The economic effects of judicial accountability: cross-country evidence

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Abstract Judicial independence is not only a necessary condition for the impartiality of judges, it can also endanger it: judges that are independent could have incentives to remain uninformed, become lazy or even corrupt. It is therefore often argued that judicial independence and judicial accountability are competing ends. In this paper, it is hypothesized that they can be complementary means towards achieving impartiality and, in turn, the rule of law. It is further argued that judicial accountability can increase per capita income through various channels one of which is the reduction of corruption. First tests concerning the economic effects of JA are carried out and on the basis of 75 countries, these proxies are highly significant for explaining differences in per capita income drawing both on OLS as well as TSLS.

Keywords Judicial independence · Judicial accountability · Rule of law · Economic growth · Corruption · Constitutional political economy

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1 Introduction

The positive effects of judicial independence have been stressed frequently: if judges are dependent on representatives of other government branches, the implementation of the rule of law was impossible and a rule of persons would

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result instead. An independent judiciary would hence be a necessary condition for the realization of the rule of law. It has also been shown (Feld and Voigt 2003, 2006) that a high degree of factually implemented judicial independence is conducive to economic growth.

But judges who are independent from most other decision-makers can also constitute a danger: they could render decisions only with hefty delays, render decisions that neglect much of the available evidence, render decisions that rely on irrelevant legislation, or render decisions that are patently false. Independent judges are not only a necessary condition for the rule of law, they also constitute a threat to the rule of law: if there is a rule of judges, the rule of law will not be realized.

This apparent tension has led many observers to claim that a tradeoff between judicial independence and judicial accountability is necessary (see, e.g., Cappelletti 1983). In this paper, a case in favor of a complementarity between judicial independence and judicial accountability is made, which implies that the imputed tradeoff between the two does not necessarily exist. It is indeed argued that it is possible to have a judiciary that is both independent and accountable (Sect. 2). Further, a number of hypotheses concerning possible effects of judicial account-ability (JA) are developed, arguing *inter alia* that a high degree of JA reduces corruption levels and hence improves growth prospects (Sect. 3). In order to make the hypotheses testable, a measure of JA is needed. It is argued that the transparency of the judiciary is one crucial aspect of accountability, others include procedural provisions either within the judiciary itself or via independent agencies (Sect. 4). A first test confirming the positive influence of judicial accountability on per capita income is carried out (Sect. 5). The Outlook mentions a number of possible topics for future research (Sect. 6).

The three main contributions of this paper are: to show that judicial independence and judicial accountability can be complementary on a conceptual level, to identify possible transmission channels from JI and JA to income and to present regression results that show the proxies for judicial accountability to be highly and robustly significant for explaining differences in per capita income.

2 On judicial accountability—and its relationship to judicial Independence

In this section, it is argued that JA and JI are not ends in themselves but means to attain another end, namely impartiality which is, in turn, a precondition for the rule of law.[1] It is further argued that they are not competing means but are indeed complementary.

Judicial independence can be interpreted as a necessary condition to implement the rule of law. To have the rule of law, judges need to be independent from any

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[1] See also Ferejohn and Kramer (2002) who argue that JA and JI are instrumental to reach the goal "well-functioning judiciary". As this term is wide open to interpretation, we prefer to say that they are both means to the end of the rule of law, which is, however, also a disputed term. There is a huge discussion whether the rule of law can be realized relying exclusively on formal procedures or whether some substantive "minimum standards" have to be satisfied. We do not intend to contribute to that discussion, yet our argument holds even if the weaker—purely formal—delineation is used.

pressure that either the conflicting parties or members of the other government branches could put on judges in order to influence their decisions. Otherwise, there is the risk that the interests of other persons are implemented—and not "the law". Interpreted like this, JI not only implies the absence from any open or subtle pressure on the judges but also that judges can expect their decisions to be implemented regardless of whether they are in the (short-term) interest of other government branches upon whom implementation depends. It further implies that judges do not have to anticipate negative consequences as the result of their decisions such as (i) being expelled, (ii) being paid less, or (iii) being made less influential.

Although JI can be interpreted as a necessary precondition for the rule of law, it is not desirable that judges are able to decide no matter what with regard to cases brought before them. We want them to treat the parties appearing in front of them with respect, to separate relevant from irrelevant arguments, and to decide the case within a reasonable period of time according to the letter of the law. We do not want them to let their personal preferences or their sympathy or antipathy with the parties taint their decision. In that sense, we want judges to be accountable to the law. JI is thus a necessary, but not a sufficient condition for the realization of the rule of law. In order to make judges act upon the letter of the law, adequate incentives are needed. JA can be thought of as one important aspect of these incentives.

In Webster's Dictionary, accountability is defined as "the quality or state of being accountable, liable, or responsible." Generally, accountability implies the necessity to justify or explain one's past behavior. In economic terms: being accountable means that behavior deviating from a generally recognized standard is sanctioned somehow and a loss in utility results. JA can then be defined as the loss in utility that a judge expects to incur in case her behavior deviates too much from a generally recognized standard. Here, the generally recognized standard refers to the letter of the law. This definition thus implies that JA is concerned with single judges and their actions—and not with the judiciary as an entire government branch. The definition further allows for the recognition of two aspects: the behavior of a judge, i.e. a procedural aspect as well as the decision of a judge, i.e. a substantive aspect. Concerning the behavioral aspect, one can further distinguish between behavior committed in office vs. behavior committed out of office, e.g. having accepted bribes vs. having driven while being drunk. The definition is fuzzy concerning the threshold with regard to deviation: at times, it will be no mean feat to ascertain whether a certain behavior is "generally recognized" or not. Over the years, ever more countries have adopted so-called codes of judicial conduct that are to separate ethical from unethical judicial behavior. Whether a decision conforms to generally recognized standards is often just as difficult to ascertain. It would be naïve to assume that the judges' job primarily consists of applying general norms to specific cases.

Now, the relationship between JI and JA can be picked up again. The hypothesis is that the two are not mutually exclusive. JI is concerned with the absence of pressure from the parties appearing in court or representatives of other government branches, whereas JA is concerned with making judges implement the letter of the law. The most important difference between the two concepts is that an accountable

judge will have to incur extra costs if she disregards or violates the law whereas a dependent judge will have to incur extra costs although she meticulously follows the letter of the law. If JA and JI needed to be traded off against each other, more JA would imply less JI—and vice versa. This can also be expressed as more JA implying a higher degree of judicial dependence (which is the opposite of JI).

An entire battery of mechanisms to make judges accountable is discussed in the literature (Seidman 1988, 1572ff. as well as Ferejohn 1999 contain very brief overviews). We propose to shortly discuss them in turn, asking whether they qualify as instruments of JA according to the definition here proposed.

(1) *Impeachment*; if the impeachment process is only initiated after a particular judge has broken some generally agreed upon standard, it does qualify as an institution of JA. But as long as the power to initiate impeachment proceedings is vested with the executive and/or the legislature, it can be misused to intimidate judges—and thus be turned into an instrument of judicial dependence. Impeachment could, hence, be an example for an instrument that—if properly used—is a means to enhance JA which could, if misused, also serve to reduce JI. In this case, a conflict between the two concepts can thus not entirely be excluded.

(2) The *power* of members of other government branches *to nominate and appoint judges*; although concerned with individual judges, this institution is not concerned with *past* and wrongful behavior of judges that is now negatively sanctioned. This is also true for the decisions to *raise the number of judges*.[2] Thus, neither qualifies as an institution of JA.

(3) *The necessity to be re-elected at periodic intervals*; this is concerned with individual judges' past behavior but not necessarily with wrong decisions on legal grounds, but rather with "wrong" decisions regarding the preferences of the relevant constituency. Hence, popular re-election requirements do not necessarily make judges more accountable to the letter of the law.

(4) Judges *decisions* need to be *implemented by representatives of other government branches*. This is a trait of checks and balances rather than of JA.

(5) Judicial decisions can be *reversed by constitutional amendment*. As pointed out above, this is part of the checks and balances as designed by the framers of the constitution.

(6) *Limitations on the jurisdiction* of judges; this aspect is rather concerned with their competence. True, if they overstep their competences, this could entail some costs. Yet, as long as jurisdictional limitations are passed (by the other government branches) drawing on the procedures provided for in the constitution, this would qualify as an aspect of checks and balances rather than of JD (or JA). The same can be said with regard to the *creation of additional courts*.

(7) Some constitutions provide for the possibility that the population corrects court decisions qua *referendum*. Assuming that judges want their decisions to be implemented and not corrected via referendum, such a possibility thus

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[2] An altogether different situation is the one where the number of judges is reduced and some judges have to leave before the end of their term.

creates incentives for the judges to take popular preferences into account in their decisions. It therefore does indeed create a kind of accountability, namely that to majority sentiment. This kind of accountability is, however, not necessarily identical to that of the letter of the law.

(8) *Enact rules of court procedure*; these could, at least indirectly, qualify as a means of JA. If rules of court procedure serve to make the procedure according to which justice is produced more transparent, it will be more difficult for the individual judge to deviate from the letter of the law. On the other hand, it cannot be excluded that such rules, if issued by the other branches of government, can also serve as an instrument to make the judiciary subservient. In that case, they would thus be an incidence of JD.

According to our definition, very few measures qualify as being part of JA if the definition here proposed is applied. Until now, we have only identified one single instrument which unequivocally belongs to JA, namely impeachment.

Impeachment is, however, a very crude instrument. Often, it can only be initiated by parliamentarians. Its initiation is connected with high opportunity costs to them. We would expect parliamentarians to initiate impeachment only if they expect positive returns, most likely in the way of increased chances of re-election. This means, again, that popular sentiment controls the probability of judges being impeached. The question thus is: aren't there any other instruments to make judges work as the principals want them to? We now turn to present some of those instruments:

(1) Judicial decisions are often *collective decisions* of three or more judges. Given that this is the case, it seems less likely that the decision will not be based on the letter of the law than if a single judge has the competence to make decisions.

(2) Judicial decisions are *subject to appellate review*. If one of the parties believes that the decision of the first instance is fundamentally flawed, it can take the case to a higher court which has the competence to overturn first instance decisions. Supposedly, the judges on the higher courts are better qualified than the ones on the first court.

(3) If a court is obliged to *publish* its *decisions*, their compatibility with the valid law can be ascertained more easily than if this were not the case.

(4) The necessity that judicial decisions need to be accompanied by an *extended reasoning* is closely related to this point; this increases JA. The reasons for judicial decisions become transparent—and can be challenged either in another court, in the media, or in a "complaint agency" (to be discussed below).[3]

(5) Another aspect of transparency is whether court proceedings occur behind closed doors—or are *open to the public*: if the behavior of a judge is subject

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[3] Requiring an extended proof can also be interpreted as an aspect of JI: it makes it more difficult for members of the other branches to put pressure on judges to rely on aspects being of minor or no importance for the case at hand. This observation strengthens our claim that JI and JA do not need to be conflicting.

to public scrutiny, incentives to comply with generally recognized standards can be expected to be higher than if this is not the case.

(6) Judicial statistics also increase transparency. Whether they qualify as JA depends on their exact nature. Judicial statistics can inform the public about the number of cases filed, the number of cases resolved etc…. As long as this information refers to the judiciary as a group, it does *not* qualify as JA as low speed cannot be attributed to individual judges. If *individual calendars* are published, it does qualify as JA because the activities of individual judges become transparent and their behavior thus accountable.[4]

(8) *Codes of judicial conduct* can help to draw the line between acceptable and non-acceptable judicial behavior. They can create focal points that will make activities, no matter whether administered within the judiciary or somewhere else that aim at sanctioning deviations from such codes easier. These activities would qualify as an element of JA.

(9) *"Complaint agencies"* can give affected parties the possibility to complain about the behavior of a judge. If they have some competence to sanction misbehaving judges and are easy to use, they can constitute an incentive for judges to behave appropriately.

(10) *Disciplinary action*; if judges do not conform to either formal law or judicial codes of conduct, they might be subject to disciplinary action. As long as disciplinary measures are not invoked out of political (i.e. non-legal) reasons, the threat of disciplinary action can indeed enhance JA.

(11) As a constraint that is often rather crude, the possibility of *charging a judge with having committed a criminal offense* must be mentioned. This can apply to both acts committed in the function of a judge but also out of court.

This list is certainly not exhaustive. It shows that many different instruments have the potential to increase the accountability of judges. It is assumed that the more of the mentioned instruments are used, the higher the likelihood that judges will indeed be accountable. It is worth pointing out that the instruments mentioned do not draw on representatives of the other government branches but exclusively rely on the judicial branch itself. The underlying assumption that judges might be good watchdogs of their fellow judges will be dealt with in the theoretical section.

In this section, both JI and JA have been defined and it has been shown that they need not be at odds with each other but can even re-enforce each other. We have critically discussed a number of instruments frequently mentioned as ways to increase accountability and concluded that few of them conform to the definition of JA offered here. Eventually, a number of instruments compatible with the definition were named. Before we discuss ways to quantify—and make comparable—these aspects of JA in Sect. 4, some theoretical notions concerning the function as well as the potential consequences of JA are discussed in Sect. 3.

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[4] Following the saying "Justice delayed is justice denied", it could be argued that the timeliness of decisions (and not just the responsible use of time) should be used as a further criterion. We refrain from doing so here because judicial decision-making does take some time. If one wanted to minimize delays until final decisions were reached, a logical first step would be to get rid off the appeals option which shows that timeliness and accountability can be partially conflicting.

3 Some theory

An independent judiciary can be one means to solve the dilemma of the strong state: on the one hand, a state strong enough to protect private property rights is needed. On the other, a state that is sufficiently powerful to protect private property rights is also sufficiently powerful to attenuate or outright ignore private property rights. This is to the detriment of all the relevant actors: citizens who anticipate that their property rights might not be completely respected have fewer incentives to create wealth. The state, in turn, will receive a lower tax income and will have to pay higher interest rates as a debtor. Formal strength thus turn s into factual weakness. A judiciary that can adjudicate between the states and the citizens without any interference from the state can reduce this dilemma: if it is a neutral arbiter and its decisions are systematically implemented by the other government branches, aggregate investment will rise and the economy will grow faster. The judiciary can thus be an institutional arrangement to solve the dilemma of the strong state because it enables the state to enforce private property rights but prevents the state from giving in to the temptation to attenuate property rights. The independent judiciary is, in other words, a precommitment device that can turn promises of the governing to respect private property rights into credible commitments.

The judiciary is thus interpreted as a means of government to commit itself to the promises it makes. The promises are, of course, the laws passed by the legislature, e.g. with regard to private property. But the beneficial effects of this institutional solution will only materialize if the judiciary redeems the promises of the legislature. If judges do not render any decisions at all, legislative promises are not redeemed. If judges do not follow the letter of the law, but rather their own preferences, legislative promises will not be turned into credible commitments. If judges can be bribed, it is not the latter of the law that is implemented but the will of the party paying the higher price for the decision. Independent judges who are not accountable and do not incur any cost for such behavior, will prevent the judiciary from unfolding its potentially beneficial consequences. A low degree of JA can thus increase uncertainty with regard to the status of the promises made by the legislature. Higher levels of uncertainty are expected to induce lower aggregate investment and thus lower levels of both economic growth and income.

In order for judicial independence to unfold its beneficial consequences, judges need incentives to render decisions according to the letter of the law. Their freedom from interference from representatives of the other government branches can be interpreted as *dis*incentives in this regard: why should they work a lot, when their salary cannot be reduced anyways? Why should they bother about the facts if they enjoy judicial immunity? With regard to the judiciary, many time-honored incentive schemes do not make any sense: paying judges depending on the number of decisions rendered could help to increase the number of decisions rendered but would most likely result in a loss of their quality.

It has been pointed out (e.g. by Kirchgässner and Pommerehne 1993) that court decisions are "low cost decisions". If a judge makes the "wrong" decision, she will not have to bear the consequences of this decision, i.e. will not experience any utility losses. This means that her incentives to responsibly collect information in

order to prevent costly personal losses are low. It is then often hypothesized that in the absence of hard incentives, soft incentives like those created by moral rules, peer group pressure and prestige can become quite relevant for decision-making.

Two conclusions seem to be worth discussing as consequences of this observation: First, we might want to think about transferring low-cost into high-cost decisions, i.e. make the judges responsible for any mistakes they commit. This would amount to a radical shift in the judicial system. This is, however, not the right place to discuss possible pros and cons of such an institutional innovation.[5] Second, one might dig a little deeper into the nature of "soft incentives" and ask to what degree they are capable of putting considerable costs on judges—and hence make them more accountable.

In principle, reputation can be an important soft incentive channeling the behavior of judges. Often, individuals have various groups among which they appreciate to enjoy a high reputation. With regard to judges, these groups most likely include (i) one's fellow judges, (ii) one's academic colleagues and (iii) the public at large. This means that ethical constraints like codes of judicial conduct can constrain judges' behavior even if they cannot be formally enforced. This can be so if codes of conduct enable others to evaluate the conduct of a judge in a specific case. If non-compliance with the code of conduct reduces the reputation of a judge, their sheer existence can be sufficient for making the judge comply with the law.

Ferejohn (1999, see also Ferejohn and Kramer 2002) has argued that many judges are interested in the reputation of the judiciary as a branch because the other branches will be more likely to reduce JI if the judiciary does not enjoy a high reputation. This means that individual judges who do not live up to judicial standards can inflict costs on the branch as a whole. Judicial reputation is thus also a public good. This observation is potentially very important for predicting the effects of institutions of JA that are run by members of the judiciary (and possibly for inducing the creation of adequate institutions that are to safeguard JA). In order to safeguard—or even increase—the reputation of the judiciary, its members have incentives to use (and possibly even create) mechanisms which make all their members comply with judicial standards because this will reduce the likelihood of some of them inflicting costs on all of them. Put differently: because members of the judiciary prefer to be held accountable to their peers rather than be made dependent on the other branches, institutions of JA that are administered and enforced by the judiciary have a good chance of turning out to be effective.[6]

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[5] Volcansek (1996, 121) reports that Italy has a provision called "recovery liability" that enables the state to recover some of the damages that it incurred as a consequence of an offending judge.

[6] On the other hand, the creation and enforcement of judicial self-control mechanisms is still a public good: once created, all judges benefit from it. If creation and implementation is costly, every judge would hope to enjoy the fruits of the good without having to devote resources to its creation. Stressing the positive consequences of judicial self-control and assuming that these consequences were sufficient to believe in their creation would, of course, be committing the functionalist fallacy. The attempt to make judges judges of other judges contains some dangers: this competence could be misused to get rid of unpopular colleagues; the anticipation of this possibility creates incentives to create informal networks within the judiciary that do not necessarily improve impartiality. The possibility that judges aim to be popular with their colleagues instead of implementing the law cannot be excluded either. On the other hand, informal norms to protect colleagues even though they are, e.g., clearly corrupt, is a real danger.

Let us now turn to generate some testable hypotheses concerning the effects of JA. If judges enforce the letter of the law, this will decrease uncertainty among all those who rely on the law in their interactions. This, in turn, is expected to lead to an increase in welfare-enhancing contracts. This should lead to higher growth rates, and, at the end of the day, to higher income.

Another channel through which JA is expected to affect economic growth is via corruption. Higher degrees of JA imply higher degrees of transparency of the judiciary including tighter screening and monitoring. A high degree of JA means that there will be few judges who do not decide based on the letter of the law. Almost by definition, a high degree of JA is equivalent with a low degree of corruption within the judiciary. Given a low degree of judicial corruption, judicial behavior is more predictable. Again, we would expect more welfare-enhancing contracts to be made—and higher income as the result. But there could also be a second, more indirect effect: if, due to high degrees of JA, judges cannot misuse public office for private gain, they might display less tolerance if other government members try to misuse public office for private gain. If corruption becomes less profitable in general, overall corruption levels can be expected to be lower.

4 Measuring JA

In order to empirically test the hypotheses just developed, indicators for JA are needed, which are developed in this section. Ideally, the criteria developed in Sect. 2 (possibility of appellate review, requirement of extended hearing, court proceedings open to the public etc…) would be subjected to some measuring rod, which would allow us to compare them between countries. Unfortunately, very few of these variables are available for a cross-country analysis on a worldwide scale. There have been some regional analyses (1998) with regard to Asian and Pacific countries, Volcansek 1996 with regard to three European countries and the U.S.), but to the best of my knowledge, no global survey has ever been done. In order to be able to estimate the effects of JA anyways, we propose to look for proxies that could help us to get a first impression of the possible relevance of JA.

In former research (Feld and Voigt 2003, 2006), the distinction between *de jure* and *de facto* JI has been crucial: whereas *de jure* JI does not have any economically or statistically relevant effect on economic growth, *de facto* JI does so in a very robust fashion. This is why we propose to develop an indicator which draws primarily on *de facto* rather than on *de jure* aspects of JA. We are, in other words, interested to ascertain the degree to which the members of the judiciary really are accountable—and not how they should be made accountable according to the letter of the law.

The Global Competitiveness Report, which has been published by the World Economic Forum annually since 1979, contains a variable that asks whether there are irregular payments in judicial decisions. It is based on an executive opinion survey in which executives are asked to evaluate the question "In your country, how commonly would you estimate that firms make undocumented extra payments or bribes connected with getting favorable judicial decisions?" on a scale between one

(common) and seven (never occurs). The 2002/2003 edition (Cornelius et al. 2003) contains answers from 80 countries. On the one hand, the answers to this question seem to be a rather crude proxy for the level of judicial accountability perceived by businesspeople in the respective countries. On the other, the absence of corruption within the judiciary can be interpreted as the degree to which judicial accountability mechanisms are effectively functioning. If there is a low degree of corruption within the judiciary, this is interpreted as implying that decisions cannot be bought—and that it is the letter of the law which is crucial for judicial decision-making.

We hence propose to use the absence of judicial corruption as our first indicator for effectively functioning JA institutions. This indicator is labeled "JA I" here.

An alternative way to get around the lack of an established indicator on JA is to focus on the various components that have been identified as contributing to a low/ high degree of JA. Unfortunately, not all of them are available for a large number of countries. Yet, Hathaway (2002) published an Index of Fair Trial which contains ten elements, namely (1) independent and impartial judiciary, (2) the right to counsel, (3) the right to present a defense, (4) the presumption of innocence, (5) the right to appeal, (6) the timeliness of court action, (7) the absence of *ex post facto* laws, (8) the right to a public trial, (9) the right that the charges are presented with prior notice and (10) the right to an interpreter. These are all procedural aspects. Procedures are usually introduced in order to reduce the arbitrariness of the actors whose behavior is subjected to them. Hence, procedures generally serve to make behavior more predictable. Given the ten elements are enforced, it will be more difficult for judges not to implement the letter of the law. This is why these elements are used here as a second proxy for JA.

To generate her indicator, Hathaway (2002) relied on the Human Rights Reports issued by the U.S. State Department. These reports are verbal and thus need to be quantified. Two research assistants coded the data and intercoder reliability was 82%. The indicator is available for six years (1985, 88, 91, 94, 97 and 2000) and for up to 160 countries. Countries are coded "0" if the respective right is always enforced, "0.5" if it sometimes enforced and "1" if it is never or not enforced. The focus is restricted to civilian trials, i.e. the practices of military courts are not taken into account. Besides this restriction, the Hathaway indicator refers to all kinds of trials and thus includes civil as well as criminal or administrative cases.

The indicator needs to be treated with caution as the correlation within countries but across years is surprisingly low. In order to reduce the likelihood that singular events unduly influence the results, we use the average over all the years for which data are available. An additional problem with the data is its source: the country reports of the State Department are political documents, which might also serve the purpose to justify U.S. development aid to certain states etc... Yet, it has been noted (Poe et al. 1999) that the annual reports of Amnesty International and the State Department have been steadily converging and do not display many differences concerning the evaluation of most states anymore.

Since we are specifically interested in JA and not in an amalgamation of JI and JA, we explicitly exclude Hathaway's first component from our analysis. The average over all remaining nine components averaged over all six points in time is labeled "JA II" here. Compared with the survey of business people, this proxy has

the advantage of being based on factual information and to be quite detailed concerning various aspects of JA. This will allow us to have a look at the influence of the single components on which this overall indicator is based.

Neither of these measures is ideal: the Competitiveness Report is a subjective measure based on the judgments of country experts. Although the State Department Reports are based on reported facts, the subjective evaluation of the staff of U.S. embassies still plays a role. Both measures are influenced by what the observers expected to see in a country. Ideally, we would thus prefer objective measures. Yet, having two differently constructed proxies available already enables us to check the robustness of our results by simply comparing them across the two proxies.

Table 1 contains some descriptive statistics of both JA I and JA II as well as of the nine single components that JA II is made up of. Table 2 contains the correlation matrix of the two JA indicators and a number of control variables in order to provide the reader with an intuition for how the indicators fare in comparison to other indicators.

The correlation between JA I and JA II is highly significant but with 0.611 far from perfect. This might be due to the different methods used to generate the two indicators but even more so to the very different criteria underlying the two indicators. If correlations with the other indicators are high, this is generally true for both versions of JA (note that in JA I high scores indicate high degrees of JA, whereas in JA II, high scores indicate low degrees of JA).

The relationship between the two proxies for JA and JI is of particular interest. Remember that we have argued that JA and JI are complementary rather than competing. To proxy for factual JI, an indicator first presented in Feld and Voigt (2003) is used. They gathered their data by way of a questionnaire that contained, however, only factual questions and none where respondents had to make any evaluations themselves. In all, their *de facto* indicator consists of 8 variables, including whether effective average term length and the term length to be expected according to the letter of the law are in line with each other, the development of the real income of judges, the development of real court budgets, and the number of

Table 1 Descriptive statistics of JA I and JA II

	Min.	Max.	Mean	SD
JA I	2.77	6.92	4.695	1.254
JA II	0	0.38	0.157	0.102
Right to counsel	0	0.75	0.324	0.187
Right to present defense	0	0.667	0.172	0.176
Presumption of innocence	0	0.833	0.157	0.172
Right to appeal	0	0.75	0.065	0.116
Timeliness	0	1	0.437	0.298
No ex post facto laws	0	0.167	0.003	0.020
Public	0	0.417	0.062	0.101
Charges presented prior	0	1	0.232	0.198
Right to interpreter	0	0.25	0.01	0.05

Table 2 Correlation matrix of de facto judicial accountability I and II as well as controls

	De facto judicial accountability I	De facto judicial accountability II	De facto judicial independence	Index for press freedom	Share of protestant population	Dummy for legal origin, common law	Dummy for mixed court system	Number of veto players	Index for total corruption
De facto judicial accountability I	1								
De facto judicial accountability II	−0.611** (90)	1							
De facto judicial independence	0.432** (66)	−0.451** (66)	1						
Index for press freedom	−0.516** (90)	0.730** (90)	−0.545** (66)	1					
Share of protestant population	0.492** (84)	−0.434** (84)	0.229 (65)	−0.415** (84)	1				
Dummy for legal origin, common law	0.140 (90)	0.203 (90)	−0.137 (66)	0.139 (90)	0.097 (84)	1			
Dummy for mixed court system	−0.158 (75)	0.080 (75)	−0.056 (62)	0.002 (75)	−0.143 (72)	−0.259* (75)	1		

Table 2 continued

	De facto judicial accountability I	De facto judicial accountability II	De facto judicial independence	Index for press freedom	Share of protestant population	Dummy for legal origin, common law	Dummy for mixed court system	Number of veto players	Index for total corruption
Number of veto players	0.050 (90)	−0.181 (90)	−0.027 (66)	−0.231* (90)	−0.040 (84)	−0.068 (90)	−0.079 (75)	1	
Index for total corruption	0.898** (90)	−0.687** (90)	0.492** (66)	−0.654** (90)	0.519** (84)	−0.006 (90)	−0.114 (75)	0.114 (90)	1

Notes: "*de facto* judicial accountability I" is the answer to the question "In your country, how commonly would you estimate that firms make undocumented extra payments or bribes connected with getting favorable judicial decisions?" scaled from 1 (common) to 7 (never occurs) provided by the Global Competitiveness Report 2002/2003. "De facto Judicial Accountability II" is the average of nine components on Fair Trials as provided by Hathaway (2002; and further explained in the text). "*De facto* Judicial Independence" as provided by Feld and Voigt (2004) and scaled between 0 (dependent) and 1 (independent). The "Index for Press Freedom" is provided by Freedom House and scaled between 0 (free) and 100 (not free). The "share of protestant population" is taken from La Porta et al. (1999) as is the dummy for legal origin. The dummy for "mixed court system" is provided by Harutyunanyn and Mavcic (1999) and the "number of veto players" is the checks-variable as provided by Beck et al. (2000). Information on general corruption based on Transparency International's (2003) Corruption Perception Index. The number in parentheses is the number of observations for the correlation. '**' and '*' show that it is significant on the 1 or 5 % level respectively

times that decisions of the highest court have not been implemented. It seems worth pointing out some differences in the construction of the indicators: both JA proxies are generated based on the behavior of judges throughout the entire court system, whereas the JI indicator is generated analyzing the observed independence of only the highest level of judges in a country.

Table 2 further shows that higher levels JA I and JA II are correlated with higher levels of *de facto* JI. A preliminary conclusion thus reads that based on our indicators, no tradeoff between JI and JA exists. The partial correlation between JA I (II) and *de facto* JI is 0.432 (0.451) which means that it is significant on the 1% level. For the regressions to be carried out, this is potentially troubling as multicollinearity might be an issue. Most other controls display the expected correlations. It is noteworthy that the partial correlation between JA I (or the absence of judicial corruption) and the general level of corruption as reflected in the Corruption Perception Index published by Transparency International (2003) is very high (0.898). The correlation with the common law variable is a bit odd as both versions of the JA indicator have the same sign (but the correlation with JA II is insignificant).

5 The estimation approach and results

In order to ascertain the economic effects of JA, we propose to estimate the following equation

$$Y_i = \alpha + \beta M_i + \boldsymbol{\chi} \mathbf{JA_i} + \delta Z_i + \phi_i. \qquad (1)$$

Income is used as the dependent variable because it has been shown that growth rates show little correlation over time and it can thus be argued that income, which reflects growth rates over many periods, is a more adequate variable (Hall and Jones 1999). Income data are from the Penn World Tables as provided by Heston et al. (2001). M is a vector containing the standard variables used to explain income (namely average real gross domestic investment per capita and the average number of school years among the total population older than 25 in 1985). JA is one version of our two indicators of judicial accountability, and Z is a vector that contains variables that might explain income and is included in order to ascertain the robustness of the influence of JA on income.[7]

Omitted variable bias is a potentially important problem in this kind of study. The Z-vector therefore contains a host of potentially relevant control variables. We include geographic, standard economic as well as political-institutional variables. Geographical influences are controlled for by a number of continent dummies. The explanatory potential of standard economic variables is covered by including

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[7] An anonymous referee rightly pointed out that investment is likely to be endogenous to the realized level of JA. One option to deal with this would be to instrument investment, another to use it as left hand side variable. Implementation of both options presupposes the explicit recognition of other determinants of investment, which is why we refrain from doing it here. If anything, the simultaneous inclusion of both investment and JA should bias the estimates against the hypothesis pursued here, which re-enforces the results (partial correlations between investment and JA I and JA II are 0.584 and −0.327, respectively).

population growth, openness, government consumption, and inflation rates. Following La Porta et al. (1999), the hypothesis that legal origins are highly influential has led to intensive debates over the last number of years. Judges are, *c.p.*, more influential in common law countries as they are one source of law. The inclusion of the legal origin variable thus allows us to control for the imputed competence—as opposed to the accountability—of judges.

Beck et al. (2000) have proposed a variable that counts the number of (factual) veto players in a political system which is called "Checks and Balances" here. The higher the number of veto players, the more difficult it is to pass fresh legislation. The difficulty of passing fresh legislation has direct implications for the judiciary: the more difficult it is, the harder it will be for the other branches to correct judicial decisions that they dislike. It hence appears that this variable is a good proxy for judicial discretion. Inclusion of this variable should allow us to disentangle its effects from the effects of both JA and JI. But this paper is also interested in the relationship between JA and JI and their effects on income. Hence, *de facto* JI is also included as a covariate. Further, it could be the case that income levels are determined by broader political factors, such as the degree of political rights that the population enjoys (the indicator is from Freedom House) or the degree of democracy (the source is Polity IV). A dummy variable for federal countries as well as one indicating the degree of ethnic fractionalization is also included.

The media can play an important role in the informal monitoring of the behavior of judges. This informal monitoring presupposes, however, that the media can freely report on the judiciary. *Ex ante*, it cannot be excluded that the controlling function of a free press is so important that it makes judicial accountability insignificant with regard to explaining differences in per capita income. We thus control for the realized degree of press freedom as reported by Freedom House.

Ex ante, we cannot be certain that the two proxies for JA are really confined to reflect our concept of JA and do not reflect something broader like 'quality of the judiciary' or even 'institutional quality' at large. We expect JA to be part of the quality of the judiciary which is, in turn, part of the overall quality of institutions. To test the robustness of the JA proxies, a very broad measure of institutional quality called "government effectiveness" is included. It is taken from the governance indicators produced by the World Bank (Kaufmann et al. 2003).

The empirical strategy closely follows this model. First, the baseline regressions are performed adding the two JA indicators in turn. In a second step, the additional variables are included in the regression. Third, the more elaborate JA indicator is differentiated into its single components. The cross section analysis is performed by both the simple OLS as well as the TSLS technique while inference is based on *t*-statistics computed on the basis of White heteroscedasticity consistent standard errors.

Beforehand, it is not clear to what degree JA is really exogenous; it could, e.g., be the case that high income levels enable governments to invest into costly judicial accountability mechanisms. Reversed causality might, hence, taint the results. In order to control for this, an Instrumental Variable approach is used in addition to OLS. The underlying idea is that geography, but also culture and religion might be important factors determining the degree of JA. This is why both JA I and JA II are

instrumented by (1) the (absolute degree of a) country's latitude, (2) the fraction of the population speaking English, and (3) a dummy variable for countries with socialist legal origin. The second variable supposedly incorporates potentially relevant information such as (i) whether a country used to be a British colony, (ii) whether it has a common law legal origin and—to a lesser degree—(iii) whether it has been influenced by protestant values and norms. Hence, it reflects both cultural as well as religious aspects. Using latitude as an instrument for various aspects of institutional quality has become somewhat conventional after Hall and Jones (1999) first relied on it. These instruments work very well; the latitude variable is the single most important one.

The estimation results of the baseline specification are presented in Table 3a. The dependent variable is GDP per capita in logarhythmic form for the year 2000 as provided by Summers, Heston and Aten (2001). The two basic economic variables investment and school enrollment already "explain" around three quarters of the cross-country variation in per capita income (Column (1)). They have the expected signs and are highly significant.

The explanatory power is significantly improved if the two measures of JA are introduced into the model (Columns (2)–(6)) and both measures of JA are highly significant. The inclusion of continent dummies leads to the expected results (Asia, the Middle East and Northern Africa as well as Sub Saharan Africa less likely to reach high income levels), but does not diminish the significance levels of either JA indicator. The same is true if a number of standard variables often used in cross country studies are plugged in (Table 3b). In its second part (columns (5)–(8)), it appears noteworthy that countries with a French legal origin are significantly more likely to have a high income than the Scandinavian benchmark countries. This result is not in line with the outcomes reported by the representatives of the legal origin literature and sheds some doubts on the robustness of their results. Columns (9) and (10) show, however, that there are limits to the robustness of the two JA proxies: As long as all economic as well as all legal origin indicators are plugged in simultaneously, the two proxies remain highly significant (t-values of 6.42 and 4.90 respectively; not reported in table). But as soon as the very broad indicator for the quality of government institutions ("government effectiveness") is included, the significance of the JA proxies is reduced (to the 5% level) or loses its significance entirely. This result should be interpreted with care: government effectiveness and the two JA proxies are highly correlated (0.883 with JA I, −0.696 with JA II). As already spelled out above, JA is part of judicial quality which is itself part of overall institutional quality. Future work should thus try to disentangle the two effects.

The first half of Table 3c analyzes the impact of both federalism and ethno-linguistic fractionalization. Both have the expected sign with ethno-linguistic fractionalization appearing to be more robustly significant than federalism. Again, inclusion of these two variables does not reduce the significance of either JA indicator. The second half of the table enables us to analyze the relevance of a number of political institutions. Remember that checks and balances were included to see whether judicial discretion has a significant impact on income levels. Controlling for judicial discretion does not reduce the significance level of either JA proxy. Judicial discretion itself does not appear to be a significant variable for

Table 3 Regressions (OLS and TSLS) of GDP per capita 2000 (in log form) on de facto judicial accountability I and II and controls

a

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
De facto judicial accountability I	–	0.100** (5.16)	0.201** (4.48)	–	–	0.064** (2.77)	0.138** (7.26)	0.161** (6.00)	–	–
De facto judicial accountability II	–			–1.319** (5.40)	–2.997** (4.64)	–0.991** (3.47)			–1.236** (4.34)	–2.638** (3.20)
Real gross domestic investment 1990–2000 per capita	0.027** (6.78)	0.020** (5.86)	0.018** (4.61)	0.028** (7.44)	0.031** (6.59)	0.023** (6.16)	0.017** (5.64)	0.016** (5.00)	0.026** (7.81)	0.027** (5.22)
Average schooling years in the total population over age 25 in 1985	0.101** (8.97)	0.082** (7.07)	0.051** (2.95)	0.065** (4.52)	0.017 (0.72)	0.062** (4.33)	0.042** (4.30)	0.036** (3.02)	0.050** (4.22)	0.021 (1.02)
Asia	–	–		–			–0.252** (6.60)	–0.251** (6.43)	–0.126* (2.41)	0.009 (0.07)
Latin America	–	–		–			–0.070 (1.575)	–0.057 (1.07)	–0.023 (0.39)	0.066 (0.62)
Middle East North. Africa	–	–		–			–0.220** (2.90)	–0.241** (3.14)	–0.017 (0.24)	0.088 (0.81)
Sub Saharan Africa	–	–		–			–0.397** (3.70)	–0.411** (1.86)	–0.236* (2.17)	–0.186 (1.36)
Constant	5.796	5.532	5.252	6.184	6.672	5.917	5.780	5.719	6.341	6.668
Method	OLS	OLS	TSLS	OLS	TSLS	OLS	OLS	TSLS	OLS	TSLS

Table 3 continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\bar{R}^2$	0.754	0.794	0.763	0.804	0.743	0.816	0.854	0.852	0.824	0.789
SER	0.231	0.212	0.238	0.206	0.248	0.200	0.178	0.188	0.195	0.225
J.-B.	0.377	2.658	0.508	4.939(*)	3.373	7.122*	52.830#	42.058#	3.64	1.636
Observations	87	87	77	87	77	87	87	77	87	77
b										
De facto judicial accountability I	0.100** (4.91)	0.242** (3.78)	–	–	0.152** (6.07)	0.338** (4.14)	–	–	0.094* (2.40)	
De facto judicial accountability II	–	–	1.335** (4.85)	–3.854** (4.53)	–	–	1.199** (4.84)	3.036** (4.25)		–0.445 (1.28)
Real gross domestic investment 1990–2000 per capita	0.016** (3.34)	0.013** (2.66)	0.024** (5.09)	0.032** (5.81)	0.022** (7.33)	0.017** (3.53)	0.028** (6.59)	0.033** (6.19)	0.017** (3.82)	0.018** (3.51)
Average schooling years in the total population over age 25 in 1985	0.082** (5.58)	0.036 (1.47)	0.071** (4.58)	0.011 (0.45)	0.068** (5.50)	0.019 (0.69)	0.075** (4.82)	0.022 (0.90)	0.056** (3.90)	0.057** (3.70)
Population growth	–0.672 (0.828)	–1.080 (1.00)	–1.219 (1.62)	–3.196** (2.67)					–0.707 (1.05)	–0.930 (1.36)
Openness	0.001 (1.21)	0.001 (0.70)	0.001* (2.20)	0.003** (2.57)					0.000 (0.79)	0.001 (1.07)
Government consumption	–0.009* (2.21)	0.014* (2.19)	–0.009* (2.27)	–0.010** (2.01)					–0.007(*) (1.82)	–0.006 (1.43)

Table 3 continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Inflation	0.001 (0.82)	0.007 (1.11)	−0.001 (1.13)	0.002 (0.31)					−0.000 (0.42)	−0.001 (1.06)
Common law legal origin					−0.055 (0.82)	0.009 (0.12)	−0.041 (0.53)	0.067 (0.67)	−0.026 (0.38)	−0.027 (0.39)
French law legal origin					0.218** (3.35)	0.388** (3.94)	0.121(*) (1.82)	0.179* (2.10)	0.230** (3.72)	0.186** (2.81)
German law legal origin					−0.019 (0.31)	0.098 (1.29)	−0.059 (0.81)	0.020 (0.18)	−0.001 (0.01)	−0.014 (0.22)
Socialist law legal origin					0.214** (3.23)	0.616** (3.33)	−0.023 (0.39)	0.086 (0.57)	0.259** (3.57)	0.143(*) (1.89)
Government effectiveness									0.124* (2.03)	0.192** (3.75)
Constant	5.770	5.558	6.399	7.197	5.235	4.570	6.063	6.208	5.777	6.259
Method	OLS	TSLS	OLS	TLSL	OLS	TSLS	OLS	TSLS	OLS	OLS
R̄²	0.796	0.751	0.803	0.668	0.851	0.764	0.822	0.742	0.862	0.853
SER	0.210	0.244	0.207	0.282	0.180	0.238	0.197	0.249	0.173	0.179
J.-B.	6.116*	3.529	6.066*	2.715	0.035	0.768	2.669	1.800	0.393	3.00
Observations	87	77	87	77	87	77	87	77	87	87
c										
De facto judicial accountability I	0.088** (4.45)	0.157** (4.75)			0.095** (4.74)	0.165** (3.97)			0.005 (0.17)	
De facto judicial accountability II			−1.122** (4.21)	−2.282** (3.48)			−1.253** (4.34)	−2.741** (4.69)		−0.412 (1.18)

Table 3 continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Real gross domestic investment 1990–2000 per capita	0.016** (4.97)	0.015** (5.30)	0.022** (5.87)	0.026** (5.58)	0.020** (5.59)	0.018** (5.17)	0.027** (6.85)	0.030** (6.44)	0.011** (3.64)	0.013** (3.50)
Average schooling years in the total population over age 25 in 1985	0.074** (7.26)	0.048** (3.79)	0.061** (4.86)	0.028 (1.48)	0.069** (5.07)	0.044* (2.39)	0.063** (4.20)	0.032 (1.62)	0.052** (4.15)	0.048** (3.84)
Federalism dummy	0.111* (2.123)	0.132* (2.13)	0.116* (2.60)	0.113* (2.11)					0.064 (1.21)	0.067 (1.32)
Ethnic fractionalization	–0.406** (3.86)	–0.404** (3.76)	–0.355** (3.09)	–0.255(*) (1.801)					–0.337** (3.36)	–0.313** (2.96)
Checks and balances					–0.018 (0.98)	–0.013 (0.63)	–0.031(*) (1.78)	–0.029 (1.58)	–0.008 (0.51)	–0.011 (0.71)
Political rights					0.013 (0.54)	0.026 (1.01)	0.035 (1.45)	0.071* (2.47)	0.015 (0.69)	0.023 (1.02)
Polity IV					0.022** (2.83)	0.028** (3.32)	0.022** (3.04)	0.023** (2.64)	0.017* (2.19)	0.017* (2.28)
Government effectiveness									0.162** (3.11)	0.143** (3.89)
Constant	5.866	5.664	6.393	6.654	5.540	5.26	6.077	6.329	6.270	6.323
Method	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	OLS
$\bar{R}^2$	0.821	0.811	0.825	0.797	0.816	0.813	0.816	0.777	0.868	0.855
SER	0.194	0.209	0.192	0.217	0.200	0.212	0.200	0.231	0.177	0.175

Table 3 continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
J.-B.	1.702	0.413	2.776	4.375	1.599	0.176	5.703	7.181*	0.654	1.704
Observations d	86	76	86	76	87	77	87	77	86	86
De facto judicial accountability I	0.073** (3.15)	0.155(*) (1.68)			0.090** (4.23)	0.182** (3.87)			0.038 (0.86)	
De facto judicial accountability II			1.164** (5.11)	2.484** (3.61)			1.261** (4.01)	−3.567** (4.24)		−0.958** (2.91)
Real gross domestic investment 1990–2000 per capita	0.023** (6.63)	0.021** (4.25)	0.029** (7.93)	0.033** (7.85)	0.021** (5.65)	0.019** (5.09)	0.028** (7.27)	0.032** (7.25)	0.022** (4.53)	0.025** (5.16)
Average schooling years in the total population over age 25 in 1985	0.067** (5.63)	0.045(*) (1.71)	0.051** (4.36)	0.015 (0.78)	0.070** (5.02)	0.043** (2.29)	0.064** (4.27)	0.031 (1.51)	0.058** (3.92)	0.050** (3.73)
De facto judicial independence	0.266* (2.15)	0.154 (0.79)	0.224(*) (1.76)	−0.040 (0.20)					0.182 (1.48)	
Press freedom					−0.003(*) (1.97)	−0.003 (1.52)	−0.000 (0.29)	0.006* (2.12)	−0.002 (1.12)	0.000 (0.21)
Government effectiveness									0.061 (0.85)	0.060 (1.34)
Constant	5.550	5.371	6.111	6.602	5.744	5.462	6.201	6.452	5.888	6.132
Method	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	OLS
$\bar{R}^2$	0.834	0.812	0.854	0.826	0.801	0.779	0.802	0.721	0.838	0.853

Table 3 continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SER	0.185	0.207	0.173	0.198	0.208	0.230	0.208	0.258	0.183	0.174
J.-B.	2.576	0.131	1.473	1.205	2.453	0.511	4.729(*)	3.314	1.531	0.684
Observations	65	57	65	57	87	77	87	77	65	65

The numbers in parentheses are the absolute values of the estimated t-statistics, based on the White heteroscedasticity-consistent standard errors. '**', '*' or '(*)' show that the estimated parameter is significantly different from zero on the 1, 5, or 10 % level, respectively. SER is the standard error of the regression, and J.-B. is the value of the Jarque–Bera test on normality of the residuals

Mauritius being the only extreme outlier

explaining differences in income levels. Higher levels of democracy (Polity IV) are, however, connected with higher per capita income levels. Inclusion of the government effectiveness variable lets the two JA proxies appear insignificant. The caveat mentioned with regard to Table 3b applies here too.[8]

Adding the *de facto* JI indicator (in Table 3d) further increases the adjusted R^2 (compared to columns (2) and (3) in Table 3a). The impact of *de facto* JI is, however, not very robust. As already alluded to above, this might be due to the multicollinearity with the two measures of JA. But it might also be the case that high levels of JA presuppose high levels of *de facto* JI as hypothesized in Sect. 2 above. If JA encompasses JI it is not astonishing that JI does not appear to be significant any more. The introduction of press freedom as a control variable (Columns (5)–(8)) does not have a robust impact on per capita income which is unexpected as a result. Now, the inclusion of the very broad variable government effectiveness only makes JA I insignificant whereas JA II remains significant on the 1% level.

In sum, both indicators of JA appear highly significant most of the time. They are, however, not robust to the inclusion of a very broad variable proxying for institutional quality at large.[9] What about their economic significance? The coefficients of both indicators vary quite a bit across equations. Based on coefficients that were obtained when the two were estimated simultaneously in a single regression (JA I = 0.064 and JA II = 0.991; column (6) in Table 3a), the economic effects would still be very substantial: a one standard deviation improvement (standard deviations being 1.254 and 0.102 respectively) is connected with an increase in income of 8.356 and 10.636% respectively.

JA II is made up of nine different components. It is, hence, very interesting to ask whether the results are driven by any particular individual components. When regressed component by component and controlling for both investment and schooling, it turns out that right to counsel, right to present a defense, presumption of innocence, charges presented with prior notice and right to appeal all have the expected sign and are significant on the 1% level (regressions not shown). The absence of *ex post facto* laws is significant on the 5% level, whereas the timeliness of trials is significant on the 10% level. Only two variables, namely public and right to an interpreter are not significant at all (Table 4). Running a regression with all nine components simultaneously is subject to problems of multicollinearity. Yet, it seems that two components are particularly important for explaining income differences, namely the right to counsel and the right to present a defense.

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[8] The loss of significance is not due to the simultaneous inclusion of the other variables. If all others except government effectiveness are simultaneously regressed the coefficient (*t*-stat) for JA I are 0.084 (4.43) and −1.019 (3.52) for JA II.

[9] Robustness of the JA proxies was also tested by including other variables such as the security of property rights as reported by the Wall Street Journal/Heritage Foundation Indicators. The JA proxies always remain highly significant (results not reported here but available from author upon request). We further tried to control for multicollinearity by adding interaction effects between JA and JI. It turned out that the JA proxies always kept their level of significance whereas the interaction term did not reach conventional levels of significance.

Table 4 OLS-regressions of GDP per capita 2000 (in log form) on components of de facto judicial accountability

Variables	(1)	(2)	(3)	(4) (5) (6)
Real gross domestic investment (in % of GDP), average in 1990–2000	0.026** (6.45)	0.026** (6.82)	0.026** (7.08)	
Average schooling years in the total population over age 25 in 1985	0.060** (3.45)	0.060** (3.60)	0.067** (4.74)	
Right to counsel	−0.382(*) (1.98)	−0.364*(2.04)	−0.431*(2.62)	
Right to present defense	0.004 (0.02)	–		
Presumption of innocence	0.022 (0.13)	–		
Charges presented/prior notice	−0.317 (1.41)	−0.315 (1.54)	−0.421*(2.30)	
Public	0.053 (0.18)	–		
No post facto	−1.361 (1.09)	−1.308 (1.06)		
Right to appeal	−0.428 (1.40)	−0.421 (1.37)		
Timeliness	−0.096 (0.92)	−0.093 (0.96)		
Right to an interpreter	0.052 (0.12)	0.040 (0.90)		
Constant	6.272	6.267	6.201	
$\bar{R}^2$	0.801	0.808	0.810	
SER	0.208	0.204	0.203	
F-Stat. (for JA components)	12.754**	17.401**	40.957**	
J.-B.	10.240**#	10.607**#	6.625*	
Observations	87	87	87	

The numbers in parentheses are the absolute values of the estimated t-statistics, based on the White heteroscedasticity-consistent standard errors. '**', '*' or '(*)' show that the estimated parameter is significantly different from zero on the 1, 5, or 10 % level, respectively. SER is the standard error of the regression, and J.-B. is the value of the Jarque–Bera test on normality of the residuals

These results show that some of the components that are hypothesized to be the core components of JA are not the most influential variables in explaining income differences. Our priors from the point of view of JA were that trials open to the public and the right to appeal would be particularly relevant. The results show that one of these variables, namely trials open to the public, never reaches any conventional significance level even when regressed upon individually (the right-to-appeal variable is significant on the 1% level when regressed together with the two standard explanatory variables, namely investment and schooling). It is not easy to interpret these findings. A look at the descriptive statistics (Table 1 above) might reveal a first explanation: the mean of this variable is pretty close to zero and the variation among countries not very large. On the other hand, this result is compatible with the finding (reported above) that a free press does not show up as robustly significant in explaining income differences. It could be argued that a trial open to the public would only have beneficial effects given that there is a free press. But interacting the two variables does not lead to any substantial changes.

Yet, the two variables that turn out to be the most significant ones also fit nicely with our notion of JA: If conflicting parties have a right to a counsel, this is likely to reduce the discretion of judges not to apply the law. But this conclusion is preliminary at best, as the possibility of reverse causality seems to be particularly severe in this case: it could be that high income countries are simply better able to afford a right to counsel than low income countries. This possibility does not seem to be as acute with regard to the other significant variable, namely the right that charges have to be presented with prior notice. The implementation of this rule does not seem to be very costly, reverse causality is, hence, less of an issue.

The difficulties in interpreting the results also suggest that it might be premature to ask for policy recommendations. Before making any suggestions, better indicators are desirable. These ought to reflect the dimensions discussed in Sects. 2 and 3 above more truthfully. In order to disentangle the issue of correlation vs. causation, the use of panel data is certainly desirable.

6 Conclusion and outlook

In this paper, the hypothesis that judicial independence and judicial accountability are not necessarily competing ends but can be complementary means towards achieving impartiality and, in turn, the rule of law is presented. It is argued that judicial accountability can increase per capita income through various channels one of which is the reduction of corruption. This hypothesis is confirmed using the absence of corruption within the judiciary as a first, but rather crude proxy for judicial accountability. A second indicator that is also highly robust to the inclusion of additional variables further confirms its significance for income.

These results are encouraging. Yet, the two indicators used here are only very crude proxies for JA. It would seem worthwhile to create more precise indicators in future research. They should include a number of aspects, which are conjectured to be important for the degree of JA but have not been taken into account here due to limited data availability. Potentially relevant aspects include the use of individual calendars which make the behavior of judges more transparent, the use of codes of judicial conduct, the behavior of complaint agencies (known under such names as judicial conduct organizations, supreme judicial councils, superior councils of magistrate and the like), the relevance of judicial self-restraint (which can be ascertained, e.g., by the existence of a political question doctrine according to which courts refuse to answer informal questions by other government branches or even refuse to render decisions on purely political issues such as foreign policy issues), the use of contempt of court rules, which would be used to indicate the absence of JA.

In this paper, the possible consequences for institutional design that can be derived from our insights have not been explicitly dealt with. Introducing or extending judicial accountability is not costless, as resources have to be devoted to it. It is thus rational to increase JA only to the extent where expected marginal costs are still covered by expected marginal revenues. It is encouraging that implementation of one of the two most significant components of JA, namely the right that charges be presented with prior notice, does not appear to be extremely costly.

Finally, JA has been treated as the exogenous variable in our analysis. But the realized degree of JA is, of course, the consequence of institutional and policy choices. In some estimates, a number of instruments have been used. Yet, instrumental variables do not make for a complete story identifying the determinants of differences in the level of JA across countries. A logical next step is, hence, to ask whether the degree of JA is systematically determined by certain variables such as the level of democracy realized in a country, certain experiences with overly active judiciaries, whether a country belongs to the civil or the common law tradition (as common law judges tend to have more influence, the likelihood of broad accountability mechanisms seems *prima facie* higher), ethno-linguistic fractional-ization, the role of the press etc… This paper is thus only a first step in a research program that promises to be exciting.

JA is certainly not the only aspect determining the quality of judicial institutions. Future work could thus analyze additional aspects and their possible interplay with JA. At least three aspects ought to be explicitly taken into account: (1) The quality of legislation, i.e. the content of the rules the judiciary is to enforce. (2) The quality of the procedures that other actors involved in the production of binding judgments—such as conflicting parties or their lawyers—need to comply with. (3) The incentives of the other actors whose actions are likely to influence the behavior of judges, e.g. the police, the prosecutors, the prison system, notaries, bailiffs and so forth.

Appendix

Appendix 1 List of variables

Variable	Description	Source
GDP per capita (log)	Log of real per capita GDP for the year 2000	Heston et al. (2002)
Investment	Real gross domestic investment share of GDP in %; per capita for 1990–2000	Heston et al. (2002)
Schooling	Average schooling years in the total population over age 25 in 1985	Barro and Lee (1993)
Judical accountability I	Answer to the question "In your country, how commonly would you estimate that firms make undocumented extra payments or bribes connected with getting favourable judicial decisions?" Coded between 1 ("common") and 7 ("never occurs")	Cornelius et al. (2003)

Appendix 1 continued

Variable	Description	Source
Judicial accountability II	Indicator made up of nine different components; Average over years 1985, 1988, 1991, 1994, 1997 and 2000 used. "0" means the respective right is enforced, "0.5" means it is sometimes enforced and "1" that it is not or never enforced	Hathaway (2002)
Population growth	Annual growth of population 1990–2000	Heston et al. (2002)
Openness	Exports plus imports divided by GDP 1990–2000	Heston et al. (2002)
Government consumption	Government share of real GDP per capita 1990–2000	Heston et al. (2002)
Inflation	Annual growth of price level of GDP 1990–2000	Heston et al. (2002)
Common law legal origin	Dummy for common law legal origin; coded 1 for if legal origin is common Law, coded 0 if legal origin is any other	La Porta et al. (1999)
French law legal origin	Dummy for French law legal origin; coded 1 for if legal origin is common law, coded 0 if legal origin is any other	La Porta et al. (1999)
German law legal origin	Dummy for German law legal origin; coded 1 for if legal origin is common Law, coded 0 if legal origin is any other	La Porta et al. (1999)
Socialist law legal origin	Dummy for socialist law legal origin; coded 1 for if legal origin is common Law, coded 0 if legal origin is any other	La Porta et al. (1999)
Government effectiveness	Combines perceptions of the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. Coding from –2.5 (worst) to 2.5 (best)	Kaufmann et al. (2003)
Federalism dummy	Federal states coded 1; all others 0	Elazar (1995)
Ethnic fraction	Index of ethnical fractionalization	Alesina et al. (2003)
Checks and balances	Number of institutions that provide legislative "checks". Data for 1995	Beck et al. (2000)
Political rights	Measures the possibility to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. Coding from 1 (highest degree of freedom) to 7 (lowest degree). Data for 1990–1997	Freedom House (2004)
Polity IV	Measures degree of realized democracy from -10 (perfect autocracy) to +10 (perfect democracy). Data for 1990–1997	Marshall and Jaggers (2000)
De facto judicial independence	An indicator on the basis of eight variables; coding between 0 (low degree of independence) to 1 (high degree)	Feld and Voigt (2003)

Appendix 1 continued

Variable	Description	Source
Press freedom	Degree of realized press freedom, coded from 1 (completely free) to 7 (completely unfree). Data for 2002	Freedom house (2004)
Latitude	Distance from the equator	Hall and Jones (1999)
English speakers	Fraction of the population speaking English	Hall and Jones (1999)

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