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National Culture and Central Bank Transparency

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Abstract

Central banking has been traditionally characterized by mystique and an organizational culture of secrecy. While in recent years there has been a shift towards greater transparency around the globe, the degree of transparency continues to vary across countries. This is surprising because the transparency of central banks has been associated with positive economic outcomes, and it might also be related to integrity and ethical issues like social responsibility, the value of virtue of truthfulness for public trust, and the accountability of independent central banks to the public. The present study examines whether and how the differences in central bank transparency can be explained by a national culture of secretiveness. Using a large cross-country sample of central banks from around the globe we document a negative association between central bank transparency and a societal culture of secrecy. This finding is robust to the controls for various country-specific attributes, and the use of instrumental regressions to lessen concerns about endogeneity.

Keywords: Central Banking, Culture, Transparency

JEL: E58, Z18, A13

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Introduction

The issue of transparency has received a lot of attention in the corporate ethics literature, and it has been approached from various angles.¹ While most of the studies focus on the financial and non-financial disclosures of enterprises (e.g. Gelb and Strawser, 2001; Haniffa and Hudaib, 2007; Vaccaro and Echeverri, 2010; Fernandez-Feijoo et al., 2014; Jackson et al., 2020), others examine issues like the role of transparency and expectations in the honesty of managerial reports (Brunner and Ostermaier, 2019), its role in the relationship between the opportunity to behave unethically in the organization and the employees' ethical judgments (Huang, 2018), and transparency in email communications in the workplace (Haesevoets et al., 2020).

Various explanations have been put forward for enhanced transparency and its relationship to ethics. While a driving reason for transparency might be the desire to achieve financial benefits like lower cost of debt and equity (Sengupta, 1998; Andrade et al, 2014; Dhaliwal et al., 2014), others claim that firms disclose because it is the socially responsible thing to do (Gelb and Strawser, 2001) and because it promotes public trust (DiPiazza and Eccles, 2002). Das Neves and Vaccaro (2013) refer to an ethical justification of information disclosure based on the ethical value of the virtue of truthfulness, while Turilli and Floridi (2009) approach this issue from a different perspective, arguing that transparency is not an ethical principle in itself but a pro-ethical condition for enabling or impairing other ethical practices or principles. As an example, they refer to accountability, safety, welfare and informed consent as ethical principles that depend on the disclosure of some information in order to be endorsed.

¹ Das Neves and Vaccaro (2013) mention that a search on the term “corporate transparency” in articles in business and computer ethics journals returns more than 150 articles published since the mid-1990s.

The present study complements existing work on transparency by examining, to the best of our knowledge for the first time in the literature, the role of a national culture of secrecy on the transparency of central banks.² Despite a growing interest in the aftermath of the financial crisis, empirical research on ethical related issues in banking remains limited (San-Jose et al., 2011) and our knowledge comes mostly from studies on commercial banking (e.g. Haniffa and Hudaib, 2007; San-Jose et al., 2011; Fassin and Gosselin, 2011) rather than central banking.³

This is surprising since the role of ethics in central banking has been emphasized by both policy makers and scholars. For example, Yellen (2017), the Chair of the Federal Reserve, mentioned that *“The Federal Reserve’s very effectiveness in setting monetary policy depends on the public’s assured confidence that we act only in its interest. We must act ethically, and we must demonstrate our ethical standards in ways that leave little room for doubt”*.⁴ Monteagudo (2019), has also emphasized the role of ethical considerations in the transparency of central banks arguing that: *“Discernment on when to be transparent or confidential requires a high level of wisdom and experience; but mostly it requires a significant dose of ethical considerations to determine when the public interest prevails over the private interest and to explain the reasons of one or another choice”* (p. 351). Along the same lines, Kahveci and Odabaş

² In a more general context, our work also relates to another strand of the literature that deals with various aspects of central banking, like the role of central bank independence in a deflationary environment (Tokic, 2018), the communication style of central banks (Moschella and Pinto, 2019), the role of professional structures on the economic ideas and subsequent policy positions of central banks (Ban and Patenaude, 2019), the parliamentary scrutiny of central banks (Högenauer and Howarth, 2019), the monetary policy related beliefs of central banks in the wake of the global crisis (Johnson et al., 2019), the leadership style of central bankers (Khademian, 2010), and the role of central banks as models for reform while transferring governmental powers to other technocrat - guardians (Roberts, 2010).

³ Existing work tends to be rather descriptive. For example, Lentner et al. (2017) discuss the social responsibility in the operation of central banks, and within this context they also refer to transparency and the ethical responsibility of the central banks. Claveau et al. (2019) also provide a general discussion of the ethics of central banking, where they refer to enhanced transparency in recent years as an aspect of an error-correction mechanism.

⁴ Interestingly, these remarks were part of her speech at a ceremony where she and former Fed Chairman Ben Bernanke received the Paul H. Douglas Award for Ethics in Government, in recognition of their efforts to increase transparency at the historically secretive Federal Reserve.

(2016) mention that *“On the positive side, it is posited that transparency makes policymakers more accountable, and gives reasons to work harder and behave in more ethical ways”* (p. 624).

Central banks have a very important role in the economy and as we discuss in more detail below, they have several unique characteristics, that differentiate them from commercial enterprises. However, some of the aspects that were discussed in the outset of this study like socially responsibility, the need for public trust, and accountability run high in the agenda of central banks, and therefore there are many reasons for which it is interesting to examine the factors that influence central bank transparency. First, being organizations with a public mandate, the central banks belong - in a broad sense - to the government (Oritani, 2010). As such, central banks occupy a unique position as both banks and independent public agencies (McPhilemy and Moschella, 2019). Additionally, the responsibilities that have been assigned to central banks over time provides them with structural power and freedom that few other public authorities and institutions possess (Blinder, 2004; Dyson, 2009; McPhilemy and Moschella, 2019). Second, while there is an agreement that the conduct of monetary policy is at the hands of the central banks, the goals of monetary policy are established by the political authorities (Bernanke, 2010). Third, despite the theoretical independence of central banks, in practice politicians continue to influence them and they attempt to promote their own goals (Binder, 2018). Fourth, the literature emphasizes that independence arguably enhances the importance of parliamentary scrutiny and the obligation for the central banks to explain and justify their decisions to the public and the elected representatives (Högenauer and Howarth, 2019). For example, Adrian and Khan (2019) characterize transparency as a vital component that is bridging independence and accountability and allows independent central banks to prove their effectiveness

and public accountability. Finally, the literature documents that central bank transparency reduces uncertainty of interest rates and inflation (Jitmaneroj et al., 2019), lowers stock price volatility (Papadamou et al., 2014), enhances monetary policy effectiveness (Papadamou et al., 2015), reduces the idiosyncratic risk of banking institutions (Andries et al., 2020), and contributes to financial stability (De Mendonca and De Moraes, 2018).

Using a cross-country sample over the period 1998-2015, our results documents that a national culture of secrecy has a negative and statistically significant effect on central bank transparency. This finding is robust across several specifications that control for other determinants discussed in the literature, and it also holds when using instrumental variable estimations to overcome endogeneity concerns. Therefore, our study contributes to the literature by showing that the transparency of powerful technocratic independent public agents is shaped not only by economic and formal institutional factors suggested in past studies, but also from the deep-rooted cultural characteristics of the society.

The paper is broken down into four sections after this introduction. We start with a background discussion and our research hypothesis (Section 2). Then, we outline the data, variables and methodology (Section 3) and present our results (Section 4). The final section provides a concluding discussion along with some research limitations (Section 5).

Background discussion and hypothesis development

The discussion in the previous section raises an important question. If transparency is beneficial, then why does the degree of central bank transparency differ across

countries, and which are the driving factors of such differences?⁵ The few studies that focus on this issue have so far examined the impact of the economic (e.g. past inflation, financial depth) and the formal institutional environment (e.g. rule of law, regulatory quality, democracy, etc.).⁶ However, these studies neglect the impact of informal institutions, like culture. This is surprising since, in recent years, scholars from different disciplines have documented that various dimensions of national culture influence an array of economic outcomes (Guiso et al., 2006), public policy decisions (Daniell, 2014), and the quality of government (Porcher, 2019). National Culture has also received attention in the business ethics literature, having been associated to ethical decision making (Lu et al., 1999), ethics' management practices (Weaver, 2001), software piracy (Husted, 2000), and corruption (Jing and Graham, 2008; Pena López and Sánchez Santos, 2014), to name a few. Therefore, we aim to bring together these studies and close this gap in the literature.

Building on the literature of commercial firms' financial disclosure decisions we hypothesize that central bank transparency might also be influenced by a culture of secretiveness. Within this context, we adopt the conceptual framework of Gray (1988) that asserts that firm managers in societies with a secretive culture tend to be less transparent in their disclosure practices. This hypothesis, known as the Gray's "secrecy" hypothesis, was confirmed by follow-up empirical studies, like the ones of Gray and Vint (1995), Doupnki and Riccio (2006), Hope et al. (2008), and Chen et al.

⁵ For example, the data from Dincer et al. (2019) reveal that the most transparent central banks in 2015 were the ones of Sweden (score of 14.5), Czech Republic (14), U.S.A. (12.5), U.K. (12.5), Iceland (12) and Hungary (12). The least transparent central bank is the Bank of Central African States (0.5), followed by Laos (1), Guyana (1.5), Sudan (1.5), and Angola (1.5). Between these two extreme groups are the central banks of countries like U.A.E (4.5), Singapore (6), Denmark (8), Peru (9), Switzerland (9), South Korea (10), Philippines (10), Poland (11), Norway (11.5), etc.

⁶ See for example Crowe and Meade (2008), and Dincer and Eichengreen (2007, 2014).

(2017).⁷ Yet, all these studies focus on commercial enterprises which have a different role and substantially different characteristics from central banks. Hence, to the best of our knowledge, our study is the first to examining whether central bank transparency can be attributed to deep-rooted cultural characteristics.

The underlying idea in our work is that central banks and their functions do not develop in a vacuum. This relates to the institutional theory which has been widely adopted to explain how firm behaviour is driven by institutional pressures, that can take the form of social, cultural or formal rules (Scott, 1992; Lawrence and Shadnam, 2008). Central in this theory is also the desire to achieve institutional fit which has been defined as “*the degree of compliance by an organization with the organizational form of structures, routines and systems prescribed by institutional norms*” (Kondra and Hinings, 1998, p. 750). Lammers and Barbour (2006) extend this to the organizational communication domain and provide a detailed discussion that formally specifies propositions an institutional theory of organizational communication.

Despite their distinguishing characteristics, central banks do not appear to be an exception to such pressures and the desire to achieve fit. In more detail, Capie et al. (1995) highlight in their discussion on the development of central banking that central banks are influenced by the development of ideas, theories and perceptions about their

⁷ Using a cross-country sample of firms operating in 27 countries, Gray and Vint (1995) conclude that secrecy and its impact on disclosure behaviour is a function of the cultural (societal) values. Douppnik and Riccio (2006) survey professional accountants in Brazil (higher secrecy) and in the United States (lower secrecy) to examine the assignment of numerical probabilities to verbal probability expressions that establish the threshold for the disclosure of information. Hope et al. (2008) conclude that firms in more secretive countries are less likely to hire a Big 4 auditor, while Chen et al. (2017) conclude that firms in more secretive countries are more likely to receive a modified audit opinion. In a more recent study that focuses on the integrated reporting (IR) quality of firms (rather than financial disclosures), Vitolla et al. (2019) show that the IR quality is associated with various indicators of national culture. In a broader sense, our investigation of the relationship between culture and information dissemination also relates to the work of Khosrowjerdi et al. (2019). Using responses from the World Value Survey, as for whether people use different sources (e.g. newspaper, radio, TV, etc.) to learn what is going on in their country and the world, they document that power distance, individualism, and indulgence influence the information source use at a global level.

proper role. Along the same lines, McPhilemy and Moschella (2019) highlight the arguments of Moschella and Pinto (2019) and Johnson et al. (2019), mentioning that: “*central banks are sensitive to the need to build and maintain their reputation with the public, and they will shape their behaviour accordingly*” (p. 490). Furthermore, as discussed in Högenauer and Howarth (2019), central banks play the role of agents in the typical principal-agent relationship. and they are accountable to the elected politicians (principal) and the wider public. Finally, Name-Correa and Yildirim (2019) propose a theoretical model to examine the consequences of vote transparency in committees whose members fear being blamed by interested observers for casting an unfavorable vote. They show that (i) while individually undesirable, social pressure can improve the collective decision by mitigating a voting externality, and (ii) public voting is particularly desirable in committees with overly biased members or overly biased voting rules against the alternative. While Name-Correa and Yildirim (2019) refer in general to a committee of experts deciding about a complex and n-dimensional project, their conclusions might also be related to the procedural transparency of the central banks and whether the individual voting records of the monetary policy committee members are released to the public.⁸

On the basis of the above discussion, we hypothesize that in a society that is characterized by a culture of secrecy, central banks will not be under pressure to disclose information to the public. In contrast, a national culture for openness will put pressure on central banks to adhere to the values of the society and be as transparent as possible. Thus, we form our hypothesis as follows:

⁸ As an example, Name-Correa and Yildirim (2019) refer to academic job promotion involving research, teaching, and service aspects, or a healthcare bill affecting several states.

The degree of central bank transparency will be negatively associated with the country-level culture of secrecy.

Data, Variables, and Methods

We collect data from various sources. We discuss here the source of the variables appearing in the baseline regression, and we mention the other sources while we introduce the additional control variables in further analysis. Information for national culture is from Hofstede Insights, while data for central bank transparency are from Dincer et al. (2019). Information for the macroeconomic environment (inflation, GDP per capita) and trade openness is from the World Governance Indicators of the World Bank. Data for financial depth are from Passport – Euromonitor International database.

Panel A in Table 1 presents descriptive statistics for the variables used in the baseline regression, while Panel B presents statistics for the variables used in further analysis. Table 2 reports the correlation coefficients for the baseline regression. To conserve space, we do not present the remaining variables in table 2, but we refer to untabulated correlation coefficients whenever necessary. In the discussion that follows, we provide a brief description of the variables used in our analysis.

[Insert Tables 1 and 2 Around Here]

Dependent Variable: Index of Central Bank Transparency

The main dependent variable in our study is the *overall central bank monetary policy transparency* index by Dincer et al. (2019). We rely on this index, because: (i) their work is well-known in the literature on central bank transparency, (ii) it has a wide

coverage of more than 100 central banks, (iii) it is up-to-date, covering the period 1998-2015, and (iv) it can be disaggregated into five dimensions, providing further insights into different aspects of central transparency. Each one of the five dimensions is based on three questions hence the overall index is the sum of the scores for the answers to the fifteen questions. In theory, this index takes values between 0 and 15, with higher values indicating higher transparency. A brief description of the five dimensions is given below, while further information on the calculations is available in Appendix I.

The first dimension, of *political transparency*, reveals the degree of openness regarding monetary policy objectives, by considering the existence of a formal statement of objectives, the quantification of the primary objective(s), and the explicit institutional arrangements between the monetary authority and the government. The second dimension, of *economic transparency*, focuses on the economic information that is used for monetary policy. It considers disclosures about the economic data used by the central bank, the forecasting model of the central bank, and the publication of its internal macroeconomic forecasts. The third dimension, of *procedural transparency*, corresponds to the approach used in the monetary policy decision taking. It accounts for the existence of an explicit monetary policy rule or strategy that describes the monetary policy framework, monetary policy deliberations and disclosures related to how the monetary policy decision was reached. The fourth dimension, of *policy transparency*, corresponds to the prompt disclosure of monetary policy decisions, the release of an explanation of the decision, and an explicit policy inclination or indication of likely future policy actions. The fifth dimension, of *operational transparency*, relates to the implementation of the central bank's monetary policy actions. It accounts for the disclosure of an evaluation of deviations from the main monetary policy targets and

outcomes, and a discussion of (unanticipated) macroeconomic disturbances that affect the transmission of monetary policy.

Key independent variable: Indicator of national culture of secrecy

To construct an indicator of a national culture of secrecy we rely on the conceptual framework of Gray (1988) and the empirical work of Hope et al. (2008). In more detail, Gray (1988) relates the societal culture of secrecy to selected dimensions of national culture from the framework of Hofstede (1980), arguing that: (i) a preference for secrecy is consistent with strong uncertainty avoidance, due to a need to restrict information disclosures as a means to avoid conflict and competition and to preserve security; (ii) high power-distance societies are likely to be characterized by the restriction of information to preserve power inequalities; (iii) secrecy is consistent with a preference for collectivism, as opposed to individualism, with its concern for those closely involved with the organization rather than external parties.⁹ Based on these arguments, Hope et al. (2008) propose the calculation of a country-level indicator of a national culture of secrecy that can be used in empirical research. This is defined as: National Culture of Secrecy = UAI + PDI – IND, where UAI, PDI, and IND are the

⁹ At the country level, uncertainty avoidance is defined as “*the extent to which the members of a culture feel threatened by ambiguous or unknown situations*” (Hofstede et al., 2010, p.191). Among other things, this is expressed through nervous stress and in a need for predictability: a need for rules, both written and unwritten ones. The power distance dimension can be defined as “*the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally*” (Hofstede 2010, p.61). As discussed in Hofstede et al. (2010), in countries with a high power distance index, people accept a hierarchical order in which everybody has a place and which needs no further justification. In contrast, in countries with a low PDI, people strive to equalise the distribution of power and demand justification for inequalities of power. Turning to the dimension of individualism versus collectivism, in individualistic societies there is a preference for a loosely knit social framework in which individuals are expected to take care of only themselves and their immediate families. In contrast, in societies characterized by collectivism there is a preference for a tightly knit social framework in which individuals can expect their relatives or members of a particular group to look after them in exchange for unquestioned loyalty.

corresponding cultural scores of the indices for uncertainty avoidance, power distance and individualism, respectively. Following Hope et al. (2008), this approach has also been used in Chen et al. (2017), Mazboudi and Hasan (2018), and Pasiouras et al. (2019).

As this point, it should be mentioned that Hofstede's dimensions of national culture are based on survey data collected around 45-50 years ago. However, our approach is consistent with a very large number of studies that rely on these indicators (e.g. Chui et al., 2010; Galor and Ozak, 2016; Porcher, 2019).¹⁰ This approach is based on the belief that differences in values between societies are deeply rooted in history and they drive socioeconomic developments rather than the other way around (Beugelsdijk et al., 2015), as well as that national culture remains stable over long time periods (Hofstede, 2001, 2011; Hofstede et al., 2010).¹¹

Control Variables

Our baseline specification includes various control variables that have been suggested in past studies as potential drivers of central bank transparency. More detailed, Dincer and Eichengreen (2014) find that past inflation is positively associated with current transparency. Therefore, our regressions include a control for *past inflation* that is the calculated as the logarithmic value of 1 plus the lagged inflation rate. Additionally, we

¹⁰ A quick search at Google Scholar returns over 170,000 citations to the studies of Geert Hofstede.

¹¹ Hofstede et al. (2010) explain that while new cultural practices can be learned throughout one's lifetime (e.g. communicating through new channels), cultural change is slow in the case of values as these are transmitted from one generation to another during childhood. As an example, Hofstede (2011) mentions that "Culture change basic enough to invalidate the country dimension index rankings, or even the relevance of the dimensional model, will need either a much longer period – say, 50 to 100 years – or extremely dramatic events. Many differences between national cultures at the end of the 20th century were already recognizable in the years 1900, 1800 and 1700 if not earlier. There is no reason why they should not play a role until 2100 or beyond" (p.22). Along the same lines, Beugelsdijk et al. (2015) replicate the dimensions of Hofstede for two birth cohorts with data from the World Values Survey, to conclude that: (i) countries' scores on the Hofstede dimensions relative to the scores of other countries have not changed very much, and (ii) using Hofstede's data in international research is as relevant now as it was when his work was first published.

control for the overall level of a country's development using the logarithm of the *GDP per capita* and we expect it to be positively associated with transparency (Dincer and Eichengreen, 2007, 2014).¹² As in Crowe and Meade (2008) and Dincer and Eichengreen (2007, 2014) we also control for *trade openness* using the sum of exports and imports as a percentage of GDP. To account for *financial depth* (Dincer and Eichengreen, 2007, 2014) we include the ratio of M1 to GDP.¹³ In subsequent analysis we augment this baseline specification with the addition of further control variables.

Methodology

To examine the impact of culture on central bank transparency we estimate a random effects model with standard errors clustered at the country-level, that takes the following form:

$$\text{Transparency}_{it} = \alpha + \text{Secrecy}_i + \text{CC}_{it} + \text{Regions}_i + \text{Year}_t + (v_i + \varepsilon_{it})$$

Where *Transparency_{it}* is the index (or sub-index) of central bank transparency in country *i* in year *t*, *Secrecy_i* is the indicator of the national culture of secrecy in country *i*, *CC_{it}* is a vector of country level control variables for country *i* in time *t*, *Year_t* corresponds to a set of year dummies that account for common time effects that could influence central bank transparency (e.g. crisis). The use of a time invariant characteristic like national culture does not allow us to estimate a model with country fixed effects. Therefore, to mitigate concerns about country-specific omitted variables

¹² To facilitate comparison across countries we use the GDP per capita based on purchasing power parity. Data are in constant 2011 international dollars.

¹³ The results do not change when we use the ratio of liquid liabilities (also known as broad money or M3) to GDP instead of the ratio M1 to GDP. The data for the M3 to GDP indicator are from the Global Financial Development Database of the World Bank.

- to the extent that it is possible - we also introduce dummies for the following geographical regions: Latin America and the Caribbean, North America, Asia and the Pacific, Middle East and Iran, Europe, and Africa (omitted group).¹⁴ These dummies account for conditions that are common between neighboring countries and within geographical regions, and have not been adequately captured by other control variables used in our specification.¹⁵

Empirical Results

Column 1 in table 3 presents the results of the baseline specification. The coefficient of national secrecy is negative and statistically significant (p-value = 0.014), providing support to our hypothesis. In other words, central banks are less transparent in societies that are characterized by a national culture of higher secrecy. Figure 1 provides a visual illustration of the baseline results, presenting the correlation between the culture of secrecy and central bank transparency conditional on the control variables (i.e. partial correlation).¹⁶

[Insert Figure 1 and Table 3 Around Here]

To examine further the robustness of this finding, in Columns 2 to 6, we replace the GDP per capita by alternative control variables for the overall country-level development, formal institutional environment, democracy, political risk, and legal

¹⁴Information for the classification of the countries in our sample to these geographical regions is from the Global State of Democracy Indices (GSoD Indices) Database of the International Institute for Democracy and Electoral Assistance (IDEA).

¹⁵ In further regressions discussed in the next section, we include additional country-level control variables in the baseline specification.

¹⁶ We use the Stata user-written command `xtavplot` by Gallup (2019).

origins. We include these variables one by one in the regressions, rather than simultaneously, as in several cases they are highly correlated.¹⁷

In column 2, we introduce a dummy variable that takes the value of 1 in the case of advanced countries and the value of 0 in the case of developing countries. Information is from the IMF and corresponds to the yearly classification of each country as either advanced or developing, going back to 1998. The inclusion of this variable in our baseline regression does not influence our main result.

In column 3 we account for the *institutional environment* using the following six indicators from the World Governance Indicators project of the World Bank: (i) voice and accountability, (ii) political stability and absence of violence, (iii) government effectiveness, (iv) regulatory quality, (v) rule of law, (vi) control of corruption. Given that these six indicators tend to be highly correlated we take the average score, that serves as an overall indicator of institutional development. The main result holds.

In column 4 we introduce a control for *political stability*. Taken from the International Country Risk Guide, it reflects the following conditions in a country: (i) government stability (e.g. legislative strength, popular support), (ii) socioeconomic conditions (e.g. unemployment, poverty), (iii) investment profile (e.g. contract viability/expropriation, profits repatriation), (iv) internal conflict (e.g. terrorism/political violence, civil disorder), (v) external conflict (e.g. cross-border conflict, foreign pressures), (vi) corruption (e.g. excessive patronage, secret party funding), (vii) military in politics, (viii) religion in politics, (ix) law and order, (x) ethnic

¹⁷ For example, the correlation coefficient of GDP per capita with the dummy for advanced countries equals 0.7074, with the institutional development indicator it equals 0.7814, with political stability it equals 0.7394. The correlation coefficient of advanced countries with institutional development is 0.8292, with political stability it is 0.7337, with democracy it is 0.5140. Similarly, the correlation coefficient of institutional development with political stability is 0.9303, while the one with democracy is 0.5933.

tensions, (xi) democratic accountability, (xii) bureaucracy quality. Higher figures of POLSTAB indicate lower political risk. As before, the inclusion of this indicator of political stability in the analysis, does not influence the so far obtained results.

In column 5 we add *democracy*, that is an indicator of institutionalized democracy reflecting elements of: (i) the competitiveness of political participation, (ii) the openness and competitiveness of executive recruitment, and (iii) constraints on the chief executive. The data for this indicator of democracy are from the Polity IV project. Its inclusion in the analysis does not influence the relationship between the national culture of secrecy and central bank transparency.¹⁸

In column 6, we use a set of dummy variables accounting for the legal origins of each country. The literature suggests that they have an impact on the quality of government (La Porta et al., 1999; Porcher, 2019) and corporate prospectus disclosures (La Porta et al., 2008), and one could expect them to have a similar effect on central bank transparency. Therefore, we use data from La Porta et al. (1999) to distinguish between the following legal origins: British, French, Socialist, German, and Scandinavian (omitted group). We continue to find that the national culture of secrecy enters the regression with a negative and statistically significant coefficient.

The literature also suggests that transparency might be influenced by other central bank characteristics and policies like inflation targeting, exchange rate regime, and central bank independence (Crowe and Meade, 2008; Dincer and Eichengreen, 2007, 2014). We introduce these variables in our specification, and we present the

¹⁸ In unreported regressions we replace this indicator of Institutionalized Democracy by Institutionalized Autocracy. Additionally, we use a combined score known as Polity. This is computed by subtracting the Autocracy score from the Democracy score, resulting in a unified polity scale that ranges from +10 (strongly democratic) to -10 (strongly autocratic). Marshall et al. (2019) discuss in the manual of the Polity IV project that this combined score is commonly used in empirical research, however, they also mention that: “*The original theory posits that autocratic and democratic authority are distinct patterns of authority, elements of which may co-exist in any particular regime context [.....] Investigations involving hypotheses of varying effects of democracy and/or autocracy should employ the original polity scheme and test democracy and autocracy separately*” (p. 17).

results in columns 1 to 3 of table 4. In addition, in column 4 we control for central bank size using the ratio of central bank assets to GDP.^{19,20} The underlying idea is that higher central bank size might imply more complexity, and it could result in differences in central bank transparency. In all the cases, our main finding holds.

[Insert Table 4 Around Here]

In the results presented so far, we included the countries of the euro area on an individual basis and we assigned to them the transparency score of the European Central Bank.²¹ At this point we perform two alternative exercises. First, we re-estimate our baseline specification while using aggregate data for the Euro area instead of the data of the individual euro-area countries.²² Second, we drop from the analysis all the euro-

¹⁹ Data for central bank independence are from Carriga (2016), data for the exchange rate arrangements are from Ilzetzi et al. (2019), and data for inflation targeting are from Dincer et al. (2019). Data for central bank size are from the Global Financial Development Database of the World Bank.

²⁰ We use information from the country chronologies, background material and online appendix of Ilzetzi et al. (2019) to introduce a set of dummy variables that distinguish between 6 categories of exchange rate flexibility identified in Ilzetzi et al. (2019). According to Ilzetzi et al. (2019) these can be roughly described as: Pegs (category 1), Narrow bands (category 2), Broad bands and Managed floating (category 3), and Freely floating (category 4). Ilzetzi et al. (2019) also refer to freely falling currencies (category 5) and dual markets in which there are no data for the parallel market (category 6). In some cases, Ilzetzi et al. (2019) assign in the country chronologies two labels to a specific country/currency, like for example: Freely falling/Peg, Freely falling/Freely floating, Freely falling/Managed floating, etc. In the results that we present in table 4, we classify these cases as Freely falling. The relationship between national culture of secrecy and central bank transparency does not change when we classify these countries as Peg, Freely floating or Managed floating, respectively. The omitted (reference) group is category 1 (i.e. Pegs).

²¹ Dincer et al. (2019) provide data for another two central banks that cover a group of countries. These are the Bank of Central African States (Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, Republic of the Congo) and the Eastern Caribbean Central Bank (Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Anguilla, Guadeloupe, Martinique). However, these central banks have been excluded from our analysis due to lack of data for the national culture of their individual member countries.

²² Information for the control variables is readily available in databases like the World Development Indicators of the World Bank. As far as the national culture of secrecy is concerned, we estimate it as the weighted average of the secrecy scores of the individual euro-area countries using as weights the population of each country relative to the total population of the euro-area. We perform this exercise for each year back to 1998, taking into account the actual membership in the euro-area and the year-specific population of each country.

area data, both aggregated and individual ones. We present these estimations in table 5. In both cases, our results remain qualitatively the same.

[Insert Table 5 Around Here]

The conceptual framework of Gray (1988) asserts that in addition to the link of secrecy with the three dimensions of national culture discussed earlier (i.e. UAI, PDI, IND), there can also be a somewhat less important association between secrecy and masculinity.²³ Gray (1988) points out that caring societies where more emphasis is given to the quality of life, people and the environment, will tend to be more open especially as regards to socially related information. Consequently, he points to a potentially negative association between masculinity and secrecy. Following Hope et al. (2008) and Pasiouras et al. (2019) we estimate a slightly different measure of secrecy that is calculated as: *Alternative indicator of National culture of secrecy* = UAI + PDI – IND – MAS, where UAI, PDI, IND as defined as before, and MAS stands for masculinity.²⁴ We obtain the same results, which we do not tabulate to conserve space.

To shed further light on the relationship between secrecy and central bank transparency we re-estimate the baseline specification while disaggregating the overall index of transparency into its five components.²⁵ The results in table 6 reveal that, consistent with the case of the overall index, the national culture of secrecy has a negative and statistically significant impact on economic transparency, procedural

²³ The dimension of *masculinity versus femininity* refers to division of emotional roles between women and men (Hofstede, 2011). Hofstede (2001) provides the following definition: “*Masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life*” (p. 297).

²⁴ The correlation coefficient between the two indicators of the national culture of secrecy equals 0.9462.

²⁵ The correlation coefficients of the overall index of transparency with the five sub-indices are as follows: 0.6807 (political), 0.8875 (economic), 0.6938 (procedural), 0.8590 (policy), 0.8023 (operational).

transparency, and policy transparency; however, this effect is insignificant in the case of political transparency and operational transparency. In more detail, it seems that a culture of secrecy matters when it comes to issues that relate to disclosures about the economic data and models used by the central bank, the approach used in the monetary policy decision taking, and the prompt disclosure of monetary policy decisions. However, a culture of secrecy is not relevant when disclosing information about the monetary policy objectives, the institutional arrangements with the government, and the evaluation of monetary policy targets and outcomes. In the case of the latter, GDP per capita and the dummy for Middle East and Iran are the only variables that enter the regression with a statistically significant coefficient. Figure 2 provides a visual illustration of these results.

[Insert Figure 2 and Table 6 Around Here]

The estimations presented so far are possibly clouded by endogeneity concerns. Reverse causality should not be an issue in our context. As discussed earlier, the culture of a society is rather stable over time and reflects deeply rooted attributes that were formed many years ago. Therefore, it would be difficult to argue that central bank transparency decisions shape the culture of a nation. Nonetheless, one could argue that our results are influenced by omitted variables. In the analysis presented in tables 3 to 6 we have shown numerous specifications that include controls for country-level characteristics, geographical regions, and time fixed effects, so we have tried to tackle this issue to some extent.

At this point we attempt to mitigate any remaining concerns in a more formal way, by using a G2SLS random-effects IV estimator with standard errors clustered at

the country level. We select carefully instruments that: (i) are expected to correlate with the first stage dependent variable (i.e. national culture of secrecy), hence satisfying the relevance requirement of an instrument, and (ii) being uncorrelated with the second stage error term, hence satisfying the exogeneity requirement of an instrument. The data for all the instruments are from Barro and McCleary (2003).

The first group of instruments refers to religion that has been used widely as an instrument for national culture (e.g. Li et al., 2013; El Ghouli and Zheng, 2016). In our case, the underlying idea is summarized in arguments like the one by Walker (1990): “*All religions contain elements, which, in one way or another, require or imply various forms of secrecy*” (p. 422). Along the same lines, Barkun (2006) mentions that “*Religion has often been associated with restricted knowledge, whether in the form of secret texts – doctrines transmitted only to disciples or initiates – or in the form of esoteric teaching understood only by a few*” (p. 275-276) as well as that “*A religion’s incentives for maintaining secrets may be material as well as spiritual*” (p. 277). Duncan (2006), in her bibliographic essay, also discusses that scholars from various disciplines study secrecy as a fundamental element of religiosity, and she points out that private or secret religious activities have existed in all types of religious traditions. Her work refers to several studies discussing: (i) that the elements of secrecy enter into understandings of many aspects of religions belief and experience, (ii) the roles of secret ideas and practices in religious communities, and (iii) the psychological and practical function of secrecy in the lives of religious individuals and groups.²⁶

²⁶ With the growing interest in the role of national culture in economics, finance scholars also discuss how religion relates to specific elements of national culture and its potential use as an instrument (Nash and Patel, 2019). Others discuss such issues in a more general context. For example, Hofstede et al. (2010) mention that religious beliefs help people avoid anxiety and accept uncertainties against which they cannot defend themselves. Along the same lines, Carl et al. (2004) argue that the Protestant religions support, the concept of equality of status before God, egalitarianism of access to God, individualist assertion, and therefore, lower power distance before other human beings.

Interestingly, Scheid (2006) and Teeuwen (2006) refer to the Japanese Middle Ages as an example where secrecy in religion spread beyond religion to become a “culture of secrecy” that cut across divisions of religion, sect, class and occupation.²⁷ Therefore, the first instrument that we use is a group of variables capturing the share of religion adherence in each country in 1970, based on the following ten categories: Catholic, Protestant, Orthodox, Other Christian, Hindu, Jewish, Muslim, Buddhism, Other Eastern religions, Other religions. As in McCleary and Barro (2006) who make use of the same data we omit the Catholic faction, which forms the reference category. The second instrument that we use also refers to religion and it is a dummy variable indicating the presence of state regulation of religion in the early 1970s, in the sense that the government appoints or approves the appointment of church leaders. Our last instrument is a dummy variable that takes the value of 1 in the case of countries that had a communist regime in 1925 and the value of 0 otherwise. It is well-known that in several communist regimes there were networks of civilian informants who monitored the politically incorrect behaviour of other citizens, and there are many studies suggesting that communism had a negative effect on individuals’ social and institutional trust (Mishler and Rose, 2001; Bjørnskov, 2007; Rainer and Siedler, 2009). In the case of totalitarian regimes this can even translate into a strong atmosphere of fear (Paldam and Svendsen, 2001). At the same time, trust appears to be a necessity for the disclosure of information and secrets (Wheless and Grotz, 1977; Vangelisti et al., 2001). Taken together, the above implies that communism created an environment of

²⁷ Scheid (2006) points out that “*The Japanese Middle Ages – taken here as the period of political decentralization from the eleven to the sixteenth century – were a time when all these forms of secrecy dominated religions practice. Geared by the legacy of Indian and the Chinese Tantrism, secrecy and esotericism trove and prospered notably in the field of Buddhism, but spread also beyond the religions realm: secret initiations became a favored medium for the transmission of knowledge among monks specializing in esoteric Buddhist ritual as well as among kami priests, scholars or poets, and by the late Middle Ages, even among actors and artisans* (p. xiv). Teeuwen (2006) adds to this that “*There seems to have existed a “culture of secrecy” in medieval Japan that cut across divisions of religion, sect, class and occupation*” (p. 9).

distrust and scepticism that could enhance the tendency to withhold information and result in a culture of secrecy. Given that this dummy variable refers to 1925 and considering the downfall of the communist systems in the 1990s, we do not expect it to have a direct impact on current levels of central bank transparency, other than through its impact on national culture.

Table 7 presents the results with the use of the G2SLS random-effects IV estimator. We re-estimate our baseline specification for both the overall index of transparency and the five sub-indices. In all the cases, the results hold. While it is difficult to completely rule out endogeneity, these estimations should mitigate concerns about omitted variable bias driving our results.

[Insert Table 7 Around Here]

Discussion and Conclusion

Hofstede et al. (2010) refer to culture as “*the collective programming of the mind that distinguishes the members of one group or category of people from others*” (p. 6), and there are numerous studies showing that culture influences human behaviour and subsequent economic and political outcomes. The present study uses a large cross-country sample to examine the impact of national culture on central bank transparency. We focus on the transparency of the central banks not only because it has been associated with positive economic outcomes, but also because it is related to ethical issues like social responsibility, the value of virtue of truthfulness, and accountability to the public. Considering that culture is a broad term, we follow the advice of Guiso et al. (2006) and we define culture in a sufficiently narrow way that allows us to identify

a causal link. Within this context, we focus on a national culture of secrecy, that appears to be of particular relevance to transparency decisions.

At first, one may question why a culture of secrecy would influence the transparency of powerful technocratic independent public agents like central banks. However, central banks do not operate in a vacuum, and there are arguments that they need to achieve fit with the values of the public. After all, central banks are accountable to the public and elected representatives. Additionally, the literature suggests that culture can influence even institutional outcomes (Tabellini, 2008) and the quality of government (Porcher, 2019). So, we have no reasons to believe that this could not extend to central bank practices.

Our results provide robust evidence that national culture, in the form of a culture of secrecy, is an important determinant of central bank transparency. This result holds while controlling for various country-level characteristics, and when instrumenting the culture of secrecy with historical information on religion and a communist regime. Additionally, our results reveal the impact of culture is not uniform across different aspects of central bank transparency. That is while a culture of secrecy has a negative and statistically significant impact on economic transparency, procedural transparency, and policy transparency, it bears no effect on political transparency and operational transparency.

One important implication of these findings is that culture is an important omitted variable in studies that examine cross-country differences in the transparency of central banks. Therefore, policy makers in the public domain should keep in mind that there is no “one size fits all” approach, and that transferring central bank disclosure practices from one country to another should be considered in the light of national culture. Given the recent interest of the public administration literature on central

banking, this should be highly considered in the research agenda as it could extend to other arrangements and policies within these public agents.

Our study is not without its limitations. First, as in other cross-country studies that focus on national culture, we ought to emphasize that our indicator does not consider cultural differences between groups within nations (e.g. based on regions, social classes, etc.) and that assigning a label of national culture does not mean that every person within that society is mentally programmed in the same way (e.g. Kwok and Tadesse, 2006; Porcher 2019). Rather, national culture refers to the average pattern of beliefs and values of a person that differentiate it from individuals in other countries (Kwok and Tadesse, 2006). As outlined in Porcher (2019), while referring to cross-cultural psychologists, the dimensions of national culture are identifiable because there are greater differences in individual responses between countries than within countries. Second, the use of a time invariant country-specific variable like culture does not allow us to use country fixed effects in our estimations, a drawback that is common to all past studies using indicators of national culture. In the present study, we have attempted to tackle concerns about omitted variable bias by considering various control variables (including dummies for geographical regions) and with the use of instrumental variables regression. Despite these limitations, we believe that our study makes an important contribution to literature, as it presents the first attempt to examine the impact of national culture on the transparency of central banks around the world.

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Table 1 – Descriptive statistics

Panel A (Baseline regression)	Obs.	Average	St. dev.	Min.	Max.
Central bank Transparency (overall)	1,236	7.231	3.363	1.000	14.500
National culture of secrecy	1,236	84.417	52.129	-33.000	188.000
Latin America & Caribbean (dummy)	1,236	0.112	0.315	0.000	1.000
North America (dummy)	1,236	0.028	0.164	0.000	1.000
Asia & Pacific (dummy)	1,236	0.216	0.412	0.000	1.000
Middle East & Iran (dummy)	1,236	0.088	0.284	0.000	1.000
Europe (dummy)	1,236	0.412	0.492	0.000	1.000
Log GDP per capita PPP	1,236	4.212	0.446	2.910	5.094
Past Inflation	1,236	2.025	0.048	1.913	3.064
Trade openness	1,236	85.517	59.726	16.439	442.620
Financial depth	1,236	26.378	18.381	4.168	155.102
Panel B (Further analysis)					
Central bank political transparency	1,236	2.252	0.742	1.000	3.000
Central bank economic transparency	1,236	1.196	0.996	0.000	3.000
Central bank procedural transparency	1,236	1.075	0.731	0.000	3.000
Central bank policy transparency	1,236	1.220	0.991	0.000	3.000
Central bank operational transparency	1,236	1.489	0.722	0.000	3.000
Alternative indicator of national culture of secrecy	1,236	36.152	55.879	-85.000	151.000
Advanced countries (dummy)	1,238	0.391	0.488	0.000	1.000
Institutional Development	1,238	0.401	0.924	-1.896	1.970
Political Stability	1,222	71.260	12.401	33.210	96.077
Democracy	1,191	7.139	3.340	0.000	10.000
British legal origin (dummy)	1,238	0.365	0.482	0.000	1.000
French legal origin (dummy)	1,238	0.337	0.473	0.000	1.000
Socialist legal origin (dummy)	1,238	0.158	0.364	0.000	1.000
German legal origin (dummy)	1,238	0.071	0.257	0.000	1.000
Inflation targeting (dummy)	1,236	0.396	0.489	0.000	1.000
Exchange rate - Narrow bands	1,236	0.206	0.404	0.000	1.000
Exchange rate - Broad bands & Managed floating	1,236	0.299	0.458	0.000	1.000
Exchange rate - Freely floating	1,236	0.254	0.435	0.000	1.000
Exchange rate - Freely falling	1,236	0.021	0.144	0.000	1.000
Exchange rate - Parallel market	1,236	0.001	0.028	0.000	1.000
Central bank independence	1,204	0.615	0.210	0.122	0.904
Central bank size	1,151	4.481	7.316	0.000	71.219

Table 2 – Correlation coefficients (Baseline regression)

	a	b	c	d	e	f	g	h	i	j	k
a Central bank transparency (overall)	1.000										
b National culture of secrecy	-0.514	1.000									
c Latin America & Caribbean	-0.145	0.263	1.000								
d North America	0.141	-0.270	-0.060	1.000							
e Asia & Pacific	-0.011	-0.015	-0.186	-0.088	1.000						
f Middle East & Iran	-0.392	0.253	-0.110	-0.052	-0.163	1.000					
g Europe	0.511	-0.275	-0.297	-0.141	-0.439	-0.260	1.000				
h Past inflation	-0.275	0.178	-0.006	-0.055	-0.089	0.012	-0.092	1.000			
i Trade openness	0.022	-0.092	-0.173	-0.112	0.197	0.031	0.056	-0.073	1.000		
j Financial depth	0.370	-0.277	-0.302	-0.051	0.059	-0.072	0.354	-0.245	0.205	1.000	
k Log GDP per capita in PPP	0.494	-0.379	-0.160	0.165	-0.122	0.190	0.445	-0.297	0.312	0.445	1.000

Table 3 – National culture of Secrecy and Central Bank Transparency: baseline regression and controls for overall development

	(1)	(2)	(3)	(4)	(5)	(6)
National Culture of Secrecy	-0.015** (0.006)	-0.013** (0.006)	-0.018** (0.008)	-0.020*** (0.007)	-0.020*** (0.007)	-0.020*** (0.007)
Latin America & Caribbean	1.086 (1.118)	1.906* (0.976)	1.959* (1.032)	2.105** (1.014)	1.948* (1.036)	1.787 (1.097)
North America	1.950 (1.278)	2.661*** (1.015)	3.590*** (1.078)	3.761*** (1.002)	3.676*** (0.969)	4.096*** (1.057)
Asia & Pacific	1.462 (0.889)	1.929** (0.871)	2.326*** (0.901)	2.651*** (0.874)	2.416*** (0.880)	2.572*** (0.870)
Middle East & Iran	-3.148** (1.226)	-1.193* (0.705)	-1.116 (0.736)	-1.021 (0.717)	-0.965 (0.705)	-1.302 (0.827)
Europe	2.717** (1.100)	3.413*** (0.787)	4.189*** (0.879)	4.401*** (0.760)	4.081*** (0.751)	5.123*** (0.927)
Past inflation	0.866 (1.453)	0.402 (1.498)	0.543 (1.508)	0.375 (1.531)	0.172 (1.572)	0.344 (1.506)
Trade openness	0.001 (0.004)	0.002 (0.004)	0.002 (0.004)	0.002 (0.004)	0.005 (0.004)	0.003 (0.004)
Financial depth	-0.000 (0.357)	-0.006 (0.325)	-0.003 (0.333)	-0.003 (0.324)	0.003 (0.365)	-0.004 (0.331)
Log GDP per capita PPP	2.349** (0.928)					
Advanced countries		2.003*** (0.292)				
Institutional development			0.283 (0.450)			
Political Stability				0.007 (0.015)		
Democracy					0.064 (0.052)	
British legal origin						1.013 (1.148)
French legal origin						1.574 (1.065)
Socialist legal origin						-0.162 (1.192)
German legal origin						1.574 (1.307)
Constant	-6.934 (4.622)	2.136 (3.374)	2.442 (3.409)	2.395 (3.686)	2.811 (3.528)	1.739 (3.632)
Year Dummies	YES	YES	YES	YES	YES	YES
R-sq. Between	0.6602	0.6712	0.6476	0.6366	0.6434	0.6517
Observations	1,236	1,238	1,238	1,222	1,191	1,238
Countries	79	79	79	78	77	79

*Notes:****Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parentheses; Results obtained from a random effects model with standard errors clustered at the country level; All the specifications include time dummies which are not shown to conserve space; The dependent variable is an overall index of central bank transparency.

**Table 4 – National culture of Secrecy and Central Bank Transparency:
controlling for central bank characteristics and policies**

	(1)	(2)	(3)	(4)
National Culture of Secrecy	-0.016*** (0.005)	-0.015** (0.006)	-0.016*** (0.006)	-0.016** (0.007)
Latin America & Caribbean	-0.123 (0.838)	1.076 (1.110)	0.508 (1.087)	1.397 (1.184)
North America	1.367 (1.148)	2.015 (1.308)	1.410 (1.224)	2.283* (1.307)
Asia & Pacific	0.759 (0.684)	1.482* (0.891)	1.235 (0.891)	1.593* (0.922)
Middle East & Iran	-2.646** (1.083)	-3.022*** (1.173)	-3.664*** (1.259)	-3.045** (1.253)
Europe	2.369** (0.963)	2.772** (1.103)	1.586 (1.081)	2.686** (1.146)
Past inflation	0.766 (1.459)	0.883 (1.334)	-0.534 (1.804)	1.046 (1.324)
Trade openness	0.002 (0.004)	0.001 (0.004)	0.004 (0.005)	0.006 (0.005)
Financial Depth	0.000 (0.007)	0.000 (0.007)	0.002 (0.008)	0.003 (0.009)
Log GDP per capita PPP	2.178*** (0.841)	2.316*** (0.889)	2.537*** (0.946)	2.104** (1.044)
Inflation targeting	2.223*** (0.437)			
Exchange rate - Narrow bands		0.177 (0.345)		
Exchange rate - Broad bands & Managed floating		0.146 (0.355)		
Exchange rate - Freely floating		0.058 (0.348)		
Exchange rate - Freely falling		-0.010 (0.463)		
Exchange rate – Parallel market		0.341 (0.309)		
Central bank independence			1.819 (1.185)	
Central bank size				-0.008 (0.016)
Constant	-6.509 (4.307)	-6.940 (4.430)	-5.245 (5.108)	-6.765 (4.854)
Year dummies	YES	YES	YES	YES
R-sq. Between	0.7486	0.6674	0.6608	0.6384
Observations	1,236	1,236	1,204	1,151
Countries	79	79	77	77

*Notes:****Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parentheses; Results obtained from a random effects model with standard errors clustered at the country level; All the specifications include time dummies which are not shown to conserve space; The dependent variable is an overall index of central bank transparency.

**Table 5 – National culture of Secrecy and Central Bank Transparency:
accounting for the Euro-area**

	Result with ECB (1)	Results without ECB or Euro-area countries (2)
National culture of secrecy	-0.020*** (0.008)	-0.020*** (0.008)
Latin America & Caribbean	1.382 (1.197)	1.401 (1.199)
North America	1.898 (1.313)	1.948 (1.317)
Asia & Pacific	1.579* (0.890)	1.597* (0.891)
Middle East & Iran	-2.691** (1.260)	-2.660** (1.260)
Europe	2.417** (1.119)	2.386** (1.124)
Past inflation	0.892 (1.484)	0.900 (1.487)
Trade openness	0.001 (0.005)	0.001 (0.005)
Financial Depth	0.001 (0.009)	0.001 (0.009)
Log GDP per capita PPP	1.965* (1.008)	1.925* (1.012)
Constant	-5.292 (4.901)	-5.194 (4.915)
Year dummies	YES	YES
R-sq. Between	0.5876	0.5800
Observations	1,035	1,017
Countries	64	63

*Notes:****Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parentheses; The results in column (1) are obtained from a specification that includes aggregate data for the European Central Bank, while excluding observations from individual euro-area countries; The results in column (2) are obtained from a specification that excludes both the aggregated data of the European Central Bank and the observations from individual euro-area countries. All the results are obtained from a random effects model with standard errors clustered at the country level; All the specifications include time dummies which are not shown to conserve space; The dependent variable is an overall index of central bank transparency.

Table 6 – National culture of Secrecy and Central Bank Transparency: exploring different elements of transparency

	Dependent Variable: sub-index of transparency				
	Political	Economic	Procedural	Policy	Operational
	(1)	(2)	(3)	(4)	(5)
National culture of secrecy	-0.000 (0.002)	-0.006*** (0.002)	-0.004** (0.002)	-0.004** (0.002)	-0.001 (0.001)
Latin America & Caribbean	0.128 (0.323)	0.794*** (0.274)	0.312 (0.265)	-0.038 (0.374)	-0.190 (0.259)
North America	-0.253 (0.740)	1.425*** (0.333)	0.110 (0.448)	0.802** (0.353)	-0.293 (0.364)
Asia & Pacific	-0.085 (0.290)	0.679** (0.264)	0.396* (0.227)	0.279 (0.269)	0.162 (0.235)
Middle East & Iran	-0.821** (0.395)	-0.303 (0.286)	-0.420 (0.351)	-0.836** (0.393)	-0.868** (0.400)
Europe	0.517 (0.342)	1.056*** (0.290)	0.239 (0.275)	0.538* (0.322)	0.266 (0.250)
Past inflation	-0.275 (0.272)	0.669** (0.265)	0.282 (0.248)	0.127 (0.607)	0.067 (0.324)
Trade openness	-0.000 (0.001)	0.002* (0.001)	0.001 (0.001)	-0.001 (0.002)	-0.001 (0.001)
Financial depth	-0.001 (0.002)	0.008** (0.004)	-0.004 (0.003)	0.001 (0.003)	-0.002 (0.002)
Log GDP per capita PPP	0.424 (0.343)	0.121 (0.243)	0.445* (0.259)	0.511* (0.279)	0.992*** (0.217)
Constant	0.754 (1.558)	-2.018* (1.063)	-1.550 (1.110)	-1.568 (1.647)	-3.021*** (1.020)
Year dummies	YES	YES	YES	YES	YES
R-sq. Between	0.4123	0.6768	0.2921	0.5375	0.5269
Observations	1,236	1,236	1,236	1,236	1,236
Countries	79	79	79	79	79

*Notes:****Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parentheses; All the results are obtained from a random effects model with standard errors clustered at the country level; All the specifications include time dummies which are not shown to conserve space; In each column, the dependent variable is a different sub-index that captures elements of central bank transparency.

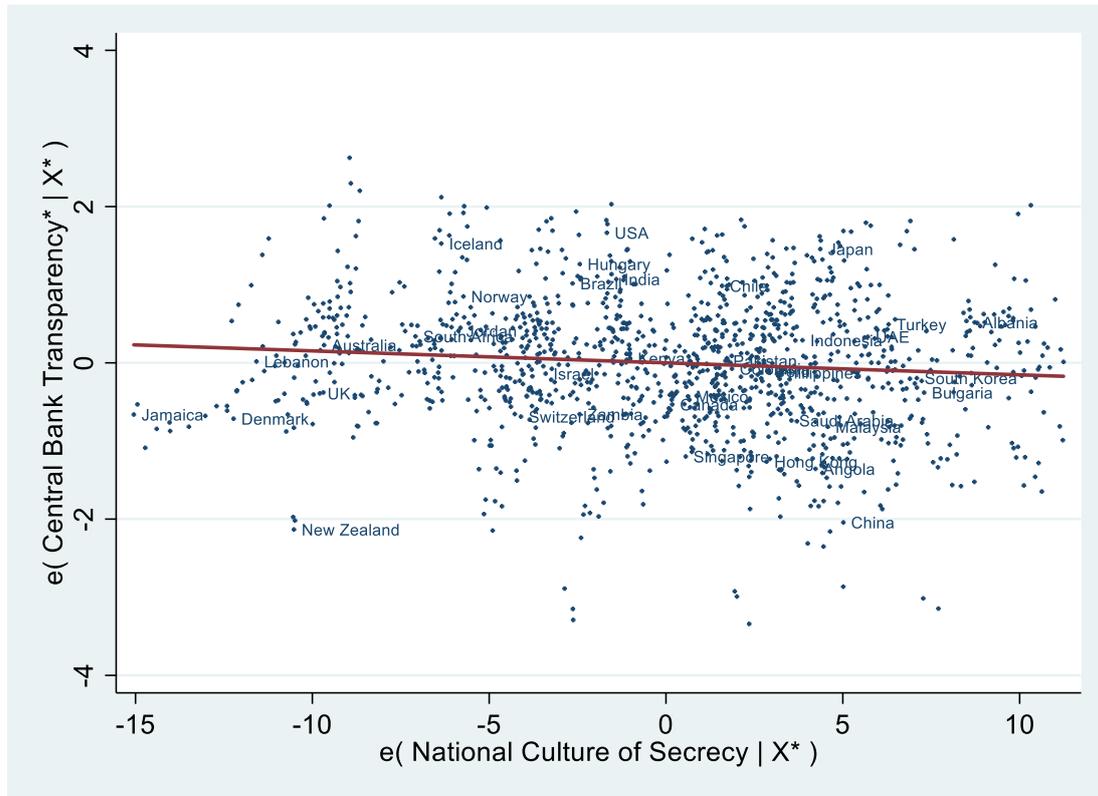
Table 7 – National culture of Secrecy and Central Bank Transparency: accounting for endogeneity

	Index of Central Bank Transparency					
	Overall (1)	Political (2)	Economic (3)	Procedural (4)	Policy (5)	Operational (6)
National culture of secrecy -instrumented	-0.022*** (0.008)	-0.001 (0.003)	-0.007*** (0.002)	-0.006** (0.002)	-0.006*** (0.002)	-0.001 (0.001)
Latin America & Caribbean	1.456 (1.233)	0.097 (0.360)	0.928*** (0.279)	0.424 (0.293)	0.097 (0.420)	-0.115 (0.266)
North America	1.551 (1.317)	-0.419 (0.746)	1.421*** (0.337)	0.027 (0.459)	0.660* (0.358)	-0.184 (0.364)
Asia & Pacific	1.614* (0.936)	-0.128 (0.303)	0.767*** (0.265)	0.420* (0.236)	0.342 (0.285)	0.246 (0.237)
Middle East & Iran	-2.918** (1.336)	-0.876** (0.435)	-0.151 (0.292)	-0.318 (0.387)	-0.726 (0.445)	-0.802** (0.403)
Europe	2.546** (1.140)	0.401 (0.358)	1.123*** (0.289)	0.226 (0.288)	0.490 (0.347)	0.339 (0.254)
Past inflation	0.893 (1.380)	-0.273 (0.265)	0.670** (0.263)	0.290 (0.237)	0.137 (0.582)	0.067 (0.317)
Trade openness	0.005 (0.005)	0.000 (0.001)	0.002 (0.001)	0.002 (0.001)	-0.000 (0.002)	-0.001 (0.001)
Financial depth	0.002 (0.008)	-0.001 (0.002)	0.008* (0.004)	-0.004 (0.004)	0.001 (0.004)	-0.002 (0.002)
Log GDP per capita PPP	2.341** (0.987)	0.447 (0.359)	0.069 (0.250)	0.397 (0.274)	0.460 (0.308)	0.975*** (0.221)
Constant	-6.697 (4.888)	0.799 (1.657)	-1.787 (1.100)	-1.297 (1.195)	-1.269 (1.738)	-3.064*** (1.066)
Year dummies	YES	YES	YES	YES	YES	YES

R-sq. Between	0.6503	0.4023	0.6775	0.2659	0.5175	0.5443
Observations	1,208	1,208	1,208	1,208	1,208	1,208
Countries	77	77	77	77	77	77
Underidentification test						
Kleibergen-Paap rk LM statistic	28.174	27.965	28.446	28.360	28.575	28.451
p-value	0.0017	0.0018	0.0015	0.0016	0.0015	0.0015
Weak identification test						
Kleibergen-Paap rk Wald F statistic	291.439	362.224	221.911	240.403	199.353	220.929
Stock-Yogo weak ID test critical values						
5% maximal IV relative bias	20.74	20.74	20.74	20.74	20.74	20.74
10% maximal IV relative bias	11.49	11.49	11.49	11.49	11.49	11.49
10% maximal IV size	38.54	38.54	38.54	38.54	38.54	38.54
15% maximal IV size	20.88	20.88	20.88	20.88	20.88	20.88
Test of overidentifying restrictions						
Sargan-Hansen statistic	7.589	14.874	14.905	9.226	5.322	11.885
p-value	0.5760	0.0945	0.0936	0.4167	0.8054	0.2199

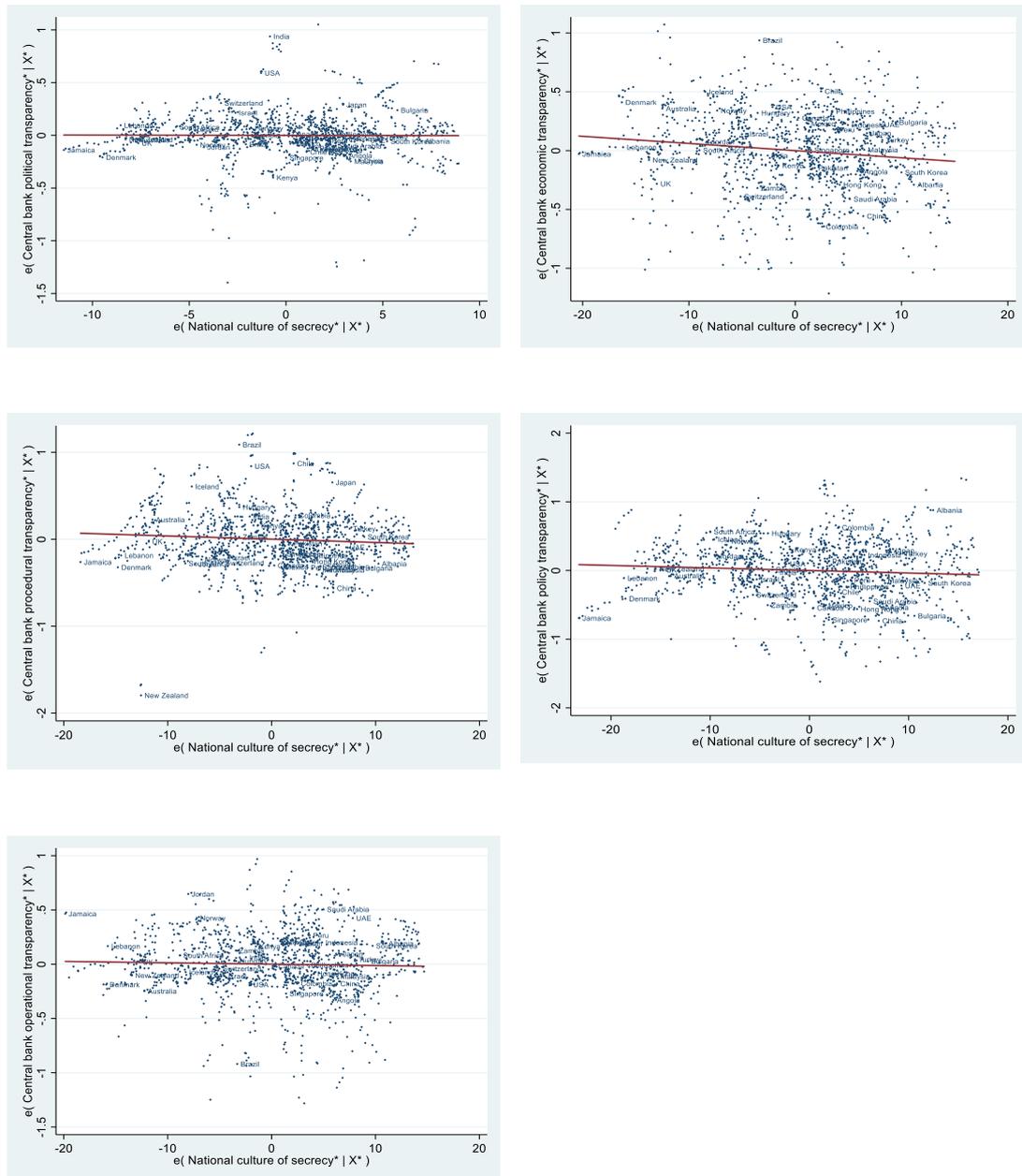
*Notes:****Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parentheses; All the results are obtained from G2SLS random-effects IV estimations with standard errors clustered at the country level; The national culture of secrecy is instrumented with: (i) a group of variables capturing the share of religion adherence in each country in 1970, (ii) a dummy variable indicating the presence of state regulation of religion in the early 1970s, (iii) a dummy variable that takes the value of 1 in the case of countries that had a communist regime in 1925 and the value of 0 otherwise; All the specifications include time dummies which are not shown to conserve space; In each column, the dependent variable is a different index of central bank transparency.

Figure 1– Baseline regression (partial correlation): overall index of central bank transparency



Notes: The figure presents the correlation between the national culture of secrecy and overall central bank transparency conditional on the control variables (i.e. partial correlation). The plot was prepared with the use of the xtavplot Stata user-written command by Gallup (2019).

Figure 2– Baseline regression (partial correlation): sub-indices of central bank transparency



Notes: The figure presents the correlation between the national culture of secrecy and sub-indices of central bank transparency conditional on the control variables (i.e. partial correlation). The plots were prepared with the use of the xtavplot Stata user-written command by Gallup (2019).

Appendix I - Calculation details of the Dincer, Eichengreen and Geraats (2019) Central bank transparency index

The overall index is the sum of the scores for the five sub-components below.

1. Political Transparency

(a) Is there a formal statement of the objective(s) of monetary policy, with an explicit prioritization in case of multiple objectives?

No formal objective(s) = 0

Multiple objectives without prioritization = $\frac{1}{2}$

One primary objective, or multiple objectives with explicit priority = 1

(b) Is there a quantification of the primary or main objectives of monetary policy?

No = 0

Yes, but not for the primary objective or all main objectives = $\frac{1}{2}$

Yes, for the primary objective or all main objectives = 1

(c) Are there explicit institutional arrangements or contracts for monetary policy between the monetary authorities and the government?

No central bank, contracts or other institutional arrangements = 0

Central bank without explicit instrument independence or contract = $\frac{1}{2}$

Central bank with explicit instrument independence for the body responsible for monetary policy or a central bank contract for monetary policy (although possibly subject to an explicit override procedure) = 1

2. Economic Transparency

(a) Is the basic economic data relevant for the conduct of monetary policy publicly available? The focus is on the release of current data for the following variables: (i) money supply growth, short and long-term interest rates, inflation, GDP growth and unemployment rate; and (ii) a measure of capacity utilization or [the central bank's estimate of the] 'output gap', and a timely [update of the central bank's] estimate of the 'natural' or long-run equilibrium interest rate (at least once a year).

Quarterly time series not available for all variables ad (i) = 0

Quarterly time series available for all variables ad (i) = $\frac{1}{2}$

Quarterly data available for all variables ad (i) and (ii) = 1

(b) Does the central bank disclose the formal macroeconomic model(s) it uses for monetary policy analysis?

No = 0

Yes = 1

(c) Does the central bank regularly publish its own macroeconomic forecasts?

No numerical central bank forecasts for inflation and output = 0

Numerical central bank forecasts for inflation and/or output published at less

than quarterly frequency or only for the short term = $\frac{1}{2}$
Quarterly numerical central bank forecasts for inflation and output for the medium term (one to two years ahead), specifying the assumptions about the policy instrument (conditional or unconditional forecasts) = 1

3. Procedural Transparency

(a) Does the central bank provide an explicit policy rule or strategy that describes its monetary policy framework?

No = 0

Yes = 1

(b) Does the central bank give a comprehensive account of monetary policy deliberations (or explanations in case of a single central banker) within a reasonable amount of time?

No, or only after a substantial lag (more than eight weeks) = 0

Only summary minutes or more comprehensive minutes published with a significant delay (of at least three but no more than eight weeks) = $\frac{1}{2}$

Yes, comprehensive minutes (although not necessarily verbatim or attributed) or explanations (in case of a single central banker), including a discussion of backward and forward-looking arguments, published within three weeks = 1

(c) Does the central bank disclose how each decision on the level of its main monetary operating instrument/target was reached?

No voting records, or only released after a substantial lag = 0

Only non-attributed voting records released within three weeks, or individual voting records released within eight weeks = $\frac{1}{2}$

Individual voting records released on the day of the policy announcement, or decision by single central banker = 1

4. Policy Transparency

(a) Are decisions about adjustments to the main monetary operating instrument/target promptly announced?

No, or after a significant lag = 0

Yes, at the latest on the day of implementation = 1

(b) Does the central bank provide an explanation when it announces monetary policy decisions?

No = 0

Only when policy decisions change, or only superficially = $\frac{1}{2}$

Yes, always and including an assessment of economic prospects = 1

(c) Does the central bank disclose an explicit policy inclination after every monetary policy meeting or an explicit indication of likely future monetary policy actions (at least quarterly)?

No = 0
Only a qualitative policy inclination = ½
Yes, quantitative forward policy guidance = 1

5. Operational Transparency

(a) Does the central bank evaluate to what extent its main monetary policy operating targets (if any) have been achieved?

No, or not very often (at less than annual frequency) = 0

Yes, but without providing explanations for significant deviations = ½

Yes, accounting for significant deviations from target (if any); or, (nearly) perfect control over main operating instrument/target = 1

(b) Does the central bank provide information on (unanticipated) macroeconomic disturbances that affect the monetary policy transmission process?

No, or not very often = 0

Yes, but only through short-term forecasts or analysis of current macroeconomic developments (at least quarterly) = ½

Yes, including a discussion of its forecast errors (at least annually) = 1

(c) Does the central bank provide an evaluation of the monetary policy outcome in light of its macroeconomic objectives?

No, or not very often (at less than annual frequency) = 0

Yes, but superficially = ½

Yes, with an explicit account of the contribution of monetary policy in achieving the objectives = 1