Incompatibilities: When Internal and External Institutions are not in Sync

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Abstract

Informal – or internal – institutions have been claimed to be crucial for development. As a consequence, their necessity to be aligned with formal – or external – institutions has been discussed. In this paper, we add to the literature by distinguishing the compatibility from the complementarity of institutions and propose proxies for measuring both. We further inquire into the sources of non-compatibility and non-complementary and find that countries with a high level of ethnolinguistic fractionalization and with major influence of foreign powers (in particular having been subject to IMF conditionality) tend to suffer from both incompatible and non-complementary institutions. Being a democracy is correlated with higher levels of compatibility. Complementarity, in turn, tends to be higher under systems relying on proportional representation.

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"There are two fundamentally intractable problems about which we know very little - aligning the informal constraints with the formal rules and creating and maintaining a polity that will support adaptively efficient institutions." (North 1992, 11)

1. Introduction

It is often argued that formal and informal institutions ought to be in sync if a society is to prosper (e.g. Acemoglu & Jackson 2017, Hay et al. 1996, Hay & Shleifer 1998, or Platteau 2009). But what exactly does that mean? What exactly does it mean to ask for the compatibility between formal and informal institutions? Is it any different from institutional complementarity? How can both institutional (in-) compatibility and institutional complementarity (or its absence) be ascertained empirically? And what are the (economic) effects of incompatibility and non-complementarity?

Examples for non-compatible institutions abound: In some parts of the world, smoking marihuana or downloading movies is not against any informal institutions but may be illegal. In other parts of the world, smoking marihuana or homosexuality are legal but may be offending informal institutions. Among the members of some societies, the honor of the family is so important that family members who act against it may be killed in so-called honor killings. This is an example of an informal institution which is incompatible with formal law in most countries of the world.

These are instances in which informal and formal institutions are incompatible with each other. In cases in which it is impossible to comply with one type of institution without reneging on the other type, many actors will need to decide whether to rely on informal or formal institutions, implying additional information costs. In business contracts, contracting parties might negotiate whether to rely on informal or formal institutions, implying negotiation costs. One way in which incompatible institutions may slow down economic development is thus by increasing transaction costs.

In his analysis of Peruvian firms that decide to remain informal – supposedly because the costs of following the formal rules are perceived as too high –, de Soto (1990) notes that most businesses will forego scale effects because it is impossible to remain informal beyond a certain size, that they will often remain undercapitalised because they cannot provide the banks with the necessary securities, that they will be excluded from using certain markets such as stock

markets and trade fairs, and that transactions will be accompanied by substantial information costs. Furthermore, long-term investment might well be impossible, which means that the investment rate in the informal sector will be too low. De Soto (1990, 12) concludes: "We can say that informal activities burgeon when the legal system imposes rules which exceed the socially accepted legal framework – does not honor the expectations, choices and preferences of those whom it does not admit within its framework – and when the state does not have sufficient coercive authority."

De Soto is not the only one who claims that the incompatibility behind formal and informal institutions is due to the legal system exceeding the socially accepted legal framework. For Easterly (2014), the complete neglect of culture – of which informal institutions are an essential part - is a central reason leading to incompatibilities and, in turn, to the failure of most development policies. Given the presumed importance of the compatibility between informal and formal institutions for development, it would seem primordial to know how to achieve compatibility, an assessment also stressed by North (2005, 79): "But it is important to note that the key to improved performance is some combination of formal rules and informal constraints and the task we face is to achieve an understanding of exactly what combination will produce the desired results both at a moment of time and over time."

Finally, assuming that culture refers to informal institutions and institutions only to formal ones here, Mokyr (2016, 11) has this to say: "If there is a clash between culture and institutions, in the sense that the underlying beliefs or legitimacy for certain institutions has eroded, a political disequilibrium has emerged. Unfortunately, there is no good theory to predict what happens then …" implying that we have insufficient knowledge regarding possible changes that might unfold as a consequence of non-compatible institutions.

Such discussion centers on the consequences of non-compatible institutions on economic development. But the non-compatibility between formal and informal institutions can also have far-reaching consequences for political development: If these institutions are not in sync, the legitimacy of the state may suffer which can imply lower tax revenues but also the necessity to spend more resources on enforcing formal law.

In brief, the non-compatibility between formal and informal institutions is likely to be detrimental to both economic and political development. Scholars investigating

institutional complementarities have shown that the available possibilities for institutional change are conditioned by the complementarity between formal and informal institutions, mainly due to lock-in effects and higher transition costs (Aoki, 2001; Belloc and Bowles). Yet, a concise theory regarding effective combinations between formal and informal institutions is missing, and there is no established theory that would enable us to predict the development of institutions in case of non-compatibility.

In this paper, we take first steps to close this gap. We propose to distinguish the compatibility of formal and informal institutions from their complementarity and discuss a number of possible proxies to measure this empirically. These proxies are then used as dependent variables to empirically assess hypotheses concerned with possible determinants of non-compatibility and non-complementarity. It turns out that both ethnic and linguistic fractionalization are an impediment to compatibility. A major influence of foreign powers – either historically by having been a colony or contemporaneously by being under IMF conditionality – is also correlated with lower levels of compatibility. Democracies do better than autocracies. Among democracies, those with proportional representation tend to do better with regard to complementarity.

The rest of the paper is structured as follows: In Section 2, we briefly define institutions and propose how to delineate both the compatibility and the complementarity of institutions. In Section 3, we propose a number of proxies to quantify these two concepts. Section 4 develops and tests a number of hypotheses regarding non-compatibility. While this is done on the system level, Section 5 analyzes individual choices referring to both compatibility and complementarity. Section 6 concludes and spells out various avenues for future research.

2. Defining Institutions, Compatibility, and Complementarity

In this section of the paper, we propose a three-step procedure for ascertaining institutions and their potential (non-)compatibility: the first step consists in defining formal and informal institutions. The second step discusses how empirically existing institutions can be identified. As we are interested in the relationship between different institutions, we need to decide on which institutions to match with each other. This is our third and final step.

Step #1: Defining Institutions

Institutions have been defined as commonly known rules endowed with a sanctioning mechanism (e.g. Voigt 2019). The distinction between formal and informal institutions focuses on the rule part of institutions somehow evaluating their formality. We suggest to focus on the sanctioning part of institutions distinguishing between internal institutions (non-compliance sanctioned by members of society) and external ones (non-compliance sanctioned by representatives of the state). External institutions consist of formal legislation; non-compliance with the law is likely to trigger action from enforcement agents such as the police, prosecutors, judges etc. Internal institutions, in turn, are those whose non-compliance is sanctioned by members of society such as neighbors, colleagues, friends etc. Social norms are one type of internal institutions.[1] The rule part of both internal and external institutions can be framed as an imperative ("when in situation x, do y") or as a prohibition ("when in situation x, do not do z"). In all likelihood, the resulting leeway in permissible behavior is larger under the second than the first type.

We define compatibility as *the possibility to simultaneously comply with both an external and an internal institution in a specific interaction situation.* Incompatibility, in turn, implies that the rule part of the two institutions which are matched expect the actor to behave in different ways such that a decision needs to be made on what institution to comply with – and what institution to renege upon.

In addition to the compatibility between external and internal institutions, (at least) two other kinds of compatibility may be analyzed, namely that among various internal institutions on the one hand and that among various external ones on the other. It is by no means certain that within a given society, there is only a single, generally agreed upon set of internal institutions. Depending on the number of ethnic or linguistic groups, the presence of different religions but also differences between popular vs. elite notions of morality, far more than a single set of internal institutions may be prevalent in a given society.[2] On the other hand, it cannot be

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[1] Note that the distinction between informal and formal institutions is similar but not identical to the one proposed here. Whereas our distinction focuses on who is to sanction non-compliance with a rule, the formal/informal distinction focuses on the formality of a rule. In the introduction, we referred to formal and informal institutions as that distinction is better known than the one between internal and external ones.

[2] Many – if not most – incompatibilities between ethical rules - one type of internal institutions – are moral dilemmas. In case of non-compatible internal institutions, some "meta-institutions" may emerge informing actors on which institution to rely upon in specific situations. Religiously based meta-institutions may ask for the unconditional compliance with a number of internal institutions

excluded either that external institutions may be non-compatible *inter se* even within unitary states. E.g, it may be the case that recently passed legislation is incompatible with previously passed legislation. But in this contribution, we focus on the (in-)compatibility of external and internal institutions.[3]

Complementarity, as distinguished from compatibility, is a more demanding concept. We use the notion of complementarity here to indicate *situations in which (behavior based on) an external institution needs to be accompanied by behavior based on an internal institution in order to fulfill its function (more) effectively.* Crimes can only be identified and prosecuted effectively if private actors who have knowledge of committed or planned crimes inform the police. The act of informing the police may be encouraged or even demanded by internal institutions. Borrowing from the language of microeconomics, public goods that can only be produced based on behavior that is based on internal institutions may be said to rely upon a limitational production function. In order for this notion of complementarity to be meaningful, it must be possible to explicitly name the purpose of an external institution (e.g. prevent criminal behavior) and of an informal institution (e.g. don't help the ill-intentioned). When the required interplay of behaviors based on external and internal institutions is successful, we propose to call this *effective complementarity*.[4]

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founded on religion. The New Testament has been interpreted as giving the grace of charity and forgiveness higher standing than other ethical rules.

Beyond religious justifications, it is also plausible to assume that non-compliance with institutions is harsher if these institutions involve serious externalities (hurting others, e.g.) than simple conventions such as standard dress code or similar.

If the groups following diverse internal institutions are geographically concentrated in different regions of a country, decentralization or even federalism may be a way to deal with this kind of heterogeneity.

[3] A very specific kind of incompatibility results if an individual's first order and second order beliefs do not coincide: if a person's first order beliefs are that she believes x to be wrong, she would prefer not to do X. But if her second order beliefs are that she believes that most others expect her to do X, she might comply leading to her behavior not being in line with her own convictions. Although this is most likely to happen with regard to conflicting informal institutions, such divergence can mirror the (non-) compatibility between formal and informal institutions, namely if my first order beliefs are in line with legislation but I believe that most people's beliefs are not in line with legislation – or vice versa.

[4] James Scott (1998, 310) posits: "Formal order … is always and to some considerable degree parasitic on informal processes, which the formal scheme does not recognize, without which it could not exist, and which it alone cannot create or maintain." In our terminology: external institutions need to be

Step #2: Ascertaining Institutions

Ascertaining external institutions is pretty straightforward, after all, they are the formal law of a country.[5] The challenge lies, rather, in ascertaining internal institutions as they are usually not formally recognized and written down anywhere. Ostrom (1996, 208) pointed out that internal institutions "may be almost invisible to outsiders, especially when they are well accepted by participants who do not even see them as noteworthy." This implies that not even surveys or interviews may be sufficient to reveal applicable internal institutions to outsiders as people may not even be explicitly aware of some of the institutions they have been following (Voigt 2018 for more on the epistemic challenges involved in identifying internal institutions).

Internal institutions are not observable, only behavior based on them. We can ascertain with relative ease if behavior is not in accordance with external institutions.[6] Unfortunately, this does not automatically imply that it is in line with internal institutions. Still, ascertaining not-complied with external institutions and then searching for internal ones that may have guided behavior promises to be a reasonable matching strategy.

Step #3: How to Match Institutions?

We are interested in the compatibility between external and internal institutions. To ascertain it, (at least) one internal institution needs to be matched with (at least) one external one. Institutions that strive to structure identical interaction situations ought to be matched with each other. In an interaction situation, at least two

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complemented by internal ones. Scott attributes various functions to informal practices, among which making social organization more productive than it could be by relying exclusively on formal rules but also to circumvent non-functional formal laws (such as those formalizing the agricultural reforms in the former Soviet Union or China and the rules imposed on state owned enterprises under socialism in general). Instead of informal rules, he refers to the Greek word of mētis which he describes as representing "a wide array of practical skills and acquired intelligence in responding to a constantly changing natural and human environment (ibid., 313). Although definitely not identical with internal institutions, there are a number of parallels between the two concepts among which the non-explicit nature as well as the unknown origin of a particular practice are the two most noteworthy ones.

[5] In reality, it may also be a challenge to identify valid formal legislation. Some countries do not have an official government gazette. Others, who do, may not publish all legislation passed by parliament in it.

[6] Granted, an important chunk of lawyerly work is in deciding which norms are applicable in a certain situation.

individuals interact and they need to coordinate their behavior to prevent an accident, to exchange some goods, to team up to reach some goal jointly etc. How to do such matching? Here are some challenges that need to be taken up when attempting to match internal with external institutions:

An "interaction situation" is not objectively defined. Different actors may, hence, perceive different situations. Assume that two persons (i and j) interact and their interaction is observed by a social scientist (o). Then, at least five combinations may be relevant.

Table 1: The subjective perception of interaction situations

	i	j	o
1	a	b	c
2	a	b	a
3	a	b	b
4	a	a	c (or b)
5	a	a	a

One would hope that combination 5 prevails, but this is in no way guaranteed.[7] One instance, in which we may attain some other combination could be when novel technology is involved. When the internet became a commonly used form of interacting, one question was whether the same norms apply with regard to interactions in the web as in the real world? Today, the same question applies to the meta-verse.

The natural starting point in matching institutions would be an attempt to match a single internal institution with a single external one. This may, however, be too short of a jump. If an interaction situation comprises various dimensions, it is likely that more than one internal institution can become relevant. Social norms referring to honesty, punctuality, altruism may all apply to a single interaction situation.

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[7] In fact, things may even be more complicated. Both actors may be aware of the fact that more than one interaction situation may be perceived as the relevant one at a particular moment. In such a case, meta-institutions telling the actors which one to perceive as the relevant one may come in: They may, e.g., rely on the age of the actors, their relative social status etc.

3. Empirical Measures

Matching single external with single internal institutions will give us thousands of matches for most countries. Instead of starting this cumbersome business, we here propose a number of rather general proxies for both non-compatible and non-complementary institutions. At least three ways of getting to such proxies seem possible:

(1) Ascertain the presently valid formal legislation and ask to what degree it is actually implemented. We refer to the difference between the two as the *de jure/de facto-gap*. One possible reason for such a gap may be internal institutions that tell actors to coordinate their behavior in a way that is different from the way suggested by formal legislation. A large gap thus serves as a search instruction. But finding a substantial gap is not sufficient for concluding that an incompatibility exists: the gap could also be caused by utility-maximizing politicians who overstep legal constraints to their own advantage.

(2) Identify a number of basic and broad internal institutions such as those referring to (non-)discrimination or the organization of the family. "Predict" formal legislation that would be compatible with those internal institutions and compare the predictions with the actually implemented external institutions.

(3) Rely on a benchmark that both internal and external institutions could be compared with. Shared moral narratives as transmitted in oral traditions could constitute such a benchmark. Internal institutions may or may not be largely in sync with shared moral narratives, just as external institutions – depending on their date of genesis. Compare the content of internal and external institutions as they are and sketch them against shared moral narratives observing which one is more distant.

In the following subsections, we propose proxies relying on either of the first two search strategies just presented. Following the taxonomy introduced above, we distinguish between proxies for incompatibility from those for complementarity.

3.1. Proxies for Incompatibility

One example for the implementation of the first strategy is a paper that asks to what degree different levels of constitutional compliance observed in different countries can be explained by differences in their respective cultures (Gutmann et al. 2024).

The degree to which governments comply with their respective constitution is equivalent to the *de jure/de facto-gap*. After having identified that gap, the authors proceed and ask if the various gaps can be explained with differences in the underlying culture. They find that two of the Hofstede variables reliably predict the size of the gap: countries displaying higher levels of individualism (as opposed to collectivism) have a lower gap whereas countries with a high level of power distance suffer from higher gaps.[8] These insights can only be a starting point for us as the Hofstede variables are not institutions as delineated above. In all likelihood, they are made up of various institutions and shared moral narratives – and we should try to rely on them to identify any incompatibility.

In the introduction, we already quoted de Soto with his analysis that the informal sector strives when the legal system imposes rules that exceed the socially accepted ones. Or – in our terminology – when the external institutions are incompatible with the internal ones. This is why we propose to rely on the size of the informal economy as a first proxy for incompatibilities between internal and external institutions at large. This is interesting for a number of reasons: first, the existence of an informal economy as such is sufficient proof that internal institutions exist which allow those who are active in the informal economy to structure their interactions according to them. Second, both reliance on external institutions as well as reliance on internal ones is associated with both benefits and costs. We know that, in principle, the state is able to provide public goods such as secure property rights and a functioning contract law at lower costs than non-state alternatives. If private actors still prefer to rely on internal institutions, this is, hence, indicative of severe weaknesses of the external institutions.

In their survey on the shadow economy, Schneider and Enste (1990) identify taxes, regulation, social transfers, the regulation of the labor market, and public sector services as main determinants of the size of the informal sector. All of these could be exceeding the socially accepted standards – and thus contribute to incompatibility. As it is impossible to measure the size of the informal economy, it needs to be somehow estimated. We here rely on the so-called MIMIC (Multiple Indicators Multiple Causes) models that have been widely used and report an estimate for the share of GDP attributed to informal economic activities.

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[8] One follow-up question comes immediately to mind: how to explain that societies choose constitutional rules that are not in sync with their own culture? We will not be dealing with this question here, though.

Corruption is conventionally defined as the private misuse of public office. Assuming that bribes are paid to receive administrative acts that are not in accordance with the law, it could also serve as a proxy for incompatibility.[9] Interestingly, and in addition to the point just made, corruption itself relies entirely on internal institutions: how to bribe someone adequately clearly is an informal rule and the precise way of doing it may vary from village to village. Corruption is an indicator that some *de jure/de facto-gap* exists. According to our first strategy, high corruption levels are a signal to look for internal institutions that may not be in line with the formally passed external ones. Here, this refers to the institutions relied upon to consummate agreements based on bribes.

The second strategy for identifying potential incompatibilities between internal and external institutions mentioned above consists in starting with a well-established internal institution and ascertain to what degree the currently valid external institutions of a country are compatible with it. One example following that strategy is to ascertain family institutions that are among the most basic ones and date back to long-term evolutionary patterns. They deal with questions such as who is to (not) marry whom? Where are newly wed couples expected to live and who is to receive what proportion of the inheritance (if any) if a family member dies? It is often argued that they have served as prototypes for generating other institutions extending beyond the realm of the family (Aristotle xxx, Schulz et al. 2019). Although such practices may have changed considerably over the last century, it has been shown that ancient practices still impact contemporaneous outcomes significantly (Duranton et al. 2009; Gutmann & Voigt 2022).

According to the second search strategy introduced above, we assume these internal institutions as rather time-invariant. Data for these institutions are available for a large number of countries. Predicting external institutions in line with them is rather straightforward. If, e.g., the internal institutions of a country stipulate that daughters do not inherit anything whereas the external institutions envisage a positive share, one has identified an incompatibility.[10]

Assume the individualism/collectivism and power distance variables as introduced by Hofstede (1980) as a general measure of a bundle of internal institutions and the size of the welfare state to be a general measure of a bundle of external institutions.

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[9]   But bureaucrats might demand additional payments for tasks that they are to fulfill in any event.

[10]   Engel et al. (2021) argue that this reflects the current situation of Pakistan.

[11] Measuring the generosity of the welfare state by the difference between the Gini coefficient before and after taxes and transfers, Gründler and Köllner (2020) hypothesize that collectivist societies possess less need for general welfare schemes as their members belong to some collectivities below the level of the state who provide welfare services on their own and further that societies whose internal institutions emphasize equality among people would tend to implement more generous welfare policies. Under these assumptions, all countries appearing as outliers in their analysis would seem to have external institutions incompatible with their internal ones, as the generosity of their welfare state policies is either too high or too low.

In a similar vein, additional measures of incompatibility can be gauged. Institutions emphasizing (the absence of) equality are expected to have external equivalents, e.g. emphasizing equality independent of gender, religion, or ethnicity. Power distance, in turn, is unlikely to be compatible with external institutions emphasizing participatory elements.

Moral universalism could be another important category. Moral universalism is the belief that there are several moral principles that apply to all individuals regardless of ethnic or religious differences (Enke 2019). It here features as an internal institution. If moral universalism is widely shared, it reduces transaction costs and thereby fosters cooperation both domestically and across nation-states. External institutions that may not be in line with high levels of moral universalism include a country's asylum policies as well as its trade policy.

Finally, a rather indirect way of identifying possible incompatibilities inquires into the degree to which moral convictions of the citizens are in line with the moral convictions held by the representatives of the state. Among those, the police have the highest likelihood of direct interaction with citizens and it is interesting to what degree their moral convictions are perceived as congruent with those of the citizens. The European Social Survey contains a statement "The police generally have the same sense of right and wrong as I do" and a footnote explains: "'Sense of right and

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[11] Hofstede himself (ibid., 214) asserts that the degree of individualism realized in different societies is central for defining the relationship between the individual and the collectivity and that this "is intimately linked with social norms." Candidates for internal institutions determining the degree of individualism abound: institutions defining privacy, speaking up for one's rights, various institutions defining intra-family relations, institutions determining the relation between in-group vs. out-group, the degree of moral universalism and so on.

wrong' in terms of 'feeling of morally right or wrong from a personal point of view".

3.2. Proxies for Complementarity

We define institutions as complementary if behavior based on internal as well as external institutions is necessary for the effective provision of some public good. If, e.g., there is some internal institution telling people not to comply with any of the health measures proclaimed by government, public health is almost certain to suffer. Many other examples could be named, ranging from participation in elections, jury membership to informing the police if one has information on planned criminal activities, such as terrorist events.

We here propose a proxy focusing on criminal law. The assumption is that many criminal offenses can be solved or even prevented only – or with a higher probability – if members of society who have access to relevant information are ready to share that information with representatives of the state. Many would refer to this activity as whistleblowing but the term has various connotations which is why we here simply refer to "information providers", which are all activities in which members of society provide representatives of external institutions with relevant information.

The Association of Certified Fraud Examiners (ACFE) is an organization of professionals interested in resolving occupational fraud (i.e., fraud committed by a person against the organization for which they work) with more than 90,000 members from around the world. It produces a bi-annual report based on survey responses from their members. The most recent report covers more than 2,000 fraud cases detected in 133 countries. Survey respondents were asked to answer a questionnaire with regard to the "single largest occupational fraud case" they have been involved in (the exact approach used by ACFE is documented in the appendix). While these numbers refer to the last edition of the reports, we rely on information contained in the reports starting in 2004.

The variable from the reports that we rely upon to ascertain complementarity is based on the question "How is occupational fraud initially detected in …?" The questionnaire offers 11 possible responses, including internal audit, management review, document examination, and tip. It is this last category that we are interested in as tips consist of information provided to fraud examiners. As a crude proxy for the degree to which internal and external institutions of a country complement each

other with regard to criminal law, we simply calculate the percentage of cases in which tips were the primary detection method.

The European Bank for Reconstruction and Development has run its so-called Life in Transition Survey (LITS) a number of times. The most recent survey covered 34 countries. These were mostly countries to be considered "in transition" located in Central and Eastern Europe but also some Western European countries such as Germany and Italy. Among other things, the survey is interested in social norms, i.e. one type of internal institution, with regard to corruption. It inquires into norms referring to information provision should one witness an act of corruption. The item does not only ask if it "is generally acceptable" to report cases of corruption, but also if one would personally feel obliged to report and – as an escalation – if one would personally feel obliged to report even if that came at a personal cost (here as needing to spend a day in court to give evidence).[12]

Both the ACFE as well as the LITS measure proxy for complementarity of internal institutions with criminal law. As they are dealing with the same area of external institutions, it would be interesting to see how the two measures correlate. Unfortunately, the overlap of countries with a sufficient number of observations from the ACFE with countries covered by LITS is too small (7). Yet, the number of countries covered by either the ACFE or the LITS proxy is 57. […]

Table 2 contains the bivariate correlations between most variables introduced in this section of the paper. The first three variables proxy for (in-)compatibility whereas the last two can be considered as proxies for the (non-)complementarity of institutions. Given that high levels of shadow economy are interpreted as a proxy for the incompatibility between internal and external institutions, all correlations have the expected sign. The three variables proxying (in-)compatibility are all highly correlated with each other, whereas the tip share variable proxying for (non) complementarity is not significantly correlated with any of the other three variables. This is in line with our argument that compatibility and complementarity are, indeed, two different concepts.

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[12] The formulation of item 8.17 is the following: "a. in our society it is generally acceptable for people to report a case of corruption they witness; b. If I would witness an act of corruption, I would feel personally obliged to report it. C. I would report a case of corruption even if I would have to spend a day in court to give evidence. D. Ordinary people can make a difference in the fight against corruption."

Table 2: Bivariate Correlations between Proxies for Compatibility/ Complementarity

	Shadow Econ	CPI	Police same sense	Trust police	Tip
Shadow Econ					
CPI	-0.682**				
Police same sense	-0.752**	0.813**			
Trust police	-0.670**	0.847**	0.814**		
Tip	0.102	-0.121	-0.394	-0.125	

Notes: The definition as well as the source of the various variables can be found in the appendix. ** indicates significance at the 1 per cent level.

To sum up: in this section, we have proposed a number of rather general proxies for both the (non-)compatibility and the (non-)complementarity of internal and external institutions. Correlating these variables with each other confirms that they are measuring similar phenomena. Future research should, of course, propose more fine-grained measures. With regard to complementarity, e.g., we only focus on criminal law but it cannot be included that complementarity in other areas of law is significantly from the area covered here. This is why more proxies are a desideratum.

4. Sources of Incompatibility

In Section 3, we proposed a number of ways to measure both the incompatibility of institutions as well as their (non-)complementarity. In this section, we take a further step: we develop a number of hypotheses regarding the factors that could drive the non-compatibility between internal and external institutions. We then test these hypotheses relying on the proxies developed in Section 3. In this section, the focus is on the societal level, implying that we are interested in the composition of a

society in terms of ethnicities, languages and religion, the prevalent form of government and so on. Throughout, we assume that the governing have an interest in interactions coordinated relying on external institutions as this will give them greater control and is, hence, in line with the assumption of utility maximization also on the side of the governing.

Rules enforced without relying on the power of the state likely reflect shared values of a group. On the one hand, this assumption may be a bit naïve, as people will always try to establish institutions that will serve themselves best, at times to the detriment of their interaction partners. Mixed motive games nicely document this, the "battle of the sexes" already indicates only partially overlapping interests in its name (Knight 1992 is an entire monograph on the relationship between institutions and conflict). On the other hand, these institutions are being implemented without resorting to the power of the state which is unlikely to be the case if they were not at least loosely correlated with the shared values of a group.

Rules enforced by the state reflect the will of some majority (in direct democracies), or the majority of some legislators (in representative democracies) and of some elite (in autocracies). Based on these simple assumptions, we generate a number of hypotheses regarding potential sources of the incompatibility between external and internal institutions. A society is likely to suffer from non-compatible institutions if the preferences of the elite are not aligned with the shared values of the group(s) it is governing. This is likely to be the case if the preferences of the elite are not compatible with the values of the population at large. We can think of numerous situations in which this is likely to be the case:

Non-compatible institutions are more likely to be present in ethnically, linguistically, or religously divided countries. As members of different groups are likely to share different internal institutions, the compatibility between some of these and the external institutions that are supposed to be binding for all members of society is expected to be lower. This hypothesis also holds with regard to the complementarity of institutions.

H1: If a society has high levels of ethnic, linguistic, or religious fractionalization, we expect low levels of compatibility and complementarity.

If foreign governments are powerful enough to exert significant influence on the external institutions of a country, this implies the possibility that those external institutions are not in sync with the internal institutions traditionally held by the

domestic population. Colonizers often tried to impose at least part of their own laws. Today, organizations such as the World Bank or the IMF frequently force countries to adopt formal legislation through conditionalities on financial support, which is thought to be conducive to faster economic development. Yet such impositions risk creating more damage than benefit when they introduce incompatibilities that can undermine trust and legitimacy of formal institutions more broadly.

H2: If a country is subject to heavy foreign influence, we expect low levels of compatibility and complementarity.

Assuming that the elite of a country may have preferences that are not completely in line with the preferences of the non-elite, one needs to ask what mechanisms exist to make the elite accountable to the preferences of the non-elite. Democracy seems to be a prime candidate here as it gives the non-elites the possibility to sanction their government in regular intervals.

H3: Democracies are expected to experience higher levels of compatibility (complementarity) than autocracies.

But not all democracies are born equal and we propose to take some important differences in their design explicitly into account. A defining criterion for parliamentary systems is that the head of government can be toppled at pretty much any time by some parliamentary majority whereas the head of government in presidential systems cannot not. It has been argued accordingly that presidential systems are characterized by a higher degree of unchecked power (Aghion et al. 2004) and the corresponding argument is that presidents are subject to looser accountability.

H4: Among democracies, parliamentary systems are expected to achieve higher levels of compatibility (complementarity) than presidential ones.

Electoral systems have important consequences on the ensuing party structures. First-past-the-post systems are likely to generate two-party systems whereas proportional systems are likely to generate more-party systems (Duverger 1954). If more parties are around, the likelihood that the preferences of rather small groups are given voice seems higher.

H5: Among democracies, countries relying on proportional representation are expected to achieve higher levels of compatibility (complementarity) than countries not relying on proportional representation.

Relatedly, proportional rule systems also have a higher chance of leading to coalition governments which increases the probability that a society's internal institutions will be compatible with its formal laws. One way of measuring this is to rely on government fractionalization which measures the likelihood that two randomly drawn government members belong to different parties.[13]

H6: High levels of government fractionalization are expected to lead to high levels of compatibility (complementarity).

Table 3 captures first estimates based on Ordinary Least Squares. The dependent variable in the first two columns is the first principal component composed of the variables shadow economy and the Corruption Perceptions Index for the year 2023, as described above.. Columns three and four solely contain the tip variable. Only countries with at least 20 answers are included.

We first discuss the findings documented in columns 1 and 2. Both ethnic and linguistic fractionalization are negatively correlated with our measure of compatibility which is in line with our first hypothesis. Among the two variables proxying for past and current foreign influence, only current influence (as proxied by IMF conditionality) turns out to be robustly correlated with our measure of compatibility. Without adding controls, the colonial past is also significant. It needs to be emphasized that these are only correlations as IMF conditionality may very well be the consequence, rather than the cause, of non-compatible institutions.

Further, and as expected, democracies are more likely to enjoy compatibility than autocracies. Interestingly, the more fine-grained indicators specifying particular dimensions of democracy (namely form of government and electoral system) are not robustly significant with our compatibility measure. However, our government fractionalization variable, which is not restricted to democracies, is positively correlated with compatibility as expected.

Turning to our second dependent variable, namely the percentage of tips that is to proxy for the complementarity between internal and external institutions, there is only a single variable robustly correlated with it, namely the one indicating a

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[13] It may seem that this is just another way of testing hypothesis 5. Yet, data on government fractionalization are not restricted to regimes coded as democratic and the bivariate correlation between proportional electoral systems and government fractionalization is even negative (-0.2436) on the basis of 175 observations.

proportional electoral system. Interestingly, this is the only variable that is not significantly correlated with our measure of compatibility.

Table 3: Determinants of (In-)Compatibility and (Non-)Complementarity

	1st Principal Component	1st Principal Component	Tip	Tip
Ethnic Fractionalization	-2.219*** (-6.04)	-0.747** (-2.00)	-0.062 (-1.05)	-0.080 (-1.20)
Linguistic Fractionalization	-1.521*** (-4.35)	-0.568* (-1.86)	-0.017 (-0.33)	-0.014 (-0.25)
Government Fractionalization	1.702*** (3.32)	0.923** (2.02)	0.072 (0.85)	0.081 (0.92)
Colonial past	-0.850** (-2.23)	-0.243 (-0.92)	0.080* (1.77)	0.073 (1.47)
IMF conditionality	-0.040*** (-7.81)	-0.024*** (-4.49)	0.001 (1.38)	0.001 (1.08)
Democracy	1.077*** (5.56)	0.703*** (4.41)	0.029 (0.78)	0.038 (0.91)
Presidential	-1.362*** (-5.16)	-0.140 (-0.63)	0.004 (0.11)	-0.01 (-0.22)
Proportional	0.202 (0.69)	0.007 (0.04)	0.074** (2.08)	.075 * (2.04)
Controls?	No	Yes	No	Yes
Constant				
R2				
N				

Note: "1st principal component" is composed of the variables shadow economy (inverted) and, CPI, "Tip" is the percentage of respondents in the ACFE survey that answered "tip" to the question "How is occupational fraud initially detected in …?" Countries were only included if at least 20 responses were available. Controls are the whistleblower rewards and police efficiency. The former is from the ACFE survey and reports whether there was a reward system in place before the tip has been given. The latter is from the Executive Opinion Survey run by the World Economic Forum which asks business executives in each country to what extent police services can "be relied upon to enforce law and order".

Now, these results are only correlational. As with all institutional variables, endogeneity concerns loom large. At an even more basic level, better proxies for both compatibility but in particular for complementarity are clearly a desideratum.

5. Individual Choice under Non-Aligned Institutions

In this section, we assume both external and internal institutions as given and try to identify the central parameters that make individuals choose to comply with internal or external institutions in case of non-compatibility (Section 5.1) or let them give input under complementarity institutions (Section 5.2).

5.1. Individual Choice under Non-Compatible Institutions

Imagine you plan to become an entrepreneur and are aware of the immense costs in terms of both money and time to formalize your firm. Under what circumstances do you go for formalization and under what circumstances do you decide to remain informal? Now imagine you belong to a religious minority and you can behave either following the formal legislation of your country or comply with the social norms endorsed by your religion. What do you do? In this section, we develop a very simple model that allows us to identify some central parameters. To the degree that their values can be influenced by government, it also allows us to draw some basic policy conclusions.

For simplicity, we assume that an individual can comply with either the internal *or* the external institution, the individual is, hence, confronted with a binary choice. In a basic expected utility framework, we include the following components: the benefits b from overstepping the rule part of either the external (b_e) or the internal

institution (b$_i$). Suppose b$_e$ > b$_i$. Neglecting any kind of sanction, we would predict that the individual would choose to "break" with the external institution – and thus comply with the internal one.

But an institution is defined as comprising the threat of a sanction in case of non-compliance with the rule. This formulation indicates that a sanction will not be administered with certainty but only with a probability (p$_e$ and p$_i$ respectively). Being sanctioned reduces one's utility. Sanctions themselves are costly – but do not need to be monetary. Most of the sanctions administered for not having complied with external institutions are of a monetary nature (and we assume that they are of a monetary nature only) whereas the sanctions administered for not having complied with an internal institution can be summarized as "reputational": if I do not comply with my contractual obligations, my contract partner will spread the word – and make it more difficult for me to find contract partners in the future (Bernstein 1992 with the story of Jewish diamond traders in New York).[14]

Another aspect of sanctions is their timing: Imagine that the cost of the sanction as such is the same, depending on whether I overstep the constrains of an internal or an external institution but that the timing differs. If we also assume that the benefits of overstepping are the same, then the timing of sanctioning becomes decisive.

$$(1 - p)b_e + p(c_e)^{\delta te} \lesseqgtr (1 - q)b_i + q(ci)^{\delta ti}$$

We now have all components for our basic expected utility calculus. To clarify possible implications, we propose to set all components except one equal to each other (e.g. b$_e$ = b$_i$ and c$_e$ = c$_i$ and so forth) which allows us to focus on single components. The first one is the probability of one's breaking a rule being detected. The police is not everywhere – but neighbors, colleagues etc. are. In many cases, we thus expect p$_e$ < p$_i$. Given that this holds and that all other components are the same with regard to both internal and external institutions, this would lead us to predict that the internal institution will be complied with.[15]

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[14]   How reputational costs are translated into monetary losses depends on a number of factors. The most important one would seem to be the availability of alternative interaction partners, i.e. the number of outside options.

[15]   Reality is, of course, more complicated. Analyzing corrupt judiciaries, Voigt and Gutmann (2015) argue that the fact of being discovered as not having complied with a rule may not be sufficient to be subsequently sanctioned. If one can, e.g., pay a bribe in order not to be prosecuted, one could indicate

Now assume that the utility loss implied in being sanctioned is identical but that the timing differs. In many countries, the judiciary is quite slow and it may take years before non-compliance with formal law is sanctioned. Compare that to internal institutions: there, sanctions are likely to be immediately administered. If the inequality holds as just argued, we would also expect internal, rather than external, institutions to be complied with. [16]

Religious people may expect non-worldly sanctions if they do not comply with institutions perceived as religiously legitimate. In their case, the decision whether to comply with an internal or an external institution may, hence, comprise an additional component.

	comply	Don't comply
legitimate		Additional sanction by God
Non-legitimate	Additional sanction by God	

Given that both external and internal institutions are perceived as religiously legitimate, no change in the expected utility calculus ensues. But assume that external institutions are perceived as not in line with basic religious doctrine, this may be an additional reason for following internal institutions if they are in line with religious doctrine. What is at stake here is the relationship between religion and the state. Whereas in Christianity, there is a religiously founded separation between state and religion (Matthew 22, 21: "Then he said to them, 'So give back to Caesar what is Caesar's, and to God what is God's.'"), Islam is a lot more critical with regard to human legislative activity. This could imply that religious beliefs are an additional factor influencing the choice of which institution to comply with.

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this by another probability q. Given that it is lower than 1, this further reduces the probability of being sanctioned. We are not aware of systems of internal institutions in which one could pay a bribe in order to avoid being sanctioned.

[16] In reality, p and t are unlikely to be independent of each other. The longer it takes the formal prosecution system to get to a case, the lower the likelihood to find a sufficient number of witnesses etc.

5.2. Individual Choice in Case of Complementarity

We defined institutions as complementary when behavior based on both internal and external institutions is a prerequisite for the provision of some public goods. The measure for complementarity introduced in Section 3 above focuses on one aspect of criminal law. There, we propose that the percentage of occupational fraud cases that are being examined as a consequence of a tip can serve as one proxy for the complementarity of external with internal institutions: the more frequently tips are given, the higher the inferred complementarity. Since the input from society here is information provision, we also refer to the tip-givers as information providers.

Here, we are interested in conceptualizing the decision-making process of potential information providers. We thus assume that an individual has some information that would make state enforcement agencies more effective if the individual shared that information with representatives of the state and ask what factors make the sharing of such information more (or less) likely. So, in this scenario, we have three actors: (1) a potential rule breaker, (2) a potential information provider, and (3) a potential sanctioner who acts as a representative of the state.

Beyond passing information to a representative of the state, the potential information provider has two additional options, namely (1) to sanction the rule-breaker herself and (2) to inform other members of society about the rule-breaking behavior who might, in turn, sanction the rule-breaker. We conjecture that the choice to pass on information to representatives of the state is influenced by the following factors:

- o The Costliness of providing information; the more time-consuming and cumbersome it is to share the information, the less like information-sharing becomes.
- o The legitimacy of the state; if the potential informant perceives the state and the basic rules on which it is founded as legitimate, this increases the likelihood that information will be shared.
- o Trust in the police (and other representatives of the state); even if citizens are loyal to their nation and perceive the state as legitimate, they might not trust those that they would need to interact with in order to share some relevant information. For cases involving criminal action, this will be the police but trust in other representatives of the state may also be relevant [name examples?]

- o There may be social norms that encourage sharing relevant information with the police. These may, however, be conflicting with social norms praising loyalty to one's family or kin. Whether relevant information is shared will also depend on how an individual weighs potentially conflicting norms.
- o [additional variables?]
- o Given that previous studies (Gutmann et al. 2024 as described above) have found individualism to be positively and power distance negatively correlated with constitutional compliance, we propose to include them as controls here.

If more than one individual has the relevant information and could thus share it with the police, an additional interaction problem needs to be resolved: the volunteer's dilemma (Diekmann 1985). Social norms of cooperation possibly supported by the threat of a sanction in case of non-compliance could mitigate it.

[to be completed]

6. Conclusion and Outlook

Most researchers agree that internal and external institutions need to be aligned for societies to prosper. Yet, we know very little about how to achieve such alignment (see the citation at the very beginning of this paper). What is worse, we do not even have established ways to measure the degree to which external and internal institutions are aligned with each other.

In this paper, we have taken first steps to change that: Conceptually, we propose to distinguish compatibility from complementarity and suggest a number of proxies to make both of these measurable at a rather general level. We then move on to get first empirically supported insights on possible drivers of both compatibility and comparability. But these can only be the very first steps of a rather long journey. We definitely need more precise measures for non-aligned institutions before we can derive any policy implications.

Similarly, more research regarding possible determinants causing the incompatibility between internal and external institutions is needed. Some heads of government who strive to implement far-reaching reforms in their countries and who are often referred to as modernizers could, e.g., cause a higher divergence between the traditional internal institutions of their countries and the formal legislation initiated by them. It would be interesting to test this conjecture

empirically. As far as we know, however, no adequate data on this aspect of leaders is readily available.

In this paper, our main focus has been on the compatibility of internal with external institutions implicitly assuming that the compatibility of internal institutions amongst each other was less of a problem. But this by no means certain and more research into this kind of compatibility seems also worthwhile.

Before any policy implications can be drawn, we also need to understand the process of institutional change better: what are the relevant dynamics at play here, does it make sense to distinguish change from below from change from above? What mechanisms cause the divergence between internal and external institutions to increase? And what mechanisms cause it to decrease? Here, it may also be relevant not to think of institutions in isolation but to take into account that they have systematic relationships with other institutions. Change of single institutions can thus have consequences that are mediated via other, systematically related, institutions.

Mass migration has become a global phenomenon. Among other things, it implies that groups who migrate from one region to another share internal institutions different from those that are shared in the destination countries. With regard to non-aligned institutions, this is likely to increase the non-alignment between different systems internal institutions (those of the migrants and those of the non-migrants) as well as between the internal institutions of the migrants and the external institutions in their destination countries.

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Appendix:

Variable Description and Sources

Variable	Label	Year	Coding	Source
Colonial Past	ColPast	2005	Colonial origins index that accounts for years of independence: former colony dummy $*(250 -$ years of independence$)/250$	Persson & Tabellini 2005
Corruption Perceptions Index	CPI	2023	Aggregation of multiple surveys; perception of corruption in public sector Respondents: businesspeople and country experts Scale: $0 - 100$ (high values indicate low corruption)	Transparency International 2024
Democracy	Democracy	2020	Dummy equals 1 if free and fair elections are conducted and offices are taken over peacefully	Bjørnskov & Rode 2020
Ethnic Fractionalization	EthFrac	2001	Probability that two randomly selected individuals from a population belong to different ethnic groups	Alesina et al. 2003
Government Fractionalization	GovFrac	2020	Probability that two randomly selected deputies from the government belong to different parties	Cruz et al. 2021

IMF Conditionality	IMFcond	1980-2019	Average number of IMF conditions per year; double weight for binding conditions	Kentikelenis & Stubbs 2023
Linguistic Fractionalization	LinFrac	2001	Probability that two randomly selected individuals from a population belong to different linguistic groups	Alesina et al. 2003
Presidential System	Pres	2005	Dummy equals 1 in presidential regimes	Persson & Tabellini 2005
Proportional Voting	Prop	2005	Dummy equals 1 if lower house is elected under proportional voting	Persson & Tabellini 2005
Reliable Police Services	ReliablePolice	2019	Survey question: "In your country, to what extent can police services be relied upon to enforce law and order?" Respondents: business executives Scale: 1 – 7	Schwab 2019
Shadow Economy	ShadowEcon	1991-2015	Average estimated size of the shadow economy in percent of GDP based on MIMIC approach	Medina & Schneider 2018
Whistleblower Reward System	WhistleReward	2021	Share of reported cases of fraud where the victim organization had a whistleblower reward system in place	ACFE 2022
Whistleblowing	TipShare20	2021	Share of reported cases of fraud where the fraud was first discovered by a tip or complaint; only for countries with at least 20 reports	ACFE 2022

More Detailed Information on the ACFE data

Citation from the methodology paper of ACFE (2022). Occupational Fraud 2022: A Report to the Nations"

"2021 Global Fraud Survey, an online survey opened to 53,118 Certified Fraud Examiners (CFEs) conducted from July 2021 to September 2021.

As part of the survey, respondents were asked to provide a narrative description of the single largest occupational fraud case they had investigated since January 2020.

Respondents were then presented with questions regarding the details of the fraud case, including information about the perpetrator, the victim organization, and the methods of fraud employed, as well as fraud trends in general. (Respondents were not asked to identify the perpetrator or the victim.)

We received 7,890 total responses to the survey, 2,110 of which were usable for purposes of the report. The data contained herein is based solely on the information provided in these 2,110 survey responses.

Cases submitted were required to meet the following four criteria:

1. The case must have involved occupational fraud (i.e., fraud committed by a person against the organization for which they work).

2. The investigation must have occurred between January 2020 and the time of survey participation.

3. The investigation must have been complete at the time of survey participation.

4. The respondent must have been reasonably sure the perpetrator(s) was (were) identified."