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A global index of information transparency and accountability

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ABSTRACT

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Interest in the political and economic consequences of transparency has grown significantly over the past decade. The literature, however, has been hampered by methodological issues over what actually constitutes 'transparency', as well as the lack of a quantitative indicator that has substantial coverage across countries, and time. This paper uses a relatively new methodology, similar to Transparency International's *Corruption Perceptions Index,* to construct composite indicators of what we call Informational Transparency, and Accountability. These new indicators use data from 29 sources, with scores being derived annually between 1980 and 2010 across more than 190 countries. *Journal of Comparative Economics* **xxx** (xx) (2014) xxx–xxx. UWA Business School, M251, 35 Stirling Hwy, Crawley, WA 6009, Australia.

1. Introduction

The economic, social and political importance of transparency has gained increasing traction over the past decade, amongst academics and practitioners alike. This has been part of a broader movement that seeks to explain and understand the role that institutions play in a nation's economic development. However, despite the increasing focus, this issue has been plagued by a number of conceptual and methodological problems that have led to some confusion over what exactly is meant by 'transparency'. Moreover, the difficulty in providing a quantifiable measure of transparency has hampered our empirical understanding of its economic and political causes and consequences.

The aims of this paper are therefore twofold: (i) to undertake a brief review of previous research into what constitutes 'transparency', and to consequently provide a conceptual framework that guides the following analysis, and (ii) to set out a new composite indicator of transparency that has extensive coverage across countries, and time. Section 2 attempts to tease out a definition of transparency that takes into consideration the fact that what has traditionally come under the 'transparency' rubric requires greater nuance. Section 3 looks more directly at existing empirical measures of transparency, whilst Section 4 takes this discussion and uses it as the basis for the construction of a composite indicator of transparency. Section 5 then looks at some basic summary statistics and comparisons of this indicator, whilst Section 6 concludes with some thoughts on how this indicator may assist in future empirical work in this field.

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2. Definitions and literature review

2.1. Defining transparency

The first obvious step is to denote exactly what is meant by 'transparency' in this paper. On the surface, this may sound like a fairly simple task. However, transparency can mean different things to different groups, and can be important for different reasons. Florini (2000) takes as broad a view as possible on this. In her view, transparency is the "release of information by institutions that is relevant to evaluating those institutions". Because these institutions can mean either public or private institutions, this provides a nice starting point. Of course, this looseness stems precisely from the fact that it is used in so many different areas: corporate governance, national security, government budgets, international organisations and so on. In a definition that has been commonly used (see for example, Hollyer et al., 2011; Bellver and Kaufmann, 2005 and others), Vishwanath and Kaufmann (1999) define transparency as the "increased flow of timely and reliable economic, social and political information which is accessible to all relevant stakeholders". Others, such as the OECD (2002) prefer to focus their definition on the removal of informational asymmetries, a feature of transparency highlighted by Stiglitz (2000), who prefers a definition whereby transparency is really just 'another name for information', and so greater transparency becomes a way of minimising informational asymmetries in the market. Other, such as Bauhr and Grimes (2012) prefer a checklist approach, whereby transparency only exists if certain criteria are met.

A number of definitions place the importance of transparency firmly in the sphere of public accountability. For example, Kopits and Craig (1998) define fiscal transparency as *"openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts, and projections."* In this sense, fiscal transparency is not necessarily about access to the budgetary information itself (although that certainly constitutes part of the definition), but rather the openness of the procedures and policies. Andreula et al. (2009), and the IMF (2012) make a similar point. In this context, it is the constraints this information may place on public officials that is the key. In other words, it is not the information itself that is important, but the fact that the information is *potentially discoverable*. Public officials may refrain from undertaking illegal and corrupt behaviour if they know that there is a high probability of this information getting out.

2.2. Literature review

As these definitions highlight, 'transparency' as a concept ranges from issues surrounding information, through to issues of accountability. The following review (loosely) divides the literature into research that highlights the 'information' component of transparency, and research that focusses more on issues of accountability, and its use as a constraining mechanism.

2.2.1. On the value of information

A simple, though not necessarily uncontroversial, statement in economics is that 'more information is always preferred to less'. In standard microeconomic competitive market models, information is assumed to be 'perfect'. Indeed, imperfectly competitive and market failure models are often characterised by the informational asymmetries they possess (for example, see Stiglitz, 2000 and others).

From a relatively early point in this literature, however, a distinction was made between public information (available to all, and considered to be a public good), and private information, available only to those who generated (or purchased) this information. In the early 'island economy' models of Phelps (1970) and Lucas (1972, 1973), or the Keynes 'beauty contests', there is a distinct co-ordination aspect that is crucial. And, when information is perfect, it was shown that this co-ordination maximises social welfare.

The literature quickly moved on from this to explore the interesting situations in which players were faced with imperfect information – either through asymmetries, or when the information itself was imperfect, or 'noisy'. This was the point made by Morris and Shin (2002 and others), whereby the perverse situation could arise that public information could be over-weighted in the minds of the participants and, if this information had a lot of noise (for example, GDP or inflation data that was subject to subsequent revisions), then it could be welfare-reducing. This paper sparked off a significant debate about (a) whether this was indeed true in the first place, and (b) if it were true, what a policy response to this problem may look like. For example, Svensson (2006) noted how, under reasonable assumptions, this result would not actually hold, and so this public information would still be welfare-improving. Indeed, if we broaden the debate to a global (rather than largely a developed country) viewpoint, one can see Svensson's point. In the original Morris-Shin model, when there is no private information, then the public information that is available (regardless of its precision) is welfare-improving. For many developing countries this would certainly be closer to their experience.

This model has largely been used in terms of the role of a central bank within an economy, and the effect that central bankers' information and forecasts can have on expectations, and hence volatility. For example, in a recent paper, Muto (2013) looks at how a central bank's (noisy) forecasts on productivity can destabilise private firms' own expectations, which may in turn worsen the output gap. Geraats (2002, 2009) provides a nice review of this literature, and the debate over the degree of transparency a central bank should undertake. She makes the point that those countries that have become more transparent have also enjoyed lower inflation (even in relative terms during the 'Great Moderation' of the 1990s and 2000s).

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But there are certainly opposing views on this, following a line of thinking more akin to Morris and Shin. Baeriswyl and Cornand (2010) focus on the dual role of monetary policy, which is to influence economic activity, but also to provide information to firms on what the central bank thinks is happening in the economy. Although they argue that transparency invariably increases the output gap, its effect on inflation depends on whether the information works directly, or through this signalling mechanism. Hahn (2012) similarly asks whether central banks should release less information when there is a negative supply side shock, as this may exacerbate the negative output effects.

With respect to the empirical literature on information and central banks, Crowe and Meade (2007), focussing on the independence of central banks, note that greater independence results in lower inflation (see Cukierman, 2008, for a review of the empirical literature on this), but also that greater transparency results in the private sector making better use of that information. Crowe (2010), essentially supports the theoretical model of Morris and Shin, in that he finds that public information is most beneficial when there is little private sector information available, but does not support the Morris and Shin hypothesis that more public information can result in less accurate private sector forecasts.

For our purposes here, one of the important issues tackled in this literature is a recognition that there are different *types* of transparency. For example, Hughes Hallett and Viegi (2003) introduce a model that separates transparency into economic transparency (*what* information is used), and political transparency (*how* the information is used). In a quantitative measure of central bank transparency, Eijffinger and Geraats (2006), Dincer and Eichengreen (2007) and Siklos (2011) separate central bank transparency into five components of transparency: political, economic, procedural, policy, and operational. Although some of these components may overlap somewhat, it is at least a more nuanced attempt to recognise that transparency has different elements that are worthy of separation. For a central bank, this makes sense, as it is both a producer of information, but is also responsible for interpreting and acting at least in part on that information. In this sense, full transparency may not always necessarily desirable, which was the point initially made by Morris and Shin.

A related issue to the models looking at the social value of information revolves around information and business cycles, led largely by Angeletos, and Veldkamp.[1] These papers often had elements of the Morris-Shin model, and focussed largely on the complementarity of information. In essence, if everyone has the same (aggregate) information, then all sectors of the economy would co-move, which would exacerbate the business cycle. Sector-specific information has a high initial fixed cost, and so it is often cheaper (and rational) to only use the country-wide aggregate information.

The extensive empirical research on information and its effect on markets have often focussed on financial markets, due at least in part to the ease with which 'news' is transmitted through to changes in prices in these markets. For example, DeGennaro and Shrieves (1997), Boyd et al. (2005), and Bauwens et al. (2005) look at the effect of the release of a range of economic indicators on exchange rates, whilst Balduzzi et al. (2001) look at macroeconomic news releases, and how a 'surprise' result can affect spreads in bond markets. Brockman et al. (2010) look specifically at the issue of co-movement, the production of information, and the business cycle. Using share market data, they show that when information is high, co-movement is low, and vice versa, which tends to support the theoretical literature on this. Gilbert (2011) examines the specific issue of the quality of data, in terms of how revisions in official economic data released by the government affects share market prices.

Across all of this research, however, a common theme was that this public information is actually released in the first place by the government. In other words, they say essentially nothing about whether the government might actually withhold information from the public, or at least try to reduce the 'noise' of this information by improving its quality. This focus on the supply-side of information has been somewhat neglected in the literature, although Williams (2009), Islam (2006) and Hollyer et al. (2011) have tried to empirically look at the quality and quantity of information governments release, and some of the political and economic consequences of this. The underlying principle here is that there may well be occasions where the government of a country may possess economic, financial or political information, but deliberately decide to withhold that information from the public. For example, if economic information shows the government doing a particularly bad job, they may not be inclined to release that information (or at least 'fudge' the data). In other situations, there might be a sort of 'benign neglect', whereby information is not necessarily withheld, but the collection and dissemination of that information is given a low priority, and hence the same result occurs, in that the public is not able to make informed economic decisions because of a lack of information (or poor processes make that information of extremely low quality).

2.2.2. On the value of transparency as a constraining mechanism

When most talk of transparency, they are invariably referring to transparency's role in acting as an *accountability* mechanism on the behaviour of public officials. Here, the information itself is not necessarily important, but rather how the potential release of this information causes agents to essentially 'do the right thing'. And so transparency is often quite closely related to the issue of corruption, in terms of transparency being seen as a vital tool in helping to reduce corrupt and rent-seeking behaviour (Brunetti and Weder, 2003). It is therefore no coincidence that the focus in this area has been specifically on issues surrounding: (i) the importance of having a free media to expose any illegal or improper behaviour on the part of public officials, and (ii) the government's attitude and actions towards accountability.

[1] For example, see Angeletos and Pavan (2004, 2007) on information as 'noise', and (2007) on the social value of information; Angeletos and Werning (2006) on the role of information in a crisis; Angeletos and La'O (2010) on noisy business cycles; Veldkamp (2006a) on information and the co-movement of asset prices; Veldkamp (2006b) on media frenzies and financial markets; and Veldkamp and Wolfers (2007) on information and business cycle co-movement.

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The theoretical literature on the links between a free media and transparency generally revolve around a type of principal-agent analysis (Besley and Prat, 2006; Besley and Burgess, 2002; Prat, 2006) where, with the existence of asymmetric information between government and citizen, a free press can play a role in making governments more responsive to the needs of its citizens. The antecedents of these models can be found in Persson and Tabellini (2000) and their 'career concerns' model, in which the agent (the politician) would like a credible signal to the principals (the citizens) on what type of politician they are, and hence get re-elected. The press, essentially, can act as a way of verifying the type of politician, in that the politician's actions on their own are not credible.

The empirical evidence on this is relatively strong. For example, in an influential paper, Besley and Burgess (2001) use the example of Indian states between 1958 and 1992 to look at the link between the degree of media freedom in each state, and their government's responsiveness to food shortages. They noted a very clear link between press freedom, and the government's response to such food shortages. Djankov et al. (2003) constructed an index on media ownership to demonstrate that government ownership of the media is associated with fewer press freedoms, political and civil rights, and poorer social outcomes. This paper therefore highlights the importance of a free and independent media. Brunetti and Weder (2003) examine the links between a free press and corruption, noting a very strong (causal) relationship running from a free press to lower corruption. Chowdhury (2004) and Freille et al. (2007) largely confirm these findings.

The idea behind the media 'shining a light' on the actions of the government has unsurprisingly resulted in quite a substantial theoretical and empirical literature on this type of political transparency and the machinations of the government's actions. Alt and Lassen (2006a) use a career concerns model to look at the relationship between transparency and public debt, with the rationale behind this being that in an opaque setting, governments are more inclined to borrow money, rather than pay for expenditure through taxation. Alt and Lassen (2006b) and Alt and Lowry (2010) examine the issue of transparency and political business cycles, with less transparent governments increasing their spending by more in the run-up to an election than a more transparent government. Gavazza and Lizzeri (2009), using a two-period model of political competition with imperfect observability, argue that transparency has different implications on the revenue and expenditure sides of the government's budget, in that transparency is always beneficial on the spending side, however, transparency on the revenue side may be counter-productive as it may lead to wasteful spending.

However, not all theoretical work is unambiguous in showing the positive effects of transparency on the government. For example, Bec (2001) argues that one of the effects of greater transparency may simply be to make it easier to identify who to bribe, and hence may actually increase corruption in the public sector. Gavazza and Lizzeri (2007) posit that greater transparency in bureaucracies may lead to the situation where the high quality producers are identified, but are supply-constrained and so all that occurs is a rationing of the high quality producers, rather than an actual increase in overall quality.

There is an increasing amount of evidence on the effects of transparency on government programmes and policies. In a series of influential papers, Reinikka and Svensson (2004, 2005, 2011) highlight the role of information in the public sector through an experiment run in Uganda, whereby education budgets were published in local newspapers. The proportion of the central government's education budget reaching the school level jumped from an average of 20% to around 80% after these figures were published. Moreover, these increases were largest in areas with greater exposure to this news. Ferraz and Finan (2008) used the random assignment of municipal audits in Brazil to examine the effect that information on subsequently discovered corruption had on the encumbent municipal mayor's chances of re-election. Not only was higher exposed corruption associated with a decreased probability of re-election, but that probability was considerably smaller in areas where that information was widely disseminated (through local radio).

In general, the empirical literature on accountability has followed a variety of avenues that range from the transparency of the budget (and budgetary process) itself, through to the consequences of transparency on other economic outcomes. For example, Alt and Lassen (2003), using OECD countries as their sample, found that greater fiscal transparency was associated with lower public debt, and smaller budget deficits. Golwitzer (2010) found a similar result in a sample of African economies. Andreula et al. (2009) highlight the links between broader institutional quality, and the degree of transparency in budgetary institutions. The IMF's Reports on the Observance of Standards and Codes (ROSCs) have been used by a number of researchers to examine the degree to which countries adhere to these standards of fiscal transparency (see for example (IMF, 2012; Glennerster and Shin, 2008; Hameed, 2005), and what some of the economic consequences of this may be. Bastida and Benito (2007) use data from the Open Budget Partnership to illustrate the links between fiscal transparency and corruption.

Across the literature, therefore, the two common criteria on what constitutes 'transparency' are apparent: (1) transparency is about increasing the quantity and quality of *information* available to interested parties, and (2) transparency is about increasing the constraints on public officials in order to enable citizens to hold these officials *accountable* for their actions. One may think that (2) will naturally follow from (1), however, the purpose and nature of each of these functions does not automatically make this so. As Kolstad and Wiig (2009) note, greater access to information may raise the cost of corrupt and rent-seeking behaviour, because the costs of discovery may outweigh the benefits of a corrupt act for the government official. But they also make the point that simply releasing more information is 'not enough' for a government to be fully accountable. This last point is worth emphasising. Von Furstenberg (2001), for example, is particularly critical of the idea that more information is associated with greater transparency, in the sense that it will help improve the degree of accountability from public officials. The link from information to accountability involves more than just making that information available. Civil society requires the ability to not only access the information, but have the voice to act on it (Lindstedt and Naurin, 2010). Nevertheless, even if it is true that increasing the amount of information the public has at its disposal

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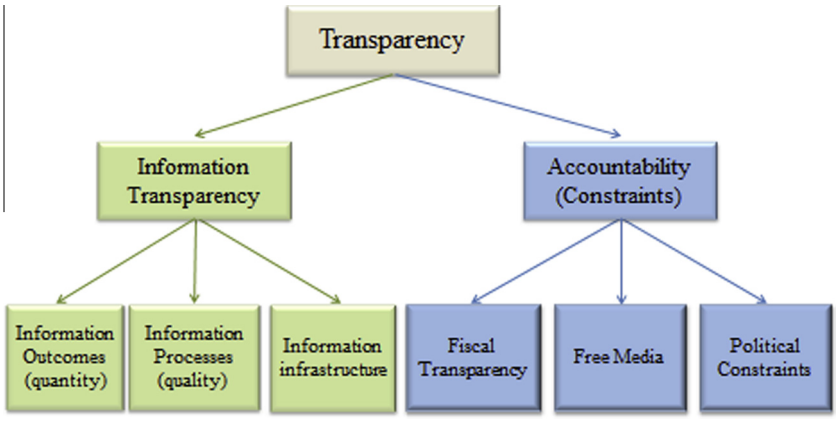

Fig. 1. Conceptual approach to transparency.

will not of itself lead to a sudden improvement in the accountability of the government, this does not preclude the possibility that the information is still useful. It may not be useful in a political sense, but it can still have value in an economic sense.

One can also think of certain circumstances whereby there might be a degree of overlap between the two. For example, one could think of certain fiscal information that might fall into both camps. Information on budget deficits, the size of the public debts, revenues and so on can be important for a range of people, both in the private and public sectors. However, this fiscal information also has an overtly political element to it as well, in the sense that the implementation of clear and consistent processes may provide a constraint on the extent to which some of those funds may be misappropriated. Fig. 1 provides a visual representation of these concepts. On the one hand you have economic and financial information that is used essentially for market-based purposes. Within that framework, one could also then think about both the quantity of that information released (the outcome), and the quality of that information (the process). It is also important that, once this information is released, that citizens have access to it, and so one could incorporate the dissemination infrastructure available to citizens. As noted above, information specifically about fiscal matters may be important in an economic sense, but is also an area clearly influenced by political constraints. Aside from fiscal information though, the existence of a free and independent media, and other (non-budgetary) political constraint mechanisms are important aspects of accountability.

3. Measuring transparency

Given the interest in institutional issues such as corruption, the rule of law and so on over the past twenty years, it is perhaps surprising that there is still no widely-accepted transparency index that has broad coverage across both countries and time. There are many indices that have tried to measure transparency on an ad hoc, one-off basis, and there have been indices that have purported to measure a particular aspect of transparency. As Coronel (2012) notes, "*these measures cover different sets of countries, examine different spheres of government transparency, and use a variety of criteria and methodologies... There is no single rating that is both comprehensive and truly global in scope*".

Perhaps the one that gets closest to the attempt made here is Bellver and Kaufmann (2005). Despite only being a working paper, it is has been used in a number of studies, either directly or indirectly (see for example Glennerster and Shin, 2008, and Williams, 2011). In this index, they bring together a number of different sources of data on transparency, and then divide transparency into two groups: economic/institutional transparency, and political transparency. Others have focussed on a specific aspect of transparency. For example, Islam (2006) looked at economic transparency (proxied by the timeliness with which countries reported data to the World Bank and IMF), as well as a component for the existence (or absence) of Freedom of Information laws. A similar approach was taken by Williams (2009), and Hollyer et al. (2011), looking at the quantity of data released by governments, rather than their timeliness. Others, such as Hameed (2005), and Andreula et al. (2009) developed indices specifically aimed at fiscal transparency. This was also the objective of the *Open Budget Index*, prepared by the International Budget Partnership. In terms of political transparency, the main indicator used over the years has been the Freedom House *Freedom of the Press* index. This is in part due to the fact that it is one of the few indicators with significant temporal coverage (going back to 1979), and that it has extensive coverage across countries as well. *Reporteurs Sans Frontieres* have a similar index, which has been compiled since 2002. Although not a direct measure of political transparency, Bellver and Kaufmann (2005) also used what they called the 'Openness of Political Institutions' from the POLITY database in their index (DEMOC).[2]

[2] Strictly, this measures (i) the competitiveness of political participation, (ii) the openness and competitiveness of executive recruitment, and (iii) the constraints placed in the executive, however, these constraining political and social groups are called 'accountability groups' in the POLITY analysis, and so it is logical to think of these constraints as being transparency and accountability constraints as well.

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In addition to these indicators that have specifically set out to measure transparency (or a component of transparency), there are a number of other measures that have a transparency component included, but which is not the main focus of the exercise. The World Bank's CPIA indicators have a component on 'transparency in the public sector', whilst the Global Competitiveness Reports ask the question "*How easy is it for businesses in your country to obtain information about changes in government policies and regulations affecting their activities?*". Finally, the *CIRI Human Rights* database has a component that rates the freedom of the press within countries.

Overall then, we can see that there are a number of existing indexes that cover various aspects of transparency. Some cover one specific area of transparency over an extended period of time (Release of Information indices, Freedom of the Press, Free Speech from CIRI for example), whilst others also cover a specific issue, but for only a limited time (for example, the CPIA, Open Budget Index, *Reporters Sans Frontieres*). Others only cover a specific aspect of transparency as a one-off (for example Hameed, 2005; Glennerster and Shin, 2008). In terms of a composite index designed to cater for transparency issues, only Bellver and Kaufmann (2005) attempt to bring together the disparate elements of transparency into the one place, but then only as a one-off indicator, which has not been subsequently replicated.

However, the number of existing indicators, and the breadth of transparency issues they cover, do seem to lend themselves to a composite index, in a similar spirit to Bellver and Kaufmann (2005), the World Bank's *Governance Indicators*, or Transparency International's *Corruptions Perception Index* (CPI). In the next section, we will discuss what such an index may look like, and the criteria for its construction.

4. Methodology and derivation of index

4.1. Sources of transparency

The first methodological question is whether the index should be a single, all-encompassing 'super index', which brings together all the different elements of transparency mentioned previously. This certainly has some advantages, in terms of simplicity of exposition, however, the main drawback is that it would not capture the fact that different elements of transparency may have different effects on the economy, the polity, and so forth.

There is much to commend an approach similar to Bellver and Kaufmann (2005), and discussed above, which tries to make a distinction between transparency as a means of conveying information that has value to citizens, and transparency as a tool that constrains the actions of bureaucrats and politicians. It has the benefit that it does not treat transparency as 'one' thing, recognising that there is a difference in not only the types of transparency alluded to earlier, but also how they affect the broader economy. If one lumps it all into the one indicator, it is impossible to disentangle these effects.

To that end, the concept of transparency has been divided up into two core constituent parts that follow the concepts outlined in Fig. 1. However, to give future researchers flexibility, sub-indicators are also constructed that focus on a specific aspect of transparency (for example, the existence of a free and independent media, or fiscal transparency). The next section outlines the measures employed in each of these sub-sections, with a discussion of the specific methodology used to construct the indicators following in the subsequent section.

4.2. Informational transparency

The rationale behind this is that whilst the government is still the main arbiter over these statistics, and can therefore decide what gets released and what doesn't, the release of this information should, in theory, be relatively uncontroversial. The real importance of this information is in terms of its market-related economic content, and in reducing the informational asymmetries that can exist when market participants have less information to work with. Within this category, however, a further distinction can be made between (i) the *quantum* of information released by governments; (ii) the *quality* of that information and; (iii) the information *infrastructure* of countries that enables dissemination of that information.

4.2.1. Quantity of economic, social and financial information

The first three indicators employed here are all new, but rely heavily on the methodology employed by Hollyer et al. (2011) and Williams (2009), in that they largely incorporate the amount of information released by governments that appear in a number of the major global statistical databases. Due to the fact that some researchers may prefer to focus on a particular aspect of information, these have been separated into distinct indices that reflect different economic, financial and social information collected and released by governments. The benefits of these new measures are threefold: (i) they provide a comparability across countries in terms of the amount of information governments release to the wider public, given that each individual international database uses the same methodology and criteria for all countries; (ii) they have extensive coverage across both time and countries and (iii) they are objective, in so far as once the criteria for each index is set, the scores are then based purely on the proportional count of this information (rather than scores being determined by 'country experts', or some other subjective means). Space precludes a detailed explanation of their derivation here, however, full details of the categories included, as well as other methodological issues for the individual sources, can be found in the online Appendix.

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(a) **Release of Financial Information:** this indicator uses the proportional amount of financial information contained in the IMF's *International Financial Statistics*. In order to avoid double counting across the other databases used, only Topics 1, 2, 3 and 6 have been included.[3] Data is available for over 180 countries for the period 1980–2010.
(b) **Release of Economic and Social Information:** this indicator uses the proportional amount of economic and social information from the World Bank's *World Development Indicators*. Any information that appears in any of the other databases used here have been removed to again avoid double counting. A full list of the categories used can be found in the online appendix to this paper. Data is available for over 180 countries for the period 1980–2010.
(c) **Release of Trade data:** this indicator uses the proportional amount of trade and balance of payments data contained in the IMF's Balance of Payments database (specifically, using the BPM5 methodology). Data has been taken from current and capital account categories only.[4] Data is available for over 180 countries for the period 1980–2010.

Aside from the development of these new indicators, there are other existing measures that purport to cover the amount of information produced by governments:

(d) **Central Bank transparency (Economic transparency category):** Based on methodology first employed by Eijffinger and Geraats (2006), and subsequently expanded by Dincer and Eichengreen (2007) and Siklos (2011), this sub-section of the central bank transparency index looks at the role of the central bank as a collector and disseminator of economic and financial information, as well as the transparency of their economic modelling forecasts. Specifically, (i) whether quarterly data is released for the following five variables: money supply, inflation, GDP, unemployment rate and capacity utilization; (ii) whether the central bank discloses the macroeconomic models it uses for policy analysis; (iii) whether the central bank regularly publishes its own macroeconomic forecasts. Data is available for 101 countries, and covers the period 1998–2010.
(e) **Institutional Profiles database:** produced by the French government since 2001, this database incorporates a wide variety of governance-related information on over 120 countries. The data is derived from a survey compiled by the economic French missions in the respective countries. For our purposes here, we incorporate the following subsections that specifically look at the amount of information[5]:
  - *A3004* (The existence of basic economic and financial statistics);
  - *B7100* (the level of information on shareholder structure in local firms);
(f) **Statistical Capacity Indicator (World Bank):** first developed by the World Bank to assess the capacity of developing countries' national statistical offices, it has three components: (i) statistical methodology; (ii) source data; (iii) periodicity and timeliness. The component used in this sub-index is the *periodicity and timeliness* of information, which 'attempts to measure the extent to which data are made accessible to users through transformation of source data into timely statistical outputs'. This aspect is therefore more about the release of information, whereas the other two components are an attempt to measure the quality of that information (see below). Data is available for 142 developing countries over the period 2004–2010.

4.2.2. Quality and processes generating economic, financial and social data

The previous indicator can be thought of as measuring outcomes, in that it focuses specifically on the amount of information produced by governments. However, there is also the significant issue of the quality of that information, which includes whether there are appropriate processes developed by countries to produce that information in the first place. For example, whether the national statistical offices adhere to standards set by multilateral bodies such as the IMF, or whether firms adhere to international accounting reporting standards.

(a) **Statistical Capacity Indicator:** following on from Section 4.2.1 (f) above, the components used here are the *statistical methodology* (which measures a country's ability to adhere to internationally recommended standards and methods, such as its subscription to the IMF's Special Data Dissemination Standards), and the *source data* category, which looks at whether regular data collection activities take place (for example, vital registration, censuses), and whether the data is reliable for estimation purposes. In other words, they are concerned with the quality of the data being produced. For our purposes here, these two components have been averaged.
(b) **Bank Disclosure Index:** Based on data contained in the World Bank's *Banking Regulation* dataset, this index reflects disclosure rules and norms governments impose on the banking sector. Specifically, it is an equally-weighted average of the following components: Section 10.3 *Are consolidated accounts covering bank and any non-bank financial subsidiaries required?*; 10.4 *Are off-balance sheet items disclosed to supervisors?*; 10.4.1 *Are off-balance sheet items disclosed to public?*; 10.5 *Must banks disclose risk management procedures to public?*; 10.6 *Are directors legally liable for erroneous/misleading information?*. Data is available for up to 145 countries over the period 2000–2010. (see Cihak et al., 2012).

[3] These are: Topic 1: Central bank/monetary authority data; Topic 2: Other deposit corporations/banks; Topic 3: monetary survey; Topic 6: Interest rates, prices, production and labour.
[4] That is, I have not used the *International Investment Position* data from this database, as temporal coverage was a lot shorter.
[5] Further details can be found at: http://www.cepii.fr/institutions/EN/ipd.asp.

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(c) **Institutional Profiles database:** From the same source as 4.2.1 (e) above. Scores are again averaged into one measure. The components used here are:
- *A3005:* Is the IMF consultation under Article IV published?
- *B600:* Information on the situation of firms (standard accounting systems employed for small and large businesses, certification of company accounts, and frequency of intervention by international auditing firms)
- *C601:* Information on the situation of the banks (whether banks use standard accounting systems, and the certification of banks' accounts)
- *C603:* Compulsory publication of information by firms at the time of share issues.

(d) **Central Bank Transparency:** *Procedural transparency:* Based on the same index developed in 4.2.1 (d) above, this aspect looks at the transparency surrounding the way monetary policy decisions are made, including whether the central bank publishes comprehensive accounts of their deliberations, and whether the voting records of the board or committee are disclosed to the public. This has particular relevance for the private sector (notably financial institutions), in terms of the private sector understanding (or not, as the case may be) how the central bank arrives at its decisions.

4.2.3. Information infrastructure

This aspect of transparency has been included to try to take into account the fact that, whilst the quantity, quality and processes of producing and releasing information is important, it is of little benefit to society unless citizens have the ability to receive this information. As a consequence, the focus here is essentially on a country's telecommunications infrastructure.

(a) **KOF Index of Globalisation:** We use the sub-section 'Information Flows', that includes a weighted average of the following variables: internet users (per 1,000 people), the number of televisions (per 1,000 people) and trade in newspapers (% of GDP). This data is available for up to 174 countries from 1980–2010; See Dreher et al. (2008) for more information.

(b) **Radios (per 1000 people):** for many countries, radio communication often represents the most common means of information for people, particularly in rural areas. The data from this has been taken from the World Development Indicators (2005) for 1980–2000, and the Indices of Social Development website for 2001–2010, and covers up to 191 countries.[6]

(c) **E-government data (UN):** this UN survey of countries looks at the diffusion of information through the internet. It includes indicators on how many people use it, as well as the amount of infrastructure a country has for the internet. For our purposes here we use the Telecommunication Infrastructure Index (TII), which has data for 2003–2010 for 192 countries. This index includes components that address the extent of the online population, the use of personal computers, fixed-line telephone subscriptions, and mobile cellular subscriptions.

4.3. Accountability mechanisms

As discussed in the previous section, this is a different form of transparency, in that access to this information by the public has less meaningful economic value unto itself, but is designed to provide a check on the behaviour of the government, and to therefore promote accountability. As with the index on information transparency, sub-indicators are constructed to reflect the nuances of this type of transparency. Specifically, three sub-components are constructed: (1) the existence of a free and independent media; (2) fiscal (budgetary) transparency; (3) political constraints.

4.3.1. Free and independent media

It has long been recognised that an independent media plays a crucial role in applying constraints upon the actions of the government (both elected and unelected officials). As mentioned in the previous section, the transparency aspect arising from a free media comes not necessarily from the quantity of the information they produce, but rather from the fact that it raises the opportunity cost of a government official engaging in corrupt or unethical behaviour through the reputational risk from exposure (Brunetti and Weder, 2003). To that end, there are a number of existing indicators that purport to measure the degree to which the media is able to freely and independently monitor the actions of government officials:

(a) **Freedom of the Press (Freedom House):** this is an annual (since 1980) survey of media independence, and assesses the degree of print, broadcast and internet freedom. Until 1994 countries were categorised as 'free', 'partly free', or 'not free'. Since 1994, countries have been given an overall score out of 100. Data is available for over 200 countries.[7]

(b) **CIRI Human Rights dataset:** Two categories from this dataset were used here: (i) Freedom of Speech: the extent to which freedoms of speech and press are affected by government censorship, including ownership of media outlets. Censorship is any form of restriction that is placed on freedom of the press, speech or expression. Expression may also be in the form of art or music; (ii) Freedom of Assembly and Association: This variable indicates the extent to which

[6] Note: missing data has been extrapolated where possible on a pro-rata basis for the missing observations. See http://andrewwilliamsecon.wordpress.com/datasets/ for details on calculations for this variable.

[7] However, to maintain comparability, scores in this index are based on the 'free', 'partly free' and 'not free' methodology across the entire 1980–2010 period.

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the freedoms of assembly and association are subject to actual governmental limitations or restrictions (as opposed to strictly legal protections) (Cingranelli et al., 2013). Data is available for up to 200 countries over the period 1981–2009.

(c) **Institutional Profiles dataset:** from the same source as in Section 4.2.1 (e) above, the following questions relate to the independence and control of the media across countries:
- A1010; Freedom of the press
- A1020; Proportion of the media under de jure or de facto government control
- A1021; the degree of concentration of the private media

(d) **Reporters Sans Frontières:** Put together by advocacy group *Reporters Sans Frontières* annually since 2002. This index "reflects the degree of freedom that journalists, news organizations and netizens enjoy in each country, and the efforts made by the authorities to respect and ensure respect for this freedom. It is based partly on a questionnaire that is sent to partner organizations (18 freedom of expression NGOs located in all five continents), to a network of 150 correspondents, and to journalists, researchers, jurists and human rights activists." Data is available over the period 2002–2010 for up to 175 countries

(e) **Media Sustainability Index:** This index rates countries on a variety of sub-components relating to freedom of speech, plurality of media available to citizens, professional journalism standards, business sustainability of media, and the efficacy of institutions that support independent media. Data has been collected for developing countries annually since 2000 for up to 78 developing countries.

(f) **Global Integrity Report:** the category used here is *Civil Society (Non-Government Organisations), Public Information and Media,* which includes indices that measure the media's ability to report on corruption, and public requests for government information. The Global Integrity Report is prepared by local researchers, lawyers, journalists and academics, using a double-blind review process. Data has been collected annually for over 100 countries since 2004.

4.3.2. Fiscal transparency (outcomes and processes)

Although there is a line of thought that might put this within the 'information' category, the majority of research into this issue places the importance of fiscal transparency squarely within the framework of what we would consider here to be an accountability measure. The reason for this is that budgetary matters (both on the revenue and expenditure sides) are often seen as an important avenue for corrupt activities. If one wishes to place constraints on public officials, then detailed (and accurate) knowledge of these revenues and expenditures is required. This component includes measures that incorporate both the quantity of publicly-available information, as well as measures that incorporate the transparency of the budget process itself.[8]:

(a) **Release of Fiscal Information:** this indicator also broadly follows the methodology used by Williams (2009) and Hollyer et al. (2011), in that it looks at the quantity of information contained in the IMF's *Government Financial Statistics*. Due to the fact that countries have varying levels of government, the only levels used were the central government categories (BA, EA and CG), along with the General Government category (for data prior to 1990). Where countries had identical data included in more than one category, it was only counted once. Additionally, many countries have moved from a cash-based reporting system to an accrual-based system. Some countries continue to produce both. Again, when both methods used, they have only been counted once. The specific categories used here are based only on revenues and expenditures. Specifically, categories 1, 2 and 3. Although there is also data on stocks, the country and temporal coverage is sporadic. Therefore, it was decided only to focus on the flows of revenues and expenditures reported each year. Data is available for up to 161 countries over the period 1980–2010.

(b) **Institutional Profiles database:** from the same source as in 4.2.1 (e) above, the following questions relate to the transparency of the government's budget (these are averaged to produce a single value for this component):
- A3000: transparency of the government budget;
- A3001: transparency of extra-budgetary funds;
- A3002: transparency of State Owned Enterprises;
- A3003: transparency of publicly-owned financial institutions.

(c) **Open Budget Index:** Developed by the International Budget Partnership (see also Seifert et al., 2013, for further details), this index is based on survey answers to over 90 questions on different aspects of government budgets, and has been published since 2006 for up to 94 countries.

(d) **IDA Resource Allocation Index (IRAI):** This index, put together by the World Bank's International Development Association (IDA), is based on the Bank's Country Policy Institutional Assessments (CPIA), incorporating 16 elements of the CPIA. Here we use the sub-index *Quality of Budgetary and Financial Management*. This criterion assesses the extent to which there is: (a) a comprehensive and credible budget, linked to policy priorities; (b) effective financial management systems to ensure that the budget is implemented as intended in a controlled and predictable way; and (c) timely and accurate accounting and fiscal reporting, including timely and audited public accounts and effective arrangements for follow up. Data is available for up to 77 countries for the period.

[8] However, as noted before, the methodology employed here means that it would be a simple matter to incorporate these fiscal measures into the 'Information' component instead, should researchers wish to.

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4.3.3. Political constraints

Aside from having an independent media, and accountable fiscal processes, there is a more general form of political transparency, in which both formal and informal constraints are placed on the actions of the government.

(a) **Executive Constraints:** This variable refers to the extent of institutionalised constraints on the decision-making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." (Marshall and Jaggers, 2002). Data is available for up to 161 countries over the period 1980–2010.
(b) **World Competitiveness Yearbook:** The measure used here is the *transparency of government policy,* with these scores being derived from the IMD's Executive Opinion Survey (covering 46–59 countries, between 1996 and 2010).
(c) **Central Bank transparency:** Based on the same index developed in 4.2.1 (d) above, this aspect addresses what the authors call *Political transparency*: this refers to "openness about policy objectives. This comprises a formal statement of objectives, including an explicit prioritization in case of multiple goals, a quantification of the primary objective(s), and explicit institutional arrangements. (a) Is there a formal statement of the objective(s) of monetary policy, with an explicit prioritization in case of multiple objectives?" (Dincer and Eichengreen, 2009).
(d) **IDA Resource Allocation Index (IRAI):** From the same source as *4.3.2. (e)* above, we use the sub-index *Transparency, Accountability and Corruption in the Public Sector. "*This criterion assesses the extent to which the executive can be held accountable for its use of funds and the results of its actions by the electorate and by the legislature and judiciary, and the extent to which public employees within the executive are required to account for the use of resources, administrative decisions, and results obtained. Both levels of accountability are enhanced by transparency in decision-making, public audit institutions, access to relevant and timely information, and public and media scrutiny. A high degree of accountability and transparency discourages corruption, or the abuse of public office for private gain."
(e) **Global Integrity Report:** From the same source as 4.3.1 (f) above, we use various indicators measuring different aspects of budgets. Here, we have taken the average of the following three sub-indices: *Administration and Public Service professionalism; government accountability; and government oversight and regulation.* These categories include questions relating to whistle-blowing protections, the transparency, fairness, and conflicts of interest safeguards in government procurement, and the oversight and transparency of government processes.
(f) **Global Competitiveness Report (World Economic Forum):** The specific measure here is from a survey of private business executives, and addresses the transparency of government policy making: *"How easy is it for businesses in your country to obtain information about changes in government policies and regulations affecting their activities?"* Data on this has been collected annually since 2006 for 135 countries.

Each of the sources used in the construction of the two indicators obviously have their own strong and weak points. For example, there are a number of measures that are perception-based, and are therefore prone to numerous biases and 'halo' effects (see Olken, 2009). This is the case, for example, for the Institutional Profiles Database, the Global Integrity Report, and the World Competitiveness Yearbook. Other sources suffer from a lack of country or temporal coverage, and so are less representative (for example, the Media Sustainability index, and the Global Competitiveness Report). Nevertheless, the shortcomings from any one individual source are ultimately one of the driving forces behind creating a composite indicator in the first place, as the combination of these sources should give a better collective representation of the relevant transparency issue.[9]

4.4. Construction of the indices for transparency

As with any index, there are a myriad of issues to consider in terms of its construction (see OECD, 2008, for a good summary of some of these methodologies). For example, the World Bank Governance Indicators (*WGI*) use a version of an Unobserved Components Model, whereby each source is considered to be a 'noisy' signal of the overall sub-category of governance.[10]

The main advantage of the *WGI* methodology is that it allows for much greater country coverage, as countries can be given an overall score even with a bare minimum of sources (albeit generally with large standard errors). However, it has two major drawbacks that meant this approach was not adopted here. First of all, although the World Bank is now quite transparent about the sources it uses, and the methodology employed, the construction of the point estimates and standard errors requires detailed knowledge of Bayesian statistics, and statistical software coding to construct. One of the criteria trying to be followed here is that not only is the methodology employed transparent and replicable, but that it be *easily* replicable, and does not require sophisticated statistical coding. Secondly, and perhaps more importantly, the *WGI* methodology does not allow easy comparison of scores across time, because for each year the global mean is set by design to be zero. In other words, the country scores can be used to compare relative governance across countries in time t, but the scores for each country for time t, $t+1$, $t+2$ etc are not directly comparable.[11]

[9] This is also, of course, the rationale used in the well-known *World Governance Indicators* form the World Bank, as well as Transparency International's *Corruption Perceptions Index*.
[10] See Kaufmann et al. (2006) for more information on this methodology.
[11] To be fair, the *WGI* authors have spent some time looking at this temporal issue as well (see Kaufmann et al., 2006).

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The other well-known composite governance-related indicator is the *Corruption Perceptions Index* from Transparency International. This index has been constructed annually since 1995. Up until the 2012 iteration of the index, each source was normalised into a common scale using a matching percentiles technique, which essentially meant the resulting scores were rankings, rather than absolute scores. The main drawback of this approach is that because these were rankings, the relative distance between two countries' scores conveyed no information about the extent to which corruption differed.[12] Under new methodology introduced in 2012, they have moved towards a simpler averaging of sources to arrive at the final corruption score. The benefit of this is that now differences in scores better reflect the difference in corruption perceptions between countries. Moreover, it is constructed so that scores are now more comparable over time, and so one can more plausibly talk about 'improvements' or 'deteriorations' in corruption perceptions within a country over time.

Specifically, the process for the construction of the *CPI* is as follows:

1. Each source is standardised, and then re-scaled to have a mean of 45 and a standard deviation of 20:

$$z_{jt} = \frac{(x_{ijt} - \overline{x_{jt}})}{\sigma_{jt}} \times \pm \times 20 + 45 \tag{1}$$

   where x_{ijt} is the individual score for country i for source j in time t, and σ_{jt} is the standard deviation for source j in time t. The ± sign is used if any of the sources have the reverse order of assigning higher values for higher corruption. Any scores falling outside the 0–100 range are then capped.
2. Global parameters are employed for those sources with a more limited range across countries by imputing values for that source.[13] In this way, a mean and standard deviation is derived on a theoretical basis of what might have been the mean if all countries had been measured in this source.
3. The resulting scores are then averaged to obtain the final score for each country in each time period.
4. The first year of the new methodology (2012) is defined as the 'base' year. In subsequent years, the parameters used will be those taken from the base year. By using the same base year, the scores generated over time will be comparable. Over time, as new sources are added, they are standardised and rescaled on the same principles as in (1) above, however, the mean and standard deviation are now taken from the year that the source enters the index, which therefore makes it comparable with all the other existing sources in the index.
5. To reflect the fact that each source is measured with a degree of uncertainty, the *CPI* also records standard errors and 90% confidence intervals, where the standard error (ρ) is the ratio of the standard deviation (σ) over the square root of the number of sources (n):

$$\rho_{it} = \frac{\sigma_{it}}{\sqrt{n_{it}}} \tag{2}$$

Because of this ability to account for changes in governance over time, the basic premise of this methodology has been preferred. It is also very simple in its construction, and so is easily replicated by anyone with simple knowledge of spreadsheets and/or statistical software packages.[14]

4.5. Construction of the Information Transparency Index (ITI), and the Accountability Transparency Index (ATI)

Although each of our two main indicators (Information Transparency and Accountability Transparency) have three sub-indicators, in much of the analysis that follows we treat these collectively to arrive at scores for the two main indicators, as well as an overall transparency score. However, it should be stressed that researchers, should they wish, can very easily create their own indices based on one or more of these sub-categories. [15]

Therefore, we have 13 separate indicators for the Information Transparency Index (six for the quantity of information, four for the processes that generate that information, and three for the infrastructure required to disseminate that information), and 16 separate indicators for the Accountability Transparency Index (six for the measurement of a free media, four for fiscal transparency, and six for political constraints). For both indices, 1980 is considered to be the base year. However, rather than just using a somewhat arbitrary mean of 45 and a standard deviation of 20 to form the initial base year parameters as in the *Corruption Perceptions Index*, we were guided by the mean and standard deviations from the sources with data in 1980. This resulted in choosing a starting mean in 1980 of 40 for both indices, however, the variance in the *ATI* was larger than that for the *ITI*, and so the standard deviation was set at 30 for the *ATI*, and 20 for the *ITI*.

Following the methodology of the *CPI*, sources (j) in subsequent years were first normalised, and then this base year mean and standard deviation were used to construct scores for each subsequent year. That is:

[12] For example, it had to be assumed that the difference in corruption between the 1st and 2nd ranked countries was the same difference as two countries ranked 100 and 101st, or the 150th and the 151st countries.

[13] This is done using the 'Impute' command in STATA, regressing that source against all sources that have broad coverage across countries (defined as more than 50% of the total population of countries).

[14] Detailed descriptions of its construction can be found at http://www.transparency.org/cpi2012/in_detail.

[15] Extensive details on how to do this can be found at http://andrewwilliamsecon.wordpress.com/datasets/.

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$$z_{jt} = \frac{(x_{ijt} - \overline{x_{jt}})}{\sigma_{jt}} \times \pm \times \sigma_{j,1980} + \bar{x}_{j,1980} \tag{3}$$

This allows for changes over time in scores to be more of a reflection of absolute, rather than relative, changes in scores. When new sources were added to an index, after being re-scaled to a score between 0 and 100, they entered with a mean and standard deviation that was determined by the mean and standard deviation in that current year based on only those indices with coverage from 1980.

Once all individual sources had been appropriately re-scaled and standardised, the final score for a country in each year for each index was simply the average of each of these scores. For example, the Accountability Transparency Index is derived by:

$$ATI_{it} = \frac{\sum_{n=1}^{n} Z_{ijt}}{n_{it}} \tag{4}$$

where Z_{ijt} is the transformed score for country i from source j in time t, and n_{it} is again the number of sources with data for country i in time t.

Further, in keeping with the *CPI* methodology, standard errors were constructed, as in Eq. (2) above. Standard errors are therefore lower when either the degree of variation across sources for a country is low (they all say approximately the same thing about the transparency in that country), and/or the higher the number of source used (giving more confidence in the final score for that country in that year). This then allows us to construct 90% confidence intervals for each country in each year.[16]

Lastly, a combined index has been constructed, using the same methodology as for the individual indicators. However, the criteria of the minimum number of sources have been increased, with the corollary to that being that a country must have a minimum of three sources from each of the two indices. The reason for this is that there are more observations across countries and time for the Information Transparency Index, and so a country was only given an overall score if it met the minimum criteria for *both* indices (i.e. a country must have a minimum of six sources, three from each indicator).

5. Summary statistics and initial analysis

Overall, these two indicators have extensive coverage across countries, and time. The Information Transparency Index (*ITI*) has scores for initially 153 countries in 1980, increasing over time to 191 by the year 2010. The Accountability Transparency Index (*ATI*) has slightly lower coverage, having only 115 countries in 1980, but rising to up to 189 countries towards the end of the period. The combined index also begins with 115 countries in 1980, rising to 183 by 2010.

Fig. 2 below illustrates how the global means have changed over time since 1980. Both the *ATI* and *ITI* are virtually identical through the 1980s, however, unsurprisingly one can see something of a spike in the mean of the *ATI* in the early 1990s as many transition countries either broke away or were created after the disintegration of the Soviet Union. From the mid-1990s one can see that the degree of accountability has largely stagnated (on average), whilst there has been a steady improvement in the information transparency of governments, to the extent that by 2010 there was roughly a ten-point difference in the global means between the *ATI* and *ITI*.

Table 1 lists the top and bottom twenty countries for each index averaged over the 1980–2010 period, restricted to the 187 countries that have scores for both indices. In many respects there are few surprises, in that OECD countries tend to feature prominently in both the *ATI* and *ITI*. In the Accountability index, those with the lowest scores are amongst those one would traditionally associate with extremely poor political constraints – North Korea, Cuba, Libya, Iraq and so on. It is also interesting to note that the countries appearing in both lists are not identical. In other words, whilst some may have extremely poor accountability, their degree of informational transparency is sometimes higher (and vice versa).

It is important, however, to remember that these indicators are constructed with 'noise', whether that be due to a small number of available sources, or because the individual sources differ significantly in their measurement of transparency for a particular country. Figs. 3a and 3b below show the point estimates and 90% confidence intervals for both indices for 2010.[17] As can be seen, there are a number of countries which exhibit quite large standard errors. As with both the World Bank's Governance Indicators data, and Transparency International's *CPI*, caution is therefore urged in researchers using the point estimates in their dataset.

Recall, one of the contentions here is that these two indices are essentially measuring two different aspects of transparency, and so it is entirely plausible that a country may score quite differently between the two indices. Indeed, as Fig. 4 shows, although there is understandably quite a high correlation between the *ATI* and the *ITI*, that correlation is not perfect (0.79 averaged over the period). There are a number of countries that lie below the 45 degree line, which indicates their

[16] The process of constructing standard errors was only performed on the two main indicators (Information, and Accountability Transparency), as well as one for the overall Transparency Indicator. Although scores have been constructed for each of the three sub-indicators across each of the two indicators, because each of these sub-indicators on their own had fewer sources, standard errors were not calculated, which is something researchers need to be aware of if they choose to use any of these sub-indicators. Furthermore, the criteria that each indicator must have a minimum of three sources for a score to be included was dropped for these sub-indicators, and so scores have been calculated as long there was one source for each period. For the full datasets of each sub-indicator, see http://andrewwilliamsecon.wordpress.com/datasets/.

[17] Individuals are free to construct their own from any year of the indicators, which can be accessed at: http://andrewwilliamsecon.wordpress.com/datasets/.

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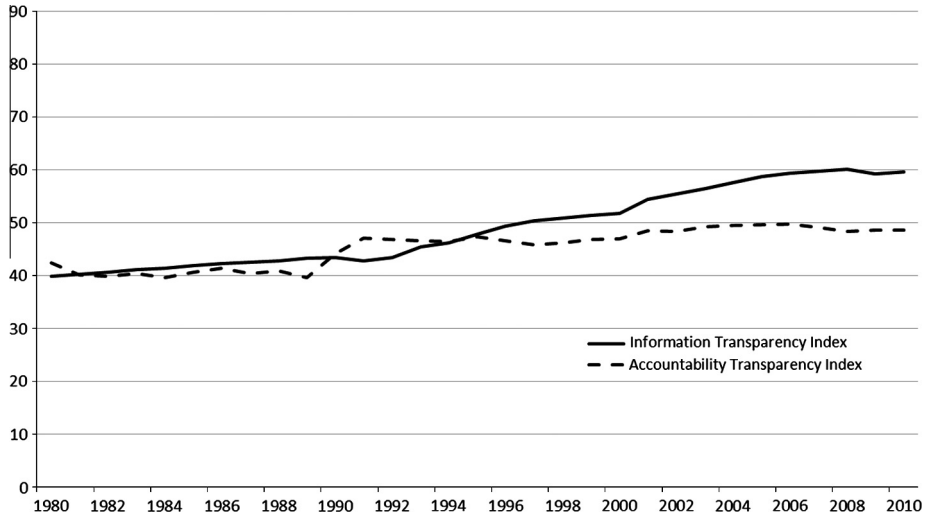

Fig. 2. Global means of information transparency and Accountability Transparency Indices, 1980–2010.

Table 1
Top and bottom twenty countries, average 1980–2010, ITI and ATI.

RANK	Country	Information Transparency, Average 1980–2010	RANK	Country	Accountability Transparency, Average 1980–2010
1	United States	80.2	1	Australia	78.5
2	Australia	79.7	2	Denmark	76.8
3	Canada	78.7	3	Finland	76.7
4	United Kingdom	77.5	4	Netherlands	76.3
5	Finland	75.5	5	Luxembourg	76.0
6	Sweden	75.0	6	New Zealand	75.1
7	Slovenia (1991–2010)	74.3	7	Sweden	74.9
8	Netherlands	73.7	8	Canada	74.4
9	France	73.0	9	Belgium	74.3
10	Germany	72.8	10	Switzerland	74.2
11	Norway	72.7	11	United States	73.9
12	Estonia (1991–2010)	71.8	12	Costa Rica	73.9
13	Czech Republic (1993–2010)	70.6	13	Iceland	73.4
14	Japan	70.5	14	Ireland	73.3
15	New Zealand	70.5	15	Norway	73.1
16	Switzerland	70.4	16	Spain	73.1
17	Italy	69.8	17	United Kingdom	72.9
18	Belgium	69.0	18	Austria	72.8
19	Slovak Republic (1993–2010)	68.5	19	Estonia (1991–2010)	72.4
20	Austria	68.4	20	Portugal	72.0
⋮	⋮	⋮	⋮	⋮	⋮
168	Laos	32.3	168	Guinea	22.3
169	Djibouti	31.5	169	Oman	21.9
170	Tajikistan (1992–2010)	31.4	170	Congo, DR	21.8
171	Central African Republic	31.2	171	Somalia	21.3
172	Guinea	31.0	172	Eritrea (1993–2010)	20.7
173	Angola	31.0	173	Sudan	20.4
174	Congo, DR	30.8	174	Vietnam	20.3
175	Guinea-Bissau	30.4	175	Qatar	19.0
176	Comoros (2001–2010)	30.0	176	Laos	18.2
177	Mauritania	30.0	177	Syria	17.8
178	Bhutan	29.8	178	Afghanistan	17.8
179	Chad	29.8	179	Equatorial Guinea	16.9
180	Iraq	28.8	180	Swaziland	16.3
181	Turkmenistan (1992–2010)	28.5	181	Iraq	14.9
182	Equatorial Guinea	28.4	182	Cuba	13.8
183	Liberia	26.5	183	Libya	13.7
184	Kiribati	23.0	184	Saudi Arabia	13.2
185	Afghanistan	19.9	185	Uzbekistan (1992–2010)	12.2
186	Korea, DPR	13.3	186	Turkmenistan (1992–2010)	10.5
187	Somalia	11.3	187	Korea, DPR	10.1

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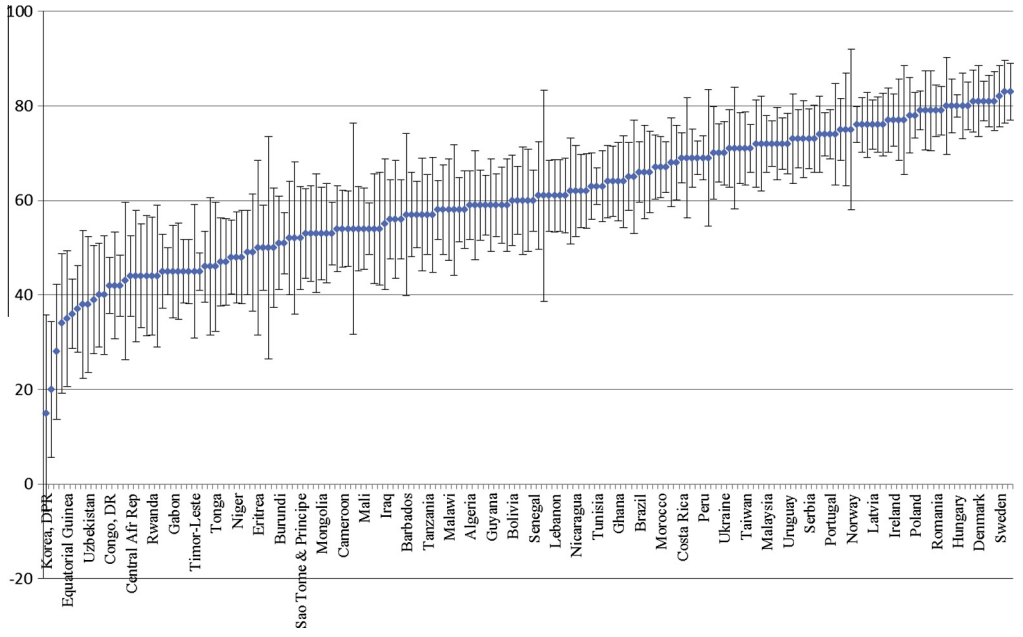

Fig. 3a. Information transparency index, 2010.

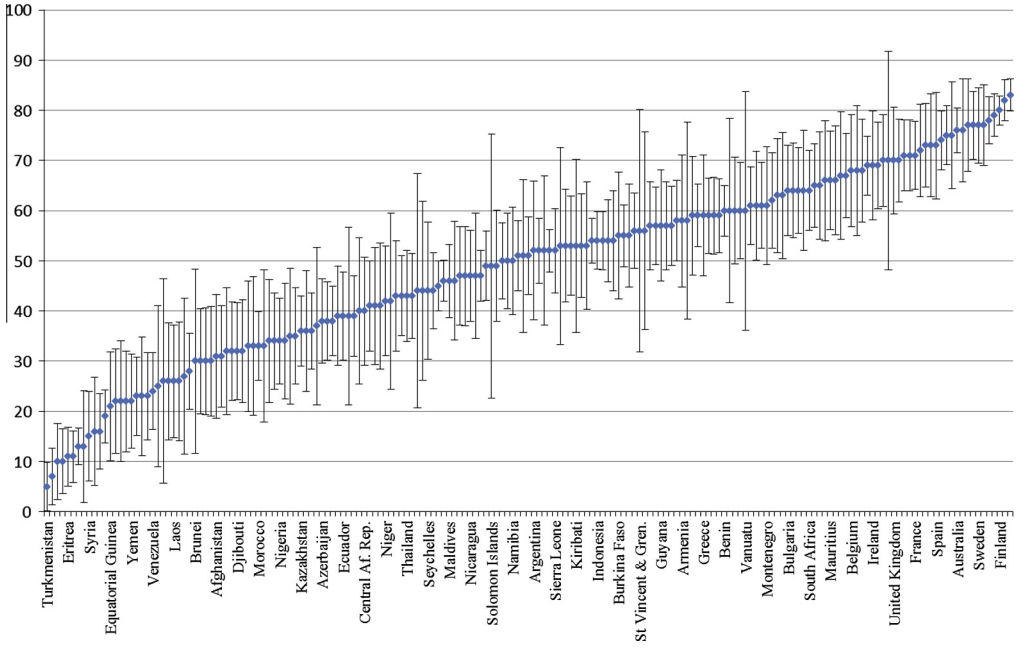

Fig. 3b. Accountability index, 2010.

informational transparency is greater than their accountability scores. As Fig. 4 shows, this includes many oil-rich Middle Eastern countries, as well as many of the rapidly-growing Asian countries.

In terms of a regional analysis (see Table 2), North America and Western Europe on average have the highest transparency across both indices, whilst the Middle East and North Africa have the lowest scores on the *ATI* (they do, however, have a higher *ITI* score on average than Sub-Saharan Africa, South Asia, and East Asia and the Pacific). It is also interesting to note that Eastern and Central Europe do much better in terms of their information transparency than their political transparency. By income grouping (see Table 3), richer countries have both better accountability mechanisms and information transparency. By and large, most income groups have better transparency with respect to information than for political constraints.

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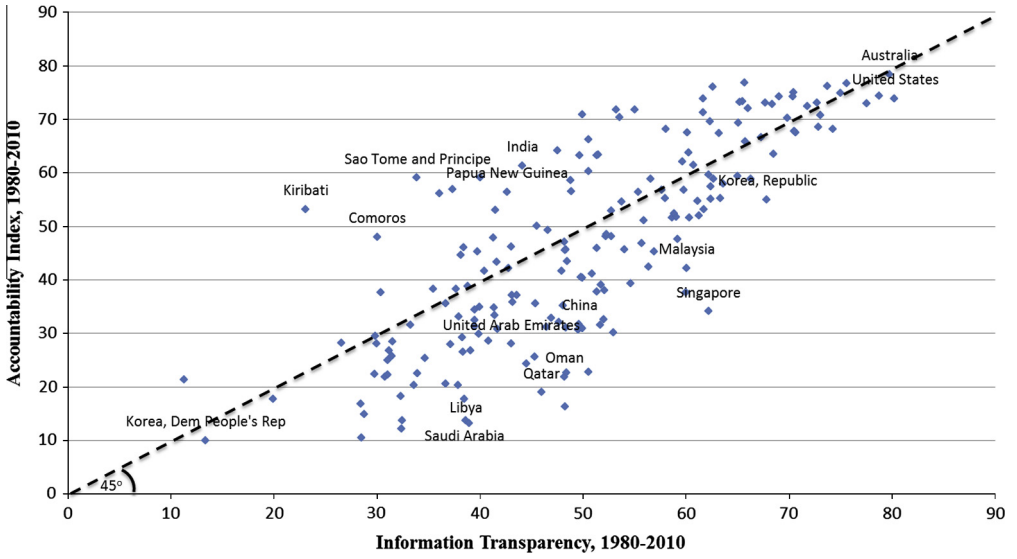

Fig. 4. Accountability versus informational transparency indices, average 1980–2010.

Table 2
Regional averages for ATI and ITI, 1980–2010.

Region	Accountability index, 1980–2010	Information index, 1980–2010
North America	74.1	79.5
Western Europe	73.5	69.8
Latin America & Caribbean	56.6	54.2
Eastern and Central Europe	47.7	55.8
East Asia and Pacific	46.0	46.9
South Asia	38.9	39.7
Sub-Saharan Africa	35.1	39.5
Middle East and North Africa	33.9	48.7
World average	46.4	50.0

Table 3
Averages by income group for ATI and ITI, 1980–2010.

Income level	Accountability index, 1980–2010	Information index, 1980–2010
High-income, OECD	73.3	70.9
High-income, non-OECD	50.5	56.2
Upper-middle-income	52.0	57.0
Lower-middle-income	45.8	49.3
Low-income	33.6	38.6
World average	46.4	50.0

In terms of GDP per capita there is a positive association between the degree of both accountability and information transparency (see Figs. 5a and 5b). However, the Accountability Transparency Index shows somewhat more of a 'U-shape' than the information transparency index, which is relatively linear in its relationship with income. This suggests that for countries with both very high and very low levels of accountability, average incomes are quite high. For example, four of the top ten countries in terms of GDP per capita (from the World Development Indicators, PPP in constant dollars) are the UAE, Qatar, Kuwait and Singapore, who all score quite poorly on the *ATI*.[18]

Although there are few existing indicators that match the Information and Accountability Transparency indicators developed here, Table 4 outlines the correlations of these two indicators (as well as the overall indicator) with three of the *World Bank Governance Indicators* that most closely match the intent of the transparency indicators here, as well as the Bellver/Kaufmann Indicators. As the table shows, the indicators here are very highly correlated with their closest corollary indicator

[18] Although each do better in terms of the *ITI*. Singapore, for example, ranked only 117th out of 187 countries (averaged over 1980–2010) on the *ATI*, but ranks 35th on the *ITI*.

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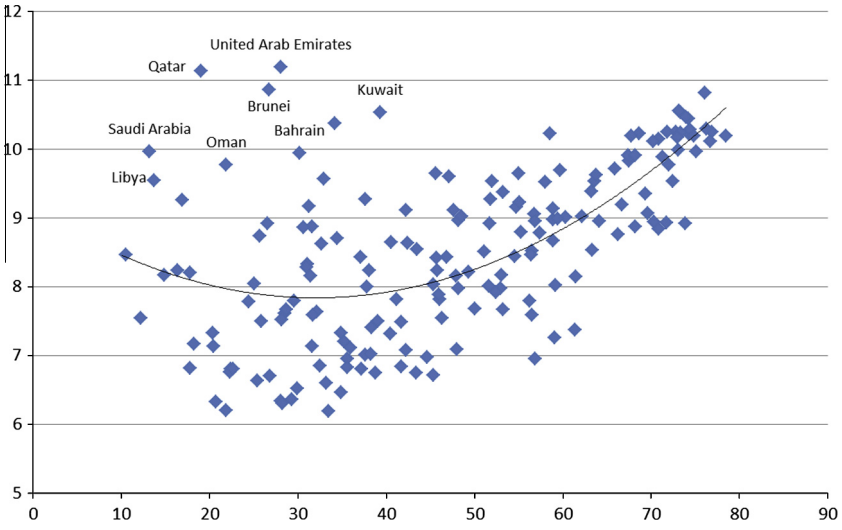

Fig. 5a. GDP per capita (ave 1980–2010) and Accountability index (Ave 1980–2010).

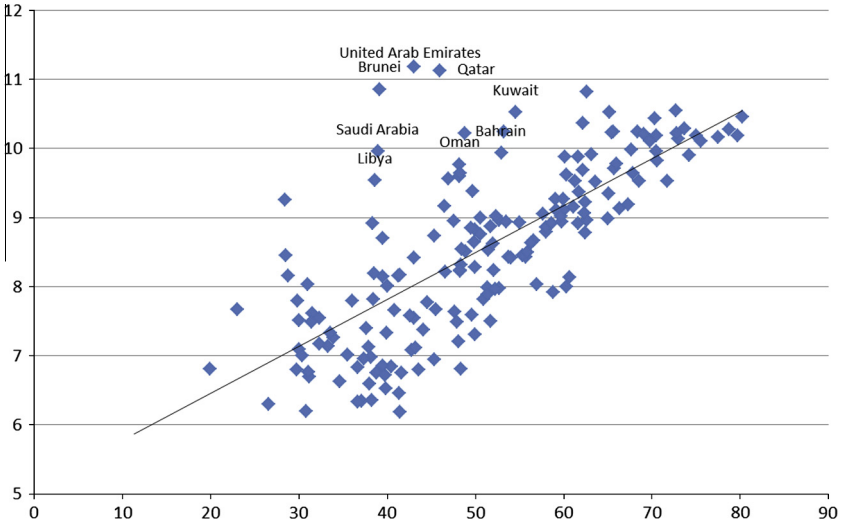

Fig. 5b. GDP per capita (ave 1980–2010) and information transparency (Ave 1980–2010).

Table 4
Correlations with selected governance indicators.

	Information index	Accountability index	Overall transparency
World Bank Governance Indicators:			
Voice & Accountability	0.64	**0.94**	0.91
Government Effectiveness	**0.75**	0.68	0.80
Regulatory Quality	**0.83**	0.75	0.86
Bellver/Kaufmann Transparency Indicators:			
Economic & Institutional Transparency	**0.82**	0.62	0.79
Political Transparency	0.58	**0.96**	0.88
Overall Transparency	0.78	0.89	**0.93**

Note: The ITI and ATI are averaged over 1996–2010 for the World Bank Governance Indicators, and averaged over 2002–2005 for the correlations with the Bellver/Kaufmann indicators. Numbers in bold correspond to most closely matched indices with respect to common intent.

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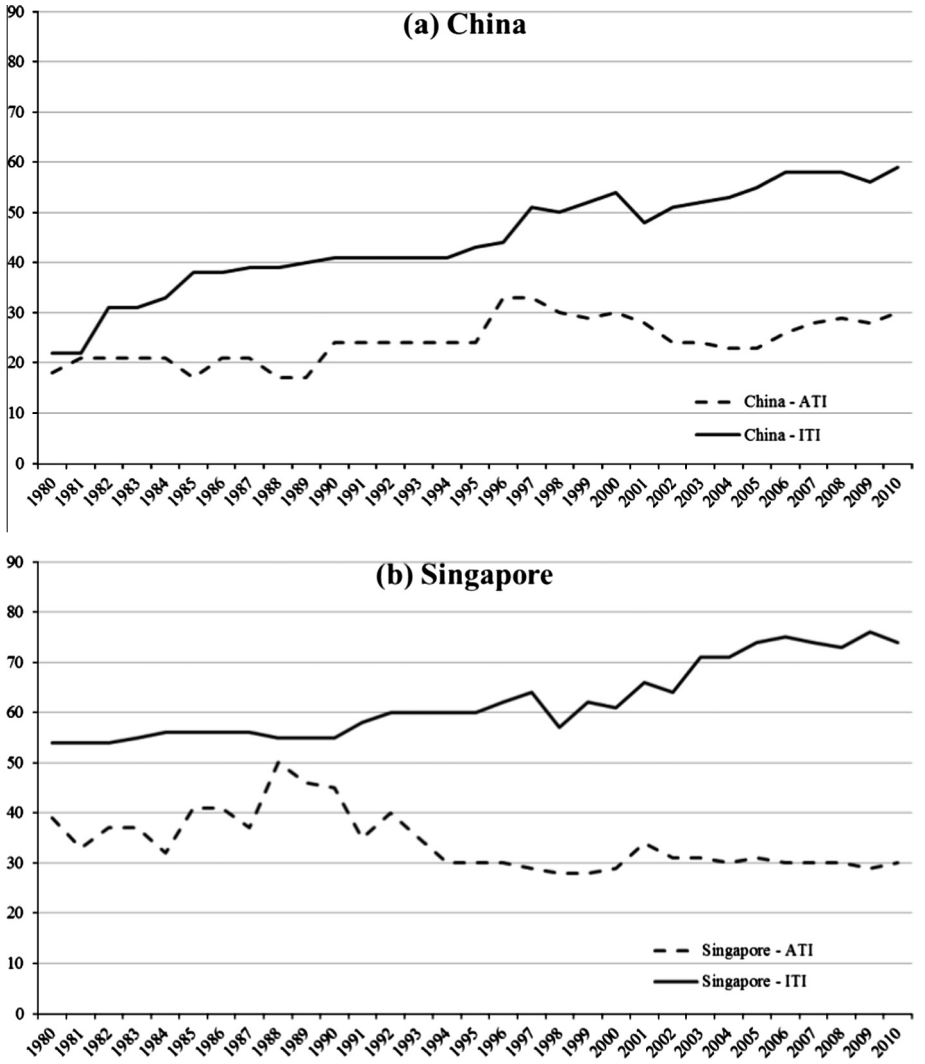

Fig. 6. Selected case studies, 1980–2010.

(highlighted in bold). For example, the *ATI* (averaged over 2002–2005) has a correlation of 0.96 with the 2002/3 Political Transparency Indicator from Bellver and Kaufmann, whilst their Economic and Institutional measure has a correlation of 0.82 with the Information Transparency indicator here.[19] The closest *WGI* indicator to the Accountability Transparency Index would be the Voice and Accountability indicator, and we see the correlation is again extremely high (0.94). The other two WGI indicators listed here (Government Effectiveness and Regulatory Quality) are not as closely matched in terms of their objectives with the Information Transparency indicator here, and this is perhaps reflected in the relatively lower correlations (0.75 and 0.83 respectively). Nevertheless, overall these correlations suggest that, as far as one can compare them to existing (imperfect) measures, the correlations are extremely high, particularly with respect to the only other existing transparency measures from Bellver and Kaufmann.

The final analysis here involves looking very briefly at a number of interesting case studies to examine how the respective accountability and information transparency indices have performed in these countries since 1980. The case studies chosen are somewhat arbitrary, but have largely been chosen either for their importance to the global economy in the 21st century, or because they are examples of where transparency-related issues may have played a part in the country's economic development.[20]

[19] One reason the correlation is relatively lower is perhaps due to the fact that Bellver and Kaufmann included fiscal transparency measures in this indicator, whereas I have included them in the Accountability Transparency Index.

[20] Interested readers are of course encouraged to undertake their own research on countries of interest to them. Data can be downloaded at http://andrewwilliamsecon.wordpress.com/datasets/.

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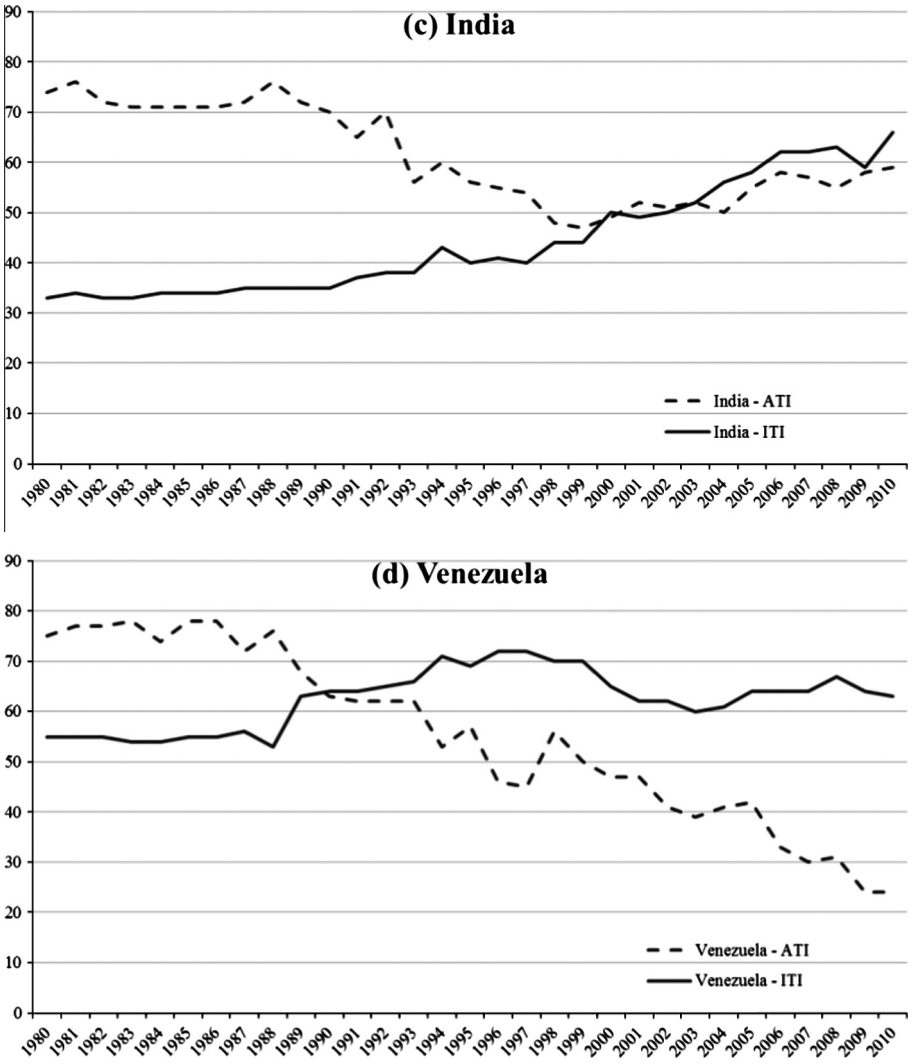

Fig. 6 (*continued*)

Fig. 6(a) shows the *ITI* and *ATI* scores since 1980 for China. Note that at the start of the period in question, China was just about to embark on its sustained period of economic development. And its scores for both types of transparency were extremely low. In 1980 China ranked 136th out of 152 countries for Information Transparency, and 90th out of 115 countries in terms of Accountability. Since that time, there has been a steady increase in its Information Transparency scores, whilst its Accountability Transparency score has remained relatively poor. Singapore tells a similar story in Fig. 6(b), although its Information Transparency scores have consistently been higher than its Accountability Transparency over the entire period.[21]

On the other hand, it has often been said that India's economic development has occurred *despite* its democracy, rather than because of it. And, as Fig. 6(c) shows, up until the late 1990s, its Accountability scores were greater than its Information Transparency scores. Since that time, however, the information transparency component has continued to climb, even as its accountability scores have stagnated and declined. The final country in Fig. 6(d) is Venezuela, which has often been seen as something of a pariah in Western countries since the early years of the 21st century under Hugo Chavez. As this chart shows, however, its political accountability was declining before Chavez came to power (although his ascension to power certainly did not stop this decline). But in terms of its information transparency it has always scored relatively well and, although it declined as well after 2000, this decline has not been quite as pronounced.

This brief look at these four countries is certainly not intended as signifying any type of causal relationship here between transparency and changes in economic development. It does, however, demonstrate that these indicators appear to 'make sense' in terms of these countries' political and economic developments over the past three decades.

[21] Although not included here, Thailand, Malaysia and South Korea also exhibit a similar pattern, in that their information transparency scores are also well above their political transparency scores over the period.

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6. Concluding comments and future research issues

For the first time, a composite indicator of transparency has been collated that has significant coverage across countries and time. Moreover, transparency has been divided into an information component, and an accountability component – issues that have often been conflated together in the literature over the years. This reflects the fact that the mere act of a government providing more economic, social and financial information does not of itself translate into greater accountability. Accountability is more closely associated with the idea of information as a constraining mechanism on the part of public officials, rather than the information itself. Having laid the conceptual groundwork for these ideas, the index was constructed using a methodology similar to the new methodology used in Transparency International's *Corruption Perceptions Index*. The benefits of this are twofold: (i) scores are more comparable over time, which is a necessary element to have in an index stretching over 30 years, and (ii) the methodology itself is quite straightforward, and lends itself to both replication and modification, should researchers choose to do so.

These composite indicators have used a broad range of sources in its construction, ranging from some well-known sources, such as Freedom House's *Freedom of the Press* index, through to measures constructed specifically for use in this index (the information published in the *World Development Indicators*, *International Financial Statistics*, *Government Financial Statistics*, and *Balance of Payments* databases). Overall, the indicators use 29 variables, collected from 21 sources. Although many of these sources begin their coverage only in the early years of the 21st century, the minimum criteria of three sources per country guarantees that scores over the entire period are not being driven purely from one source.

A brief analysis of the two indicators highlighted several issues. The first of these was that, although the two measures have a high degree of correlation between them, this correlation is far from perfect. There are a number of cases where a country has on average scored quite poorly in one index, but relatively strongly in the other. For example, when discussing 'transparency' in China, the distinction between the information component and the accountability component is an important one, because China has seen a steady increase in its information transparency since 1980, but very little improvement in its political accountability mechanisms. Singapore displays a similar pattern. Unsurprisingly, high income countries in Western Europe and North America demonstrate high levels of both information and political transparency. The Middle East and North Africa, by contrast, have on average the lowest levels of accountability, whilst Sub-Saharan Africa has the lowest average scores with respect to information transparency.

There are a myriad of economic questions that these indicators may help in shedding some light on, such as the role of information in a country's productivity over time; the impact of natural resources on a country's information and/or accountability, and hence whether that is in some way a contributor to the 'resource curse'; the role of transparency in the quantum and quality of foreign direct investment; and the role of transparency in the effectiveness of aid. The use of these transparency indicators developed here should at least be able to provide some general guidance on these problems, and allow researchers to develop some general principles for more detailed future research.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jce.2014.10.004.

References

Alt, J., Lassen, D., 2003. Fiscal Transparency and Fiscal Policy Outcomes in OECD Countries. University of Copenhagen Economic Policy Research Unit Working Paper (2003-2).
Alt, J., Lassen, D., 2006a. Fiscal transparency, political parties, and debt in OECD countries. Eur. Econ. Rev. 50, 1403–1439.
Alt, J., Lassen, D., 2006b. Transparency, political polarization, and political budget cycles in OECD Countries. Am. J. Polit. Sci. 50 (3), 530–550.
Alt, J., Lowry, R.C., 2010. Transparency and accountability: empirical results for US states. J. Theor. Polit. 22 (4), 379–406.
Andreula, N., Chong, A., Guillén, J., 2009. Institutional quality and fiscal transparency. Inter-American Development Bank Working Paper 36.
Andreula, N., Chong, A., Guillén, J., 2009. Institutional quality and fiscal transparency. IDB Working Paper Series (IDB-WP-125).
Angeletos, G.-M., La'O, J., 2010. Noisy business cycles. NBER Macroecon. Ann. 24.
Angeletos, G.-M., Pavan, A., 2004. Transparency of information and coordination in economies with investment complementarities. Am. Econ. Rev. 94 (2), 91–98.
Angeletos, G.-M., Pavan, A., 2007. Efficient use of information and social value of information. Econometrica 75 (4), 1103–1142.
Angeletos, G.-M., Werning, I., 2006. Crises and prices: information aggregation, multiplicity, and volatility. Am. Econ. Rev. 96 (5), 1720–1736.
Baeriswyl, R., Cornand, C., 2010. The signaling role of policy actions. J. Monetary Econ. 57, 682–695.
Balduzzi, P., Elton, E.J., Green, T.C., 2001. Economic news and bond prices: evidence from the U.S. Treasury market. J. Financ. Quant. Anal. 36 (4), 523–543.
Bastida, F., Benito, B., 2007. Central government budget practices and transparency: an international comparison. Pub. Admin. 85 (3), 667–716.
Bauwens, L., Omrane, W.B.B., Giot, P., 2005. News announcements, market activity and volatility in the euro/dollar foreign exchange market. J. Int. Money Fin. 24 (7), 1108–1125.
Bauhr, M., Grimes, M., 2012. What is government transparency?. Quality of Government Institute Working Paper (2012:6).

Bec, M., 2001. Corruption, connections and transparency: does a better screen imply a better scene? Pub. Choice 107, 87–96.
Bellver, A., Kaufmann, D., 2005. Transparenting transparency: initial empirics and policy applications. <SSRN: http://ssrn.com/abstract=808664>.
Besley, T., Burgess, R., 2001. Political agency, government responsiveness and the role of the media. Eur. Econ. Rev. 45, 629–640.
Besley, T., Burgess, R., 2002. The political economy of government responsiveness: theory and evidence from India. Q. J. Econ., 1415–1451.
Besley, T., Prat, A., 2006. Handcuffs for the grabbing hand? media capture and government accountability. Am. Econ. Rev. 96 (3), 720–736.
Boyd, J., Hu, J., Jagannathan, R., 2005. The stock market's reaction to unemployment news: why bad news is usually good for stocks. J. Fin. 60 (2), 649–672.
Brockman, P., Liebenberg, I., Schutte, M., 2010. Comovement, information production, and the business cycle. J. Financ. Econ. 97, 107–129.
Brunetti, A., Weder, B., 2003. A free press is bad news for corruption. J. Public Econ. 87 (2003), 1801–1824.
Chowdhury, S., 2004. The effect of democracy and press freedom on corruption: an empirical test. Econ. Lett. 85 (2004), 93–101.
Cihak, M.A., Demirguc-Kunt, M., Martinez Peria, Soledad, Mohseni-Cheraghlou, A., 2012. Bank regulation and supervision around the world: a crisis update. World Bank Policy Research Working Paper 6286. <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html> (accessed July 2013).
Cingranelli, D.L., Richards, D.L., Clay, K.C., 2013. The Cingranelli-Richards (CIRI) Human Rights dataset. <http://www.humanrightsdata.org> (accessed September 2013).
Coronel, S., 2012. Measuring openness: a survey of transparency ratings and the prospects for a global index. Mimeo. <http://www.freedominfo.org/2012/10/measuring-openness-a-survey-of-transparency-ratings-and-the-prospects-for-a-global-index/>.
Crowe, C., 2010. Testing the transparency benefits of inflation targeting: evidence from private sector forecasts. J. Monetary Econ. 57, 226–232.
Crowe, C., Meade, E.E., 2007. The Evolution of Central Bank Independence. J. Econ. Perspectives 21 (4), 69–90.
Cukierman, A., 2008. Central bank independence and monetary policymaking institutions – past, present and future. Eur. J. Polit. Econ. 24 (4), 722–736.
Dincer, N., Eichengreen, B., 2007. Central bank transparency: where, why and with what effect? NBER Working Paper 13003.
Djankov, S., McLiesh, C., Nenova, T., Shleifer, A., 2003. Who Owns the Media? J Law Econ, XLVI, pp. 341–381.
Dreher, Axel, Gaston, Noel, Martens, Pim, 2008. Measuring Globalisation – Gauging its Consequences. Springer, New York. KOF dataset <http://globalization.kof.ethz.ch/> (accessed July 2013).
Eijffinger, S., Geraats, P., 2006. How transparent are central banks? Eur. J. Polit. Econ. 22, 1–22.
Ferraz, C., Finan, F., 2008. Exposing corrupt politicians: the effects of Brazil's publicly released audits on electoral outcomes. Q. J. Econ., 703–745.
Florini, A., 2000. Does the invisible hand need a transparent glove? Proceedings of the 11th Annual World Bank Conference on Development Economics. The World Bank, Washington, DC.
Freille, S., Haque, M.E., Kneller, R., 2007. A contribution to the empirics of press freedom and corruption. Eur. J. Polit. Econ. 23, 838–862.
Gavazza, A., Lizzeri, A., 2007. The perils of transparency in bureaucracies. Am. Econ. Rev., Papers Proc. 97 (2), 300–305.
Gavazza, A., Lizzeri, A., 2009. Transparency and economic policy. Rev. Econ. Stud. 76, 1023–1048.
Geraats, P., 2002. Review: central bank transparency. Econ. J. 112 (483), F532–F565.
Geraats, P., 2009. Trends in monetary policy transparency. Int. Financ. 12 (2), 235–268.
Gilbert, T., 2011. Information aggregation around macroeconomic announcements: revisions matter. J. Financ. Econ. 101, 114–131.
Glennerster, R., Shin, Y., 2008. Does transparency pay? IMF Staff Papers 55 (1).
Golwitzer, S., 2010. Budget institutions and fiscal performance in Africa. J. Afr. Econ. 20 (1), 111–152.
Hahn, V., 2012. Should central banks remain silent about their private information on cost-push shocks? Oxford Econ. Papers 64, 593–615.
Hameed, F., 2005. Fiscal transparency and economic outcomes. IMF Working Paper WP/05/225.
Hughes Hallett, A., Viegi, N., 2003. Imperfect transparency and the strategic use of information: an ever present temptation for central bankers? Manchester School 71 (5), 498–520.
Hollyer, J., Rosendorff, B.P., Vreeland, J.R., 2011. Democracy and transparency. J. Polit. 73 (4), 1191–1205.
Islam, R., 2006. Does more transparency go along with better governance? Econ. Polit. 18 (2), 121–167.
Kaufmann, D., Kraay, A., Mastruzzi, M., 2006. Governance Matters V: Aggregate and Individual Governance Indicators for 1996–2005. World Bank Policy Research Working Paper 4012.
Kolstad, I., Wiig, A., 2009. Is transparency the key to reducing corruption in resource-rich countries? World Dev. 37 (3), 521–532.
Kopits, G., Craig, J., 1998. "Transparency in Government Operations", IMF Occasional Paper, vol. 158. International Monetary Fund, Washington.
Lindstedt, C., Naurin, D., 2010. Transparency is not enough: making transparency effective in reducing corruption. Int. Polit. Sci. Rev. 31 (3), 301–322.
Lucas, R., 1972. Expectations and the neutrality of money. J. Econ. Theory 4 (2), 103–124.
Lucas, R., 1973. Some international evidence on output-inflation tradeoffs. Am. Econ. Rev. 63 (3), 326–334.
Marshall, M.G., Jaggers, K., 2002. POLITY IV Project: Database User's Manual, Centre for International Development and Conflict Management, University of Maryland. <http://www.systemicpeace.org/polity/polity4.htm> (accessed July 2013).
Morris, S., Shin, H.S., 2002. Social value of public information. Am. Econ. Rev. 92 (5), 1521–1534.
Muto, I., 2013. Productivity growth, transparency, and monetary policy. J. Econ. Dyn. Control 37, 329–344.
OECD, 2002. Foreign Direct Investment for Development-Maximising Benefits, Minimising Costs, OECD Secretariat.
OECD, 2008. Handbook on Constructing Composite Indicators: Methodology and User Guide, OECD, 2008.
Olken, B., 2009. Corruption perceptions versus corruption reality. J. Pub. Econ. 93, 950–964.
Persson, T., Tabellini, G., 2000. Political Economics: Explaining Economic Policy. MIT, Cambridge.
Phelps, E.S., 1970. Introduction. In: Phelps, E.S. et al. (Eds.), Microeconomic Foundations of Employment and Information Theory. Norton, New York.
Prat, A., 2006. The wrong kind of transparency. Am. Econ. Rev. 95 (3), 862–877.
Reinikka, R., Svensson, J., 2004. Local capture: evidence from a central government transfer program in Uganda. Q. J. Econ. 119 (2), 679–705.
Reinikka, R., Svensson, J., 2005. Fighting corruption to improve schooling: evidence from a newspaper campaign in Uganda. J. Eur. Econ. Assoc. 3 (2–3), 259–267.
Reinikka, R., Svensson, J., 2011. The power of information in public services: evidence from education in Uganda. J. Pub. Econ. 95, 956–966.
Seifert, J., Carlitz, R., Mondo, E., 2013. The open budget index (OBI) as a comparative statistical tool. J. Comp. Policy Anal. Res. Prac. 15 (1), 87–101.
Siklos, P.L., 2011. Central bank transparency: another look. Appl. Econ. Lett. 18, 929–933.
Stiglitz, J.E., 2000. The contributions of the economics of information to twentieth century economics. Q. J. Econ. 115 (4), 1441–1478.
Svensson, L., 2006. Social value of public information: comment: Morris and Shin (2002) is actually pro-transparency, not con. Am. Econ. Rev. 96 (1), 448–452.
Veldkamp, L., 2006a. Media frenzies in markets for financial information. Am. Econ. Rev. (3), (577–601).
Veldkamp, L., 2006b. Information markets and the co-movement of asset prices. Rev. Econ. Stud. 73, 823–845.
Veldkamp, L., Wolfers, J., 2007. Aggregate shocks or aggregate information? costly information and business cycle co-movement. J. Monetary Econ. 54, 37–55.
Vishwanath, T., Kaufmann, D., 1999. Towards transparency in finance and governance. World Bank Working Paper. <http://ideas.repec.org/e/pka21.html> (accessed October 2013).
Von Furstenberg, G.M., 2001. Hopes and delusions of transparency. North Am. J. Econ. Financ. 12, 105–120.
Williams, A., 2009. On the release of information by governments: causes and consequences. J. Dev. Econ. 89 (1), 124–138.
Williams, A., 2011. Shining a light on the resource curse: an empirical analysis of the relationship between natural resources, transparency and economic growth. World Development 39 (4), 490–505.

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Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., Wacziarg, R., 2003. Fractionalization. J. Econ. Growth 8 (2), 155–194.
Freedom House, 2013a. Political Rights dataset. <http://www.freedomhouse.org/report-types/freedom-world> (accessed July 2013).
Freedom House, 2013b. Freedom of the Press dataset. <http://www.freedomhouse.org/report-types/freedom-press> (accessed July 2013).
Global Development Network Growth Database, 2009. Development Research Institute, New York University, <http://www.nyudri.org/resources/global-development-network-growth-database/> (accessed November 2013).
Global Competitiveness Report, 2013. GCR Dataset. <http://www.weforum.org/issues/competitiveness-0/gci2012-data-platform/> (accessed July 2013).
Global Integrity, 2013. Global Integrity dataset. <http://www.globalintegrity.org> (accessed July 2013).
Institute for Management and Development, 2013. World Competitiveness Yearbook. <www.imd.ch>. Dataset accessed from <http://info.worldbank.org/governance/wgi/index.aspx#doc> (accessed July 2013).
Institutional Profiles database, 2013. Institutional Profiles database. <http://www.cepii.fr/institutions/EN/ipd.asp> (accessed July 2013).
International Budget Partnership, 2013. Open Budget Index dataset. <http://internationalbudget.org/what-we-do/open-budget-survey/> (accessed July 2013).
International Development Association, 2013. IDA Resource Allocation Index dataset. <http://www.worldbank.org/ida/IRAI-2011.html> (accessed July 2013).
International Monetary Fund, 2012. Fiscal Transparency, Accountability and Risk, IMF: August. <http://www.imf.org/external/np/pp/eng/2012/080712.pdf> (accessed October 2013).
International Monetary Fund, 2013a. Balance of Payments Statistics, IMF, Washington.
International Monetary Fund, 2013b. Government Financial Statistics, IMF, Washington.
International Monetary Fund, 2013c. International Financial Statistics, IMF, Washington.
IREX, 2013. Media sustainability index dataset. <http://www.irex.org/project/media-sustainability-index-msi> (accessed July 2013).
Reporteurs Sans Frontieres, 2011. Press Freedom Index. <http://en.rsf.org/> (Accessed: July 2013).
Transparency International, 2012. Corruption perceptions index 2012: an updated methodology. <http://www.transparency.org/files/content/pressrelease/2012_CPIUpdatedMethodology_EMBARGO_EN.pdf>.
UN Public Administration Programme, 2013. UN E-Government Development database. <http://unpan3.un.org/egovkb/egovernment_overview/index.htm> (accessed July 2013).
World Bank, 2013a. Country Performance Institutional Assessment dataset. <http://databank.worldbank.org/data/home.aspx> (accessed July 2013).
World Bank, 2013b. Statistical Capacity Indicator dataset. <http://go.worldbank.org/UI0WGV6KW0> (accessed July 2013).
World Bank, 2013c. World Bank Governance Indicators dataset. <http://go.worldbank.org/EAAD9A0GA0> (accessed July 2013).
World Bank, 2013d. World Development Indicators, Washington, World Bank.

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