

Institutions as a composite concept: explaining their indeterminate relationship with economic development

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Abstract

Development economics witnessed an ‘institutional turn’ from the 1990s onwards, with an increasing number of studies examining the two-way relationships between institutions and growth or individual incomes. Most of these studies, however, rely on mathematical models and with empirical evidence being analysed via econometrics, thus assuming the possibility that given institutions may be subsumed under quantifiable variables. Many possible channels of causality have been highlighted over time and are *in fine* inconclusive. The context-dependence of causalities has been underscored in the literature. This paper goes further, building an original conceptual framework that articulates concepts from development economics, evolutionary theories of institutions and cognitive psychology. Firstly, the paper argues that the modelling of causalities is hindered by the very nature of the concept of institutions: these are composite entities and include varieties of ‘forms’ and ‘contents’, which are driven by heterogeneous evolutionary dynamics and combine between themselves according to contexts. The concept of institution thus does not have the properties of semantic precision and stability in time and space that is yet required by modelling. What econometric studies measure are indeed some public attributes (‘forms’) of an institution, but this gives little information on the beliefs that individuals have about a given institution. Building on this first argument, the second argument is that this *ex ante* causal indeterminacy (on economic outcomes) is compounded by the heterogeneity of institutions: some institutions have the property in individual mental representations to be more resilient than others, notably those governing group memberships: in the context of a limited presence of other institutions (e.g., those created by states) they exhibit a greater social dissemination - but cumulative causation may generate ‘institutional traps’. Understanding these ‘core’ institutions may explain the vicious circles in which some developing regions seem to be caught.

1. Introduction

Development economics witnessed an ‘institutional turn’ from the 1990s onwards, with an increasing number of studies examining the two-ways relationships between institutions and growth or individual incomes. Most of these studies, however, rely on

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mathematical models and with empirical evidence being analysed via econometrics, thus assuming the possibility that given institutions may be subsumed under quantifiable variables. Many possible channels of causality have been highlighted over time and are *in fine* inconclusive.

The context-dependence of causalities and therefore the impossibility of assessing *ex ante* the causal relationships have been underscored in the literature (e.g., Rodrik, 2004). This paper goes further, building an original conceptual framework that articulates concepts from development economics, evolutionary theories of institutions and cognitive psychology, and uses stylised case studies from developing countries with different economic trajectories (e.g., ‘developmental’, vs. ‘collapsed’ states).

Firstly, the paper argues that the modelling of causalities is hindered by the very nature of the concept of institutions: these are composite entities and include varieties of ‘forms’ (e.g., names, written rules, material symbols) and ‘contents’ (e.g., mental representations, meanings, deontic force), which are driven by heterogeneous evolutionary dynamics and combine between themselves according to contexts. The concept of institution thus does not have the properties of semantic precision and stability in time and space that is yet required by modelling. What econometric studies measure are indeed some public attributes (‘forms’) of an institution (e.g., for democracy the number of parties or elections), but this gives little information on the beliefs that individuals have about a given institution.

Building on this first argument, the paper’s second argument is that this *ex ante* causal indeterminacy (on economic outcomes) is compounded by the heterogeneity of institutions. Institutions are not only rules governing economic, political, social domains, but these rules are subject to hierarchies: some institutions (or norms) have the property in social evolution and individual mental representations to be more resilient than others, notably those governing group memberships (lineages, territories, occupations, religions): in the context of a limited presence of other institutions (e.g., those created by states) they exhibit a greater social dissemination (‘relevance’) - but cumulative causation may generate ‘institutional traps’ (Bowles, 2006), e.g., when state collapse and membership affiliations mutually reinforce. Understanding this hierarchy is particularly important in the perspective of development, as it may explain the vicious circles in which some developing regions seem to be caught.

The paper is structured as follows. Firstly, it presents the main features of the vast and ever increasing literature in development economics and development studies that aim at establishing relationships between ‘institutional’ variables and various aspects of economic activity; it also underscores its many limitations in terms of conceptual rigour. Secondly, the paper goes beyond the mere observation of these limitations in arguing that ‘institutions’ are intrinsically impossible to subsume in mathematical models’ variables and causalities, because they are intrinsically composite entities, which, moreover, are context-dependent and domain-specific, which deprives these models of any predictive capacity. The paper then shows that this impossibility is compounded by the fact that some social rules are more resilient at the macro level and more relevant at the micro – individual – level (‘core institutions’), and therefore that this heterogeneity across types of ‘institutions’ prevents them from being defined by functional variables in models: the latter cannot accurately represent the complexity of facts involving institutions.

2. The increasing literature explaining economic performance by ‘institutions’ and its limitations

2.1. The wide use of ‘institutions’ in the exploration of the determinants of development

From the 1990s onwards, development economics and development studies made an increasing use of institutions in order to explain economic growth or the level of incomes. What has been coined as the ‘institutional turn’ (Evans, 2005) has been driven by several factors, in particular the legitimisation in mainstream economics of the concept of institutions that was enabled by the Nobel prize awarding Douglass North and Robert Vogel in 1993, and also factors stemming from theoretical debates internal to the discipline, in particular regarding theories of growth.

Indeed, mainstream models of growth would predict convergence across countries levels of incomes if trade barriers are removed: empirical observations contradicting this, and especially the divergence across countries (Pritchett, 1997; 2000, Easterly and Levine, 2001). This incited development and growth economists to explore whether other mechanisms or causal variables could explain this divergence. Endogenous growth models underscores the role of mechanisms of endogeneity, e.g. captured by the concept of total factor productivity, where the focus had been made on causal factors such as innovation capacity, knowledge, or technology (summarised in, e.g., Aghion and Howitt, 2009). In the same movement non-economic variables appeared to be possibly relevant causal variables of these divergences: in particular, institutions and ‘social norms’.

A vast literature has therefore developed on the relationships between political institutions and economic outcomes, for example studies analysing the impact of economic behaviour on political institutions, or the impacts on growth of, e.g., political stability, elections, judicial institutions and constitutions (Persson and Tabellini, 2003; Aghion et al, 2004; Alesina, 2007 – continuing the theoretical stance of public choice and ‘constitutional political economy’ that emerged in the 1960s, e.g., Buchanan and Tullock, 1962). These political institutions’ impacts can be explored not only on growth, but on a variety of other economic aggregates, e.g. financial crises (Herrera et al., 2014). The relationships between democracy vs. dictatorship and economic performance have given rise to a very vast literature for a half century (since the seminal study by Lipset, 1959) (e.g., Bardhan, 1993; Przeworski and Limongi, 1993; Barro, 1999; Przeworski et al., 2000; Tavares and Wacziarg, 2001; Gerring et al., 2012; Knutsen, 2013). Equally, studies can explore the impact of economic institutions on growth or any other dimension of economic activity, at the macro or micro levels. This can be, for example, the impacts of modes of taxation, property rights (e.g. in developing countries, land rights or use rights, Hayami and Aoki, 1998; Aoki and Hayami, 2001), markets (e.g., institutions organising external trade, or domestic production, exploring for example their impact on some economic aggregates such as, e.g., agricultural production, Theriault and Tschirley, 2014 or cotton), regulatory institutions, the rule of law, ‘governance’ (‘good’ or ‘bad’ e.g., corruption) (e.g., Knack, 2002). Studies can also explore the impacts on growth of mixes of institutions,

e.g. historical, economic and political, a key example for developing countries being slavery (Nunn, 2008a; Bezemer et al., 2014).

The relationships between different types of institutions are of course also investigated, e.g. between a political institution such as democracy and an economic institution such as the organisation of taxation (Baskaran, 2014), and institutions may be analysed as intermediary variables in causal economic processes. Regarding economic development, among a huge literature, examples can be the exploration of the relationships between inequality and growth via an institution such as slavery (Nunn, 2008b), that of the relationships between colonial institutions and subsequent quality of colonised countries institutions, and *in fine* these countries' growth (Jones, 2013, building on a database on the 'quality of colonial rule'), that of institutions as mediating the relationships between exports structure (such as a structure based on primary commodities) and growth (Gylfason, 2004; Mehlum et al., 2006a, b; Brunnschweiler, 2008; Torvik, 2009; Boschini et al., 2013) or that of political institutions as mediating the relationships between natural resources' revenues and financial development (Bhattacharyya and Hodler, 2014). Similarly, in widely disseminated studies (e.g., Acemoglu and Robinson, 2006, 2012) Acemoglu and Robinson have extensively analysed the relationships between political institutions and economic outcomes, for example the negative impacts of dictatorship, or those of 'extractive institutions', which explain 'why nations fail'.

These studies in essence rely on mathematical models, for example assuming representative agents, and, notably in analyses of social norms, on game theory - it may be argued that otherwise they would be categorised as 'sociology' or 'history'. Empirical evidence is analysed via econometrics, most often via cross-country regressions that rely on existing databases or on surveys (which may be original surveys devised for the research question, e.g. see Olken, 2006; Olken and Barron, 2009, on the impact of corruption in Indonesia – as is increasingly the case for studies based on 'field experiments'). Their common hypothesis is that 'institutions' can be viewed as single units that can be circumscribed and subsumed in variables that can be quantified, as measuring is necessary for using them in modelling and econometric exercises. Databases of institutions are therefore used, which measure notions such as the 'rule of law', 'political rights', political or economic 'freedom', 'business climate', etc. (Knack and Keefer, 1995). Indexes are elaborated, e.g. of 'institutional quality', which scale, for example, 'poor' vs. 'good' institutions. Among many others, examples of such databases, which are widely used in development economics literature, are those of 'governance matter' of the World Bank, of Freedom House, Polity IV, International Country Risk Guide (ICRG), etc. (Kaufmann et al., 2010).

Moreover, it is assumed that such unitary entities can be the terms of simple causations that can also be circumscribed, where identified and observable causes produce identified and observable effects, of the type: 'if p, then q': for example, if 'democracy', then 'growth'; or if 'accountability', then 'growth'; if 'inequality', then 'lower income', etc.

The conventional storyline is that 'poor' institutions are detrimental to economic growth, as well as to other economic aggregates or to other institutions or policy decisions – as exemplified, e.g., by North et al. (2009), who argue that developing countries economic stagnation stems from the lack of consolidated and 'open' institutions, in particular 'neutrally enforced rule of law', because such institutions are

crucial for the long-run stability of investors' expectations, and therefore, as investment is a most robust determinant of long-term growth, crucial for economic growth. This has been used, for example, as an argument for views that are cautious regarding the growth of India, or even China, in the longer run (Pritchett and Summers, 2013).

2.2. The limitations of the mainstream institutionalist literature focused on economic development

In this vast literature, empirical econometric exercises find a variety of results; similarly, they have highlighted over time a great number of possible channels of causality, in different directions - negative or positive. They appear *in fine* to be inconclusive.

Indeed, the standard model-based literature focused on institutions in development is weak regarding the reflection on the concepts its uses. Concepts subsumed under the word of 'institutions', 'norms' or 'rules' are not questioned or conceptualised in a coherent way. The majority of studies of this quantitative literature do not devote any introductory space to the definition of the concepts they will use in the model, nor the epistemic validity of the aggregates of the database or indexes that will be used in the empirical analyses (as noted by Hodgson, 2013): conceptual frameworks are not made explicit before starting modelling and econometric analyses of databases or questionnaires.

The studies that aim at being more rigorous usually confine their definitions of institutions to the borrowing of canonical definitions provided by the neo-institutionalist reference studies, notably the first writings of North (e.g., 1990) - institutions are 'the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)' (North, 1991, p. 97). Obvious and well-known exceptions being the few theoreticians of institutions and development that have deepened the concept of institutions - e.g., protection of property rights, coordination device, such as Greif and Bardhan, among others (Greif, 2006; Bardhan, 2006) as well as the studies - which are precisely analytical and qualitative -, that have evaluated the weight of institutions in comparison with other determinants of growth (e.g., Rodrik et al., 2004) or the impact of inequality (i.e. more or less inegalitarian institutions) on growth (Engerman and Sokoloff, 2002). Reflections on the complexity of the concept of institution are most often absent, including on North's definition (Hodgson, 2006). Similarly, such studies ignore the progressive sophistication over time of North's own conceptualisation, notably via the consideration of the cognitive processes that underlie the formation and evolution of institutions, e.g. beliefs and intentionality (North, 2005; Denzau and North, 1994).

'Social norms' usually refer to these 'informal' rules of behaviour (e.g., Platteau, 2000). Using a precise and relevant concept of 'social norms', however, would be particularly crucial in studies of developing economies, where 'informality' and 'informal' sectors represent the large share of economic activity and 'informal' rules are said to prevail. Economic activity is here said to be partitionable, e.g. in what would be 'formal', and what would be informal ('social norms'). There is no reflection on the plausibility of such borders between these two worlds, not only in economic activities but in individual minds (Sindzingre, 2006).

Institutions are thus presented as simple, primary notions. In this literature (mainly development economics), in particular that of international financial institutions (the World Bank, the IMF) and aid agencies, institutions can thus be ‘weak’ – e.g., a low score in an index that is quantifying and ranking the ‘quality of institutions’; they may suffer from problems of (institutional) ‘capacity’; their ‘quality’ can also be ‘good’ or ‘poor’ (an example is the World Bank report on ‘institutions for markets’, World Bank, 2002). Due to the intrinsic vagueness of the qualification, this ‘weakness’ is indeed often specified by other notions, e.g., the presence of high inequality, the likelihood of social unrest, the unlikelihood of foreign investment, and the like².

An ‘institution’ – and, moreover, ‘institutions’ are, however, in no way unitary entities that can be circumscribed in a simple variable that has a stable reference – in the linguistic sense of the word, i.e. the object that a word refers to – and which can be a term in unidirectional and unambiguous causalities at a given time (theoretical refinements such as considering endogenous causation or non-linearities do not modify the assumption that the ‘institutional variable’ and hence the causation at a given time is unambiguous). The concept of ‘institutions’, or that of ‘social norms’, contrasts here with the other variables with which causation is investigated, e.g., prices, GDP per capita, fiscal deficit, exports volumes, even if the exact definition and measurement of these aggregates is continuously debated). Such aggregates on the one hand, and ‘institutions’ or ‘norms’ on the other, do not have the same epistemic status: the first are variables constructed for measurement and the second are concepts. As is well-known since the foundations of philosophy, concepts are not natural kinds, they are not observable: in contrast with the objects of econometrics (Hoover, 1994; see also Hausman anthology, 2007), they may not be computable – and conversely, mathematical assumptions are not warranted regarding economic phenomena, and *a fortiori* institutional ones (Velupillai, 2005) and the variables that models use are not concepts (Mäki, 2011). Despite the great number of studies that make models of the economic impact of ‘institutions’ or ‘norms’, this is obviously the case of an institution such as ‘colonialism’ or colonial rule, or ‘democracy’, among many others, which are concepts and clearly refer to complex sets of institutions and historical events. This is also the case of economic institutions such as those organising production or markets. This fact that ‘institutions’ are not single units also holds for apparently more simple and clear-cut notions, such as family, marriage, political party, for example.

This also underscores that the word of ‘institution’ as it is recurrently used in mainstream studies in development economics may refer to a wide range of phenomena that may have very little in common: they may refer to heterogeneous entities, going for example from observable institutions established by a state – e.g., courts –, to some of their attributes – the written legal apparatus, which courts produce and simultaneously underlie them –, or the mechanisms that support the functioning of courts – e.g. the existence of rule of law. The references to the word (‘institution’) used across the vast literature on institutions and economic performance may exhibit no more than, quoting Wittgenstein, a ‘family resemblance’ across themselves.

² This is underscored in newspapers comments of the Pritchett and Summers’ (2013) paper: see William Pesek in one of the Wall Street Journal’s blogs: <http://www.livemint.com/Opinion/NzXsFP58zMqZF6iwA8hG5I/Lawrence-Summers-asks-China-India-42-trillion-question.html>

In addition, differences with neighbouring notions remain often under-addressed, an example being that between institutions and public policies (political or economic). Indeed both can be defined as set of ‘rules’ (underscoring the intrinsic ambiguity of the term). Policy tools such as independent central banks, taxation, regulation, may be defined as rules (Alesina and Passarelli, 2014), and they may also be viewed as institutions, which creates confusion in the causalities presented in the models - yet model-based studies rarely take the time to reflect on the complex reciprocal relationships between the two concepts (e.g., policies being anchored in institutions, institutions being built by policies) (e.g., Persson, 2001).

Also, causalities are represented via variables in models: the reference of each variable is by definition, assumed to be stable in time and space, even if of course the econometric model investigates a change of a particular variable in time and space: if the variable is said to denote ‘property right’, ‘contract’, corruption, etc, the references of such words are by definition considered as stable by a given model as soon as it uses them.

Causalities are used for both levels; macro and microeconomic. Causalities are presented as stable across levels, micro levels or macro levels: yet, this is not the case. Growth as a concept is not questioned in cross-country regressions. Inferences are often confused regarding the conceptual nature of the points of impacts - growth, levels of incomes, ‘development’, ‘economic performance’ -, and if the model uses representative agent, on average incomes that give no information on impacts across individuals. Yet, stability of causation is not preserved across levels, e.g. between institutions such as networks and levels of incomes. As argued by the well-known literature on trade networks, reputation mechanisms enable contract enforcement and thus trade relationships and therefore enhance the income of members (Greif, 1989; Milgrom et al., 1990). However, this causality does not hold when the analysis is transposed at more macro levels, where, for example, if this group is subject to discrimination, group membership may be associated with lower income (Rauch, 2001).

Equally, the imperatives of quantification and econometric ‘proof’ are an incentive for using data that may be inappropriate and make results very questionable. As databases are scarce, especially in developing countries, series of proxies are proposed, which are said to be able to replace missing data, e.g. the number of elections, of parties, of newspapers can proxy democracy, or the existence of constitutions can proxy the rule of law. Reflections on the epistemic risks of some proxy are thin, as in such studies, the overarching criterion is to measure, quantify, and hence to have a database – overlooking decades of debates on this epistemic validity even within mainstream economics (Hodgson, 2012). In a reversal of the foundations of scientific reasoning, availability of the database seems to come first, and only then the exploration of a given causality. For example, the availability of databases in the 2010s on earth luminosity has produced several papers using it as a proxy of GDP per capita (Chen and Nordhaus, 2011; Henderson et al., 2012; Pinkovskiy and Sala-i-Martin, 2014). Data availability being notoriously difficult for past centuries as well as developing regions, proxies are very general and aggregated variables (and most studies rely on the same datasets, e.g. for data covering the last millennium, those built by Angus Maddison³). In well-known papers aiming at explaining long-term divergence between world regions by

³ <http://www.ggd.net/maddison/maddison-project/home.htm>

institutions, notably Sub-Saharan Africa's economic stagnation, and the apparent 'reversal' of prosperity across regions over time, the nature of institutions (those establishing property rights vs. 'extractive' institutions) in colonised countries have been proxied by colonisers' settlement in these countries, itself proxied by settlers mortality rates (Acemoglu et al., 2001); similarly, urbanisation, along with population density, has thus been used as a proxy for per capita income (Acemoglu et al., 2002).

3. Institutions as composite entities involving heterogeneous cognitive processes: *ex ante* indeterminate causalities and uneven stability

This literature on the relationships between development (or economic growth) and 'institutions' or 'social norms', be it based on models or regressions, produces inconclusive or contradictory results, as it relies on a simplistic view of institutions. As underscored by economic historians, causalities drawn by, e.g., studies explaining divergence across regions and history by institutions via datasets covering half millennia and hundreds of countries and using econometric methods are simplistic. Results that argue, for example, that Africa has suffered a 'reversal of fortune' during the last 500 years, as in Acemoglu et al. studies, may be criticised on both methodological and empirical grounds: 'unknown to most historians, economists have produced a new economic history' (Hopkins, 2009). Models 'compress' different historical periods and paths, and over-simplify the causation: e.g., as argued by an economic historian such as Austin (2008) economic rent and growth have often been associated in history and the types institutions that favoured growth in certain historical contexts were not necessarily optimal in others.

3.1. In contrast with models' reductionism: 'institutions' as inherently composite entities

These studies on the relationships between institutions and economic outcomes neglect the fact that an 'institution' is not a simple economic aggregate. The concept obviously refers to a wide range of heterogeneous phenomena. It is therefore argued that an 'institution' intrinsically is a composite entity, and that this property inherently prevents this concept to be quantifiable, with a context-free and stable measure, which is a key factor of the inconclusiveness of studies based on econometric modelling. Evolutionary theories of institutions and cognitive psychology, in particular, have already provided theoretical arguments that confirm the composite character of what is 'coined as an 'institution' – or a 'social norm'. Via examples from developing countries with different economic trajectories, the elements of a conceptual framework are presented below.

'Institutions' are composite entities. The concept refers to a great number of dimensions, which may be gathered in two broad categories, i.e. their 'forms' and their 'contents' (Sindzingre, 2007; 2010). 'Forms' of institutions refer to percepts – forms that are public and perceived by the human mind -, for example the words that are used to denote institutions (e.g., 'democracy', 'republic', 'property', 'family'), the public and written rules that support them, the material symbols (e.g., objects, rituals) attached to them. The 'contents' of an institution are intrinsically heterogeneous. They refer to the

mental representations that one or several individuals have of a given institution (including the connotations of names, of objects, of symbols), with some of these representations being more salient and resilient, for example because they are associated with emotions, with some representations having a deontic dimension vis-à-vis other representations ('I must' do this, 'I must think this', etc.), with some of these mental representations being publicly shared via language and behaviour, with some of these public representations being more disseminated across individuals, i.e. more 'relevant' than others (Sperber, 2000; Sperber and Hirschfeld, 2004; for differing views, Searle, 2005; Mantzavinos, 2001): within these types of publicly shared representations, those having a deontic force typically become social norms.

Mental representations are context (time and space)-dependent, and, as has been shown for a long time by evolutionary psychology, domain-specific (Tooby and Cosmides, 1992). Similarly, the deontic force of the rules widely varies across individuals and moreover according to contexts (e.g., 'believing' in democracy, but only within a parliament, or only for a country's nationals; e.g., not adhering to a religion, excepted for funerals, etc).

By definition, these mental representations are not public, other individuals have no direct access to the degree of adherence, to the intensity of the belief, to the force of obligation that a particular mental representation has for a given individual: an individual's public behaviour provides only a 'signal' to others, and this individual may not 'believe' or 'adhere' to these deontic representations. This is why the existence of forms of institutions does not provide any *ex ante* information on the mental representations that individuals have of them, the intensity of adherence and on the enforcement capacity of these institutions (a familiar example being adherence to the single party in dictatorial regimes just before an overthrow by massive protests).

The concept of 'informal' vs. 'formal' that is recurrently used in mainstream economic studies is obviously superficial here, because the mental representations here involved (and the related behaviour) build a continuum, not a partition (Sindzingre, 2006). This partition is arbitrary: particularly in developing countries where state institutions may not have the social pervasiveness they have in developed countries, depending on contexts, individuals may sometimes follow the rules of a public institution, e.g. a court, and simultaneously those of a village 'traditional' council, and as is well-know, the enforcement capacity of the latter may often be stronger than the former. Such easy partition between 'formal' and 'informal' institutions – the latter being often implicitly equated with 'social norms' -, firstly stems from the requirements of modelling, e.g. building easily tractable models (such as two-sectors models, Stark, 1982). It is more rigorous and parsimonious to name concepts by their relevant attributes, here the fact that some rules are 'written' while others are 'unwritten': differentiating between these two modalities of a rule then triggers theoretical perspectives that are overlooked by the formal-informal partition, notably the analysis of the cognitive effects of the fact that a rule is unwritten or written, i.e. remembered and stocked in an external device (Goody, 1986; Ong, 1982; 1986).

Institutions are in constant processes of combination with other institutions and rules, which are themselves made of the composite elements mentioned above, in the course of time and randomness of events. Elements of 'contents' and 'forms' are shaped by each other, for example according to feedback processes (e.g., between the extension of

the social dissemination of public representations and the latter' deontic force). Hence at a given point of time, the actual content of particular forms is an outcome of these continuous processes of combination. Both forms and contents of institutions continuously evolve over time and across space via a variety of mechanisms, e.g., coevolution, relevance, complementarity, power, among many others – as do evolve institutions in general, as shown by a vast literature in evolutionary psychology (e.g., on the coevolution genes-culture, Richerson and Boyd, 2005; Boyd and Richerson, 2008; Boyer and Bang Petersen, 2013). Not only contents (e.g. mental representations), but also forms expressing given content also vary: for example, the 'forms' attached to the concept of 'government', 'democracy', 'right', 'market', among others may be 'fed' by a variety of contents; similarly, in one party regimes, other political forms can express opposition, and as is well-known, democratic forms are often captured by autocratic rulers.

Both forms and contents display various combinations between themselves according to contexts. Forms and contents are obviously shaped by contexts: for example, the public and written rules supporting an institution, its 'forms' – e.g. the written legal apparatus – are enforced because some meta-institution is present that is able to do it, such as a state, a religion, an army and the like, and if it is not the case, these rules are ignored – which confirms that econometrics and indicators that only use data on institutional forms may be misleading. Similarly, contents of institutions are shaped by the presence or absence of other institutions, e.g. the content of the concept of 'property' in traditional or 'collectivist' societies, or the content of the concept of 'presidential government' in the presence or absence of other institutions that can be a check-and-balances power.

Hence, not only because they are concepts but also due to their very nature of composite entities, the references of an 'institution' therefore do not exhibit the properties of stability across time and space that are required for the variables of a model. For example, despite identity of 'form' (i.e. despite an identical 'name'), there may be very little common content in the institution of 'democracy' as elaborated by Tocqueville and, say, the mental representations of voters of a newly independent developing country in the 21st century; similarly, as is well-known, through the forms exhibit many commonalities (and resilience), there is little common content in the institution of marriage in pre-modern times (mainly an alliance of two lineages) and its contents in liberal countries of Northern Europe in the 21st century.

Only the 'forms' of institutions are observable, and mainstream analyses consist in transforming these observable forms into variables that can be handled in models (Sindzingre, 2014). Most often, what econometric studies measure are some public attributes of an institution, assuming that they can be substitute for the institution (e.g., for 'democracy', the number of parties, or of elections). Attributes are in no way the entity itself, however. Moreover, using attributes of an institution in a model gives little information on the beliefs that individuals have about that institution, e.g. doubt, rejection, etc, and the causalities highlighted by an empirical econometric analysis may here be seriously misleading. Forms of institutions may be quantifiable (e.g., numbers of elections, number and domains of laws, number of occurrences of the name of an institution in a poll, etc.). This cannot be the case of 'contents', however, as these are mental representations and, moreover, context-dependent ones (as, to paraphrase Spinoza, the idea of a circle does not have a circumference). What models apprehend

are forms, in particular attributes of institutions that may be quantifiable, not their ‘content’. ‘Contents’ do not have the property of separability that is required for variables in a model. The inconclusive character of causalities involving ‘institutions’ analysed by mainstream model-based economics thus stems from the methods itself, i.e. from the imperative of modelling, which can capture only attributes, moreover the quantifiable ones.

The context-dependence of causalities that include institutions and economic aggregates has been underscored in the literature (Rodrik, 2004). Context-dependence has also shown the limitation of the analyses of social norms emerging from experimental games – exceptions being the studies that have put games within context (e.g. Henrich et al, 2004), though it may be argued that a game, even in a traditional village, remains a game, i.e. an artefact, and not a contextualised cognitive and practical activity, in contexts of political (power) and economic institutions and social norms. A key point that is overlooked in the literature, however, is that the context-dependence of forms and contents of institutions implies the impossibility of assessing *ex ante* the causal relationships in a model: the very nature of the concept of institutions inherently hinders the possibility to use them in modelling as well as the demonstration of causalities using the concept of institutions. Not only the mathematical modelling must be disconnected from the content of the variables, the economic content of them being possibly inexistent (as argued by Gerard Debreu himself, Düppe, 2010), not only the modelling of causalities is confronted with the identification and moulding of the causal mechanisms (Hoover, 2013), but ‘institutions’ do not have the properties of semantic precision and stability in time and space that are yet required by mathematical modelling.

Indeed, an epistemic consequence of institutions as a concept referring to composite entities, with context-dependent deontic force and social dissemination is that the causalities involving ‘institutions’ cannot be *ex ante* determined (for example, according to causalities of the type frequently used in cross-country econometric studies: e.g., ‘growth rate $_{i,t} = \alpha_i + \beta \text{institution}_{i,t-1} + \gamma Z_{i,t-1} + \varepsilon_{i,t}$, with $Z_{i,t}$ a vector of control variables for country i in year t , and $\varepsilon_{i,t}$ the error term’), contrary to the assumptions of econometric models of the existence of stable and *ex ante* relationships. Causalities obviously exist and can be drawn, but the causal links that the many forms and contents of an institution may have with other concepts or with other aggregates, such as economic outcomes, are as multiple as the elements and levels considered (cognitive, linguistic, social, political, economic), with them moreover varying according to contexts: causalities cannot thus be predicted *ex ante*, and they can be observed only *ex post*. Beyond the issue of identification and definition of a given institution in the continuum of reality and the issue of its conceptualisation, no intrinsic outcome of institutions can be *ex ante* deduced from it. Analyses of causalities involving both economic aggregates and concepts related to ‘institutions’ (‘norms’, ‘rules’) must be made case by case, situation by situation and for a given period of time.

As underscored by Przeworski (2004), it cannot be demonstrated that institutions are ‘in last instance’ a central determinant of economic growth, and in the long run, no cause is exogenous. Moreover, as shown by Engerman and Sokoloff (2003), who precisely relied on elaborated case studies, even if it were the case research across history and world regions show that it cannot be demonstrated that a specific, identified institution is necessary for growth.

3.2. Uneven cognitive resilience across institutions and norms: ‘core’ institutions vs. the others

In the theoretical literature linked to economic growth or development, institutions may be conceptualised by the domains they govern: e.g. constitutions vs. customs, protecting property rights, enhancing coordination, enabling contract enforcement, reputational devices. These are, however, analysed as systems of rules in a general way, and as underscored above, as homogenous units causing effects: their existence and their effects are mostly analysed via their functions.

Yet institutions are not only rules governing economic, political, social domains: a functionalist perspective and views of institutions as variables in mathematical models do not allow for taking into account the key feature that ‘institutions’ constitute sets of forms and contents that are very heterogeneous in terms of their evolution, especially in terms of cognitive salience and capacity and pace of transformation, as well as in terms of the economic causalities they generate, notably their impact on individual incomes or their link to economic incentives (i.e. their creation of economic incentives by institutions and the transformation of institutions as responses to changes in incentives).

Indeed, the first theoretical argument presented above explains that ‘institutions’ are composite entities of forms and contents (‘compositional view’) and therefore the *ex ante* indeterminacy of the causalities involving them, only *ex post* causalities in a given time and space being observable, contrary to the assumptions of models. Building on this, a second step of the argument is that this *ex ante* causal indeterminacy on economic outcomes is compounded by the heterogeneity of institutions.

In an evolutionary perspective – in particular, evolutionary anthropology, evolutionary psychology-, some ‘contents’, i.e. some deontic representations that underlie some social norms and institutions appear to have the property in individual mental representations to be more resilient than others. These are the representations related to group memberships, i.e. to the fact that an individual represents herself as the member of one or several groups (e.g., lineages, territories – village, region, nation -, occupations, religions, among others), and within these groups, as having a specific status in a hierarchy (criteria being various, age, gender, symbolic, exploitive power, among others) (Sindzingre, 2012; Sindzingre and Tricou, 2012).

Such representations and the associated norms are at the foundations of human societies and of exchange relationships, and they may be coined as ‘core’ institutions. They are central in human psychology as they shape individual identity and fill ontological needs inherent in the fact of having a consciousness (e.g. regulation of interactions with other individuals, and the associated hierarchies, parents, elders, chiefs, etc). They are usually reminded to an individual at the key steps of the lifecycle (birth, adulthood, death), in particular via public rituals. They constitute - such as statuses and ranks in hierarchies -, strong cognitive ‘attractors’, and are reinforced by rewards, coercion and the punishment of defectors (Kurzban and Neuberg, 2005).

Norms and institutions relying on religious beliefs are here paradigmatic examples of such ‘core’ institutions that have the property of being more stable than others, such beliefs being always deontic representations (religion always being a set of moral norms and behaviour prescriptions) and typically less falsifiable in a Popperian sense than

others as they are based on non-observable entities (Boyer, 1994). Providing individuals with deontic representations on the ‘core’ steps of their life and their ‘core’ identity via a group membership, and with principles all the more irrefutable and non-disputable since they are decreed by unobservable agents, such norms are not driven by and modifiable by narrow self-interest and the calculations related to it (Ginges et al., 2011) (or, in other words, complying with these norms brings rewards that are not even quantifiable, being promised by unobservable agents and involving both moral principles and self-identity). As underscored by Atran and Ginges (2012), if religion enhances in-group cooperation, it also increases the likelihood of conflict with non-members, and moreover, in such conflict situations the very high deontic dimensions of attached mental representations (‘moral imperative’) makes it so that these representations are not driven by, and hence little permeable to material incentives (e.g., costs, punishments, rewards) and therefore to any modification.

As highlighted above, all the many heterogeneous elements of contents and forms evolve according both to their nature (e.g., genetic, psychological, social) and to contexts, while they are also shaped by each other: content and forms of ‘membership’ may evolve differently. What characterises ‘core’ institutions such as those governing memberships is the resilience of the associated mental representation of ‘being a member’ (of whatever group) even if contexts change, even if the representation’s actual content vary (e.g., one may be a Londoner, or British, or Scottish, or a Westerner, but in all cases one remains the member of a group). This has been shown by the anthropological concept of ‘segmentary’ systems, i.e. systems of affiliations where the scope of the group to which an individual is affiliated varies according to the context, typically a situation of conflict (Sahlins, 1961): e.g., ‘me and my lineage against the neighbouring lineage’; and in another situation involving higher levels, the same individual may represent her membership as filled with another content, e.g. ‘me and my village against the neighbouring village’, or ‘me and my nation against the neighbouring one’, or ‘me and the believers in my religion against all members of another one’, etc.). Civil wars may be examples of this resilience of ‘core’ membership institutions, which govern individual behaviour even if ‘contents’ change (for example, individuals representing themselves as members of the same group, e.g. ‘ethnic’, becoming suddenly enemies when a changing context makes it so that a new content, e.g. their differing membership in some religion, becomes more relevant).

This heterogeneity in institutions, with those governing memberships at all possible levels exhibiting a greater cognitive stability, is a feature that is crucial for the analysis of developing countries, especially the poorest ones. As is well-known, these countries are characterised by the limited presence, and also a limited credibility and legitimacy in citizens’ minds, of the state and public institutions: such contexts enable lower level memberships (e.g. lineages, villages, ‘ethnic’ groups) to be more ‘relevant’ for individuals (e.g., regarding the provision of security or justice), and the associated norms may enjoy greater dissemination. Yet, when state collapse combines with, e.g., the pervasiveness of ‘ethnic’ affiliations, both may mutually reinforce themselves according to feedback and cumulative causation processes: this may typically generate ‘institutional traps’ (Bowles, 2006).

Thus, the understanding of this heterogeneity of institutions and norms, and the specific features of ‘core’ institutions - their stability in an evolutionary approach -, is particularly important in the perspective of development. Membership institutions may

enhance cooperation, but they also inherently generate inequality and exclusion. In given contexts – time and space - it may be observed *ex post* that a particular ‘core’ institution is detrimental on a particular economic aggregate, individual income or welfare, or on an economic welfare-enhancing mechanism, such as inter-groups cooperation. Such ‘core’ institutions do not respond to pure economic incentives and exhibit great stability: this cannot be apprehended by the variables of mathematical models or mathematical operations, nor by the analysis of coefficient in econometric regressions: yet such institutions may explain the vicious circles and trapping processes in which some developing regions seem to be caught.

4. Conclusion

The argumentation of this paper has followed a series of steps. It has firstly highlighted some key features of the literature that relates economic performance to ‘institutions’ as well as its limitations in terms of theoretical accuracy. These limitations stem in particular from the translation of ‘institutions’ into variables in mathematical models – these limitations being a key issue as this literature is increasing and preminent in mainstream economics.

Secondly, borrowing from insights of evolutionary psychology, anthropology and development economics, the paper has presented an original theoretical framework. This framework shows that institutions are a firstly a concept, and that in essence institutions are composite entities, which are context-dependent and domain-specific. A consequence of this feature is that the causalities involving both institutions and economic aggregates cannot be captured by models, by their inherent reductionism and by their assumptions that institutional variables can be quantified, that terms of causalities can be *ex ante* identified, and that causalities may be assessed outside of a context. This framework has underscored that institutions involve many heterogeneous cognitive processes, in particular the formation of deontic representations and mechanisms underlying the dissemination of some of these representations (becoming thus ‘social norms’), while others mental representations remain private: causalities implying ‘institutions’ and economic aggregates are *ex ante* indeterminate.

In a final step, this framework has shown that institutions are not only composite entities, but also heterogeneous in terms of evolutionary dynamics and capacity of transformation, with some institutions being more stable than others, notably those governing memberships. While this heterogeneity constitutes an additional limitation to modelling, its understanding is particularly crucial for the analyses of the relationships between economic development and institutions.

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