness in some contracts' design when it comes to protection against future inflation[6]. This is essential for infrastructure services, whose prices are often closely regulated.

1.5. Foundations and extensions

The theory of public finance offers two major analytical frameworks for the study of government activities. On one hand there is the Anglo-Saxon tradition, which focuses on optimal taxation and spending levels. The ultimate goal of Anglo-Saxon public finance is to better understand goods markets with the ultimate goal of providing governments with improved policy tools. The most important competing school of thought is broadly called the Continental approach to public finance. The distinguishing characteristic of the Continental tradition is that governments are treated as a different kind of "market" in which rational agents interact. Understanding the inner workings of this political market is key. The main difference between these two currents is captured by Wagner (2006):

[6] A well known example is the Aguas Argentinas contract awarded to French company Lyonnaise des Eaux. In this case water tariffs were indexed to the US, not the Argentrine, inflation rate. During the Argentine crisis of 1998 the Peso suddenly devalued, but water tariffs stayed the same in nominal terms. The contract was cancelled and a lengthy international arbitration followed.

The relationship between economy and polity is sequential in conventional fiscal theorizing: market equilibrium is first established, with government then intervening to shift society to some alternative equilibrium. This is, of course, as it must be with systems design, for an existing system is to be followed by some alternative. In contrast, when public finance is treated as a facet of social theorizing, the relationship between economy and polity must be coeval within a societal catallaxy. Moreover, primacy of analytical focus is placed on emergent processes of development and not on states of equilibrium. (Wagner, 2006, pp viii)

In this paper I used many findings from the traditional public finance literature to build my case for the importance of good infrastructure for economic growth. Some of these papers explicitly speak of socially optimal levels of infrastructure provision, and ways for governments to get closer to these levels. These papers add much to our understanding of the role of infrastructure in developing countries, but in the end they are not fully satisfactory.

Today there is increasing recognition of the fact that governments and markets rarely interact in the sequential manner assumed by traditional public finance. Rather, goods markets and governments are different types of forums in which the same rational agents interact with each other. The rules of interaction differ across these forums, but their analysis belongs in the same conceptual framework.

In this paper I attempt to quantify the impact of some of the rules of interactions in both public and private arenas for the private provision of infrastructure services. In my essay governments are susceptible to corruption, accountable to varying degrees and may be more or less effective at providing the services desired by their constituencies. These "institutional" factors are essential for understanding the rate of failure of private projects in infrastructure.

This study can be expanded in a number of directions. On one front new developments in the field of public finance will provide a better analytical framework for analyzing infrastructure contracts. On another level much progress will be made in the future with the availability of richer data on infrastructure provision contracts.

Efforts are currently underway to systematize a number of characteristics of cancellations which are missing in my analysis. For example, my data does not contain any information on contract renegotiations, which are more common than cancellations and potentially every bit as important. Another important missing piece of information in my analysis is the reason for a contract's cancellation. These could include: over-enthusiastic bids from the private operators; abuse from poorly monitored public officials; popular discontent reflected in the actions of local politicians; inadequate insurance in the face of macroeconomic crises; miscalculation during attempted contract renegotiations. Perhaps certain types of government support have an effect on contract cancellation rates. Better data on these topics will help us form a better image of what happens to private infrastructure contracts.

1. 6 Conclusions

The main goal of this paper was to analyze contract cancellations for privately operated infrastructure projects in developing countries. My results show that, for the entire population of projects undertaken between 1990 and 2005, cancellations are relatively uncommon. When they do happen, contract cancellations are not randomly distributed, and appear to be correlated with a number of institutional, macroeconomic and technical characteristics. The most controversial projects were for water and sewage services, while energy projects were very infrequently cancelled. A better record of property rights enforcement and lower current account deficits lower the likelihood of cancellations, ceteris paribus.

An interesting finding from my dataset is that countries with more effective bureaucracies have higher rates of contract cancellations. This can be an indication that governments that are good at providing public services are more confident in retaking control of controversial projects. This trend is possibly accentuated in countries where unpopular privatizations take place and fail to deliver economic growth. Where infrastructure is not a binding constraint, politicians may be more willing to backtrack on unpopular sector reforms.

My findings are directly relevant to both investors and policymakers interested in developing countries. Understanding the extent of the contract cancellation problem is a

useful first step in forming expectations about future projects. I also quantified the correlation between a number of technical, macroeconomic and institutional variables and project cancellations. In the academic literature, this study makes contributions to the growth literature, the debate on the importance of institutions and the public finance literature.

2. ENTERPRISE SIZE AND ECONOMIC POLICY

2.1 Economic policy and firm size: brief historical overview

Industrial policy is typically understood as the active support by the government of a particular economic sector through direct financing, regulation or law.

The case for such policies typically rests on perceived "market failures" (Krugman, 1986). These coordination breakdowns are thought to generate both immediate and long term problems. In the short run, the redistribution to correct for a market failure can provide an increase in total welfare. In the long run, growth rates are affected. A common argument today is that there are important externalities in knowledge and in new-good creation (Klenow and Rodriguez-Clare 2005). If these externalities are significant, subsidies to the sectors generating them could be growth-enhancing.

Throughout the past half century a key targeting factor for industrial policy has been firm size. The trend started in the decades following the Second World War, when many Western European countries adopted a large number of reconstruction programs in residential construction, industry and infrastructure. These programs, often planned and supported by the central government, created a network of firms that maintained a close relationship with regulators. These links grew over the following decades, and by the

1960s many policymakers embraced the idea of actively supporting the development of specific large firms – the "national champions". (Hayward, 1995)

A number of other factors contributed to the rise of "national champions". In academia, this was a time when the Harrod-Domar model and its Solow-augmented form dominated growth theory. A central idea behind these models was that capital accumulation is a key determinant of productivity, and high savings/investments rates are essential. The apparent success of communist economies is another factor that doubtlessly helped generate some support for industrial policies aimed at helping "national champions". Rapid industrialization was typically equated with the construction of ever greater factories, often planned and financed with public support.

In this favorable academic and geopolitical context, the systematic policy of redistribution towards large firms became the norm in Western Europe by the 1960s. In the United States pressure on the government to actively support "re-industrializing" resurfaced in the 1970s and 1980s. Walter Mondale, the Democratic presidential nominee for the 1984 election was a vocal advocate of active industrial policy as the means to stop capital flight, deindustrialization and increase international competitiveness (McKenzie, 2002)[7].

[7] Mondale's nomination does reflect a clear preference in some part of both the electorate and the political establishment for such policies. However, broader support remained relatively weak, as reflected by the heavy loss suffered by Mondale in the presidential election.

Support for "national champions" gradually weakened during the 1980s. On the policy front, this change in perception was driven by the success of Margaret Thatcher's reforms in Great Britain, as well as the collapse of centrally planned economies. In academia a number of empirical studies raised serious doubts as to the effectiveness of policies supporting "national champions"[8]. By the early 1990s a new "consensus" emerged in development economics, emphasizing liberalization and privatization, and institutionalized redistribution programs supporting large firms went out of fashion.

The lower levels of redistribution towards large firms marked a shift, rather that an end to industrial policy. In fact, a new class of redistribution plans was greatly scaled up in the 1990s: small business support programs.

Examples of pro-small enterprise programs abound. Virtually every country now has at least one agency dedicated to the task. These agencies are typically created as popular means to foster growth in low and middle income countries, but are by no means absent from rich countries. In the US, for example, the Small Business Administration was created in 1953 with the goal to "maintain and strengthen the nation's economy by aiding, counseling, assisting and protecting the interests of small businesses and by helping

[8] Paul Krugman summarizes the prevailing view among professional economists at this time:
"The case for a targeted industrial policy therefore stands or falls on the issue of criteria for selection. Can we devise criteria for choosing targets which will by and large pick the right industries? If we can, can we devise an institutional framework which will actually act on these criteria and not degenerate into a system of political payoffs? The answers I will suggest are not encouraging. Most criteria for targeting suggested by the advocates of industrial policy are poorly thought out and would lead to counterproductive policies. While there are more sophisticated criteria suggested by economic theory, we do not know enough to turn the theoretical models into policy prescriptions. Indeed, we find it hard to tell whether industrial policies have been successful even after the fact. Given this lack of clear guidelines, it is very naive to suppose that government agencies can somehow intuit their way to appropriate policies." (Krugman, 1987)

families and businesses recover from national disasters."[9] The total amount of loans awarded by the SBA has tripled after 1992[10]. Japan has its own Small and Medium Enterprise Agency (METI) that provides a wide variety of services ranging from help obtaining venture capital to management consultancy and "smoothing adaptation to changes in the economic and social environment."[11] The list of country level agencies could go on and on.

Multinational donors are also increasingly active in supporting small and medium size businesses. The World Bank, for example, spent over two billion dollars in 2004 on SME and micro enterprise support programs. Eighty percent of those funds were used for financing programs in developing countries.[12]

The European Union, one of the most active regions in supporting national champions in the 1960s and 1970s, is today a leading promoter of active support programs for small business. This support was made explicit in June 2000, when the heads of state from all member countries met in Portugal to discuss the most effective ways to foster innovation and competitiveness in the region. An essential part of the European Union's push to foster innovation was the adoption of the Charter for Small Enterprises, which clearly articulates the way small firms are viewed by many policymakers:

"Small enterprises are the driving force for innovation and job creation in Europe. Their small size makes them very sensitive to changes in the industry and environment in which

[9] http://www.sba.gov/aboutsba/index.html
[10] U.S. Small Business Administration, Results Report, Report to Employees July 2005—June 2006, pp 2.
[11] http://www.chusho.meti.go.jp/
[12] World Bank project database.

they operate. This is why emphasis was placed on the need to facilitate the development of small enterprises by the Heads of State or Government and the European Commission at the European Council in Feira (Portugal) on 19 and 20 June 2000.

The Heads of State or Government and the European Commission acknowledge the dynamic capacity of small enterprises, particularly when it comes to providing new services, creating jobs and fostering social and regional development. They also stress the importance of entrepreneurship and of not penalising some of the failures. "[13]

The Lisbon agenda justified an expansion of various incentives for small firms at the national level, such as lower tax rates or direct funding. Another layer of programs was added at the EU level. For example, the Joint European Resources for Micro to Medium Enterprises (JEREMIE), a new program endowed with over 11 billion Euros, is scheduled to become operational in 2007.[14] JEREMIE will offer advisory and technical assistance, equity and venture capital and guarantees both for micro credit loans and SME loans.

The European Union's pro-small business programs reflect a desire on the part of its members to increase the area's competitiveness in innovative, cutting edge industries. Governments in poorer countries have somewhat different objectives, and are frequently more focused on employment and growth, rather than being at the technological cutting edge. What both groups have in common is a desire to replicate a "successful" economic

[13] European Charter for Small Enterprises, adopted by the European Council in June 2000.
[14] http://www.eif.europa.eu/jeremie/

environment in their economy, in the hope this will translate into economic performance comparable to that of the market leaders.

From a historic perspective, the recent small business support programs are reminiscent of the pro-national champion policies of earlier decades. There is a strong similarity, for example, between the "innovation" based arguments used to justify these pro-small business programs and those iterated during the national champion era. Small firms are also commonly described as drivers of innovation.

As a theoretical argument, the case for industrial policies is rarely disputed: a policymaker endowed with sufficient information could improve on market outcomes. The trouble is, real world policymakers rarely have enough information, when they need it, to effectively target the right areas of the economy. To make matters worse, bureaucrats may not have the right incentives to make the best policy decisions from a welfare standpoint. The net effect of these difficulties is that actual policies are often based on the wrong targeting criteria.

Efforts to assess the link between firm size and innovation empirically fail to give convincing answers. Macro level studies relying on cross country statistical analysis raise doubts as to the benefits of a large SME sector: there seems to be no evidence that it is the SMEs which cause rapid economic growth. Rather, high growth rates seem to be the result of a good institutional mix that leads to – strong enforcement of property rights, reasonable regulation, and macroeconomic stability (Biggs, 2002, or Beck, Demirguc-

Kunt and Levine, 2003). Studies undertaken from a micro perspective also often offer ambiguous answers[15]. Some authors show that in many cases large firms are far more productive than smaller ones (see for example William Lewis, 2004, pp30, for a discussion of McKinsey's productivity case studies in Japan), while others find the opposite result (reference). Systematic empirical evidence on positive externalities by a subset of firms has also been harder to come by[16].

These indecisive statistical results are not entirely surprising. Much of the empirical discussion seeking correlations between the size of a certain sector and economic performance are "engineering"[17] efforts often lacking an in depth understanding of why firm size should matter in the first place.

In this paper I argue that firm size is the result of the risk and uncertainty in their operating environment. Because of its endogenous determination, firm size cannot become a policy target in and of itself. The primary lesson from the now discredited national champion era is not that large firms are inherently less worthy of redistributive programs, but that attempts to micro-manage the "mix" of small and large businesses in the economy may not be effective at stimulating growth.

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[15] A good survey of empirical studies into the link between firm size and innovation rates can be found in chapter nine of Freeman and Soete's book *The Economics of Industrial Innovation*.

[16] Acemoglu and Angrist (2001) discuss the difficulty of establishing an empirical basis for even the least controversial "knowledge" externality – the return to schooling.

[17] Mankiw argues economists can be broadly classified as engineers and scientist: "My premise is that the field has evolved through the efforts of two types of macroeconomist—those who understand the field as a type of engineering and those who would like it to be more of a science. Engineers are, first and foremost, problem-solvers. By contrast, the goal of scientists is to understand how the world works." (Mankiw, 2006) Much of the empirical literature on small firms, innovation and growth can be classified as an "engineering" effort, often without a solid understanding of why firm size should matter in the first place.

2.2 Firm size, risk and uncertainty

As is the case with many topics in economics, the discussion of firm size can be traced back to Adam Smith and his *Wealth of Nations.* In his epic book Smith points out that people are far more productive when they specialize and trade with each other than when they work separately. Smith demonstrates his point with an example of the division of labor in a pin factory[18].

[18] "To take an example, therefore, from a very trifling manufacture; but one in which the division of labour has been very often taken notice of, the trade of the pin-maker; a workman not educated to this business (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it (to the invention of which the same division of labour has probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on, is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them. I have seen a small manufactory of this kind where ten men only were employed, and where some of them consequently performed two or three distinct operations. But though they were very poor, and therefore but indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day. There are in a pound upwards of four thousand pins of a middling size. Those ten persons, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thousand eight hundredth part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations." Smith, ***An Inquiry into the Nature and Causes of the Wealth of Nations,* I.1.3.**

Smith's pin factory example, interpreted literally, can be considered as one of the first explicit discussions of the determinants of firm size[19]. The main prediction of the pin factory model is that larger companies should have higher productivity levels than smaller ones. As long as it is technically feasible to split the production of a good into smaller and smaller sub-tasks, large firms will come to dominate every industry. This is troubling prediction, as the real world is clearly not made up solely of large companies, but, a mix of firms of all sizes interacting side by side. Much of the modern theory of the firm can be understood as an attempt to complement the economies of scale described in Smith's pin factory.

A key contribution to the literature on the boundaries of the firm came in 1921, when Frank Knight introduced his concept of uncertainty. Knight argued that people use two mechanisms to form expectations about the future. On one hand, there are situations, such as betting on the roll of a fair die, in which people know the true statistical distribution of expected outcomes, and consequently the amount of "risk" involved in an activity. On the other hand, people may contemplate actions whose distribution of outcomes is not known. In this case, agents must use "statistical probabilities" – attempts to discover the possible distribution of outcomes from existing observations.[20] When the distribution of

[19] Smith's pin factory example also opens up the debate on increasing vs. constant returns to scale. David Warsh offers a great review of the main arguments in this discussion in his *Knowledge and the Wealth of Nations* (2006).

[20] "There are two fundamentally different ways of arriving at the probability judgment of the form that a given numerical proportion of X's are also Y's. The first method is by a priori calculation, and is applicable to and used in games of chance. This is also the type of case usually assumed in logical and mathematical treatments of probability. It must be strongly contrasted with the very different type of problem in which calculation is impossible and the result is reached by the empirical method of applying statistics to actual instances. As an illustration of the first type of probability we may take throwing a perfect die. If the die is really perfect and known to be so, it would be merely ridiculous to undertake to throw it a few hundred

outcomes for an action is unknown and there are no available empirical observations, people operate under "true uncertainty".

The difference drawn by Knight between risk and uncertainty is in my opinion highly relevant for the discussion related to firm size as it provides a good tool to organize the literature that examines firm size into two groups. The first, usually identified with the neoclassical theory of the firm, is exclusively concerned with how **risks** affect the production decisions of a firm. The second family of models focuses on the role of **uncertainty** in shaping firm's structure and behavior. Since each group of papers addresses quite different economic processes, I will review them separately.

2.2.1 The neoclassical theory of the firm: risk and firm size

Modern economics formalized the relationship between risk and the behavior of the firm. There are three families of models linking risk to firm size (Bauer, 2005). Each analyzes how the firm's output behavior changes when it faces risks in different areas: demand, access to inputs, and methods of production. Within each area two strands of research can be identified. The first focuses on how environmental factors change the internal structure of the firm: how worker compensation is structured, how decision making

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thousand times to ascertain the probability of its resting on one face or another. And even if the experiment were performed, the result of it would not be accepted as throwing any light on the actual probability. The mathematician can easily calculate the probability that any proposed distribution of results will come out of any given number of throws, and no finite number would give certainty as to the probable distribution. On the other hand, consider the case already mentioned, the chance that a building will burn. It would be as ridiculous to suggest calculating from a priori principles the proportion of buildings to be accidentally destroyed by fire in a given region and time as it would to take statistics of the throws of dice." (Knight, 1921, III.VII.25.)

mechanisms are designed, etc. The second family of papers examines how the firm's production decisions are likely to be affected by environmental and policy changes (Greenwald and Stiglitz, 1990).

There are three areas of risk that can impact a company's size and structure. First, there is risk about the demand for a firm's product. Second, the methods of production used may change quite dramatically. Third, acquiring the right inputs may be a challenge. All these risk factors are in turn affected by meta-factors of risk, such as institutional instability and the technological environment[21].

A. The neoclassical theory of the firm with risky demand

The first formalized model of a firm's productive behavior which incorporated risk was proposed by Sandmo in 1971, and subsequently extended by a number of writers (Coes, 1977, Feder 1977). The model removes the assumption that the demand for products is known with certainty at the time when output decision is made. The firm's utility is modelled to be increasing in profit, but with a decreasing marginal utility of profit (Bauer 2005). Firms are thus assumed to be risk averse and maximize:

$$\text{Max } Ev(\pi^i) = Ep^i - (1 + r) * c(q^i).$$

[21] Knight writes: "The world is made up of objects which are practically infinite in variety as aggregates of sensible qualities and modes of behavior not immediately sensible. And when we consider the number of objects which function in any particular conduct situation, and their possible variety, it is evident that only an infinite intelligence could grasp all the possible combinations." (Knight, 1921, III.VII.15)

Here "π" is the firm's uncertain profit, $c(q^i)$ is the cost function, "q" is the output level, "Ep^i" is the expected price and interest rate "r" is the opportunity cost of staying in business. The profit maximizing output for the firm must satisfy:

$$Ev(\pi^i)[\, Ep^i - (1+r)c'(q^*)] + cov[v'(\pi^i), p^i] = 0$$

The last equation captures the main predictions of the neoclassical models of the firm: a risk averse firm will have a negative covariance between the marginal utility of income and price, and will produce less than a risk neutral firm. Coes (1977) also shows that the more "stretched" the distribution of the expected price around a mean the larger the gap between a risk averse and risk neutral firm will be. Put differently, this conclusion would seem to indicate that when demand for a product is riskier firm size tends to be small.

B. Risk in acquiring inputs: asset specificity and access to finance

Following Coase (1938), a large part of the industrial organizations literature focuses on the importance of transactions costs in shaping the structure of the firm. In his breakthrough article, Coase describes the firm as a system of relationships where resources are organized and combined using an internal allocation mechanism, different from "external" alternative to coordination through "markets" and price signals (Coase 1937, pp 393). Coase argues that the boundaries of the firm are shaped by the relative magnitude of coordination and transaction costs inside companies versus those in outside "markets".

This transactions cost approach gave rise to a number of insightful articles on the structure of the firm. Williamson (1983) applied the transactions costs argument to asset specificity. In some cases, Williamson agued, investments made to support a particular transaction have a higher value to that transaction than they would if used for any other purpose. This can create "captive" rents which can ex-post be appropiated by one of the parties, reducing the incentive to make the investment in the first place. A possible solution to this dillemma is vertical integration. The classic example in this literature is the purchase of Fisher-Body by General Motors in 1919 and 1926 (Klein, 1988) [22].

Grossman and Hart formalized the transactions costs model of the firm in 1986. They distinguish between two types of contractible rights to an asset: residual and specific. When it is costly to describe and contract over all specific rights, it can be optimal to let one party purchase all residual rights.

The conclusion from this literature seems to be that, when access to a particular resource is difficult and/or requires firm specific investments, vertical integration is a possible solution, and firm size is expected to rise (Klein 1988, Grossman and Hart 1986, Hart and Holmstrom, 2002).

C. Risk in financial markets: capital structure and agency theory of the firm

[22] Klein (1998) notes that some writers, including Ronald Coase, reject the idea that vertical integration was a better solution for the hold-up problem than long term contracts. Klein argues that long term contracts are never complete and can create hold-up problems of their own.

Risk in financing firms accounts for an entire literature attempting to explain the capital structure of the firm. The seminal article in this field was written by Modigliani-Miller (1958), and outlined the "irrelevance principle". Simply stated, the principle shows that, in the absence of taxes, bankruptcy costs, and asymmetric information, the value of a firm is unaffected by how that it finances itself. This means it makes no difference if the firm is financed by issuing stock or taking out debt, or whether it pays dividends or retains its earnings in the firm. The Modigliani-Miller principle spurred a large number of studies analyzing what happens when one or more of the theorem's assumptions are violated and risk is introduced into the model.

Jensen and Meckling (1976) integrate elements from the neoclassical theory of the firm, agency theory and finance to argue that, when firms use a mix of debt and equity managers will be risk averse and firms will produce less than in a Modigliani-Miller neoclassical world. Greenwald and Stiglitz (1993), reach a similar conclusion.[23] Bauer (2005) extends the Greenwald-Stiglitz model and shows that firms remain risk averse even when they can raise extra equity. Both models find that firms with access to more equity are less risk averse and produce more than those which are more equity constrained.

[23] The Greenwald and Stiglitz paper is written in the New-Keynesian tradition of establishing micro-foundations for macroeconomic cycles. In this case, asymmetric information in financial markets ensures cyclical behavior can easily be persistent, and may even be made worse when wages and prices are more easily adjustable.

The less information asymmetry there is between lenders and borrowers, the easier and cheaper it is for firms to raise financing of any kind. Larger firms certainly fit this profile, as they tend to be tracked by more financial analysts, have more standardized and transparent accounting standards and, in the case of debt financing, more assets to offer as collaterals (D'Melo and Ferris, 2000).

2.2.2. Firm size, uncertainty and growth

The level of mathematical formalism reached by neoclassical economists in describing the link between risks in the business environment to firm size brings a great deal of precision to the discussion, but fails to address some important questions. Most notably, neoclassical models of the firm ignore Knightian uncertainty, which by definition refers to unknown, and thus un-modelable, distributions of possible outcomes. This makes main stream economic theory appropriate for firms with short term horizons, over which they are not overly concerned with the fundamental changes in their business environment. Given the role such fundamental changes play in economic growth, ignoring them is highly unsatisfactory. As Bauer points out "time and uncertainty are integral parts of economic reality and omitting these facts is like playing Hamlet without Hamlet." (Bauer, 2005, pp 3)

A. Creative destruction, uncertainty and firm size

Early writers on the theory of the firm recognized the importance of Knightian uncertainty. This is clear, for example, in Joseph Schumpeter's first book - the *Theory of Economic Development,* written in 1912. Schumpeter starts with the simple observation that standard economic models predict no profits when systems are in "equilibrium": all firms merely enjoy "normal" returns. This prediction is at odds with the real world, where many firms do in fact manage to obtain extra-normal returns. Schumpeter contends that the puzzle must imply that the real world economy is often not in "equilibrium". Furthermore, Schumpeter notes, the economic agents who stand to enjoy extra-normal profits have strong incentives to try to move away from equilibrium and break the status quo. These incentives are the very fuel which keeps the engine of wealth creation going in a capitalist system. Schumpeter calls this dynamic force "entrepreneurship", and sees it as being primarily the work of individual firm owners operating at the fringes of the established "circular flow" of goods and services, in new and typically small firms (Scherer 1992). These small firms venture into areas of Knightian uncertainty and make discoveries capable of causing systemic changes and great leaps forward[24].

[24] Following Schumpeter's 1912 book, the term "entrepreneurship" is to this day associated with small firms, even in academic circles. Business schools for instance often offer courses in "small business management" under the entrepreneurship curriculum (Foss and Klein, 2004). Similarly, new efforts to measure "entrepreneurship" rely in large part on the share of small businesses and/or the number of startups in an economy (see for instance the Global Entrepreneurship Monitor).

Subsequent authors pointed out that Schumpeter's description of entrepreneurship in the *Theory of Economic Development* is greatly simplified. In particular, there are many "entrepreneurial" acts undertaken by large firms. Established companies often have more resources dedicated to research and development activities compared to new start-ups (Beck, Demirguc-Kunt and Levine, 2003). Additionally, the idea of an extra-normal rate of return must go hand in hand with some degree of monopoly power. Larger companies may be in a better position to obtain and use this market power. By 1942 Schumpeter himself becomes convinced of the importance of monopoly rents for the innovative process. Schumpeter's most famous term "creative destruction" coined in his 1942 book, refers to a process driven mainly by large corporations:

"What we have got to accept is that [the large firm] has come to be the most powerful engine of … progress and in particular of the long run expansion of output not only in spite of, but to a considerable extent through, this strategy which looks so restrictive … In this respect, perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency." (Schumpeter, 1942, p. 106)[25]

Schumpeter's two accounts of creative destruction point to two important misunderstandings. First, "innovation" and "entrepreneurship" are not homogenous commodities. Second, the difference between risk and uncertainty is important for understanding the role of firm size in generating the "creative destruction" process. *Some*

[25] Schumpeter is reluctant to "accept" this trend, and worries about its consequences. The process of turning innovation into scientific routine made the art of the entrepreneur obsolete. Scientists and bureaucrats working for large corporations would replace entrepreneurs, eventually paving the way for socialism. Capitalism would become the victim of its own success.

entrepreneurial activities could plausibly be best undertaken by small firms, while *others* are primarily driven by large companies.

B. Product life cycles, uncertainty and firm size

A major area of study that deals with the possibility of multiple types of innovation and their link to firm size is the product life cycle (PLC) literature. Insights from a variety of fields are used to draw loose analogies between the evolution of industries and that of biological organisms. Typically PLC models are less concerned with describing a complete general equilibrium system and more interested in explaining particular observed patterns in real world industries.

The product lifecycle literature makes clear distinctions between different types of discoveries or innovations. Jovanovic and MacDonald, for example, argue that in the early stages of an industry demand is uncertain, and a great deal of effort goes into product research. Once some general standards are in place the innovative emphasis shifts to process research and development. (Jovanovic and MacDonald 1994a,b). In a separate paper Klepper summarizes:

"when a product is introduced, there is considerable uncertainty about user preferences (even among the users themselves) and the technological means of satisfying them. As a result, many firms producing different variants of the product enter the market and competition focuses on product innovation. As users experiment with the alternative

versions of the product and producers learn about how to improve the product, opportunities to improve the product are depleted and a de facto product dubbed a dominant design, emerges. Producers who are unable to produce efficiently the dominant design exit, contributing to a shake- out in the number of producers. The depletion of opportunities to improve the product coupled with locked-in of the dominant design leads to a decrease in product innovation. This in turn reduces producers' fears that investments in the production process be rendered obsolete by technological change in the product. Consequently, they increase their attention to the production process and invest more in capital-intensive methods of production, which reinforces the shakeout of producers by increasing the minimum efficient size firm." (Keppler, 1996, pp 562-563)

It is important to note that, while PLC models discuss Knightian uncertainty and place structural change at the heart of the conversation, they are in agreements with many predictions made by neoclassical models of the firm. As Keppler suggests, higher levels of risk or uncertainty on the demand side, for example, are expected to reduce firm size in both neoclassical and PLC models[26].

Amar Bhide captures the essence of this similarity between neoclassical models of the firm and life cycle type models in his excellent book *Origin and Evolution of New Businesses* (2000). Bhide offers a fascinating account of how new companies get started, operate in their early days, and grow. The centerpiece of the book however is the

[26] It should be noted that in the neoclassical models of risky demand firms produce less only when they behave in a risk averse manner. By contrast, PLC models do not require this strong assumption.

observation that there is a negative relationship between the amount of Knightian uncertainty faced by a firm and its size. (Figure 1)

Bhide also shows that few startups in fact operate in entirely new fields. More often, new companies tweak existing products trying to find niches for themselves where they do not have to directly compete with larger firms. The search for such niches represents taking on some uncertainty, deviating from the industry standards.

Large corporations are unlikely to be able to compete with smaller firms for highly uncertain projects. Careful planning, an area where large firms generally have a competitive advantage, does not help very much in uncertain environments[27]. Poor incentive alignment can easily make operating a hierarchical structure considerably more difficult, as it is harder to infer the effort put in by agents at all levels and monitoring costs increase abruptly. By contrast, in small firms there is a closer relationship between owners, investors and employees, incentives are better aligned and principal-agent problems tend to be of lesser importance. This enables these firms to better explore uncertain opportunities.

[27] Alfred Marshall first proposed adding "organizational capital" as a factor of production (Schumpeter 1954, pp 559). This factor is extremely helpful when dealing with repetitive tasks, but considerably less useful (or even counter-productive) in uncertain environments.

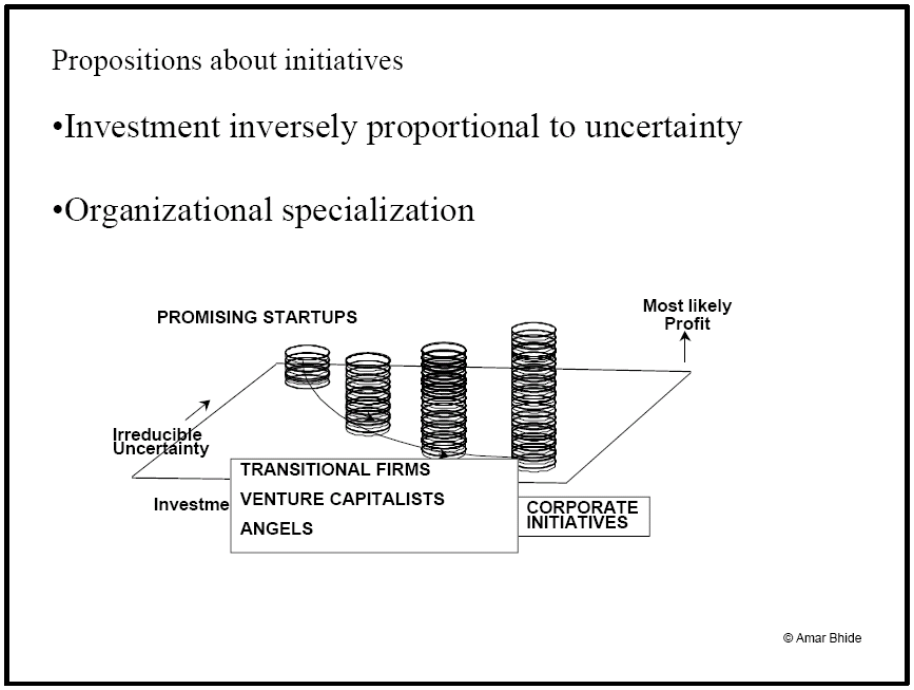

Figure 2: Uncertainty, investments and profits[28].

It is important to note that a critical part of this discovery process is early recognition of failures. There are two important reasons for allowing firms to exit an industry quickly. First off, the quicker bad projects are closed down, the faster resources will be redistributed to higher end yields. Second, failed ideas provide important information in uncertain environments. This knowledge is greatly diluted when it is harder to distinguish between the successful and failed innovations. Given the high failure rates of small firms engaged in innovative activities, it is quite likely that programs supporting the entire group reach many under-performing companies.

[28] http://www.bhide.net/book/Bhide_book_talk.PDF

Taken together, these findings indicate that small and large firms perform rather different and often complementary entrepreneurial acts. Trying to single out one group as THE main driver of innovation in the economy is ill-conceived. Small firms are needed to explore areas of uncertain demand and production methods, but it is large companies that invest in the process R&D necessary to lower prices and greatly increase welfare.

2.3. Conclusions

In this paper I have argued that the size and structure of firms is primarily determined by a number of risk factors they face. Two frameworks exist for looking at the precise connection between these risks and firm structure. The first is the neoclassical theory of the firm, which emphasizes the importance of quantifiable risks. Neoclassical theory is very useful for understanding firm behavior around a position of equilibrium, where no great disturbances take place. The second window into what determines the size of a typical company places its emphasis on Knightian uncertainty. This theory is less formal and precise, but better equipped to analyze the link between creative, equilibrium-changing innovation and firm size and structure.

The neoclassical theory of the firm predicts that firms will be smaller when the variability of demand around a mean is higher, when firm owners are more risk averse, and when the methods of production are not well known. By contrast, larger, more vertically

integrated firms are predicted to emerge when the major risk comes from acquiring inputs and/or relationship specific investments are needed.

Knightian uncertainty is important for understanding the role of small firms in the process of innovation. When firms are faced with a set of decision for which the distribution of demand and the best method of production are not knowable a priori and for which there are very few empirical data points, the natural response of individual businesses is to construct such as a set of observations. This is best done by many small firms through a process of gradual experimentation with alternative product variants, production methods, contractual structures, bribes, etc. Large firms do not perform well at this task due to fast rising principal agent problems and monitoring cost. Additionally, many of the major advantages of being large are negated in such an environment.

Viewing firm size as endogenously determined by the various risk factors present in a firm's environment is an approach with important policy implications. In developing economies small firms may well have an advantage in dealing with weak and corrupt government – where there uncertainty in dealing with all levels of authority may require a flexible and experimental approach. Attempts to simply replicate the mix of small to large firms observed in more advanced nations is a fruitless exercise as long as the underlying local risk factors remain the same. In developed countries, where policymakers tend to focus more on fostering innovation and structural change, a similar problem exists: innovation rates are not driven by a particular ratio of small to large

firms. Instead, firm size is again endogenously determined and influenced by the rate of technological change and the increased levels of uncertainty it entails.

Programs supporting small firms do not simply change the mix of large to small firms. Firm behavior within a target group is also affected. Small firms operating in a free market environment help discover new products and production methods by an adaptive process of experimentation and failure. Under an industrial policy regime, by contrast, subsidies to small firms may well slow this discovery process by encouraging firms to stay in the market longer than they should. Differentiating between winning innovations and failures can become more difficult. Paradoxically, the "small business sector" as a whole may well be less innovative when it receives government support.

Reducing institutional risks for all participants regardless of their size is likely to have a bigger positive impact on the overall economy. In particular, market entry and exit should be as easy as possible.

3. A framework for analyzing SME financing

Introduction

Starting with the mid 1990's it has become widely accepted in policy making circles that directly supporting small and medium size enterprises[29] is good for economic development. The dominant view shared by policy makers is that SMEs are essential sources of innovation, growth and employment, but that their development is prevented by a wide range of market imperfections. This analysis forms the basis for a series of programs aimed at actively supporting SMEs.

Access to financing is perceived as a particularly important problem for the SME sector. Firms of a smaller size have a harder time accessing financial markets than their larger counterparts. The main factor driving this fact is the greater information asymmetry between owners/managers and potential investors in the case of small firms. Typically a smaller business will have less standardized accounting systems and shorter histories, making it harder for financial institutions to assess its creditworthiness. The problem is compounded by the fact that small enterprises typically own fewer assets they can use as collateral.

[29] The European Union defines Small and Medium Sized Enterprises as firms with less than 250 employees and either an annual turnover of less than ECU 40 million or an annual balance sheet total not exceeding ECU 27 million. (Recommendation 96/280/EC.)

Information asymmetry problems are typically worse in developing countries. This is the direct result of a more unpredictable environment and less sophisticated financial markets: specialized institutions and available financing instruments, no credit rating agencies, limited and unreliable information available – all reflected in higher financing premiums. For these reasons, as we saw in the previous section, international development agencies typically dedicate a good deal of efforts to provide additional funding for SMEs in developing countries.

3.1 The effectiveness of SME financing programs

This great level of interest in small business financing programs motivated a number of studies on policy effectiveness. Conclusions vary with the authors, and an overall verdict on pro-SME programs is not clear.

A strong theoretical argument in favor of any aid program is the promise that even minor reforms which successfully relax "binding constraints" can lead to sustained growth[30]. On the other hand, failure to correctly diagnose a country's problems may render otherwise sensible reforms useless[31]. Policymakers could, in principle, identify the general causes behind observed inadequacies in financing markets and design programs to address them.

[30] Rodrik cites the example of China, where relatively minor but ultimately very successful policy changes in the agricultural sector worked very well, creating social and political capital for further reforms.
[31] Rodrik et al (2005) argue that it is relatively easy to differentiate between two large groups of problems: low access to finance and low returns to economic activity. The authors offer the example of El Salvador, which seems to have ample savings and good access to capital, and Brazil, where credit is scarce.

In practice such precise diagnostics are always difficult, and the implementation of the corresponding reforms even harder. Still, the question of how well a program targets the relevant constraints on development remains essential: failure here can waste resources and even have a negative impact on the recipient. There is some evidence that donor activity is correlated with lower growth rates and poorer economic performance (Djankov, Montalvo and Reynal-Querol, 2005). Some authors suggest that poorly designed aid programs can bring with them a "resource curse" and damage local institutions, increase corruption and in the end be detrimental to the target country's economy (Brautigam and Knack, 2004). The defenders of foreign aid are not persuaded, and point out that it should be no surprise that countries which receive more aid have lower growth rates: that is where help is most needed. This debate is not likely to be conclusively resolved through cross country regressions[32]. What seems clear is that how well aid is targeted matters a great deal.

Financing programs targeting the private sector are typically less controversial than those offering aid to national governments. In general, programs that introduce new products/technologies are regarded as having the best chance to avoid the "resource curse" problem which can undermine local institutions. When they do not overlap with

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Implementing the same set of economic policies in the same sequence in both nations is unlikely to be the best way forward.

[32] For a review of the problems with empirical research on the determinants of growth see: *Why we learn nothing from regressing economic growth on policies*, Rodrik, 2005.

existing financing institutions crowding out effects of the private sector should also be minimal.

Success in this area is most often associated with microcredit programs, yet a similar reasoning could apply to SME schemes. The most frequently cited example of a financing program that spurred widespread financial sector changes is that of microcredit lenders in Latin America[33]. The first regional programs of lending to the poor were started by NGOs in the 1970s, with ACCION International as one of the first organizations to get involved. The NGOs implemented credit evaluation techniques that were novel at the time. At the center of this approach were the use of "social capital" as collateral and a more careful applicant evaluation. By the early 1990s some microcredit programs in Latin America applied for licenses to accept deposits from the population, moving upstream to becoming commercial banks. The first NGO to transition into a full fledged "bank for microentrepreneurs" was BancoSol of Bolivia, which opened its gates in 1992. BancoSol started off with some 22,000 customers. Over the next five years BancoSol proved the feasibility of microloans by registering low arrears for Bolivia (around 3.5%) and being some 10% more profitable than traditional Bolivian commercial banks. This success spurred imitators all over Latin America, and seems to be a case where innovative screening methods and new products introduced by non-commercial organizations revolutionized financing for poor people.[34]

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[33] http://topics.developmentgateway.org/microfinance/rc/ItemDetail.do~1060460?itemId=1060460
Grameen type programs were independently started in South-East Asia around the same time, but there is less evidence of "demonstrational" effects there.

[34] For a more skeptical view on the impact of microfinance see Jonathan Morduch, 1998. Nathanael Goldberg, 2005, provides a broader review on the topic.

Expertly designed and targeted programs may be difficult to create and implement in the real world. In *The White Man's Burden*, for example, William Easterly describes at length many instances in which policies aimed at spurring economic growth failed over and over again in many parts of the world or time periods. The main problem faced by aid programs, as Easterly points out, is that policymakers are "planners" who rarely have all the knowledge necessary to identify the relevant constraints, devise adequate solutions and implement them fast enough to remain relevant.

In this paper I am directly interested on how well SME financing programs fit the "binding constraints" policy model, and how they are impacted by real world imperfect information. While the essay is written starting from observations on two specific financing schemes, the questions I address are framed for a far broader range of programs. Many of my conclusions are also easily generalized.

3.2 SMEs and the financial sector: possible constraints

In order to correctly identify the source of problems in the market for SME financing a broad analysis of the overall economy is necessary. We can distinguish between four separate types of agents that are relevant to this market: small and medium enterprises, financial institutions, regulators, and a broad category of "other agents" that encompass households, micro enterprises, large firms and state owned businesses.

A multitude of exchanges takes place between these actors, as shown in diagram one. Regulators receive taxes and fees in exchange for contract enforcement, setting standards and providing of some basic infrastructure services. Financial institutions provide a broad range of financial products to firms, ranging from basic loans and deposits to trade finance, structured finance or leasing. In exchange for these facilities financiers receive some payments, either in the form of interest or as fixed service charges. The SME sector purchases a number of inputs from larger firms or directly from households, while in turn selling their products to them for revenues.

The interrelated nature of an economy means that serious problems with any of these relationships will impact all other areas. A lack of activity in the SME financing sector, for example, could well be driven by problems that originate elsewhere. Direct financing programs, with their narrow focus on supplementing the product offer for a particular group of agents, should therefore not be viewed as the universal cure for improved access to funding. When the most pressing problems lie elsewhere such programs are not going to be effective.

Broadly speaking, there are seven areas that can at any given time be problematic:

A. SME regulation

A vast number of rules and regulations can affect the viability of a small business. Tax levels matter for the firms' capacity to repay loans. In some countries paying taxes also

imposes significant administrative costs on firms[35]. In other regions dealing with licenses may be a large impediment for firms. Labor market regulation is often a huge cost for smaller firms in many countries (Botero et al, 2004). The quality of a country's court system matters greatly for contract enforcement (Djankov, 2002). Bankruptcy laws can also make an important difference in how willing a lender will be to disburse funds to firms (Djankov et al 2007).

[35] The doing business database maintained by the World Bank estimates that in Brazil, for example, a medium size firm spends some 2,600 hours in a preparing forms for 23 different tax payments. In Belarus a company is required to make 125(!) different payments each year, which take a combined 1,188 hours.

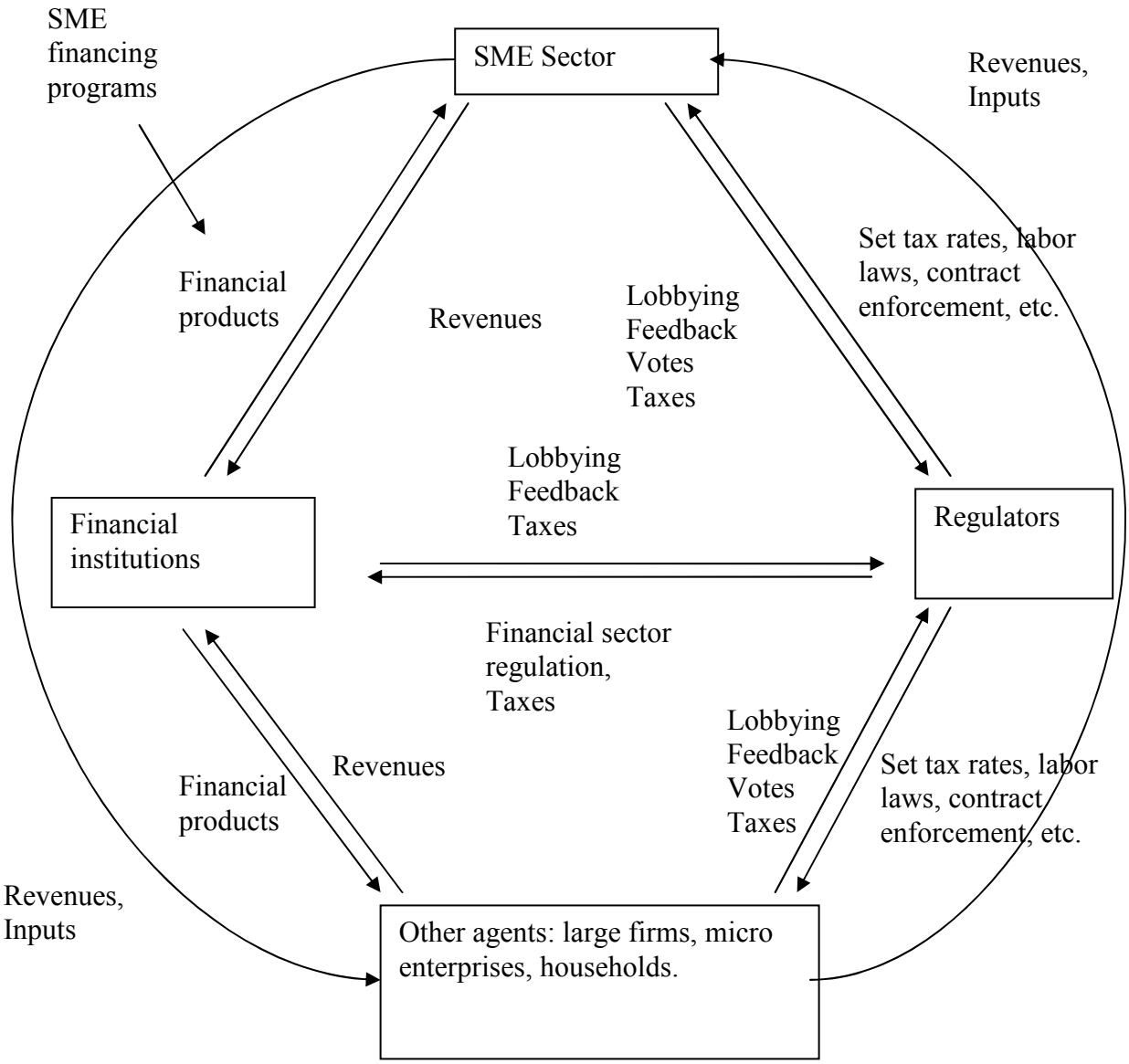

Figure 3: SME financing in the economy.

B. SMEs' influence on regulators

Regulators are influenced by SMEs in a number of ways. Direct interaction with individual firms provides the basic feedback to regulators about necessary changes. Small businesses also interact with regulators through associations that represent large groups of entrepreneurs. When these basic mechanisms of communication do not function properly more forceful methods, such as organized protests, can take their place.

Indirectly firms also influence regulators through the amount of taxes they pay. In countries with oppressive regulation an incentive for change comes from the promises of attracting tax revenues from firms operating in the informal sector.

SMEs' influence on regulators is not always efficiency enhancing. In a number of countries strong SME lobbies manage to pass legislation that hurts development by limiting entry and scale. In some industries large firms are far more productive than smaller ones, but small firms succeed in getting government protection against competition, with large detrimental effects on growth and productivity (see for example William Lewis, 2004, pp30, for a discussion of McKinsey's productivity case studies in Japan).

C. Financial sector regulation

Poor regulation of the financial sector can easily damage its competitiveness. In many countries entry is restricted, which reduces pressure on incumbents to expand their range of services. In other areas taxation of financial institutions can be a problem. Price caps on the interest rates lenders can legally charge to small businesses also restrict the range of products that are legally offered. In India, for example, banks often cannot break even on small loans because of regulation, mostly from local states, that forbids them charging the necessary interest rates (Radcliffe and Tripathi, 2006).

D. Financial sector's influence on regulators

Financial institutions can exercise some amount of pressure on regulators to change unfavorable legislation. As with other companies, this can be done through direct lobbying or indirectly, through the promise of bringing in more tax revenues from formerly illegal activities.

Large financial institutions will sometimes lobby for less, rather than more competition. In a market dominated by a few large banks, for example, these can be expected to attempt to limit entry. This in turn can have an adverse effect on the financing products offered.

E. Inadequate financial products

Distortions coming from parts A through D exert a large influence on the range of products offered by the financial sector at a given point in time. Yet there may be other problems with SME financing that originate in the financial sector itself.

Financial products are similar to goods in other markets: they need to address the specific needs of their intended users. This requires creative thinking and innovative solutions, and incumbent firms can fail to provide these types of advances. A 2007 report by the Boston Consulting Group notes that today's financing industry is badly structured to reach small customers in developing countries. The study finds that banks, for example, use a top down decision making process which is not conducive to the type of innovation needed to develop new products that target small customers.

Lack of innovation can have a negative impact in two areas of the financing market. First, it can reduce the range of available products. Second and perhaps more importantly, it can raise production costs for existing services when inefficient technology is used.

The primary problem firms operating in financial markets face stems from the information asymmetry between lenders and borrowers. The screening methods used to reduce this asymmetry are an essential part of the "production technology" used by financial firms. Improvements in the screening process would make financing available to a wider range of agents.

F. Inadequate revenues for financial institutions

Financial institutions tend to charge SMEs higher fees and commissions in order to compensate for higher processing costs and higher risks. If for whatever reasons small businesses are unable to pay the premiums, banks will be reluctant to deal with them. In a perfectly competitive environment this reality simply means that only projects/businesses that generate a high enough return to pay the premiums are financed. However, in real-world situations there may be lots of distortions induced by various factors:

- Regulatory. Capping interest rates charged to small businesses is a typical example of policy aimed at supporting SMEs, which results in fewer transactions between lenders and small firms[36]. Many other bad regulations of the SME or of the financial sector have a negative impact on their capacity to do business with each other.
- Technological. Financial institutions do not have or do not use appropriate solutions/products for small businesses which results in excessive costs.
- Market structure. When the financial sector is weak and uncompetitive, banks enjoy some degree of monopoly power over firms and tend to pick only the deals most profitable for them. This usually means favoring large operations.

G. Weakness in the broader economy

A weak economy impacts SME financing in a variety of ways. A region with poor households and no profitable large firms is unlikely to attract a lot of activity in its

[36] Radcliffe and Tripathi offer a good review of these interest caps in India, for example.

financial sector, which will in also lead to fewer products being offered to SMEs. Weak overall conditions also have a negative impact on the firm's ability to sell its products and obtain inputs. This can make individual SMEs less predictable and can also negatively impact profitability. In such an environment even the financial intermediaries that do operate are likely to offer fewer products and charge higher premiums.

3.3 SME Financing Programs: Two Case Studies from Romania

Project financing comes in a variety of forms, from strictly commercial programs where an investor seeks to maximize profits, to pure donations. Many "development" programs position themselves somewhere in between these polar cases. Common examples are matching grants or loans with subsidized interest rates.

To try to cover as much as possible of this diversity of real world small business financing programs I picked two funding schemes that were quite different in their design. The first program was managed under the European Union's Phare initiative. The program's objectives were pronouncedly "social", and implementation was done through grants. The second program I chose was managed by the European Bank for Reconstruction and Development (EBRD). It was designed as a chiefly "commercial" instrument to provided loans to qualifying SMEs.

For each of the two programs I conducted a number of semi-structured interviews with people from the implementing agency and entrepreneurs that benefited from the

programs. I also had interviews with individuals from financial institutions, consultants on financing, and the president of an SME association. The interviews were conducted over a period of five weeks in the summer of 2004.

My first goal is to see how well the two programs I studied perform at the micro-level: what firms are reached, how honest or corrupt is the actual implementation, and how participant firms perform subsequently. One of the programs I chose has a pronounced social character, so I will also examine how it achieves these goals.

This basic understanding of each program will then help me evaluate each of the two schemes on their impact in the development of the broader Romanian SME financing sector. To this end, I will rate the program's effectiveness in each of the seven areas I outlined in section 3.3.

In both cases I use two types of evidence: firm level interviews and macroeconomic / sector data.

3.3.1. Program impact at the firm level

A first step towards evaluating the effectiveness of SME financing programs is to look at the impact they have on participant firms. At this level we can see if the funding reaches "good" firms and if it helps honest entrepreneurs prosper.

Consider the example of Mr. Constantin Cucu, a Romanian entrepreneur I interviewed in the summer of 2004. Mr. Cucu was the CEO and owner of Cubus Tech. The company was located in Bucharest and specialized in advertising and printing. Mr. Cucu founded the company in 1994, using personal funds. Over its lifetime Cubus Tech has grown significantly: in 1994 the firm had four employees and revenues of $10,000; by 2004 the company had 45 workers and sales were over $2 million, with assets around $1.5 million. In 2004 the company was number seven in the Romanian advertising industry.

In 2004 Mr. Cucu decided to expand the output of his printing shop by 30%. To achieve this goal Mr. Cucu asked his bank – Banca Transilvania[37] - for advice on the best financing options available to him. BT was happy to help, and offered him a loan from an EBRD line designed to provide medium term financing to SMEs. Mr Cucu became a beneficiary of the SME financing program backed by the EBRD.

The Banca Transilvania SME credit line that Mr. Cucu benefited from was part of a larger EBRD loan facility approved in December 1996, covering a number of early transition countries. At the time, the EBRD assessed that banks in Romania did not provide adequate medium and long term financing to SMEs.

[37]Romanian bank founded in 1993 in Cluj-Napoca (Transilvania) as a local alternative to larger state owned banks dominant by that time. BT enjoyed early local success and gradually expanded its network throughout Romania. Today (end of 2006) BT has a market share of around 4.6%, total assets of some US$ 3.1 billion, total equity of $153 million and a net profit of $46.8 million. BT is also one of the most actively traded companies on the Romanian stock market, with a market capitalization of $1.2 billion. The fact that BT developed from scratch in Cluj forced the bank to rely heavily on small local clients. This focus on small businesses created in BT a corporate culture and philosophy that was different from that of the larger Romanian banks, placing BT as one of the leading Romanian banks in financing start-ups.

Banca Transilvania was chosen as one of the first participants in the EBRD SME Credit Line. The EBRD started its partnership with BT in 1999, by investing an initial 5 million Euros into the bank in exchange for equity participation. The 5 million were used to create a credit line for SMEs that would provide medium term financing in both foreign currencies and Romanian Lei. The first installment of the program was very successful, with many requests for financing and thus a large pool of quality projects to choose from. The loans performed well, with a default rate under 1%. The success of the first SME credit line extended to BT led the EBRD to invest an additional 5 million Euros into the Romanian bank. This makes the EBRD the largest stakeholder in BT, with 15% of the total shares[38].

Like Mr. Cucu, typical beneficiaries of the EBRD SME loans are solid companies with very clear investment plans and profitable projects. The soundest available projects are prioritized for financing, and many "success" stories seemed to be generated at an individual firm level.

This good rate of success at the level of individual firms comes from two sources. First, offering financing in the form of a loan forces good projects to self select themselves into the program. A firm that does not think it will be able to repay the loan is unlikely to apply in the first place. Second, the commercial character of the program insures that the implementing agency has every incentive to screen applicants carefully and work closely with them for the duration of the project. Often times, for instance, BT offered a number

[38] The rest of 85.% of the shares are owned by investors with less than 5% each.

of consulting services to participant firms and developed a long standing relationship with them.

In summary, the EBRD credit line looks like a success at the level of individual firms:

- The screening process was rigorous and honest.
- The financing reached solid firms.
- The projects that got funded are generally profitable.
- Participant firms often experienced good growth rates.

A second approach to SME financing is exemplified by AP[39], a participant in the PHARE RICOP grant scheme I interviewed in 2004. AP started his business in the summer of 1992, when he had just graduated college and returned to his home town of Brasov. By pure chance he one day met a truck driver who was delivering oranges from Greece. The driver was desperately trying to find a buyer for a truck full of oranges, as the store he was supposed to deliver them to refused to pay for them. AP offered to buy the oranges from the truck driver for a very low price. Worried that the oranges were going to spoil, the truck driver accepted. AP sold the oranges in Brasov and made a small profit from the deal. Immediately AP started to look for a way to invest his newly found money. AP's father was working in heavy truck factory in Brasov at the time, and though it would be a good idea to use the funds to start a small truck repair shop. AP agreed to use the money

[39] Firms participating in the RICOP program are in principle tracked for a period of two years by the Romanian government to ensure they maintain certain contractual obligations. This Policy Comment could create some problems for the entrepreneurs I interviewed, so I will avoid using the full name of the business and its owner.

he had to purchase a small plot of land adjacent to the highway where they could build a garage and repair trucks.

By 2004 there was little growth in AP's truck repair business. He did manage to buy a larger plot of land in 2001, but it remained mostly empty, occupied by only a small shop selling auto parts. The firm never had a high volume of customers, as it averaged between one to two truck repairs per week. This made AP unwilling to commit to any commercial loan, unsure that he can generate the cash flows to pay the money back.

In 2002 AP learned from the internet of the RICOP grants for SMEs. He assumed that most of the grants must be given away on some political criteria, or at least that some bribery had to be involved. Still, he figured it cannot hurt to learn more about the RICOP grants.

The RICOP Grant program came from a fairly long tradition of European Union SME financing grants in Romania, started in 1992 with a ECU 4 million scheme. Most recently, the EU offered through its PHARE office grants for SMEs through RICOP – the Industrial Restructuring and Professional Reconversion Program. RICOP was designed to target areas with high rates of unemployment, where layoffs took place in the process of closing down or restructuring state owned enterprises. The goal of the RICOP program was to "support job creation and economic growth" by helping applicant SMEs with

matching grants between ECU 10,000 and ECU 100,000. The total amount to be distributed was ECU 30 million.[40]

The RICOP program had ambitious objectives for both participant firms and local communities. Job creation and economic growth were central policy objectives of the program. The RICOP scheme was trying to simultaneously achieve more objectives than the EBRD program discussed earlier. This multitasking affected the program's design in a number of ways.

First of all, it was argued that because of its "social" component (job creation), the program was not meant to operate on a purely commercial basis. This translated into a choice of handing out grants rather than making loans. The grants were seen as an instrument to encourage job creation even in areas where there would otherwise be no employment opportunities.

Second, a number of requirements were imposed on firms applying for the grants: they had to be an SME from an area with high unemployment rates (five such areas were designated in Romania); they had to be able to show a profit for the past two years; they were asked to partly match the EU grant; for each ECU 5,000 received a new job must be created; no alternative (commercial) source of funding should be available for the project. These requirements were imposed in addition to the "standard" screening process used by

[40]See www.ricop.ro

commercial loans, making the procedure for obtaining a grant fairly difficult. Often, business owners reported that it was easier to obtain a bank credit than a RICOP grant.

The disbursement of the grants was to be done through Banca Comercial Romana (The Romanian Commercial bank – BCR), the largest bank in Romania, controlling almost 25% of the banking sector's assets. Using BCR as the implementing agency helped the RICOP program in two ways: it provided both a good network of local offices and a large number of credit officers trained to screen regular financing applications.

The "standard" set of screening requirements was first applied to ensure that firms obtaining the grants were worthy recipients; SMEs that did not qualify were screened out. The additional requirements imposed on applicant firms were seen as necessary to ensure that the social objectives of the RICOP program would be met.

After reading up on the RICOP program AP drew up a business plan that seemed to meet the grant requirements: he proposed an expansion of his auto repair business through the construction of a large service garage, where seven trucks could be repaired simultaneously. The RICOP grant AP requested was for the amount of ECU 70,000. To meet the RICOP requirements on job creation AP estimated he would need 15 new workers once construction of the new garage would be complete. Once the business plan was complete AP submitted it to the RICOP office, without much hope of being accepted. To his surprise, AP got the PHARE financing, without resorting to any bribery or using any connections. Work on the new seven truck garage started.

The desire to simultaneously reach viable projects that can be seen as "success" stories while at the same time achieving "social" goals and expanding financing to ventures that cannot obtain funds from commercial sources created a fundamental tension in the RICOP program.

In an attempt to showcase "success stories" at the firm level, PHARE required very rigorous ex-ante screening of applicant firms, making it harder to obtain RICOP grants than regular commercial loans.[41]. While this rigorous screening ensured relatively high applicant quality, the process was incongruent with the programs' goal of expanding traditional sources of financing, rather than replacing them. In annex A, section 1.6, of the RICOP application, for example, entrepreneurs are asked why their (presumably solid firms) cannot obtain other forms of funding for the project. When I asked entrepreneurs how they answered the question I always got a surprised reaction: most people did not remember that question; all entrepreneurs I interviewed told me it would not have been very hard to obtain funding from other sources (granted in most cases the investment would not have been made in the absence of a grant). This design inconsistency highlights a difficult question facing all non-profit financing programs: how do you consistently pick "winners" that were missed by the existing private sector financing system?

[41] For a broader criticism of donor's bias towards visible projects see William Easterly's "The White Man's Burden".

In the case of the RICOP program, the use of grants made the situation worse: not only did the grants go to firms that in fact could have found alternative financing, but they also went to projects that were rarely very profitable. Interviewing people such as AP I learned that the use of grants encouraged SMEs to apply for funding even when they do not have a clear investment plan in mind. Just like AP, entrepreneurs typically did not apply for the grants because of a particularly good business opportunity, but simply because funding was available. In the process, business plans were drawn up and usually "prepped up" to pass through the screening process while entrepreneurs frequently did not believe in the forecasts they made. In my interviews I found that grant beneficiaries frequently listed as a major challenge for the future "using up the entire productive capacity" available after the new investment. When asked about future plans, AP, for example, simply stated that it would be great to keep the new truck repair shop working anywhere near full capacity. He was not sure he could find enough customers, as he'd never attracted that volume of clients before. This means investments made with grant money rarely turn out to be as profitable as they were projected to be in the original business plans.

The principal agent problem we see here is one all financing programs have to face: the objectives of the principal (the development agency) are naturally misaligned with those of the agent (the beneficiary). As with all principal-agent problems the two available solutions are better monitorization or a better incentive scheme.

Monitorization by the agency disbursing the grants it is often very difficult. It is quite hard for the agency to correctly assess the ex-ante profitability of a project. Ex-post monitorization (output based aid, an increasingly popular instrument with international development agencies), is also not easy when financing SMEs. It is unclear what parameters should be monitored, and how this could be done effectively. The RICOP program, for example, attempted to use ex-post monitorization and ran into many practical difficulties. In theory, once the money was disbursed by BCR, the Romanian government was going to monitor participant firms for a two year period, to insure they maintained a set of "indicators". For example, new jobs should have been created, as stipulated in the contract. Entrepreneurs knew such monitoring was in reality quite difficult: they often felt that in the unlikely event of an inspection they could always bribe their way out of trouble, or simply declare they intended to create the jobs at a later date. The choices made during the program design meant that many of the RICOP jobs are only created on paper.

Because of these difficulties in solving the principal agent problem through increased monitorization, changing the incentives themselves may work better. Using loans rather than grants tends to minimize the principal agent problem, as entrepreneurs who do not think they can repay a loan will generally not apply for financing, unless they have outright fraudulent intentions. Entrepreneurs have a much stronger incentive to make more accurate forecasts about the future of their business when they share the costs of possible failure.

To summarize, the RICOP program exemplifies the problem of trying to achieve too many goals with the same instrument. Multitasking often leads to a lack of understanding over which goals are actually prioritized and the design of the program suffers. The end results are a diminished impact of the RICOP grant scheme at the firm level:

- The screening process was rigorous and "honest". There were no reports in the press of blatant abuses of the RICOP funds, for example.
- The grants reached solid firms.
- The firms the program reached typically did have access to alternative sources of funding.
- The projects that got funded were not necessarily viable on a commercial basis.
- Participant firms often did not grow very fast after receiving the RICOP grants.
- The "social" objectives of the program were not achieved well. In particular, firms often did not create the numbers of jobs they promised in their business plans. The belief that the RICOP program can at the margin trade some growth impact for job creation proved to be illusory.

3.3.2 Lessons from the Romanian case study –SME programs and financing sector development

Financing programs often aim to do a lot more than provide temporary relief for a target group. The more ambitious goal is to help provide "sustainable", long term financing solutions. This can only be achieved through the broader development of the financial sector, a process which leads to the creation of new products and improves financing

“depth”. This section focuses on the question of how well the two programs I studied target the “binding constraints” for SME funding, and how successful they are at facilitating the financial sector’s development.

The theoretical outline from section 3.3 offers a natural way to frame this discussion. As I argued there, many factors can lead to low levels of financial intermediation. Direct funding programs only target a small subset of problems. Moreover, direct funding schemes are likely most effective when they introduce innovative new financial products in the market.

Similarly to all other entrepreneurs I interviewed in 2004, Mr. Cucu felt that access to financing for SMEs had improved significantly compared to previous years. Mr. Cucu felt that even in the absence of the EBRD facility he would still have received funding from BT for his expansion. He was confident in his business plan and his company had a good track record. He felt financing of good projects was generally available. More detrimental to his business were in Mr. Cucu’s opinion the relatively high taxation, the system of permits, the frequently changing regulation and competition from the networks of friends in the state owned sector of the economy. Mr. Cucu also mentioned that he did not plan on hiring any new workers with the expansion of his business. He preferred to substitute labor with capital, and was investing the entire amount of the credit in acquiring new machinery. Excessive regulation of the labor market, particularly the difficulty of firing incompetent full time employees, was the main reason Mr. Cucu tried to avoid hiring more workers.

AP also felt that financing was not the most important concern for him, but for a slightly different reason: he could afford to take his time in expanding his garage; did not feel he was missing out on a great immediate business opportunity. Comparing AP's experience with that of Mr. Cucu, it is clear that small firms are not a homogenous group. Some innovate, experiment and grow, others do not. Reallocating scarce resources towards the latter group can easily have a negative impact for the economy. Even if funding programs could somehow overwhelmingly target the innovators, it is unclear they would have a beneficial impact. Small firms typically have a comparative advantage in uncertain environments, where trial and error experimentation helps reveal the best production methods, the customer's tastes, and so on. At this stage it is critical firms recognize failure early and either change strategies or exit. Programs that slow down this process by rewarding all firms of a certain size could well be counter-productive when they keep scarce resources in low yield projects. The lesson is that SME support programs can change the behavior of firms in a detrimental way, by reducing the rate of turnover essential for adaptive innovation.

AP felt that the biggest problems facing SMEs felt were the large number of licenses and permits required for constructing new buildings (a pressing issue for him, in the middle of the expansion process). Taxation and frequently changing legislation were also issues AP viewed as important.

Can this improvement in the availability of financing for SMEs be viewed as a success of financing programs such as the EBRD SME credit line or the RICOP grants? The EBRD, and most other developmental agencies, would like to at least in part answer "yes".

The EBRD SME loan program made an explicit goal of helping Romanian small firms find long term, sustainable financing solutions. To achieve its objective the EBRD correctly believed its program had to impact the broader financial sector. The EBRD identified three channels through which it could influence the quality and depth of SME financing:

- Investing in local banks would strengthen their balance sheets, improve corporate governance and increase the level of competition in the financial sector.
- Leading by example: if an SME credit line can be proven successful, other banks would be more likely to start their own similar programs.
- Training bank staff in evaluating SME credit applications as a way of building institutional lending capacity.

During my stay in Romania I had several informal interviews with local bankers, to help me asses the impact of programs such as the EBRD's SME lending scheme on the financial environment of Romania. The general feeling was that their long term impact was minimal. It was certainly not the cost of training bank personnel, for example, that kept banks from lending to SMEs, but rather the fact that other market segments were more attractive at that time. Training of personnel was not, by itself, going to change that

fundamental fact. The binding constraint in this case was not access to training programs, and the EBRD did not introduce any new screening techniques.

The Romanian financial sector has undergone major structural reforms starting from 1998, centered on banks' privatization. In 1998, 47 commercial banks were licensed to operate in Romania, out of which the 7 state owned banks dominated the market in terms of assets (64% of the banking assets), loans (around 60% of total loans to non-governmental institutions) and territorial coverage (about 1400 out of the total number of 1500 branches and agencies in the country)[42]. In the early 1990s many of the state owned banks were directed by the Romanian government to give out loans to loss making state owned enterprises. Large non – performing credits accumulated on the banks' balance sheets. By 1997 a crisis was imminent, and by 1998 many banks were forced to file for bankruptcy[43]. The wave of bankruptcies brought the Romanian financial system to the brink of total collapse by early 1999. To its credit, the Romanian government managed to avoid a crash by radically restructuring the banking system. In 1999 two major banks with a sound financial situation were privatized: the Romanian Development Bank (BRD) and Banc-Post, both acquired by large multinational banks (Societe Generale and General Electric respectively). By the end of the 1999 state ownership in the banking system had fallen to 46%. Privatization progressed during the early 2000s and was

[42] See Claudiu Doltu, *The Evolution of the Banking System in Romania.*
[43] The most notable victim at the time was Bancorex – owner of some 25% of the Romanian banking system's assets. The Romanian government unsuccessfully tried to bail out the banks, investing some $600 million (about 2% of GDP at the time) into a recapitalization of Bancorex. Banca Agricola was the second largest bank in distress, primarily because of its large portfolio of government directed non performing loans to the agricultural sector. Banca Agricola was restructured and in 2001 successfully sold to Raiffeisen.

practically completed by the end of 2006, when the largest bank in the system, Banca Comerciala Romana, was sold to ERSTE Bank from Austria, Currently, 37 out of the total of 39 credit institutions are now in private hands while foreign capital controls 89% of the banking assets,

Privatization dramatically changed the way banks operate: government lending declined (from 11% of the banking assets in 2000 to 1.6% of the banking assets in 2006) while lending to households and companies increased over five times, from less than RON 6 billion in 2000 to over 30 billion in 2006. At less than RON 1 bn., lending to state-owned companies remains marginal. Not only the available funds for businesses increased, but the cost of lending was reduced substantially: nominal interest rates came down from over 40% a year in 2000 to less than 10% in 2006. The lending process itself was much improved, with new products and procedures adopted by local banks drawing on the experience of their parent company abroad. Practically all banks now are competing for small business clients and advertise specially designed products and procedures for SMEs.

Bank privatization is without a doubt the most important development in improving the availability of financing for Romanian firms. The process brought large multinational institutions to Romania, immediately increasing the level of competition in the financial markets, improving local governance and raising the amount of available funds. Although banks remain the most important financial intermediaries, other institutions are

increasingly playing a role in providing funds to SMEs: leasing companies, private equity funds, microcredit organizations.

A second crucial factor contributing to the creation of a better financing environment is increased macroeconomic stability. Lower and lower inflation rates increased the credibility of the National Bank of Romania and reduced perceived uncertainty surrounding future monetary policy. This lower risk perception led banks to decrease the share of government securities in their portfolio, and to loan out more money. More stable inflationary expectations also reduced the spread between deposits and credits, making financing affordable to a larger segment of economic agents. The sustained growth and overall better environment had a positive effect on the companies' balance sheets, improving their capacity to take credit.

Table 7: Romania macroeconomic indicators

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Real GDP Growth	-4.8	-1.2	2.1	5.7	5.0	4.9	8.3	4.1	7.6
Inflation Rate (dec/dec.)	40.6	54.8	40.7	30.3	17.8	14.1	9.3	8.6	4.87
Monetary Policy interest rate	71.1	83.6	45.1	41.8	19.75	21.25	17.0	10.0	8.2
Fiscal Deficit/GDP	-2.8	-2.5	-3.6	-3.1	-3.1	-1.5	-0.7		
Public Debt/GDP	28.0	33.2	31.3	28.6	28.3	26.6	16.7		
Current account deficit/GDP	-6.9	-4.0	-3.7	-5.6	-3.4	-5.7	-7.7	8.7	11.0

Finally, a series of legislative initiatives were passed by the Romanian government in an effort to align domestic legislation to the EU legislation that substantially improved the business environment[44]. A special law was passed in 2001 that created favorable conditions for small enterprises (simplified taxation based on revenues, not on profit).

These important structural changes caused a rapid increase in the availability of domestic non governmental credit after 2000. The level of bank deposits as percentage of GDP, also increased significantly[45].

In this broader context the macroeconomic impact of the two SME financing programs I discuss in this paper is likely to be very limited. I conclude that the program's impact is negligible for a number of reasons:

- The programs fail to offer innovative, sustainable, financial products or new lending technologies. The RICOP program uses grants, which are not commercially viable and will disappear once the program ends. The BT credit line fails to offer new screening techniques and products. This means the medium term impact on the financial services market is negligible.
- In the short run the programs can supplement existing funds and improve the "depth" of financing. However, crowding out effects seem to have been quite

[44] It is worthwhile to note that Romania has in 2005 adopted a flat tax system: corporate profits as well as personal income are taxed at 16%.

[45] In spite of these recent improvements financial intermediation in Romania remains relatively low. For 2003 total banking sector assets amounted to 33% of GDP in Romania, compared with a Euro zone average of 260% or an east European average of about 70%.

large for both schemes, as participant firms typically could have found alternative sources of financing.

- Grants awarded through the RICOP project were likely to go to lower yield projects and generate little growth. Entrepreneurs applied for funding even when they lacked confidence in the viability of their investment, which often result in misallocated resources.
- Volume: the two financing lines are almost invisible as a share of total credit.

Table 8: The impact of the RICOP SME financing program in Romania

	SME regulation	SME influence	Financial sector regulation	Financial sector influence	Financial products	Revenues from SMEs	Impact on other agents in the region
Short term	No direct impact	No direct impact	No direct impact	No direct impact	No new commercially viable products are developed.	May lead to the accumulation of extra assets SMEs can use as collaterals.	May lead to sub-optimal firm size. Raising employment is in practice difficult. Can provide extra revenues for SME suppliers.
Medium term	No direct impact	No direct impact	No direct impact	No direct impact	May have a detrimental effect if it lowers incentives for commercial sector loans to compete for SME market.	May channel scarce assets (land, etc.) to lower yield uses.	May further channel scarce resources into lower yield activities.

Table 9: The impact of the BT SME financing program in Romania

	SME regulation	SME influence	Financial sector regulation	Financial sector influence	Financial products	Revenues from SMEs	Impact on other agents in the region
Short term	No direct impact	No direct impact	No direct impact	No direct impact	May improve access to funding. Risk of crowding out existing lenders in the absence of new screening techniques.	Positive, as the program offered technical consulting to SMEs, which may be easier to bundle with other financial services.	May lead to sub-optimal firm size. Can provide extra revenues for SME suppliers.
Medium term	No direct impact	No direct impact	No direct impact	No direct impact	No direct impact	No direct impact	No direct impact.

To the extent that today it is easier for SMEs to obtain financing in Romania, as both my interviews and the macroeconomic data suggest is indeed the case, this is an improvement that cannot be attributed to direct financing programs. The Romanian case illustrates clearly that direct funding programs can easily fail to target the financial system's binding constraints, and instead focus on treating their symptoms.

3.4 *Conclusions*

In this paper I have argued that any aid program needs to start with a careful investigation of the binding constraints affecting the economy at a particular point in time. It is only after such an analysis is complete that policymakers can hope to pick effective programs and avoid superfluous or potentially damaging ones.

SME financing programs cannot be expected to act as universal cures for observed inadequacies in the funding markets. There are many factors that can lead to inadequate SME financing which direct funding programs cannot address: SME regulation, SME-regulator influence, financial sector regulation, the degree of pull exerted by the lenders on regulators, the competitiveness of SMEs in the economy, and the overall prosperity of households and other firms.

The most promising route for direct financing programs to have a lasting impact is through promoting new and innovative products or lending technologies that are designed for clients without access to existing funding sources.

In reality, direct financing programs are rarely implemented as a result of a careful analysis of the "binding constraints". Rather, they represent a knee-jerk reaction to observed lack of financing, an attempt to treat the market's symptoms while ignoring the underlying ailment. As a result, most financing programs fail to make a lasting impact on financial markets.

I illustrate this problem with two case studies of financing schemes implemented in Romania between 1998 and 2004. My analysis indicates that the binding constraint in Romania was not an insufficient offer of financing products per say, but poor regulation and a lack of competitiveness in a financial sector dominated by state owned banks. Not

surprisingly, I find that the two programs I studied likely did not play an important role in providing a sustainable solution for small end medium enterprise financing.

The Romanian case studies also illustrate a series of practical problems that confront most direct financing programs. Imperfect information, for example, means that even the short run impact of the two programs was not very impressive: they only reached firms that were able to obtain funding elsewhere. In some cases skewed incentives gave participant entrepreneurs a reason to overestimate the profitability of the provided funds. The long time it usually takes from the original design of the program and its implementation is another important concern, even when the relevant constraints can be carefully identified at the start of the program. In the case of Romania, many of the impediments to financing initially identified by the program designers had changed by the time it was implemented, making it either irrelevant or inadequate.

Another concern about programs designed to support smaller firms is that they may change firm behavior in a counter-productive way. Small firms as a group play an important part in risky/uncertain environments, where small scale experimentation and adaptation important parts of the discovery process. A key ingredient in such environments is quick exit/failure. Subsidies rewarding all small firms likely slow down this process and reduce the rate of innovation.

My findings provide project level evidence for a problem previously identified by a number of authors: skewed incentives faced by development agencies and

policymakers[46]. Experimenting with new financing instruments or selection algorithms takes a considerable degree of entrepreneurial spirit, and reaching out to firms which do not use financial markets carries significant project risks. International development agencies currently face only weak incentives to pursue such innovative opportunities. There are much stronger incentives to manufacture project level "success stories" and highlight them to donors by selecting safer firms who may already be able to access funding from alternative sources. The race for "success stories" may also play a part in the choice of direct financing programs even in areas where they will clearly fail to address the system's binding constraints. My paper provides a critical tool for analyzing these "success stories", and some hope for improving future programs.

[46] See for instance Eastely, 2006.

Appendix

"Kitchen Sink" model results

probit	cancelation	corr_avg	rol_avg	regq_avg	eff_avg	stab_avg	acct_avg	sector
	total	contract	LOG_PPPPC	pcpipch	bca_ngdpd	fx_nstd	lp	REGION_N

Iteration	0:00	Log likelihood =	-602.337
Iteration	1:00	Log likelihood =	-567.775
Iteration	2:00	Log likelihood =	-566.592
Iteration	3:00	Log likelihood =	-566.589
Iteration	4:00	Log likelihood =	-566.589

Probit estimates	Number of ob	3262
	LR chi2(11) =	71.5
	Prob > chi2 =	0
	Pseudo R2 =	0.0593

cancelation	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
corr_avg	-0.38668	0.28048	-1.38	0.168	-0.93641	0.163049
rol_avg	-0.48564	0.292819	-1.66	0.097	-1.05956	0.088271
regq_avg	0.024349	0.19883	0.12	0.903	-0.36535	0.414048
eff_avg	0.544855	0.30469	1.79	0.074	-0.05233	1.142037
stab_avg	0.128163	0.093476	1.37	0.17	-0.05505	0.311373
acct_avg	-0.05272	0.107644	-0.49	0.624	-0.2637	0.158258
sector	0.194818	0.038134	5.11	0	0.120077	0.26956
total	0.000242	7.75E-05	3.12	0.002	8.98E-05	0.000394
contract	0.054684	0.049089	1.11	0.265	-0.04153	0.150896
LOG_PPPPC	-0.06799	0.042919	-1.58	0.113	-0.15211	0.016126
pcpipch	7.06E-05	0.000176	0.4	0.688	-0.00027	0.000415
bca_ngdpd	-0.01998	0.009717	-2.06	0.04	-0.03903	-0.00093
fx_nstd	-0.04945	0.217867	-0.23	0.82	-0.47647	0.377556
lp	-0.00357	0.003149	-1.13	0.257	-0.00974	0.002605
REGION_N	0.039107	0.03556	1.1	0.271	-0.03059	0.108804
_cons	-2.19129	0.337611	-6.49	0	-2.853	-1.52959

Significance testing for groups of variables:

test	corr_avg	rol_avg	regq_avg	eff_avg	stab_avg
	1		corr_avg	=	0
	2		rol_avg	=	0
	3		regq_avg	=	0
	4		eff_avg	=	0
	5		stab_avg	=	0
	6		acct_avg	=	0

chi2(6) =	16.97
Prob > chi2 =	0.0094

```
test        sector          contract    total

                  1                     sector      =          0
                  2                     contract    =          0
                  3                     total       =          0

            chi2(3) =           35.85
            Prob > chi2 =           0


test        LOG_PPPPC       pcpipch     bca_ngdpd   fx_nstd

                  1                     LOG_PPPPC   =          0
                  2                     pcpipch     =          0
                  3                     bca_ngdpd   =          0
                  4                     fx_nstd     =          0

            chi2(4) =           10.18
            Prob > chi2 =      0.0375
```

Rule of Law descriptive stats:

ROL_AVG descriptive stats	
Mean	-0.45995
Standard Error	0.053742
Median	-0.50751
Standard Deviation	0.622112
Sample Variance	0.387024
Kurtosis	-0.34692
Skewness	0.312351
Range	3.042512
Minimum	-1.84436
Maximum	1.198157

Bureaucratic effectiveness descriptive stats:

EFF_AVG summary stats	
Mean	-0.40354
Standard Error	0.052625
Median	-0.47966
Standard Deviation	0.609182
Sample Variance	0.371102
Kurtosis	-0.09382
Skewness	0.375674
Range	2.968697
Minimum	-1.70396
Maximum	1.264742

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CURRICULUM VITAE

Silviu Dochia graduated from the State University of New York at Binghamton in May 2002, receiving a Bachelor of Science degree in Economics and a Bachelor of Arts in Mathematics. In 2005 Mr. Dochia received his Masters of Art in Economics from George Mason University. Between 2005 and 2007 Mr. Dochia worked as a consultant with the World Bank in Washington DC. At the end of 2007 Silviu Dochia moved to the Philadelphia area to work with Jeffrey A. Parker and Associates, a transportation infrastructure financial consultancy team.