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Abstract

Over the past two decades, we have seen an impressive expansion of quantitative work in comparative politics. The expanding edifice of quantitative cross-national political research, however, rests upon incomplete as well as insecure foundations of cross-national data. Despite the incessant development of new datasets, data availability continues to be problematic. Despite increasing scholarly attention to the challenges of cross-national measurement, data quality continues to be problematic, too. Drawing upon a wide range of cross-national datasets, this paper offers a structured review of the twin problems of data availability and data quality in the cross-national study of politics. As it argues, these multifaceted problems are not of an individual nature, but of a collective nature. They arise from a kind of market failure: the failure of the academic community to supply in practice the public good of high-quality data it demands in theory.

Resumen

En los últimos veinte años hemos visto una expansión impresionante de estudios cuantitativos en política comparada. El edificio reluciente de investigación cuantitativa, sin embargo, descansa sobre fundamentos incompletos e inseguros de datos cuantitativos. Aun con el desarrollo continuo de nuevas bases de datos, la disponibilidad de datos sigue siendo problemática. Aun con una atención creciente a los retos metodológicos de la medición, la calidad de los datos sigue siendo problemática también. El presente documento ofrece una revisión estructurada de estos problemas gemelos en el estudio comparado de la política. Como se argumenta, no se trata de deficiencias individuales, sino colectivas, que derivan de incapacidades estructurales de la comunidad académica para coordinarse y producir el bien público de datos comparativos de alta calidad. El documento concluye con algunas sugerencias prácticas para remediar las múltiples fallas del mercado académico.
Introduction

Over the past two decades, we have seen an impressive expansion of quantitative work in comparative politics. According to a recent study, the number of quantitative comparative articles in leading academic journals has more than tripled over the past twenty years (Schedler and Mudde, 2008). The increasing reliance on statistical techniques of data processing in the comparative study of politics has been supported by an expanding pool of cross-national political data, at the same time as it has been supporting the steady expansion of this pool. For long, while increasing the scope and sophistication of quantitative analysis, comparative scholars had been paying only “minimal attention to measurement problems” (Bollen and Paxton, 2000: 59). This seems to be changing.

Purportedly pragmatic indifference to issues of data quality, the merry use of dubious measures under the all-forgiving motto according to which “bad data are better than no data,” still reigns the day in some quarters of comparative politics. Yet, more and more quantitative scholars have been recognizing that we subvert the quality of our research if we ignore the quality of our data. They have been investing admirable efforts in building new high-quality data. In addition, they have been starting to methodically analyze the qualities of available data. As a matter of fact, some thematic fields have been producing rich streams of data critique over the past years. Perhaps more than in any other area of research, this has been true in the comparative study of political democratization (among others, see Alvarez et al., 1996; Beetham, 1995; Bogaards, 2007, 2008; Bollen, 1993; Bollen and Paxton, 2000; Casper and Tufis, 2003; Collier and Adcock, 1999; Collier and Levitsky, 1997; Coggedge, 2007; Elkins, 2000; Gerring, 2008; Hadenius and Teorell, 2005; Inkeles, 1991; Munck and Verkuilen, 2002).

The incipient methodological debate on issues of cross-national measurement has made clear that the expanding edifice of quantitative cross-national political research has been resting upon problematic foundations of cross-national data. These foundations are incomplete as well as insecure. Despite the incessant development of new datasets, data availability continues to be problematic in many ways. Despite increasing scholarly attention to the challenges of cross-national measurement, data quality continues to be problematic in many ways, too. The present paper offers a structured review of these twin problems of data availability and data quality.

1 Outstanding examples of methodologically sophisticated and self-aware datasets are the European Social Survey (www.europeansocialsurvey.org), the Afrobarometer surveys (www.afrobarometer.org), the Comparative Welfare Entitlements Dataset by Lyle Scruggs (www.sp.uconn.edu/~scruggs/wp.htm), the European Protest and Coercion Data by Ronald Francisco (http://web.ku.edu/ronfran/data/index.html) and the Research Network on Gender Politics and the State Data Set (http://libarts.wsu.edu/polisci/rngs).
in the cross-national study of politics. As it argues, these multifaceted problems are not of an individual nature, but of a collective, disciplinary nature. They arise from a structural failure of the academic community to coordinate and to supply in practice the public good of high-quality cross-national data it demands in theory.

**Problems of data availability**

Even though the number of cross-national political datasets has been growing dramatically over the past decades, the quantitative study of comparative politics remains seriously constrained by the limited availability of cross-national data. We wish to highlight four structural problems: the private provision of political data, the epistemological gap between theory and methods in comparative politics and practical problems of data access and data integration.

**The private provision of data**

The expanding forest of cross-national political data grows within a peculiar, heterogeneous landscape of data providers. In the realm of economic and social information, the infrastructure of data collection is largely public, centralized and institutionalized. In order to realize its wide ranging ambitions of control, the modern panoptic state has been developing a wide range of instruments of societal observation. From its very inception, the state’s triple monopoly of legitimate coercion, taxation and education has been accompanied by its monopoly of social measurement. Today, international organizations like the International Monetary Fund and the World Bank work as central data gathering agencies that collect state-produced economic and social data and integrate them into cross-national time series with worldwide coverage. Overall, despite recurrent technical concerns about data quality, consistency and comparability in numerous fields of economic and social measurement, both academic and political data users tend to be perfectly happy to work with the cross-national data international public agencies provide on a regular basis.

The infrastructure for the development of political data looks very different. With respect to political institutions, actors and processes, we lack both a tradition of public data construction by national states and a tradition of coordinated data collection by international organizations.\(^2\) “Seeing like a state” (Scott, 1998) entails *not* seeing most of the politics that goes on within

\(^2\) Both the information assembled by secret services and electoral data form partial exceptions. In non-democratic regimes, the former are abundant but secret and the latter unreliable. In electoral autocracies, states do not release electoral information in an accurate, precise and complete ways (for a review of available cross-national datasets on election results, see Gandhi, 2008).
the boundaries of national states. The potential reasons for the blind political spots the panoptic state chooses to cultivate are manifold. The fact is that the provision of cross-national political data, rather than being public and centralized, is predominantly private and dispersed.

A broad range of actors are involved. National governments as well as international organizations play a minor role only (though the former play a major role in funding academic data development). Some business firms, such as Political Risk Services, Global Insight and Gallup International, create political and politically relevant data and sell them primarily to the business community and only to a much lesser extent to the academic community. The two main engines of cross-national data development for the empirical study of politics are civic associations and academic researchers. Non-governmental organizations, such as Freedom House, Transparency International, Reporters without Borders, the Heritage and Bertelsmann Foundations, have been sponsoring some of the most prominent datasets in comparative politics. Yet the bulk of political datasets is created by the academic community—individual scholars, research teams, university centers, research networks and formal organizations of data generation grounded in academic research.

The predominantly private supply of cross-national political data entails undeniable advantages. Most crucially, it grants data developers degrees of political freedom they would hardly enjoy as members of national or international bureaucracies. Private suppliers of cross-national political data suffer from countless constraints, yet rarely from political ones. They work under limitations of time, money, personnel, language skills, cultural knowledge and information sources. Yet commonly they do not have to internalize external political pressures on what they can and cannot measure. Unburdened by the manifold political and diplomatic considerations that restrain public officials, private data developers are (mostly) free to measure the concepts they want to measure, to define and operationalize them the way they want, to choose the types of evidence, sources and indicators they find fit, to hire and consult the scientific experts and political actors they need to and to rate and rank countries in conclusion as their empirical evidence compels them to. However, leaving the provision of the public good

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3 One exception that proves the rule of low involvement in political data construction by inter-governmental agencies are the yearly Eurobarometer surveys conducted by the European Commission since 1973 (http://ec.europa.eu/public_opinion). The role of international agencies is often limited to the integration and aggregation of available cross-national data. Besides, some of the databases they publish seem to represent personal initiatives by senior policy researchers within these institutions, rather than institutional projects properly speaking. Examples are the two most prominent political datasets associated with the World Bank: the Dataset on Political Institutions, led by Phil Kiefer and his team and the World Governance Indicators, developed by Daniel Kaufmann and his collaborators.

4 Given the high financial, technical and logistical demands of survey data collection, recent advances in the study of comparative public opinion, more than in any other field of research, have been dependent on the foundation of formal academic networks of data development, such as World Values Survey, Global Barometers, the Comparative Study of Electoral Systems and the European Social Survey.
of political data in the hands of private suppliers has its downsides too. Above all, as classically predicted by our theories of collective action (Olson, 1965), the public good ends up undersupplied.

The undersupply of data

The quantitative study of comparative politics suffers from a structural shortage of data. For most things we would like to have cross-national data on we don’t. The stark diagnosis offered by José Antonio Cheibub about a decade ago is still essentially accurate: While “we are living through a period of unprecedented data abundance,” in many areas of research, “we simply lack the data, even on the most basic, observable, uncontroversial political events” (1999: 21 and 23). “The simple fact is for most problems in comparative politics research... comparable data are scarce” (McBride and Mazur, 2006: 6).

Given the absence of a public infrastructure of political data production, the underproduction of data looks like a simple symptom of market failure. When private actors produce public goods, their incentives tend to be aligned in a way that prevents them from supplying these goods at an optimal level. The production of cross-national political data is no exception. Developing original data is a rewarding enterprise, often paving the way into leading academic journals (see Schedler and Mudde, 2008). Yet, it is a costly enterprise, too, demanding, if nothing else, huge investments of time. Accordingly, individual researchers usually cannot afford generating original data unless they produce them as temporary private goods by withholding publication until they manage to get their own work out. Commercial firms privatize political data on a permanent basis, offering them as merchandise rather than public good.

Along with supply-side reasons, the scarcity of data has demand-side origins too. Just like goods and services in consumer markets, political data are not scarce in any absolute sense, but scarce in relation to demand. The ratio of the data we have to the questions we ask is low because of excessive

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5 Ironically, while the private provision of political data tends to generate scarcity, it also contains the opposite tendency of producing overabundance and waste. Given (a) the rising demand for cross-national measurement and (b) the lack of coordination among private data producers, we see more and more instances of inefficient duplication and even multiplication of efforts among scholars who develop data in mutual isolation roughly similar data in a simultaneous fashion. Even if these data intend to measure the same broad concepts, and even if they are publicly available, it is often difficult to merge them into integrative datasets. Being similar among each other, they are not identical. They often differ in their spatial and temporal coverage. More importantly, they usually differ in their methodological micro-choices: their formal definitions, their measurement techniques, their choice of primary sources, their units of analysis, their operational rules, their measurement scales, their coding procedures and their publication formats. Emergent fields of study are most susceptible to witness the competitive multiplication of datasets. For instance, in the flourishing study of non-democratic elections, we do not possess widely accepted cross-national time series data on the integrity of elections. What we do have, though, is a fragmented set of datasets on electoral fraud, some public, others private, some opaque, others transparent, some global in coverage, others regional, some broad, others narrow in their conception of fraud (for a partial review, centered on the electoral fraud measure of the World Bank Database on Political Institutions, see Schedler, 2009).
demand: our theories demand more than our methods are able to deliver. The mainstream of contemporary comparative politics carries schizophrenic traits. It is caught in a deep tension between its theories based on rational explanation and its methods based on factual observation. Our enterprises of theory building rest upon subjective intangibles, like factual beliefs, interests and preferences, expectations, reputation, risk perception and aversion, credibility and so forth. By contrast, our enterprises of theory testing rest upon quasi-objective observables, like electoral outcomes, institutional rules, political decisions, acts of protest and rebellion, the composition of governments and legislative assemblies and so forth. Our theories are strictly interpretive, our methods strictly positivist (with the tension between the two being as resistant to public reflection as the oldest sexual taboos).

The point here is not just that our rational explanations demand information that is practically impossible to obtain for large numbers of countries, within given limitations of available cross-national information sources. The point is that our theories make information demands that are methodologically difficult to fulfill, given the restrictions we place on the nature of legitimate evidence. As a consequence, we often end up testing our theories with data that do not fit them. For example, while dominant theories in the study of ethnic politics embrace social constructivism, dominant datasets on ethnic politics conceptualize and measure ethnic groups in static and reified ways that are essentially incompatible with constructivist assumptions (see Kocher and Mylonas, 2008: 3-9).

Data access
Descending from the heights of epistemological discussion we would wish to highlight two more mundane concerns regarding the practical availability of data: Even those datasets that do exist are often not easy to access; and even those that are accessible are often not easy to integrate. Data produced by either international agencies or non-governmental organizations are usually in the public domain. The same applies to proprietary data constructed by commercial firms, although the monetary thresholds they raise for access to their products (sometimes of dubious methodological quality) are often prohibitive for about everybody in the academic community except the most affluent universities. The public availability of data is most problematic among academic data producers.

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6 Positivism means many things to many people. In my view, it essentially involves a strong methodological commitment to observation. What we see is what we believe in. For a similar conception, see Johnson (2006).

7 Limitations of access to commercial data sometimes impose sensible limitations on the substantive and methodological scope of research. For instance, the slow development of the comparative study of public opinion in Latin America has been attributed, among other factors, to financial and bureaucratic hurdles that have hampered access to individual-level data of the Latinobarometer surveys (www.latinobarometro.org). In addition, the proprietary nature of commercial data limits the critique and replication of empirical research based on these data. The same applies for aggregate data that either partially or fully based on proprietary data, such as the World Bank
In principle, the principle of publicity is accepted by everyone in the academic community. Scientific progress depends on critique and critique depends on transparency. If access to the empirical evidence that sustains scholarly inferences is blocked or restricted, “peer review is impossible” (Thomas, 2007: 28). The concrete application of the abstract norm of publicity, in particular the length of the embargo period authors may legitimately impose after completion of their dataset, has been a matter of mild controversy (see Widner, 1999: 18-19). The normative consensus nevertheless holds: social scientific data should be made public (at the latest) at the moment of publication of the empirical work that is based on these data. However, despite this shared commitment to the principle of public access, the discipline of comparative politics thrives upon publishing routines that license its regular breach in practice. Despite the free availability of customer-friendly web applications like Dataverse that allow academic journals to store and publish replication datasets on their websites in a secure and permanent manner, only very few journals in political science, like the Journal of Conflict Resolution and the Journal of Peace Research, actually oblige their authors to make replication datasets available upon publication and to do so at the place where readers look first: the journal website (as well as at the sites of electronic publication).

Data integration
In those cases in which cross-national political data are publicly available, potential users have to surmount two practical obstacles to effectively access them. First, they have to encounter the data in the vast territories of cyberspace where most of them are posted in a decentralized fashion. Then, they have to integrate them into datasets alongside other political and non-political data. The first task of dataset discovery is reasonably easy for data on the Internet. Web search engines do a good job in identifying specific datasets if one knows what to look for. Otherwise, a fair number of web portals offer (more or less comprehensive and more or less structured) compilations of links to cross-national political datasets and search engines.

Public data archives continue to provide access to huge numbers of datasets, although in the age of the Internet their main function seems to reside in the

Governance Indicators that aggregate quantitative information from multiple sources, including confidential sources and commercial data providers (see Thomas, 2007: 4 and 28).

8 The Dataverse Network is sponsored by the Institute for Quantitative Social Science at Harvard University (http://dvn.iq.harvard.edu)

9 See, for example, the lists of political datasets compiled by the Organized Section on Comparative Politics of the American Political Science Association (www.nd.edu/~apsacp/data.html) and by the Graduate Program in Comparative Politics at the University of Michigan (http://polisci.lsa.umich.edu/grad/comparative/data.htm).
storage and dissemination of nation-specific data, rather than cross-national data.\footnote{The Inter-University Consortium for Political and Social Research (ICPSR) is of course the Grand Dame of us social science data archives (www.icpsr.umich.edu). The Council of European Social Science Data Archives (CESSDA) coordinates the fragmented landscape of European national data archives (www.cessda.org). The Data Archive for Applied Research in the Social Sciences (BIIACS) at CIDE in Mexico City represents a recent effort to develop a region-wide Latin American archive for social science data (http://biiacs.cide.edu).}

The second task of dataset integration poses barriers to the productive use of available data that are seldom recognized. In comparative politics, pure replication studies are almost non-existent. For better or worse, practically nobody re-uses given datasets as they are — either rerunning statistical procedures to check the correctness of reported results or altering model specifications to check their robustness. Almost invariably, the use of comparative political data requires merging them into other datasets. The blending of data allows us to evaluate the solidity of previous empirical research, to test a broader range of hypotheses and, last but not least, to subject competing datasets to systematic evaluation. The methodical evaluation of consistency among datasets, the comprehensive analysis of missing data, the estimation of bias and the use of multiple indicators in statistical analysis all require the integration of data from diverse sources into one single dataset (see Bollen and Paxton, 2000; Casper and Tufis, 2003; Gandhi, 2008; Ríos and Staton, 2008; Skaaning, 2008; Teorell and Lindstedt, 2008).

Datasets that employ different units of analysis — such as country years (the most common format in comparative politics), political regimes, elections, electoral systems, governments, policy debates, civil wars, or acts of terrorism — are inherently difficult to integrate. But even the merger of datasets that are nominally based on identical categories of cases poses intricate difficulties. The private, dispersed production of political datasets has evolved without recourse to any instance of coordination to define industry-wide technical standards. In consequence, we stumble continually over three recurrent obstacles to the integration of cross-national datasets.

a) Divergent case definitions: Even when datasets employ the same abstract unit of analysis at an abstract level, they may still diverge in the concrete definition of their universe of cases. For instance, existing datasets on government duration differ in subtle but consequential ways in their precise definition of inaugural and terminal events (see Jäckle, 2008).

b) Divergent case identification: Even when datasets conceptualize their units of analysis in identical ways, they may still come to identify non-congruent universes of cases within the same geographic and temporal coverage. For instance, global datasets on elections contain remarkable inconsistencies not only in the results they report, but in the elections they register (see Gandhi, 2008).
(c) *Divergent case codes*: Even when datasets identify the same cases, we may have difficulties knowing it since they may not use common codes to identify cases. For instance, the major datasets on civil war classify, count and measure very similar sets of events, actors, processes and outcomes. Yet, since they do not use common sets of case codes, it is in numerous instances hard to tell whether they are actually registering the same conflict or set of actors (see Pinfari, 2008: 10-11).

Datasets that are built around the same abstract units of analysis, yet differ in their concrete definition, identification and coding of cases, cannot be merged in an automatic fashion. If feasible at all, their integration requires fair amounts of manual work and informed judgment. Even in areas where the fusion of data presents few technical or substantive obstacles (as with standard cross-national datasets in country-year format), institutional initiatives of cross-national data integration, like the compilation of the Quality of Government Data by the University of Gothenburg in Sweden (www.qog.pol.gu.se), do a huge service to the academic community.11

**Problems of data quality**

The availability of cross-national data sets outer limits to the scope of quantitative comparative research, the quality of available data outer limits to its solidity. Concerns about data quality have been widespread in comparative political research. They have been raised with respect to each of the four traditional pillars of good measurement: validity, reliability, precision and accuracy.12

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11 Naturally, the integration of national, sub-national and individual-level data into cross-national datasets presents even more dazzling challenges to the comparative researcher. Building higher-level datasets from lower-level ones often carries the price of definitional inconsistency. Two well-known examples of additive cross-national statistics derived from inconsistent national data are international poverty and unemployment statistics. Both are based upon figures provided by national governments who use divergent operational definitions of the underlying concepts (see Helwege and Birch, 2007; Rohlfing, 2008: 9). In a similar manner, assembling comprehensive datasets by fusing variables from different data sources of unequal spatial or temporal coverage is likely to produce inconsistent data patchwork. For instance, the construction of simple time series of aggregate national results from public opinion surveys conducted at different points in time entails pervasive problems of comparison. Even when they inquire into the same theoretical constructs, the leading comparative public opinion surveys (not to mention the countless non-comparative national ones) contain innumerable fine differences among each other in their concrete phrasing of questions and answers. Montero et al. (2008) offer a systematic map of these instrumental differences with respect to religiosity, Rubal and Ferrín (2008) with respect to social and institutional trust.

12 For insightful treatments of the pathway from conceptualization to measurement, with applications to cross-national political data, see Collier and Adcock (1999), Munck and Verkuilen (2002) and Rohlfing (2008).
Validity
The production of high quality data presupposes clear and consistent definitions. Good conceptualization is the anchor of good measurement. If we fail to define from the very beginning what it is we pretend to measure, we will fail to know at the end of the day what it is we have been measuring. Opaque definitions cannot but engender opaque data. Conceptual uncertainties are certainly not universal in the universe of cross-national political data. Yet, they do afflict some central datasets as well as central areas of study.

Some datasets content themselves with intuitive understandings of the categories they measure. As it appears, they assume their meaning to be self-evident and thus refrain from explicating their conceptual choices. Few databases renounce the systematization and explication of their core concepts as candidly as the Global Terrorism Dataset (GDT). The database its authors present as “the most comprehensive unclassified data base on terrorist events in the world” goes about its business of collecting tons of information about “terrorist incidents” in the contemporary world employing (since 1998) “no set definition” of terrorism, only a loose “configurable approach covering several definitions of terrorism”.¹³

It is more frequent to see data authors avoid systematic definitions in more implicit manners. For example, Alberto Alesina and his co-authors (2003) do not explain the concept of ethnicity that motivates their widely used measures of ethnic fractionalization. Other datasets do not offer abstract conceptualizations that would allow to situate their measurement categories within larger semantic fields and traditions of research. Instead, they offer brief operational definitions only. For instance, the Tony Banks Cross-National Time-Series Data Archive provides concise definitions of “conflict events” like anti-government demonstrations, general strikes, riots and revolutions without anchoring them in the field of contentious politics. Reliance on thin operational definitions bears the advantage that the resulting measures may be open for use to scholars working within diverse theoretical traditions. It has the disadvantage that these definitions may be incompatible with major theoretical traditions.¹⁴

¹³ The Global Terrorism Dataset (GDT) is sponsored by National Consortium for the Study of Terrorism and Responses to Terrorism (START) of the US Department of Homeland Security, developed by the Center for Terrorism and Intelligence Studies (CETIS) and hosted at the University of Maryland (www.start.umd.edu/data/gdt). In practice, its non-definitional or multi-definitional approach involves a very thin definition of terrorism. Its only necessary attribute is the use of violence. In the fashion of radial concepts (Collier and Mahon, 1993), three other attributes are considered contingent (two of them must apply): non-private goals (political, economic, religious, or cultural), communicative goals (towards audiences beyond immediate victims) and illegality (the violation of international humanitarian law) (see the”Methodology” section of the gdt webpage, subsection “Study Design”).

¹⁴ For instance, cnts conceptualizes “revolutions” in a manner that is much broader than our common understandings of political revolutions. It comprises (awkwardly) both successful and attempted changes in government (not society, neither state, nor regime) by “illegal or forced” means, as well as both successful and
Still other datasets do introduce their definitions at higher levels of abstraction, yet fail to develop them in clear and consistent ways. Often refraining from embedding their conceptual decisions in the scholarly literature, they end up operating on the basis of “idiosyncratically and vaguely defined and unclearly differentiated, concepts” (Munck, 2005). The World Bank Worldwide Governance Indicators represent a supreme example of conceptual nonchalance (http://info.worldbank.org/governance/wgi). Parting from a broad intuitive background idea of political governance, its authors postulate the existence of six (broadly defined and broadly overlapping) sub-dimensions: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and corruption control. Firmly following their intuition, they assign a wide assortment of available data to these conceptual boxes, standardize and weigh them, and aggregate them statistically in a rather opaque manner through unobserved component analysis.\footnote{Unclear conceptualization subverts measurement validity. Partial conceptualization, though less determinative, threatens the validity of political data too. In broad fields of research that are defined by complex concepts (as well as by complex realities), cross-national data often do not pretend to measure more than selected sub-dimensions of the overarching concept. For instance, most datasets that strive to capture the comprehensive, multi-dimensional concept of the rule of law emphasize partial aspects of Rechtsstaatlichkeit only —such as the absence of state violence (repression); the control of societal violence (crime and rebellion); the protection of political rights, civil liberties, or property rights; the formal structure or actual operation of the judicial system (court independence and impartiality); the perception of judicial systems by citizens, elite actors, or external agents; and the compliance of citizen or elite actors with the law. Not infrequently, data producers sell (and data users buy) such truncated measures of the rule of law as full measures of the rule of law. For the sake of measurement validity, they should be accepted as what they are: partial measures of (more or less) specific sub-dimension of a complex concept - a concept that may be “too big” to be measured anyway (Ríos and Staton, 2008: 4).\footnote{For incisive critiques of the Global Governance Indicators, see Kurtz and Schrank (2008), Munck (2005), Ríos and Staton (2008) and Thomas (2007).}}

Unclear conceptualization subverts measurement validity. Partial conceptualization, though less determinative, threatens the validity of political data too. In broad fields of research that are defined by complex concepts (as well as by complex realities), cross-national data often do not pretend to measure more than selected sub-dimensions of the overarching concept. For instance, most datasets that strive to capture the comprehensive, multi-dimensional concept of the rule of law emphasize partial aspects of Rechtsstaatlichkeit only —such as the absence of state violence (repression); the control of societal violence (crime and rebellion); the protection of political rights, civil liberties, or property rights; the formal structure or actual operation of the judicial system (court independence and impartiality); the perception of judicial systems by citizens, elite actors, or external agents; and the compliance of citizen or elite actors with the law. Not infrequently, data producers sell (and data users buy) such truncated measures of the rule of law as full measures of the rule of law. For the sake of measurement validity, they should be accepted as what they are: partial measures of (more or less) specific sub-dimension of a complex concept - a concept that may be “too big” to be measured anyway (Ríos and Staton, 2008: 4).\footnote{For a critique of one-dimensional indicators that pretend to measure multi-dimensional concepts, see Coppedge (2007). For systematic reviews of cross-national data on the rule of law, see Ríos and Staton (2008) and Skaaning (2008).}
Reliability
In the world of physical objects and standardized units of measurement, measurement is traditionally understood as “the practice of attempting to identify the magnitude of a quantitative attribute by estimating the ratio between that magnitude and an appropriate unit” (Michell, 2005: 678). In the social sciences, we lack standardized units of measurement for most purposes of quantification. Commonly, we cannot even tell how such units of measurement might even be conceived in the first place. Thus, for the enterprise of social measurement, the wider, classic definition offered by psychologist S. S. Stevens seems more appropriate: “Measurement is the assignment of numbers to objects or events according to rules.”

The normative criterion of measurement reliability aims at reducing non-systematic measurement error. In the realm of physical measurement, it demands technical instruments competent agents can apply with low margins of error. In the realm of social measurement, it demands bureaucratic rules competent agents can apply with low margins of error. Reliable social measures are impersonal measures. They do not vary with the identity of the person who performs the act of measuring. Reliable procedures of social measurement produce (almost) identical results (with low random error) when different people assign numbers to identical observations on the basis of identical rules of measurement.

In general, although generally not recognized by methodological debates, problems of reliability vary according to the type of data under review. In the field of cross-national political datasets, three kinds of data present distinct challenges to measurement reliability: factual data, subjective data and judgmental data. Factual data in comparative politics quantify specific properties of concrete political phenomena that are open to visual inspection—in particular, formal political institutions (such as constitutions, parties, legislatures and courts), public political events (such as elections, the termination of governments, military coups, armed rebellions and street protests) and the outcomes of political decision making (such as wage policies, welfare state regimes, the regulation of campaign finance, pension reforms and political repression). Subjective data collect personal perceptions individuals drawn from variously defined groups carry with respect to political

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17 Cited in Neuenfeld (2002: 111). Note that Stevens’ rule-based rather than unit-based definition does not distinguish measurement from counting (the determination of frequencies of empirical phenomena that are identified as members of the same conceptual category).

18 Although reliability is a standard criterion of data quality, some authors profess (in private) remarkable indifference to measurement error when they declare bad data to be better than no data (as the common saying has it). No reasonable actor would conduct everyday life according to such indifference towards informational uncertainties. Imagine authoritative decision-makers using this rationale: the court condemning the accused in a murder trial on the basis of rumor and false witness, the university teacher grading her students on the basis of their performance in kindergarten, the us president invading a foreign country on the basis of advice provided by misinformed exiles and culturally illiterate secret service agents. For many practical matters, noise is worse than silence, bad data worse than no data. Why should we expect this to be different in theoretical matters?
phenomena. *Judgmental* data aggregate overall judgments experts reach with respect to abstract properties of complex political phenomena.

*Factual data.* Standard methodological advice that tells us to base our measurement decisions on “observations, rather than judgments” (Przeworski *et al.*, 2000: 55) applies best to factual data. It presupposes that we divide the process of measurement into two phases. In a first judgmental stage, we make all the judgments necessary to select the empirical phenomena we admit as observational evidence and to devise the coding rules that allow us to assign numbers to cases. In a second observational stage, by contrast, we suspend our judgmental faculties in order to apply our self-made rules of codification in a quasi-bureaucratic fashion. In this second stage, we obtain reliable measures to the extent that *(a)* we hold observations constant across repeated acts of measurement, *(b)* our coding rules are complete, precise and consistent and therefore permit a mechanical (non-discretionary, non-judgemental) assignment of numbers to observations and *(c)* our coders are competent observers and rule followers. Factual data in comparative politics raise doubts about their reliability to the extent that their sources of information, their coding rules and their coding processes are opaque.

*(a) Opaque sources:* Reliability is a standard we demand from the repeated application of measurement procedures to invariant empirical phenomena. If we apply identical procedures to varying phenomena, we have no reason to expect the results to be reliably similar. Unfortunately, cross-national political dataset often fail to disclose their information sources in a systematic and transparent manner. Frequently we learn that dataset authors rely upon a certain range of information sources, without getting to know the precise information bases that motivated specific coding decisions. We learn about the rough contours of their camp of vision, but cannot know what exactly they have been looking at when taking concrete coding decisions. In the end, we cannot relate numbers to observations in a precise fashion. For instance, in its more recent annual reports on the state of freedom in the world, Freedom House publishes selective listings of more than 200 periodical publications and over 120 organizations that go into its global estimates of political rights and civil liberties (see, for example, Piano, Puddington and Rosenberg, 2006: 902-906). Replication is impossible under such conditions of observational opacity. Granted, Freedom House provides judgmental, not factual, data. Yet it presents no more than a rather extreme version of a problem that is pervasive among factual political datasets as well. Even data collections that tap few primary sources only are seldom as transparent as they could (and should) be. For instance, the Tony Banks CNTS conflict event counts are based on one single periodical source: *The New York Times*. Nevertheless, we never learn which the concrete reports on concrete events are that sustain the annual counts of conflict events the dataset offers.
(b) Opaque rules: Anyone who has tried to translate national political facts into cross-national measures will have stumbled across the numerous difficulties that tend to arise even in simple cases, when we try to apply apparently clear and consistent coding rules to apparently well-defined and readily observable political phenomena. Political realities tend to carry a wider potential for ambiguities than we anticipate when drawing our conceptual boxes and boundaries. In addition, information about national political realities across the world is often uneven, uncertain, incomplete, unreliable and inconsistent. To attach precise numbers to muddled realities without falling back on their personal judgment, coders need carefully crafted rules of boundary delimitation, rules of exception, rules of adjudication between information sources and rules of ignorance management.

Remarkably, even some prominent, widely used cross-national datasets guard hermetic silence about the concrete coding problems they are bound to encounter and the rules that permit to handle them in a non-arbitrary fashion. The political conflict data collected by the Tony Banks CNTS team may again serve to illustrate the point. This dataset contains the only longitudinal cross-national measures on contentious collective action we have in comparative politics. It reports annual counts of eight types of conflictive events: government crises, opposition purges, anti-government demonstrations, general strikes, political assassinations, riots, guerrilla warfare and political revolutions. Each of these categories refers to rather complex and disorderly empirical phenomena for which the CNTS codebook offers no more than short operational definitions, as if their application could be entrusted entirely to common sense. Yet its nominal categories are far from self-explanatory. They entail concepts of unclear boundaries (like “the use of physical force” that defines riots or the “high government officials” who are the targets of political assassinations), estimates of probability (as with respect to threats of regime collapse that define government crises), attributions of motives (like the “opposition to government policies” that define anti-government demonstrations or the political motivations that define political assassinations) and the identification of unsuccessful actions on the basis of original intentions (like murder attempts that count as political assassinations). In the absence of precise coding rules that settle the observational uncertainties raised by these conceptual choices, the replication of such data is hazardous and their reliability evasive.

(c) Opaque procedures: If either information sources or coding rules are semi-transparent only, we cannot properly replicate the resulting measures - and if we cannot replicate them, we cannot check their degree of reliability. Unfortunately, only few cross-national political datasets employ multiple coders and conduct and report reliability tests. In general, disciplinary

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19 Two examples are the Cingranelli-Richards Human Rights Dataset that has been reporting reliability tests (Krippendorff’s r-bar measure) for each of its measures since 2004 and the Bertelsmann Foundation that has
reporting standards on coding procedures are deficient. With few exceptions, data authors provide no or partial information only on coder training, the number and identity of coders, their instructions and procedures, their degree of convergence and the treatment of divergent coding decisions.

**Subjective data.** Measurement procedures that elicit and assign numbers to expressions of private preferences and perceptions by individuals are well established in the comparative study of politics. Since its invention by Gabriel Almond and Sidney Verba (1963), the comparative study of public opinion has been the most vibrant field of cross-national research grounded in subjective measures. Yet, subjective measures have been extracted not only from citizens at large, but from smaller groups as well, such as legislators, foreign investors and business people. Frequently, such data strive to tap the “privileged” perceptions of likely victims of illegal transactions, such as corruption and crime, which are by nature difficult to observe otherwise.

The reliability of subjective data is not problematic per se. It simply depends on the controlled nature (context-independence) of the accompanying procedures and the representative nature of the underlying sample. Unless procedures are constant and unobtrusive, individual responses will vary every time we ask. Unless samples are representative, aggregate measures will vary every time we collect them. For decades, survey researchers have been refining their sampling techniques, survey design and interviewing procedures. Cross-national surveys like the World Values Surveys and the Global Barometer surveys have been striving hard to ensure their international partners follow recognized methodological standards. To the extent that their technical foundations have been transparently solid, the reliability of cross-national political surveys has been a much lesser concern than their validity and comparability. Subjective measures of elite attitudes, by contrast, tend to rest upon less firm and more opaque methodological foundations, which makes it hard to estimate their degree of reliability. Such measures could profit substantively from incorporating the long tradition of technical sophistication that distinguishes the comparative study of public opinion.

**Judgmental data.** Scholars who wish to attach numbers to complex aspects of national realities for the purpose of cross-national comparison, are often reluctant to assume the dramatic loss of information that occurs unavoidably when we follow standard methodological advice and substitute published (better than nothing) the overall percentage of coder agreement for its 2003 Transformation Index (www.bertelsmann-transformation-index.de/).

20 For example, the annual Corruption Perception Index published by Transparency International (www.transparency.org) is in part built from subjective measures (although judgmental data account for a larger part of its underlying sources).

21 For overviews on cross-national public opinion research, see Heath, Fisher and Smith (2005) and the symposium on “The Proliferation of Comparative Survey Research” ASPA-CP Newsletter 15/2 (Summer 2004). 5–25. For a balanced assessment of the European Social Survey, the widely-recognized “Rolls Royce” of cross-national survey research, see Orvik (2008).
observational fragments ("proxies") for comprehensive realities. Instead, they ask experts, that is, professional observers who are assumed to possess superior knowledge, competence and judgment in determinate fields of inquiry, to squeeze their broad knowledge of specific cases into thin, synthetic numbers. Since experts may not fully converge in their assessments, data producers must have some way of aggregating their diverging judgments. They may do so either through additive procedures (the calculation of arithmetic means) or deliberative procedures (the reconciliation of discrepancies through communication). Standard textbook advice of adjudicating among diverging coding decisions through random procedures makes little sense in the case of expert judgments.22

In contrast to subjective measures, expert judgments are not supposed to be subjective, but intersubjective: grounded on public facts and public reasons, defensible in the face of critique. In contrast to factual measures, expert judgments are not supposed to be impersonal. Coders of factual observations are fungible, experts are not. While the identity of the former must not matter for the results of factual measurement, the identity of the latter is constitutive for the construction of judgmental data. Of course, judgmental data have a terrible press among quantitative methodologists who tend to describe (and disqualify) them as “subjective” (Bollen and Paxton, 2000) and to issue urgent calls for “bringing objectivity back in” (Kurtz and Schrank, 2008: 8). And it must be said that judgmental data often do suffer from multiple shortcomings that threaten their reliability, such as the lack of procedural transparency, a poor selection of experts, loose operational guidelines and the absence of shared standards and common anchoring points.

Discussing (and resolving) the methodological challenges of judgmental data lies beyond the scope of the present piece. However, I do wish to emphasize (controversially) that judgmental measurement needs not be synonymous with unreliable measurement. To improve the quality of our judgmental data we could begin by looking beyond our disciplinary boundaries and see how others construct their judgmental data. In particular, I wish to suggest, we could learn from the way “judgmental” disciplines of sports set up their juries. To ensure high-quality measurement of complex performances, Olympic gymnastics, for instance, employs a sophisticated system of checks and balances that includes: a careful selection of professional judges, precise and detailed coding rules, multiple teams of coders, common information (through the recording of performances and their display on computer screens), deliberative coding within teams (by allowing collective discussion before individual judges take their decisions), the public

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22 Most expert surveys rely on additive aggregation. Examples are the Legislative Power Index assembled by Steven Fish and Matthew Kroenig (Fish, 2006) and the data on subnational regimes in Argentina constructed by Carlos Gervasoni (2008). By contrast, Freedom House scores of political rights and civil liberties and the Bertelsmann Transformation Index exemplify judgmental data that arise from layers of expert deliberation.
nature of individual votes (roll call voting), the elimination of outliers (highest and lowest scores), additive coding across teams (by averaging results) and the known, disciplining presence of critical audiences with access to identical observations. While never immune to criticism, the resulting assignment of numbers to empirical realities is much more transparent, reliable and resilient to critical interrogation than common judgmental data in comparative politics.

Precision and accuracy
Cross-national political data are almost never as precise as we would like them to be. For most purposes of quantitative research, we are (almost) condemned to methodological incongruence. We preach thick concepts, yet practice our statistical tests on the basis of thin measures. More precise measures are possible, yet developing them tends to be an extraordinarily resource-intensive enterprise. Emergent strategies of data refinement, that aim at bridging the gap between the coarse cross-national data we have and the demands of conceptual differentiation our theories make, strive to ground quantitative data construction in the contextual knowledge of case experts. This might be achieved either through the coordinated conduct of fieldwork by collaborative research networks or through the translation of existing case studies into quantitative comparative formats (see McBride and Mazur, 2006; Mazur and McBride, 2006; Poteete and Ostrom, 2005; Johnston, 2008).

Just like concerns about precision, worries about potential bias, i.e. the presence of systematic measurement error, are widespread in cross-national political research. The two main threats to the accuracy of comparative political data are political bias and uneven information. One common source of suspected political bias is the reliance on governmental sources of information. For example, data on human rights violations that are derived from annual US State Department’s Country Reports on Human Rights Practices, just like data on religious freedom based on US State Department’s International Religious Freedom Reports, are liable to suspicions about US national security concerns that may have been distorting the information contained in these primary sources. One common source of uneven coverage is the reliance on single information sources, such as national newspapers. For example, the Tony Banks CNTS political conflict data tap only one news source, The New York Times. Given the journalistic criteria of relevance that determine the news coverage of print media, dependence on a single national

23 On the distinction between “thick” and “thin” concepts and measures, see Coppedge (2007), who advocates the development of multi-dimensional indicators that are congruent with the multi-dimensional concepts we use (see also Gerring, 2008).

24 For instance, the two major cross-national time-series data on human rights violations use US State Department reports: the Cingranelli-Richards Human Rights Dataset (http://ciri.binghamton.edu) and Mark Gibney’s Political Terror Scale (www.politicalterrorscale.org). The same is true for the International Religious Freedom Data contained in the Association of Religion Data Archives (arda) (www.thearda.com/Archive/CrossNational.asp).
source is bound to produce serious under-reporting of conflict events in small countries of low geostrategic relevance, of conflict events at subnational levels and of conflict events in conflictive countries (whose n\textsuperscript{th} anti-government demonstration will be of little interest to international news agencies).\textsuperscript{25}

\textsuperscript{25} For insightful analyses of source bias in comparative politics, see Bollen and Paxton, 2000: 72-77) and Rohlfing (2008).
Conclusions

The preceding inventory of data problems is not meant to drive us into scholarly resignation. To the extent that these problems are collective, though, the solutions must be collective, too. It is always edifying to exhort data producers to manufacture their data according to highest standards of quality. Well-intentioned appeals to their good intentions are welcome. Yet, if we wish to elevate the overall availability and quality of cross-national political data, we have to involve the entire academic community, not just the self-sacrificing minority of data suppliers. Relevant actors are data users (the producers of quantitative work), readers (the consumers of quantitative work), journals and presses (the publishers of quantitative work), professional associations, national funding agencies and international organizations. Besides, since data problems are multifaceted, solutions have to be multifaceted, too. To structurally improve the provision of the public good of high-quality data, we have to combine mutually reinforcing strategies that include: changes in patterns of data demand, the transformation of incentive structures, the mobilization of networks and financial resources, the reinforcement of scientific norms and the mobilization of normative resources, the improvement of information environments, the reinforcement of accountability mechanisms and organizational innovation. As a matter of course, the following wish list addressed to various groups of actors is meant to be provocative, not definitive.

- Individual scholars: Although less dependent on consumer demand than the supply of private goods, the provision of public goods is not immune either to the nature and level of demand. As long as data users (as well as consumers of quantitative work) are happy to work with dubious data, dubious data is what they will get. By refusing to endorse inappropriate measures, scholars can clear the market of substandard data. By using data critically, rather than naively, they will raise both the standards of data production and the standards of data processing. By methodically comparing competing datasets, systematically testing the empirical implications of data choice and selecting data on the basis of methodological criteria and “theoretical reasons rather than expediency” (Casper and Tufis, 2003: 203), scholars will be able to abandon false empirical certainties, report honest “estimates of uncertainty of their inferences” (King, Keohane and Verba, 1994: 32) and overall generate more valid and reliable cross-national research.
- **Journals and publishers**: To the extent that the old maxim holds according to which scholars either publish or perish, the organizations and persons that control scientific publication outlets control the conditions of academic survival. Accordingly, their publication policies are powerful potential levers to affect disciplinary practices of data production, distribution and usage. Journals in particular could improve the availability and quality of political data by imposing constraints and by creating opportunities. On the one hand, they could impose stringent data information and publication requirements on the quantitative work they publish. On the other hand, they could open up to the publication of dataset reviews, correcting the current tendency of the major political science journals to privilege empirical studies with explanatory purposes and reject methodological work that focuses “only” on issues of conceptualization and measurement.26

- **Professional associations**: The comparative study of politics lacks a disciplinary infrastructure for the critical appraisal of datasets. Academic journals are crucial players in building such an infrastructure. Professional associations have a role to play, too. They can be crucial in formally defining and publicly reinforcing “industry-wide” standards for data development. The American Association for Public Opinion Research (AAPOR), for example, has agreed upon a code of professional ethics and practice, disclosure standards and standard definitions, lists commendable best practices as well as condemnable worst practices and offers formal procedures to report, investigate and judge ethical code violations (www.aapor.org/standardsethics). Among many other things, professional association can also encourage the development and publication of high-quality data by granting formal professional recognition to data authors (as the APSA Organized Section on Comparative Politics does through its annual Dataset Award).27

- **Funding institutions**: Junk data are cheap, quality data expensive. The construction of high-quality data requires large initial investments, plus posterior streams of financial resources in those cases in which datasets require continuous updating. It is often national science funding agencies like the NSF that provide the required resources for the construction of original databases. Yet, their funding policies tend to prevent them from ...
supporting other essential activities, such as the long-term maintenance of databases; joint ventures among data producers to coordinate and integrate their datasets; transnational collaborative projects to build cross-national datasets grounded in nation-specific expertise; and the development of public infrastructure, like information platforms that would allow data producers to connect among themselves and with data users at various stages of data development.  

Data agencies: If we want to go beyond the current state of (essentially) scarce, coarse and contested cross-national political data, we need to transform the organizational basis of data development. To construct the high-quality data we need, as extensive, valid, reliable, precise and accurate as we need them to be, we cannot proceed as we have done up to now: entrusting their supply to decentralized private initiative. Other scientific disciplines can rely on international organizations to supply their fundamental stocks and flows of cross-national data: the IMF, the World Bank, the International Labour Organization, the International Health Organization, the Organisation for Economic Co-operation and Development (OECD), and many others. Comparative political science needs something similar. Given the political constraints under which multilateral organizations operation operate, the creation of political data should possibly not be located within the UN system. It could be a joint initiative of professional associations, universities and research centers, national governments, international agencies and non-governmental organizations. Naturally, unless some actors are willing to assume the costs of coordination as well as the costs of data production, any such initiative is condemned to stumble into the classic dilemmas of collective action that block the optimal provision of public goods.

The scholarly community is not a centrally-controlled hierarchical organization nor a mere collection of disconnected individuals, but a complex communicative network. We need not wait to see all desirable initiatives put into practice in order to see our disciplinary culture of data production and consumption improve. Whatever we do at one node of the net is likely to affect the others.

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28 In principle, their financial leverage also permits funding agencies to shape the availability and quality of prospective data by defining publication requirements as well as procedural standards and reporting obligations. In practice, however, they often face difficulties in enforcing their standards of quality and publicity [insert reference to Roper Center report on nsf financed social science data].

29 For a similar, slightly less ambitious proposal aimed at the construction of disaggregated indicators of democracy, see Gerring (2008: 11-13).
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