

Bring Me Sunshine:
Which parts of the business climate should public policy try to
fix?¹

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Abstract

This paper offers guidance to perplexed policymakers on how to draw practical lessons from the large and often confusing literature on the business climate and its role in economic development. We use the analogy of a doctor treating a patient, who must draw together information from the patient's subjective reports, from clinical studies of average patient responses to treatment, and from the patient's detailed case history. We argue that policymakers can use three complementary sets of findings: from subjective reports of managers of firms, from cross-country regression analysis, and from case histories of countries or regions. These findings are less often contradictory than they sometimes appear, provided they are interpreted carefully. Although there is still much to learn, we give many examples of useful practical conclusions that can be drawn from this literature.

¹ This paper, especially Section 3.2, draws heavily on joint work with Mark Schaffer. We are also grateful for useful discussions of these questions with David Ulph. Oleg Shchetinin provided excellent research assistance.

1. Introduction

The purpose of this paper is to see what policymakers can conclude from the large and often contradictory literature on the importance of the business climate for economic development. A consensus has emerged over the last decade or so in the research community that the quality of a society's institutions is of critical importance to successful development,² but there is no consensus on how to identify the dimensions of institutional quality that matter most. This reflects partly the lack of a common definition of "institutions", in the absence of which it is easy for the term to serve purely as a cover for our ignorance as to what really determines differences in economic performance between societies. However, even among researchers who use the term "institutions" in common ways there is little agreement about how to choose among rival institutional explanations. In the circumstances what are policymakers to do? Should they ignore this literature until the researchers have got their act together? Should they dive in and hope to make sense of it themselves? Or are there some preliminary conclusions that can be drawn even if the remaining uncertainty is large?

This paper is intended as a guide to this research for the perplexed policymaker. We shall focus on those institutions that form part of what is commonly called the "business climate", namely those aspects of the economic environment that are not under the control of individual firms but that affect the expense, ease and reliability of doing business in a country. These have the advantage of being easier to define than institutions in general. Our intended typical reader is a senior civil servant advising the prime minister, finance minister or industry minister of a developing country. Policymakers will be very aware that it is not enough to understand what factors affect a country's economic performance unless those factors can be influenced by policy. We shall therefore distinguish two questions on which existing research can shed some light:

- Which elements of the business climate make the most difference to the performance of firms?
- Which elements of the business climate have the highest priority for policymakers?

Some factors may be like the weather – impossible to control but important to anticipate; others may be like political crises – impossible to anticipate but important to react to. Only a few can be both anticipated and controlled.

We start by asking what the business climate is and how we can find out about it.

² This consensus is not unchallenged. For instance, Gregory Clark (2007 forthcoming) challenges institutionalist explanations of the industrial revolution, on the grounds that a number of medieval economies (such as England from the thirteenth century onwards) had institutions (such as systems of secure property rights in land) that, he claims, would have earned them high marks in any World Bank policy review. Of course, not all researchers who claim that good institutions are important for development would claim that they were either necessary or sufficient.

2. What is the business climate and how can it be measured?

Firms in any economy respond to their environments in ways that, in most cases, add value. That is, they transform goods and services (which in the jargon are describes as their “inputs”) into other goods and services (called their outputs) which they can sell for more than it cost them to undertake the transformation. The terms under which they can do this are influenced mainly by technology and by the extent of competition in the market where they sell. But two firms that use apparently similar technology and face similar competition may have very different productivities, meaning that one can produce more valuable outputs for the same inputs. This difference in productivity may be due to factors internal to the firm – the skill of its managers, for instance, or the motivation of its workforce. Alternatively, it may be due to factors outside the firm’s control: one firm may be located in a violent neighborhood, for instance, that obliges it to spend more on security. The list of all the possible external factors that might influence a firm’s productivity is what we call the business environment. We can therefore think of the state of the business environment as a series of constraints that prevents the productivity of firms in an economy from being as high as it could otherwise be.

In practice, and to enable comparison between different datasets, researchers use measures based on a number of commonly-agreed dimensions, which typically include physical infrastructure, the legal system, the financial system, various aspects of the micro and macro policy environment such as taxation, regulation, macroeconomic stability, and social factors such as crime and corruption in a society. Physical infrastructure, for instance, counts as an aspect of the business environment (unlike such purely private goods as cars or refrigerators) because firms cannot simply choose to buy as much of them in the market as they need. Firms can buy more private goods if they need them, provided they can pay for them by the productivity with which they transform them into outputs. But the state of the physical infrastructure is determined by factors in the economy (including government policy) that are not under the control of the firms that use it. It is useful to think about the business environment as a kind of public good – nevertheless, it is important not to forget that even the terms on which private goods are available can be influenced by distortions including those induced or sustained by poor policy. For example, trade barriers may raise the cost of inputs and technological economies of scale may do the same for non-traded inputs if the size of the market is very small.

The question which elements of the business climate make the most difference to the performance of firms in a particular society therefore has, in principle, a simple interpretation. Which of the constraints in that society costs firms the most in lost productivity? Alternatively expressed, if any one of the constraints on firm productivity could be relaxed, which one would have the biggest impact on productivity in the economy as a whole? Imagine that the legal system in Russia were as reliable as in, say, the Netherlands, would that make a bigger or smaller difference to the productivity of Russian firms than if the financial system were as developed as in the Netherlands? Or if corruption were at Dutch rather than Russian levels? Or if Russian roads were as good as Dutch ones?

Once the question is posed in this way we can see why it doesn't yet tell us what the priorities of Russian policymakers should be. Roads may be under policymakers' control, but corruption may be entirely outside their control (we are not claiming that this actually is so, but it may be). Alternatively, of any two constraints that are both under policymakers' direct control, some may cost much more to improve than others. Suppose, for instance, that we estimated that improving the Russian legal system to Dutch standards would make slightly less difference to productivity than improving the financial system, but that it would cost only a fraction as much. Then, for the resources required to raise the Russian financial system to Dutch standards, it might be possible to raise the legal system, *and* substantially to improve the roads.

Still, finding out what factors make the most difference to firms' productivity is an essential first step to finding out what the priorities of policymakers should be – to move from the first to the second we need to add an assessment of the feasibility and costs of improving the relevant constraints. Unfortunately, as we shall see, the research in this field has made less progress in identifying these costs than in identifying the impact of the constraints themselves. Nevertheless, a number of useful conclusions can be drawn all the same.

To illustrate these conclusions we shall try during the course of this paper to answer a number of specific questions:

- Should governments in developing countries make large investments, financed out of public funds, in such items of physical infrastructure as electricity and telecommunications?
- In which countries should governments give high priority to improving law and order – under what circumstances are there substitutes for improvements in law and order?
- Is labor regulation a major constraint on productivity?
- How much difference does the tax system make?
- What other regulatory reforms would have an important impact on the business environment?

We begin, though, by looking at the different sources of evidence about the business climate, seeing what these different sources of evidence actually say, and asking whether they tell a consistent story.

3. What are the different sources of evidence about the business climate and do they tell the same story?

We begin with a simple analogy. A doctor may be interested in knowing the major influences on the health of a particular patient she is treating for some serious illness. She may have no doubt that her patient's health is determined by some complex causal process of which she could imagine having a reasonably full and reliable model. However, in practice her model of that process is based on very limited information. For both practical and ethical reasons, she

cannot subject her patient to all the experiments that would be necessary to determine how his individual health responds to different influences. She therefore has to rely on data generated by experiments (plus other, non-experimental data) from other patients who are similar to her subject but not exactly like him. She will be working with a model of the typical or average patient, albeit one who shares some of her subject's general characteristics, but she will not be able to control for unobserved ways in which her patient differs from those others, and which may make treatments that are suitable for one patient quite unsuitable for another. She can, of course, supplement her model with information designed to make it more sensitive to her subject's particularities. First, she can ask her patient for a full account of what he himself feels and any clues he may be able to give as to the origins of his condition ("I haven't felt quite right since I ate that hamburger..."). Such information may of course be misleading, as any medical professional knows ("I'm quite sure it's my heart, doctor"), but it can be useful if she has a way of integrating it with, and testing it against, the information from other sources. Secondly, she can rely on her own or others' detailed information about the patient's case history, including treatments to which the patient responds particularly well or particularly badly, plus any hunches she may have about his idiosyncrasies, his strengths and his weaknesses. Such hunches, without necessarily constituting a basis for treatment in themselves, may also suggest hypotheses that can help her in searching the medical literature: is his adverse reaction to a certain treatment related to his weight problems, for instance, and have similar associations been documented elsewhere? She may also use case study material about subjects who are like her own patient in what seem to her particularly relevant respects.

In the spirit of this analogy we shall distinguish three sources of information that a policymaker can use to understand the effects of the business climate on the productivity of the society for which she has political responsibility. First there is cross-country evidence, generated both by policy experiments and from other sources, about the average or typical response of the economy to various factors. Secondly, there is what the managers of firms themselves say about the impact of various factors on their own productivity. Finally, there is case study evidence generated by the prior history of the country in question, or by that of relevantly similar countries. These three sources of evidence have many of the same strengths and weaknesses as their analogues in the medical example, and need to be assessed together in something of the same spirit.

Nevertheless, countries are not the same as individual patients, and economic policy is not medicine. Among the most important differences is the presence of many interactions between firms – even if the managers of firms give accurate replies to questions about the constraints on their productivity, the effect of these constraints on the productivity of the economy as a whole may not be simply equal to the sum of their effects on individual firms.³ Still, if we bear the limitations of the analogy in mind we can still explore it in a useful way.

³ The most likely reason would be externalities, but general equilibrium effects might be important as well. For instance, managers of existing firms might be correct in thinking that the reduction of tariffs on imports would be bad for their firms, but wrong in thinking that it would be bad for the economy as a whole.

3.1 The causal model: cross-country regression analysis

Just as the doctor will draw on studies based on samples of patients⁴ to derive evidence about the average causes of health, so economists have by now generated many studies based on samples of countries to derive evidence about the average determinants of economic performance. No country is average, just as no patient is average, but a study based on averages can be a good place to start looking for explanations that fit the particular case.

One of the most difficult problems for studies of health is identifying the direction of causality. Depression and unemployment are correlated, but how much is this because unemployment causes depression, and how much because depressed people are more likely to become unemployed? One famous study purporting to find that breastfeeding babies raised their IQ turned out to have ignored the possibility that mothers with higher IQ (whose babies also have higher IQ on average) were more likely to breastfeed their babies. Much of the ancient medical lore that has now become discredited was due to confusion about causality – for example the common medieval belief that sickness could be due to an excess of heat in the body, whereas we now know that high temperatures are typically a symptom of ill health rather than an underlying cause.

Exactly the same problem bedevils studies of institutions and economic performance: we all observe that richer countries have higher quality institutions – a better business environment – but how much is this simply the consequence of economic development rather than the cause? Would policy-makers be better advised to focus on other fundamental causes rather than the symptoms of development, leaving the business climate to improve as development proceeds? Real progress has been made in the past decade in identifying a causal role for institutional quality in development, and this has sharpened the incentive for researchers to pin down more concretely which aspects of the business environment matter for firm performance.

Recent cross-country econometric analysis is widely viewed as having established that institutional quality is causal in determining living standards (for a survey, see for example, Pande and Udry, 2006). The key to overcoming the reverse causality problem is to find a variable that predicts today's institutional quality but that has no *direct* effect on today's living standards: this is a so-called instrumental variable. In the most well-known study (Acemoglu, Johnson, Robinson, 2001) select a sub-sample of countries in the world that had been colonized and use as the instrumental variable for today's institutional quality the disease environment faced by potential colonizers. They conjecture that the disease environment affected the nature of the colonies that were established but has no direct effect on living standards today. They hypothesize that where the disease environment was conducive to European settlement, so-called settler colonies were established. Settlers replicated their home institutions, which were associated with secure property rights and with successful capitalist development. The persistence of these high quality institutions is reflected in current institutional quality measured by the risk of expropriation of foreign

⁴ or sometimes entire populations, especially in the fields of epidemiology, nutrition and preventive medicine.

investors. By contrast in places where the disease environment for Europeans made settlement hazardous, extractive states were set up with the main purpose of transferring resources back to the colonial power. Australia is an example of a settler colony in which institutions to enforce the rule of law were paramount. The Belgian Congo was an extractive colony, where the disease environment made it unattractive for the colonizers to settle and invest in replicating home institutions. To complete the argument, AJR point out that the disease environment at the time of potential settlement is not related to current living standards, because indigenous populations were already largely immune to the diseases that killed Europeans, and because these diseases are no longer major killers.

Subsequent studies have tended to confirm the finding that historical and geographical factors are good instrumental variables for institutional quality, which means that their effect is indirect, that is, via institutional quality rather than having a direct effect on current performance outcomes. This literature does not help in pinning down which aspects of the business environment matter most; but it makes a highly relevant contribution by showing that countries are not doomed by their history or geography to be poor forever. A good example is the case of Eastern and Western Germany: longitude is a good instrumental variable for the role of institutional quality as a determinant of long-run GDP per capita by district in Germany in 1989 (Rodrik 2004). Lying further to the east made it more likely that a district was organized as part of the planned economy during the 1949-89 period, but otherwise had no direct effect on living standards in 1989. The implication is optimistic rather than pessimistic since if institutions can be changed then convergence of per capita GDP toward those in more westerly districts would be expected. This is what can now be observed in the eastern districts of unified Germany. The implications would be different if longitude had a direct effect on living standards, since policy to change institutions might be correspondingly less effective. Latitude, for instance, is more likely than longitude to have such an effect since directly influences climatic, environmental and epidemiological factors that have a known impact on economic outcomes.

Unfortunately many studies test for the importance of one aspect of the business environment against the null hypothesis that there is *no* systematic influence on productivity apart from some basic factor endowments. However, this is not an interesting null hypothesis. The source of the problem is the limited number of countries in the world and the shortage of convincing instrumental variables for different dimensions of the business environment; there are simply not enough degrees of freedom to choose between a significant number of alternative hypotheses. One example where such a test has been implemented is the attempt of Acemoglu and Johnson (2005) to see whether it is ‘property rights institutions’ or ‘contracting institutions’ that matter for long-run development. Property rights institutions regulate the relationship between the state and the private sector and contracting institutions regulate the relationship between private sector lenders and borrowers. The authors use settler mortality as the instrument for property rights institutions and legal origin as the instrument for contracting institutions. Two important findings emerge: first, these are good instruments, which has the same optimistic interpretation as before. For instance, having French legal origin helps to predict the nature of contracting institutions (reflected, for example, in a greater extent of

legal formalism and measured by more steps required to resolve an unpaid cheque than is the case in English legal origin countries) today but has no direct effect on economic outcomes today. Secondly, they find that property rights institutions and not contracting institutions are causal for living standards today (as well as for the investment share and overall financial development). By contrast, contracting institutions are causal for the structure of financial institutions and in particular, for the significance of the stock market in the economy: more costly contracting institutions are associated with smaller stock markets. Other research suggests reasons why greater legal formalism may not be of first order importance as a constraint on growth: there may be effective extra-legal substitutes such as an open press and broadcasting media and norms of tax enforcement (Dyck and Zingales 2004).

The ability of cross-country regression analysis to reveal which institutions or elements of the business environment really matter for long-run development is severely limited by

- the correlation between the proxies that are used to characterize them
- problems with measuring business environment variables
- the persistence of institutions over time
- the limited number of countries
- the paucity of credible instruments to deal with the problem of reverse causality as well as those of measurement error and omitted correlated variables.

In an appendix to this paper (A1), we provide an annotated guide to a selection of the vast number of cross-country studies that have sought to investigate the role of institutions or the business climate for long-run growth. Although the bulk of studies are conducted within a similar reduced form framework, it is still not easy to compare the findings. Different studies explore different ways of mitigating the problems listed above. These problems mean that studies that appear to have identified one particular aspect of the business environment as explaining long-run performance should be treated with some skepticism. Just as epidemiologists are skeptical of the new study they receive each year claiming to have found a particular foodstuff (broccoli this year or milk products last year) that raises or lowers the risk of breast cancer, economists should be skeptical of claims that the key dimension of the business environment has been revealed in a cross-country study. Corroboration from other sources of evidence is needed before any degree of confidence can be placed in the findings of a particular study, and it is to these other sources that we now turn.

3.2 The patient's perspective: surveys of managers

3.2.1 What do the answers mean?

Parallel with the emergence of more convincing evidence from aggregate data of the importance of institutional quality for long-run economic performance through the use of imaginative strategies for dealing with problems such as those of reverse causality, was a

massive data collection effort that sought to document aspects of the business environment as experienced by managers. Two different kinds of data have been collected: quantitative indicators of the quality of physical and institutional infrastructure (e.g. the length of time taken to have a main-line telephone connection installed) and the subjective assessment by managers of the impact of aspects of the business environment on the operation and growth of their firm. This data has been collected for fairly large cross-sections of firms in more than 70 – mainly developing and transition – countries but with OECD economies also represented. The results of these surveys have been analyzed in a variety of ways and a number of important lessons have emerged that are relevant to their usefulness for policy purposes. A guide to a selection of business climate studies using firm-level data is provided in Appendix A2.

We concentrate on the use of the subjective evaluations collected from the surveys because this is a new source of information, which is different in character from the alternative measures of the business climate. Commonly used measures of the business climate include those collected from experts (for example, measures of the security of property rights) or from tabulating objective indicators such as those for the numbers of procedures required to start a business or cash a cheque in each country in the sample. Subjective evaluations are less commonly used in economics. We shall argue that they provide both opportunities and pitfalls in the context of business climate studies because of the public good character of at least some dimensions of the business environment (see Carlin, Schaffer, Seabright 2007, CSS, for a more extensive discussion). The question asked of the manager in the PICS and BEEPS surveys conducted by the World Bank and the EBRD is:

“I would now like to ask you questions about the overall business environment in your country and how it affects your firm. Can you tell me how problematic are these different factors for the operation and growth of your business?”

Aspects of the business environment managers are asked to evaluate are: Telecoms; Electricity; Transport; Land access; Tax rates; Tax administration; Customs Regulation; Licensing Regulation; Employment regulation; Access to finance; Cost of finance; Policy uncertainty; Macro stability; Corruption; Crime; Skills availability; Anti-competitive practices.

Thinking about the business climate as a public good highlights the potential role of the policy maker. In the theory of pure public goods we face the question of what is the optimal amount of the public good, and whether the private market will provide it? The problem arises for policy because once provided, the pure public good is available to all. Those who do not wish to pay cannot be excluded from consuming the good, so either citizens must be coerced into paying or the good must be supplied at a zero price and funded out of coerced taxation or some un-coerced source such as foreign aid. Voluntary participation cannot therefore be used as a signal of citizens' willingness to pay for the good, so policymakers have somehow to determine the sum of their marginal valuations of the public good and compare that with the marginal cost of provision to determine the optimal quantity. Furthermore, different agents value the public good differently even when it is optimally supplied, unlike in the case of

(divisible) private goods where the marginal valuations of different citizens are same (and determined by prices) even if their average valuations are not.⁵

We can apply this insight to the interpretation of subjective ratings of the business climate by managers. A manager will “value” a public good according to how much an extra unit of that public good would improve the performance of the firm. In the language of microeconomics, this value is a “shadow” price – it represents the cost to a decision maker of the fact that some resource is in constrained supply. However, even if the constrained supply of the public good is constant for all firms in a particular economy, different firms will be affected by this to different degrees (poor law and order will obviously hurt a firm that delivers payrolls much more than it will hurt a firm that delivers pizzas). So the shadow prices of the public good will vary across firms in the economy. Furthermore, it will often be the most productive firms that have the highest shadow prices, for reasons familiar from the case of ordinary public goods. Think of a national park – assuming that we can elicit their true preferences, citizens who are fitter and anticipate using the park more intensively are likely to have a higher marginal valuation. Similarly, firms that make more efficient use of their resources will utilize the business environment more intensively and place a higher value on the relaxation of its constrained supply than will less productive firms.

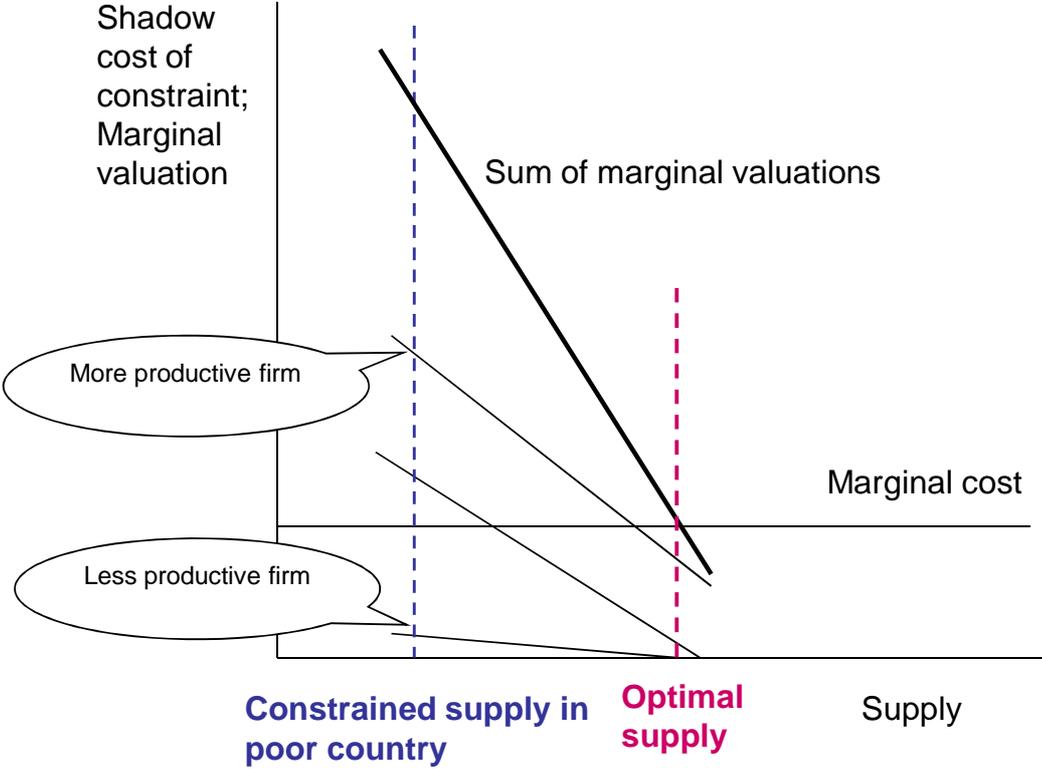
From the point of view of our original question, data about valuations have one great advantage over the results of cross-country regression studies – *they already tell us how important are different aspects of the business environment relative to each other*. Of course, this is relative importance in the opinion of managers, who may be mistaken, just as patients may be mistaken about the relative importance of factors such as diet, genotype, lifestyle and disease pathogens in affecting their health. Still, managers typically spend much more time systematically studying their business than most individuals spend analyzing their own health, so the value of their opinions about relative importance should not be underestimated.

We can now show how this simple framework can be applied to the data collected in the surveys of managers. For each dimension of the business environment, a higher score is recorded when it is viewed by the manager as imposing a stronger constraint on the firm. We interpret this as a higher shadow cost of the constraint to the firm. If we compare the scores across firms within a country, then we would expect to find that better-performing firms would report higher costs of the constraint (higher scores) – since these are the kinds of firms for whom the constrained supply of good business environment services is most costly. By contrast, if we average across firms within a country and compare averages across countries, the variation is likely to be strongly influenced by variations in the supply of the public good (though not only by that, as we shall see). We would expect this average complaint score to be lower in countries with better economic performance and vice versa (the sum of the marginal valuations declines as the supply rises).

⁵ For indivisible private goods such as motor vehicles this is not correct, but the information revelation problem facing a car manufacturer is nevertheless much less severe than that facing a government supplying most public goods.

Figure 1 illustrates these relationships in a simple way by showing, for three firms of different levels of productivity, their valuation of the public good as a function of the level of the public good supplied (a diminishing function, for familiar reasons – the more you have of something the less you need still more of it). At any level of supply the more productive firms will have higher valuations. The dark line represents the sum of their valuations for any level of supply, and the optimal level of supply is where the dark line intersects the marginal cost (shown here as constant for simplicity). If the supply is less than the optimal level, though, the sum of the valuations will be higher.

Figure 1. Business environment constraints and productivity: schematic illustration of between- and within-country relationships



So we have two sharp empirical predictions: in any country, more productive firms will complain more about the business environment, but when we take average complaints in a country, firms in more productive countries will complain less. What, then, do the data actually show?

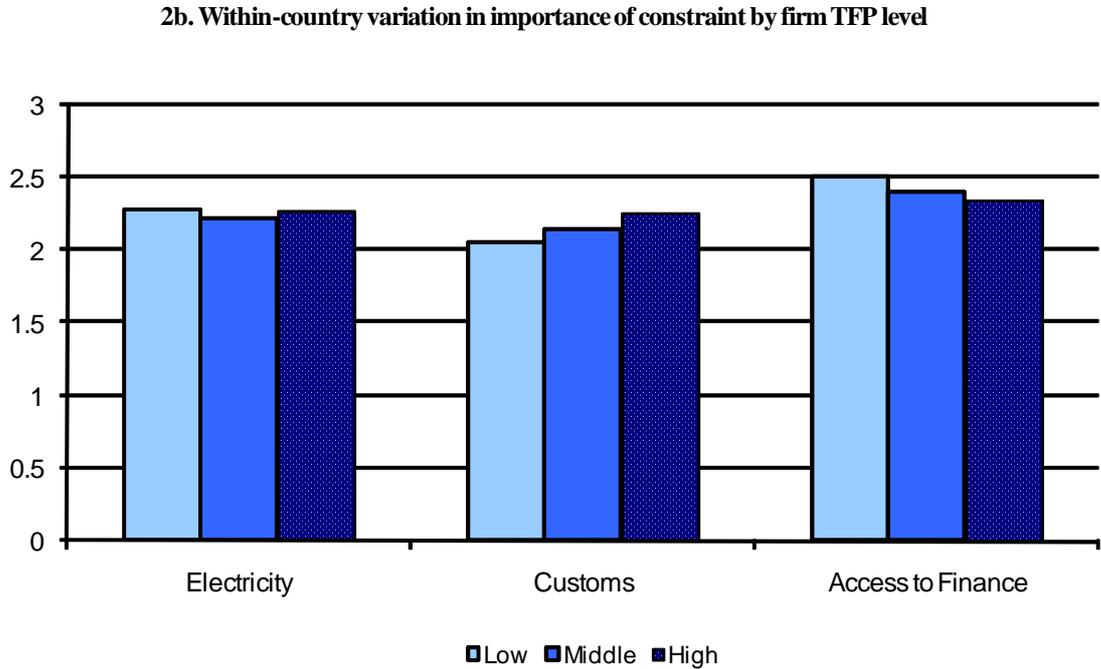
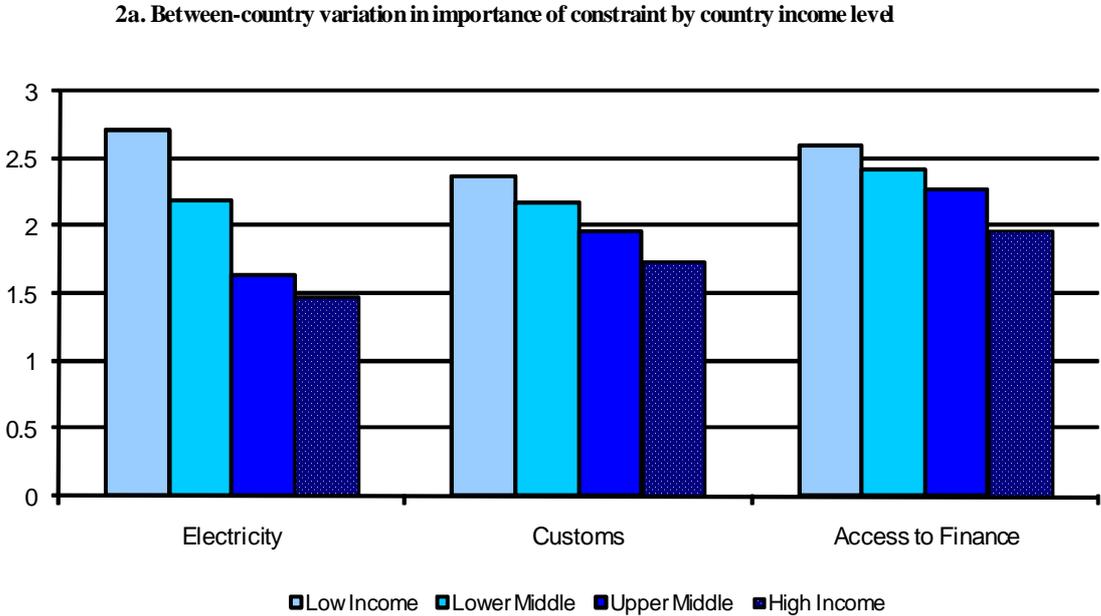
Figure 2 illustrates how these cross country and within country patterns are reflected in the data from surveys of managers conducted by the World Bank (PICS) and the EBRD (BEEPS). Figure 2a reports a between-country relationship of the level of income per capita of the country and the reported importance of three kinds of constraints: physical infrastructure (specifically, electricity), customs regulations and access to finance.

As predicted, the figures show a declining relationship, with the reported importance of constraints falling as country income level rises. Figure 2b reports the equivalent within-country relationships. It shows that for customs regulations, there is an increasing relationship between productivity and the score measuring the cost of the constraint to the firm. This is in accord with the above discussion, as would be expected given that customs regulation has the character of a pure public good. However, as we can see there is the opposite relationship for 'access to finance' and no relationship at all for electricity. Exploring why different patterns characterize the within-country relationship between constraints and firm performance helps to bring out important features of the business environment and its effects.

Whereas some aspects of the business environment can usefully be thought of as public goods, for others the public good aspect is only part of the story and for yet others, it is unhelpful. In the case of physical infrastructure – the example in Figure 2 is electricity – the availability of private substitutes means that this is not a pure public good. Productive firms are likely to invest in private electricity generation if the public infrastructure is unreliable. In such cases the positive within-country relationship between the complaint score and firm performance predicted by the public goods model may not be found. It is necessary to be sensitive to the existence of private substitutes when assessing the information about constraints drawn from survey data. As is even clearer from the case of telecoms, technological progress can radically alter the public goods nature of infrastructure.

Taking the third aspect of the business environment in Figure 2, we note first that when managers are asked to evaluate the constraint imposed on their firm's performance by their access to finance or the cost of finance, it is high productivity firms who report lower constraints. This brings our attention to the fact that these aspects of the financial system – access to and cost of finance – do not have the character of a public good. Indeed, if the financial institutions are working well the perception of its availability as a constraint should be *inversely* related to the quality of investment projects the firm has available to fund, so that high scores may indicate poor quality projects rather than the potential for increased output. An effective set of financial institutions should be characterized by a perception that the supply of finance is a constraint on the activity of at least some managers, unlike in the case of institutions such as customs regulations.

Figure 2. Between and within country variation in importance of three dimensions of the business environment



Source: Carlin, Schaffer, Seabright (2007).

Note: Country income categories are those defined by the World Bank. Data on importance of constraints is for 18,444 manufacturing firms. The severity of the constraint is measured on a scale from 0 (no obstacle) to 3 (major obstacle). For further details, see CSS.

3.2.2 Making use of survey data on the business environment

3.2.2.1 Within and across country patterns

We are now in a position to look at the scores for a wide range of dimensions of the business environment across more than 60 countries. We concentrate here on the ranking of constraints relative to the country average complaint level. One way of looking at the data is to look at each constraint in turn and count the countries for which that particular constraint is ranked as of above average importance. This information is shown in Fig. 3: the constraints are ordered from right to left according to the total number of countries, for which that particular constraint was rated as of above average importance.

Another way of summarizing the data is to use the ‘absolute’ rather than the ‘relative’ value of the constraint score. In principle the absolute score of a constraint is the correct measure of the ‘shadow value’ of the constraint for that economy, and a country whose scores are higher on average than those of another is a country facing more constraints overall on the supply of public goods. However, we focus here on the relative scores because from the perspective of the policy-maker, the country is the right focus: in measuring the relative importance of a constraint we are capturing where the priorities of policy-makers in that country should be directed. Interestingly, there are few differences between the ranking of constraints by relative importance and their ranking by absolute importance (for the details, see CSS 2007). The differences that do exist concern constraints that affect countries that are either very poor or very rich. For instance, while telecoms constraints rank as absolutely important in four countries, these are countries with many other problematic constraints, so that telecoms never rank as relatively important even there. Labour regulation, by contrast, ranks as relatively important for more countries than report it as absolutely important; this reflects the fact that labour regulation is reported as important only in comparatively rich countries whose other constraints score low.

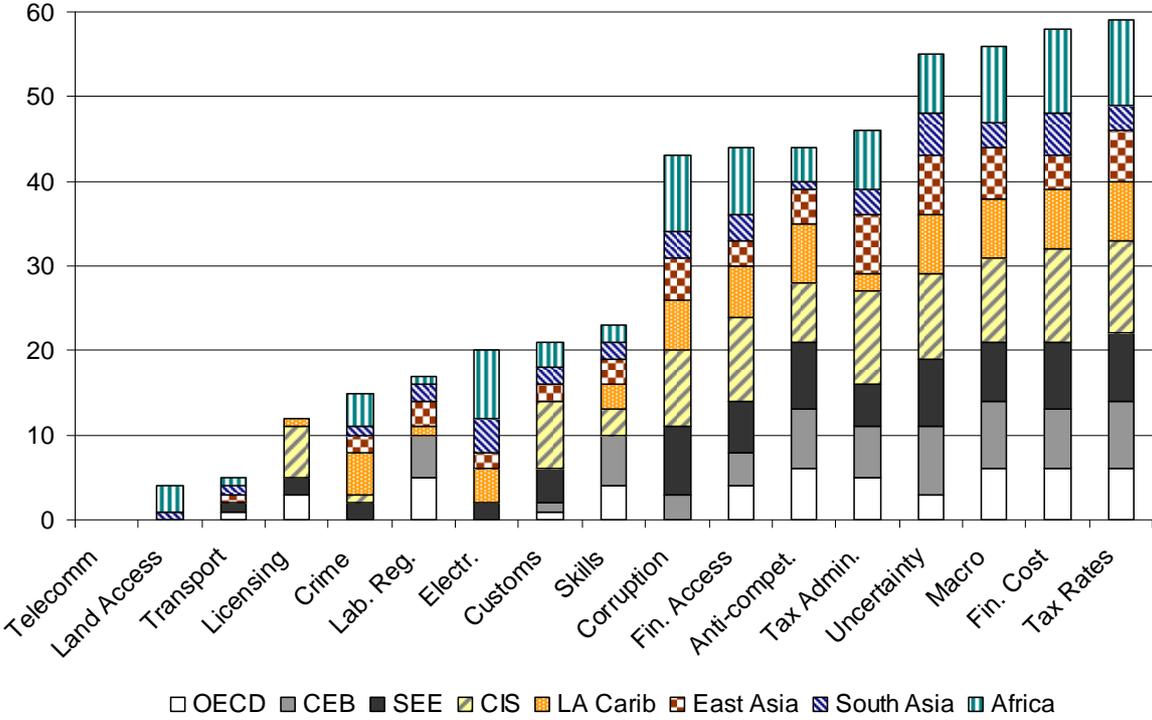
The constraints fall into three groups: those that appear very infrequently as of above average importance (Telecommunications, Land Access and Transport); those that are important in between one-fifth and one-third of countries (from Licensing to Skills in Figure 3) and a final group comprising the constraints that appear to be of above average importance in more than 70% of countries (from Corruption to Tax Rates).

Countries are classified into eight groups: Africa (with 10 countries), South Asia (5), East Asia (7), which includes China and Vietnam, and Latin America and the Caribbean (7). In addition there is an OECD European group (6) and three groups of transition economies from the former Soviet bloc: Central and Eastern Europe including the Baltic states (8), South Eastern Europe (8), and the CIS (11).⁶

⁶ Since the surveys for about half the countries only include manufacturing firms, the data in Figure 3 are for the responses from manufacturing firms only.

Figure 3. The relative importance of constraints by country group

Each bar shows the number of countries in each country group for which the constraint is ranked more important than the average constraint for that country.



Source: Carlin, Schaffer, Seabright (2007).

When looking at the constraints reported as of above average importance, some interesting patterns emerge:

- Physical infrastructure rarely rates highly as an important constraint. Land access appears only in three African countries, Eritrea, Ethiopia and Mali; transport in a handful of poor or war-torn economies (including Sri Lanka and Kosovo) and also in Ireland. Telecommunications does not appear at all, suggesting that the presence of privately provided mobile telephony has much diminished the public good aspect of this traditional component of infrastructure. Electricity stands out as the key physical infrastructure problem that constrains firms – rated as of above average importance in a third of the countries (including all countries in Africa (apart from South Africa) and in South Asia). The only transition countries where electricity is cited as problematic are Kosovo and Albania, where it is the top-ranked constraint.
- Problems with licensing and customs affect relatively few countries in aggregate (less than one third) but are especially prevalent in the CIS countries, where tax administration is also of particular concern.
- Crime and/or corruption show up as important constraints in all groups of countries except the OECD: crime in only one-quarter of countries and corruption in 70%. In Central and Latin America, if we exclude Chile, then in 5 of the other 6 countries,

crime is ranked above average as a constraint, and corruption in all six. For four of those countries, crime or corruption is the top-ranked constraint. The only other countries where corruption is top-ranked are Cambodia, India and Kenya.

- There are seven dimensions of the business environment that are ranked as of greater than average importance in all country groups: anti-competitive practices, tax rates and tax administration, access to and cost of finance, and policy uncertainty and macroeconomic stability.⁷ Perhaps not surprisingly, complaints about the burden of the tax rate are virtually universal. It is striking that in the CIS, tax administration is scored as more problematic than the tax rate in almost half of the countries, including Russia. It is also rated as more problematic than corruption in all CIS countries except Georgia. It is in the CEB and OECD countries that the tax rate most often shows up as the highest ranked constraint – it is reassuring to see that an exception is Estonia where the tax rate attracts a relatively low score and where skills and then labour regulation are ranked as the most important constraints. In South East Europe, policy uncertainty is the most common top-ranking constraint; in East Asia, it is macroeconomic policy and in Africa, it is the cost of finance. Unsurprisingly, South Africa’s profile is quite different from the rest of Africa: the constraints ranked most highly there are labour regulation, skill shortages, macroeconomic stability and crime.
- The broad similarity in the pattern of complaints between CEB and OECD countries is reassuring, with complaints about labour regulation and skill shortages much less in evidence in country groups at lower levels of per capita GDP.

3.2.2.2. Interpreting studies using firm-level business environment data

Since many studies have been done using business climate data, it is useful to draw attention to issues that arise in the interpretation of results. For illustrative purposes, we focus on four studies. The first, (Dollar et al. 2005), is a study using the ‘investment climate’ surveys for four low income countries (Bangladesh, China, Ethiopia and Pakistan). The authors use ‘objective’ measures of the business environment collected in surveys similar to the ones we use in this paper, restrict their attention to firms in the garment industry and use city averages as their measure of the quality of the business environment. They estimate a production function, which they augment by including five business environment measures. They conclude that the most significant bottleneck is the delay in getting a phone line, followed by customs delays and power outages. The number of inspections by government officials and the availability of an overdraft do not appear to be as important. The significance they report for delays in getting phone connections is quite at odds with the average subjective assessments of managers as to the problems posed by the telecommunications infrastructure in the PICS-BEEPS data reported above. All four country surveys are in this dataset, and

⁷The outliers here are Asia (South and East), where access to finance is a problem in fewer countries than are most other constraints; in Central and Latin America where tax administration is less problematic than many other constraints; and in the OECD where policy uncertainty is less frequently problematic than are other constraints. Firms in South Asian countries do not rate anti-competitive practices as problematic and nor is it reported as a major problem in African countries.

telecommunications is never recorded as of above average importance (nor is it in any other country in the dataset, as we noted above). What are we to make of this discrepancy?

Fortunately regression analysis of the PICS-BEEPS data casts an interesting light on this question. As reported in CSS (2007), the severity of telecoms constraints enters with a large and significant negative coefficient in the between country production function regression (i.e. using country average scores), exactly consistently with the results of Dollar et al. There seem to be two possible explanations for the discrepancy between the regression results and the low reported costs of the constraints in the raw data. One is reverse causality – namely, that countries (or cities, in the Dollar et al. analysis) that are prosperous for a variety of other reasons for which it is not realistically possible to control econometrically also happen to have higher levels of telecom services. In CSS, the equations were re-estimated using a variety of instrumental variables to try to address this endogeneity problem but without success. Any plausible instrument has to affect telecoms infrastructure but not otherwise to be correlated with economic performance, and CSS report that instruments that meet this challenging description could not be found.

An alternative explanation for the discrepancy could be the presence of network externalities. The subjective data measure the reported importance of telecoms constraints to telecoms users, not the network benefits that their use of telecoms might have on others. But their direct importance is small. The absolute level of the reported constraint is 1.74 in Pakistan, 1.91 in China, 2.43 in Bangladesh and 2.36 in Ethiopia – unimportant in absolute terms in Pakistan and China and somewhat important in the other two countries. The relative levels show, however, that it is never a priority for any of these countries compared to their other public good constraints. Whether or not network externalities matter remains a subject for further research, but the data suggest they would have to be large in order to overturn the conclusion that telecoms constraints matter little for firm performance.⁸

A second study that raises important issues of interpretation is Ayyagari, Demirgüç-Kunt and Maksimovic, 2006, who report on the basis of regression analysis that only constraints related to finance, crime, and political instability⁹ are important for firm performance. Other constraints such as taxes and regulations are found to be unimportant yet the data reported above show that tax rates and tax administration are reported as important by firms across the entire sample of countries. However, as argued in CSS, that makes it very probable that they are indeed important, in the sense that policies to reduce tax rates while holding other aspects of public good provision constant (for instance by improving administrative efficiency) would improve firm performance. However, constraints that score highly in both rich and poor countries are likely to show up with low values of regression coefficients (as confirmed in the regression analysis in CSS), however important they are in fact, because regression analysis

⁸ There is some evidence that they may indeed be large at some stages of development (see Roeller and Waverman, 2001).

⁹ The authors appear to misreport the question asked in the surveys, which refers to ‘economic policy uncertainty’ or ‘regulatory policy uncertainty’ but not to ‘political instability’.

picks up *differences* in scores reported by high and low-performance firms. This does not mean, as one might initially suppose, that tax constraints are unimportant, on the grounds that ‘if rich countries can maintain tax rates that means they can hardly matter much for economic performance’. Such an inference would be warranted only if tax rates were exogenous. But if, as seems overwhelmingly likely, countries that perform well demand higher levels of public good provision and have to maintain high tax rates to finance these, then tax rates will not show up in the regressions however important they really are. This suggests we should be cautious about drawing policy implications from studies of this kind.

A third study is instructive for different reasons: Commander and Svejnar (2007) conduct an exhaustive regression analysis of the BEEPS business environment data-set for transition economies. Their analysis confirms that variations in firm-level performance *within* countries are positively influenced by foreign ownership and competition. Variations in the business environment at the level of the firm within a country (where this is measured by the indicator averaged across other firms in the same sector, size class, year and country) do not seem to be important. This confirms the idea that the business environment is a country-level characteristic (although there may be important regional variations especially in large countries for which they are not able to test). Their analysis also confirms that with only 26 countries, regression analysis is unable to distinguish which elements of the business environment matter most – or indeed to distinguish between business environment and other country characteristics.

Finally, we draw attention to how pitfalls can be avoided and policy-relevant use made of regression analysis on business environment data (see CSS for more details). The standard regression approach we have been discussing has a performance indicator as the dependent variable and business environment (and other) variables as explanatory variables on the right hand side. Our earlier discussion about interpreting many dimensions of the business environment as public goods indicates that regressing *firm-level* performance on the firm’s *own* evaluation of the business environment will not provide a good measure of how the business environment affects the firm: the reason is that the firm’s assessment of the cost of a business environment constraint will reflect its own performance. As illustrated in Fig. 1, good firms will be more constrained by a shortage of public goods and will complain more. It would be a mistake to interpret a positive sign on the complaints score for, say, customs regulation as indicating that a policy to worsen customs regulation and thereby raise complaints would boost firm performance. This example suggests what not to do – but it also hints at another exercise that the policymaker might find useful. When considering whether to implement a policy to improve some aspect of the business environment, the policy-maker may be interested to know the characteristics of firms most likely to benefit from the measure. Information on this comes from a regression of the business environment scores at firm level (as the dependent variable) on firm characteristics.

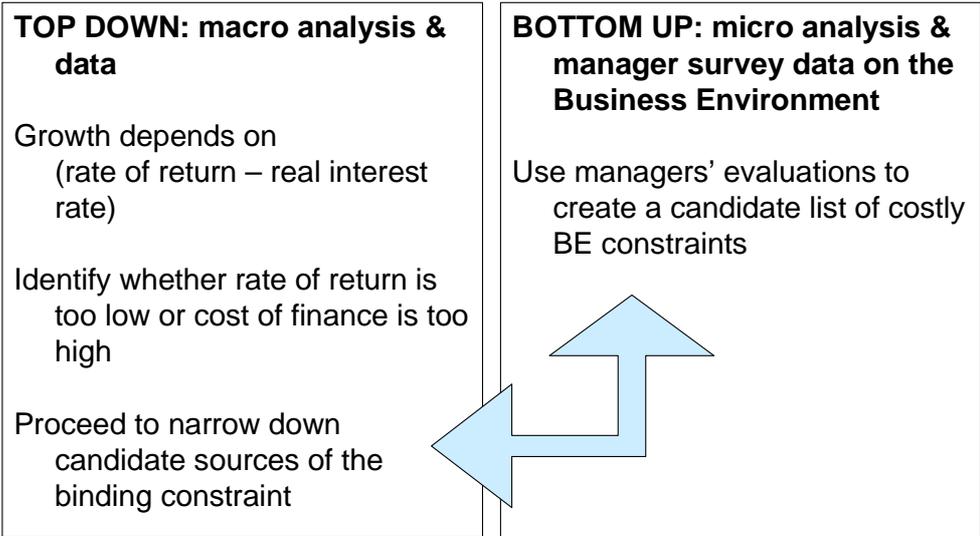
CSS report that controlling for other firm characteristics, firms with higher efficiency are more constrained by customs regulations and the legal system and less efficient ones by access to finance. More highly educated managers appear more sensitive to a broad range of constraints. As compared with domestically owned private firms, those with a foreign owner

appear more sensitive to some constraints including aspects of physical infrastructure and a series of administrative and regulatory institutions. As we would expect, they complain less about access to or the cost of finance. State owned firms rate many constraints as less of an impediment than other firm types, which suggests that improvements in the business environment may benefit private firms more.

3.2.2.3. Country level diagnosis

The analysis of the data from manager surveys suggests that variations in the business environment across countries matter for firm performance. However, countries differ in many other ways. This highlights two problems we have noted in the discussion of cross-country regression analysis: given the limited number of countries and large number of potential country differences, it is next to impossible for a cross-country regression analysis to single out the most important ones. Moreover, cross-country analysis can only provide information about the relationship between performance and business environment variables for the average country. The limited ability of cross-country regression analysis to provide direct policy guidance is reflected in the summary of studies in the appendix. Dixit (2006) discusses this problem further. This points to the use of a different strategy when we seek to narrow down the aspect(s) of the business environment on which a policy-maker in a particular country should concentrate. One approach is to combine top-down ‘Growth diagnostics’ Hausmann, Rodrik and Velasco (HRV 2005) with the bottom-up survey data from managers. Figure 4 shows in a schematic way how these two perspectives may be combined.

Figure 4. Diagnosing the binding constraint in country x: combining growth diagnostics with manager survey data

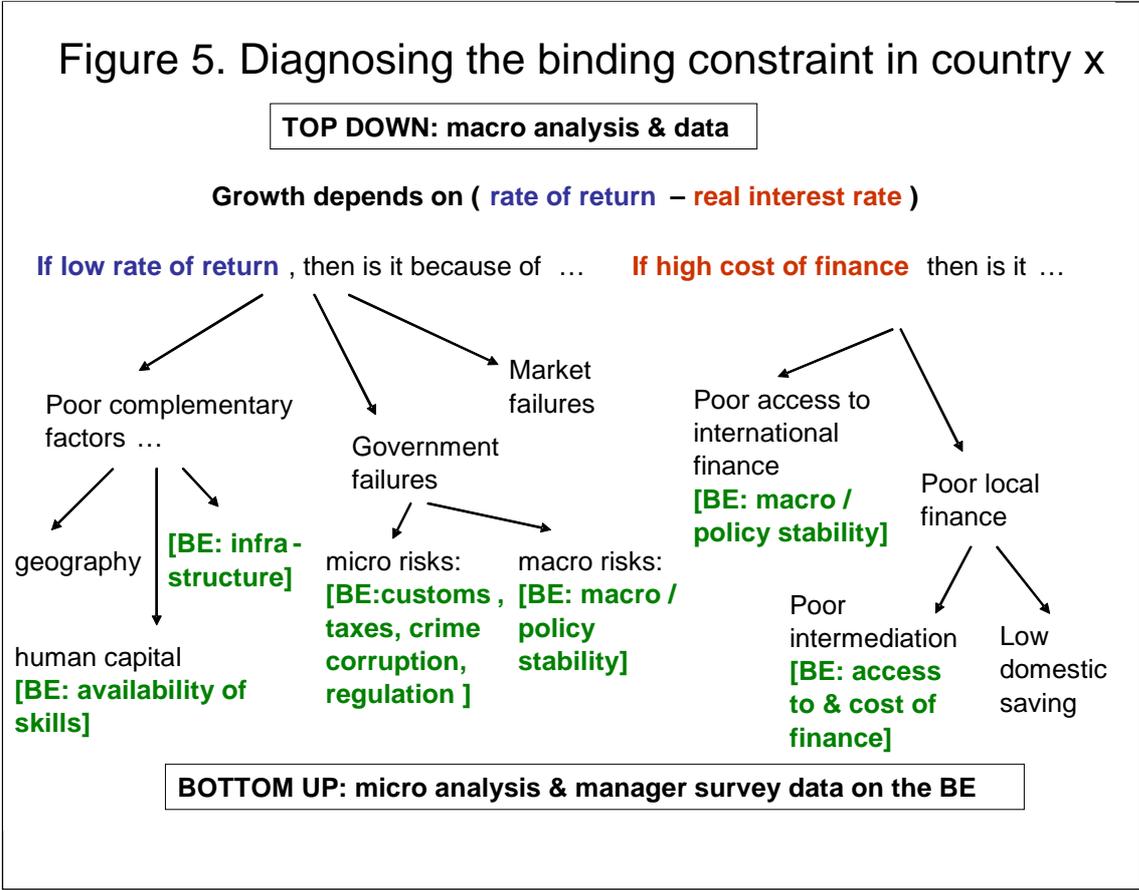


We begin (following HRV) in the left hand panel of Fig. 4 with a macroeconomic (endogenous) growth framework in which output per capita grows at a rate that depends on three key variables: preferences about current relative to future consumption, the rate of return to economic activity and the real rate of interest that is relevant to domestic investment decisions. We shall ignore the first and concentrate on the rate of return and the rate of interest. The rate of return on investment depends on a technology indicator, the availability of complementary factors of production, which include skills and infrastructure, and on the presence of externalities, which reflects both positive spillovers between firms and negative coordination failures. This rate of return is reduced by taxes, poor tax administration and by risks of expropriation. The rate of interest that is relevant to domestic investment decisions will be raised by high country risk and by poorly functioning domestic financial markets and institutions.

HRV suggest beginning the diagnostic exercise by reviewing the macroeconomic indicators of the economy as a way of making an initial decision as to whether the growth weakness reflects too low a rate of return or too high a cost of capital. The initial top-down diagnosis of the binding constraint on a country's growth evaluates whether the problem is the availability of plenty of high return investment projects but lack of access to finance, including international finance, or whether the problem is the reverse, i.e. adequate availability of finance but limited demand because of a predominance of low return projects. HRV provide guidance about how to determine this: for example, if the problem is a shortage of finance (i.e. high real interest rates relative to the rate of return) then the country will tend to be characterized by external deficits as access to international finance is restricted (due for example to poor fiscal control) and / or low domestic savings. Such an economy should display high returns to investment (in physical but also in human capital manifested, for instance in high premia for skilled labour). In the opposite case, where it is not the availability of finance that is the problem but the lack of high return investment projects, the economy would be characterized by low rates of return and skill premia and there would be few signs of it having exhausted its access to international capital markets.

This initial diagnosis is of crucial importance since directing resources and attention to improving infrastructure or reducing regulation in an economy in which returns to investment are already high is likely to produce few gains for growth: much more important is to try to understand why access to international finance is poor, domestic savings are too low or the inefficiency of domestic financial institutions imposes such a large wedge between borrowing and lending rates as to prevent advantage from being taken of the existing profitable opportunities in the economy. Conversely in a country where access to finance at the macroeconomic level appears adequate, closer attention needs to be directed toward trying to understand why weak private returns from investment are the fundamental problem. The explanation here could be the poor quality of complementary inputs such as skilled labour or infrastructure (e.g. poor transport or communications skills and infrastructure may prevent isolated entrepreneurs from effectively demanding capital that is potentially available); or that entrepreneurs are unable to secure an adequate expected private return from investment because of high taxes, predatory or inefficient performance of the state (taxes, regulation,

corruption, crime) or that macroeconomic instability is prevalent. Figure 5 illustrates how we can move down a diagnostic tree diagram to review possible constraints.



As the tree diagram suggests, when assessing the relevance of the lower branches the ranking of business environment constraints by managers in the economy in question provides a crucial input. To see how the top-down and bottom up approaches can be combined, we look at two Latin American countries considered by HRV, Brazil and El Salvador. Their diagnosis is that for Brazil, the right hand side of the tree is indicated: the binding constraint for Brazil is excessive macroeconomic risk and inadequate domestic savings. Brazil has had persistent problems with its external deficit: when external conditions have improved due to higher world commodity prices or a more favourable view of emerging markets by international capital markets, then Brazil’s growth has revived. This points toward a constraint imposed by the availability of savings.

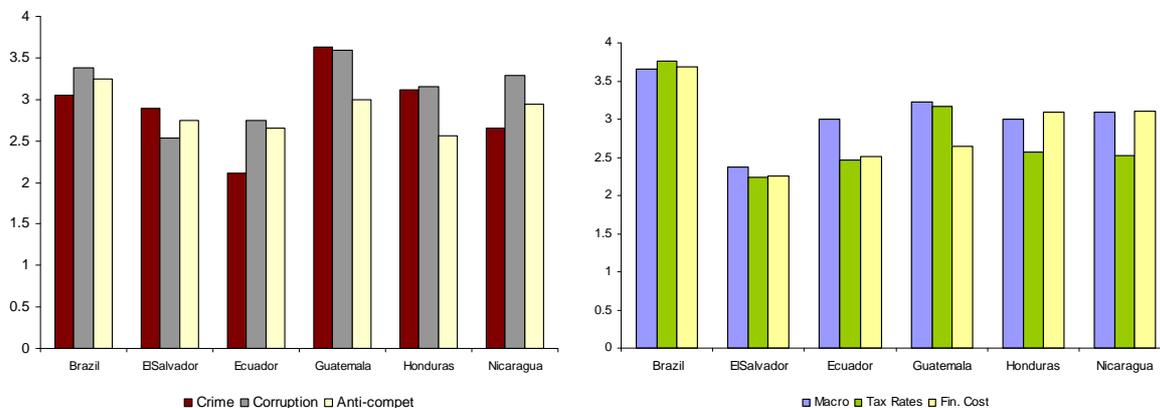
By contrast, HRV argue that El Salvador belongs to the left hand side of the tree diagram: its problem is not the availability of finance but the weakness of its investment projects. Unlike Brazil, they point out that El Salvador appears to have plenty of savings: when remittances went up dramatically, they were not converted into higher investment. Banks “have more

liquidity than domestic credit demand can soak up” (p. 13) and they lend to firms elsewhere in the region. From the perspective of the standard bundle of ‘good micro and macro policies’, El Salvador looks puzzling. How can weak growth performance be reconciled with good institutions and infrastructure as captured by standard country indicators and the absence of macro imbalances? They conclude that El Salvador’s problem must be lack of appropriate innovation. This would be captured in Fig. 5 under the heading of ‘market failure’ with the implication that poor information, abuse of market power or externalities between firms (or potential firms) prevent entrepreneurs from discovering and taking advantage of the economy’s comparative advantage.

What light is cast on the top-down diagnosis by the business environment rankings? According to the ranking of complaints by managers of manufacturing firms in the PICS-BEEPS data set, the biggest problems in Brazil are policy uncertainty and macroeconomic policy, tax rates and the cost of finance. All of these are consistent with high macroeconomic risk and the high cost of finance alluded to by HRV. It is clear from the right hand panel of Figure 6, which shows the absolute rankings, that macroeconomic conditions as well as tax rates and the cost of finance are viewed as less problematic in El Salvador than in the other Latin American and Caribbean countries (including Brazil), confirming that El Salvador’s problems unlike Brazil’s do not seem to stem from the right hand side of the tree. Managers in El Salvador complain most about crime, anti-competitive practices and corruption. But consistent with the HRV diagnosis using expert country ratings of the business environment, we can see from the left hand panel of Figure 6 that in terms of the *absolute* complaint scores, El Salvador does not look particularly poor across these dimensions in the Latin American context. For example, complaints about corruption are lower than elsewhere in the region.

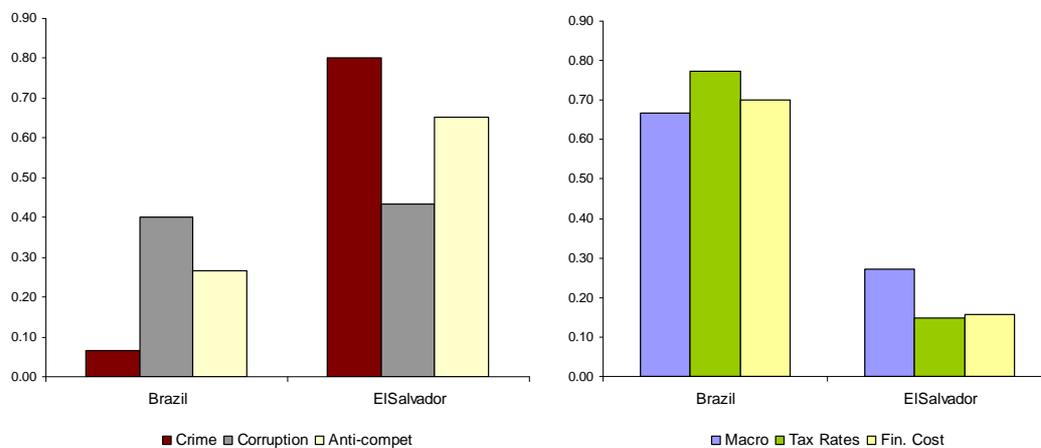
Figure 7 highlights the difference in the *relative* importance of the two sets of constraints: ‘institutions’ and ‘macro/ financing’ across the two countries. This suggests that there may be additional information in the subjective rankings by managers, who in El Salvador identify crime, corruption and anti-competitive practices and in Brazil identify the macro/financing problems as the biggest barriers to the operation and growth of their business. Such information is not available in the cross-country bench-marking indices used by HRV to determine the quality of institutions in El Salvador, since these have difficulty in identifying priorities for countries that have low average constraints. The manager survey information suggests that in addition to investigating possible problems with innovation / appropriate specialization in El Salvador and the implied need for some kind of industrial policy intervention, there is a *prima facie* case for policy makers to look more closely at how anti-competitive practices, crime and corruption may be depressing the private returns to investment.

Figure 6. Average country scores by constraint (absolute measure)



Source: Carlin, Schaffer, Seabright (2007).

Figure 7. Country scores by constraint relative to the average country score across constraints (relative measure)



Source: Carlin, Schaffer, Seabright (2007).

3.3 The case-history: individual regional or country studies.

The case-history literature on the effects of the business climate is vast and we cannot even begin to survey it here. This is both because of its sheer size and because, without the pressure for methodological homogeneity imposed by a cross-country framework, many studies effectively study the business climate even when they do not call it that. We include in the category of case-histories regional studies such as the famous East Asia study undertaken by the World Bank (1993). We doubt whether a simple set of rules of thumb could ever realistically be devised to enable policymakers to integrate the insights of case studies of their own countries with the comparative literature discussed in Sections 3.1 and 3.2. However, we can make a few remarks about some of the strengths and weaknesses of case studies and illustrate them with examples.

The methodology of cross-country regressions rests on the assumption that there is a common 'technology' that transforms inputs, including business environment inputs, into output. This has tended to go along with the idea that countries performing poorly relative to the average should be prescribed a set of reforms to improve their business environment. As we have seen however, the regression methodology is not well-suited to identifying the aspects of the business environment that matter most for the average country and cannot speak to the question of the likely effect of a given reform in a specific country. Use of manager survey data within a diagnostic framework as illustrated in the previous section can help fill this gap. So too can the case-history literature. However just as we have seen that there are pitfalls in interpreting cross-country regression studies and firm-level assessments by managers about constraints, there are dangers in drawing implications for policy from case studies.

The first point to note is that case histories can be very good at suggesting causal hypotheses but very bad at testing them, since usually there is little basis for evaluating the hypotheses other than a general inclination or disinclination to take the author's word for it. Different authors may look at apparently similar facts and reach incompatible conclusions, giving the reader sometimes no means of choosing among them other than a preference for one author's prose style, political convictions or general scientific distinction. The Asian tigers, for instance, have generated a range of country studies with wildly different implications both for the tigers themselves and for any other country that might be tempted to imitate them (compare Amsden (1989), Wade (1990), World Bank (1993), Young (2005), Fishlow et.al. (1996), Jomo and Khan (2000), Page (1994), Stiglitz & Yusuf (2001), Chang (2002) and Noland & Pack (2003)).¹⁰ This reinforces the importance of using country studies together with other evidence – each time a country study suggests an apparently plausible hypothesis we should ask what other evidence might help to decide whether it is in fact correct.

¹⁰ It is not quite accurate to bracket Young with the others since Young is not strictly a case-history but rather the application of a standard methodology – growth accounting – to a sub-group of countries, in a way that affects the view we may wish to take about what there is to explain in the East Asian experience. See Hsieh (1999) and Young (1998) for detailed discussion of this evidence.

A second point to note is that case-histories are often the only source of evidence about the relative feasibility and costs of improving various aspects of the business climate, an aspect of the problem on which, as we noted on page 3, much less work has been done than on the relative benefits. Case-histories can reveal that policymakers tried something and then abandoned it, or tried several different initiatives and concluded that one was much harder to implement than the other, or found policies easier to implement in some circumstances than in others. For instance, Schrank & Kurz (2005) argue on the basis of studies of Latin America and the Caribbean that trade openness changes the trade-offs in domestic industrial policy: ‘open economy industrial policies are costly to retain and easy to abandon, and therefore tend to be temporary’. Case studies can also cast light on such issues as whether elements of a given culture undermine or reinforce components of the business climate – for instance is corruption deeply ingrained and widely accepted in a given culture (as argued, for instance, by Ledeneva, 2006, for Russia), or is it a more accidental and temporary result of the under-rewarding of bureaucrats (see Rose-Ackerman, 1999, especially parts I and II, for an illuminating general discussion of the difference between these perspectives)?

A third point is that case-histories can sometimes suggest interactions between effects that cross-country studies can miss, or that might apply only in rather limited circumstances. Some studies of interventionist industrial policy appear to have suggested that policy that has had credibility in the East Asian context (for instance, making state subsidies conditional on performance – see Wade, 1990) has lacked it in Europe, where far from picking winners governments have often found themselves in a continual effort to prop up losers. It is one thing to argue (as we ourselves have argued) that in a modern industrial economy much productivity growth comes from the entry of new firms and the exit of old ones, a process which policy may wish to manage but should not seek to curtail (Carlin et al 2001; Seabright 2005). It is quite another to identify the political and other circumstances under which public policy is able to commit credibly to allowing the sorting process in modern industrial capitalism to work,¹¹ still less to document the subtle interactions that may mean that in a society where firms are allowed to fail fewer of them may actually do so. Nevertheless, case-histories are far more likely than cross-country studies to make a plausible case of this sophisticated kind.

A good example of these potential interactions has been suggested recently by Paul Collier (2007), who has proposed that an important difference between highly-corrupt but relatively-successful poor countries such as Bangladesh and equally-corrupt but slower-growing countries such as many natural resource exporters may lie in the nature of comparative advantage and the differential vulnerability of different activities to the damage that corruption can cause. It seems likely that Bangladesh’s reliance on low-cost manufactured textile exports created less of a tempting target for rent-seekers than the great mineral resources of, say, Venezuela (like those of Russia and Saudi Arabia as well). There is presumably even less incentive to avoid killing the goose that lays the golden eggs if the eggs,

¹¹ Noland & Pack (2003) claim that Korea’s focus on export performance was a beneficial consequence of the widespread cynicism about official corruption: export figures “were the only statistics that couldn’t be faked”.

rather than having to be carefully and painfully laid, have already been laid and have only to be lifted out of the ground. Other writers such as Mushtaq Khan (1998) have highlighted the way in which apparently similar degrees of corruption have had very different consequences for economic development in different countries across South and East Asia due to the different nature of patron-client networks in these countries.

Surely an important source of future insights along these lines will be the comparison between growth in China and Russia during the last two decades of the twentieth century, and particularly the role of property rights and inter-regional competition in that process. Both vast countries saw considerable regional competition, but with very different consequences. Neither country saw the development of what could be called clear systems of property rights along the Western European or North American model, but while it has often been argued that this was a serious handicap to Russian economic performance it has yet to be convincingly explained why a similar absence should apparently have been no handicap at all to China. Once again, it is in the nature of the question that cross-country regression studies can hardly expect to provide an answer.

These examples suggest that of particular value are *comparative* case studies. There is a sound economic reason as to why this is the case. Much of the methodology of growth analysis emerged from an essentially closed economy framework. Yet economic success hinges on a country's integration in the world economy. The comparative case studies highlight how a country's comparative advantage can interact with the business environment: aspects of the business environment that are crucial for a country specializing in standard manufactures are likely to differ from those specializing in traded services or in exports of minerals. As development proceeds, specialization evolves and with it the demands on the business environment. Looking across the advanced countries of the world, we see a considerable variety of business environments: countries differ a lot in legal formalism (i.e. the 'cost of doing business'), the extent of employment protection and tax and welfare regimes. In successful countries, those arrangements complement their comparative advantage. The principal message of this section is therefore that case studies can be of immense value provided they are treated as a complement to rather than a substitute for the other sources of evidence we have discussed.

3.4 Some simple messages

It may be helpful for the reader to see what all this can lead to in a concrete setting. Here, in no particular order, are some conclusions that, in our view, emerge from a reading of the business climate literature that follows the kind of procedure we have outlined:

- 1) The supply of telecoms infrastructure is not worth significant investment from the government budget - much better to let private entry take care of it.

- 2) Poor electricity supply can be a big problem but only in Africa and some parts of Asia.
- 3) Tax rates and inefficient tax administration are a big problem, almost everywhere. This doesn't mean that the public sector should be small, rather that it should be financed at lowest cost, including the cost implicit in slow and cumbersome procedures.
- 4) Labour regulation is not really a problem, except in some relatively rich countries. In poor and middle-income countries it is not worth incurring significant political costs to reform this.
- 5) Crime and corruption are a serious problem in some parts of the world, though not in all - it may not be easy to fix, but needs further investigation to see whether affordable solutions exist to some of the problems.
- 6) Slow, inefficient or corrupt customs procedures impose a big cost on firms and should be capable of being fixed at low cost.
- 7) Development of financial systems is important, though ambitious: it does not necessarily make it easier for all firms to have access to finance, but makes financial intermediaries discriminate more effectively between good and bad investment projects.

We now try to draw the threads of our overall together and ask how perplexed policymakers should proceed.

4. Conclusions: what should policymakers make of all this?

There are two main questions that policymakers might reasonably ask in the face of the large literature on the business climate that we have reviewed. The first is about the solidity of the scientific findings, the second is about how they can be used to decide policy priorities.

- First, what should policymakers conclude when there is disagreement in the literature or uncertainty about its findings?

One thing that becomes apparent from the review we have conducted above is that although there are many different findings in the literature, there are very few *incompatible* findings because many of the studies are asking different questions from each other. This is not just true in the sense that the three categories of contribution (cross-country regressions, surveys of managers and country studies) are doing different things, but even within categories it is rare for studies to come up with genuinely incompatible findings. For instance, regression studies often test the hypothesis that a particular set of institutions is important against the null hypothesis that no institutions are important, rather than against a rival hypothesis asserting the importance of different institutions. By contrast, surveys of managers are more informative about these hypotheses concerning relative importance. So the findings of

the regressions should be understood as preliminary and complementary rather than as definitive and contradictory. They establish that institutions matter, that we are not yet sure how they matter, and that we need to refine our conjectures about the causal channels involved. On its own this might seem inadequate consolation (like saying “medical studies have established that diet is important for health, but we have no idea which is the best diet”). However, this is where the complementarity with other sources of information becomes important – managerial surveys and case studies can be used in the ways we have outlined above. And as further research subjects more sophisticated data to the discipline of regression analysis, the hypotheses suggested by these other sources will be able to be tested in their turn.¹²

- How can policymakers use these findings to help prioritize i) their budgetary allocations; ii) their political and legislative attention?

Policymakers do not decide policy priorities in a vacuum: they face repeated lobbying for their budgetary resources and for their scarce legislative and regulatory attention. The lobbyists in question have their own agenda and politicians should be wary of thinking that the strength of lobbying about some aspect of the business climate necessarily reflects the weight that this should have in public policy. How then can policymakers respond to lobbying about a particular aspect of the business climate? Here we propose a checklist of questions that policymakers can ask themselves. Suppose that a lobby (the chamber of commerce, say) requests that the government spend money, or pass a law, to bring about an improvement in some aspect of the business climate – the tax administration, customs regulation, the functioning of the courts, the state of the electricity infrastructure, the time it takes the banking system to clear a cheque, delays at customs. Then policymakers can ask the following questions in order to establish the value of responding to such a request:

- a) Where does that aspect of the business climate fit in the diagnostic tree diagram and is its importance corroborated by the ‘top down’ analysis?
- b) How highly does that aspect of the business climate rank as a complaint in the policymaker’s country in the surveys of managers? If it doesn’t rank very highly, then it will take more argument and more evidence to establish that this should be a priority for public policy.
- c) Does cross-country regression analysis suggest modifying the answer to b) because there are grounds for thinking that this aspect of the business climate is generally more important for economic performance than it appears to be in the surveys of managers? Network effects or the impact on new entry (which creates

¹² An example of taking the insights of case studies to a regression framework is the approach used in Carlin and Mayer (2003) where the idea that specialization in industries with different characteristics interacts with characteristics of a country’s financial structure is tested using cross-country industry level data (see Appendix A1).

benefits for the economy but costs to existing firms) might explain such discrepancies.

- d) Do case studies suggest that this aspect of the business climate is more or less important for this country's performance than in other countries?
- e) Are there alternative policies that would achieve similarly valuable results but at lower cost, or with a greater probability of success for the same cost?
- f) Are the interest groups lobbying for this change representing firms that, on average, are performing relatively well or relatively poorly? What are the other distinguishing characteristics of the firms concerned, and is it likely that a policy reform that aids these types of firm will benefit the economy as a whole?

Note that these questions parallel quite closely the questions a doctor would ask about the condition of a patient: what does the patient himself say about his condition, what do scientific studies suggest about the factors that influence the health of typical patients like this one, does the patient's personal history lead one to suspect particular susceptibilities that make him different from others, are there alternative treatments that would achieve the same outcome but with fewer side-effects or with more certainty of success, and is the patient asking for treatment out of other concerns than his health (a desire to qualify for sick pay, a recurrent depression, or whatever...)?

Just as the answer will not be the same for each patient, so the answer will not be the same for each country. We discussed at some length in Section 3 the way in which the importance of constraints varied across countries. Some examples include the way in which physical infrastructure (with the exception of electricity) was rarely a constraint, except in some countries in Africa; the way in which crime and corruption varied in importance around the world; and the way in which labor regulation was a problem only for rich countries and was of negligible importance in poor ones. But we can make sense of the differences as well as the points in common between countries.

Appendix A1. Summary of results of selected empirical studies based on cross-country regressions.

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Acemoglu, Johnson (2005)	Multiple IV Aim: to evaluate importance of property rights institutions versus contracting institutions	Former European colonies (<=77 countries). 1990s for GDP_pc. Property rights measures from Political Risk Services; Polity IV Contracting institutions measures from Djankov et al. (2003). WDI, PWT	GDP_pc, Investment rate, Level of financial development measured as: - (total amount of credit to the private sector)/GDP in 1998, - stock market capitalization.	1. Property rights institutions (protection against expropriation by the state, constraint on the executive). Legal formalism (steps to resolve bounced cheque); 2. No controls – only institutions on the 2 nd stage regression.	IV for institutions: mortality rate of European settlers) or (indigenous population density in 1500); Legal origins	1. Can separate IVs: settler mortality is good instrument for property rights institutions; legal origin for contracting institutions. In 2 nd stage, property rights institutions have effect on LR economic growth, investment, and financial development. Contracting institutions appear to matter only for the form of financial intermediation (size of stock market).	1 SD (property rights) → 1.4 SD GDP_pc; whereas coefficient on legal formalism not significant. (IV). 1 SD (legal formalism) → 0.2 SD lower stock market capitalization. (IV)

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Acemoglu, Johnson, Robinson (2001)	Single cross-section. Focus on endogeneity. Aim: to test whether "institutions matter"	Years: 1985-1995. 75 countries – world. WDI, ICRG	Final year GDP_pc	1. Institutions: index of protection against expropriation; constraints on the executive in 1990. 2. Latitude; Regional dummies; British/French colony; Legal origin; Health variables; Historical variables (settler mortality, Democracy in 1900) ELF.	IV for institutions: settler mortality.	1. This pioneering paper proposes settler mortality as an instrument for today's institutions in the former European colonies 2. "It is useful to point out that our findings do not imply that institutions today are pre-determined by colonial policies and cannot be changed."	1 SD (protection against expropriation risk) → change in GDP per worker by 118% (OLS) and 309% (IV).
Aghion, Howitt, Mayer-Foulkes (2005).	Cross-country OLS; IV Aim: to analyze the role of financial intermediation for growth	1960-95, use averaged 71 countries	GDP growth relative to that of US	1. Financial intermediation measured as (intermediaries lending) / GDP; Alternative measures: Liquid liabilities / GDP; Bank assets; Ratio of commercial bank assets to the sum of commercial plus central bank assets.	Develop a theoretical model and estimate growth regression with financial intermediation. IV for financial intermediation: Legal origins;	1. significant and sizeable effect of an interaction term (initial GDP_pc relative to the US)*(financial intermediation) in otherwise standard growth regression, implies that like-	Country converges to frontier only if its financial development exceeds a critical value: this is the case for 37 or 71 countries in sample.

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
				2. Initial GDP relative to US; schooling; + other controls.	Legal origins interacted with initial GDP relative to US.	likelihood of converging to U.S. increases with financial development. Direct effect of financial intermediation on growth is not significant.	
Bardhan (2005)	Cross-section IV estimation.. Focus on endogeneity of institutions. Aim: alternative instruments (other than settler mortality), which allows larger sample size.	Years : 2000 3 samples according to availability of data (n=98, 69,57)	2000 GDP_pc + other indices of human development: literacy, life expectancy, HD	1. Measures of institutions: Protection of property rights as in Acemoglu, Johnson, Robinson (2001) and 'voice' measure relating to democratic political rights. 2. ELF; Population density in 1500; European settler mortality.	Alternative IV for institutions, in particular state antiquity index.	1. State antiquity predicts (in 1 st stage) security of property rights including in countries that were not European colonies. In 2 nd stage, for some aspects of development (e.g. literacy) an index of participatory rights and democratic accountability is a better explanatory variable than property rights institutions.	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Barro (1990)	OLS Standard growth regression	98 countries 1960 to 1985 PWT	GDP_pc average annual growth rate	1. Measures of infrastructure: Government spending/GDP ratio; Public investment/total investment ratio 2. Initial GDP_pc; Education; Regional dummies; Number of revolutions; Number of assassinations.	OLS only	1. An increase in resources devoted to nonproductive (but possibly utility-enhancing) government services is associated with lower per capita growth. There is no separate effect on growth from the breakdown of total investment between private and public components.	
Bockstette, Chanda, Putterman (2002).	OLS and IV cross-section Aim: to investigate the impact on long-run growth of an early territory-wide policy.	ICRG	GDP growth averaged 1960-95 Output per worker (1988)	1. Index of social infrastructure; ICRG 2. Initial GDP_pc; Schooling; Population growth; Investment rate; Population density; Ethnic (heterogeneity); Regional dummies	IV for institutions: Distance from equator; English speakers; European-language speakers; Predicted trade share; State antiquity.	1, 2. early territory-wide polity and experience with large-scale administration may make both for more effective government and for more rapid economic growth. Emphasis on capacity	1 SD (=0.25) index of social infrastructure → rise in output per worker by 126% (OLS) and 229% (GMM-IV).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
						building and institutional quality is important to foster economic growth	
Calderón, Servén (2004)	Panel data GMM estimators based on both internal and external instruments (Arellano-Bond)	121 countries 1960-2000 Data averaged over five year periods	Growth GDP_pc	1. Aggregate index: - Telecommunication sector (number of main telephone lines per 1000 workers), Power sector - electricity generating capacity of the economy —in MW per 1000 workers, Transportation sector - the length of the road network —in km. per sq. km. of land area 2. standard growth and inequality determinants	IV: External - terms of trade; Internal - lags of covariates (Estimated equation is in first differences.)	1. Growth is positively affected by the stock of infrastructure assets. Income inequality declines with higher infrastructure quantity and quality. 2. Infrastructure development can be highly effective to combat poverty.	
Carlin, Mayer (2003)	Cross-section OLS and IV	Industry-level (manufacturing) data for 27 industries in 18	Abnormal growth (also Investment and R&D (%GDP))	1. Financial_development; Accounting standards; Concentration of banking sector; Ownership	IV for country variables: legal origin; rule of law; population	1. Accounting disclosure is associated with faster growth of industries that are equity and	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
		OECD countries + country-level data 1970-1995	relative to country & industry average	concentration 2. Interaction between equity-dependence of industry (also skill-dependence and bank-finance dependence) & measure of financial development of country (e.g. accounting standards), structure of banking sector, ownership concentration.	US is used as bench-mark for equity-dependence; Japan, for bank-finance dependence and Germany for skill-dependence of industries.	skill dependent. Skill dependent industries benefit from concentrated ownership. Equity dependent industries grow more slowly where the banking system is concentrated. Bank-dependent industries appear to benefit from accounting disclosure & more concentrated banking but only in poorer countries.	
Clague, Keefer, Knack, Olson (1999)	IV cross-section Aim: to introduce a new proxy for contract enforcement	ICRG, PWT, IFS, BERI,	GDP_pc annual growth (1970-1992); Output per worker (1988); Capital per worker (1988);	1. Contract-intensive money (CIM) (the ratio of non-currency money to total money supply); ICRG index; BERI index.	IV for institutions Colonial origin; Ethnolinguistic homogeneity. Use new measure	1. CIM is positively related to investment and growth rates, and to the relative size of contract-dependent sectors of the economy.	1 SD (=0.14) (CIM) → increase in growth by 0.945 (OLS) and 1.739 (IV).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
	institutions – 'contract-intensive money' and test in a growth regression.		Years of schooling per worker (1985); TFP (1988).		of the security of contract enforcement and property rights - (CIM)		
Djankov, McLiesh, Ramalho (2006)	Develop an aggregate index of business regulations and use it in Barro type growth regression cross-section OLS + 2SLS (IV)	Doing Business database 135 countries + country indicators: economic (1993-2002) WDI, ICRG, TI.	GDP_pc growth 1983-92.	1. Business regulation index; Corruption; Law and order, Democratic accountability. 2. GDP_pc initial; Education; Civil conflicts; Regional dummies; Government Consumption (as % of GDP)	IV for business regulation: Legal origin of a country; Commercial code or company law; Absolute latitude; Initial GDP_pc; Religion; Language	1. Business regulation remains a significant determinant of growth after controlling for other standard determinants. 2. Policy implications could be drawn since index is comprised of reform-related components (but not done in paper).	Shift from 1 st to 4 th quartile of business regulation index raises growth by 2.3 % points. Results are weaker in IV regressions.
Easterly, Rebelo (1993)	Standard Barro-type growth regression . Pooled regressions with decade averages.	100 countries 1970-88 PWT, World Bank	GDP_pc growth	1. Transport and communication infrastructure 2. Initial GDP_pc; Education, Number of revolutions, assassinations.		1. Investment in transport and communication is correlated with growth.	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Esfahani, Salehi, Ramírez (2003)	Aim: to estimate a structural growth model (3-equation system), which includes infrastructure, based on both steady state conditions and deviations from steady state. Estimated for 10-years periods by IV cross-country regression (1 observation – 1 10-years interval)	75 countries 1965–1975, 1975–1985, 1985–1995	GDP_pc growth	1. Infrastructure; Telephone lines; Power generation capacity. Institutions; Contract enforcement; Centralization. 2. A long list: Private ownership of infrastructure; Population ; Urbanization; Investment; Democracy; ELH; Gini coefficient; Regional dummies; Education; Health vars; Interactions between: Democracy, ELH, Gini coefficient.	The estimation results are not robust to changing the specification. Analyses only 2 infrastructure sectors (lack of data).	1. Private ownership of infrastructure speeds up adjustment but does not affect long-run levels. Stronger institutions and private ownership matter more for infrastructure adjustment in richer countries; centralization and population density matter more in poorer countries.	1 Examples: 5% p.a.rise in growth rate of telephones pc → rise in GDP_pc annual growth by 0.4% ; 4% p.a.rise in growth rate of electricity output pc → rise in GDP_pc annual growth by 0.5%. Complexity of model makes interpretation of results difficult.
Giavazzi, Tabellini (2004)	Panel difference-in-difference estimation	140 advanced and developing countries years: 1960-	Performance indicators: (i) Growth in GDP_pc, Investment;	1. Openness to international trade - Sachs and Werner index of economic liberalizations; Democracy.	Identify reforms and consider them as “treatment” for the countries.	1, 2. The sequence of the reforms is important for economic performance	When the second reform is democracy, growth is not affected but investment accelerates by 2-

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
		2000. Indicator of economic liberalizations from Wacziarg and Welch (2003), updated by Sachs and Werner (1995). POLITY IV; ICRG	(ii) Macro: Inflation, Central gov. surplus; (iii) Governance indicators perceptions of structural policies and institutional environments (Knack, Keefer, 1995), Corruption.	2. Dummies for liberalization and/or democratization; Dummies for pre- and post-reform years		Economic liberalization should come first and receive the strongest priority; only afterwards should the country worry about political reform.	3% of GDP. When instead the second reform is economic liberalization, growth either falls or remains unaffected and investment rises but by less (about 1.5% of GDP).
Glaeser, LaPorta, Shleifer (2004)	Critical review of existing literature on the role of political institutions for economic development	ICRG Polity IV Kaufmann, Kraay, Mastruzzi (2003) data.	GDP_pc (2000); GDP_pc growth (1960-2000), overall and by decade; 5-year change in years of	1. Executive constraints, i.e. political institutions 2. Initial GDP_pc; Schooling (as human capital); Share of population living in temperate zone	IV for institutions: Settler mortality; Legal origin; Indigenous population density in 1500	1.a) Question the validity of settler mortality as an instrument for institutions arguing that human capital performs better. b) Growth and human capital cause improvement of	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
			schooling; 5-year changes in political institutions.			political institutions not vice versa. c) Focus on role of dictators in raising human capital.	
Hall, Jones (1999)	Estimated equation is based in production function IV cross-country	ICRG Sachs and Warner [1995] PWT 127 countries	Output per worker (1988)	1. Index of social infrastructure which combines: index of government antidiversion policies and index of country's openness	IV for institutions: Distance from equator; English speakers; European-language speakers; Predicted trade share.	1. The large variation in output per worker across countries is only partially explained by differences in physical & human capital . Differences in social infrastructure → differences in capital accumulation, educational attainment and productivity, → differences in income. Type of social infrastructures is partially related to	1 SD (=0.25) (index of social infrastructure) → rise in output per worker by 128% (OLS) and 261% (IV).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
						the influence of Western Europe.	
Kaufmann, Kraay (2002)	Cross-section OLS Aim: to separate strong positive causal effect from better governance to higher per capita incomes, and a weak or even negative causal effect running in the opposite direction	175 countries years 2000-01 WB approach: indexing (aggregation) methodology to measure institutions WBES, ICRG, Country Risk Service, PWT and other.	GDP → institutions and vice versa to determine the causality	1. Governance measures: Voice and accountability; Political stability; Government effectiveness; Regulatory quality; Rule of law; Control of corruption; Overall governance.	Strategy to infer direction of causality: use non-sample information to determine the variance of measurement errors in GDP and institutions (governance).	1. Reforms matter. Causality is from governance to GDP_pc. Couldn't find evidence for virtuous circles, in which higher incomes lead to further improvements in governance.	1 SD (governance measure) → 4 SD (per capita income in the very long run).
Knack, Keefer (1997)	Cross-country OLS 2SLS	World Values Surveys 29 market economies	Growth 1980-1992 Investment / GDP (1980-1992)	1. Human capital – TRUST in society; CIVIC cooperation; GROUPS - density of associational activity; TRUST*GDP_80	IV for institutions: Ethnolinguistic homogeneity; Law students as % of post-secondary	1. Where interpersonal trust is low and unlikely to improve rapidly, institutional reforms to provide better formal mechanisms	1 SD(=0.14) (trust) → rise in average annual growth in per capita income by 0.011 (OLS) and 0.012 (IV)

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
				2. Education; Initial GDP_pc (1980).	students in 1963	for the reliable enforcement of contracts and access to credit are even more important than where trust is higher.	
Masters, McMillan (2001)	Cross-section of average data OLS and IV Aim: to replicate standard growth regressions by augmenting them by a new climate variable (days of frost)	PWT Panel for 1960-90 90-125 countries depending on specification (data availability) OLS	Output per worker (1988)	1. Index of social infrastructure as in Hall and Jones (1999) 2. Standard growth regression variables plus Frost days and scale measures.	IV for institutions Distance from equator; Predicted trade share; English speakers; European-language speakers.	1. Temperate countries have been on growth paths that converge towards a common high level of income, while tropical countries' growth paths converge towards income levels that depend on scale measures Institutions matter more for tropical countries' growth.	1 SD (=0.257) (index of social infrastructure) → rise in output per worker by 680% (IV) for "tropical" subsample of countries (average of fewer than five days per month of frost in winter)

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Mauro (1995)	IV and OLS cross-section for averaged data Aim: study the role of corruption for growth	Business International 68 countries 1980-1983, PWT Barro (1991)	Average growth of GDP_pc (1960-1985); Average investment/GDP (1960-1985); Average investment/GDP (1980-1985).	1. Index of institutional efficiency; Index of bureaucratic efficiency.	IV for institutions: ELF (1960)	1. Corruption lowers investment, thereby lowering economic growth.	1 SD (=2.16) (index of bureaucratic efficiency) → rise in average growth of GDP_pc by 0.006 (OLS) and 0.023 (IV)
Rajan, Zingales (1998)	Panel and cross-section	Industry-level (manufacturing) data for 41 countries + country-level data (average data for 1980-1990)	Abnormal growth relative to country & industry average	1. Financial development: Total capitalization (% GDP); Bank debt (% GDP); Accounting standards. 2. Interaction between external-finance dependence of industry & measure of financial development of country (e.g. accounting standards).	US is used as the bench-mark for the external finance-dependence of industries.	1. Financial market imperfections have an impact on investment and growth: inferred from the second-order effect of financial development on equity dependent industries.	Possible reverse causality (but tested → not a problem).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Rodrik (1999)	OLS and Panel (within)	World Bank Labor Market Data Base (WBLMDB, Rama [1996] compiled from UNIDO U. S. Bureau of Labor Statistics (BLS); International Comparisons data-series.	Average dollar wages in manufacturing (1985-1989)	1. Political institutions; Two rule of law indicators: ICRG Bureaucratic efficiency; Two democracy indicators: - Freedom House; - Polity III Labor_market_institutions; Unionization rate; Number of the ILO's six basic workers' rights conventions ratified by a country.	IV for institutions: Dummy for oil exporter; Colonial origins; Each measure of democracy is used as an instrument for the another one in different specifications.	1. Institutions matter to distributive outcomes. Democratic institutions tend to be friendly to labor: they are associated with higher wages and a larger factor share for labor in manufacturing.	1 SD (=0.33) (freedom house index) → rise in average dollar wages in manufacturing by 0.198 (OLS) and 0.3762 (IV).
Rodrik, Subramanian, Trebbi (2004)	Aim: to study the three clusters of "factors" of economic growth: institutions, integration and geographical. Repeat "traditional regression" by	80 countries ICRG, PWT, Polity IV	GDP per capita (1995); output per worker (1988); capital per worker (1988); human capital per worker (1988); TFP (1988).	1. Rule of law index; Contract-intensive money (CIM) defined in Clague et al. (1999) above; Revolutions; Freedom house rating; Rule of law (ICRG); War deaths. 2. Regional dummies; Climate (frost); Malaria; Temperature.	IV for institutions: Settler mortality; European-language speakers; Predicted trade shares.	1. Once institutions are controlled for, measures of geography have at best weak direct effects on incomes, although they have a strong indirect effect by influencing the quality of institutions. Similarly, once institutions are	1 SD (=0.94) (rule of law index) → rise in GDP_pc by 112% (OLS) and 205% (IV).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
	using larger set of instruments. IV cross-section					controlled for, trade is almost always insignificant, and often enters the income equation with the "wrong" (negative) sign.	

Appendix A2. Summary of results from selected empirical studies based on firm-level regressions.

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Ayyagari, Demirgüç-Kunt, Maksimovic (2006)	Panel and Directed Acyclic Graph (DAG) methodology	WBES 1999-2000 80 countries	Firm growth	1. Financing; Political Instability; Street Crime; Inflation; Exchange Rates; Judicial Efficiency; Corruption; Taxes and Regulation; Anti-Competitive Behavior; Infrastructure.	Panel contains only 2 years. Regressions have weak explanatory power. Weak instruments + still possible endogeneity.	1,2. only Finance, Crime and Political Instability are binding constraints → maintaining political stability, keeping crime under control, and undertaking financial sector reforms to relax financing constraints are likely	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
				Interactions: (Financing, Political Instability, Street Crime)*(Size of firms, country income group dummies)	IV for institutions: Country size * average of the instrumented variable	to be the most effective routes to promote firm growth.	
Bastos, Nasir (2004)	Focus on investment climate. OLS (production function estimation → TFP → regress TFP on investment climate factors)	WB investment climate survey (2003) Kyrgyz Republic, Moldova, Poland, Tajikistan, and Uzbekistan 362 firms total	Firm output and TFP	1. Foreign ownership; Exports (percentage of sales); Rent Predation; Infrastructure; Competition. 2. Age of firm	After regression, rank relative importance of each of the investment climate dimensions in explaining the variation in productivity across firms. → Kruskal's approach based on partial correlation coefficients	1. The results indicate that competitive pressure is the most important factor driving productivity levels. A good supporting infrastructure and a non-predatory regulatory environment are invaluable, but they are not sufficient.	
Beck, Demirgüç-Kunt,	Panel + robustness	WBES 1999-2000	Firm growth	1. Obstacles with: financing, legal obstacles, corruption –	Panel contains only 2 years. Explanatory power	1. Provide evidence that small and medium-sized firms	The predicted effect of the legal obstacle on annual

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Maksimovic, (2005)	check with IV	54 countries		as reported by firms, 2. Country characteristics: GDP_pc; GDP growth; Inflation; Firm characteristics: Size; Ownership structure; Sector of economy).	of regressions is not always strong, especially within countries.	face greater financial, legal, and corruption obstacles compared to large firms, and that the constraining impact of obstacles on firm growth is inversely related to firm size. It is the small firms that stand to benefit most from improvements in financial development and a reduction in corruption.	firm growth is highest for small firms and lowest for large firms. The difference between the predicted effects on large and small firms is statistically significant. The influence of corruption is qualitatively the same.
Carlin, Schaffer, Seabright (2006)	Panel Aim: estimate the role of obstacles to firm growth by using public good framework	PICS, BEEPS 53 countries 1999-2005	TFP: firm-level (i.e. within regression) Country level (i.e. between regression)	1. Business environment = obstacles for the business – subjective evaluations from firm surveys. 2. K and L inputs; Firm characteristics (foreign owned, state, SME, big city).	Production function is assumed to be the same for all firms. Estimate between country and within country regressions.	1. Demonstrate that empirical results should be interpreted with care because of public good nature of at least some features of business environment.	

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS variables	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Commander, Svejnar (2007)	1) pooled 2002 and 2005 data estimated as 2SLS (IV) 2) changes between 2002 and 2005 – only 600 firms	BEEPS 26 transition countries up to 5897 observations (depending on specification) 2002-2005	Firm revenue or Value Added	1. Business constraints from firm surveys (objective and subjective evaluations). Use value averaged across all other firms in same sector, country and firm size class. 2. Export orientation of the firm; Extent of product market competition; Firm ownership – as reported by managers; K and L inputs.	IV: Age; location; skill ratio interacted with region, firm age. Lagged values of employees; investment, export share. Possible multi-collinearity of constraints remains a problem for interpretation.	1. Firm performance is affected positively by foreign ownership and competition. Perceived constraints for business development don't explain a lot once country and sector fixed effects are included and when constraints are entered together.	Business climate factors vary at country level; but do not account for variation in firm performance within countries.
Dollar, Hallward-Driemeier, Mengistae (2005).	Production function estimation (OLS, GLS) Compute TFP and regress it on business climate characteristics	Bangladesh, China, India, Pakistan – firm level data 4000+ firms	TFP and Annual growth Growth of fixed assets Growth of unemployment	1. Customs days for export and import; Power loss (% of sales); Days for phone line; Overdraft facility; Distance from market; Distance from port. 2. Industry dummies.	Endogeneity: replace reported indicator of business climate by average value over (sector*location) of the firms.	1. There is significant variation in the investment climate across locations within countries. So, local governance is important.	Problem of potential endogeneity business climate at regional level remains.

Appendix A3. Examples of studies where the dependent variable is not a performance measure (e.g. GDP_pc or TFP).

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Djankov, McLiesh, Shleifer (2005)	Aim: To examine the effect of private credit institutions on financial development. OLS on averaged data + Panel	129 countries and 25 years of data. Other sources: IMF, legal sources survey of 440 lawyers from the 133 countries.	Private Credit (% GDP)	1. Creditor Rights; Public Registry; Private Bureau. 2. GDP; legal origins.	No endogeneity issues discussed.	1. Suggests that the governments especially in poorer countries should facilitate information sharing.	
Djankov, La Porta, Lopez-de-Silanes, Shleifer (2006)	Focus on shareholders rights protection. OLS (mainly)	Questionnaire completed by attorneys from Lex Mundi law firms.	Stock-market capitalization (% GDP); Block premium; Listed firms per million population; IPOs/GDP; Ownership concentration.	2. Approval by disinterested shareholders; Ex-ante disclosure; Ex-ante private control of self-dealing; Disclosure in periodic filings; Difficulty in proving wrongdoing; Ex-post private control of self-dealing; GDP_pc; Time to collect on a bounced cheque.	Construct index of the strength of minority shareholder protection against self-dealing by the controlling shareholder (<i>anti-self-dealing</i> index).	1. To avoid self-dealing, it appears best to rely on extensive disclosure, approval by disinterested shareholders and private enforcement.	Problems with endogeneity (difficult to find IV). Examples: 2 SD (anti-self-dealing index) → rise in stock-market / GDP ratio by 33%. 2 SD (ex-ante private control of

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
							self-dealing) → fall in median block premium by 9%.
Djankov, La Porta, Lopez-Silanes, Shleifer. (2003)	Focus on procedural formalism Construct index and sub-indexes of formalism OLS cross-section	Lex Mundi and Lex Africa questionnaires 115 countries. + other usual variables	Outcomes of the two standard procedures : Eviction of a tenant and Cheque collection	1. Index and sub-indexes of formalism. 2. GDP_pc; Legal origins; Ethnic fractionalization; Average. years of schooling; Latitude.		Formalism doesn't depend on the level of development. Many developing countries have inherited their court system from past colonizers.	The explanatory power of regulation of entry is only 4 to 5 percent, compared to the explanatory power of formalism of 18 to 20 percent.
Djankov, Hart, McLiesh, Shleifer (2006)	Focus on debt enforcement Index efficiency of firm liquidation	88 countries	Index of efficiency of firm liquidation Measure of going concern	1. Index for efficiency of firm liquidation (standardized case study of an insolvent firm); Measure of going concern. 2. GDP; Legal origins.		Debt enforcement around the world is highly inefficient; is related to under-development; is associated with insufficient public sector capacity of the country and with French legal system.	A 10 point increase in efficiency → a 5 to 6 point higher ratio of debt to GDP.

Study type / study	Basic method & aim	Data set	Dependent variable (s)	1. How is 'Business environment' measured? 2. Other key RHS	Comments on methodology	1. Main findings 2. Explicit policy conclusions	Comments e.g. quantitative importance
Micco, Pages (2006)	Panel difference-in-differences approach Studies effects of employment protection on job flows, employment, economic performance	UNIDO Industry-level (manufacturing) data for 41 countries + country-level data 1985–90 and 1991–95, 65 countries during the 1980s and 1990s	Job flows Employment Value Added, Labor Productivity, Number of Plants and Employment per Plant	1. Average employment, job reallocation 2. Index Employment Protection Legislation –Administrative Costs (EPLadm); Legislation --Monetary Costs (EPLmon); and the sum of the two. GDP_pc; Accounting standards; Property rights; Rule of law; Entry costs; Entry rates; External financial dependence; Intangible intensity; Employment; Value added; No. of establishments; Plant size. Interactions with job reallocations.	Difference-in-differences estimation approach, → reduces the likelihood of omitted variable bias and lessens endogeneity. Follows Rajan & Zingales (1998) – note uses US bench-mark for sector characteristics including sector volatility.	1. Employment protection reduces turnover, employment, and value added by reducing the growth of highly volatile sectors. The decline in employment is mostly accounted by a decline in net entry of firms, with no discernible changes in average employment or output per firm.	Examples: Compare the difference in job reallocation in industries in 10 th and 90 th percentiles of flexibility requirements → difference is 6.31 pp lower in a country with strict EPL (90 th) than in a country with low EPL. When EPL rises from the 10 th to the 90 th → fall in employment in the 90 th most variable sector relative to the 10 th most variable sector by 54%.

List of acronyms.

2SLS – 2 Stage Least Squares.

BEEPS - Business Environment and Enterprise Performance Survey. World Bank and EBRD.

BERI - Business Environment Risk Intelligence.

CIM - contract-intensive money is the ratio of non-currency money to the total money supply, or $(M2-C)/M2$, where M2 is a broad definition of the money supply and C is currency held outside banks.

ELF – Ethno-linguistic fragmentation.

ELH - Ethno-linguistic heterogeneity.

GDP – Gross Domestic Product.

GDP_pc - Gross Domestic Product per capita.

GLS – Generalized Least Squares.

GMM – Generalized Method of Moments.

HD – Human Development.

ICRG - International Country Risk Guide.

IFS - International Financial Statistics, IMF.

IMF – International Monetary Fund.

IPO – Initial Public Offering.

IV – Instrumental Variables.

LR – Long Run.

OLS – Ordinary least Squares.

PICS - Productivity and Investment Climate Survey, World Bank

POLITY III – Polity III dataset.

POLITY IV – Polity IV dataset.

PWT – Penn World Tables.

SD – Standard Deviation.

TFP – Total factor Productivity.

TI – transparency International.

UNIDO - United Nations Industrial Development Organization

VA – Value Added.

WB – World bank.

WBES - World Business Environment Survey, World Bank Group.

WDI – World Development Indicators.

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