

Master Thesis

**Environmental and Development Economics, 2-year Master of
Philosophy**

**Do Judicial Reforms Have an Economic Payoff?
Theory and Evidence for Latin America**



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May 2006

Preface

This thesis has been performed with the invaluable help and support of a number of people and institutions that I would hereby like to acknowledge.

First, I would like to express my deepest gratitude to the Centre for Development and the Environment (SUM), and particularly to Desmond McNeill for giving me the chance to take part in a really challenging project. Special thanks also to my student fellows at SUM for useful discussions at the Student Forum and for livening up endless hours of work, especially during the weekends and holydays.

Undoubtedly, I am also grateful to my supervisor Jens Christopher Andvig, from the Norwegian Institute of Foreign Affairs (NUPI) for useful guidelines and comments. Moreover, I would also like to thank Harald Goldstein for his technical advices in the econometric study, and Maria Dakolias, from the World Bank, for showing a great interest in my work and for guiding me in the collection of data.

Finally, I would like to express my deepest gratitude to those who contributed with their moral support and made of my stay in Norway a wonderful experience, with special mention of my student fellows at the Masters program in Environmental and Development Economics, Sara Cools and Jorge Macias. Special thanks to my family and to Miriam Sanchez for their patience and support.

Abstract

This thesis provides theoretical arguments and empirical evidences to illustrate the potential economic benefits of an effective reform of the Latin American judiciaries. First, I suggest a concept of judicial efficiency and I illustrate with a simple model some possible trade-offs that might arise in the design of the judiciary, regarding the incentives of some actors involved in the process. The economic rationale is spelt out through several microeconomic mechanisms in which the judicial efficiency may play a very important role to enhance further economic development. These mechanisms are contextualized in the Latin American region, and are embedded in a long-run growth framework to identify the possible macro implications. In order to contribute to the empirical literature on institutions and economic growth, I run several panel data regressions to illustrate the potential impact of different quantitative judicial indicators on several economic and institutional variables commonly associated with the creation of wealth.

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1. Introduction

The role of institutions in economic performance has been extensively discussed in the economic literature, particularly during the last two decades. Microeconomic theory has pointed out that institutions shape most of the incentives in economic relations and determine the efficiency of markets, because, under perfect market conditions, the lack of perfect information and the existence of transactions costs would lead us to undesirable allocations. These statements were originally postulated by Ronald Coase (1937 and 1960) and gave rise to a whole stream of economic thought known as the New Institutional Economics. Although this approach apparently seems to be quite obvious, development economists have neglected for many years the role of institutions by assuming an exogenous role of the state focusing on allocative-efficiency models¹ to back up their policies (North, 1995). Nevertheless, such analysis can only lead us to the desired consequences when we have a well defined set of property rights, which must be regarded as one of the main functions of the state. Thus, the role of institutions (private and public) must be regarded as a fundamental element of economic policy due to the crucial role of property rights in economic development.

On the other hand, the literature on economic growth has attempted to explain the enormous differences in per capita output between poor and rich countries. Models of economic growth have traditionally explained this fact in terms of factor accumulation (labor and physical and human capital). Countries that show higher rates of factor accumulation yield faster economic growth and vice versa. However, this approach contains at least two important weaknesses: first, it does not explain an important share of the cross-country differences in per capita output² and, secondly, although it shows important descriptive facts, it does not say anything about the engines of economic growth, thereby, it does not answer the question what *makes some countries to grow faster than others?*. The institutional approach attempted to bring light to this question and several authors³ pointed out the extreme importance of the institutional framework to encourage economic growth, basing their arguments on strong empirical evidences. Including measures of institutional quality as a fundamental argument of economic growth (within the

¹ Neo-Classical models in which the efficient allocation of resources are obtained by getting the “right prices” neglecting exchange or price controls.

² See Easterly and Levine (2001), Hall and Jones (1999) and Knack and Keefer (1995)

³ Olson (1996) and Acemoglu (2004) among others.

framework of cross-country regressions to explain output differences), turned out to be highly significant.

Therefore, we see that economics has paid great attention to identify the role of institutions, both at micro and at macro level, but a great unknown still remains when it comes to the design of policies for economic development: **which are those institutional features that yield greater economic development and which are the proper policies to transform bad institutions into good institutions?** In this paper I will claim that one of the most important institutional features to enhance economic growth and development is the **judicial efficiency**.

Judicial efficiency can be defined as the capacity of courts to enforce property rights and contractual agreements by minimizing the costs⁴ involved in the process. Thus, wondering about the role of judicial efficiency is equivalent to wonder about the role of the enforcement of property rights and contractual agreements. Nonetheless, while the latter is a pure theoretical approach, the former allows us to go further in policy implications because it regards specific institutional features to reform. Let me put it in simple words: we already know that we need institutions that foster the enforcement of property rights and contracts⁵, but we need further theory and evidence about the way of achieving this target, which does not seem to be an easy task.

Nevertheless, the need of better courts for economic development was an argument already claimed during the 60's, giving rise to a new stream of thought known as the Law and Development Movement. The new movement crystallized in a program run by the USAID, the Ford Foundation and other American private donors to reform the judicial and legal systems in developing countries in Asia, Africa and Latin America. The program was designed to transplant the American legal system in those countries, but in the end it resulted in a resounded failure. According to Messick (1999) there were four reasons why the program did not succeed: lack of a theory about the impact of a judicial reform, little participation of local lawyers, the program was focused on formal legal system (excluding customary law) and the belief that the American system could work well everywhere.

⁴However, the term *costs* must be regarded in a broader sense than in traditional production theory, since judicial activities can not be considered as a standard productive activity. In order to obtain judicial efficiency we must minimize, as I will show later, the length of the processes, the monetary costs for litigants, the unfairness of the outcomes and the unpredictability of the judgments. Some of these four elements can also be seen as negative externalities of an inefficient judicial system.

⁵For a deeper discussion on this topic see North (1990)

During the last decade a new wave of institutional concerns has brought a revival on judicial reforms encouraged by the World Bank and other multilateral institutions. **Could it be the case that these institutions are making the same or similar mistakes as in previous experiences?** This paper tries to set up the **theoretical background** missing in previous experiences identifying several economic mechanisms that can transform judicial efficiency into faster economic development. In the next section I will discuss the desirable features of a judicial system and I will suggest different ways to achieve it, paying special attention to the **role of incentives** in a simple model on judicial efficiency. In the third section I will present a survey of the specific microeconomic mechanisms that regard judicial efficiency as a powerful source of economic development. The arguments presented in the survey can be summarized as follows:

1) I will discuss how parasitic activity and private rent seeking behavior can be fought through judicial prosecution, overcoming the poverty traps that those activities may cause in the private sector

2) A costly transaction system may cause certain economic inefficiencies such as vertical integration and price inefficiencies that hamper economic growth in the long run. An efficient judiciary may play a key role by lowering the transaction costs and the uncertainty among the contracting parties.

3) The judicial enforcement of credit rights as an engine to enhance credit flows, and consequently to foster investments in the private sector. I will show how the cost of credit enforcement plays a key role on credit markets, which may strongly influence on investment decisions.

4) The prosecution of criminal activities as mechanisms to reallocate human capital. One of the explanations of the weak correlation between investments in human capital and the long run economic growth is that in most of developing countries the talented and well educated individuals might have incentives to focus their skills in profitable criminal activities and rent-seeking. Therefore, by improving the judicial efficiency against these activities we may foster the allocation of human capital in productive activities.

5) The role of judiciary to fight against public corruption and rent-seeking.

The second target of this paper is to **obtain empirical evidences**⁶ about the potential economic effects of a judicial reform in terms of aggregated output. Due to the last initiatives of the World Bank⁷ and the Inter-American Development Bank concerning judicial reforms in the Latin American area, it seems that, after ten years of implementations, this is a good moment to check out the economic outcomes of those measures. The scenario seems to be quite suitable for our purposes, since not all the countries in the region have gone through the same experiences regarding judicial reforms. While some countries have experienced deep transformations and invested large amounts in equipments for their courts, some others still remain in an extremely obsolete, costly and slow systems⁸. This state of affairs gives us a good chance to check national differences in economic performance due to differences in judicial efficiency. The last section of the thesis presents some empirical results by using panel data of 13 Latin American countries for the period 1993-2004. By regressing several economic and institutional variables on my own judicial indicators, I will test, in an indirect manner, the potential role of the judicial branch in promoting faster economic growth.

All these arguments (empirical and theoretical) aim to solve the most important question concerning policy implications: do judicial reforms have an economic pay-off? or, to put in another way, **in what extent could judicial reforms be a priority in policy making**⁹?

⁶ All estimations are performed with Stata 8.0

⁷ See World Bank (2004)

⁸ For example Mexico

⁹ Undoubtedly, the convenience of an efficient judicial reform should be justified only by the prominent role that the judiciary plays in society, in terms of the rule law, the respect for human rights and the establishment of a secure and stable society. In this paper, however, I want to emphasize an additional reason, that is to say the instrumental economic justification, that might put the judiciary in a privileged position to encourage economic development through faster long-run economic growth

2. Judicial Reform: from Law to Economics

2.1. Law, Microeconomics and Macroeconomics

In order to obtain a clear theoretical background about the economic implications of a judicial reform, it is necessary first to regard the problem from a broad point of view, trying to put together the elements of the judiciary to reform, the series of microeconomic mechanisms stemming from greater judicial efficiency and their potential macroeconomic effects. In this first stage of my analysis I try to combine two different scopes within the economic science that are development economics and growth theory. Although the latter approach could be disregarded, I decided to connect the judicial performance with economic growth because of two reasons: first, fast sustained economic growth seems to be the only strategy for developing countries to reduce the enormous divergence with western economies, and secondly, since the institutional environment has proved to be an important explanatory factor of long-run economic growth, I want to evaluate to which extent the judiciary might imply a feasible institutional feature to reform.

This first approach to the problem is summarized in Figure 1. The first step in the process is to obtain judicial efficiency through what I call “judicial inputs”. This is strictly speaking the procedure of the reform, which consists of all those measures -emphasizing the role of agents’ incentives- aiming to improve the four desirable features of a judiciary: predictability, fairness, low cost and speed of processing. The second stage of the reasoning leads us to the microeconomic mechanisms that transform the judicial output (efficiency) into economic inputs or determinants of the economic growth. The economic rationale that may support a judicial reform revolves around two pillars in institutional economics: the enforcement of contracts and property rights, and the institutional credibility and reliance. North (1990) summarizes the importance of enforcement as follow:

“Parties to an exchange must be able to enforce compliance at a (transaction) cost such that the exchange is worthwhile to them [...] Surely the gains from trade, which economists take to be the bedrock of economic performance, should make it worthwhile to evolve cooperative solutions among parties to capture jointly those gains”

Do Judicial Reforms Have an Economic Payoff?

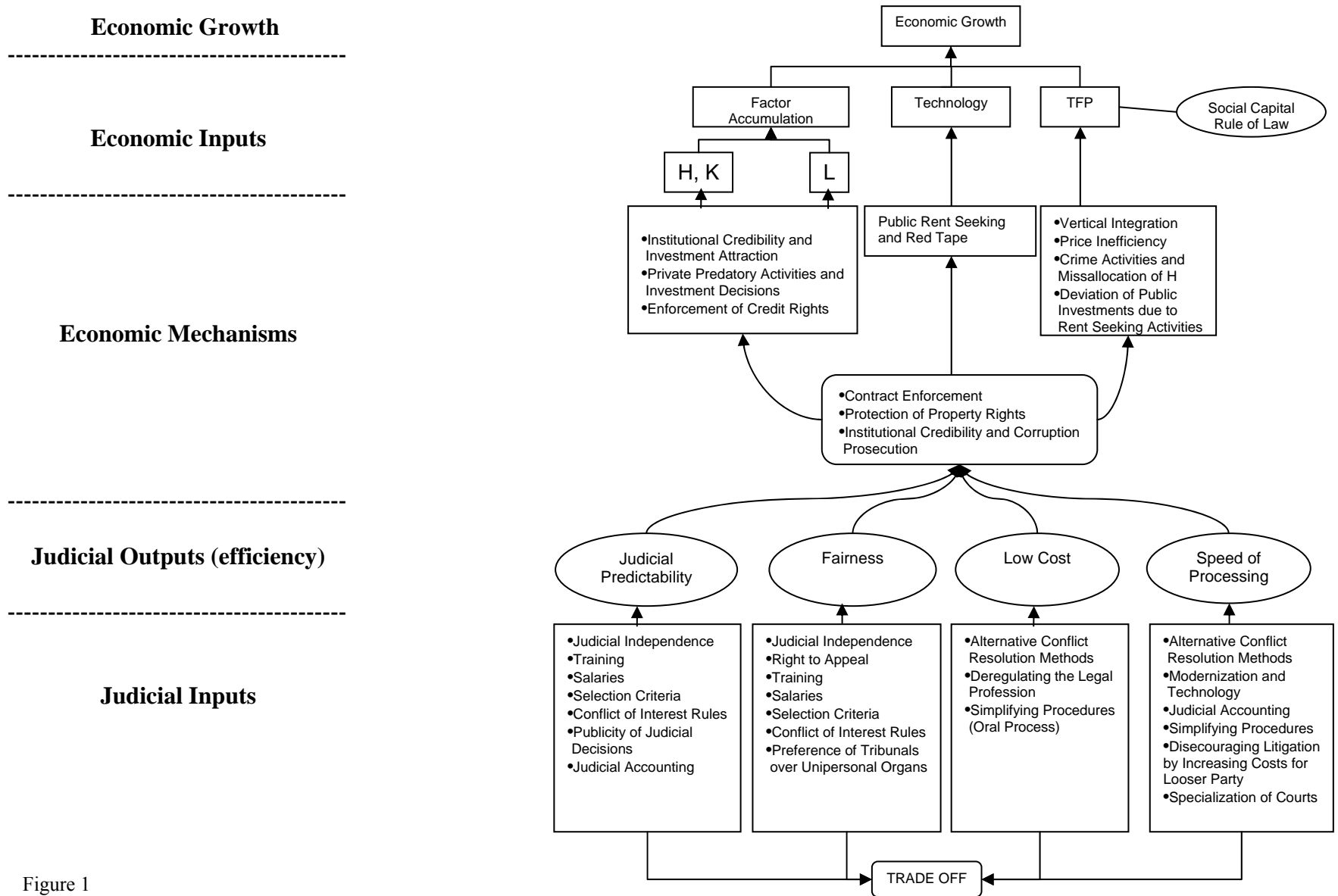


Figure 1

Here it is where the role of the judiciary enters, since with the presence of an external coercive power, cooperative solutions among parties are more likely to occur, so contracts become self-enforcing before the threat of a coercive power. In the third section I will regard (in a theoretical survey format) several partial economic problems in which at least one of these mechanisms (contract enforcement, property rights enforcement and institutional credibility) plays a crucial role for the Latin American development. As my purpose is to evaluate the potential aggregated effect of improvements in the judicial efficiency on the economic performance, I will discuss where these mechanisms may enter in a growth model approach. Some of the mechanisms are relevant for the accumulation of productive factors (human capital, physical capital and labor), some of them are engines of technological innovation, and some others enter in the so-called *total factor productivity*¹⁰. Although the exact content of the latter concept still remains as a mystery, it seems that it has a lot to do with the efficient allocation of productive factors, which in a large extent is the role of the institutional environment¹¹. Within the recent literature of economic growth there are two concepts that have gained a great importance to explain the mystery of the TFP residual. I am referring to *Social Capital and the Rule of Law*¹² as powerful explanatory arguments of the per capita output differentials among countries. However, these features not only enter in the unexplained residual of the neoclassical approach, but also determine in a large extent the investment decision that leads the economy towards greater factor accumulation. Institutional arrangements, as the improvement of the judiciary, might also contribute to the strengthening of such engines of economic growth.

It is worthwhile to mention that growth economists have neglected for a long time the role of institutional issues due to the handicaps of an aggregated approach. Institutional issues matter at micro level affecting the decision process and incentives of agents, which is imperceptible in aggregate levels of productive factors. When using an aggregated production function, economists try to explain the phenomenon of growth by regarding the levels of factor

¹⁰ Total Factor Productivity has been regarded as the unexplained residual of regressions of output on factors accumulation.

¹¹ See Easterly and Levine (2001) and Hall and Jones (1999)

¹² Dasgupta (2001) reports a definition of social capital by N.D. Putnam: "...features of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions". Despite of its difficulty to measure, some studies have attempted to obtain proxies and evaluate its relevance for economic development (see Knack and Keefer, 1997). On the other hand, we can consider the rule of law as a feature included in the concept of social capital, since the former is defined as the capacity of the state to make law enforced and respected by its citizens.

accumulation, but they neglect the process through which investments decision have been taken. Therefore, the real engines of economic growth stem not only from the accumulation of those classical factors and the unexplained residual (TFP) but also from the institutional environment that remarkably determines these features. My claim is that a reliable judicial system plays a fundamental role in shaping incentives for investments decisions and the allocation of productive factors.

2.2. Judicial Efficiency and the Design of a Judicial Reform

Let us begin with the lower part of the scheme presented above to see some of the suggested measures that might improve the efficiency of a judicial system. There are four desirable features that make a judicial system to work efficiently and, as shown in the figure, different partial reforms can lead us to different outcomes¹³. Hence, judicial reform, as here defined, is not a simple and unidirectional variable, but a complex set of different features that could even be incompatible among them. For instance, it has been suggested that the **predictability** of judgments can be improved by setting rules that guarantee the independence of the judiciary from the government, applying programs of legal training for judges, avoiding the probability of judicial corruption by increasing the salaries of judges, regulating the selection criteria for every jurisdictional function, improving the transparency of process and resolutions and setting an accounting system for all the judicial systems and partial decisions. That we are able to predict the outcome of a trial does not necessarily mean that judges will produce fair decisions regarding the application of law; hence, further measures are needed to improve the **fairness** of a process. Although many of the previous suggestions would foster fairer judgments, there are other judicial initiatives, such as the guarantee of the right to appeal and the priority of tribunals over unipersonal organs (indeed the probability of a mistake or corruption is greater when decisions are deliberated by just one judge). These two first properties of an optimal judiciary must be regarded as the main targets to fight against judicial corruption, notwithstanding, there exists a trade-off between fairness/predictability and the other two desired characteristics of the judiciary,

¹³ The purpose of this paper is not to establish the specific measures of an optimal judicial reform but to analyze its potential economic effects. Nonetheless, I considered of a remarkable interest to mention some of the most common suggested feasible measures. For further discussion on the optimal design of a judicial reform in Latin America see Buscaglia, Dakolias and Ratliff (1995), Botero and others (2003), Dakolias (1996) and Eyzaguirre (1996).

which are **low cost** and **speed of processing**. Indeed, it is reasonable to think that the more we invest in accuracy of the system, the more expensive and slower it will become. Thus, the previous measures must be combined in an optimal proportion with those aiming to lower costs and to cut waiting times. What are, then, the suggested measures to make the judiciary a more affordable service? Most of Latin American countries contain in their constitutions procedures and guarantees for a free access to the courts, at least for those litigants who can prove the lack of necessary resources, but in reality these are rarely fulfilled or not properly developed in the legislation (Buscaglia and Dakolias, 1995). Thus, an effective application of these guarantees would help to foster the reliance and the access to the judiciary. Moreover, a common factor in the Latin American countries is the excessive intervention of legal professionals in trials of less importance (summary trials) that do not really require it, making the process very expensive for parties. So by deregulating the legal profession in those cases we would noticeably reduce the costs of trials¹⁴. Other ways to reduce costs would be to reform the procedural codes to introduce faster and simplified procedures and to foster alternative systems of conflict resolution (arbitrage, for instance) that would relieve the accumulation of pending cases in the courts¹⁵.

Finally, the last desirable feature of an efficient judiciary requires interventions to improve the speed of trials by means of, for instance, the implementation of information technology for the processing of trial documentation and judicial resolutions, and the specialization of courts in specific branches of the law¹⁶. Another suggested measure is to discourage the artificial extension of a trial by punishing the looser party with higher costs, so anyone knowing full well his guiltiness will not appeal to an upper stage just to gain time¹⁷.

It is worthwhile to mention some other considerations with regard to the design of a judicial reform. First, as noticed in the problem of the deregulation of the legal profession, we have to

¹⁴ For instance, Messick (1999) reports how in Peru attorneys opposed measures to cut costs of registering land belonging to urban poor because this would make them to compete against other professionals, such as engineers and architects.

¹⁵ One may distrust such measures when regarding their success in some countries where arbitrage has become a non coactive attempt to solve conflicts that finally leads the unsatisfied party to go to the courts. However such a behavior is rather suitable in developed countries where parties can afford a “double procedure” or are willing to exploit all the chances that the jurisdictional system offers. Nevertheless, a good alternative system for standard conflicts in transaction contracts could relief an overcrowded judiciary and could also satisfy litigants at least in minor conflicts in poor countries.

¹⁶ For instance, within the jurisdiction of civil law different organs could specialize in contract law, family law, property, etc.

¹⁷ Notice that this measure seems apparently incompatible with the legitimate right to appeal (defended above), but its real intention is precisely to stop illegitimate appeals, motivated exclusively by gains of time from one of the parties when she is aware of her guiltiness.

keep in mind that most of the undertaken measures must be incentive oriented. This means that initiatives aiming strictly towards the investment in greater resources or restricting the access to the judiciary will not solve the problem, but we need to strengthen the incentives of agents involved in the judicial process¹⁸. Otherwise we may confront opposition from judges and lawyers who may perceive that their interests are undermined with certain aspects of the judicial reform, and we may not be effective against judicial corruption. Secondly, since I have not regarded any aspect concerning the quality of substantive law¹⁹, I will assume in my analysis that the legal system fulfils a minimum standard of quality and that the main problem to solve is the effective application and enforcement of its will. This seems to be the case of many Latin American countries in which commercial, criminal and civil codes show a reasonable quality level, but the degree of effective prosecution and enforcement of the law are remarkably deficient.

2.3. Judicial Reform and Incentives. A Model

Indeed, many of the initiatives in judicial reform can turn out to be useless if they are not accompanied by the appropriate incentives of the agents involved in the judiciary. As reported by Botero et al. (2003), lawyers in Uruguay vigorously opposed measures to accelerate civil and criminal trials, fearing that quicker procedures would imply less work for them. On the other hand, an intuitive solution against delays and backlogs is to cut the number of filings by restricting the access to courts. However, judges themselves may hinder judicial efficiency by lowering their productivity if they find that they will not be penalized for keeping delays at the same level as before. Moreover, if we want to foster the judiciary as a reliable institution and encourage citizens to litigate and to enforce contracts and rights²⁰, then, cutting the access to courts might not be the proper solution. Consequently, it seems difficult to combine high rates of access and judicial protection with low levels of delays and backlogs. If judicial systems are not able to escape from this trap, then the potential economic benefits of the reform will not be

¹⁸ See Botero, La Porta, López-de-Silanes, Shleifer and Volokh (2003)

¹⁹ Notice that the reform of procedural codes can not be considered substantive law, but part of a judicial reform.

²⁰ Studies based on citizens' perceptions show that the main curse of many Latin American judicial systems is the lack of confidence and the low levels of crime report and civil actions to enforce contracts. Likewise, courts show high levels of stagnations which show the deplorable conditions of the judiciary in the region. See Seligson (2004).

unleashed. In the following model I will show how incentive oriented measures might help to obtain higher judicial efficiency and to escape from this trap.

Let us start by setting up the objective function of a social planner that faces the problem of designing an optimal judicial system. Let us discuss first the arguments of the planner's utility function. We assume that the planner obtains utility from higher rates of access to the judiciary, so we include as an argument the annual amount spent on free access to the judiciary²¹ (R). Secondly, large rates of backlogs and delays create disutility, so a negative argument of the utility function would be the number of pending cases in the system (P) in a certain period. Finally, the planner wants to maximize the processing capacity of the system, obtaining utility from the cases that the system is capable to solve in one period (C). Therefore we have that the objective function would show the following properties:

$$U(R, C, P) \quad \text{Where} \quad \frac{\partial U}{\partial R} \geq 0, \quad \frac{\partial U}{\partial C} \geq 0 \quad \text{and} \quad \frac{\partial U}{\partial P} \leq 0$$

The problem of the planer is to maximize its utility subject to the restriction imposed by the following condition:

$$P = L(R, C) - C \quad \text{Where} \quad \frac{\partial L}{\partial R} \geq 0 \quad \text{and} \quad \frac{\partial L}{\partial C} \geq 0$$

This equation states that the number of pending cases per period equals the number of reported cases to the courts (L) minus the number of proceeded cases. Notice that the litigation level will depend on the level of access determined by the amount R, and on the confidence that citizens deposit on the system. If we assume that the speed of processing is observable by users, there will be a "call effect" for litigation when the capacity of courts is high²²; therefore C enters

²¹ By doing so, we assume that the government has the capacity to directly determine the level of access to the courts by spending certain amount to subsidize litigation costs.

²² This should be regarded as a middle term condition, because in a second phase we should regard judicial efficiency as a credibility factor that would make agents to act in such a way that property rights and contracts did not need to be defended in the courts anymore. The presence of a credible and coactive judicial system would lower the rates of litigation. Therefore, if we manage to escape from the initial trap of too low litigation and the immediate call effect after the reform, we would probably enter into a virtuous circle in which the better the judiciary performs the less necessary is to litigate, and the lower the judicial stagnation.

in L with a positive first derivative. This condition contains the incentive structure of litigants, which plays a key role in the problem.

Therefore, in order to maximize its utility, the planner chooses the subsidy of litigation costs and the level of system capacity, keeping in mind that excessive levels of both can induce to greater backlogs, creating disutilities. The amount spent on litigation costs subsidization is directly set by law, but the way in which the state decides its judicial capacity needs further comments. At first, we might think that the decision on judicial capacity is entirely a budgetary issue, insofar as the number of solved cases in one period would depend on the amounts invested in human resources and equipments in the judicial sector. Nevertheless, although it is true that an important share of the judicial efficiency (at least in the short run) depends on resources, we should regard C as also depending on other factors such as the incentives of judges to work faster, or some budgetary restriction. However, in the current analysis I will neglect budgetary concerns, and I will rather illustrate the incentives problem with the regulation of the legal profession (lawyers and attorneys). For the moment, let us solve the problem proposed above:

$$\left. \begin{array}{l} \text{Max}_{R,C} \quad U(R, C, P) \\ \text{s.t} \quad P = L(R, C) - C \end{array} \right\}$$

First order conditions:

$$\begin{array}{l} 1) \quad \frac{\partial U}{\partial R} = 0 \Rightarrow U'_R + U'_P \cdot L'_R = 0 \quad \text{or} \quad -\frac{U'_R}{U'_P} = L'_R \quad \Rightarrow R^* \\ 2) \quad \frac{\partial U}{\partial C} = 0 \Rightarrow U'_C + U'_P (L'_C - 1) = 0 \quad \text{or} \quad -\frac{U'_C}{U'_P} = L'_C - 1 \quad \Rightarrow C^* \end{array}$$

Equation 1) shows the condition that leads us to an equilibrium level of access to justice (determined by the amount R), according to which the marginal increase in litigation due to an increase in the access to judiciary (or the subsidization of litigation costs) must equal the rate of substitution between the marginal utilities with respect to R and the pending cases. Similarly, equation 2) shows the condition for an equilibrium level of processing capacity, but in this case the rate of substitution between marginal utilities equals the marginal increase in litigation with respect to C minus one, since C accounts positively and negatively for the level of pending cases.

Notice that for an optimal level C to be feasible, L_c' must be greater than 1, due to the assumptions made about the utility and litigation functions.

These conditions have strong implications for policy making because they prove that indiscriminate and unilateral changes in R and C might be misleading insofar as they may differ from the equilibrium condition imposed by the discussed restriction. In that case we would create an unwanted situation of high levels of backlogs and delays that could undermine the reliance on the system and the potential economic benefits of the reform²³. What should be then a good way to reform the judiciary? To improve our analysis, and to make it more realistic according to the Latin American context, let us include in the maximizing problem a set of preferences of the legal professionals, assuming that they play as an important lobby in the process of a judicial reform.

As mentioned before, it is common to find certain opposition to reforms from the side of legal guilds who expect their interest to be undermined after improvements in the judicial efficiency. This fact can be introduced in our framework defining a utility function that represents lawyer's preferences which are included within the maximization problem of the social planner. If we assume that part of the amount R is spent to provide legal aid lawyers for the poorest (which seems to be the common case), then, private lawyers will bid for lower levels of R , because it would imply more work for them. Thus, R enters in their utility function with a negative derivative. The mentioned case of Uruguayan attorneys does not seem to be an isolated case, so we can assume that legal guilds oppose increases in the judicial capacity fearing less work for them. As a consequence C may enter in their utility as a negative argument. In this case, if we assume that the planner maximizes the sum of its own preferences (assuming as before that it cares about the social welfare) and the preferences of lawyers, the maximization problem would be set up and solved as follows:

$$\left. \begin{array}{l} \text{Max}_{R,C} \\ \text{s.t} \end{array} \right\} \begin{array}{l} W = U(R, C, P) + V(R, C) \\ P = L(R, C) - C \end{array} \quad \text{where} \quad \frac{\partial V}{\partial R} \leq 0 \quad \text{and} \quad \frac{\partial V}{\partial C} \leq 0$$

First order conditions:

²³ This is perfectly consistent with the statements that Botero and others (2003) use as titles of three different sections of their article: "More Resources Will Probably not Solve the Problem", "Reducing Access is Probably not the Solution Either" and "Incentive-Oriented Reforms May help Solving the Problem"

$$\begin{aligned} 3) \quad \frac{\partial W}{\partial R} = 0 &\Rightarrow U'_R + U'_P \cdot L'_R + V'_R = 0 && \Rightarrow \hat{R} \\ 4) \quad \frac{\partial W}{\partial C} = 0 &\Rightarrow U'_C + U'_P (L'_C - 1) + V'_C = 0 && \Rightarrow \hat{C} \end{aligned}$$

Conditions 3) and 4) are equivalent to those examined before, but now, since C and R enter in the objective function as additional negative factors (and keeping in mind the assumptions about the properties of the utility functions) we see that the next condition applies:

$$R^* \geq \hat{R} \quad \text{and} \quad C^* \geq \hat{C}$$

This means that when lawyers' preferences are taken into account in the design of the judicial system, we are led to lower levels of both, processing capacity and access to litigate, albeit the effect on pending cases turns out to be ambiguous. Obviously, this is a strict worse-off situation compared to the first one. So, what does this tell us about the design of an optimal reform? A direct result from this analysis is that a gradual deregulation of the intervention of lawyers and attorneys in those cases where they are really not necessary can considerably improve the judicial efficiency. Botero (2003) claims that a large part of the success of the Japanese judicial system is attributed to the absence of lawyers in 90 percent of summary court cases, which account for more than 60 percent of civil litigation in the country. Apparently, there is no reason why a cut in the intervention of lawyers in Latin American judiciaries led us to a worse outcome.

More generally, what this simple model shows us is that the incentives, either from litigants, judges or lawyers, play a key role in the configuration of an optimal judiciary. Measures that attempt to directly adjust the levels of access and the capacity will probably fail to improve the judicial efficiency and its economic effects, because agent's reaction to these measures may create greater unbalances than adjustments when their incentives are disregarded. If a proper design of a reform is finally performed, then we can expect the series of advantageous economic mechanisms presented in the next section.

3. Judicial Reform and Economic Performance. An Overview of the Microeconomic Mechanisms and Their Macro Implications

In this section I attempt to identify the potential economic effects of improvements in the judicial efficiency, within the Latin American context. As seen before, most of these effects are related to the enforcement of property rights and contracts, so we are evidently not interested in all the judicial decisions. Those cases that in a way deal with productive factors, or may influence decisions about the efficiency and the allocation of productive factors are the ones that in aggregated level can be determinants of the economic development in the region²⁴. In addition, the role of an efficient judiciary not only stems from the direct effect of cases resolution but also from the institutional credibility that encourages agents to act more efficiently without the need of a judicial intervention (see footnote 20). The following arguments are not meant to be an exhaustive economic theory of judicial reform and economic growth, but they attempt to summarize those economic phenomena previously regarded in the economic literature that might be unleashed in the Latin American region after strengthening the judicial enforcement. Although they are presented in a survey format, new implications are expected to contribute to the literature, firstly, because some of the presented mechanisms have not been specifically linked to the role of the judicial efficiency, and secondly, because there is a lack of studies that regard the economic implications of the judicial performance through the link between all the possible microeconomic consequences and their macroeconomic impact in terms of growth.

3.1. Weak Enforcement of Property Rights as a Source of Private Rent-Seeking and Poverty Traps

Illegitimate activities oriented towards the expropriation of productive resources involve one of the curses that plague most of developing and transitional countries. In his series of studies about democratic culture in Latin America, Seligson (2004) shows that a large share of criminality counts for illicit expropriation of private properties, giving rise to very pessimistic perceptions about the reliance on institutions and private rights enforcement (specially in Mexico,

²⁴ In principle one might think that only jurisdictions of private law (labor, commercial and civil) would enter in our target, but, as we will see later, criminal and administrative trials may be relevant for the process of economic development.

El Salvador and Nicaragua where we find the highest rates of criminality). For example, only 37% of Mexicans believe that criminals will be punished in the judicial system, and more than a half think that reporting a crime is totally useless. Such a background can not be a good framework for entrepreneurial activities, but probably for the opposite, because parasitic activities²⁵ will proliferate by extorting and expropriating licit business. Therefore, the losses for economic growth not only derive from the expropriated resources but also from the forgone investments due to the threat imposed by rent-seekers. We will see that an external credible authority imposed by an efficient judicial system (accompanied by an effective criminal code) may help to escape from the poverty traps caused by such hampering activities.

But in what extent are parasitic activities harmful to economic development? Firstly, economic theory (Murphy, Shleifer and Vishny, 1993) has shown that such activities tend to be extremely persistent and self-feeding because they exhibit increasing returns, in the sense that an increase in parasitic activities lowers the cost of further parasitic activities. This fact can be explained in terms of specific features of the “technology” used to extort and expropriate. For example, it seems obvious that mafias and other extorting activities do not require large fixed costs to be set up compared to productive firms. Another way of increasing returns is the fact that the probability of being caught is decreasing in the number of people performing parasitic activities, which Murphy, Shleifer and Vishny call “strength in number”. However, the most important mechanism that makes rent-seeking a self generating activity is its interaction with productive activities: *over some range, as more resources move into rent-seeking, returns to production may fall faster than returns to rent-seeking do, and so the attractiveness of production relative to rent-seeking will fall as well.* Such a mechanism can lead us to multiple equilibria situation, and depending on the quality of institutions, economies can find themselves stuck in a poverty trap due to the effects of predatory activities in the private sector.

Mehlum, Moene and Torvik (2004) use a simple model to show how this mechanism can lead an economy towards a poverty trap and the necessary conditions to escape from it. The background of the model consists of a set of entrepreneurs who can decide the type of activity they are going to perform (to produce goods and services or to expropriate resources from

²⁵ “Parasitic Activities” is the term used by Mehlum, Moene and Torvik (2004) to refer to organized crime that directly extort and expropriate resources from licit entrepreneurs. Other authors, as Murphy, Shleifer and Vishny prefer to coin the term “private rent-seeking”. Notice that under the scope of such definitions we are not interested in crimes on a small scale, although statistics reported above include all kinds of expropriation (nevertheless, they might help us to understand the necessary context for the economic analysis of this section).

producers). When an entrepreneur decides what to do, he does not take the opportunity cost of being a producer as fixed, since the larger the number of producers, the larger the revenues for predators. Therefore, predators' revenues create an additional obstacle to development that may hamper investments that otherwise would have taken off and benefited all. The main features of the mechanism presented in the model can be summarized as follows:

- Entrepreneurs are profit maximizers so there will be movements from one kind of activity to the other as long as one of them is more profitable.
- There exist joint economies, in the sense that producers' revenues are a positive function of the number of entrepreneurs dedicated to produce, due to demand externalities.
- As the number of producers increases, the return to parasites goes up as well, and the opportunity cost of production therefore increases with the number of producers

Under these conditions, it can be seen that the model would show two stable equilibria, one good and another bad. In the bad equilibrium, where a large share of entrepreneurs engage in parasitic activities, if a predator decides to move towards productive activities, all kind of entrepreneurs would gain²⁶ (including himself), but as far as production is less profitable with respect to predation, someone else will take his place as a predator. The opposite mechanism would take place in the good equilibrium, where we only find productive entrepreneurs.

Nevertheless, this situation can be avoided if profits of productive activities remain higher than profits of parasitic activities for any allocation of entrepreneurs. In that case, all predators would decide to switch to productive activities leading to a unique desirable equilibrium. Unfortunately this does not seem to be the case nowadays in many developing countries. The stagnation caused by this mechanism is deeply hindering economic development in the long run. As seen in the model, not only should we account for the expropriated resources but also for the forgone investments in new businesses due to the threat of predators that encourage entrepreneurs to move to predatory activities. These obstacles for economic growth especially affect the accumulation of productive factors. What could make productive activities more profitable

²⁶ Predators would obtain more direct revenues from the new producer, and old producers benefit from the newcomer because we have assumed joint economies.

regardless the distribution of entrepreneurship between producers and predators? Undoubtedly, minimizing the capacity of extortion of predators would help to reach that target, and this can be achieved by a proper enforcement of the producers' property rights.

It is reasonable to think that the amount of resources that predators are willing to expropriate will depend on the probability of being caught, so an effective judicial system that persecuted predators would protect these rights and would help to escape from the vice circle described above. One could think that for this argument to be effective, we would also need an efficient and uncorrupt police capable to bring criminals to the court, something that seems far from being viable in countries like Mexico or Ecuador where the rates of police corruption are enormous. However, although this criticism might be partially relevant, one should regard the role of the judiciary not only as a way to eliminate crime by catching criminals, but also as a way to impose a credible threat to those criminals that have not been caught yet. An effective application of the criminal code in these cases might be very helpful to dissuade entrepreneurs to move towards predatory activities, and hence, to escape from the poverty trap. Therefore, the level of harmful capacity of the parasitic sector will not only depend on the probability of being caught but also on the degree of punishment in case of being caught, which is determined by the level of law enforcement (or the judicial efficiency).

3.2. Weak Enforcement of Contracts as a Source of Economic Inefficiencies

The rationale of this argument implies that a costly transaction system in which contract among economic agents are difficult to enforce, may cause vertical integration and price inefficiencies that hamper economic growth in the long run. An efficient judiciary may play a key role by lowering the transaction costs and the uncertainty among the contracting parties. This efficiency loss may be interpreted as a weaker TFP, provided that it may distort the efficient allocation of factors in the long run.

Pinheiro (1996) broaches the price inefficiency problem with a simple model that helps to illustrate the role of a credible judiciary to foster efficient price setting. *Because contract and property rights are not properly enforced, firms may decide not to pursue certain activities, forego the opportunity to specialize and exploit economies of scale, mix inputs inefficiently, not allocate production among clients and markets in the most efficient fashion, keep resources*

unemployed etc. Pinheiro uses a standard capital-asset-pricing model in which the firm set prices with regard to the expected rate of return. According to this approach, the expected rate of return $E(r)$ equals a free-risk rate (i) plus an expected factor that depends on the risk aversion of the firm (a) and the variance of the return coming from the operations with clients (σ_r):

$$E(r) = i + a\sigma_r$$

Assuming that there are two types of clients, one who pays accordingly to the contract and another who does not fulfill it and requires renegotiating it, the expected rate of return would equal:

$$E(r) = (1-\pi)r + \pi(1-\alpha)r \quad \text{and} \quad \sigma_r^2 = r^2\alpha^2\pi(1-\pi)$$

where π is the share of clients who require enforcement of the contract and α is the cost of renegotiating the contract. Combining the three equations we obtain the rate of return with which the firm operates:

$$r = \frac{i}{1 - \alpha\pi(1 + a\sqrt{\frac{1-\pi}{\pi}})}$$

It is straightforward from the previous expression that the rate of return will be higher the larger are the levels of risk aversion, the cost of enforcing the contract and the share of bad debtors. Notice that these three variables are directly influenced by the level of judicial efficiency. First, if after the renegotiation of an unpaid contract, parties do not reach an agreement, they will decide to go to the courts, and therefore, the more efficient is the judicial system the less the debtor party will bid for renegotiation, reducing the costs α . More specifically, what the debtor party does is to set its renegotiation demands till the point in which the other party equals the utility of accepting the renegotiation to the utility of going to the courts. Secondly, a more reliable judicial system will dissuade clients to break the conditions of the contract in order to seek extra rents, so the share π of bad debtors will decrease as far as the judiciary becomes more effective and credible. A third point, which Pinheiro disregards, is the

fact that the level of risk aversion of the firm might be also influenced negatively by the level of judicial efficiency.

As a consequence, we see that the price charged by firms would be lower the less costly is to enforce the terms of a contract. But which are the implications of this result to economic growth in the long run? We have just seen that the main argument of the model is that under low levels of contract enforcement, clients may expropriate firms by breaching their contracts and withholding payments. This expropriation accounts negatively for the accumulation of productive factors that create aggregated economic growth, because reductions in firms' income count for less productive investments. Furthermore, as a response to compensate this effect, firms will set higher prices that might be distant from the efficient ones, discouraging both types of clients to consume and yielding less amount of production than those resulting from an efficient allocation²⁷. Once again, a suboptimal set of prices within the context of a general equilibrium model lead us to undesired outcomes in terms of factor allocation and production levels.

Nevertheless, as noticed by Pinheiro himself, this approach only regards the case in which firms are the ones to be expropriated. It can be seen that, particularly in the context of developing countries, in many cases firms expropriate clients by providing services and goods with different features from those stated in the contract. In this case, firms are the ones breaching the terms of the contract and, because litigation remains very costly for consumers, and because they do not bear bargaining power against firms, losses are irreversible. Nonetheless, repeated transactions under this behavior would lead to lower levels of consumption, because transactions are less trust worthy after observed breaches. Thus, in order to keep sustained levels of consumption firms will try to keep the terms of the contract, but, as an incentive for their self-enforcement, they will obtain rents from consumers by increasing the prices²⁸. Hence, comparing to the previous case where the breach of the contract came from the client's side, we reach a similar outcome in which prices are kept higher than in an optimal situation with low costs of external enforcement²⁹. Obviously, the negative consequences for economic growth remain identical than in the previous

²⁷ Chemin (2004) provides theoretical arguments (in a game theoretical context) and empirical evidences to relate the judicial efficiency and contracting behavior in India. He finds that having a slower judiciary is associated with more breaches of contract, less relationship-specific investments, a greater shortage of capital, less access to formal financial institutions and a preference for family ownership of firms, which seems to be consistent with our arguments.

²⁸ See Klein and Leffer (1981) for a formalization of this argument.

²⁹ These outcomes will depend on the structure of the market and the bargaining power of the contracting parts, nevertheless, here I have regarded the most common case in which the bargaining power remains in the supply's side, and hence prices end up at higher levels no matter who breaches the contract first.

case, and they could be avoided if a credible mechanism to enforce contracts applied in the transaction since the moment in which it is negotiated

A second argument that regards a weak judiciary as a source of economic inefficiency is related to the internalization of transactions within the structure of the same firm. Indeed, inefficiencies not only can come from price setting, but also from altering the optimal structure of the market and the size of the firm. Sherwood, Shepperd and de Souza (1995) summarize the problem as follows: *“Because of poor enforcement, firms may internalize as many transactions as possible to eliminate enforcement costs and risks. This may alter firm size or firms may experience unique pressure to join conglomerates, joint holdings, family groups or other arrangements. The firm trades the flexibility of market choices for the security (and inflexibility) of hierarchy. While these are choices made rationally by firms in countries with strong judicial enforcement systems, in a weak enforcement country the choice of alliances and a firm's size and contents may be forced toward sub-optimal behavior.”* Vertical integration is fostered when the benefits of mitigating opportunism problems that may arise as a consequence of specific investments³⁰ are greater than the costs of other sources of inefficiency that may be associated with resource allocation within the same productive unit that may emerge as a consequence of vertical integration (Joskow, 2005). The problem of incomplete contracts and vertical integration has been extensively discussed in the economic literature and it goes beyond the decision of “buying it” or “producing it”, since alterations over an optimal allocation of resources may bring about disadvantageous consequences for growth. The costs associated with vertical integration are usually related to higher levels of bureaucratic hierarchy and overload of managerial activities that not only undermine productive investments, but also affect negatively technological innovations. Acemoglu, Aghion and Zilibotti (2002) develop a model in which the equilibrium organization of firms changes as an economy approaches the world technology frontier. In vertically integrated firms, managers have to spend time both on production and innovation activities, and this creates managerial overload, and discourages innovation. Outsourcing of some production activities mitigates the managerial overload, but creates a holdup problem, causing some of the rents of the owners to be dissipated to the supplier. Far

³⁰Once specific investments have been made, a potential "hold up" or "opportunism" situation is favored if the parties can bargain over the appropriable ex post quasi rents (the difference in asset values between the intended and next best use) created by specific investments or must bargain or “haggle” to adapt to changing circumstances as the relationship proceeds over time.

from the technology frontier, imitation activities are more important, and vertical integration is preferred. Closer to the frontier, the value of innovation increases, encouraging outsourcing.

However, empirical evidence does not seem to support the hypothesis that weak enforcement of contracts leads to larger firms. In fact, Laeven and Woodruff (2004) obtained evidences of the opposite effect. The average size of firms in Mexico varies with the quality of legal enforcement in the state in which the firm operates. States with more effective legal systems have larger firms. This finding suggests that the administration of the legal system is an important determinant of the prospects for firm growth. All states in Mexico have the same legal origin, and firms across the country are governed by the same legal code. What varies is the administration of laws and the enforcement of court verdicts. The reason for such a contradictory outcome is that, as we will see later, judicial efficiency is also responsible of other effects that might compensate and even exceed the tendency to vertical integration due to a weak enforcement of contract. Indeed, judicial efficiency facilitates the accumulation of capital through greater access to credit, which determines to a great extent the size of firms.

3.3. Weak Enforcement of Property Rights as a Source of Misallocation of Human Capital

As pointed by Pritchett (2001), there exists a paradox between the macroeconomic results about the accumulation of human capital and its microeconomic foundations. While data clearly show that individuals with higher education obtain higher wages, cross-country regressions of levels of output per capita on productive factors do not show a significant positive coefficient for human capital. In some cases it has even turned out to be negative. As a consequence, it is reasonable to assume that the impact of human capital has varied broadly across countries. The challenge is, thus, to find out why in some countries the predictions from the augmented Solow model do not apply.

Although Pritchett mentions three possible reasons to explain such a phenomenon, we are especially interested in one of them, insofar as it is related to the enforcement of property rights, and hence to judicial concerns³¹. This argument, originally posed by North (1990), implies that rent-seeking and directly unproductive activities can be privately profitable but socially

³¹ The other two possible explanations for the lack of correlation between output and human capital are a low demand of educated labor and the existence of a low quality education system.

disadvantageous and hamper economic growth in the long run, thereby if additional years of higher education are applied to illicit activities oriented towards expropriation, then, this could be a reason for the divergence between micro and macro analysis of human capital.

This problem is known in the economic literature as the allocation of talent. When people can decide freely, they will choose to apply their skills to those activities that provide them the highest income. More specifically, they will perform those activities that involve increasing returns to their abilities, in the sense that a little advantage in certain skill can provide large income differential with respect to other activities. But, what makes an activity more attractive than others? Murphy, Shleifer and Vishny (1991) suggest three features:

- The size of the market: activities with larger markets are more attractive
- Diminishing returns to scale: activities with weaker diminishing returns to scale are more attractive³²
- How much of the rents on their talent individuals can capture

Applying this framework to our current problem, we observe that when a country shows large markets sizes and people can easily set up and manage businesses and keep their profits, then, many talented individuals will decide to perform entrepreneurial activities. However, in connection to the analysis in section 3.1, we see that this is not the case of most Latin American countries. We saw that predatory activities show increasing returns, which make them more profitable and persistent over time, and that entrepreneurs who decided to perform productive activities have serious problems to capture the returns of their investments due to a weak enforcement of their property rights.

However, in this case we are not only interested in the dichotomy between predatory and productive activities, but we also must regard some other activities that, although being licit, do not imply a source of economic development. For example, in many Latin American and African countries today the most talented people use to join the army and the bureaucratic sector in order to access the resources of their own country. Thus, piracy is not the only alternative to

³² Murphy, Shleifer and Vishny illustrate this point with a very useful example. A surgeon is constrained by his physical ability and his time, since he can operate for sixteen hours a day, while an inventor overcomes these constraints when his invention is embedded in a large scale of products. Therefore, entrepreneurship shows weaker diminishing returns to scale than surgery does.

productive activities when it comes to the allocation of talent. These other activities are in fact pure rent seeking in its original meaning; which it takes place when an entity seeks to extract uncompensated value from others by manipulation of the economic environment -- often including regulations or other government decisions.

With regard to the implications for long-run economic growth, the excessive allocation of human capital on rent-seeking activities may have strong hampering consequences. Murphy, Shleifer and Vishny (1991) present a model of the allocation of talent in which, if returns to skills are greater in rent-seeking, then economic growth is harmed by drawing the most talented people away from productive activities to piracy. The reasoning is similar to the one explained in section 3.1, but now we focus on the specific role of human capital. The most obvious effect is that rent-seeking activities consume resources that otherwise would be applied in productive organizations. In the case of predatory activities the reasoning is quite obvious, and in the case of licit rent-seeking activities such as public bureaucracies or the army, although they do not expropriate resources, they consume them in order to perform tasks that do not generate economic growth or can even hinder it (for example by setting excessive red tape). Secondly, the presence of too much rent-seeking induces less investment in productive activities, as seen in the model of parasitic activities; and finally, if most of the talent is allocated in rent-seeking, the quality of entrepreneurship would decrease, yielding less productivity. Notice that, while in the analysis in section 3.1 we were concerned about levels of factors accumulation due to the forgone investments, now we also regard the efficient allocation of an specific factor (human capital), which may counts for higher rates of productivity.

Judicial efficiency may also play an important role in the allocation of talent. As seen above, the capacity of certain activities to attract human capital will depend on how much rents can be captured. If rents from productive activities are safe from the threat of talented predators and piracy becomes a risky and less profitable activity (all of it thanks to an affective and credible enforcement mechanism), then, we can expect talented individuals to move from piracy towards productive activities. This mechanism would allow reducing gradually the market size of rent-seeking activities, which is another of the factors that determines the allocation of talent. For example, many talented lawyers and business man in Latin America dedicate their knowledge in consultancy firms whose main task is to give advices about how to evade taxes, to perform subsidies frauds or to disregard labor laws with total impunity. Information technology experts

are also one of the most highly valued guilds for embezzlements and illicit appropriations of funds and information. An exemplary judicial system that persecuted and punish those activities would reallocate human capital towards socially beneficial activities, insofar as piracy would become too risky and less profitable for talented individuals³³.

Nevertheless, the analysis above is not the only argument claimed to defend the judicial efficiency as a source of human capital allocation. Some authors, as Köhling (2000), have argued that accumulation of human capital can be fostered through the enforcement of education law, and hence, improving the education system. According to this theory *expensive and unjust judiciary can prevent poor and disadvantaged people from enforcing their rights, and effecting through the lack of education the economic development of a country*.

However, from my point of view, this argument is unrealistic and entirely misleading. Indeed, the reality in many Latin American countries is that education, at least basic education, is formally free and mandatory until a certain age, but this right is often not enforced. However, in this case, the presence of an efficient judiciary would not alter the picture. No matter how efficient judges are in applying education law, the reality is that no one would undertake civil actions to defend his/her right to education. It is difficult to imagine a trial in which parents claimed their children's right to education, to the extent that parents usually need children to be employed for the survival of the family. Neither the state, through the actions of public prosecutors would ever have the capacity to start trials to enforce those civil rights. The degree of litigation in these cases is not a consequence of the efficiency of the system, but it stems from structural economic incentives determined by the degree of economic development of the society. Nevertheless, we have already regarded several arguments that support judicial efficiency as an engine of economic development, thus, the enforcement of law and contracts might indirectly foster higher rates of school enrolment and greater human capital accumulation. But this is only a very indirect mechanism that takes part of the whole process of economic development. What seems clear is that the role of the judiciary can not cover the enforcement of education rights, as far as the level of school enrolment is an endogenous element determined by many other factors.

³³ Murphy, Shleifer and Vishny (1991) point out that efficiency differences between productive licit activities and piracy could be exaggerated in some extent. They take trade as an example. Trading might bring efficiencies in terms of pricing and facilitating the access of capital, but they claim that the main gains from trading come from the transfer of rents to the *smart traders from the less astute*.

3.4. Weak Enforcement of Credit Rights as a Source of Lack of Finance

The breach of a credit contract from the side of debtors may be caused by solvency reasons, perhaps because of a failure of his investment project. However, the economic performance of a debtor is not the only element that affects his willingness to pay back. Indeed, even though he is able to fulfill the terms of the loan contract, if the benefits from delaying the payment are larger than the expected sanctions and the costs of enforcements, then the debtor will have incentives to default. Thereby, it seems that credit defaults depend to a large extent on institutional matters, and more specifically, on the capacity of courts to enforce credit rights.

The way in which different countries regulate the protection of creditors varies depending on the legal system they adopted. We can distinguish three different kinds of historical legal systems. The common law system, implanted in countries of the Anglo-Saxon tradition, concedes an outstanding role of judges' jurisprudence, which is directly incorporated into the ruling legislation. French, German and Scandinavian laws are Civil law systems that are rather based on the tradition of civil Roman law. La Porta and others (1997) found strong empirical evidences to support the strength of common law systems to enforce credit rights against the weakness of civil systems, especially in countries that adopted the French Civil Code, as most of Latin American countries did as an influence of the Spanish colonization. They show that French civil law countries have both the weakest investor protections and the least developed capital markets as compared to common law countries. It is important to note that the extent to which courts can enforce credit rights is determined both by the quality of the legal system and by the efficiency of courts when they apply them. Although data show that common law systems perform better in this task, my claim is that there is still room for improvement within the same legal systems in the way laws are applied. Thus, here we are mainly concerned about judicial issues, taking the quality of law as given³⁴. The fact that most of Latin American countries adopted the French Civil Code tradition facilitates very much the purpose to test the economic potentials of a judicial reform in the region, since we do not need to control for legal systems differentials.

³⁴ Here it is important to remind the assumption I made in section 2.2 about the quality of substantive law. Considerations about the need of a legal reform escape from the scope of this work.

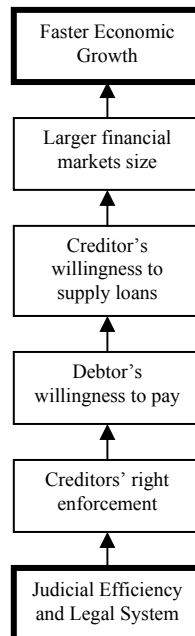
Judicial performance is a new argument that helps to explain the underdevelopment of financial system in most of low and middle income countries, while poor economic policy and market failures were traditionally blamed for this. It has been claimed that macroeconomic instability increases credit risk, while low and unevenly distributed income reduces market size and increases unit costs. High risk and costs would keep interest rates high, limiting the set of viable projects and increasing default rates. Thereby, the shortage of well-trained labor and the high cost of information (poor accounting systems, high costs of computers and information technology in general, etc.) also reduce the ability of banks to assess borrowers' ability to pay back their loans. As a consequence, very little credit flows to the private sector (see, Pinheiro and Cabral, 2001).

As stated before, the way in which judicial efficiency may foster financial development and access to credit is through the enforcement of creditors' rights. By lowering the costs of doing so, we would affect the borrower's future willingness to pay, which in fact helps to determine the ex ante willingness of lenders to supply credit and the conditions under which the contract will bind. Jappelli, Pagano and Bianco (2002) illustrate this mechanism in a model of opportunistic debtors and inefficient courts. Judicial efficiency is measured by the fraction of inside or outside collateral that lenders can expect to recover from an insolvent borrower at the end of a trial. According to the model, an improvement in judicial efficiency unambiguously increases aggregate lending, by opening the credit market to borrowers with little collateral. The impact of judicial efficiency on the average interest rate is ambiguous, in that this depends on the structure of the credit market (competitive or monopolistic) and on the specific judicial reform (improvement in the recovery of inside or outside collateral). This is one of the few theoretical models that attempt to link the judiciary with the development of the financial sector, albeit, the empirical literature is much more abundant in this issue. There are several studies that show cross-country correlation between the legal system and the size of capital markets (see La Porta and others, 1998 and 1997, and Levine 1998 for instance); but as I mentioned before we are specially interested in the role of the judicial efficiency, so we rather need evidences at country level (or at least, at homogenous legal system level) to test how important the effective application of law is. Pinheiro and Cabral (2001) use data from Brazil to show that differences in the quality of judicial enforcement are as important as per capita income differentials in explaining cross-state differences in the ratio of credit to GDP. Results indicate that it would be

possible to increase the volume of credit by 8.5 percent of GDP by improving the index of judicial performance in 1%. Jappelli, Pagano and Bianco run their own empirical analysis using data from Italian provinces. In their regression analysis they relate lending, fraction of firms with overdraft loans, interest rates and non-performing loans to length of trials and judicial backlog, controlling for credit market concentration, provincial GDP, calendar-year effects, and - in some specifications -provincial effects. Again their econometric estimates show that the judicial districts with better legal enforcement display more lending activity and less credit rationing. Finally, Chemin (2004) uses data from India on non-recovery of service charges/fees/credit, design of contracts, whether a firm is capital constrained, source of borrowing and the form of ownership, together with measures of the judicial enforcement to show that *having a slower judiciary is associated with more breaches of contract, less relationship-specific investments, a greater shortage of capital and less access to formal financial institutions.*

Therefore, it seems that both theoretical and empirical arguments support the hypothesis that better courts help to achieve larger financial markets. The reasoning is summarized in *Figure 2*.

Figure 2



However, one aspect that I have neglected so far is the relationship established between the development of the financial sector³⁵ and the economic growth, which is the last step of the scheme presented above. Examining the theoretical causal links between the financial sector and economic growth has turned out to be a great controversy within the economic literature. Although this discussion escapes from the scope of this work, it can be summarized as a classical problem of double causality. While some scholars claim that financial development is a response to economic growth, some others regard it as a more than obvious mechanism to enhance faster development. Indeed, if finance is to explain economic growth, we need theories that describe how financial development influences resource allocation decisions in such a way that it fosters productivity growth. Levine (2004) provides five different mechanisms through which financial development can be linked to growth:

- Producing information ex ante about possible investments and allocate capital
- Monitoring investments and exert corporate governance after providing finance
- Facilitating the trading, diversification, and management of risk
- Mobilizing and pool savings
- Easing the exchange of goods and services

Nevertheless, Levine himself notes that there also exist some other ambiguities that might make the link less clear than these mechanisms apparently show. Thereby, *higher returns ambiguously affect saving rates due to well-known income and substitutions effects. Similarly, lower risk also ambiguously affects savings rates. Thus, financial arrangements that improve resource allocation and lower risk may lower saving rates. In a growth model with physical capital externalities, therefore, financial development could retard economic growth and lower welfare if the drop in savings and the externality combine to produce a sufficiently large effect.* Therefore, due to these theoretical ambiguities, it seems that empirical evidences play a crucial role to determine to what extent financial development enhance faster growth. Levine (2004) reports a vast empirical literature including firm-level studies, industry-level studies, individual country-studies, time-series studies, panel-investigations, and broad cross-country comparisons

³⁵ The development of the financial must be understood as the improvement of financial instruments, markets, and intermediaries to reduce the effects of information, enforcement, and transactions costs.

that clarifies the controversy between theoretical arguments, pointing a strong link between finance and growth. Indeed, the econometric evidence suggests that both financial intermediaries and markets matter for growth and that reverse causality alone is not driving this relationship. As a consequence, we can assure that improvements in the judiciary will bring faster economic growth by encouraging credit contracts and thereby expanding the financial sector of the economy.

3.5. Weak Judiciary as a Source of Public Rent-Seeking and Corruption

That corruption implies an enormous obstacle for economic development apparently seems a straightforward conclusion. Nevertheless, some authors have claimed that an initial level of corruption might be helpful to escape from certain traps, since, for instance, bribes might encourage officials to work more efficiently. As an example, take the case of a nurse who accepts bribes from patients' relatives to provide better care, that otherwise would not have taken place under her normal work standards and her salary conditions. But once we extrapolate this behavior onto a different context, let us say an official that provides licenses for a certain economic activity, the outcome might be quite more undesirable. Indeed, by accepting bribes the public agency is rather affecting the competitive conditions, because bribes can be affordable only by a certain set of applicants who would obtain monopolistic powers, excluding the rest from the access to license. Economic theory has approached the problem of corruption from different points of view, but most of them coincide in its harmful effects for sustained economic development³⁶. The classical approach regards the roles of a principal and an agent within the context of a game theoretical framework, and tries to foster agents' honest behavior by providing efficient wage incentives and credible threats in case of being caught. In this section we are rather interested in the effects that a highly corrupted bureaucracy might have on the overall economic performance and how a stronger judiciary can help to avoid them. Notice that courts themselves might be (and in fact they are) a very suitable scenario for corrupted practices, since judges in developing countries are very willing to accept bribes in order to favor those who illicitly bid for their interests. Nonetheless these concerns must be regarded from a different perspective, which

³⁶ Also empirical evidences point out towards this direction. A large share of developing countries show high rates of political and bureaucratic corruption, while, although also present in some extent, developed countries show rather honest administrations and governments. See Mauro (1993) for cross-country comparisons.

is the provision of direct incentives coming from an appropriate judicial reform. This has been an object of discussion in sections 2.2 and 2.3.

In order to assess the impact of a highly corrupt system on the economic performance, first we have to distinguish two different kinds of corruption: bureaucratic and political corruption. The way in which bureaucratic corruption hinders economic growth has been already suggested. By imposing red tape and demanding bribes for necessary permissions for producers, first, public agencies are expropriating resources that otherwise should be used in productive activities. Indeed, when charging bribes, officials act as monopolists who bear the sovereignty over the provided public goods, imposing a taxation that goes straight to their pockets instead of the national treasury. Again, this accounts negatively for the accumulation of productive factors, not only in terms of the amounts “expropriated”, but also in terms of the forgone investments due to the discouragement effect to set new businesses. Secondly, they provide monopolistic power to those who are able to afford the payment of a bribe, since a privileged access to permissions and licenses expels potential competitors out of the market, creating market distortions and economic inefficiencies.

But producers are not the only victims of such governmental activities. As noted by Murphy, Shleifer and Vishny (1993), innovators actually need even more public provisions in order to maintain their activities, such as permissions, access to technological goods, research licenses, patents, etc. Since the demand of such goods is highly inelastic, and innovators normally do not take part of the government’s interests and they are not able to organize an effective lobby, they become easy targets of bureaucratic corruption. However, innovators usually do not have easy access to capital markets, so they can hardly afford the payment of bribes. As far as technological innovation, according to a large share of the economic literature, establishes a very important engine of long-run economic growth, we can be sure that an appropriate persecution of such activities might have noticeable effects on the economic performance.

With regard to the possible effects of political corruption, Shleifer and Vishny (1993) emphasize the need of secrecy as one of the main sources of economic damages. The fact that the illicit taxation over certain activities and goods is easier to detect than others, makes officials and governmental leaders to take irrational and misleading decisions. As noted by the authors, many western observers wonder why developing countries demand inadequate technologies for their needs. The reasons is that, by demanding unnecessary and unique technologies (supported by

donor's funds), parties in the contract negotiate rather bilaterally with a western monopolist, so bribing is easier to perform than in a context of free competition in which governments need to deal with several offers. In this kind of contracts the bribing consists of the expropriation of part of the supplier's benefits, since the purchase of technology is normally subsidized by donor's funds. This rationale about the need of secrecy of corruption may explain as well the deviation of public investments towards less productive activities such as defense and infrastructure projects rather than in education, health. *In light of the enormous returns on these forgone health and education projects, the social costs of corruption might be enormous. Without the need to keep corruption secret, officials could collect their bounty in much less distortionary ways*³⁷.

But the main question I address in this section is how can a more efficient judiciary help to reduce corruption's harmful effects? As mentioned before, one of the main mechanisms that make corruption a durable phenomenon is the absence of a credible threat. When the probability of being caught and the expected sanction are low, officials are encouraged to accept bribes. A credible and efficient judiciary has actually the power to influence both the probability and the sanctions. When the rule of law and the credibility of the judicial system are perceptible by customers of public agencies, rates of bribing reporting are expected to increase, hence the probability of being caught perceived by officials increases and they become less willing to charge bribes. Likewise, if criminal and administrative law against corruption is effectively applied, credible sanctions will noticeable damage the incentives to bribe.

The establishment of specialized anticorruption judicial organs might be an effective measure, as long as the guarantees of independence from the government are respected. Nonetheless, some authors within the political sciences claim that such a measure can turn out to be useless in countries that show endemic corruption, as in the case of many Latin American countries. Indeed it seems quite difficult to hold the necessary independence among the state powers when corruption spreads all over the governmental offices and public agencies. There exist a disparity of opinions about the viability of reliable anticorruption courts, and even previous experiences have lead to different outcomes³⁸. Event though most of Latin American

³⁷ For a formal extension of the economic implications of corruption in terms of growth see Angeletos and Kollintzas (2002). In this paper they develop a model of economic growth in which rent seeking/corruption activities lead towards static and dynamic efficiency costs, reducing production and slowing down innovation and growth.

³⁸ For instance, according to an expert panel survey (see Carnere, 2001), South Africa's anticorruption courts have obtained a quite positive assessment in terms of effectiveness, based on experts' perceptions. In some other cases, as in Pakistan, anticorruption judicial organs have been said to pursue political purposes.

countries have implemented their own anticorruption programs, only Peru (and shortly Venezuela) created specific jurisdictional organs on this area.

3.6. Some Ambiguous Effects

In the previous sections I have presented strong theoretical arguments to support the priority of national judicial reforms in Latin America. The role of a strong judiciary seems truly important in areas such as the enforcement of contracts, the predatory activities within the private sector, the bureaucratic and political corruption, the development of credit markets or the allocation of human capital, which are crucial determinants of long-run economic growth. But the influence of courts on economic activity can still go further, although their implications for growth might be weaker than in the other cases.

Judicial Efficiency and FDI Flows

The first question I address in this section is whether a reliable judiciary could be a significant determinant of foreign direct investment (FDI), and if so, which are the expected implications to growth. That a stable and reliable institutional environment encourages international investors seems to be an irrefutable statement according to theory and the vast empirical literature on FDI determinants³⁹. The quality of institutions is likely an important determinant of FDI activity, particularly for less-developed countries for several reasons. First, poor legal protection of assets increases the chance of expropriation of firms' assets making investment less likely. Poor quality of necessary institutions for well-functioning markets and corruption increase the cost of doing business and, thus, may also diminish FDI activity. And finally, to the extent that poor institutions lead to poor infrastructure, expected profitability falls as does FDI into a market.

However, once we evaluate the specific relative importance of a judicial system, we see that, compared to other institutional features, it might not be as crucial as in other areas. It seems that it is rather the general political atmosphere what encourages international investors to approach emerging markets. Indeed, the fear to policy reversal concerning the liberalization of markets, trade or macroeconomic reforms can have irreversible damages for investments' profitability (Rodrik, 1991). In addition, the correlation between judiciary's quality and the attraction of FDI

³⁹ See Busse and Hefeker (2005), Gastanaga, Nugent and Pashamova (1998), for instance.

flows can be undermined by the fact that foreign investor can actually obtain advantages of inefficient courts and corrupt judges. Unlike other political and macroeconomic variables, courts themselves do not offer a direct guarantee of the profitability of investments. Since FDI implies physical presence of investors in local businesses, litigation can be an important factor when it comes to the defense of their property rights and the enforcement of contracts associated with the investments. However, if jurisdictional organs can be easily bribed in order to overcome possible legal obstacles, thus, judicial quality might not be a crucial determinant of the attractiveness of international investments⁴⁰. In those cases the quality of substantive law plays a more important role to encourage international investors. Therefore we apparently have two opposite effects of a judicial reform on FDI attraction: on the one hand, judiciary and the effective enforcement of law provide safety for investments, lowering the costs of a corrupted institutional environment and helping to enlarge markets' size, which eventually fosters FDI flows. On the other hand, if the political and macroeconomic climate is stable enough, certain level of judicial corruption could be even advantageous for investors, since they can easily afford bribes to defend their interests.

Even in the case that judicial quality was a strong causal link to international investments, the correlation between FDI and economic growth still remains quite unclear to economists. Theory provides contradictory predictions of FDI flows on economic growth. On the one hand, we could expect that foreign investments would exert a positive influence in the form of technological externalities and spillovers. Indeed, through these technological transfers stemming from FDI poor countries could have access to higher rates of productivity and new business know-how. Nonetheless, some other theories point towards a negative effect due to distortions of resources allocation under certain previous financial, trade and price policies (Boyd and Smith, 1992). Even though there have been dozens of attempts, empirical studies on this topic do not really help to clarify the theoretical controversy. For instance, while Borensztein, De Gregorio and Lee (1998) claim that foreign investments are much more productive than domestic investments, finding significant correlation between FDI flows and economic growth particularly in developing countries that show higher levels of human capital; however, Carkovic and Levine (2005) did not

⁴⁰ In previous sections of this paper I have claimed that judicial efficiency sharply discourages domestic investments. The difference with respect to international investors is that they can actually benefit from a corrupted judicial system, since they can afford the payment of bribes to defend their claims in litigation. However, domestic productive investments find a difficult obstacle when facing expensive and long litigation.

find significant evidences of a positive relation using panel data for 72 countries within the period 1960-95 and correcting for many of the most usual econometric bias.

As a conclusion, due to the weak (although positive) correlation between judicial efficiency and the attraction of FDI flows, and the contradictory arguments and evidences about the relation between the FDI and economic growth, the expected impact of a judicial reform on economic growth can not be explained in terms of capacity to attract international investments.

Judicial Efficiency and the Enforcement of Intellectual Property Rights

Another controversial topic in economic development is the extent to which the protection of intellectual property rights may eventually stimulate economic growth in less-developed countries. It is impossible to review in detail the huge literature on this topic, but I will attempt to summarize the main arguments and to asses the role of the judicial efficiency in these concerns. Arguments favoring the enforcement of IPRs point towards the transmission of technologies and information, and the strengthening of markets (Maskus 2000):

- In order to acquire certain level of competitiveness, firms in developing countries need to develop new organizational features and to adopt appropriate technologies to enhance productivity. Such investments are costly and difficult to implement under risk of unfair competition conditions and constant infringement of trademarks. Adequate and enforceable IPRs can help to reward enterprises for creativity and risk taking. When weak standards are retained, countries tend to remain dependent on unproductive firms that rely on counterfeiting and imitation.
- IPRs also might be helpful to accumulate and transmit information. Although the target of patents is protecting inventions from illicit copying, the fact that patent claims are accessible to anyone can help other firms to undertake further research in new inventions. The legal certainty provided by IRPs regulation encourage producers to invest in further technological progress, helping to disseminate knowledge and information
- IPRs may also encourage the interregional and international distribution and the necessary marketing to achieve firm-level scale economies. Weak IPRs limit incentives for such investments because rights owners cannot prevent their marketing outlets from devastating the quality of products. Thus, IPRs permit effective monitoring and enforcement of activities throughout the supply and distribution

chains, giving both innovators and distributors an incentive to invest in marketing, service and quality guarantees

As noted by Braga, Fink and Sepulveda (2000) IPRs laws and administrations are only the preconditions for an effective protection of intellectual property. Proper mechanisms to enforce the regulations are needed to achieve these expected positive effects. Intellectual property owners depend on the possibility to request courts action to stop others from illicit use of their assets. A prerequisite for guaranteeing the enforcement of IPRs is an efficient and independent judicial system -I have already remarked the importance of avoiding political influences and corrupt activities within the judiciary-. In addition, judges should be familiar with the legal aspects of IRPs protection and should have a basic scientific and technical knowledge. The discouragement of small firms for filing complaints due to the costs and inefficiency of courts plays a fundamental role in the area of innovation where bias towards large firms are very likely to occur. Another option in countries with particularly weak judicial systems is to create administrative conflict resolution mechanisms. This option has been implemented in Peru, where most disputes on IPRs are resolved by the tribunal of the *National Institute for the Defense of Competition and for the Protection of Intellectual Property* (INDECOPI). Nonetheless, the use of alternative administrative conflict resolution could even imply an additional burden in the process of enforcement, because any administrative act can be reviewed at jurisdictional instances, making the process longer and more expensive. Administrative dispute resolutions have turned out to be effective only in societies that retain certain degree of institutional reliance.

However, not all the effects of a proper enforcement of the IPRs legislation have positive implications for economic growth. Maskus (2000) indicates and discuss the following handicaps of IRPs for economic development:

- There are likely to be significant amounts of labor employed in copying and retailing unauthorized products in most developing countries. As nations introduce stronger trademarks and copyrights and expand their enforcement efforts, this labor must find alternative employment.
- A major concern of technology importers is that strong patents and copyrights expand the market power of foreign providers of information and new products, permitting higher price markups. As a consequence, importing countries would experience losses in their terms of trade, while access to new products and key impost could be reduced

- One basic point of IRPs is to raise the costs of copying and imitation in order to expand innovation and learning through market channels. In nations where information diffusion comes largely through copying and imitation, growth prospects could be diminished⁴¹.

In the light of these arguments, what can we expect from the current situation of Latin America concerning IPRs regulation? During the 90's, most of the countries embarked on a complex and comprehensive process of legal reform, which has been mainly driven by the need to comply with the Trade-Related Intellectual Property Rights Agreements (TRIPS) and to respond to the demands of the United States. However, tensions relating to the level of protection and enforcement of rights have continued after the adoption of the Agreements (Correa, 2000). Some countries (e.g. Argentina, Andean Group and Uruguay) applied the minimum standards of TRIPS Agreement in practice as the maximum level protection that such countries were willing to provide. Other countries, such as Brazil, were more open to the concession of higher standards of protection. The adoption of new laws has led to a significant increase in patent applications, but patent offices and organs in charge are poorly staffed and equipped to cope with it. In addition, the strengthened enforcement rules require better capacities to act against counterfeiting by custom authorities and police, which face similar constraints and lack of training on IPRs issues. One of the visible effects of the changes in IPRs legislation and the adoption of the TRIPS Agreement has been a significant increase in IPRs-related litigation. This increase in litigation in some cases responds to what Correa (2000) calls "strategic litigation", or legal activity mainly made by foreign firms against small and medium firms in order to discourage or suppress them as competitors. Enforcement measures should allow the protection of legitimate interests, but protect against abuses too.

With regard to the empirical evidences, in the area of the pharmaceutical industry, Nougés (1990) found that the introduction of pharmaceutical product patents would entail significant welfare losses and income gains to patent owners. Similar results were found for Chile and for

⁴¹ For instance one of the key elements of the Japanese technological development was its patent system, designed to encourage incremental and adaptative innovation and diffusion of knowledge into the economy. Mechanisms for doing so included early disclosure of patent applications, an extensive system of utility models, and narrow claim requirements in patent application. Horii and Iwaisako (2005) formalized the arguments against a stringent enforcement of IPRs in an endogenous growth model. They conclude that the strictest IPRs policy does not necessarily facilitate growth, and that, in most cases, the long-term rate of growth is maximized with imperfect protection of IPRs.

Argentina (Challu, 1991). An important question is whether these costs may be somehow compensated by increased transfer of technology or foreign direct investment to the countries introducing or reinforcing IPRs protection. Notwithstanding, some cross-country evidence showed certain positive correlation –not very strong though- between the degree of IPRs protection and the rates of economic growth (Gould and Gruben, 1996). Furthermore, they found that the linkage between innovation and IPRs may play a weaker role in less competitive and highly protected markets.

In the light of all these arguments it is unsure that efforts in reforming the judicial system yield economic payoffs by means of an effective enforcement of IPRs regulations. Expected effects of opposite sign and weak empirical correlations cannot imply an additional argument to support the economic convenience of a judicial reform.

4. Empirical Analysis

4.1. Introduction and Data Description

In the discussion up to this point, I have provided a concept of judicial efficiency, I have discussed different measures that may help to achieve it, and, finally, I have identified some of its expected economic effects in the Latin American context. We saw several microeconomic mechanisms that place the judiciary in a privileged position to encourage economic development, and I showed how these mechanisms may lead to greater long-run economic growth. This section attempts to capture some empirical evidences about these arguments.

As mentioned in the introductory chapter, during the last 10-12 years, the Latin American region has experienced many initiatives in the field of judicial reform supported, both, at national level and by multilateral financial institutions⁴². Great effort has been invested in reducing backlogs, delays and to guarantee fair and predictable courts for an increasing number of litigants, albeit the initial conditions and the extent to which these initiatives have been implemented extensively vary among countries. Therefore, this seems to be a very suitable framework to evaluate whether a noticeable change in the judicial performance may unleash faster economic growth. In addition, the fact that the whole region adopted similar patterns in the legal system, due to a common colonial origin, makes quantitative comparison on judicial performance even more meaningful. Indeed, differences in court performance could be misleading if the role of judges and the applicable law differs systematically among countries.

Nonetheless, the way I will approach the empirical tests of such theoretical arguments is rather indirect, regarding the impact on economic growth. Instead of adding measures of the judicial efficiency into a standard cross-country analysis of GDP, I will provide panel data regressions for 13 Latin American countries for the period 1993-2004 to check whether an improvement in certain quantitative measures of the judicial performance has been associated with a positive change in several determinants of economic growth. The determinants of growth that I will use as dependent variables have not been randomly selected, but they are closely related to the discussion in previous sections, as shown in *Figure 3*.

⁴² For a comprehensive description of the national initiatives in justice reform see CEJA (2005)

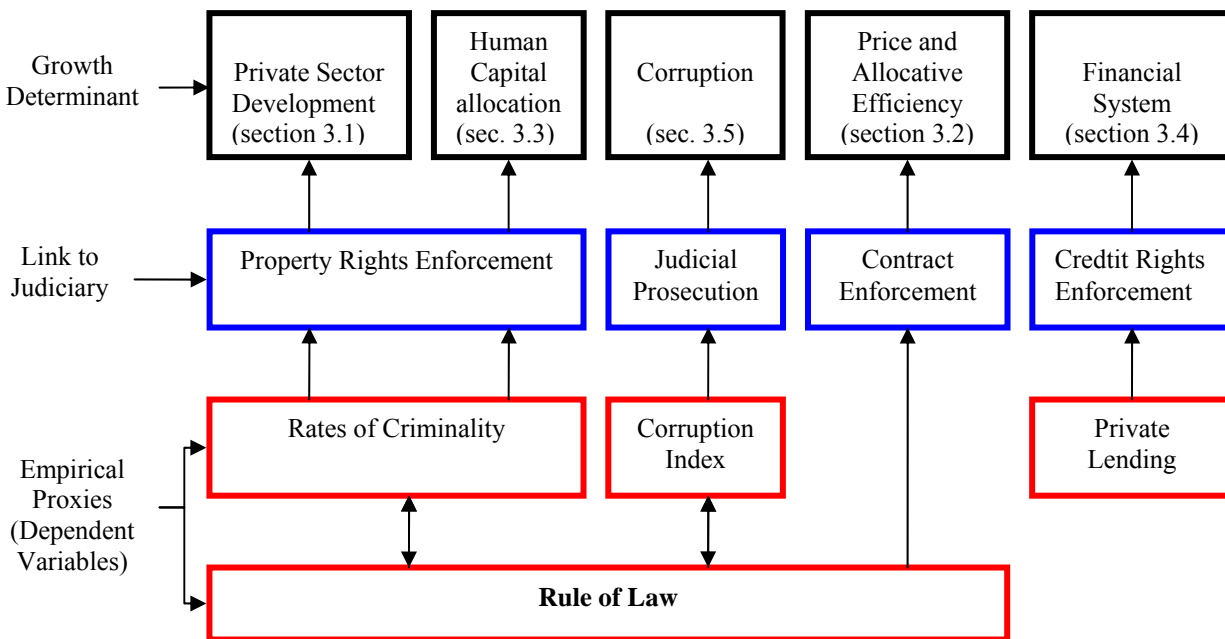


Figure 3. Dependent variables in connection with the theoretical discussion.

Regressing GDP measures on judicial quality might not be very feasible in this framework. We have to bear in mind that, although relevant, the effects of the judiciary on the final output may be quite indirect. Hence, an appropriate approach to accurately determine the impact on growth rates would possibly require a two stages regression approach, using instrumental variables: first we should regress certain determinants of growth on several indicators of judicial quality, and in a second stage, to use the results as explanatory variables of long run economic growth, controlling for the accumulation of classical productive factors. In a panel data approach this could become quite complicated, and the availability of data for judicial indicators would not allow to me to obtain very reliable results⁴³. Hence, in this paper I rather undertake the first stage, assuming the theoretical role that the dependent variables play in the generation of wealth.

The rationale for a panel data approach in this case stems from two different sources. Firstly, the fact of covering only the Latin American area leads to the problem of lack of observations for consistent estimations (only 13 countries reported data on quantitative judicial

⁴³ One of the main problems faced in the empirical analysis is the missing observations for different periods and countries included in the sample, which in panel data analysis is known as “unbalanced panel”. See *Section 4.7* for further discussion about data weaknesses.

performance). Therefore, by including different time observations for each country we overcome that problem, but it noticeably complicates the picture, since we have to deal with cross-sectional and time series data at the same time⁴⁴. On the other hand, dealing with cross-sectional time series might be convenient in my framework, since I am not only interested in the cross-country differential in judicial performance, but also in its evolution during the last ten years, when many judicial reform initiatives occurred in the region.

With regard to the variables, there are several points to highlight before moving to the results of the estimations:

- **Dependent variables selection.** Selecting proxies for the arguments in section 3 was not an easy task. Some of them have more direct implications for economic development (such as the corruption index or the level of private credit) and others require a little more of reasoning to link it to economic affairs. That is the case, for instance of the rates of criminality. Taking measures of the degree of development of the private sector or the allocation of human capital (sections 3.1 and 3.2) seemed quite difficult to perform. Thus, I used instead the rates of criminality as a proxy of the level of protection of property rights, which, according to the theory above, functions as an important factor for the private sector and the allocation of human capital. Another tricky proxy is the index of the rule of law, which in fact feeds back some of the other selected variables. Again, finding proxies for the argument in section 3.4 was quite difficult. Therefore I decided to include the level of rule of law as a proxy of the enforcement of contracts, which in the end helps to explain the economic inefficiencies reviewed in that section.
- **Independent variables selection.** The purpose of this study is to find significant correlations between some indicators of the judicial efficiency and the selected dependent variables. I constructed my own indicators by collecting data from national bureaus of statistics and judicial organs in each country. This resulted in a long and tedious work, since, in order to be comparable, data required a careful inspection and harmonization⁴⁵. The selected judicial indicators focus on two of the four desirable features of the judiciary: the access and the speed of processing. The fairness and predictability are by nature difficult to capture in an appropriate quantitative proxy, and certainly unavailable for the

⁴⁴ See *Section 4.7* for the discussion of weaknesses of the panel data approach in this case.

⁴⁵ It is worthwhile to mention that such an effort to collect a unique data set on judicial indicators might yield a great potential effect, since the World Bank expressed its interests in the resulting database.

region and periods covered in this paper. Next, I provide a description of the indicators, together with some more details about the rest of the variables⁴⁶:

- **Rates of Clearance:** it is the ratio between the number of cases solved by courts in a period and the number of cases that a court receives (either from new demands or inherited from previous periods) in the same period. The rates are calculated for the civil and criminal jurisdictions, and for the overall system.
- **Rates of Congestion:** it is the ratio between the number of pending cases in a court at the end of every period, and the number of cases received at the beginning of the same period. This measure is also reported for the civil, criminal and total jurisdictions.
- **Rates of Litigation:** number of received cases in the judicial branch for every period per 100.000 inhabitants.
- **Judicial Budget:** judicial national budget, divided by the total public expenditure
- **Rule of Law:** index provided by the World Bank that captures the level of public order and the enforcement of rights and contracts according to the law.
- **Corruption:** index provided by Transparency International that scores every country in the fight against corruption with a range of 1-10.
- **Private Credit:** level of credit by deposit (in banks and other financial institutions) divided by the GDP.
- **Interest Rates:** private lending interests rates
- **Criminality:** Crimes recorded in criminal (police) statistics, including attempts to commit crimes, every 100.000 inhabitants.

4.2. Rates of Criminality

In this section I provide some empirical evidences about the role of the judicial performance in lowering the rates of criminality, which, as I pointed out before, may lead to overcome certain poverty traps in the development of the private sector and it may help to efficiently allocate human capital. The dependent variable, thus, will be the total number of reported crimes per 100.000 inhabitants⁴⁷. That improvements in the rates of clearance and congestions lead to lower rates of criminality seems, at a first glance, an obvious statement. However, one could argue that if the judiciary suffers from endemic problems of corruption, or if

⁴⁶ See Appendix I for details about the sources and the specific organs included in the sample.

⁴⁷ Two important remarks concerning this variable. First, we have to take into account that it contains the number of *reported* crimes to the police, which differs from the real rates of criminality. This should not necessarily be a disadvantage, since this measure might also give us a hint about people's confidence in the system. Secondly, it could be more convenient to use rates only for crimes against property, which are the most relevant to my purpose. Unfortunately the availability of such data was much more limited than for total criminality. Nevertheless we can expect it to function as a good proxy.

there is a lack of an effective police force, the impact of such measures might be less effective in the reduction of criminality. Another potential handicap is that the selected judicial indicators do not capture all the aspects of judicial efficiency as defined in *section 2.2*. Here I rather test how the speed of processing and the levels of stagnation in the courts may be associated with the rates of reported criminality. Table 1 shows the correlation coefficients, the robust t-statistic and the fit measure R^2 of four OLS panel data regressions with different judicial explanatory variables⁴⁸.

	Total Clearance	Criminal Clearance	Total Congestion	Judicial Budget	R^2	Observations
Model 1		-2140.916 (-3.56)			0.2915	28
Model 2		-2656.178 (-5.26)	1256.826 (7.32)		0.8319	17
Model 3	-2982.235 (-3.11)		903.6659 (6.23)		0.7524	19
Model 4		-4049.772 (-5.88)		27142.97 (5.20)	0.8294	18

Table1: OLS regressions of criminality rates on several judicial indicators

The results seem to support a positive influence of the judicial performance on the reduction of the reported criminality. From the first model we see that high rates of clearance in criminal courts are significantly associated with lower rates of crime report. With such a model we are able to explain nearly a 30% percent of the variance of the dependent variable. When adding the rates of congestion of the overall system⁴⁹ the explanatory power of the model rises to 80%. We see that the more stagnated the system, the higher the rates of crime report. However we should be cautious when suggesting causal links out of these results, due to a possible problem of double causality: greater criminality may collapse the system, but a collapsed system may encourage criminality due to the ineffectiveness of prosecution. The third model yields similar results when using total clearance rates instead of criminal clearance.

The fourth regression brings interesting implications in connection with the model in *section 2.3*. When including the percentage of public expenditure assigned to the judicial branch,

⁴⁸ See also regression charts in Appendix II

⁴⁹ Note that in this model, the rates of clearance have an even more negative impact on criminality rates, but provided the possible positive correlation between both independent variables, we can expect a negative bias of the coefficient for the clearance rates.

we obtain a positive effect on the rates of reported crime. This means that countries that invested the most in judiciary during the period 1993-2004 did not manage to noticeably reduce criminality. This is consistent with the claim that more expenditure in resources does not necessarily make the judiciary more efficient, due to restriction dynamics explained in the mathematical model⁵⁰ in *sectin 2.3*.

4.3. The Rule of Law

According to a vast empirical literature, indexes attempting to capture the degree of property rights protection, the enforcement of contracts and the public order ruled by law are significant arguments for the cross-country differentials in economic growth⁵¹. In the previous theoretical discussion I paid special attention to some economic inefficiencies caused by a weak enforcement of contracts, and I discussed how a reliable and efficient judiciary may help to overcome the problems. In this section I investigate if observable improvements in the judicial quality are associated with better scores in the rule of law index. As I mentioned before, this index not only captures the degree of contract enforcement, but also some other features related to the appropriate implementation of law. Thus, the implications we may obtain from the reported correlations not only stand for those economic inefficiencies (*section 3.2*), but they have a broader expected effect, due to the nature of the selected indicator. Indeed, it is reasonable to think that the index may be highly correlated with other proxies I used, such as the level of corruption or the rates of criminality. Nevertheless, due to the great explanatory power that the index bear in income differentials, I considered to be a good test for the role of the judiciary in economic performance. In *Table 2* I summarize the statistical findings.

The first model is a simple OLS regression between the rates of litigation (number of received cases per 100.00 inhabitants in one year) and the index of the rule of law. The model shows a positive significant coefficient, but the most interesting implications may be obtained from the chart that plots the observations⁵². The scatter plot shows an inverted U shape, which illustrates certain reasonable dynamics. When rates of litigation are very low, the extent to which law rules in societies can not be very high either. As far as people access the judiciary, they are

⁵⁰ See section 4.5 for further discussion about the relationship between judicial budget and court performance.

⁵¹ See for instance Rigobon and Rodrik (2004) and Barro (1996).

⁵² See Appendix II

	Clearance Civil	Clearance Criminal	Clearance Total	Congestion Civil	Congestion Criminal	Congestion Total	Corruption	Litigation	Judicial Budget	Criminality	R ²	<i>Obs.</i>
Model 1								.0000708 (4.17)			0.4149	31
Model 2							.3451197 (11.34)	.0000256 (3.16)			0.7848	25
Model 3										.0002477 (1.60)	0.1284	25
Model 4				-.099032 (-1.04)							0.0396	22
Model 5					-.5186989 (-1.86)						0.1122	23
Model 6						-.1235459 (-1.27)					0.0493	26
Model 7					-.3109942 (-1.57)		.3804418 (7.89)				0.7496	18
Model 8					-.6159982 (-2.93)			.0000462 (4.15)			0.4857	21
Model 9					-.4971933 (-2.98)		.2844071 (5.89)	.0000231 (2.47)			0.8117	16
Model 10	-.442458 (-1.90)										0.1191	24
Model 11		-1.37112 (-4.82)									0.2772	24
Model 12			-.231926 (-0.62)								0.0046	33
Model 13			-.683918 (-0.92)				.3340506 (7.96)	.0000304 (3.44)			0.7817	21
Model 14							.3856314 (17.49)		1.767642 (0.47)		0.8247	31

Table 2: OLS regression of the rule of law index on several judicial indicators

entitled to enforce their rights and contracts and thus, the index of the rule of law increases. Nonetheless, too much litigation may be disadvantageous for the rule of law, because it may cause stagnation and loss of confidence in the system. That is exactly what the inverted U shape illustrates in this case. Note, that such dynamics are fully consistent with the model described in *section 2.3*, in the sense that high levels of access to the judiciary may not unequivocally imply an optimal situation. However, we can expect many other variables to be correlated with the index. For instance, when we include the index of corruption fight in the previous model the fit measure increases and we still obtain highly significant positive correlations for both variables (model 2).

With regard to the rates of reported criminality, the pattern of the scatter plot is very similar to the case of litigation rates. In fact, both are proxies of the level of confidence on the judiciary, so the outcome is quite reasonable⁵³. One could expect that a low level of criminality was associated with higher scoring in the rule of law index. However, the fact that we are using police claims on criminality shows that low levels of our independent variable would imply low levels of crime reporting, and, thus, lack of confidence in the system. When people report crimes, the rule of law increases, but once the levels of trusts are reestablished, too much crime reporting implies too much criminality and therefore the index falls dramatically. Many of our observations remain in the two first stages of this reasoning, which makes the OLS estimator to be positive.

Now we move to the judicial capacity indicators. With regard to the congestion rates, models 4, 5 and 6 yield negative coefficients for the civil and criminal branches, and for the overall judicial system. It seems quite reasonable that stagnated judiciaries can not be associated with high scoring in the rule of law index. However, the estimates are not very significant, and simple regression analysis might not yield very reliable results due to the omitted variable bias. Consequently, in models 7, 8 and 9 I include the most significant rate of congestion (the one corresponding to the criminal judicial branch), together with two other variables that have proved to be highly significant for the rule of law (the levels of litigation and the corruption fight index). Proceeding this way, I managed to noticeably increase the fit measure and to obtain significant estimates, without changes in the expected signs. However, we lose accuracy due to the loss of observations.

⁵³ For such a statement to be true, it is very important to keep in mind that the rates of criminality are those reported to the police, but not the real level of crime in society. Crime might be committed but not reported to the police, because of lack of trust in the system or its high cost

However, models 10, 11, 12 and 13 seem not to support a positive impact of the clearance rates on the rule of law index. In none of the simple regressions, not even when controlling for other factors, can we find positive effects. In fact, all clearance rates yield significant negative estimates. This appears to be a striking conclusion at a first glance, but let us interpret the results according to the previous theory. Data show that the more cases courts manage to resolve in one year, the lower is the score in the rule of law index. Nevertheless, here it is important to remind the concept of judicial efficiency that I defined in *Section 2*. More particularly, I explained how different features that enter in the description of judicial efficiency may cause a trade-off. In our case, it could be possible that high rates of cases clearance in the courts implied less accuracy in the judgments, and hence, in their predictability and fairness (which are the two features of the judicial efficiency that might collide with the speed of processing). If that was the case, the judiciary would no be fulfilling its assignment, which is the administration of justice, and thereby the negative scores in the rule of law. Another plausible explanation could be that a large share of the acceleration in courts proceeding was due to payment of bribes by litigants, which definitely counts negatively for the rule of law. Finally, model 14 relates the expenditure in judiciary with the rule of law index, controlling for the level of corruption fight. The impact is positive, but not significant, which, again, seems to be consistent with the theoretical discussion: money might not be the solution.

4.4. The Level of Credit

As discussed in *section 3.4*, the level of access to credit might play a relevant role in the process of economic development, and the establishment of an efficient judiciary could significantly contribute to enhance it. I argued that, in order to keep a sustainable financial system, credit contracts need to be self-enforceable, and that the credible threat imposed by the judiciary might be determinant for that. In this section I provide some empirical evidence for these theoretical linkages between the judicial system and the level of credit. The selected dependent variable is the amount of credit per bank deposits divided by the GDP, which is regressed over several judicial indicators –controlling for the private lending interests rates. The correlations matrix is provided in *table 3*.

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	Clearance Civil	Clearance Total	Congestion Civil	Congestion Total	Judicial Budget	Litigation	Rule of Law	Interest Rates	R ²	<i>Obs.</i>
Model 1						1.20e-06 (0.30)		-0.0015197 (-1.13)	0.0236	63
Model 2						-0.0000161 (-2.54)	.2373806 (5.97)	-0.0013476 (-0.76)	0.2917	31
Model 3	.1560022 (1.79)							.0004834 (0.44)	0.0750	49
Model 4	.3447208 (8.72)						.263512 (7.72)	.0019509 (1.51)	0.6239	24
Model 5	.3860145 (9.16)					7.10e-06 (0.52)	.1722731 (2.98)	.0026137 (1.82)	0.6449	17
Model 6		.5386561 (2.87)				-0.0000145 (-2.68)	.2399157 (5.39)	-0.0024302 (-1.29)	0.4860	25
Model 7			.0167302 (0.62)					-0.0025245 (-2.27)	0.0602	44
Model 8			.0009846 (0.03)				.0560205 (0.86)	-0.0029737 (-1.42)	0.0580	22
Model 9			-0.0698234 (-2.07)			-0.0000213 (-2.84)	.1556719 (2.60)	-0.00405 (-1.99)	0.2768	21
Model 10				.0028443 (0.11)		-1.51e-06 (-0.33)	.0234827 (0.41)	.0016183 (1.14)	0.1569	21
Model 11					-3.303137 (-4.30)			-0.0012894 (-1.13)	0.1044	81
Model 12					-2.958271 (-2.40)		.1873616 (6.82)	-0.0006214 (-0.58)	0.3607	33

Table 3: OLS regressions of the level of credit on several judicial indicators.

The first model attempts to explain the variations of private lending in terms of the interests rates and the level of litigation. The estimates are not very significant, although they show the predicted signs. The tendency is that greater litigation brings more credit, but in this case the rates of litigation stand for the overall judicial system, and we would rather be interested in the commercial and civil branches, which are the competent for credit issues. Nevertheless, by regarding the corresponding scatter plot from the Appendix 2, we see that certain countries, such as Costa Rica and Chile, have experienced and increase in the level of lending, clearly associated with higher rates of litigation. The results get fuzzier when controlling for the rule of law, which seems to be positively correlated with level of lending, but pushes downwards the relation with the litigation rates.

According to models 3-5, the rate of clearance is a significant explanatory variable of the level of credit in the Latin American area. We are especially interested in the performance of the civil judicial branch, which in most of the cases is the competent jurisdiction for credit contracts. The estimates keep quite significant, even when controlling for other factors, such as the level of litigation and the rule of law. The clearance rates of the overall judicial branch seem to be quite significant as well. Hence, these results seem to support the idea that the judiciary helps to shape the willingness to lend. However, as reported in models 7-10, the degree of courts congestion seems not to have such a clear influence on the level of credit. Only when controlling for the level of litigation and the rule of law we obtain a significant negative coefficient, which is the reasonable outcome to expect.

Finally, the last two models attempt, without success, to positively link the expenditure in judiciary with the level of access to credit. Once again, increasing the judicial budget does not necessarily bring improvements in the judicial efficiency, and therefore we can not expect economic implications stemming only from that.

4.5 Corruption

Another institutional feature that may impose a serious obstacle for economic development is the level of political and bureaucratic corruption. Its eradication constitutes one of the major challenges concerning institutional building in developing and transitional countries, and as

previously discussed, a reliable judicial system may impose a credible threat against it. Once again, I use the collected judicial indicators to check whether such theoretical linkages apply in the Latin American region.

As usual, we start by testing the impact of the rates of litigation, and, once again, we should pay attention to the shape of the scatter plot, rather than the OLS estimates to figure out the interrelations. Many observations remain in the area where, both, the demand for judicial services and the performance in fighting corruption are low. From this point, higher rates of litigation are associated with less corruption. The best performer in fighting against corruption is Chile, whose observations lay on top of the inverted U, implying intermediate levels of litigation. The observations corresponding to Costa Rica show that too much litigation does not yield good results in struggling against corruption, which seems a quite reasonable outcome⁵⁴. Indeed, too high levels of litigation will cause stagnation and delays in the judicial system, which may encourage bribing judges and may undermine the role of courts in imposing a threat against political and bureaucratic corruption out of the judicial branch.

According to the estimates from model 2 in *table 4*, the rule of law is a highly significant explanatory variable for the fight against corruption, yielding a very high R^2 as well. Therefore I will use this variable as a permanent control for the rest of the regressions. Model 3-6 show highly significant negative estimates for the levels of court congestion, both for the civil branch and for the overall system, even when controlling for the levels of litigation and the rule of law. This is consistent with the discussion about the litigation rates, insofar as high levels of backlogs may encourage litigants to pay bribes to accelerate the process, and may also encourage corrupt behavior out of the judiciary due to the ineffectiveness of courts.

However, estimates from models 7-12 lead us to the conclusion that faster courts are not associated with better performance in corruption. The effect of clearance rates tends to be slightly positive but not significant in any of the cases. This might be due to the fact that bribing judges actually helps to improve the rates of clearance, which does not mean that judicial corruption improves the efficiency, especially when we bear in mind the broad definition of judicial efficiency from previous sections.

Once more, we find no significant correlation between the expenditure on judiciary and the dependent variable (model 13).

⁵⁴ Note that we obtained a very similar pattern for the relation between litigation and the rule of law index.

	Clearance Civil	Clearance Criminal	Clearance Total	Congestion Civil	Congestion Criminal	Congestion Total	Litigation	Rule of Law	Judicial Budget	R ²	<i>Obs.</i>
Model 1							.0001287 (3.59)			0.2807	49
Model 2								1.947442 (13.76)		0.7788	56
Model 3				-.4025445 (-3.49)				1.44597 (5.16)		0.8023	17
Model 4						-.3372495 (-2.85)		.9215571 (4.36)		0.6279	22
Model 5				-.5332341 (-3.64)			-.0000312 (-1.45)	1.540721 (4.86)		0.8368	16
Model 6						-.75394 (-6.06)	-.0000343 (-1.78)	1.020249 (4.32)		0.8125	17
Model 7			.0166605 (0.04)					1.766237 (9.94)		0.7647	29
Model 8	.3488472 (0.52)							1.79906 (6.97)		0.7103	20
Model 9		-.1549595 (-0.23)						1.610463 (4.37)		0.7183	20
Model 10			.5704229 (0.41)				-2.31e-07 (-0.01)	1.793117 (5.80)		0.7331	21
Model 11	.0721776 (0.18)						.0003645 (5.34)	.5267552 (1.27)		0.9054	13
Model 12		.0534186 (0.14)					.0003689 (6.65)	.5104167 (1.43)		0.9053	13
Model 13								2.133248 (10.72)	-6.203587 (-0.85)	0.8280	31

Table 4. OLS regressions of the Index of Corruption Fight, on several judicial indicators

4.6. *Jurimetrics*

Let us finally test some correlations among several judicial variables, such as the level of litigation, the judicial expenditure and the clearance and congestion rates. Apparently, such an analysis has no implications for economists' purposes but, by proceeding in this manner, it is possible to obtain useful implications for the institutional building of the judiciary, and therefore for development oriented policies. As I have already claimed, judicial efficiency can not be summarized in a unique parameter, but it is composed of different desirable aspects that might collide, as in the case of the facilities to access the judiciary and the level of backlogs. Hence, it might be very convenient for our purposes to provide some empirical highlights about such a trade-off in the Latin American context. In addition, such an approach will help me to illustrate some of the results from the theoretical model in *section 2.3*. More specifically, I will try to answer the following questions:

- Does the judicial capacity attract more litigation?
- What determines the levels of court congestion?
- Is the judicial budget correctly spent?

One of the assumptions I made in the model of *section 2.3*, more specifically in the restriction of the langrangian, was that the more capable the courts, the greater the rates of litigation⁵⁵. The first OLS regression on *table 5* seems to support this assumption, insofar as it yields a positive significant coefficient for the rates of clearance. In addition we also have that the rates of congestion have a negative effect on the rates of litigation, implying that stagnated courts discourage people to litigate. Nevertheless, one could think that greater levels of litigation would cause backlogs and delays in the judicial performance. The estimates indicate that the first effect seems to be stronger.

⁵⁵ The assumption is based on peoples' perception about the efficiency of the courts.

	<i>Dependent Variable</i>	
	Litigation	Congestion Total
Clearance Total	10717.89 (2.28)	-2.551674 (3.85)
Congestion Total	-4091.368 (-3.17)	
R ²	0.3436	0.2310
Observations	36	48

Table 5

The second question I try to empirically illustrate is about the determinants of court stagnation. It seems quite obvious that improving the rates of clearance will help to reduce the amount of pending cases, and that is exactly what data show in the second column. However one might think that greater clearance also attracts more people to litigate, due to the increase in the system confidence, and that would feedback the congestion rates. That might happen in a first stage but, as reported in the left hand regression above, stagnation will discourage again the level of litigation, helping the system to enter in a virtuous circle of greater capacity and litigation, but less stagnation.

Finally, I wanted to test whether the implementation of greater expenditure in judiciary has caused better performance in the court indicators. In the theoretical discussion about the optimal way of reforming the judiciary, I suggested that investing larger sums of money in the judiciary might not be optimal, because that could increase the rates of litigation and create further stagnation. That was illustrated in the mathematical model, but nothing was said about how the money actually affects the performance of the courts.

If there is evidence that the investments in judiciary are not directly associated with improvements in the performance of the courts, then we have a second argument why the judicial budget does not help to explain differences in the rule of law, the private lending, etc. Figures 4 and five seem to point in that direction.

The scatter plots show an interesting path, when relating the judicial performance with the money invested on it. Certain observations remain in the area where it is possible to obtain high rates of clearance and low congestion with relatively low judicial budgets. Chile, one of the best economic and judicial performers of the region, remains in this area, but also Mexico and Peru, which seems to be quite contradictory.

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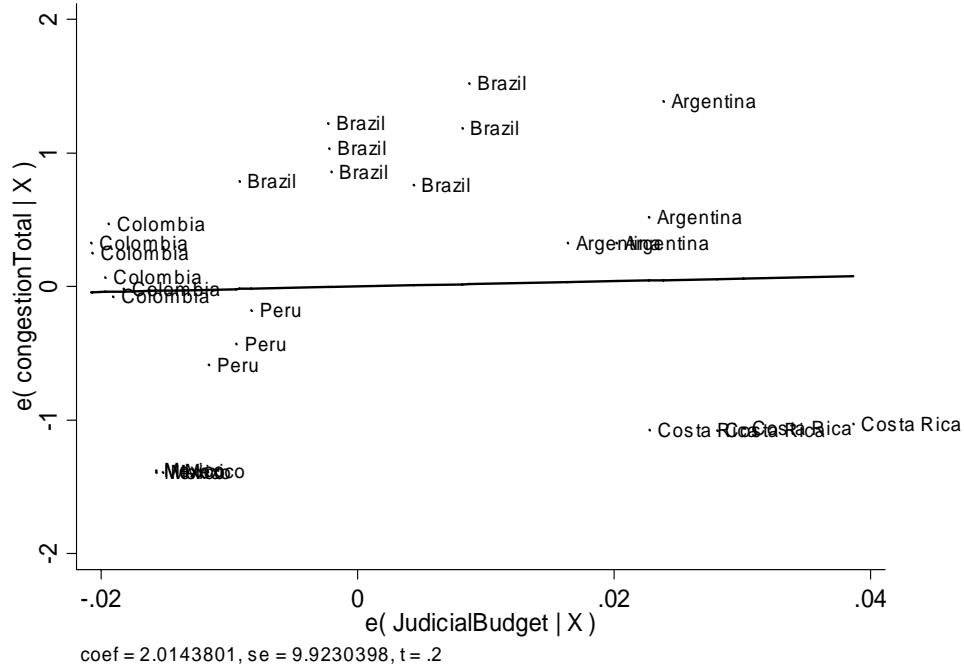


Figure 4

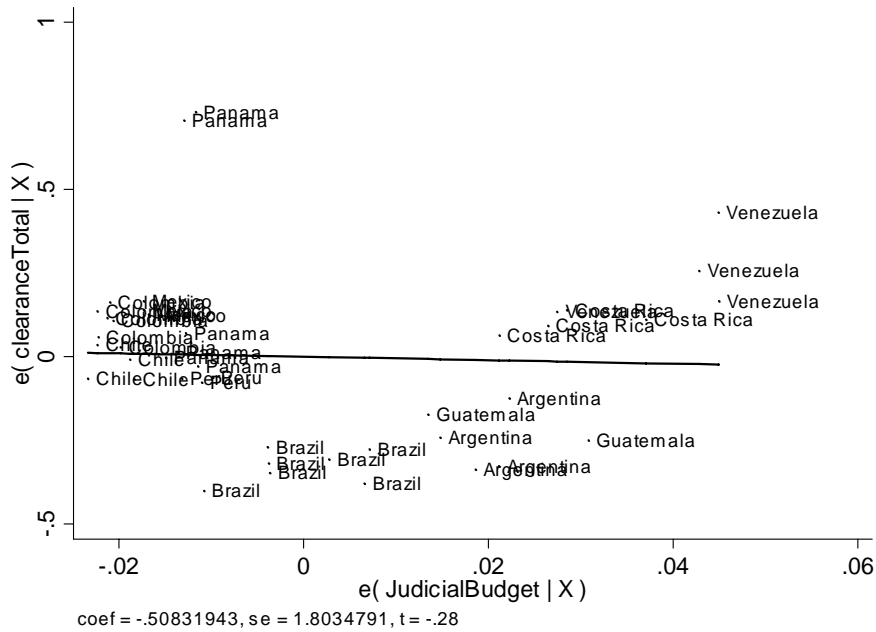


Figure 5

A possible explanation for this would be that good performance in clearance and stagnation may hide a problem of too low litigation, which eventually would banish the potential economic role of the judiciary. That can not be an optimal situation, and that is actually the case of Peru and Mexico.

From this point forward, greater expenditure in judiciary not only does not improve the performance, but it even worsens it, which could be explained in terms of some of the incentive problems stressed in *section 2.3*⁵⁶. Another reason could be that in this stage, when implementing greater expenditure in the judiciary, the rates of litigation grow faster than the rates of clearance, which in the end causes stagnation. Finally, the curved shape of the figures shows that even greater expenditure in judiciary helps to bring back good levels of judicial performance.

These results may have important implications for the design of a judicial reform. First, it is important to identify whether the country faces bad judicial performance, low rates of litigation or both. Hence, data seem to support the hypothesis that greater expenditure in judiciary does not help to escape from low judicial performance when the levels of litigation are very low.

4.7. Weaknesses, Possible Biases and Further Research

Most of the estimates presented in this section show consistent conclusions with the theoretical hypothesis about the potential impact of the judiciary. In general, courts performance indicators are significantly correlated with some institutional and economic features that eventually may encourage faster economic growth. However, the empirical study may possibly suffer from some weaknesses, due to several methodological difficulties.

The first, and most noticeable problem, stems from the lack of observations in many of the reported regressions. The availability of data has indeed imposed an important handicap for the performance of the study, mainly due to the lack of harmonization of judicial statistical information among countries. As a consequence, the data set shows many gaps for different variables, periods and countries (what in statistical terms is known as an “**unbalanced panel**⁵⁷”). This problem may cause a serious bias if the lack of data follows a systematic pattern with

⁵⁶ We saw how judges, lawyers and other judicial staff might feel discouraged to work more efficiently if they perceive that, for instance, the computerization of the system may imply fewer jobs for them.

⁵⁷ The statistical package Stata.8 deals the missing observations problem, by systematically dropping them out of the calculations.

respect the dependent variable (what is called “**selection bias**”). However, this does not seem to be our case, since the missing observations in judicial indicators are due to a random unavailability of data, in different countries and different periods. In some cases data are not available because of the total absence of judicial accounting, which might be correlated with some of the institutional variables that I take into consideration, but in other cases the unavailability responds to other reasons, such as the heterogeneity in trial accounting⁵⁸. Therefore, it is reasonable to assume a high degree of randomness in the pattern of missing data, and hence, we should not expect the estimates to be biased because of this reason.

With regard to the estimation method, there exists an extensive literature about the treatment of missing observations in a panel of data that might help to overcome some problems regarding the efficiency of the estimates. Nonetheless, from my point of view, that would escape from the scope of this thesis, insofar as the reported OLS estimates may be free from serious biases, and fulfill their primary purpose, which is to roughly illustrate some of the theoretical arguments. However, there are some underlying problems that we should take into consideration, especially when it comes to the assessment of the estimates’ significance. The fact of dealing with several time observations for each country and variable may give rise to heterokedasticity and autocorrelation problems. That does not bring consequences in terms of biasness, but conclusions about the significance of the estimates might be done cautiously. A way to mitigate this problem is to use robust standard errors⁵⁹ to construct the statistics, which is actually performed in all the reported regressions in the paper, but we should not expect the problem to be totally solved.

In addition to this, a panel data approach offers a wide range of possibilities to control for possible biases, by using different estimation methods. For instance, the fixed effects (or within) regression method introduces a set of individual intercepts for each country that absorb the influences of all omitted variables that differ from entity to entity but are constant over time. Another possibility is the so-called between estimator that exploit the differences between individuals by performing an OLS regression of individual averages of the dependent variable on individual averages of the independent variables. However, in this paper I decided to run OLS

⁵⁸ Indeed, some observations have been excluded from the study because of the impossibility of comparisons among judicial indicators. For instance, not all countries define in the same manner what is meant by “number of solved cases per year”, which in some cases includes only judgments, but in other it also includes all kind of partial resolution that may cause the transfer of the case to other organ, for instance.

⁵⁹ Huber/White/sandwich robust estimates.

regressions, which exploits both dimensions (between and within) but less consistently. A more careful inspection of the data and a possible completeness of the unbalanced panel would allow me to take further assumptions and to apply different estimation systems to exploit the real potential of the data.

With regard to the reliability of the collected data, it is important to stress that all the judicial variables have been subject of careful inspection in order to be fully comparable. Nevertheless, we should be especially cautious about the conclusions related to the judicial budget. Indeed, this has turned out to be the most difficult variable to construct, mainly due to the lack of homogeneity in the definition of public expenditure in judiciary. I tried to include in the variables the amounts corresponding to similar titles in the different national budgetary laws, but that does not totally guarantee the full cross-country comparability.

Another feasible critique may stand for the variables selection. The selected judicial indicators capture some of the desirable features of the judiciary, but not all of them. My empirical evidences illustrate how the speed of processing and the access to the courts affects some economically relevant variables, but nothing has been said about the predictability or the fairness of the outcomes, which may play an important role as well. This is mainly due to the adoption of a quantitative approach to assess the judicial performance but, nevertheless, some attempts have been made to capture the degree of predictability of courts decision. For instance, Kohling (2000) uses the average dismissed appeals in supreme courts as a proxy. Unfortunately, it was impossible to find homogeneous data for such a variable in all the countries and periods of my sample.

Nevertheless, despite all these inconveniences, my estimates point towards a significant correlation between the judicial performance and some economically relevant variables. These results may open highly valuable possibilities for further research, by for instance completing the data set and testing for some dynamic implications of the judicial reform (i.e. squeezing all the real possibilities of a cross-sectional times series set) and by using some other sophisticated statistical techniques to overcome the mentioned possible weaknesses. On the other hand, in this thesis I have rather taken an indirect test with regard to the long-run economic growth; hence, another possibility for further research would be the performance of an instrumental variable approach in two stages regressions (first, regressing the several growth determinants on the

judicial indicators, and then using the results as instrumental variables in a panel data growth regression).

Also the dynamics within the judicial sector seem to be an unexplored field of work for economists. Indeed, the judicial activity appears to be a very suitable quantitative framework for modeling, due to the complex dynamics in litigation rates, pending cases, trial timing, etc. Although there exists a large literature about the game theoretical approach of court litigation - in which litigants set their strategies provided the expected outcome of the trial- my suggestion points towards the modeling of the judiciary as an “economic” producer whose inputs and outputs (litigation rates, clearance rates, etc.) play a relevant role in shaping economic activity. An optimal design of the judicial system might obtain great advantage of such methodology, and eventually may yield important implications for economic development.

5. Concluding Remarks

This thesis attempted to assess the potential economic impact of judicial reforms by, first, providing theoretical economic reasoning that links the judicial activity with the economic performance, and secondly, by testing for some empirical evidences in the Latin American region.

For such a purpose, first, we needed to identify the desirable characteristics of an efficient judiciary and to describe the ways to achieve it. Thus, in sections 2.2 and 2.3 I summarized the suggested measures to obtain each of the four desirable features (predictability fairness, speed and access), and I illustrated, by means of a simple mathematical model, some of the inner mechanisms that occur in the judicial system concerning the design of its capacity and the incentives of the actors. The model highlighted two main results: first it shows that investments in greater judicial capacity must be done by keeping into account the dynamics of the litigation levels, because, otherwise, courts could attract more litigation than the one is capable to absorb, yielding an suboptimal situation. Secondly, it shows that the capacity of the judiciary could be improved not only by implementing greater investments in capacity, but also regulating the intervention of several actors (more specifically the unneeded intervention of lawyers).

Once I had a conceptual framework and an approximate picture of the forces involved in a judicial reform process, I described some mechanisms that link the judicial performance to the

economic development in the Latin American context. In the third section I provided some microeconomic arguments where the judiciary plays a crucial role, and I identified their macro implications in terms of long run economic growth. The arguments can be summarized as follows:

- 1) I discussed how parasitic activity and private rent seeking behavior can be fought through judicial prosecution, overcoming the poverty traps that those activities may cause.
- 2) A costly transaction system may cause certain economic inefficiencies such as vertical integration and price inefficiencies that hamper economic growth in the long run. An efficient judiciary may play a key role by lowering the transaction costs and the uncertainty among the contracting parties.
- 3) The judicial enforcement of credit rights as an engine to enhance credit flows, and consequently to foster investments in the private sector. I showed how the cost of credit enforcement plays a key role on credit markets, which may strongly influence on investment decisions.
- 4) The prosecution of criminal activities as mechanisms to reallocate human capital. One of the explanations of the weak correlation between investments in human capital and the long run economic growth is that in most of developing countries the talented and well educated individuals might have incentives to focus their skills in profitable criminal activities and rent-seeking. Therefore, by improving the judicial efficiency against these activities we may foster the allocation of human capital in productive activities.
- 5) How the judiciary, by imposing a credible threat, may help to fight against public corruption and rent-seeking, which turns out to be one of the most harmful obstacles for economic development.

Finally, the fourth section of the thesis attempted to find some empirical evidences for these mechanisms, by using some proxies for the growth determinants mentioned in the theory, and by regressing them over several judicial indicators. Hence, the way I tested the economic role of the judiciary in economic growth rather bears an indirect character. By using panel data of 13 Latin American countries for the period 1993-2004, I managed to obtain several significant OLS estimates that support the main hypothesis of the judiciary being a relevant economic actor.

Despite of the missing observations problem, the tendency points towards a significant role of the judiciary in explaining differences in the levels of rule of law, corruption, access to credit and the rates of criminality. However, not all the indicators seem to have the same explanatory power. In some cases the relevant explanatory indicator is rather the rate of clearance (as in the access to credit), and in some others it is the level of court stagnation (rule of law). I also reported some empirical evidences about the interrelations between court performance, litigation level and the expenditure in judiciary, that seem to support some of the arguments of the theoretical model. Indeed, my data support the claim that greater investment in court capacity might be only rewarding for those countries that show, both, low judicial performance in terms of clearance and congestion, and high rates of litigation.

All these results may have important policy implications, since they stress the importance of a judicial reform in shaping the institutional environment for greater economic growth. Economists have pointed out the relevance of the institutional framework to enhance economic development, but there are still few attempts to identify which are those specific institutions and the way to improve them. This thesis made its suggestion, and it may possibly open the way for further future research in a field not very explored by economists.

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Appendix I. Data Sources

Table 1: Data Sources

	Credit	Corruption	Criminality	Rule of Law	Judicial Budget	Clearance Civil	Clearance Criminal	Clearance Total	Congestion Civil	Congestion Criminal	Congestion Total	Interests Rates	Litigation
Argentina	World Bank	Transparency International	UN Surveys on Crime	World Bank	Portal de la Justicia Argentina	Judicial Branch & Supreme Court	Judicial Branch & Supreme Court	Judicial Branch & Supreme Court	Judicial Branch & Supreme Court	Judicial Branch & Supreme Court	Judicial Branch & Supreme Court	International Financial Statistics ,FMI	Judicial Branch & Supreme Court
Chile	World Bank	Transparency International	UN Surveys on Crime	World Bank	Dirección de Presupuestos de Chile	Nacional Institute of Statistics	Nacional Institute of Statistics	Justice Studies Center of the Americas	Nacional Institute of Statistics	Nacional Institute of Statistics	Justice Studies Center of the Americas	International Financial Statistics ,FMI	Nacional Institute of Statistics
Uruguay	World Bank	Transparency International	UN Surveys on Crime	World Bank	National Budgetary Law (2001-2005)	Judicial Branch & IADB	Judicial Branch & IADB	Judicial Branch & IADB	Judicial Branch & IADB	Judicial Branch & IADB	Judicial Branch & IADB	International Financial Statistics ,FMI	Judicial Branch & IADB
Colombia	World Bank	Transparency International	UN Surveys on Crime	World Bank	Departamento Nacional de Planeación	Dep. Nacional de Planeación	Dep. Nacional de Planeación	Dep. Nacional de Planeación	Dep. Nacional de Planeación	Dep. Nacional de Planeación	Dep. Nacional de Planeación	International Financial Statistics ,FMI	Dep. Nacional de Planeación
Venezuela	World Bank	Transparency International	UN Surveys on Crime	World Bank	Oficina Nacional de Presupuesto	Supreme Court of Justice	Supreme Court of Justice	Supreme Court of Justice	Supreme Court of Justice	Supreme Court of Justice	Supreme Court of Justice	International Financial Statistics ,FMI	Supreme Court of Justice
Peru	World Bank	Transparency International	UN Surveys on Crime	World Bank	Justice Studies Center of the Americas	Judicial Branch & Justicia Viva	Judicial Branch & Justicia Viva	Judicial Branch & Justicia Viva	Judicial Branch & Justicia Viva	Judicial Branch & Justicia Viva	Judicial Branch & Justicia Viva	International Financial Statistics ,FMI	Judicial Branch & Justicia Viva
Brazil	World Bank	Transparency International	UN Surveys on Crime	World Bank	Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas	International Financial Statistics ,FMI	Banco Nacional de Dados do Poder Judiciário & Justice Studies Center of the Americas

Guatemala	World Bank	Transparency International	UN Surveys on Crime	World Bank	Justice Studies Center of the Americas	n.a.	n.a.	Ministerio Publico & Asociación de investigación y Estudios Sociales	n.a.	n.a.	Ministerio Publico & Asociación de investigación y Estudios Sociales	International Financial Statistics ,FMI	Ministerio Publico & Asociación de investigación y Estudios Sociales
Panama	World Bank	Transparency International	UN Surveys on Crime	World Bank	Dirección de Presupuestos de la Nación	Órgano Judicial de la Republica	Órgano Judicial de la Republica	Órgano Judicial de la Republica	Órgano Judicial de la Republica	Órgano Judicial de la Republica	Órgano Judicial de la Republica	International Financial Statistics ,FMI	Órgano Judicial de la Republica
Mexico	World Bank	Transparency International	UN Surveys on Crime	World Bank	Presupuesto de egresos de la Federación	Poder Judicial de la Federación & Consejo de Judicatura Federal	Poder Judicial de la Federación & Consejo de Judicatura Federal	Poder Judicial de la Federación & Consejo de Judicatura Federal	Poder Judicial de la Federación & Consejo de Judicatura Federal	Poder Judicial de la Federación & Consejo de Judicatura Federal	Poder Judicial de la Federación & Consejo de Judicatura Federal	International Financial Statistics ,FMI	Poder Judicial de la Federación & Consejo de Judicatura Federal
Costa Rica	World Bank	Transparency International	UN Surveys on Crime	World Bank	Justice Studies Center of the Americas	Judicial Branch. Department of Planning	Judicial Branch. Department of Planning	Judicial Branch. Department of Planning	Judicial Branch. Department of Planning	Judicial Branch. Department of Planning	Judicial Branch. Department of Planning	International Financial Statistics ,FMI	Judicial Branch. Department of Planning
Ecuador	World Bank	Transparency International	UN Surveys on Crime	World Bank	National Budgetary Laws	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	International Financial Statistics ,FMI	n.a.
Bolivia	World Bank	Transparency International	UN Surveys on Crime	World Bank	Ministerio de Hacienda	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	International Financial Statistics ,FMI	n.a.

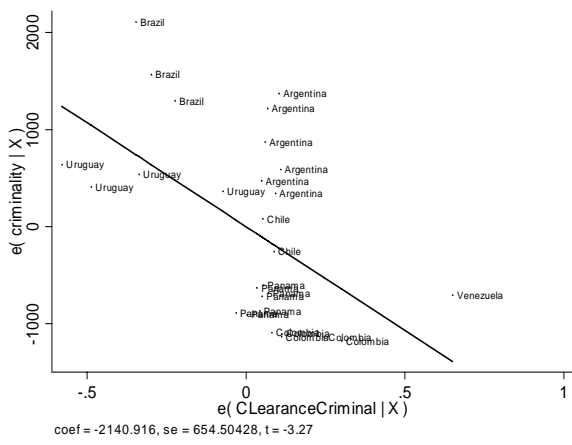
Table 2: Judicial Organs included in the indicator

	Civil Courts	Criminal Courts	Total
Argentina	Juzgados Civiles	Juzgados Penales	Total
Chile	Cortes de Apelaciones (appealing organ)	Cortes de Apelaciones (appealing organ)	Total
Uruguay	Juzgados Letrados de Primera Instancia (first instance)	Juzgados Letrados de Primera Instancia (first instance)	Total
Colombia	Total Civil Issues	Total Criminal Issues	Total
Venezuela	Corte Suprema (supreme court)	Corte Suprema (supreme court)	Corte Suprema (supreme court)
Peru	Juzgados y Salas Civiles (civil courts and civil tribunal sections)	Juzgados y Salas Penales (criminal courts and civil tribunal sections)	Total
Brazil	Juzgados Especiales Civiles	Juzgados Especiales Penales	Tribunales Regionales Federales
Guatemala	Juzgados Primera Instancia Civil (first instance)	n.a	Total
Panama	Juzgados de Circuito y Municipales	Organo Judicial	Total
Mexico	Justicia Federal (civil issues at federal level)	Justicia Federal (criminal issues at federal level)	Justicia Federal (all issues at federal level)
Costa Rica	Primera Instancia Civil (civil first instance)	Primera Instancia Penal (criminal first instance)	Total Primera Instancia (first instance)
Ecuador	n.a.	n.a.	n.a.
Bolivia	n.a.	n.a.	n.a.

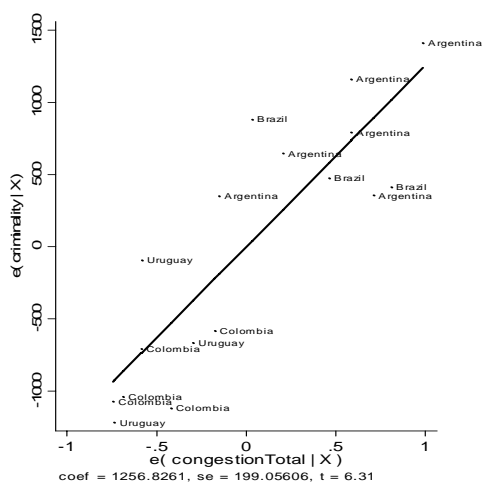
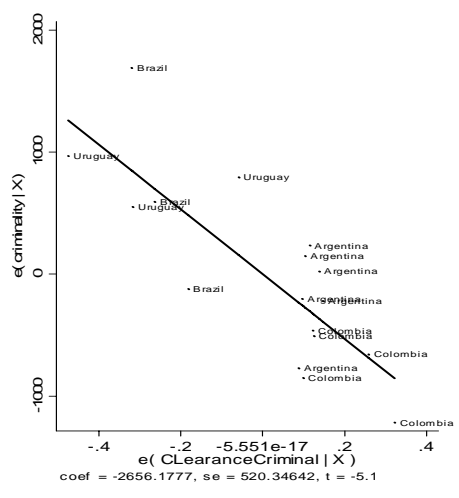
Appendix II. Regression Charts

Regressions from Section 4.2

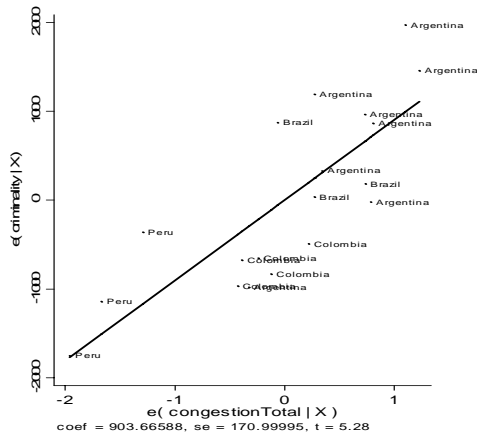
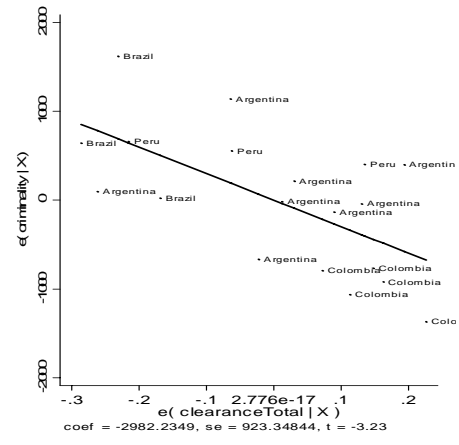
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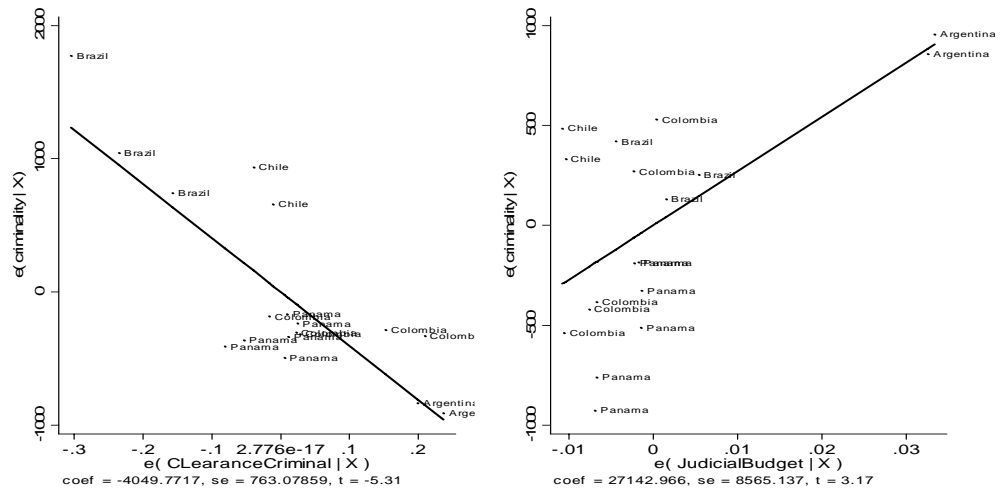
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Model 3

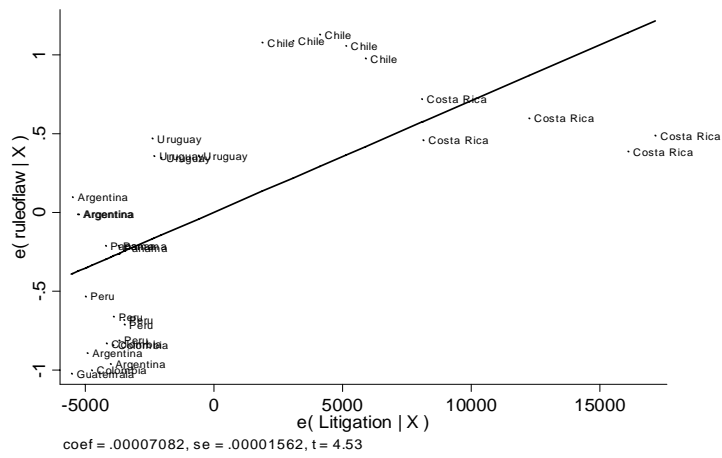


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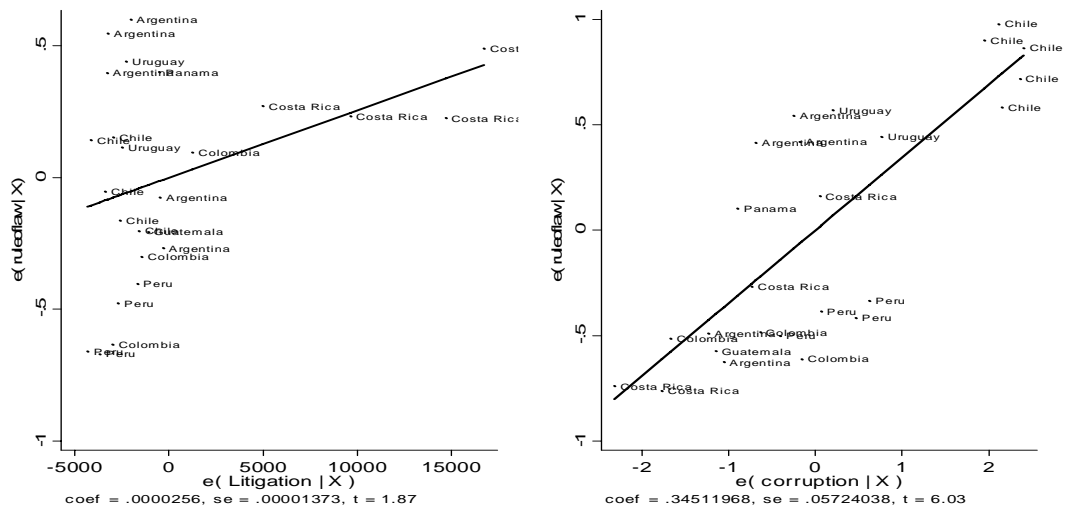


Regressions from Section 4.3

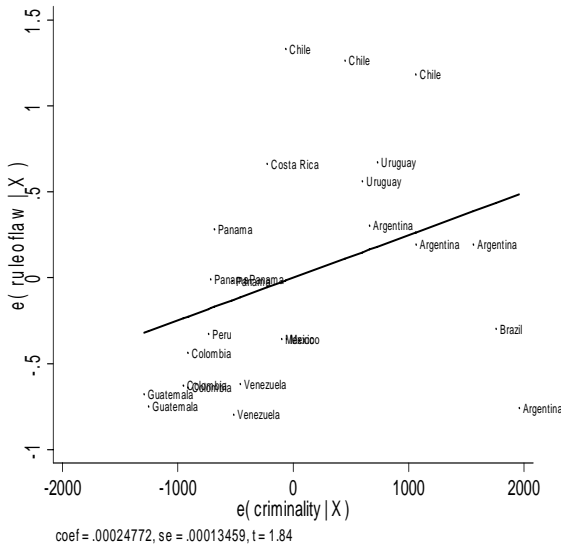
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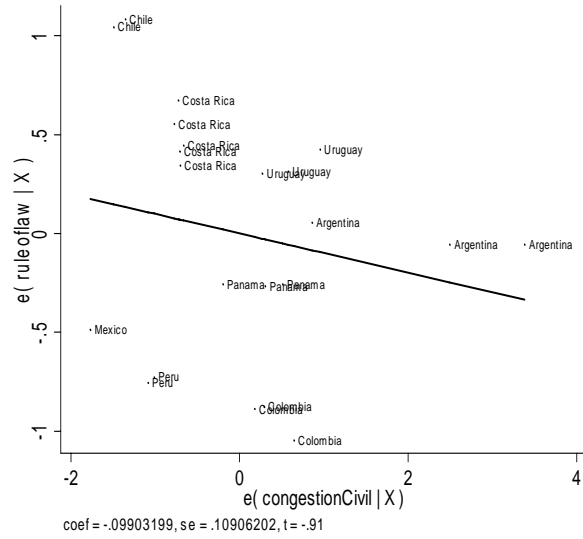
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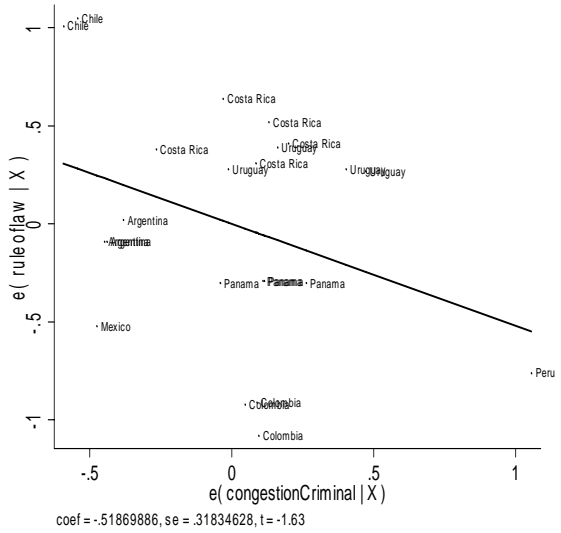
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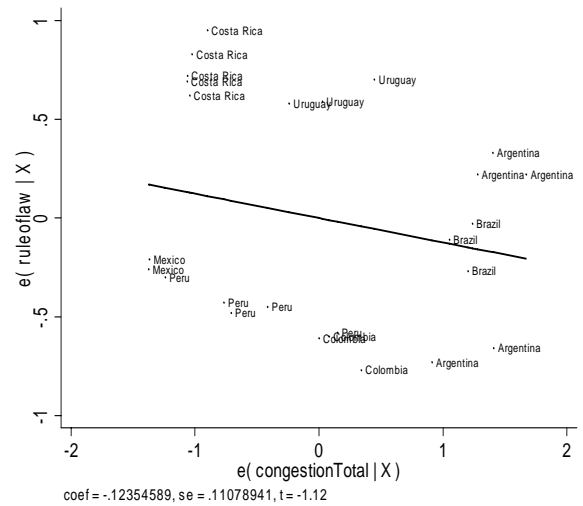
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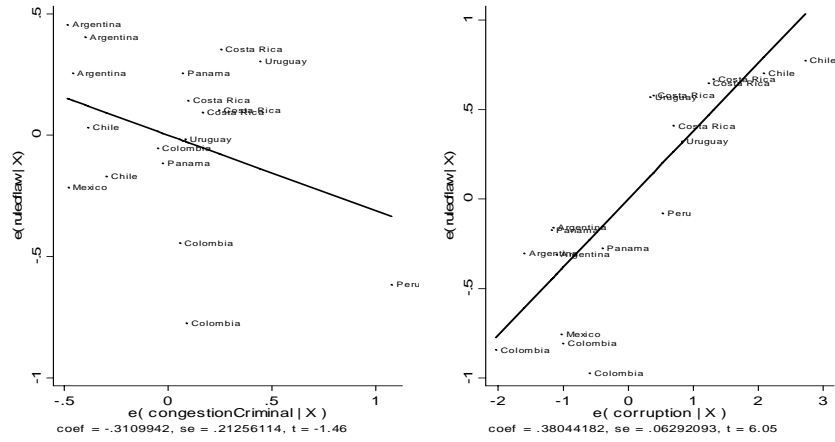
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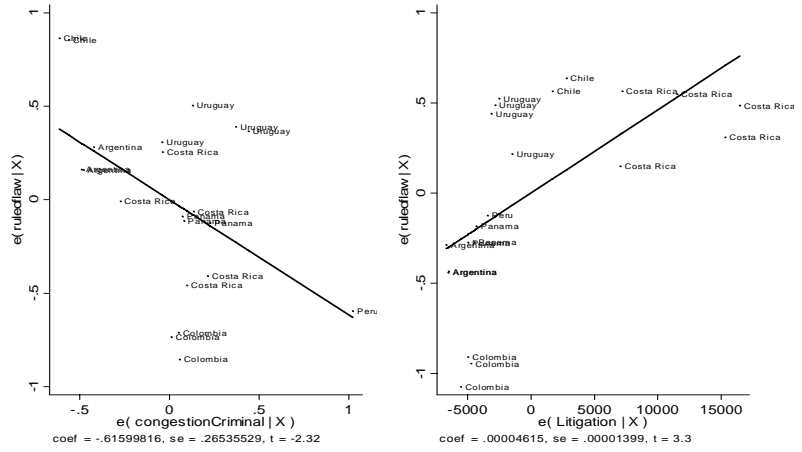
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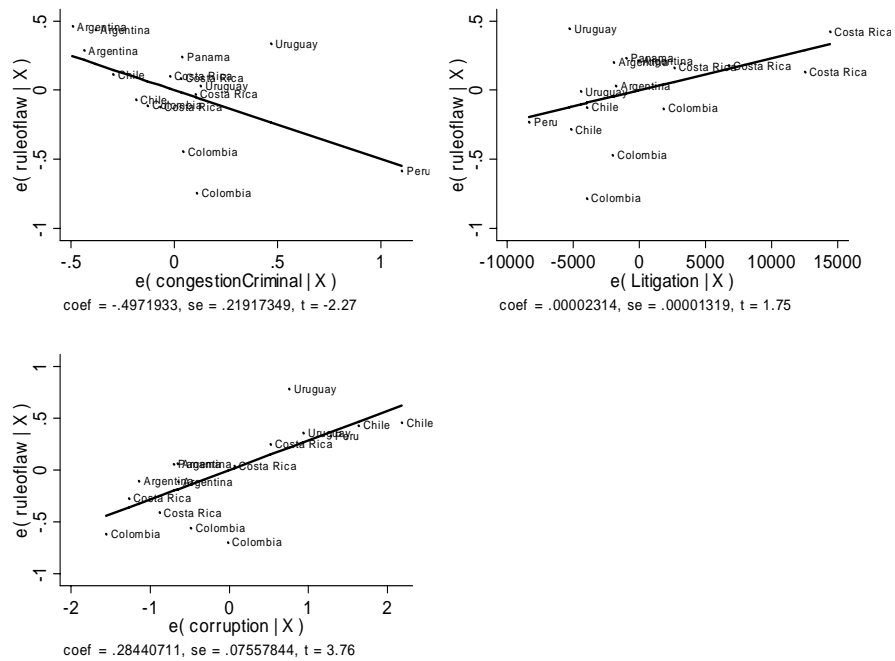
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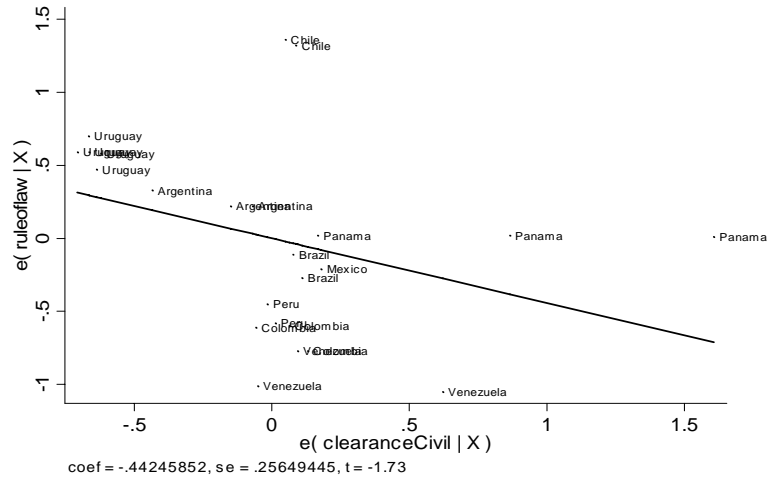
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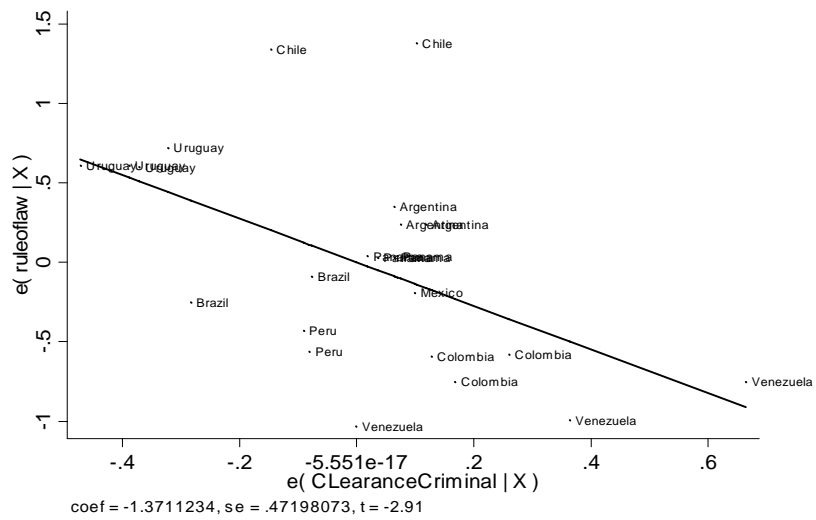
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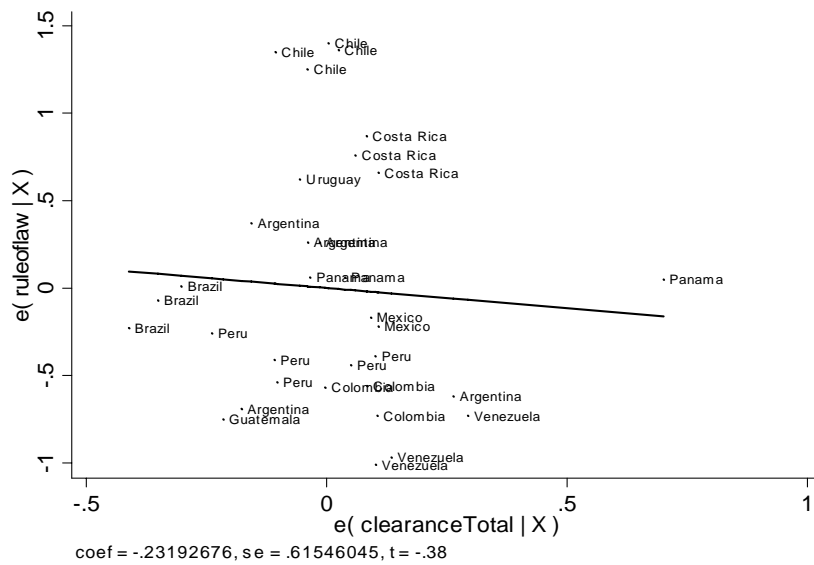
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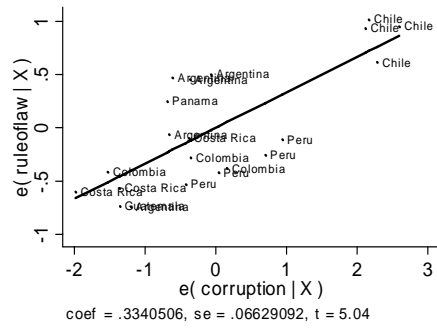
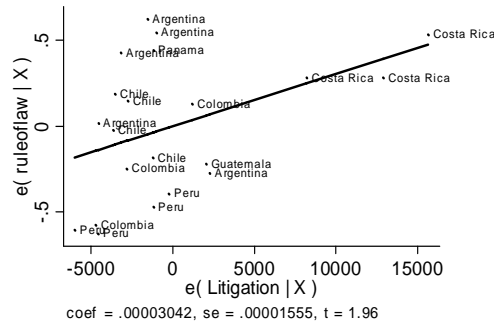
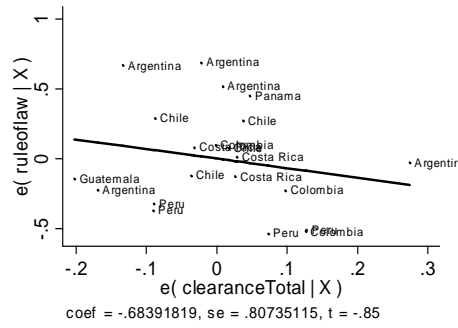
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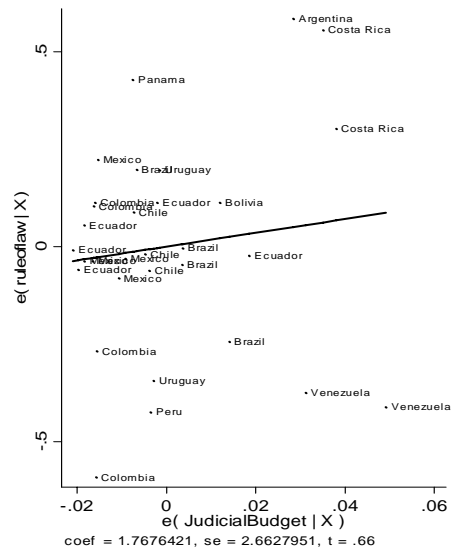
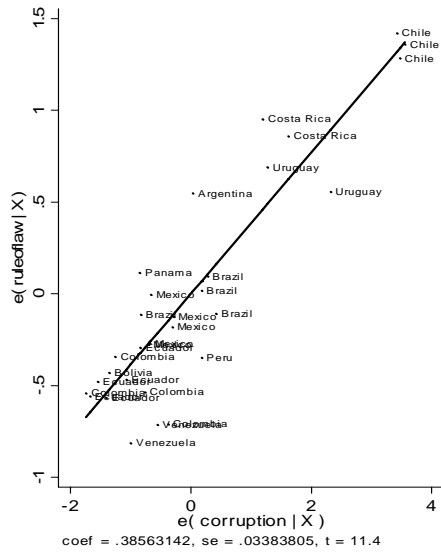
Model 12



Model 13

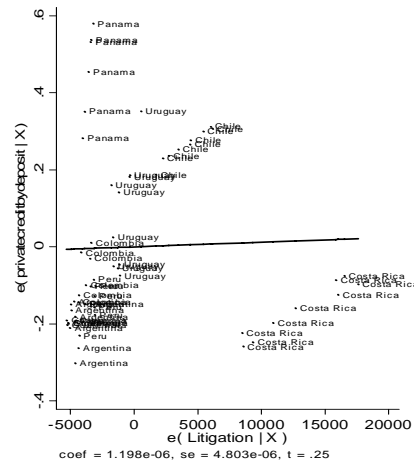
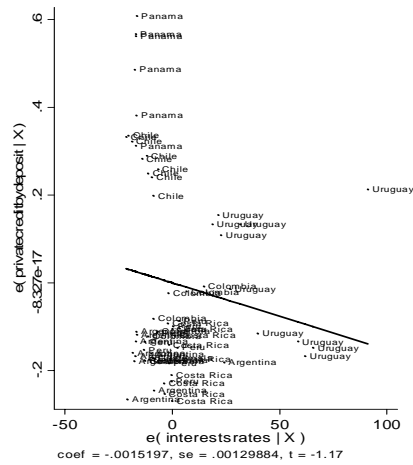


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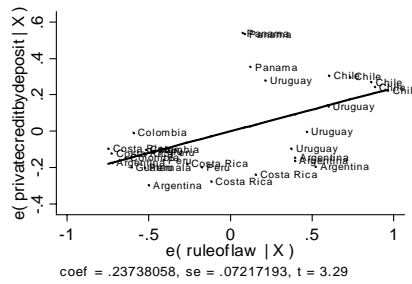
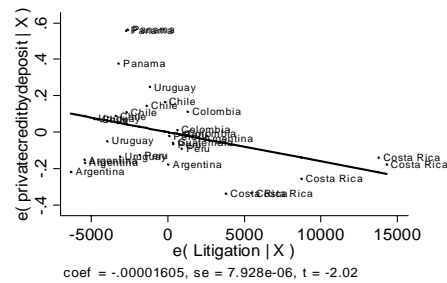
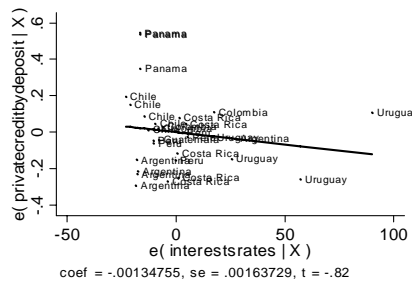


Regressions from Section 4.4

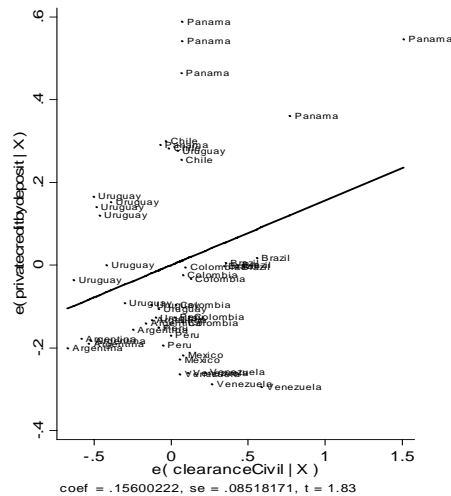
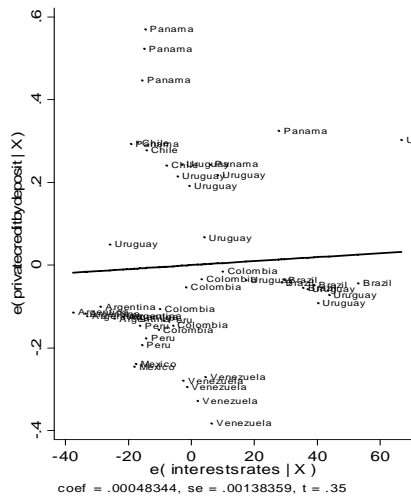
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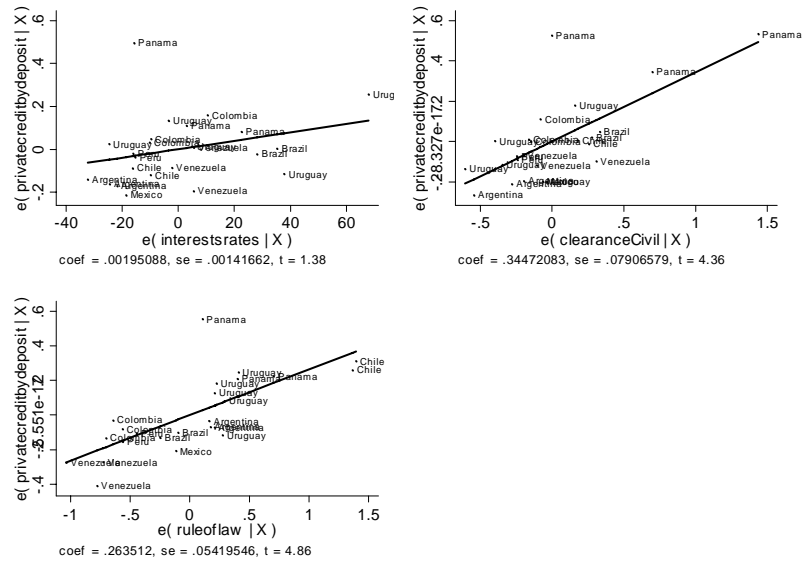
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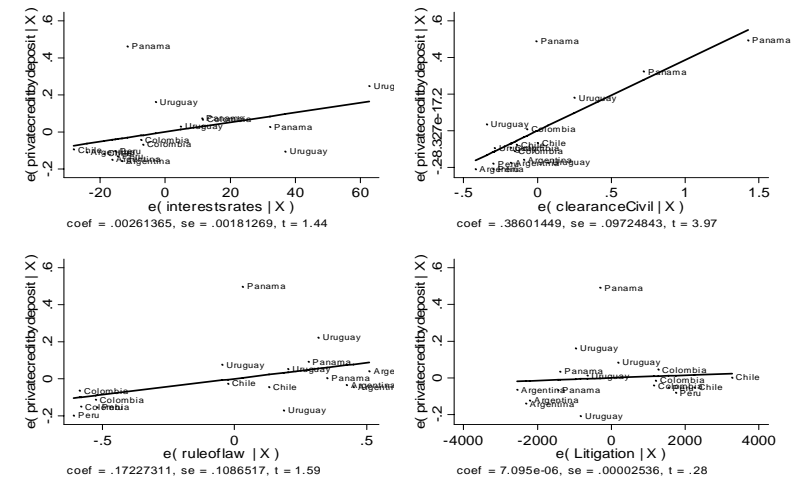
Model 3



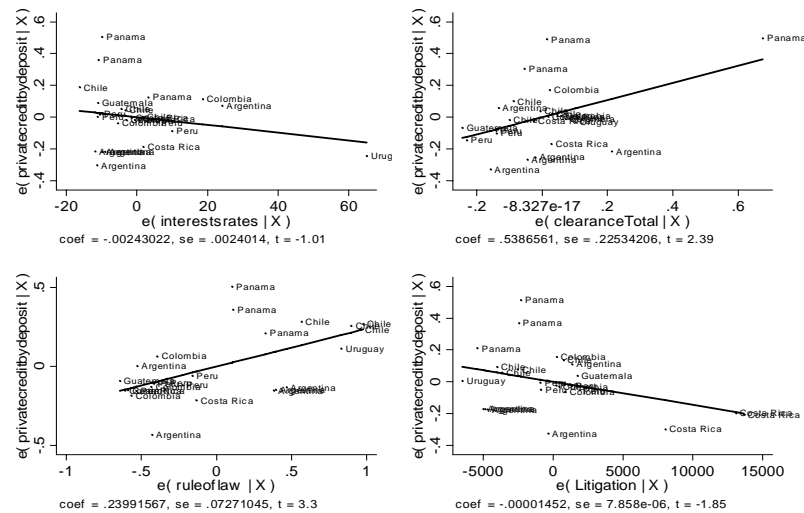
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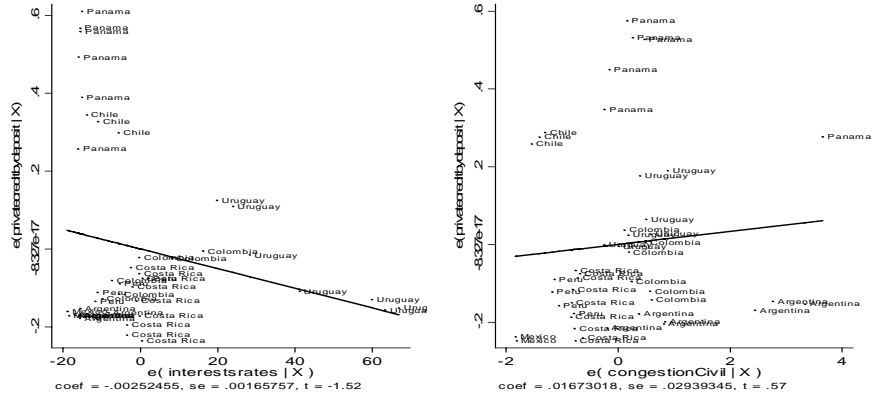
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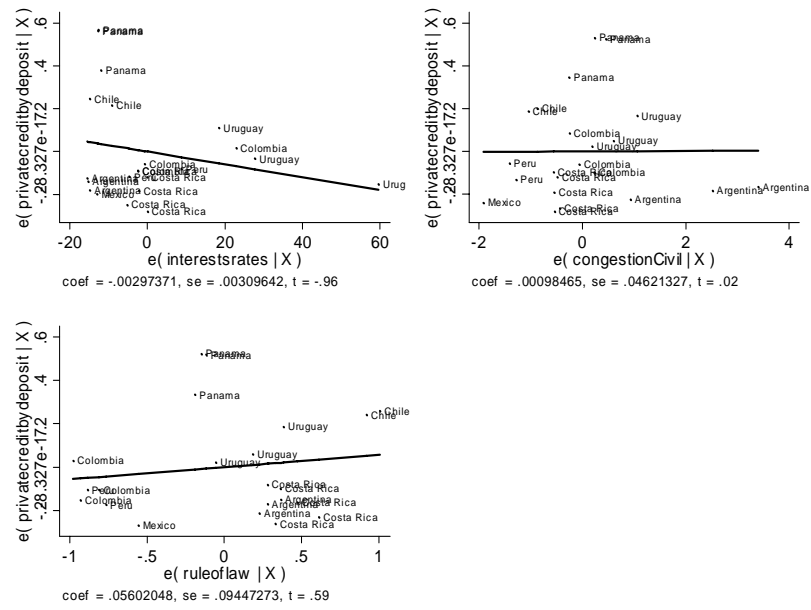
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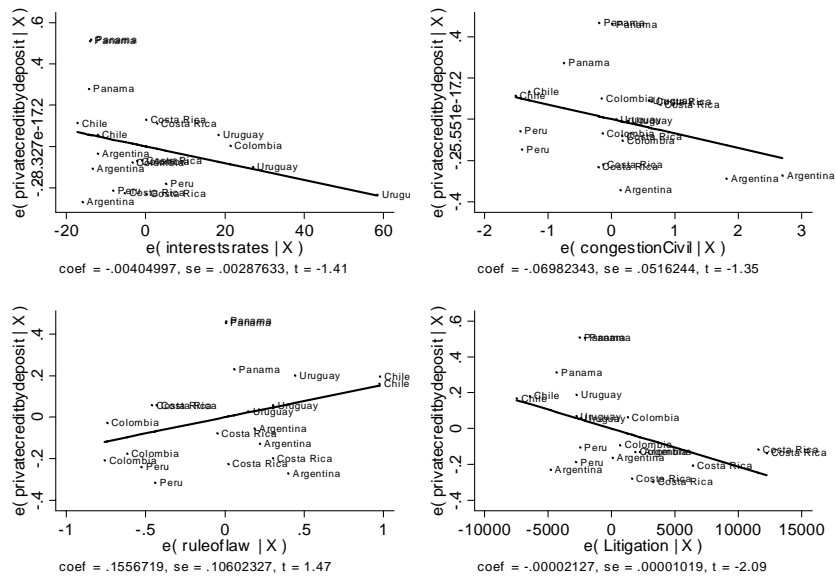
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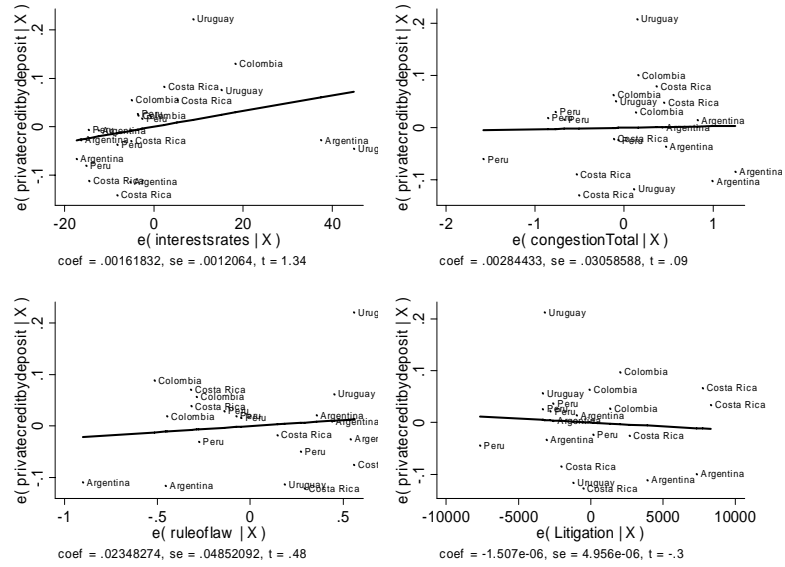
Model 8



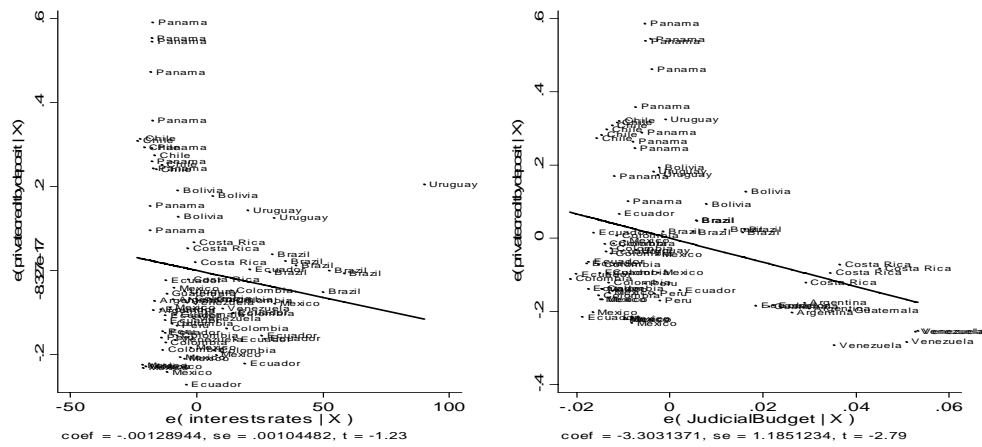
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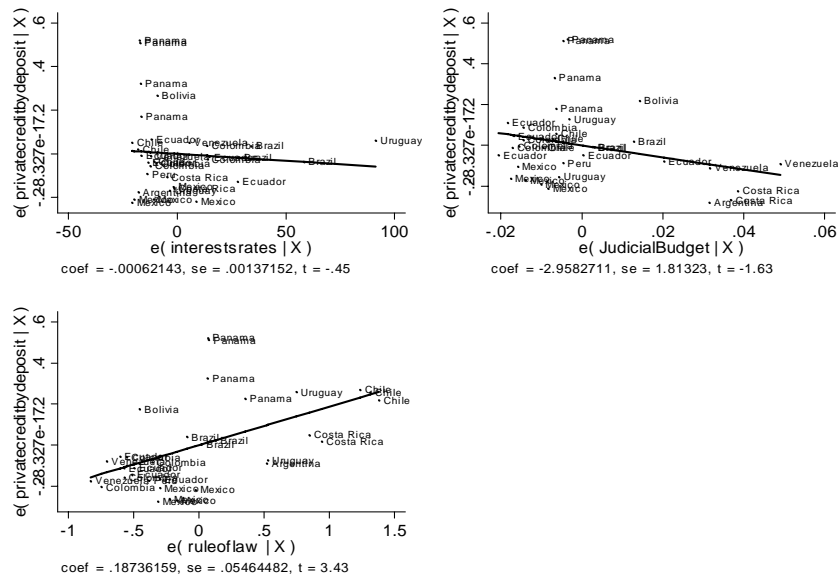
Model 10



Model 11

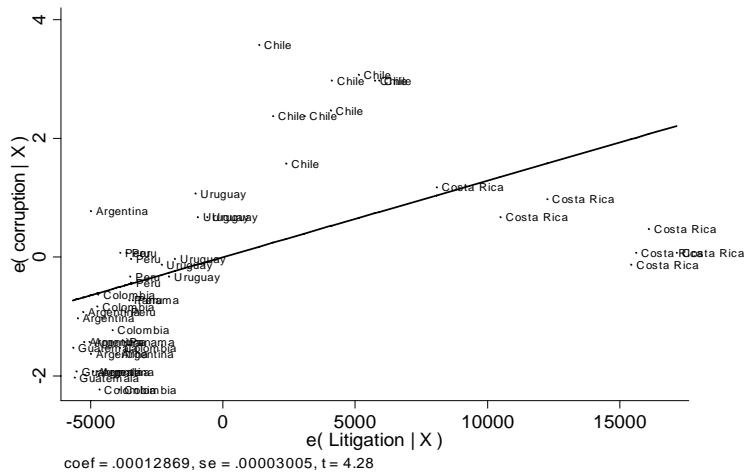


Model 12

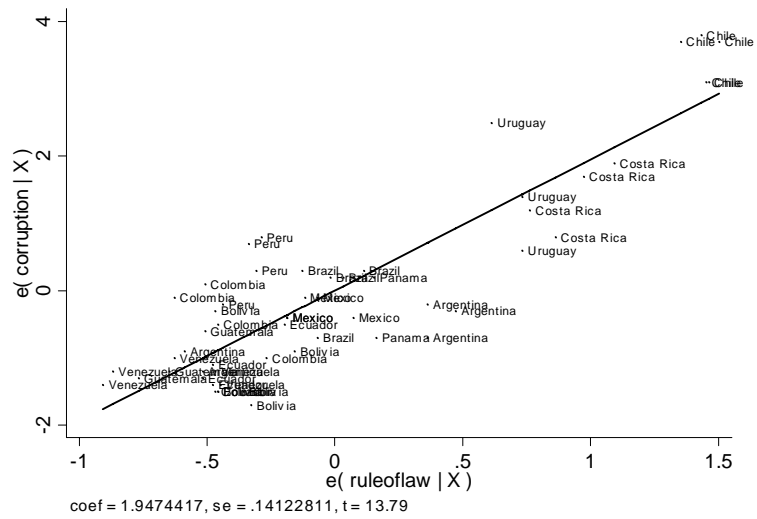


Regressions from Section 4.5

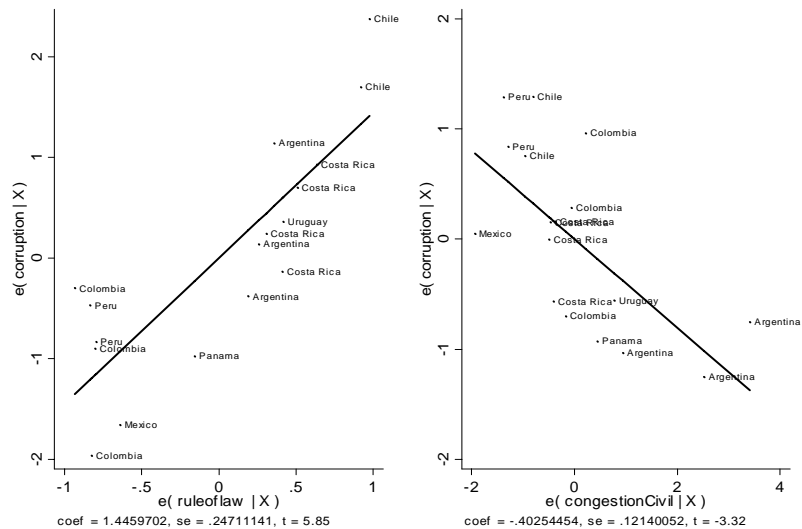
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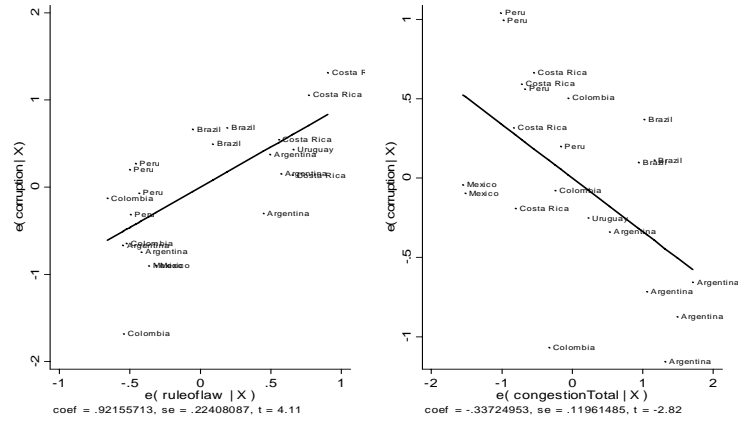
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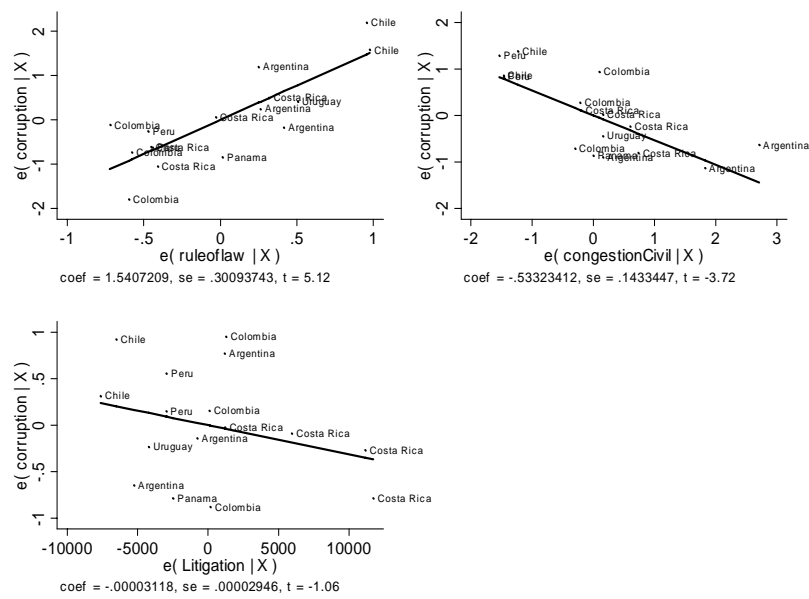
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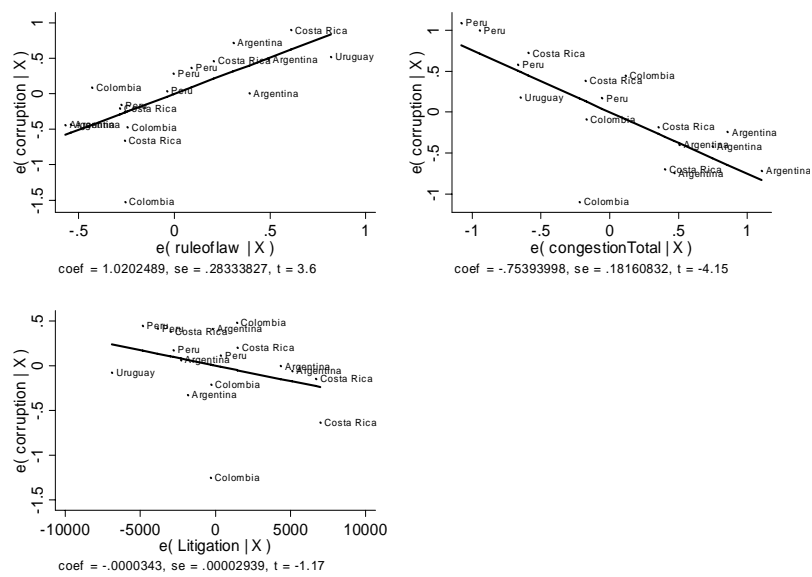
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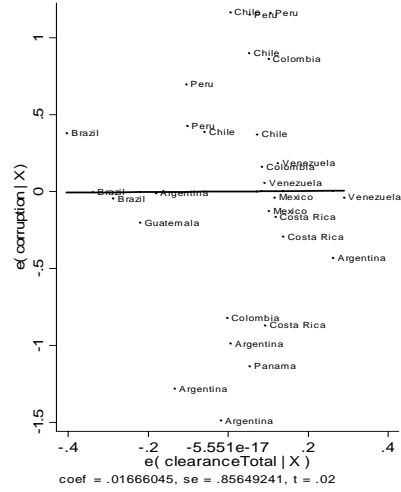
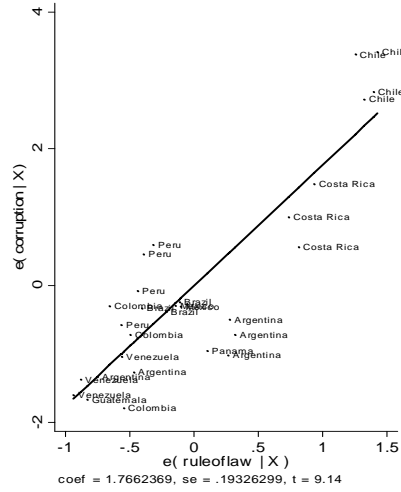
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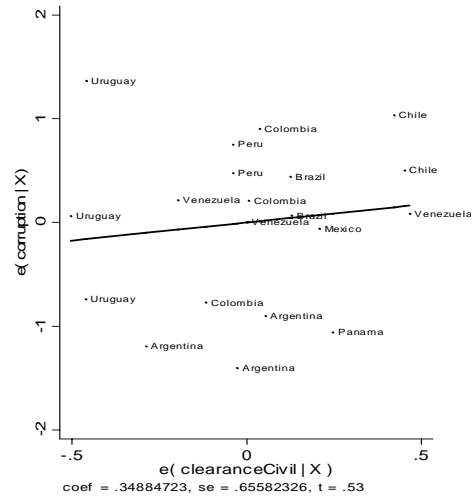
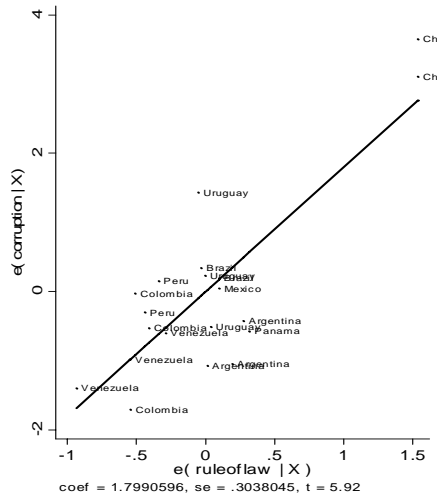
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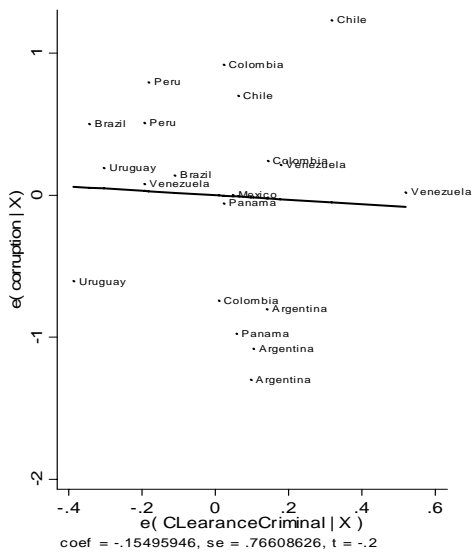
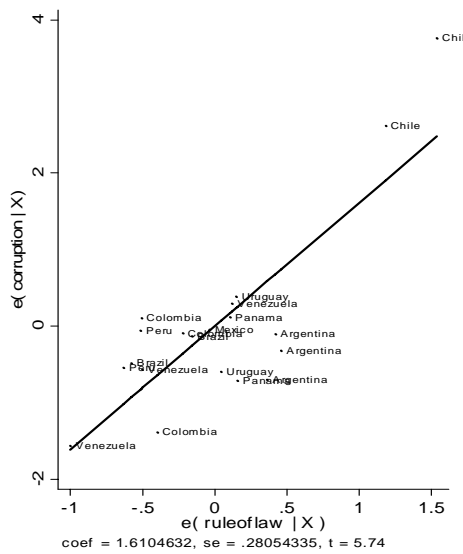
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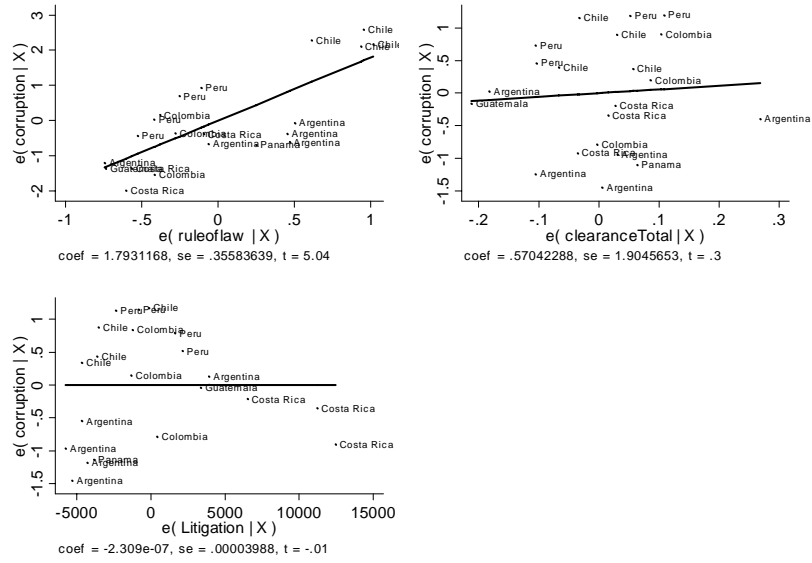
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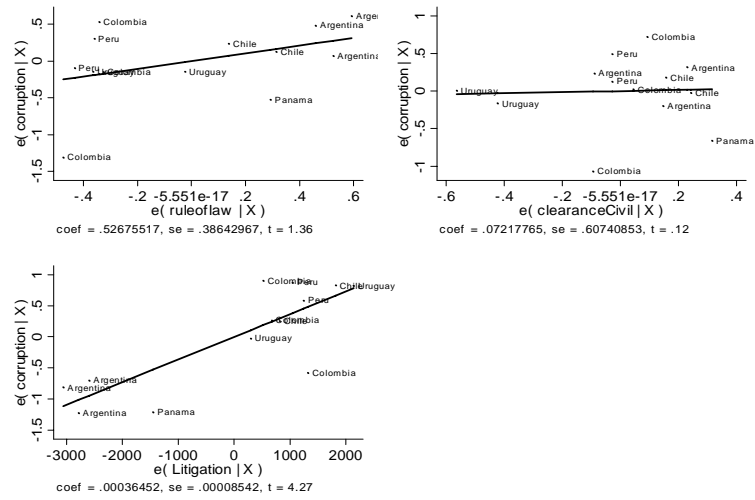
Model 9



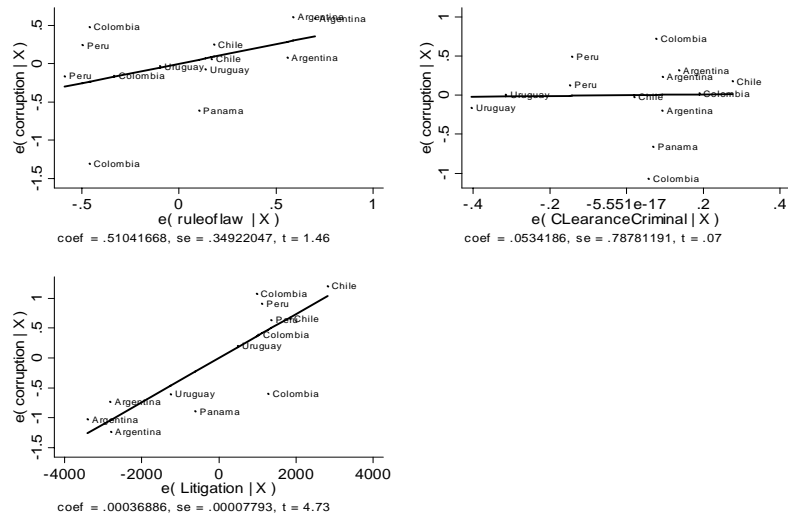
Model 10



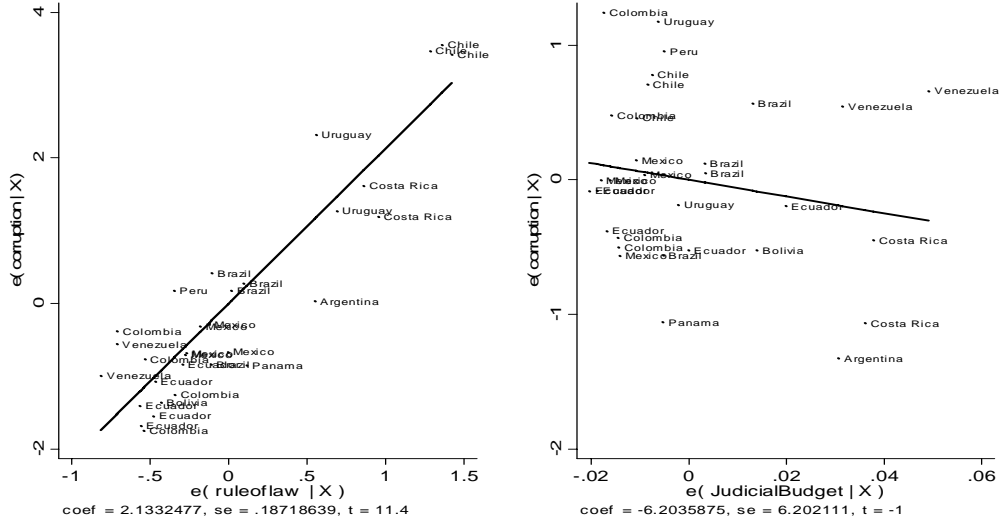
Model 11



Model 12

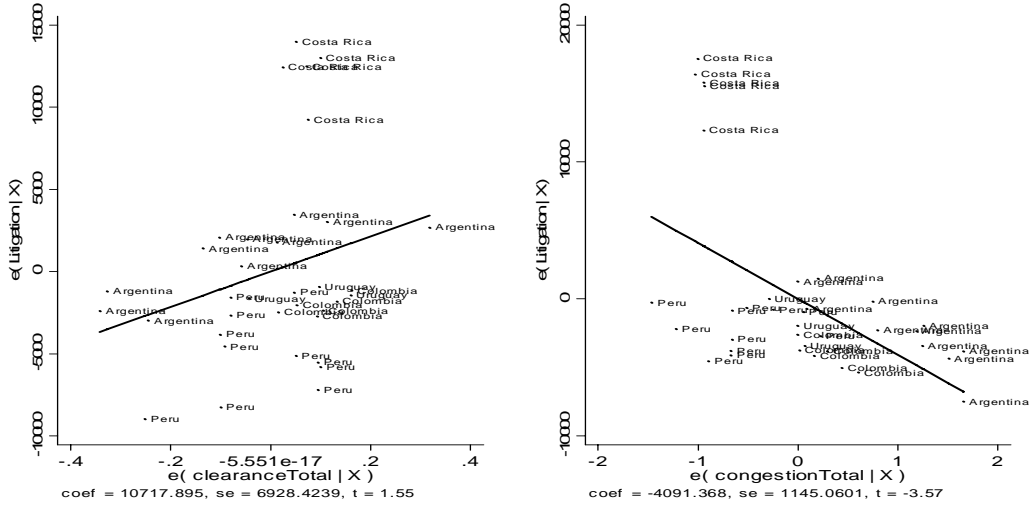


Model 13



Regressions from Section 4.6

Model 1



Model 2

