Growth empirics with institutional measures and its application to transition countries: a survey

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Introduction

Institutions are strikingly absent from most economic *theory*, certainly from growth theory. In standard theory it is simply assumed that the needed institutional environment is there, within which economic agents can make their optimizing decisions. At the same time, in *descriptive* growth studies, particularly in economic history and most influentially in North (1990), the importance of good institutional contract enforcement has been emphasized for long. Good institutions guarantee property rights and minimize transaction costs, creating an environment conducive to economic growth. The considerable sunk costs of most investments create large disincentives against binding resources to projects in an uncertain institutional environment.

Until recently, *empirical* studies measuring just *how* important institutions are for growth and investment have been scarce. This has mainly been due to a lack of data concerning the quality of institutions. It is obviously impossible to find data which totally conforms to a most broad definition of institutions such as Schmieding's (1993, p. 233), stating that they '… encompass not only bureaucracies and administrations but also, and more importantly, the entire body of formal laws, rules and regulations as well as the informal conventions and patterns of behavior that constitute the non-budget constraints under which economic agents can pursue their own individual ends'.

Nevertheless, there has increasingly been data around which at least describes specific aspects of this definition, which covers both 'rule of law', or '*formal*' institutions (enforced by the state), and 'civil society', or '*informal*' institutions (enforced by convention). This data has been used to construct measures of the quality of institutions which have been applied in (cross-country) growth empirics. The initial studies have proxied the quality of institutions indirectly, using universally observable and thus '*objective*' measures. Recently some studies have used more direct ways to try and capture the quality of institutions, using survey and thus '*subjective*' measures.

In this paper the most important empirical studies on the relationship between institutions and growth and investment, and the applications to transition countries, will be surveyed. A special focus on transition countries is considered justifiable, mainly because the transition process seems to a large extent about institutional transformation, so it may be expected that institutions 'matter' here in particular. In section 1 the main problems in (cross-country) growth empirics will be treated, showing as an important aside which (economic) variables have been found to be robustly related to growth and investment. Section 2 and 3 will judge the empirical relevance for growth and investment of respectively the objective and subjective institutional measures which have been used in the literature. The to my knowledge only two studies to date which have, in this context, specifically looked at transition countries will be treated in section 4. Section 5 will conclude.

1 <u>Main problems in growth empirics</u>

In modern (cross-country) growth empirics average per person growth is explicitly related to potential determining factors proposed in the literature at large. Thus, the typical regression equation looks like:

$$Y = \alpha + \beta_i I + \beta_c C + \varepsilon$$

where Y is the average growth of gross domestic product (GDP) per person, I is a set of variables of interest, possibly institutional, C is a set of control variables, chosen

from a pool of explanatory variables identified as potentially important by prior studies, and ε is the usual random error. Many studies also use the average share of investment in GDP as Y, recognizing investment as a major determinant of growth. This approach has two main problems that are only rarely adequately dealt with.

The first main problem concerns the robustness of the estimated β_i to variations in C. A large majority of studies does not report whether the estimated β_i depends on the particular specification used. Moreover, due to the lack of a consensus theoretical framework, in different studies different variables have been used as I and C. In this way growth and investment have been found to be significantly correlated with a very large number of variables (e.g. Barro and Sala-i-Martin, 1995).

Levine and Renelt (1992) provide a sobering sensitivity analysis of the potential determinants of growth and investment. They formally test the robustness of the estimated β_i to variations in C, using a large number of variables from prior studies and even new ones. They consider the relationship between Y and a particular I to be robust if the estimated β_i remains statistically significant and keeps the theoretically predicted sign under variations in C. The important finding is that variations in C overturn almost all past results: they are not robust, but fragile. Thus, there is not a reliable independent statistical relationship between Y and a wide variety of variables previously found to have a significant effect.

Levine and Renelt (1992) do find some robust results though. With regards to growth, they find a robust positive correlation with investment, legitimizing the additional focus the latter gets in many studies. Further, they find a robust negative correlation with the initial income level, as long as the initial secondary school enrollment rate is also included. Thus they find evidence of convergence, *conditional* on this measure of 'human capital'. With regards to investment, they find a robust positive correlation with the trade share, *either* measured as exports, imports *or* both. Note that this suggests a positive role of openness *in general*, not just of exports. Finally, and most interesting for this paper, they find a robust negative correlation between investment and the number of revolutions and coups per year, a variable which says something about the quality of institutions.[2]

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[2] Recently, Sala-i-Martin (1997) has argued that the sensitivity analysis by Levine and Renelt (1992) is too strict, because it labels explanatory variables either as robust or non-robust (fragile), with no room in between. Instead, he develops a method to assign some level of confidence to the robustness.

The second main problem that is only rarely adequately dealt with concerns the exogeneity of explanatory variables. In a lot of cases, e.g. with institutional variables, it is not hard to imagine the causation to run the other way, leading to a simultaneity problem in ordinary least squares estimation (OLS).[3] To check technically whether simultaneity is indeed a problem instrumental variable estimation (IV) should be used. In most studies the potential simultaneity problem is not tackled at all however. To a large extent this is due to the difficulty of finding adequate instruments.

For growth empirics in practice, the upshot of the above is firstly that a sensitivity test of the estimated β_i by varying in C is badly necessary. Secondly, the few robust results Levine and Renelt (1992) do find suggest to at least include the investment share, the initial income level and the initial secondary school enrollment rate under C in the growth equation, and the trade share and the number of revolutions and coups per year in the investment equation, or some other variables capturing the same underlying theoretical ideas. Thirdly, exogeneity needs to be explicitly checked for, using IV.

2 Growth empirics with objective institutional measures

If the institutional environment is to be integrated into growth empirics, its quality needs to be measured. In the previous section an institutional variable, measuring the number of revolutions and coups, was found to have a robust correlation with investment (but not with growth directly). This institutional measure is objective, in the sense that it is universally observable, as has been the case for all institutional measures initially used in the literature. Brunetti (1997) distinguishes these measures into institutional variables measuring democracy, government stability (e.g. the number of

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He classifies a particular explanatory variable as important for growth if, under variations in C, 95 percent of the density function for the estimated β_i lies to the right of zero. Thus, he naturally comes up with more relevant variables (22 out of 59, including both objective and subjective institutional measures) than Levine and Renelt (1992) find robust (3 out of 59). However, the explanatory variables found robust by Levine and Renelt (1992) form a subset of the ones found important by Sala-i-Martin (1997). Since determining a cut-off level for robustness remains an arbitrary decision, for practical purposes, it may be better to err on the save side and stick to the approach followed by Levine and Renelt (1992).

[3] Recall that under a simultaneity problem OLS no longer delivers the best linear unbiased estimator. See any econometrics textbook, like Johnston (1988) or Pindyck and Rubinfeld (1991).

revolutions and coups), political violence and policy volatility. It may be argued that property rights will be better guaranteed and transaction costs will be lower respectively the more democratic the regime, the higher government stability, the lower political violence and the lower policy volatility. Therefore, these institutional variables may be empirically linked to growth and investment, as done in the classic studies by Kormendi and Meguire (1985), Barro (1991) and Levine and Renelt (1992; see table 1).

Until recently, measures of democracy were the most often used as an explanatory institutional variable. The 'Gastil-index' has become the dominant measure of democracy. Since 1973 it has provided annual indicators of political rights and civil liberties, based on a very simple objective checklist, with the voting process, election procedure and possibility of political organization and discussion as the crucial points (e.g. Gastil, 1989).[4] The explanatory power of measures of democracy in growth empirics is generally very low, regardless of the many specifications used in the literature. Kormendi and Meguire (1985) e.g. find no relationship (of significance at the 5% level) between democracy and growth, although they do find a positive relationship between democracy and investment. Levine and Renelt's (1992) sensitivity analysis shows that democracy is clearly not a robust determinant of growth and investment.

In contrast to measures of democracy, other institutional variables have only recently started to show up in growth empirics. The studies focusing on measures of government stability as an explanatory institutional variable mostly use data on the number of (either legal or illegal) changes in government per year (e.g. Jodice and Taylor, 1983; Banks, 1979). These studies show that measures of government stability are more significant than measures of democracy in growth and investment equations, but the relationship is subject to large variations depending on the specification chosen. Barro (1991) e.g. finds a positive relationship between government stability and growth and investment. However, as noted before, Levine and Renelt's (1992) sensitivity tests show that only the latter of these two correlations is robust.

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[4] The classification by Brunetti (1997, endnote 3) is adhered to, who states: 'Although there is a certain subjective element in Gastil's indicators, we classify them as objective measures because they rely on an objective checklist rather than on personal opinions'.

The studies focusing on measures of political violence are usually based on the same data sources as the studies focusing on measures of government stability, this time mostly using data on the number of political assassinations per million inhabitants per year. The results are similar in the sense that there are indications that political violence affects economic growth and investment negatively (e.g. Barro, 1991), but the evidence is far from clear. Regretfully, Levine and Renelt (1992) do not use this variable in their sensitivity analysis.

Most studies which look at measures of policy volatility as an explanatory variable in growth empirics use the standard deviation (σ) of monetary impulses, for which the data can be drawn from the usual cross-country data sets that are widely used in empirical macroeconomics (in particular Summers and Heston, 1991). There is a tendency towards a negative relationship between policy volatility and growth and investment, but again the result is not infallible. Kormendi and Meguire (1985) e.g. find a negative relationship between (monetary) policy volatility and growth and investment. However, the sensitivity analysis by Levine and Renelt (1992) shows both these relationships to be fragile too.

Thus, as the previous section showed to be the case for most other potential explanatory variables too, the empirical relevance of most objective institutional measures as a determinant of growth and investment turns out to be limited. This should not come as too big a surprise, since their 'economic content' is rather small, in the sense that they measure the quality of institutions only in a very crude and indirect way. Objective institutional measures can both concentrate on events that economic agents may not perceive as important and fail to capture uncertainties that economic agents perceive as crucial, as Brunetti, Kisunko and Weder (1997b) argue. Part of the problem is that they measure the instability and not the uncertainty in the quality of institutions. With regards to these measures, Levine and Renelt (1992) show that only the correlation between the number of revolutions and coups and investment is robust. On this basis, there remains some evidence that institutions matter, as one of the few factors for which robust correlations have been found in growth empirics.

Table 1: <u>Classic studies in growth empirics, with objective institutional measures as an explanatory variable</u>

STUDY	OBJECTIVE INSTITUTIONAL MEASURE	NUMBER OF COUNTRIES AND PERIOD	OTHER MAIN EXPLANATORY VARIABLES AND ESTIMATION METHOD	RESULT
Kormendi and Meguire (1985)	Democracy (Gastil)	47; 1950-1977	Initial GDP, Population growth, σ(Growth), σ(Money supply shocks), Export growth, Inflation growth, Investment; OLS	No relationship with growth, but positive relationship with investment
	Policy volatility (σ(Money supply shocks))			Negative relationship with growth and investment
Barro (1991)	Government stability (Revolutions and coups)	98; 1960-1985	Initial GDP, Initial schooling, Government consumption, Market distortions, Investment; OLS	Positive relationship with growth and investment
	Political violence (Political assassinations)			Negative relationship with growth and investment
Levine and Renelt (1992)	Democracy (Gastil)	119; 1974-1989	Initial GDP, Population growth, Initial schooling, Market distortions, Government consumption, Trade, Inflation, Domestic credit growth, Investment; OLS; Sensitivity test	No robust relationship with growth and investment
	Policy volatility (σ(Domestic credit growth), σ(Inflation))	119; 1960-1989		No robust relationship with growth and investment
	Government stability (Revolutions and coups)			No robust relationship with growth, but robust positive relationship with investment

Source: Original studies and Brunetti (1997)

3 <u>Growth empirics with subjective institutional measures</u>

Some recent studies have used surveys of the perception of institutions in growth empirics (see table 2). From these surveys subjective institutional measures can be constructed, grasping the opinions of economic agents who make growth-relevant decisions. Thus, these measures are likely to reflect more closely and directly than objective institutional measures the concerns about the quality of institutions. Besides, they open up the possibility to draw more interesting conclusions about the mechanisms at work and the policies needed. Contrary to objective institutional measures (which reflect instability) subjective measures also do reflect uncertainty, which is subjectively perceived. Essentially two ways to acquire the data necessary to construct subjective institutional measures have been used in recent growth empirics.

The first way is to get them from *experts'* evaluations. Here the main data sources have been the commercial international country risk agencies Business International (BI), nowadays incorporated in the Economist Intelligence Unit (EIU), the International Country Risk Guide (ICRG) and Business Environmental Risk Intelligence (BERI). The main studies using data from these agencies are Mauro (1995) and Knack and Keefer (1995). The mere existence of agencies like these and the willingness of entrepreneurs to pay substantial prices for their data signals that they measure growth-relevant aspects of the institutional environment about which entrepreneurs want to reduce their uncertainty. Nevertheless, this data has two main disadvantages. Firstly, it is assembled for foreign multinationals, and the institutional problems for foreign and domestic entrepreneurs may differ quite substantially (e.g. nationalization, profit repatriation). Secondly, experts' evaluations need of course not be right on the mark for private entrepreneurs.

The second way to acquire data to construct subjective institutional measures, and the latest one employed in growth empirics, does not suffer from these two disadvantages, for it consists of directly asking *local economic agents* themselves for their evaluation of the quality of institutions. On the other hand, this data may suffer from measurement-error problems in cross-country studies, because local economic agents may not be able to compare institutions across countries (experts may be better at this after all). Brunetti, Kisunko and Weder (1997a, a background paper for World Bank, 1997) present the results of the to my knowledge *largest* cross-country survey

in this vein done so far, among local private entrepreneurs, which they use in growth empirics in Brunetti, Kisunko and Weder (1997b, another background paper for World Bank, 1997). Knack and Keefer (1997) is the main study focusing on the role of informal institutions, using data from the World Values Surveys among local economic agents (e.g. Inglehart, 1994).

The first systematic cross-country study that relates subjective institutional measures to growth and investment was done by Mauro (1995). He uses experts' evaluations from BI to construct a measure of 'bureaucratic efficiency', reflecting the answers to survey questions about judiciary system, red tape and corruption. He finds a robust positive relationship with investment, but not with growth (directly). This is consistent with what Levine and Renelt (1992) find with the objective institutional measure of revolutions and coups. Interestingly, in Mauro's (1995) estimations, in the presence of bureaucratic efficiency, the number of revolutions and coups is consistently insignificant though. This implicitly suggests that his (significant) subjective measure better reflects the quality of institutions. Further, Mauro (1995) is one of the few to use IV, using a measure of ethnolinguistic fractionalization as an instrument. The results with IV are similar to the results with OLS, indeed suggesting that good institutions cause investment and not the other way around.

Knack and Keefer (1995) examine the impact of 'property rights security' using experts' evaluations from ICRG on expropriation risk, rule of law, repudiation of contracts by government, corruption in government and quality of bureaucracy, and from BERI on contract enforceability, infrastructure quality, nationalization potential and bureaucratic delays. They find robust positive relationships with both growth and investment. The coefficient on initial income is explicitly shown to become notably more negative and significant in the presence of their subjective institutional measure than without it. This suggests that institutions are an important factor in the conditionality of convergence (rivaling human capital). Further, whereas Mauro (1995) only implicitly shows that subjective institutional measures 'work better' than objective ones (revolutions and coups), Knack and Keefer (1995) explicitly show this. Firstly, the correlations between their measure on the one hand and the Gastil-index, revolutions and coups, and political assassinations on the other hand prove to be relatively low. Secondly, their measure is found to have a greater and more significant impact on growth and investment. Thirdly, the objective institutional measures used are

consistently insignificant in the presence of the (significant) subjective institutional measure.

Contrary to these two studies, Brunetti, Kisunko and Weder (1997b) use data from their survey among local private entrepreneurs. This survey includes 25 questions aiming to identify the 'credibility' of the quality of institutions as perceived by the latter. The overall credibility measure can be divided into five submeasures, relating to predictability of laws and policies, evaluation of political instability, security of property and persons, reliability of judiciary enforcement and uncertainty stemming from corruption and bureaucratic discretion. Brunetti, Kisunko and Weder (1997b) find that the overall credibility measure has a robust positive relationship with growth and even more so with investment. The submeasures security of property and persons, and predictability of laws and policies are most closely associated with growth, the other submeasures are most closely associated with investment. For corruption and bureaucratic discretion this is a corroboration of what Mauro (1995) finds. Also, the results of both Mauro (1995) and Knack and Keefer (1995) are corroborated, that objective institutional measures generally prove to be insignificant in the presence of (significant) subjective institutional measures.

Knack and Keefer (1997) present the to my knowledge strongest evidence to date on the relevance of informal institutions, using results on interpersonal trust and civic norms from the World Values Surveys among local economic agents. They find a robust positive relationship between this 'social capital' and both growth and investment. The former is also confirmed with IV, using a measure of ethnolinguistic fractionalization (as in Mauro, 1995) and the ratio of the number of law students to the number of all post-secondary students as instruments. Interestingly, Knack and Keefer (1997) also investigate the determinants of trust and civic norms themselves. These come out positively correlated with subjective measures of the quality of formal institutions, and negatively with income inequality (Gini-coefficient) and ethnolinguistic fractionalization.

In short, the a priori case for the use of subjective instead of objective institutional measures in growth empirics is quite consistently verified. Subjective institutional measures prove to be robustly correlated with growth and particularly investment. IV by Mauro (1995) and Knack and Keefer (1997) further shows that it is likely that better institutions are indeed a cause of higher investment and growth

respectively. Especially given the rarity of finding robust correlations, let alone causations, in growth empirics at all, using subjective institutional measures seems to be a promising research avenue.

Table 2: Main studies in growth empirics with subjective institutional measures as an explanatory variable

STUDY	SUBJECTIVE INSTITUTIONAL MEASURE	NUMBER OF COUNTRIES AND PERIOD	OTHER MAIN EXPLANATORY VARIABLES AND ESTIMATION METHOD	RESULT
Mauro (1995)	Bureaucratic efficiency (Judiciary system, Red tape, Corruption)	67; 1960-1985	Initial GDP, Initial schooling, Population growth, Government expenditures, Revolutions and coups, Political assassinations, Market distortions, Investment; OLS; IV; Sensitivity test	No robust relationship with growth, but robust positive relationship with investment
Knack and Keefer (1995)	Property rights security (Expropriation risk, Rule of law, Repudiation of contracts, Corruption, Quality of bureaucracy, Contract enforceability, Infrastructure quality, Nationalization potential, Bureaucratic delays)	97; 1974-1989	Initial GDP, Initial schooling, Government consumption, Market distortions, Revolutions and coups, Political assassinations, Factor accumulation, Investment; OLS; Sensitivity test	Robust positive relationship with growth and investment
Brunetti, Kisunko and Weder (1997b)	Credibility (Laws and policies, Political instability, Security of property and persons, Judiciary enforcement, Corruption and bureaucratic discretion)	41; 1983-1994	Initial GDP, Initial schooling, Inflation, Government consumption, Trade, Gastil, Political assassinations, Revolutions and coups, Bureaucratic efficiency, Investment; OLS; Sensitivity test	Robust positive relationship with growth and investment
Knack and Keefer (1997)	Social capital (Trust, Civic norms)	29; 1980-1992	Initial GDP, Initial schooling, Money balances, Labor force growth, Trade, Market distortions, Gini, Property rights security, Investment; OLS; IV; Sensitivity test	Robust positive relationship with growth and investment

Source: Original studies and Brunetti (1997)

4 <u>Applications to transition countries</u>

If there is one subset of countries for which institutions can be reasonably expected to be most important, it is the transition countries. As argued by e.g. Schmieding (1993), the transition countries are going through a period of pervasive institutional transformation. Here, the main problem is that the necessary new institutional (market) environment has not been put in order, while the old institutional (plan) environment has already been destroyed, leaving a vacuum. However, practically all studies to date which apply growth empirics to transition countries have focused on macroeconomic stabilization or liberalization, confirming the importance of both, most influentially in Fischer, Sahay and Vegh (1996) and De Melo, Denizer and Gelb (1996) respectively. All empirical results mentioned in the previous sections concern cross-country analysis excluding transition countries. As the to my knowledge only ones so far, Brunetti, Kisunko and Weder (1997b and particularly 1997c) do give attention to transition countries in growth empirics with (subjective) institutional measures (see table 3), based on the results of the survey among local private entrepreneurs in Brunetti, Kisunko and Weder (1997a).

Brunetti, Kisunko and Weder (1997a) provide institutional data for two transition regions: Central and Eastern Europe (CEE) and Commonwealth of Independent States (CIS), in addition to data for the regions developed countries (DC), Middle East and North Africa (MNA), Latin America and Caribbean (LAC), Sub-Saharan Africa (SSA) and South and South-East Asia (SSEA). Regretfully, for reasons of confidentiality of the World Bank, their data is not provided for the individual countries of these regions. However, their regional data can, for a start, at least tell something about the quality of institutions in transition countries relative to other regions. On practically all counts CIS scores worst, mostly followed by CEE (which however in some instances performs better than SSA, LAC and MNA). Concerning e.g. laws and policies, in CIS the highest percentage of entrepreneurs reports that unpredictable changes seriously affect their business, almost 80%, followed by CEE with almost 70% and compared to a world average of almost 60%. Furthermore, in CIS almost 70% of entrepreneurs does not believe government policy announcements, again the highest percentage reported, followed by almost 60% in CEE and compared to a world average of almost 50%. The survey by Brunetti,

Kisunko and Weder (1997a) also asks whether the quality of institutions had changed over the past five years in the case of transition countries and over the past ten years in the case of the other regions. The clearest deteriorations are also scored in CIS and CEE. Thus, this data indeed shows that institutional issues are of particular importance in the transition countries.

In addition to the empirical results mentioned in the previous section, Brunetti, Kisunko and Weder (1997b) also present some preliminary results for a larger sample of countries, including 18 transition countries, and for these transition countries only, for the period 1990-1995. The results for the full sample of countries still show a robust positive relationship between credibility and growth. Interestingly, the coefficient on credibility is much larger than in the sample without transition countries, once more suggesting that institutional issues are of particular importance here. However, the results for transition countries alone do not show a robust relationship between credibility and growth. More specifically: if inflation is controlled for, which shows to be significantly and negatively correlated with growth in transition countries, credibility becomes insignificant, although its coefficient remains positive and relatively high. Note that this suggests some support for a policy stressing the initial need for macroeconomic stabilization in transition countries. This finding appears to be associated with the initial problem of the 'monetary overhang'. When Brunetti, Kisunko and Weder (1997b, p. 32) only look at more recent years, inflation stays significantly negative for growth, but credibility becomes more closely correlated with growth again, leading them to conclude that: 'It may be that institutional uncertainties become more important as the transition is ending and these countries slowly approach more 'normal times' and private sector development becomes central'.

Brunetti, Kisunko and Weder (1997c) explicitly focus on 20 transition countries. Although the data for the individual countries is still not presented, they show disaggregated data for six geographical sub-regions of CEE and CIS: Balkan (Albania, Bulgaria, Former Yugoslav Republic Macedonia), Baltics (Estonia, Latvia, Lithuania), Caucasus (Armenia, Azerbaijan, Georgia), Central Asia (Kazakstan, Kyrgyz Republic, Uzbekistan), Slavic and Moldova (Belarus, Moldova, Russia, Ukraine) and Visegrad (Czech Republic, Hungary, Poland, Slovak Republic). Institutional uncertainty is high in all these transition sub-regions, but there are some substantial and interesting differences. Generally, Slavic and Moldova and Central Asia

do worst and Visegrad and Baltics do best. Most notably fears of unconstitutional government changes are relatively low in Visegrad and Baltics, which have had several free democratic elections by now, and also corruption in bureaucracy is perceived as relatively low here.

In their estimations Brunetti, Kisunko and Weder (1997c) try to explain growth and (gross) foreign direct investment inflows (FDI), for the period 1993-1995. FDI is used because it is likely to be among the more reliable data available for transition countries. Besides, it can be interpreted as an overall indicator of economic performance. The focus is on 1993-1995 in order to avoid the most severe initial shocks that the transition process involved. For this period Brunetti, Kisunko and Weder (1997c) do find a robust positive relationship between credibility and growth and especially FDI. The submeasure security of property and persons turns out to be the most important for both growth and FDI. With IV for growth, using the Gastil-index of political rights as an instrument for credibility, they try to illustrate that this correlation is likely to be a causation. However, this instrument does not seem adequate: although it may be likely that political rights are related to the quality of institutions (they report high and positive correlations), they may still be plausibly caused by growth too. The control variables are generally mostly insignificant, the exception being that inflation is mostly significant (and negative) in the growth equation, as in their previous study. Unlike in Brunetti, Kisunko and Weder (1997b) though, adding an inflation variable to the growth equation does not render credibility insignificant, but only less significant. Nevertheless, this again suggests that macroeconomic stabilization is very important for growth as well.

The results above are indeed suggestive of the special importance of institutions in transition countries. The mentioned IV, showing that the correlation between institutions and growth is likely to be a causation, does not seem adequate however. Of the control variables used in the above studies, only inflation turns out to be rivaling institutions in significance for growth. However, on the basis of these studies, it seems that once a certain degree of macroeconomic stabilization has been accomplished, institutions become the more important determinant of growth in transition countries.

Table 3: The studies applying growth empirics with (subjective) institutional measures as an explanatory variable to transition countries

STUDY	INSTITUTIONAL MEASURE	NUMBER OF COUNTRIES AND PERIOD	OTHER MAIN EXPLANATORY VARIABLES AND ESTIMATION METHOD	RESULT
Brunetti, Kisunko and Weder (1997b)	Credibility (Laws and policies, Political instability, Security of property and persons, Judiciary enforcement, Corruption and bureaucratic discretion)	18; 1990-1995	Initial GDP, Initial schooling, Inflation; OLS; Sensitivity test	No robust relationship with growth
Brunetti, Kisunko and Weder (1997c)	Credibility (Laws and policies, Political instability, Security of property and persons, Judiciary enforcement, Corruption and bureaucratic discretion)	20; 1993-1995	Initial GNP, Initial schooling, Trade, Government consumption, Inflation; OLS; IV; Sensitivity test	Robust positive relationship with growth and FDI

Source: Original studies

5 Conclusion

Recent literature on growth empirics shows that, as one of the few variables found to do so, the quality of institutions robustly matters for growth and particularly investment. This is mainly so when using subjective institutional measures, which capture the relevant uncertainties in the most close and direct way. IV suggests that the relationship is likely to be from better institutions to growth and not the other way around. The to my knowledge only two studies applying growth empirics with (subjective) institutional measures as an explanatory variable to transition countries, which are going through a period of pervasive institutional transformation, do indicate that these issues particularly matter here. Tentative results suggest that once a certain degree of macroeconomic stabilization has been accomplished, the institutional environment, in particular the security of property and persons, becomes the more important determinant of growth in transition countries.

Clearly, in particular the findings for transition countries have to be interpreted with caution, mainly because of data limitations, short observed time period, as well as intrinsic problems of measuring and explaining growth in countries that went through such a major structural break. Nevertheless, they give support to those (relatively few) who early-on in the transition process stressed the need for institution building (e.g. Litwack, 1991). Only recently institutional issues have gained broader recognition, also in policy circles (e.g. World Bank, 1997). At the same time, the findings also warrant the stress put on the need for macroeconomic stabilization in transition countries. Thus, it seems not so much the case that the policies of the 'Washington consensus' are wrong, but rather they are incomplete, or at the least not 'balanced' enough. The general field of economic development seems to be rightfully moving towards a more balanced 'post-Washington consensus' (Stiglitz, 1998).

Given the preeminent policy relevance of economic growth, and the limited success in explaining it so far, more empirical studies working with (subjective) institutional measures would seem welcome, particularly for the transition countries. Extending previous sensitivity analysis with more control variables, e.g. for liberalization and initial conditions, could be a start. While existing studies have mainly focused on one issue at the time, certainly for policy purposes it is important to get a feel for the *relative* importance of different variables for growth and investment.

Further investigation of the direction of the causation between the quality of institutions and growth and investment seems also needed, possibly with different instrumental variables, admittedly difficult to find. Finally, as recently stressed by Temple (1998), using a panel-data approach may be the best way forward for many questions of interest concerning economic growth. In the present context, it could e.g. tell more about the *dynamic* effects of institutional *change*, which may even be large in the short run (e.g. through capital flows).

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