

Property Rights, Judicial Independence and Growth

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Abstract:

Among economists, the view that precisely defined and reliably enforced property rights are generally conducive to economic growth has been quasi-unanimous. But recently, some authors have argued that the relationship is more complex than previously acknowledged: property rights reforms might, for example, not per se lead to increases in observed growth rates. This paper contributes to the debate by emphasizing that the mere promise of secure property rights is unlikely to have any effects unless accompanied by some commitment to enforced these rights that is perceived as credible by private actors. We further take into account that the protection of private property rights can be too broad and that governments should therefore not maximize but, rather, optimize them.

Key Terms: Property Rights, Credible Commitment, Independent Judiciary, Unbundling Property Rights, Transmission Channels

JEL classification: D02, D23, H41, K11.

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1. Introduction

Among economists in general and among adherents of the new institutional economics in particular, there has been quasi-unanimous consensus that securely defined and reliably enforced property rights are the single most important institution or, rather, group of institutions, conducive to economic growth and well-being (see e.g. Asoni 2008).

The consensus has been so broad that both scholars and policy-makers were optimistic that growth in poor countries could be spurred by passing broad reforms improving property rights. Yet, the success of such reforms seems mixed at best: Martínez and King (2010), for example, do not find a positive association between improvements in property rights country rankings and economic growth. They suspect that this result is driven by “unacceptably low validity” of property rights indicators: Among the three indicators used by them, they even find countries for which one indicator reports improvements over time whereas another observes deteriorations. Other issues that have been raised include endogeneity (e.g. Haggard et al. 2008) and the substantial variation in fast growing countries concerning the degree to which they protect property rights (Melton 2011).

There are two straightforward explanations for these counterintuitive results based on different model misspecifications. The relationship between property rights and growth might be more complex than a simple positive linear relationship (e.g. Cooter and Edlin 2011). First, one might have to differentiate the form of property that is protected, e.g. intellectual or other property. Second, there might be an optimal intermediate level of property rights protection in the presence of transaction costs. Transaction costs e.g. inhibit perfect price discrimination by monopolists and finding a negotiation solution to externalities or the tragedy of the anticommons. It is thus only in the presence of transaction costs that monopolies, externalities and overly segmented property rights yield inefficient market results. This might legitimize a limitation of property rights as a second-best solution.

The second potential explanation is that property rights require an efficient design of other complementary institutions to be growth-enhancing (Haggard and Tiede 2011:682). A simple promise to secure property rights by ordinary law or even in

the constitution is unlikely to be interpreted as a credible commitment. This insight leads Melton (2011) to argue that the interaction between the (formal) protection of property rights and a high degree of checks and balances in government affairs could do the trick. Justesen (2011) argues likewise for a critical role of veto players in making property rights credible. In this paper, we propose a more specific hypothesis: Given that private property rights are promised in countries characterized by a judiciary that is independent from political pressure, the promise will be considered as credible by private actors. This should, in turn, lead to more investment and economic growth should pick up.

In previous work (Feld and Voigt 2003, 2006), it was shown that *de facto* judicial independence is conducive to economic growth. In this paper, we are interested in the interaction effect between *de jure* property rights on the one hand and *de facto* judicial independence on the other. The results largely confirm these priors. The entrenchment of property rights into the constitution is not significantly correlated with economic growth, while the actual level of judicial independence is.

The rest of the paper is organized as follows: Section 2 contains a very brief sketch of the main arguments according to which secure property rights are the single most important determinant for long-run economic growth. We argue that some intricacies concerning the effects of property rights have not been taken sufficiently serious until now. In Section 3, the pros and cons of some commonly used property rights indicators are briefly discussed. Section 4 presents the data and explains our estimation approach. Section 5 is a discussion of the results and Section 6 concludes by pointing to a number of open questions.

2. Secure Property Rights and Long-Term Growth: A Survey of the Main Arguments

Seldon (2005) defines property rights as “the expectation of an individual, or group of individuals, that his/their exclusive use of resources will be assured [...] The rights attach to the owner, not to the property and trade consists of an exchange of rights over property rather than of property itself, which would be useless if there was no power to use (or transfer, or hire, or sell) it.”

Seldon’s definition reminds us that representatives of the property rights school (e.g. Demsetz 1967, Furubotn and Pejovich 1972 or Alchian 1977) proposed to think of property rights not as a relation between a person and a (physical) object

but, rather, as legislation – or even broader: norms – defining the relationship between actors in relation to (physical) objects. The property rights school was to become part of the New Institutional Economics which proved to be very influential, especially among development organizations such as the World Bank.

The argument that private property rights are decisive for economic development can be traced back at least to Aristotle (1959) who dealt with the positive incentives of private property and the negative ones of common or public property. More recently, some of these arguments have been dealt with under headings such as the tragedy of the commons (Hardin 1968), but also the incentive incompatibility of socialism (Kornai 1992).

Buchanan (1975), echoing Hobbes (1982), develops a complementary argument in favor of secure private property rights. Absent a state that protects such rights, an anarchic equilibrium in which the marginal returns from producing, stealing and protecting one's own property will all be equal is expected to ensue. In such a situation, huge welfare gains can be reaped by creating a state that protects private property.

But the simple existence of the state is evidently not sufficient to ensure both the promise and the enforcement of secure property rights. North (1981:20) describes the existence of the state as both necessary for economic development but also as a potential source of man-made economic decline. Time and again, inadequately specified and insufficiently enforced property rights have been the root cause for economic demise. In order to fulfill its potential role as a catalyst for economic growth, the state needs to be strong enough to enforce efficient property rights. Yet, if it is thus strong, it is also strong enough to attenuate them or to ignore them altogether. This problem has been succinctly described by Weingast (1997) and it could be termed the dilemma of the strong state: A government which is strong enough to enforce its own promises – e.g. with regard to private property rights – is also strong enough to ignore them. The (physical) strength of the state embodies its greatest weakness, namely the inability to make credible promises.

Why should anybody invest in a country whose government is too strong to make its own promises credible? The incapacity of credibly committing to one's own promises can have enormous costs for economic development, e.g. by inducing potential investors to withhold investment. If there was a player who was independent from government but who commanded sufficient competence to

ensure the enforcement of government promises and who had sufficient incentives to do so, this player could alleviate the dilemma of the strong state.

The conjectured relationship between secure property rights and economic development can hence be summarized: Secure property rights reduce uncertainty and thus allow actors to develop a longer time horizon. This will spur investment both in human and in physical capital which will lead to faster growth.³

The argument

The argument to be developed in this paper is that promising private property rights is not sufficient to induce economic development. Rather, governments need to find means to make such promises credible. Once implemented, “a credible government policy gives a government incentives to confirm prior expectations about its future actions” (Sargent 2008:8). Over the last couple of years, various devices that could serve this function have been analyzed both theoretically and empirically. Among them are the number of veto players (Henisz 2000, Tsebelis 2002), the degree of checks and balances (Beck et al. 2001), but also joining international organizations (Levy and Spiller 1994; a recent empirical test is Dreher and Voigt 2011). Previous studies find that promises work only in conjunction with one or more of these means to increase the credibility of promises. This has been shown with regard to the promise of an independent central bank for bringing about monetary stability (Keefer and Stasavage 2003, Hayo and Voigt 2008a). Here, we argue that a factually independent judiciary increases the credibility of government promises, including the promise to enforce property rights.

Feld and Voigt (2003, 2006) show that JI is conducive to economic growth. JI is a procedural attribute that asks whether judges who decide according to the law have to expect any negative consequences (such as being moved to other courts, being paid less or even fired). It is, at least on logical grounds, completely unrelated to the content of legislation, a substantive attribute. We hypothesize that the growth effect of a high degree of JI should be more pronounced if the substantive attributes are also growth-friendly. In other words: if countries promise secure property rights and have been factually implementing their promises for a while, then increased growth of per capita income is predicted to be observable.

³ Further, an increase in the level of social capital could be expected.

It should be stressed that our argument refers to the *de facto* independence of the judiciary. Rodrik (2004) warns that even if causality can be shown by proper instrumentation to run from one of the commonly used property rights indices to growth, the results are silent on the specific institutions responsible for the measured outcome. He goes on criticizing a disconnect between the perception of rules and the actual rules, referring to the example of China that was preferred by investors in the 1990s to Russia in spite of the latter's private property rights regime and independent judiciary. However, consistent with our main argument, the indicator of Feld and Voigt (2003, 2006) shows that although China has a substantially lower level of *de jure* JI (7th vs. 66th rank among 71 countries), Russia performs much worse regarding *de facto* JI (51st vs. 60th among 62 countries).

It is only a small step from conjecturing about the positive effects of secure property rights to make their introduction or improvement one's agenda for development. De Soto (2000) claims that endowing people in less developed countries with legal title concerning the assets that they factually already own could have hugely positive effects, for example, because receiving credit would be easier which would, in turn, make it easier to start a business.

Potential Quarrels with the Standard Argument

The general argument just summarized does often not explicitly differentiate between different kinds of property. Some differentiation might, however, be appropriate to arrive at more specific predictions concerning the impact of property rights. Rights in tangible goods might have consequences different from rights in intangible goods. Among the tangible ones, it might make a difference whether the property rights apply to immovable or movable goods. Angeles (2011:160) is interested in an analysis of the effects of property rights from a historical angle. He argues that in pre-industrial times, land was the major factor of production and further that human capital "differs from physical capital and land in that it cannot be expropriated or taken away from its owner." He concludes: "Human capital cannot be seized, and something that cannot be seized has no need for protection."

That argument might, however, be too simplistic. If the income streams that can be generated on the basis of human capital are perceived as rather certain, the readiness to invest into one's own specialization might be considerably higher than if perceived income streams are highly uncertain. Property rights in human

capital can, thus, be an important determinant for the degree of specialization realized in a particular economy. Further, the return on human capital depends on the possibility for secure investment in complementary physical capital.

It is further argued that the short-term growth implications of a delineation of property rights in land are different from those of recently invented goods. Given that land has been used in the past, the explicit delineation of property rights over land is more likely to be connected with some kind of re-distribution than the (first-time) delineation of property rights regarding newly created goods or services.⁴

It is highly likely that a delineation of property rights which might lead to higher productivity in the long run is connected with increased uncertainty in the short run. Improvements in the protection of *de jure* property rights might, therefore, very well induce less investment, less specialization and less growth, at least in the short run. We have thus arrived at one possible reason for the disturbing results concerning the (short-term) effects of improvements in the formal protection of property rights that have been found in some recent studies (e.g. Martínez and King 2010).

A more fine-grained delineation of property rights might also be interesting for another reason: whereas there remains a broad consensus on the advantages of private property regarding land and other tangible goods, this is much less clear regarding intellectual property rights. Various scholars (e.g. Wright 1983, Boldrin and Levine 2002, Salzberger forthcoming) argue that a broad delineation of intellectual property rights can slow down the diffusion of knowledge which would, in turn, make innovations (the generation and utilization of new knowledge) less likely. This argument is, in other words, based on the necessity to trade off static against dynamic efficiency.

Too much Protection for Property Rights?

Above, we alluded to the possibility that land reforms might lead to an improvement in the overall productivity with which land is used. If this is the case for reforms from top to bottom, then we cannot exclude the possibility that a

⁴ The British enclosure movement in the second half of the 18th century did increase the productivity with which land was used but also entailed a huge (re-)distribution from the (previous) land-users to the (newly protected) land-owners. The post WW-II land reforms in some Asian countries implied an important re-distribution in the other direction.

broad protection of property rights could be too broad from an efficiency point of view. Many competition laws are based on a very similar idea: some uses of property, such as attempts to monopolize, are likely to have detrimental effects to economic development such as slowing down innovation.

Voigt (2009) introduces four indicators of competition policy. Their effect on productivity is then probed into. Here, we are interested to analyze whether property rights embedded into a competitive environment will lead to higher returns in terms of growth or productivity. Hence, yet another interaction effect is analyzed. If it turns out to be significant, this could be interpreted as evidence in favor of the conjecture that property rights alone might be too broad: this is the case if their unrestricted use is connected with worse outcomes than under competition policies.

Increasing the Precision in Estimating the Consequences of Property Rights

Acemoglu and Johnson (2005:95) propose to separate *contracting institutions* from *property rights institutions*. According to them, „Property rights institutions [...] regulate the relationship between ordinary private citizens and the politicians” whereas contracting institutions mainly affect the costs of enforcing private contracts. Acemoglu and Johnson (2005) are interested in “unbundling” the effects of these two different groups of institutions. They conjecture that it is primarily property rights institutions that are crucial for economic development as contracting between individuals can also be structured by circumventing government. As indicators for property rights, they rely on protection against expropriation by government (produced by Political Risk Services) and, alternatively, the constraints on the executive variable that is part of the Polity IV dataset. As indicator for the quality of contracting institutions, they rely on the indicator of legal formalism by Djankov et al. (2003). Acemoglu and Johnson find that, as hypothesized, property rights institutions have an important effect on long-run economic growth, investment and financial development, whereas contracting institutions seem relevant only for the form of financial intermediation.⁵

⁵ Effects of legal formalism on economic growth are enquired into by Hayo and Voigt (2008b). They find that, contrary to Djankov et al. (2003), some aspects of formalism are conducive, rather than detrimental, to growth. These are (i) timeliness, (ii) written—as opposed to oral—procedures and (iii) the right to counsel.

Their attempt to unbundle institutions and identify the various transmission channels more precisely is extremely interesting. Drawing on a distinction mainly used in continental Europe, one could argue that their concept of property rights refers to public law (which regulates the relationship between individuals and the government) whereas their concept of contracting institutions refers to private law (which regulates the relationship between individuals). Although the conjecture that the quality of government-offered contracting institutions is less important than those of property rights institutions is appealing, it might be too simplistic. We conjecture that economic development is a function of the complementarity of both contracting and property rights institutions as delineated by Acemoglu and Johnson (2005).

Interpersonal trade is conjectured to be a function of the costliness of institutions used to secure such exchange. If contracting institutions supplied by government are highly inefficient (unreliable, costly in terms of money or time or both etc.), private arbitration might be a welcome substitute. But given that, in principle, the state has some advantages in the provision of contracting institutions, their inefficient provision by the state would still be accompanied with higher transaction costs and, hence, less interpersonal exchange, a lower division of labor and slower economic development. Moreover, the complete circumvention of state-run institutions can be impossible in a number of contracting areas: to exchange property rights in land, for example, entry in the respective land registry is a prerequisite in many legal systems.

These concerns are picked up in the empirical section. Various indicators proxying for various aspects of property rights widely conceived are tested for their influence on a number of dependent variables. In a way, the unbundling exercise by Acemoglu and Johnson (2005) is thus picked up, relying on more and differently delineated variables.

3. Pros and Cons of Some Commonly Used Property Rights Indicators

Establishing a causal relationship between the security of property rights and economic growth requires adequate measures for both. Assuming growth data to be sufficiently precise – which, in reality, they might not be – we only discuss the issue with regard to property rights here.

We define institutions as commonly known rules used to structure recurrent interaction situations that are endowed with a sanctioning mechanism (Voigt 2011 develops this definition and compares it with alternative definitions). Institutions thus consist of two parts, namely a rule part and a sanctioning part. Regarding property rights, the rule part would regularly spell out the conditions under which property can be held and exchanged, the kinds of property protected, the conditions under which the state can expropriate property, the amount of compensation it needs to pay if it wants to expropriate and so forth. The sanctioning part would spell out the sanctions that actors have to face in case they infringe upon someone else's property. In a rule of law state, representatives of the state would be subject to the sanctions just as private law subjects would be.

One of the prime functions of institutions is to reduce uncertainty. To be successful in reducing uncertainty, institutions need to be fairly stable over time. In their critique of many empirical studies involving institutions, Glaeser et al. (2004) point out that measures often fluctuate considerably within short periods of time. They suspect that many variables would measure policies, rather than institutions. In search of property rights indicators, we should thus look for variables that are relatively time-invariant.

To establish causality running from the secure protection of property rights to economic growth, the measures of property rights should be as independent as possible from the purported outcome, namely growth. We suspect that many subjective indicators, i.e. those that are based on subjective evaluations by local or international experts, by foreign investors etc. are subject to this criticism: If the country has grown fast over the last couple of years and growth prospects are positive, then subjective evaluations are more likely to give better scores to the security of property rights than if the country has suffered through a recession (see e.g. Kurtz and Schrank 2007b).

Taking up the above definition of institutions, we propose that the rule part can be interpreted as the degree to which protection of property is promised, whereas the sanctioning part refers to the degree to which promises are actually enforced. Logically, a high correlation between the two need not exist. A country's laws might promise extremely secure property rights, yet a country's prosecution agencies might do a lousy job such that few of the promises are actually enforced. Since the two aspects of institutions cover very different aspects, it makes sense to measure them separately – and not to mix them into one single indicator.

We are, hence, interested in property rights indicators that (i) are relatively stable over time, (ii) are objective rather than subjective and (iii) distinguish between the rule and the sanctioning part of institutions.

Unfortunately, the most frequently used indicators for property rights do not fare very well compared to these criteria. Knack and Keefer (1995) is one of the first papers to use indicators provided by commercial firms to potential investors. Data are taken from: (1) The International Country Risk Guide (ICRG) and (2) Business Environmental Risk Intelligence (BERI). The single variables taken from ICRG are (1) expropriation risk, (2) the rule of law (existence of established mechanisms to solve disputes peacefully), (3) repudiation of contracts by government, (4) corruption in government and (5) the quality of the bureaucracy. The variables from BERI are (1) contract enforceability, (2) infrastructure quality, (3) nationalization potential (which is comparable with the expropriation risk from ICRG) and (4) bureaucratic delays (comparable to the quality-of-bureaucracy variable from ICRG). Since some of these variables are highly correlated, Knack and Keefer (1995) produced a single indicator out of these variables.

Coding of the variables is the result of subjective evaluation of the staff of the respective firm; they are, hence, not objective. Further, an underlying assumption of these indicators seems to be that the respective countries aim at protecting private property rights. There is no variable that would explicitly inquire into this. Still further, the overall indicator contains very different aspects related to the enforcement of property rights. Analyzing single aspects would have the advantage to make it easier to draw policy conclusions.

Many other variables and indicators suffer from similar weaknesses. The Global Competitiveness Report (GCR), for example, contains a question “How would you rate the protection of property rights, including financial assets, in your country?” Respondents are asked to answer with a number from 1 (“very weak”) to 7 (“very strong”). This variable is entirely subjective.

Results from both ICRG and the GCR are used as inputs to the indicator “Legal Structure and Security of Property Rights” that is supplied by the Fraser Institute as “Economic Freedom in the World”. More specifically, the indicator is made up of various dimensions including (i) judicial independence, (ii) the impartiality of courts, (iii) protection of property rights, (iv) military interference in rule of law and the political process and (v) the integrity of the legal system. The first three variables are from the GCR, the last two from ICRG. It goes without saying that

the resulting indicator is also subjective. Beyond being subjective, it is also synthetic in the sense of comprising many different dimensions that might better be kept apart.

A competitor to the last indicator has been produced jointly by the Heritage Foundation and the Wall Street Journal and is called the Economic Freedom Index. The indicator “Property Rights” is one out of ten categories. Here is the definition of that category:

“The property rights component is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country’s laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. The more certain the legal protection of property, the higher a country’s score; similarly, the greater the chances of government expropriation of property, the lower a country’s score. Countries that fall between two categories may receive an intermediate score.”

(<http://www.heritage.org/index/Property-Rights>)

Again, we encounter a mix of very different aspects.

Inadequate measures for property rights are, however, not the only potential problem in establishing a causal relationship from property rights to growth and development. Many reforms regarding property rights implemented over the last decade have been inspired or even demanded by the world financial organizations. If the poorest countries or those with the worst prospects regarding growth have been encouraged most to reform their property rights institutions, then being poor might be the cause for reforms and reversed causality a serious problem. On the other hand, foreign investors might pressure countries with good growth prospects and otherwise attractive conditions for investment to improve property rights. Ali et al. (2011), e.g., purport to show that FDI inflows have a positive and highly significant impact on a country’s *de facto* property rights as measured by the Heritage foundation. One should, however, keep in mind the previously discussed inadequacies of subjective indicators in this context.

4. Data and Estimation Approach

We are interested in separately estimating the effects of (1) promises to secure property rights on the one hand and (2) the degree to which such promises are

enforced on the other. Only in a second step will the interaction effect between the two be estimated.

Data on the promises to secure property rights are, hence, needed. Ideally, the data would reflect only the promise but not the extent of its enforcement as we are interested in keeping these two channels apart. The *Comparative Constitutions Project* run by Elkins, Ginsburg and Melton (2009) contains variables that are almost ideal for our purpose: they reflect the degree to which property is promised according to the (written) constitutions of the coded countries. Data are available for up to 126 countries on a yearly basis.

The following variables are used to construct an indicator of *de jure* property rights:

- (1) PROPRGHT - *Does the constitution provide for a right to own property?* This variable can be answered yes or no and helps to establish whether private property is a right under the coded constitution. “Yes” answers were coded 1, all others 0.

The following three variables enquire into various aspects of property.

- (2) TESTATE - *Does the constitution provide for a right of testate, or the right to transfer property freely after death?* This variable is to ascertain whether property owners have the right to give property after their own death.
- (3) INHERIT - *Does the constitution provide for inheritance rights?* Whereas variable (3) refers to the right to give, this variable refers to the right to receive property from someone dead. We combine INHERIT and TESTATE in one variable INHERIT+. We code 1 if at least one of them is answered positive and 0 otherwise.
- (4) IPR - *Does the constitution mention any of the following intellectual property rights?* Three specific (patents, copyright, trademark) and one general option are explicitly inquired into. If specific rights are mentioned, each one is given 1/3 and the sum is calculated. If intellectual property rights are protected in general, the respective country is coded 1.

The last three variables deal with the possibilities of government to expropriate property owners lawfully under the constitution.

- (5) *EXPROP* - *Can the government expropriate private property under at least some conditions?* This variable helps to establish whether there is any constitutional way of expropriation and answers are confined to either “yes” or “no”. We refrained from integrating this variable into our overall indicator, since there was no variation; in no country in the world, the constitution prohibits all kinds of government expropriations.
- (6) *EXPRCOMP* - *What is the specified level of compensation for expropriation of private property?* The options are (1) fair/just, (2) full, (3) appropriate and (4) adequate. Since it is difficult to judge whether 1, 3 or 4 implies a more complete protection of property rights, we code option 2 as best (i.e. 1) and do not distinguish between 1, 3 or 4 (0.5). We code all other options 0.
- (7) *EXPCOND* - *Under what conditions or for what purposes can the state expropriate private property?* Seven options are explicitly coded, including (i) infrastructure, public works, (ii) redistribution to other citizens and (iii) national defense. We conjecture that the more options are explicitly mentioned, the less secure the respective property rights. Every country begins with a coding of 1 but $1/7$ is subtracted for every explicitly mentioned option.

Partial correlations between these different aspects range between -0.12 (*PROPRGHT* and *EXPCOND*) and +0.27 (*PROPRGHT* and *INHERIT+*). They are, hence, rather low and there is no single model by which property rights would be protected constitutionally across all, or at least most, constitutions. We construct a single indicator out of the variables by adding all their values up and then dividing them by six. The indicator can thus take on values between 0 (no constitutional protection of property rights at all) and 1 (very explicit protection of property rights). The minimum value is 0.0476 (Botswana) and the maximum value is 0.976 (Armenia). The mean is 0.415 and both the U.S. (0.504) and Germany (0.532) are not far above. In our regressions we use the natural logarithm of this composite indicator.

The conjecture to be tested here is not only that this first indicator will NOT have a significant impact on economic growth – and some more dependent variables – but that it will have an impact once interacted with *de facto* judicial independence. The *de facto* *JJ*-variable is taken from Feld and Voigt (2003, 2006) and includes aspects such as average term length of highest judges, development of their real income as well as the development of the court budget or the number of times

decisions by the highest court have not been implemented by the other government branches. Again, we use the natural logarithm of this indicator.

The security of property rights can be linked to economic growth through a variety of possible channels. To shed some light on these channels – and to learn something on the differential impacts of the various kinds of property rights – economic growth is not the only dependent variable. In addition, productivity (both labor and total factor productivity) is included as a proxy for long-term growth. Investment has been identified as an important driver of economic growth. The security of property rights is expected to be an important determinant of investment into both physical as well as human capital. Thus, these two are also used as left hand side variables.

The following model, which is based on the regression framework suggested by Acemoglu (2009:84), is used to estimate the effect of constitutionally entrenched promises of private property (1a), the effect of *de facto* judicial independence (1b) and the interaction of promises turned credible via an independent judiciary (1c). M is a vector of variables that proved significant in previous studies and Z is a vector of controls. We include a full set of time fixed effects into our regression. However, it would not be a sensible strategy to include country fixed effects into the regression. Our measure of *de facto* JI is time-invariant and the promise of PR is only slowly varying over time, as is their interaction term. Thus, we also control for a set of fundamental time-invariant country characteristics in terms of culture, geography and history. The models are estimated using GLS regressions with random effects.

$$\ln y_{i,t} = \alpha + \beta M_{i,t} + \gamma PR_{i,t} + \varphi Z_{i,t} + \rho \ln y_{i,t-1} + \mu_t + u_{i,t} \quad (1a)$$

$$\ln y_{i,t} = \alpha + \beta M_{i,t} + \delta JI_i + \varphi Z_{i,t} + \rho \ln y_{i,t-1} + \mu_t + u_{i,t} \quad (1b)$$

$$\ln y_{i,t} = \alpha + \beta M_{i,t} + \gamma PR_{i,t} + \delta JI_i + \vartheta PR_{i,t} * JI_i + \varphi Z_{i,t} + \rho \ln y_{i,t-1} + \mu_t + u_{i,t} \quad (1c)$$

In the theoretical section, the possibility that property rights might be too broad was alluded to. It was conjectured that one way to prevent this was an adequate competition policy. To test this conjecture empirically, we rely on three different variables proxying for different aspects of competition policy: (1) the substantial content of competition law; (2) the *de jure* independence of the competition agency and (3) its *de facto* independence. The variables are described in more detail in Voigt (2009). It is worth noting that the partial correlation between *de*

jure and *de facto* agency independence is quite high ($r= 0.924$). Compared with other policy areas, promises and implementation do not seem to be miles apart.

To estimate the effect of competition policy, the original model in which *de jure* property rights are interacted with *de facto* JI is augmented with a competition policy variable.

$$\ln y_{i,t} = \alpha + \beta M_{i,t} + \gamma PR_{i,t} + \delta JI_i + \varepsilon CP_i + \vartheta PR_{i,t} * JI_i + \phi Z_{i,t} + \rho \ln y_{i,t-1} + \mu_t + u_{i,t} \quad (2a)$$

$$\ln y_{i,t} = \alpha + \beta M_{i,t} + \gamma PR_{i,t} + \delta JI_i + \varepsilon CP_i + \vartheta PR_{i,t} * JI_i + \theta_1 PR_{i,t} * CP_i + \theta_2 JI_i * CP_i + \theta_3 PR_{i,t} * JI_i * CP_i + \phi Z_{i,t} + \rho \ln y_{i,t-1} + \mu_t + u_{i,t} \quad (2b)$$

Finally, we want to probe deeper into transmission channels. The idea is to rely on variables that do not proxy for property rights in their entirety but cover more specific aspects. By relying on more specific variables, we hope to be able to identify transmission channels with more detail than hitherto possible.

Meisel and Ould Aoudia (2007) present an “Institutional Profiles 2006” database covering 85 countries with 132 indicators. We are specifically interested in one group of variables that is entitled “security of transactions and contracts”. The first indicator used here reflects the “effectiveness of legal measures to defend property rights between private agents”. The formulation implies that private property rights are assumed to exist and refers to the degree to which state representatives are effective in defending private property. This variable hence reflects the effectiveness of state action in its function as neutral arbiter – or protective state (Buchanan 1975). We call this variable EFFLAW (A6010).

The second indicator used here refers to the “independence of the justice system vis-à-vis litigants (local) as regards commercial disputes.” This variable thus proxies for the independence of the judiciary not from governance influence, but from being pressured by the commercial parties in dispute. We call it INDCOM (A6051).

In contradistinction to INDCOM, the next variable is concerned with the “independence of the justice system vis-à-vis the Government as regards commercial disputes.” At times, governments have an interest in a specific result of court cases, even if they are not directly involved as litigants. This variable asks whether the judiciary is independent from such pressures. It is called INDGOV here (A6050).

Whereas the first three indicators focus on the role of the state as a neutral arbitrator vis-à-vis private parties, another group of indicators reflects the behavior of state agents when they do not behave as a neutral third party but an actor directly involved in interaction with private parties. One indicator is to reflect the “respect for law in relations between citizens and the administration.” It does, hence, not deal with property rights in a narrow sense but rather with the more general adherence to law when the administration interacts with citizens. It is of interest here because it reflects an important aspect of administrative law, i.e. one specific form of public law (RESADMIN), A1013).

Regulation can be necessary to improve the functioning of the market. At the same time, regulation can also be interpreted as a limitation of property rights. Given that it is, it is important that its effects are not perceived as arbitrary and unpredictable. The variable “generally speaking, does the government exert arbitrary pressure on private property (red tape, etc.)?” reflects exactly this notion. We call it ARBIPRES (A6013).

There are two closely related variables reflecting the past record of governments regarding the termination of contracts vis-à-vis (i) local agents and (ii) foreigners, both without “reasonable” compensation. The fact that there are two variables gives us the possibility to compare how a government deals with local agents compared to foreigners. The variables are called TERMLOC and TERMFOR respectively (A6040, A6041).

Most indicators are coded from 1 to 4 where 1 indicates the worst possible state and 4 the best one. The partial correlations between the seven indicators range between 0.322 and 0.807. Appendix 2 displays all partial correlations.

It has been argued that even autocratic governments would have incentives to set up a rather efficient private law as this increases income – and tax receipts. Among other things, public law determines the amount of discretion the government has at its disposal. If autocratic governments value discretion, then the efficiency of public law created by autocrats could suffer. It has thus been hypothesized that there are more incentives to create an efficient private law than to create an efficient public law (Grady and McGuire 1999). If the factual independence of the judiciary is assumed to be given, one could, hence, conjecture that there are no important differences in the implementation of private law between democratic and autocratic states but that these differences might be significant with regard to the factual implementation of public law. This implies

that the level of autocracy/democracy should be explicitly controlled for in the empirical part.

Data on real per capita income, investment and population growth is from the Penn World Tables 7.0 (Heston et al. 2011). The data on years of schooling is from Barro and Lee (2010). Information on a country's distance from the equator is from La Porta et al. (1999) and the CIA World Factbook (2011). We control for politico-geographic differences between countries using the regional classification by Hadenius and Teorell (2005). For legal origins, we rely on data provided by La Porta et al. (1999). These data are to capture long-established traits of the judicial system. To distinguish between legal systems and other forms of colonial heritage, we also control for colonial history based on Hadenius and Teorell (2005). To proxy for the realized degree of democracy, we rely on the Polity IV dataset provided by Marshall and Jaggers (2002) and more specifically, on their *polity2* variable which scores a complete autocracy with -10 and a perfect democracy with 10.

5. Results

We start our analysis by estimating equations (1a) to (1c), the results of which are reported in Table 1. Coefficient estimates for cultural, geographical and historical time-invariant country characteristics and on the level of democracy are omitted. The standard control variables investment, education and population growth always exhibit the expected sign. While the effect of investment on growth is highly statistically significant, education has no significant effect and population growth only when judicial independence is omitted from the model. Also, *de jure* property rights and *de facto* judicial independence individually (and included at the same time) have no significant effect. Although we would have expected a positive effect from judicial independence, it comes as no surprise that merely promising property rights without making this promise credible has no effect on economic growth. However, once we take into account that the effect of *de jure* property rights on economic growth is dependent on the level of *de facto* judicial independence, we find positive and significant effects for the individual variables and their interaction term. Thus, our theoretical expectations from Section 2 are so far confirmed.

Table1: Random-effects GLS regression over 1981 to 2009

VARIABLES	[1a] ln(GDP)	[1b] ln(GDP)	[1c] ln(GDP)
1-year lagged ln(GDP)	0.995*** (0.002)	0.992*** (0.003)	0.990*** (0.003)
Ln(Investment)	0.010*** (0.003)	0.021*** (0.004)	0.018*** (0.004)
Ln(Schooling)	0.002 (0.002)	0.001 (0.004)	0.001 (0.004)
Ln(Population growth)	-0.005*** (0.002)	-0.002 (0.002)	-0.002 (0.002)
<i>De jure</i> PR	-0.002 (0.003)		0.011** (0.005)
<i>De facto</i> JI		0.005 (0.004)	0.021*** (0.007)
PR * JI			0.019*** (0.007)
Region-fixed effects	yes	yes	yes
Time-fixed effects	yes	yes	yes
Observations	3,183	1,351	1,351
Number of countries	126	54	54

Coefficient estimates for legal origins, colonial history, level of democracy and ethnic fractionalization are not reported. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

While we assume that the level of *de facto* judicial independence is exogenous over relatively short periods of time as it is the case here, we cannot exclude that the likelihood of promising the protection of property rights in the constitution and changes thereof are endogenous. To solve this potential endogeneity problem, we estimate two stage least squares regressions, instrumenting for both *de jure* property rights protection and its interaction with the level of JI. As instruments we use the level of property rights in 1960 and for the interaction term either the squared level of property rights in 1960 or its product with the distance from the equator. While the level of constitutional property rights protection in 1960 affects the level of PR after 1981, it should not have a direct influence on income. Also, the distance from the equator is a good predictor of institutional quality, but it should not have a direct effect on income. Table 2 shows the IV regression results.

Table2: Generalized 2SLS IV regression over 1981 to 2009

VARIABLES	[A] ln(GDP)	[B] ln(GDP)	[C] ln(GDP)
1-year lagged ln(GDP)	0.986*** (0.004)	0.984*** (0.004)	0.986*** (0.004)
Ln(Investment)	0.029*** (0.005)	0.024*** (0.005)	0.023*** (0.005)
Ln(Schooling)	0.002 (0.004)	0.004 (0.005)	0.003 (0.004)
Ln(Population growth)	-0.003 (0.002)	-0.004** (0.002)	-0.003* (0.002)
<i>De jure</i> PR	0.005 (0.005)	0.062*** (0.019)	0.041** (0.018)
<i>De facto</i> JI	0.012** (0.005)	0.077*** (0.020)	0.052** (0.021)
PR * JI		0.084*** (0.025)	0.054** (0.025)
Region-fixed effects	yes	yes	yes
Time-fixed effects	yes	yes	yes
Observations	1,351	1,351	1,351
Number of countries	54	54	54

Coefficient estimates for legal origins, colonial history, level of democracy and ethnic fractionalization are not reported. Additional instrumental variables in regression (1): “PR in 1960”, in (2): PR in 1960 and (PR in 1960)² and in (3): PR in 1960 and (PR in 1960)*(Distance from equator). Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The results of the instrumental variable regressions confirm our simple GLS results. The standard control variables again exhibit the expected signs and this time the negative effect of population growth is even significant in the fully specified models (B) and (C). *De facto* judicial independence now has the expected significantly positive effect, even without the interaction term. The coefficient estimates for PR, JI and the interaction effect are substantially larger in the IV model. In further regressions, we will test for effects on different productivity measures, the role of competition policy as a restriction on property rights and the transmission channels to economic growth via investments in human and physical capital. We further follow the work of Acemoglu and Johnson in trying to unbundle property rights based on the “Institutional Profiles 2006” database by Meisel and Ould Aoudia (2007).

6. Conclusions and Outlook

This paper takes up some recent questions concerning the effects of property rights on economic development. It argues that some of the mixed results are due to inadequate indicators purporting to measure property rights. It argues that both *de jure* and *de facto* aspects of institutions are important but that any indicators should aim at measuring them independently of each other. The paper contains a new measure for constitutionally entrenched property rights as an indicator exclusively interested in *de jure* aspects. If economic growth is regressed on this indicator, it becomes evident that *de jure* promises do, as such, have little effect. As soon as a measure for the actual enforcement of government promises, in our case: *de facto* judicial independence – is added, the picture changes. This study thus reconfirms that it is the actual implementation of institutions that matters and not any government promises as such.

Various extensions almost suggest themselves. In the theoretical section, the possibility that property rights referring to different kinds of goods (tangible vs. intangible, movable vs. immovable) might have different effects on growth and development. To test this, indicators reflecting these different areas are needed.

In the theoretical section, the possibility that property rights reforms could have negative short-term effects while still having positive long-term effects was mentioned. To take this into account, panel cointegration models might be the adequate estimation technique.

Beyond all possible extensions, it seems already clear that the capacity not only to promise secure property rights but to commit to them credibly is not equally distributed the world over. This insight might be frustrating news not only to some governments but also to some international organizations: understanding the effects of institutions does not automatically imply our capacity to modify them at will and to bring growth-enhancing institutions about.

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Appendix 1: Partial Correlations between the single components of the Property Rights Indicator

	1 PROPRGHT	2 TRANSFER	3 TESTATE	4 INHERIT	5 IPR	7 EXPRCOMP	8 EXPCOND
1 PROPRGHT	1.000000	0.003277	0.116131	0.206456	0.186962	-0.013729	0.220255
2 TRANSFER	0.003277	1.000000	0.322793	0.002791	0.123623	0.009756	-0.077349
3 TESTATE	0.116131	0.322793	1.000000	0.208791	0.220867	0.039530	0.044573

4 INHERIT	0.206456	0.002791	0.208791	1.000000	0.179955	0.021713	-0.007429
5 IPR	0.186962	0.123623	0.220867	0.179955	1.000000	0.024075	0.099789
7 EXPRCOMP	-0.013729	0.009756	0.039530	0.021713	0.024075	1.000000	0.140577
8 EXPCOND	0.220255	-0.077349	0.044573	-0.007429	0.099789	0.140577	1.000000

Appendix 2: Partial Correlations between the Institutional Profile-Variables

	EFFLAW	INDCOM	INDGOV	RESADMIN	ARBIPRES	TERMLOC	TERMFOR
EFFLAW	1.000000	0.779410	0.697277	0.711548	0.582495	0.321523	0.388426
INDCOM	0.779410	1.000000	0.780086	0.785305	0.594532	0.398708	0.415130
INDGOV	0.697277	0.780086	1.000000	0.679804	0.564080	0.411247	0.466225
RESADMIN	0.711548	0.785305	0.679804	1.000000	0.682726	0.372209	0.374027
ARBIPRES	0.582495	0.594532	0.564080	0.682726	1.000000	0.406036	0.509194
TERMLOC	0.321523	0.398708	0.411247	0.372209	0.406036	1.000000	0.807406
TERMFOR	0.388426	0.415130	0.466225	0.374027	0.509194	0.807406	1.000000

Summary Statistics:

Variable	Obs	Mean	Std. Dev.	Min	Max
ln_gdp	4175	8.329609	1.340312	4.764114	11.97897
ln_inv2	4173	2.976963	.5207256	-.6790614	4.369558
ln_school2	3583	.4014445	.8885832	-3.454542	2.048999
lnpopgrowth	3751	-4.190437	.9630816	-9.983979	-.5646558
lnpr	4146	-.925579	.4712686	-3.044523	-.0240976
lnji	1566	-.6033792	.472616	-2.017406	0
c.lnpr#					
c.lnji	1566	.5225842	.5138164	0	2.684932
ht_region					
2	4175	.1389222	.3459067	0	1
3	4175	.1192814	.3241582	0	1
4	4175	.314012	.4641768	0	1
5	4175	.1389222	.3459067	0	1
6	4175	.0347305	.1831184	0	1
7	4175	.0538922	.2258319	0	1
8	4175	.0445509	.2063403	0	1
9	4175	.0205988	.142054	0	1
10	4175	.0208383	.14286	0	1
lp_legor					
2	4175	.4761677	.4994915	0	1
3	4175	.1542515	.3612329	0	1
4	4175	.0416766	.1998731	0	1
5	4175	.0277844	.1643744	0	1
ht_colonial					
1	4175	.0069461	.0830633	0	1
2	4175	.131976	.3385053	0	1
3	4175	.0124551	.1109185	0	1
4	4175	.0069461	.0830633	0	1
5	4175	.2589222	.4380952	0	1
6	4175	.1753293	.3802941	0	1
7	4175	.0347305	.1831184	0	1
8	4175	.0208383	.14286	0	1
10	4175	.0069461	.0830633	0	1
polity2	4175	1.883114	7.189424	-10	10
al_ethnic	4175	.4608931	.2589632	0	.930175