National institutional context and voluntary carbon disclosure : An international study of the banking industry

Abstract

The determinants of banks' voluntary environmental disclosure have been little studied in the literature. Based on the assumptions of institutional theory, this paper analyzes the impact of the national context, including the general legal system and the environmental policy of the states, on banks' carbon disclosure. Based on three international samples (118 to 237 banks from 31 to 48 countries), the results show a positive relationship between the strength of the legal system (degree of law enforcement), the stringency of environmental regulations, and the quality of banks' carbon disclosure. The porosity between the "country" and "bank" strata validates the influence of coercive factors and opens perspectives for public authorities to improve the transparency of firms' carbon information. Two factors vary the intensity of the institutional context-carbon disclosure relationship: the level of development of the home country and the size of the bank.

JEL classification: G21, M14, M41, Q56, Q58

Keywords: banking industry, voluntary carbon disclosure, country-specific determinants, institutional theory, legitimacy theory.

1. Introduction

Recent reports confirm the financial support of banks for fossil fuels. However, the future consequences of the climate crisis on banking activity are real, the responsibility of carbon energies on global warming is proven, public opinion is increasingly sensitive to environmental issues and the international community is looking for solutions and global agreements to limit the effects of climate change (COP26 in Glasgow). On an international scale, the Rainforest Action Network (RAN, March 2020) shows that cumulative financing between 2016 and 2019 granted by 35 international private banks to large fossil fuel companies amounts to 2,749 billion dollars (with a 15% increase over the period). In Europe, ShareAction (April 2020) analyzes the climate policies of the 20 largest banks and concludes that their performance is largely insufficient. Finally, a report on French banks evokes a trajectory of +4°C at the end of the century at the rate of current financing (Oxfam, October 2020)[1].

The banking sector is an essential link in the fight against climate change: banks finance the real economy through loans granted to individuals, companies, public actors, asset management, securities underwriting and their investments. If their environmental performance seems questionable, banks actively communicate on their sustainability commitments and policies. Beyond this gap between performance and voluntary disclosure, the collection and dissemination of environmental information remains a prerequisite for monitoring, steering and, ultimately, mitigating the environmental impact of the sector (Caby et al. 2020).

This paper focuses on the determinants of banks' voluntary carbon disclosure (VCD), and particularly on the influence of the national institutional context. Several authors note a lack of studies on the banking sector (Caby et al. 2020; Kiliç and Kuzey 2019) and comprehensive

[1] Links to the reports: https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change__2020_vF.pdf. https://shareaction.org/reports/banking-on-a-low-carbon-future-ii. https://www.oxfamfrance.org/rapports/banques-des-engagements-climat-a-prendre-au-4eme-degre.

research on the national context-environmental disclosure link (Baldini et al. 2018; Boura et al. 2020). The interest in exploring this issue also stems from the finding of heterogeneity in disclosure strategies across firms' home countries (societal disclosure: Buhr and Friedman 2001; Van der Laan Smith et al. 2005; Xiao et al. 2005; environmental disclosure: Ellimäki et al. 2021; Gerged et al. 2021; Grauel and Gotthardt 2016).

Drawing on assumptions from socio-political theories (institutional: Campbell 2007; DiMaggio and Powell 1983; Oliver 1991; and legitimacy: Deegan 2002; Patten, 2002; Suchman), this research assumes that the legal system and environmental policy of states have an impact on banks' VCD. The two phenomena underlying this relationship are the coercive force of the institutional context (the VCD is a consequence of political and regulatory pressure) and the search for legitimacy (the VCD must reflect societal aspirations). The specific characteristics of banks make this sector an ideal field of study for the above hypotheses: internationalization, extreme visibility, fragile reputation, high carbon footprint, specific regulation, multi-sector impact and dependence on regulators.

The DVI indicators used specifically reflect the banks' policy to assess and control their current and future emissions: the Carbon Disclosure Project (CDP) score, adherence to international initiatives to ease global warming (BankTrack site) and assessment of the coal exit policy (Reclaim Finance tool, Coalpolicytool site). Several dimensions of the general legal system are measured: the origin, the degree of enforcement of laws, accounting standards (reliability and transparency of information) and national banking regulations. Finally, the national environmental policy is evaluated via their energy policy, coercive and normative dimensions (taxes, application of climate laws and international treaties) and their current performance.

The results show that several institutional context variables contribute to improving banks' VCD. General, environmental, and sectoral coercive forces have a positive impact on VCD indicators. Specifically, the variables of national governance, the degree of law enforcement,

and the strength of environmental and sectoral (banking) regulations exhibit stable and positive coefficients in the models. These findings tend to validate the neo-institutional theory hypotheses on the influence of the national stratum on banks' VCD strategy. The synergy found between the two levels of analysis offers a wide range of regulatory implications: developing governance tools and the legislative arsenal on environmental issues seem to encourage banks to improve the quality of their carbon communication. Other determinants are also highlighted, notably the positive influence of environmental performance and the level of development of countries and the size of banks. Conversely, the legal origin, according to the classification of La Porta et al. (2008), the energy policy proxies of the countries and the profitability ratio of the banks do not have an impact on the VCD.

The contributions of this paper are varied. The results add to the literature on the determinants of banks' VCD. The scope of the conclusions is strengthened by 1/ a real correspondence between the "country" variables and the disclosure measures used (carbon theme, banking regulations); 2/ international samples (31 to 48 countries) reflecting very heterogeneous levels of development, legal systems and environmental policies and ensuring the relevance of the tests; 3/ the variety and originality of the dimensions of the legal system and environmental policies taken into account; 4/ internal variables and control indicators complementary to the study of institutional factors (level of development of the country, ownership structure of the banks); 5/ a robust empirical methodology based on the bootreg() and valreg() functions of R.

The article is organized as follows: the first section is devoted to the literature review and the definition of the hypotheses. The second section presents the methodology. The results are detailed in the fourth section. Finally, a discussion synthesizes the contributions and evokes future avenues of research.

2. Literature and hypotheses

2.1 Theorical perspectives

Why do firms voluntarily release nonfinancial information? Two broad families of theoretical fields identify the determinants of nonfinancial disclosure: socio-political and economic theories (Cotter et al. 2011; Hahn et al. 2015).

For socio-political theories, the managerial decision to disclose nonfinancial information stems from socio-political influences, specifically the institutional contexts in which firms operate (institutional theory: DiMaggio and Powell 1983; Meyer and Rowan 1977), the search for legitimacy with respect to society (legitimacy theory: Suchman 1995), and stakeholder expectations (stakeholder theory: Freeman and Reed 1983).

According to the hypotheses of economic theories, the disclosure decision responds to the objective of profit maximization by reducing information asymmetry via the emission of a credible signal to investors (signal theory: Akerlof 1970), by mitigating the effects of agency problems (agency theory: Jensen and Meckling 1976), and by taking into account the costs of disclosure of private information (Verrechia 1983).

This article is part of the field of socio-political theories. The reasoning is based on legitimacy and institutional hypotheses to analyze the influence of the legal system, environmental policies and their implementation at the state level on banks' VCD.

Neo-institutional theory points to an isomorphism phenomenon leading firms to adapt their organizational practices (including environmental disclosure) according to social norms, beliefs, values and structures (DiMaggio and Powell 1983; Meyer and Rowan 1977). Firms' behavior is shaped by institutional pressures and the demand for legitimacy dictated by other environmental actors (general public, civil society, other firms, government: Brammer et al. 2012; Campbell 2007; Oliver 1991). DiMaggio and Powell (1983) distinguish three types of

isomorphism[2] that tend to harmonize firms' practices in a given institutional context and reinforce their legitimacy: coercive isomorphism (application of binding rules and laws), normative isomorphism (alignment with societal, sectoral or professional network norms) and mimetic isomorphism (copying and imitating practices of other firms in the sector). North (1990) specifies that firms deal with a set of formal (political) and informal (cultural) rules: societies impose constraints (institutions) that define the rules of the game for interactions between entities and regulate the behaviour and activities of firms.

Several authors have defined grids to characterize the institutional context. The variety of capitalisms approach (Whitley 1999) defines four dimensions that shape historical institutional frameworks: the political system, the financial system, the education-labor dimension, and the cultural dimension (Ioannou and Serafeim 2012; Matten and Moon 2008[3]). Scott (1995; 2008) studies the dynamics of firm-institution interactions (voluntary disclosure being the consequence of these interactions) via three pillars: the regulatory pillar (political and legal), the cultural pillar[4], and the normative pillar (Tran and Beddewela 2020).

Neo-institutional theory is essential to explain differences in the practices and contents of organizations' non-financial IVD (societal, environmental, carbon) based on country-specific institutional variables (Aguilera and Jackson 2003; Chen and Bouvain 2009; Jackson and Apostolakou 2010; Matten and Moon 2008). Its general framework also allows for the integration of the assumptions of legitimacy, stakeholder pressure, and external governance. According to legitimacy theory, there is a social contract between the firm and society at large: the actions of an organization must be adapted to a social construct of norms, values, and beliefs (Cho and Patten 2007; Cormier et al. 2005; Deegan 2002; Suchman 1995). This contract is

[2] Dillard et al (2004) define isomorphism as the adaptation and application of an institutional practice by a firm.
[3] Matten and Moon (2008) distinguish between liberal Anglo-Saxon and coordinated European market economies, and explain the coexistence of two types of voluntary disclosure, explicit and implicit.
[4] Two sets of indicators are frequently cited for the study of cultural context: Hofstede's national culture variables and Gray et al. (1995) classification.

crucial for the firm's survival and allows it to use the human and natural resources of its environment. Voluntary disclosure appears to be a means of maintaining, restoring, or increasing the firm's legitimacy, depending on changing societal expectations (Ali and Rizwan 2013).

Some institutional characteristics can be considered as external governance mechanisms, complements or substitutes of internal mechanisms, which modify the level and quality of disclosure (public pressure, regulatory environment, legal system of investor protection, capital markets or degree of law enforcement: Jacoby et al. 2019; Kolk and Perego 2010; La Porta et al. 1998; Lu and Wang 2021; Prado-Lorenzo and Garcia-Sanchez 2010).

In synthesis, voluntary disclosure can be interpreted as a managerial practice responding to institutional pressures (coercive, normative, and mimetic), a vehicle for legitimacy vis-à-vis society, a response to constraining external governance mechanisms, and a tool for meeting stakeholder expectations (Roberts 1992). All socio-political theories therefore converge to emphasize the impact of external institutional variables on environmental voluntary disclosure[5].

This research focuses on the influence of the legal system (origin and degree of enforcement of laws) and the national environmental policies and performance on the quality of the banks' VCD. Thus, the hypotheses developed assume that the VCD depends on coercive and normative factors and on a search for legitimacy in the face of growing environmental concerns.

2.2 Hypotheses

La Porta et al (1998) suggest that laws and their degree of enforcement impact corporate governance. International comparative studies on voluntary diclosure take into account the legal

[5] For the complementarity of institutional and legitimacy theories, see Baldini et al. (2018). Economic theories are also complementary to socio-political assumptions as the costs and benefits of disclosure depend on the specifics of institutional contexts: Aguilera and Jackson (2003) and the notions of over- or under-socialization of theoretical fields, Clarkson et al. (2008), Grauel and Gotthardt (2016).

traditions of states and distinguish between Anglo-Saxon common law countries and European civil law countries. The former are characterized by a "shareholder" mode of governance (stricter laws on property rights and shareholder protection), developed financial markets and diluted ownership structures. The latter are defined by "stakeholder" modes of governance (stricter laws on the protection of employees and other stakeholders), preponderant bank financing and more concentrated ownership structures. These specificities guide financial disclosure incentives, but the reasoning can be extended to societal and environmental disclosure as it weighs on firm valuation (De Villiers and Marques 2016). In common law countries, the objective of the disclosure is to reduce information asymmetry between shareholders and managers, whereas in civil law countries the disclosure has a broader scope and responds to societal expectations. In both cases, a positive relationship is expected between the level of voluntary disclosure and the legal origin. However, as this paper focuses on VCD (high societal impact on a variety of stakeholders) of a sample of banks (which are central to the financing of the economy in civil law countries), the first hypothesis is formulated as follows:

H1: The quality of banks' VCD from civil law countries is higher than those from common law countries.

The influence of legal tradition has been widely tested in the empirical literature. The results mainly show a more intense environmental disclosure in Anglo-Saxon common law countries (Gallego-Alvarez et al. 2017; Grauel and Gotthardt 2016; Jorgensen and Soderstrom 2007; Luo 2019; Van der Laan Smith et al. 2005). Conversely, for societal disclosure, firms in civil law countries appear to communicate more than those in common law countries (Adelopo et al. 2013; Dhaliwal et al. 2012; Frias-Aceituno et al. 2013; Garcia-Sanchez et al. 2016; Kolk and Perogo 2010; Tran and Beddewela 2020). In both cases, a general trend emerges but the results are not unanimous.

Coercive forces are embodied in the efficiency of a state to define and enforce rules and laws corresponding to the political system in the sense of Whitley (1999) and the regulatory pillar of Scott (1995). The quality of regulation and the degree of enforcement can induce (dissuade) firms from voluntarily disseminating non-financial information. There are two opposing theoretical arguments about the direction of the relationship between the strength of the legal system and VCD. Proponents of a positive relationship[6] assume that: 1/ there is a synergy between mandatory and voluntary disclosure (if there are binding regulations, VCD is less costly for firms because they already have the tools and procedures to collect it), 2/ VCD is a way of anticipating stricter regulations in the future (Lyon and Maxwell 2002), and 3/ firms will tend to behave irresponsibly in a weaker legal system (little or no VCD and biased information). The authors supporting the existence of a negative relationship[7] believe that: 1/ if the legal system is very constrained, firms will adopt only the minimum level of disclosure required by law, thus minimizing the VCD, 2/ in a weak legal system, the VCD will serve as a substitute for institutional failures.

Authors have declined the previous hypotheses by focusing on the environmental dimension of the relationship between legal system and voluntary disclosure. Political, social and competitive pressures in favor of transitions should encourage firms to undertake environmental initiatives for reasons of compliance and transparency (Boura et al. 2020; Campbell 2007). In societies where sustainability and environmental issues are very prominent in political and public debates, stakeholder expectations increase and firms attempt to comply. The costs and benefits of disclosure (Cormier et al. 2005) and the search for legitimacy thus depend on the environmental laws of states that normally reflect the concerns of the general public (climate

[6] See Cahan et al. (2016), De Villiers et Marques (2016), Dhaliwal et al. (2012), Garcia-Sanchez et al. (2016) et Ioannou et Serafeim (2012).
[7] The results of Baldini et al. (2018), Ellimäki et al. (2021), Jackson and Apostolakou (2010), Lu and Wang (2021), Matten and Moon (2008), Prado-Lorenzo et al. (2009) support this hypothesis.

change laws, adherence to and implementation of international treaties, energy policies, sectoral norms and standards, environment-related taxes). The previous arguments lean toward a positive relationship: the more ambitious and binding national policies are, the more incentive firms have to disseminate environmental information (Boura et al. 2020; Grauel and Gotthardt 2016; Luo 2019). However, the hypothesis that disclosure is driven by the failure of states to provide strong policy solutions has also been tested (Ellimäki et al. 2021; Lu and Wang 2021).

Beyond the legal tradition, this research declines political strength along several dimensions to respect both the nature of the voluntary disclosure under study (carbon) and the specificity of the sample (banks). The relationship between countries' political and legal systems and banks' VCD is dependent on the degree of enforcement of laws in general, accounting and auditing standards (reliability of information: Kolk and Perogo 2010; Jacoby et al. 2019), specific banking sector regulations, and states' environmental policies.

In the case of banks, the institutional context-VCD link is particularly interesting. The role of the banking sector in the real economy makes it both a lever for economic development and a major player in the environmental transition via the collection of savings and the financing granted to individuals and companies. On this last point, measuring their real footprint poses major methodological problems (see Carbon Impact Analytics CIA methodology by Carbone 4), which reinforces the need and the desire to communicate on their environmental commitments. Subject to strict regulations (prudential rules, central bank supervision), highly exposed to the media, and weakened by the jolts of financial crises, banks are constantly trying to re-establish and maintain the legitimacy of their activities.

Hypotheses H2 to H5 are all based on the scenario of a synergy between political and regulatory factors and the banks' VCD, a scenario that assumes that the quality of the banks' VCD is higher in countries with a strong and efficient legal system at the service of an ambitious environmental policy. On the environmental side, hypothesis H5 distinguishes between energy regulations

(H5a), the coercive and normative dimensions of national environmental policies (H5b and H5c) and states' current performance of governments (H5d).

H2: The degree of enforcement of laws and regulations has a positive influence on banks' VCD.

H3: The quality of accounting and auditing standards has a positive influence on banks' VCD.

H4: National banking sector regulation has a positive influence on banks' VCD.

H5: Ambitious national environmental policies have a positive influence on banks' VCD.

H5a: Stringent national energy regulations have a positive influence on banks' VCD.

H5b: Coercive factors in national environmental policies have a positive influence on banks' VCD.

H5c: Prescriptive factors in national environmental policies have a positive influence on banks' VCD.

H5d: High national environmental performance has a positive influence on banks' VCD.

Finally, internal variables to account for intrinsic characteristics of banks that may impact VCD are incorporated into the hypothesis system[8]. The literature recognizes the positive influence of size (visibility and societal pressure favor VCD), profitability (higher profitability helps to absorb the costs of collecting and disseminating information) and multiple listings (higher market exposure and the involvement of international investors encourage firms to disclose more information).

H6: The quality of the VCD increases with the size of the bank.

H7: The quality of the VCD increases with the bank's profitability.

[8] See literature reviews by Gallardo-Vazquez et al. (2019), Hahn et al. (2015), and Velte et al. (2020).

H8: The quality of the VCD increases with the number of ratings of the bank.

2.3 Empirical literature

The empirical literature on the external determinants of voluntary disclosure studies societal disclosure more frequently than environmental disclosure[9]. The tests empirically decline the concepts of reporting, disclosure and accounting in a very similar way (Fifka 2013; Hahn and Kuenen 2013). The proxies used are varied: quantitative and qualitative measures from company reports, indices and scores (Thomson Reuters ESG score, Datastream Asset4 , Sustainalytics ESG ranking, Carbon Disclosure Project CDP, KPMG rating, MSCI KLD index...). This heterogeneity of measurement tools hinders the comparability and generalization of results (Kalesnik et al. 2020). Three recommendations emerge from the literature: give preference to international samples that include countries at different levels of development and that ensure significant variability in institutional contexts; ensure consistency between the measurement of disclosure and institutional explanatory variables[10]; and take into account the effect of internal variables in the tests.

Looking specifically at tests of the relationship between *institutional factors and environmental disclosure*, a few empirical results seem to emerge. Several authors show that firms in countries with an Anglo-Saxon legal tradition disseminate more environmental information (Grauel and Gotthardt 2016; Jorgensen and Soderstrom 2007; Luo, 2019; Prado-Lozenzo and Garcia-Sanchez 2010). The results regarding the quality of the legal system are more mixed: Boura et

[9] For external determinants of societal disclosure, see: Baldini et al. (2018), Bani-Khalid and Kouhy (2017), Cahan et al. (2016), Chen and Bouvain (2009), Coluccia et al., (2018), Frias-Aceituno et al. (2013), Gallen and Peraita (2017), Garcia-Sanchez et al. (2016), Fortanier et al. (2011), Ioannou and Serafeim (2012), Jackson and Apostolakou (2010), Kühn et al. (2018), Lattemann et al. (2009), Tran and Beddewela (2020).

[10] Cormier et al. (2005) tailor their research design to different stakeholders by isolating the impact of their respective expectations on the nature of information. Baldini et al. (2018), Chen and Bouvain (2009), and Jackson and Apostolakou (2010) distinguish several institutional "pillars" that they link to the three dimensions of CSR.

al. (2020) and Gerged et al. (2021) find a positive relationship between legal system strength and environmental disclosure, while Baldini et al. (2018), Ellimäki et al. (2021), Lu and Wang (2021), Prado-Lorenzo and Garcia-Sanchez (2010) report a negative relationship. National environmental policies seem to influence firms to disclose more and better information: Boura et al. (2020), Grauel and Gotthardt (2016), Luo (2019), Sun et al. (2019). A few articles note the positive influence of public and media pressure (legitimacy hypothesis) on environmental disclosure (Cormier et al. 2005; Dawkins and Fraas 2011; Luo et al. 2012; Prado-Lorenzo and Garcia-Sanchez 2010). Finally, several authors have focused on the relationship between cultural dimension (normative isomorphism) and environmental disclosure, via Hofstede's reading grid (Calza et al. 2016; Oktay et al. 2021; Once and Almagtome 2014).

The empirical literature on *the determinants of banks' nonfinancial disclosure* is quite sparse. Articles analyze internal determinants (Hossain and Reaz 2007; Kiliç and Kuzey 2019; Zanga Ongbwa 2019[11]) and others incorporate or focus on external variables. Caby et al. (2020) highlight that the level of development and environmental performance of the home country positively influences the volume of carbon information but not its quality (sample of 117 international banks). Adelopo et al. (2013) show that European banks (14 countries) from civil law countries with high risk aversion disclose more societal information (legal system and Hofstede cultural dimensions). In a sample of 67 West African banks, Maama (2020) discusses the negative impact of the level of corruption (political factor) on societal disclosure.

[11] Overall, the variables of size, age, profitability and rating significantly influence the environmental disclosure.

3. Methodology

3.1 Samples and dependent variables

The sampling method is based on the availability of environmental data from the banks, including information on current emissions and commitments for fossil fuels. Three VCD indicators are targeted and lead to three distinct samples. Several sampling rules ensure satisfactory homogeneity and comparability between the banks selected. The following are excluded: 1/ firms whose main activity is not banking (e.g. insurance, venture capital, factoring, brokerage, etc.); 2/ subsidiaries of other banks in the sample; 3/ central banks; 4/ public export support agencies.

First of all, on the BankTrack website in December 2020, international voluntary initiatives related to carbon financing and investments to which banks have subscribed were listed: these organizations aim to improve methodologies for measuring and reporting GHG emissions. Based on the methodology of Caby et al (2020), participation in seven international agreements was selected[12]: Carbon Disclosure Project CDP, Montreal Carbon Pledge, GreenHouse Gas Protocol, Green Bond Principles, FSB Taskforce on Climate-related Financial Disclosure TCFD, Partnership for Carbon Accounting Financials PCAF, Science Based Targets SBT. A score out of 7 (variable (*VCI*), for Voluntary Carbon Initiatives) assigned to each bank is the first dependent variable. The *Banktrack sample* consists of 148 banks from 43 countries.

A second sample comes from the Carbon Disclosure Project's collection of 2020 scores. Two filters were used to establish an initial list of 707 firms with a score from F to A: 1/ sector = financial services, 2/ score = climate change. After applying the sampling criteria, the final *CDP*

[12] Caby et al (2020) identified only five of them. We add the Partnership for Carbon Accounting Financials (PCAF: a partnership between 175 financial institutions to define and generalize GHG accounting and reporting standards in the financial sector), and Science Based Targets (SBT: an initiative that allows companies to set GHG reduction targets that are compatible with the 1.5° target and that are updated with recent scientific data).

sample includes 237 banks from 48 countries; the second dependent variable (*CDP*) is a score between 1 and 9 (translation of the F to A scale, where F is the lowest score, as the bank did not provide enough information to be assessed, and A is the maximum compliance score)[13].

Finally, the third sample is taken from the Coalpolicytool website maintained by Reclaim Finance, accessed in December 2020. This tool aims to evaluate the coal exclusion policies of financial actors. A score based on 5 criteria is attributed: projects (exclusion of mines, plants and infrastructure), development (exclusion of firms with development projects in the coal sector), relative exclusion, absolute exclusion (exclusion of the most exposed firms and the largest firms in the sector), and coal exit strategy. The information collected comes from the press, websites, and banks' annual reports. By retaining only banks, this third *Coalexit sample* includes 118 observations from 31 countries; the third dependent variable (*COAL*) is a score on 50 points (the more ambitious and detailed the bank's exclusion commitments, the higher the score).

Banktrack information and Coal Policy Tool exclusion scores are updated regularly. Only the CDP score is available over several years. Thus, the dependent variables are calculated exclusively for the year 2020 and the multivariate tests are performed in cross-section: the annual and sectoral fixed effects (banking sector exclusively) do not therefore disturb the tests.

The dependent variables share common characteristics: voluntary disclosure (explicit in the sense of Matten and Moon 2008), variables that focus more on the quality of the information and not on the volume, and data that are accessible and transparent to stakeholders, especially investors. This multi-channel disclosure, being the result of individual or collective initiatives, echoes the concepts of legitimacy and institutional context at the heart of this article.

[13] Luo (2019) states that CDP offers two advantages: standardized and comparable data across firms and a higher level of detail on GHG emissions than internal company reports.

3.2 Model and independent variables

In order to test the research hypotheses, the following regression model was constructed:

$$VCD_{i,t} = \alpha_0 + \beta_0 LegalSyst_{i,t-1} + \beta_1 EnvPol_{i,t-1} + \beta_2 InternalVar_{i,t-1} + \beta_4 ControlVar_{i,t-1} + \beta_7 \varepsilon_{i,t-1}$$

(VCD) represents one of the three VCD proxies of the bank (i) for the year 2020 (t). Four families of explanatory variables have been defined: variables measuring the origin and strength of the legal system (LegalSyst: H1 to H4), variables reflecting the countries' environmental policies (EnvPol: H5a to H5d), internal variables on the banks' characteristics (InternalVar: H6 to H8) and control variables (ControlVar). All of these indicators are "lagged" (calculated for 2019 or 2018) to respect causality. A complete summary of the calculation methods, sources, and theoretical linkages is presented in Table 1.

[Insert Table 1 about here]

The general institutional context is captured through three sources of information. The first concerns the legal origin of the country: a dichotomous variable (*LO*), defined on the basis of the classification of La Porta et al. (2008), is coded 1 if the country is of common law tradition and 0 otherwise. The World Bank's 2019 governance indicators allow for the calculation of two variables that reflect the strength of the legal system[14]: the regulatory quality (*RQ*) with a score between -2.5 and 2.5, and the total score of the index aggregating six dimensions (*WGI6*). Existing tests indeed retain either specific dimensions or aggregate scores (Baldini et al. 2018; Boura et al. 2020; Coluccia et al. 2018; Jacoby et al. 2019).

[14] The data are collected by polling firms, think tanks, NGOs, international organizations, and private firms. In the September 2020 update, data are available from 1996 to 2019: https://databank.worldbank.org/source/worldwide-governance-indicators.

The third source is the World Economic Forum's Global Competitiveness Report 2019. Since 1979, The Global Competitiveness Report (GCR) has calculated a national competitiveness score for 141 countries by putting four broad themes to managers' opinions: institutional environment, markets, human capital, and ecosystem and innovation. To complete the measurement of the strength of the general legal system, the variable (*INST*) is selected: this score out of 100 of the first "pillar" of the report includes items on security, social capital, oversight, public service performance, transparency, property rights, corporate governance, and long-term orientation. Two final scores are collected to test hypotheses H3 and H4, respectively the impact of auditing and accounting standards (*SAAS*, 1.17) and banking sector regulation via the existence of a prudential ratio (*BRCR*, 9.09)[15].

The other main explanatory factor of this research, the national environmental policy, is measured by various indicators. Two variables derived from GCR scores attempt to reflect the countries' energy policy: energy efficiency regulation (*EER*, 1.24) and renewable energy regulation (*RER*, 1.25). The coercive dimension of environmental policy is approximated by the amount of environment-related taxes relative to the country's GDP (*Tgdp*, %) collected from the OECD website for the most recent year (2018) and an environmental sustainability score from the World Economic Forum's The Travel and Tourism Competitiveness Report 2019 (*ES*)[16]. The normative dimension is proxied by GCR item 1.26 on environmental treaty ratification and implementation (*ERTF*). The variables on energy regulation ensure consistency with the nature of the dependent variables (GHG-related proxies) and those measuring the coercive and normative dimensions match the framework of the institutional theoretical field mobilized. Finally, the current global environmental performance is estimated by the

[15] Jorgensen and Soderstrom (2007, p.10) warn of potential biases stemming from the exclusive opinions of managers from which the GCR scores are derived. Unfortunately, for many indicators, the GCR remains the only available source of information.

[16] Three themes are assessed: the extent to which the country's environmental regulations are rigorous and enforced, the status of natural resources (water, forest, ocean), which are coercive factors, and the sustainability of the national tourism sector, which is an environmental performance index.

Environmental Performance Index (EPI). The average of the scores (*EPI*) 2018 and 2020 are calculated. The EPI is the result of collaboration between Yale and Columbia Universities and the World Economic Forum: a score out of 100 for 180 countries is released every two years and synthesizes 24 objectives around ecosystem vitality and environmental health.

The third family of explanatory variables is composed of intrinsic characteristics of banks: size (*ASS*, log of total assets at the end of 2019 in USD), profitability (*ROA*) and number of listings (*LIST*). The data is taken from the Wall Street Journal website or, by default, from the banks' annual activity reports.

In order to control the biases that could disturb the reliability of the tests, several control variables are taken into account. The extra-financial information disclosure is influenced by the country's level of development (Gallen and Peraita 2017; Grauel and Gotthardt 2016; Kühn et al. 2018; Maama 2020), which in turn is highly correlated with its carbon footprint (Esty and Porter 2001). Thus, (*GDP*), the logarithm of GDP/capita in 2019, and (*CO2*), the total CO2 emissions/capita in 2018 are incorporated into the analysis. The legal status and ownership of the bank can also influence the VCD: two dichotomous variables allow us to identify cooperative and mutual banks (*COOP*) and public banks (*PUB*). For the former, governance is more oriented towards stakeholder expectations and less towards profit maximization; for the latter, the porosity between national policies and managerial decisions is accentuated.

4. Empirical results

4.1 Descriptive statistics

Figures 1 (*VCI*), 2 (*CDP*) and 3 (*COAL*) combine the GDP/capita and CO2/capita variables while representing the average of the VCD indicators per country. Even if the number of banks per country is not taken into account, these graphs allow us to establish several observations: 1/

the heterogeneity of circle sizes confirms the interest of studying national contexts to explain banks' VCD; 2/ no linear relationship between circle size and axis variables seems to emerge; 3/ no developing country has high CO2 emissions ; 4/ European countries are grouped in the upper left-hand quadrant (high level of development and lower CO2 emissions) and have proportionally higher VCD indicators (size of the circles); 5/ the highest emissions come from North American countries (USA and Canada), Australia and some Middle Eastern countries (UAE, Qatar, Saudi Arabia): the VCD of the banks of origin is average; 6/ the statistics of Latin American countries are quite homogeneous: low levels of emissions, average levels of development and rather high VCD indicators; 7/ possible linear relationships between GDP and CO2/capita can be identified for African and Middle Eastern countries (excluding Israel) and for Asia-Pacific countries (excluding Japan and Singapore).

[Insert Figures 1, 2 and 3 about here]

Table 2 provides a geographic snapshot of the samples. Two regions dominate exceedingly: Asia-Pacific (between 33 and 41% of banks) and Europe (between 31 and 36%). North America (USA and Canada) accounts for 10 to 12% of the banks. The samples are quite heterogeneous regarding the presence of African and Middle Eastern countries (subtotal between 5 and 14%). Two regions are under-represented: Latin America (3 to 8%) and Eastern Europe - Eurasia (2 to 6%).

If we look at the distribution by country, two countries are prevalent in the three samples: China (between 7 and 14%) and the United States (between 6 and 9%). In the *CDP sample*, Japan, India and the United Kingdom are among the five most represented countries; in the *Coalexit sample*, we find Japan, Germany and South Korea. 27 countries are common to all three

subsamples. The *Banktrack sample* is characterized by the specific presence of 4 African and Middle Eastern countries (Bahrain, Morocco, Nigeria and Oman) and shares with the *CDP sample* banks from Latin American countries (Argentina, Chile, Colombia, Mexico and Peru). The *CDP sample* includes banks from Eastern European and Eurasian countries, which are not very present in the *Banktrack and Coalexit samples* (Estonia, Georgia, Hungary, Czech Republic and Ukraine). The *Coalexit sample* has only a few observations for the Eastern Europe and Eurasia, Latin America and Africa Middle East zones. Overall, based on the ranking of the 100 largest global banks by total assets (2018), the geographic distribution of the sample seems to match the reality of the international banking industry[17].

[Insert Table 2 about here]

Descriptive statistics for the other variables are presented in Table 3. The mean (median) values of the VCD indicators are low for (*VCI*), 1.53 (1) out of 7, and (*COAL*), 8.02 (5) out of 50, and medium for (*CDP*), 4.67 (5) out of 9. Depending on the sample, common law countries represent 31 to 43% of the total. 35 to 58% of the banks are listed on several stock exchanges; 4 to 8% are cooperative or mutual structures and 26 to 30% are structures whose main shareholder is public (at level 2 of capital participation).

[Insert Table 3 about here]

[17] Link: https://banque-info.com/meilleure-banque/meilleure-banque-monde/. China 18%, USA 13%, Japan 8%, UK, France and South Korea 6%, Germany 5%.

4.2 Multivariate analyses

The methodology applied to the sub-samples consists of three steps: 1/ sorting and skimming of the explanatory variables by optimizing the R^2 and avoiding collinearity; 2/ use of the bootreg() function on R which performs a bootstrap of 1000 iterations to confirm or refute the values of the coefficients and p-values; 3/ use of the valreg() function on R to study the robustness of the proposed models Tables 4, 5 and 6 summarize the regression results for the variables (*VCI*), (*COAL*) and (*CDP*). The unreported correlations show strongly positive correlations between the VCD indicators and all the national context variables.

For all the VCD indicators, several variables were discarded due to lack of significance. The origin of the legal system (*LO*) does not seem to have an impact on the banks' VCD: this lack of relationship invalidates hypothesis H1. A Wilcoxon rank test was conducted to test for possible differences between banks in common law and civil law countries: the results, not reported, show no difference in median for (*VCI*), (*CDP*) and (*COAL*). The bank's profitability (*ROA*) also does not influence the VCD indicators: H7 is also rejected. Finally, the current home country environmental footprint (*CO2*) is insignificant.

Previous empirical tests on the influence of legal origin show differences in results attributable to the nature of the information studied (environmental versus societal: Garcia-Sanchez et al. 2016; Grauel and Gotthardt 2016; Luo 2019) and the heterogeneity of the samples (geographical areas, business sectors); no paper has studied the phenomenon on the banking sector, so comparison is impossible. The direction of the profitability-VCD relationship remains ambiguous, including in the bank samples. Bose et al. (2018) and Zanga Ongbwa (2019) conclude a negative relationship and Caby et al. (2020) come to the opposite conclusion. The argument of the organizational costs of collecting and disseminating environmental information does not seem relevant for the banks studied.

The models presented in Tables 4, 5, and 6 include only a few variables simultaneously because of the strong correlations found. The R^2s of the models are between 0.323 and 0.388 for the variable (*VCI*), between 0.175 and 0.419 for the variable (*COAL*) and between 0.162 and 0.201 for the variable (*CDP*), respectively.

The variables (*WGI6*) and (*RQ*) measuring the strength of the legal system show robust positive and significant coefficients after Bootstrap for the three VCD indicators. This result is also valid for the variable (*INST*) from the GCR, although the value of the coefficients is lower, the R^2 is lower for (*COAL*) and the relationship is insignificant for (*CDP*). This finding corroborates H2: the VCD of banks is more pronounced in countries with an efficient legal system. This trend can be explained by the banks' willingness to anticipate the emergence of more restrictive national regulations in the future: their participation in international initiatives, their commitments to exclude and exit the "coal" sector and their carbon communication would constitute necessary prerequisites for institutional compliance and tools for regulating their legitimacy. This conclusion echoes the results of previous tests using WGI proxies (Boura et al. 2020; Cahan et al. 2016; Coluccia et al. 2018; Gerged et al. 2021), other global indicators (Garcia-Sanchez et al. 2016; Lattemann et al. 2009), or state corruption indices (Baldini et al. 2018; Kühn et al. 2018; Maama 2020).

National banking regulation positively influences banks' VCD: H3 is confirmed only for the variables (*VCI*) and (*COAL*). This result is consistent with the validation of H2 on the influence of the general coercive dimension and the isomorphism hypothesis of the neo-institutional theory. The quality of auditing and accounting standards (*SAAS*) shows a positive and significant sign only for the explanation of the variable (*VCI*): H4 is only partially validated. Overall, the contributions of this article on the relationship between the national legal system and the banks' VCD underline the synergy and complementarity between the two levels of

analysis: an efficient legal system encourages banks to engage in more virtuous climate strategies and to report on their progress.

If we look at the impact of state environmental policies, the variables related to national energy regulation are not significant: renewable energy regulation (*RER*) has a positive influence in two models in Table 7 (*CDP*) but the p-value does not withstand the Bootstrap. Similarly, the variable (*ERTF*) reflecting the ratification of international environmental treaties by the home country is not significant in any model: H5a and H5c are therefore not verified. Yet, Chen and Bouvain (2009), Marquis and Tofel (2011) and Prado-Lorenzo et al. (2009) highlight the positive impact on the environmental disclosure (Trucost, GRI and KPMG) of the ratification of the Kyoto Protocol and countries' commitments in international environmental organizations (including the UN Global Compact). The discrepancy in results could be due to the proxies used. The GCR indicators are based on the unique perception of managers.

The strength of the coercive dimension and the level of environmental performance of the home countries favor the VCD of banks: (*ES*) and (*EPI*) show positive and significant signs in all three sets of models. The relative value of environmental taxes (*Tgdp*) positively influences the exit and exclusion score of the "coal" sector (*COAL*). These results validate hypotheses H5b and H5d. For the coercive dimension of environmental policies, these findings are consistent with those of Grauel and Gotthardt (2016) and Luo (2019) on the stringency and enforcement of environmental laws and the existence of an emissions trading scheme. The positive influence of the EPI is found in the tests of Boura et al. (2020), Caby et al. (2020), Cahan et al. (2016), and Luo (2019). Thus, banks from countries with stringent environmental laws and high environmental performance maximize their VCD (commitments and reporting). The influence of institutions and the search for legitimacy weigh on banks' strategies.

Among the internal variables, the size of the bank (*ASS*) has a positive and significant impact on VCD: large banks that are more exposed, more internationalized and dealing with a

multitude of stakeholders need to disseminate more environmental information: H6 is therefore validated. Bose et al (2018), Caby et al (2020) and Hossain and Reaz (2007) find a similar result on samples of banks. The positive relationship between the number of ratings (LIST) and the VCD variables becomes insignificant after Bootstrap which invalidates H7.

Finally, banks originating from the most developed countries in the sample communicate more about their carbon commitments: the coefficient on the variable (*GDP*) is positive for all three VCD indicators, a result consistent with Gallen and Peraita (2017), Grauel and Gotthardt (2016), Kühn et al. (2018), and Maama (2020).

In summary, coercive institutional forces symbolized by the degree of enforcement of laws in general and environmental laws in particular, the environmental performance and level of economic development of the home countries, and firm size are the main determinants of banks'VCD.

[Insert Tables 4, 5 and 6 about here]

4.3 Robustness tests

Three complementary steps were taken to ensure the validity of the previous conclusions: the valreg() function, which calculates all the tests controlling the relevance of the models, the analysis of the "country" effects and other variables that could impact the observed relationships (size of the bank, legal origin and level of development of the country) and the consideration of particular ownership structures (cooperatives, mutuals and public).

In all the models in Tables 4, 5 and 6, the value of the VIF is well below 5, which guarantees the non-collinearity of the explanatory factors. Concerning the adequacy of the model, the p-value of the Rainbow test is sometimes lower than 0.05 in 3 models (*VCI*) and 3 models (*CDP*).

In view of the relatively high values of Cook's distances, the few problems of adequacy are linked to the presence of extreme values that weigh on the models, without calling into question the relationships observed. Only three p-values of the Durbin-Watson test ensuring the independence of the residuals are lower than the threshold of 0.05, which remains marginal for all the models tested. The homogeneity of the residuals is measured by the Breusch-Pagan test: the p-value is significant in half of the models, mainly for the variables (*VCI*) and (*COAL*). These last two tests depend closely on the order in which the observations are introduced into the models (initially by country). Several additional iterations introducing observations by bank size or country development level show again the persistence of marginal values. The Shapiro-Wilk test is almost systematically significant (19 models out of 20). To further investigate the normality of the residuals, Quantile-Quantile Plots (QQ Plot) have been made for each specification: the curves of the model (*VCI3*) and the models (*CDP*) show marginal residuals. Overall, even if the predictive power of the models could be affected by the extreme values identified, the explanatory power is little impacted and guaranteed by the Bootstrap.

The regressions were reproduced by including the fixed effects of the most represented countries in the sample, those that account for more than 5% of the banks in each subsample (China, United States, India, Japan, Germany, South Korea). The corrections of the coefficients of the explanatory variables are negligible and do not disturb the direction and significance of the relationships. The fixed effect of legal tradition was also tested. It has no impact for the (*VCI*) and (*COAL*) models. For all the (*CDP*) models, only the adjustments on the size variable (*ASS*) have an impact: the positive relationship is strengthened for banks from common law countries and moderated for those from civil law countries.

Another set of tests consisted in splitting the samples according to the medians of the variables (*ASS*) and (*GDP*) and then reproducing the models in tables 4, 5 and 6. The split by size shows a notable difference in the impact of all the legal system variables (*WGI6*, *RQ*, *ES*) on VCD in

the *CDP sample*: the positive influence is very strong for larger banks and disappears for smaller banks. The level of development of the country has a strong influence on the results of the *Banktrack and Coalexit samples*: the institutional context-VCD link is very significant for low-GDP countries and is not found for banks from the most developed countries. Conversely, bank size is much more significant for the developed country subsample. Thus, size and level of development may explain the presence of marginal values found in the reliability tests: these variables explain the disclosure of banks and vary the intensity of the institutional context-VCD link (the analysis reproduced as a fixed effect confirms the phenomenon).

The last check performed concerns bank ownership structures, isolating cooperative and mutual banks and public banks. The variables (*COOP*) and (*PUB*) were included in the previous regressions. Only the variable (*PUB*) has a negative and significant influence for the *Banktrack sample*: public banks participate less in international initiatives related to environmental issues. In this sample, public banks are mainly Chinese (9), Indian (6) and German (5).

5. Discussion and conclusion

This paper highlights the weight of the home country institutional context on the VCD of several samples of international banks. A strong legal system characterized by strong overall governance and banking regulation provides incentives for banking groups to improve the quality of their VCD. Similarly, strong regulation and high environmental performance at the state level favors banks' VCD. These findings show that the "country" layer influences the disclosure strategy at the firm level and that there is a synergy between the two levels: a strong institutional context improves the transparency and quality of carbon information. This positive relationship invites regulators to develop national environmental legislation, especially in developing countries. The dissemination of carbon data is a first step towards reducing the GHG emissions induced by banks' activities.

The contributions of this research are multiple. The test enriches a literature that is too scarce on the determinants of banks' environmental communication: to our knowledge, it is the first attempt to link the institutional context with the VCD on a sample of international banks. Yet, with a potentially very high environmental footprint that is difficult to measure and a close dependence on regulators, banks constitute an excellent field for exploring the national context-VCD link. This paper proposes a variety of original indicators and above all a declination of the institutional stratum according to the characteristics of the national legal system and several facets of the environmental policy (energy regulation, taxation, degree of enforcement, current performance). The robustness tests reinforce the significance of the empirical results and highlight the influence of the size of the banks and the level of development of the countries on the institutional context-VCD relationship.

There are some limitations to these contributions. The VCD proxies used focus exclusively on the quality of the carbon information and not on direct quantitative measurements of emissions volumes: the tests therefore do not include the influence of environmental performance on the national context-VCD link. The very notion of environmental performance in the case of banks is complex: induced/deducted emissions, variety of banking activities and differentiated impacts (savings, credit, investment), financing of "green" sectors and technologies, etc. Based on secondary data that are not very well controlled, the scores selected nevertheless make it possible to account for the banks' willingness to communicate globally on their environmental involvement: completeness of the CDP report, participation in initiatives to improve the methodologies for estimating and reporting GHG emissions, and multi-channel communication on their strategy for exiting from the sector that emits the most, coal.

Among the institutional variables, this article does not specifically examine national environmental laws and regulations, their ambitions, their binding nature and their scope of application. The Climate Laws in Europe (2020) report by the Ecologic Institute and the

European Climate Foundation, for example, details the environmental laws of the European Union countries, but an analysis on an international scale remains complex. As regards the national environmental performance, other measures are possible, in particular those that estimate the efficiency of energy policies: let us cite the Energy Transition Index (ETI) of the World Economic Forum, the Green Future Index (GFI) of the MIT Technology magazine, or the World Energy Trilemma Index of the World Energy Council. The general institutional context also includes a cultural dimension measured in the literature by Hofstede variables (Calza et al. 2016; Oktay et al. 2021; Once and Almagtome 2014): these normative indicators were not incorporated into the models. Finally, some internal determinants of VCD are missing such as internal governance mechanisms (board composition, bodies dedicated to environmental issues).

The internal variables of bank size and profitability are also open to improvement: national accounting rules affect the measurement of total assets (international comparisons may be biased: IFRS, US GAAP, Japanese GAAP, etc.) and several alternative profitability ratios are possible (profits on capital, NPL to total loans, cost to income, Caby et al. 2020).

The main drawback of this research is that it does not take into account the geographical distribution of banks' activities. Only the multiple rating variable very partially reflects the degree of internationalization. However, if the VCD strategy is thought of as a legitimacy tool and a means of responding to national institutional pressures, banks should adapt their carbon communication according to the geographical distribution of their turnover. An empirical solution would be to weight the general institutional and environmental variables by the weight of each country in the banks' turnover. Internationalization multiplies stakeholders and increases firms' exposure to global standards and NGOs (Ellimäki et al. 2021). Home and host country environmental pressures may converge or diverge, and the effects of internationalization on VCD policy may depend on this institutional distance. Integrating

internationalization and studying the institutional contexts of home and host countries would help to better understand banks' motivations for carbon communication. The Banktrack website lists a few dozen "dodgy deals" (projects and polluting companies in the energy, agriculture and chemical sectors, etc.) for which this foundation examines the financing allocated by international banks and banking consortiums. The geography of projects, firms and financial actors reinforces the interest of integrating not only internationalization but also the reality of carbon financing, via the composition of banking consortia, in the analysis of the institutional context-VCD link.

Finally, one avenue for future research would be to consider the role of the environmental performance of countries and their level of development (GDP and HDI, for example) as moderating factors in the relationship between institutional context and carbon DVI. Indeed, controlling for the effects of these parameters in regression models does not reveal all the potential causal links.

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Table 1: Summary of variables (description, source, theoretical link)

Variables	Description / Source	
DEPENDENT (Y)	**Voluntary Carbon Disclosure (VCD)**	
(*VCI*)	**Year 2020. BankTrack.** Number of international Voluntary Carbon Initiatives on climate issues to which banks have subscribed. 7 initiatives identified on BankTrack (information on carbon footprint and climate change): Carbon Disclosure Project CDP, Montreal Carbon Pledge, GreenHouse Gas Protocol, Green Bond Principles, FSB Taskforce on Climate-related Financial Disclosure TCFD, Partnership for Carbon Accounting Financials PCAF, Science Based Targets SBT. https://www.banktrack.org/	
(*CDP*)	**Year 2020. Carbon Disclosure Project.** CDP score for banks (*CDP*). Scale from 1 to 9. 1 = F (firms that were approached but did not provide enough information to be assessed); 1.5 = E; 2 = D-; 3 = D (Disclosure level); 4 = C-; 5 = C (Awareness level); 6 = B-; 7 = B (Management level); 8 = A-; 9 = A (Leadership level). Carbon Disclosure Project. The CDP scoring methodology evaluates the level of detail and completeness of participants' responses (particularly on GHG emissions) as well as their awareness of climate issues, management methods and progress made. The responses used to assign scores are not verified (declarative data) and external information from other sources (websites, CSR reports) is not taken into account. Link to the detailed content of the CDP 2020 questionnaire: https://guidance.cdp.net/en/guidance?cid=13&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=Questionnaire&tags=TAG-646,TAG-605,TAG-600 Link to company scores: https://www.cdp.net/en/companies/companies-scores	
(*COAL*)	**Year 2020. Reclaim Finance, Coal Policy Tool**. Score on policies to exclude coal finance. Score out of 50. 5 criteria differentiated on 10 points: projects (exclusion of mines, plants and infrastructure), development (exclusion of firms with development projects in the coal sector), relative exclusion, absolute exclusion (exclusion of the most exposed firms and the most important firms in the sector), quality of the coal exit strategy. Information gathered from press, bank websites, annual reports. Coal Policy Tool - Reclaim Finance. https://coalpolicytool.org/	
INDEPENDENT (X)	**Description / Source**	**Theoretical link / Hypothesis / Expected sign**
COUNTRY – INSTITUTIONAL VARIABLES		
(*LO*) Legal Origin	**La Porta et al (2008).** Dichotomous variable: =1 if Anglo-Saxon origin (common law country); =0 otherwise.	Institutional and stakeholder theories.

	La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2008. The economic consequences of legal origins. J. Econ. Lit. 46 (2), 285-332. http://dx.doi.org/10.2307/27646991 https://faculty.tuck.dartmouth.edu/rafael-laporta/research-publications	Hypothesis : H1 Expected sign : -
(*RQ*) (*WGI6*) Strengh of the legal system	**Year 2019. World Bank. The Worldwide Governance Indicators.** Country score between -2.5 and 2.5. "Opinion on the government's ability to define and deploy policies and regulations for private sector development." Aggregate country score on the six themes of the governance index (ranging from -15 to 15): voice/participation, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. https://databank.worldbank.org/source/worldwide-governance-indicators	Institutional theory. Coercitive isomorphism. Hypothesis : H2 Expected sign : +
(*INST*) Strengh of legal system (*SAAS*) Audit and accounting standards (*BRCR*) Banking regulations	**Year 2019. World Economic Forum. « The Global Competitiveness Report 2019 ».** (141 countries analyzed since 1979). 4 general themes for assigning a "national competitiveness score" out of 100: institutional environment, markets, human capital, ecosystem and innovation. Aggregate score (out of 100) of the first general "pillar," Institutions, which includes the following headings: security, social capital, oversight, public service performance, transparency, property rights, corporate governance, long-term orientation. Score out of 100, item 1.17. "Strength of auditing standards and accounting standards." Score out of 100, item 9.09. "Banks' regulatory capital ratio". https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf	Institutional theory. Coercitive isomorphism. Hypotheses : H2 (*INST*) H3 (*SAAS*) H4 (*BRCR*) Expected signs : +
COUNTRY – ENVIRONMENTAL VARIABLES		
(*EER*) (*RER*) Energy regulation	**Year 2019. World Economic Forum. « The Global Competitiveness Report 2019 »** Score out of 100, item 1.24. "Regulation of energy efficiency." Score out of 100, item 1.25. "Regulation of renewable energy".	Institutional theory. Hypothese : H5a Expected sign : +

(*Tgdp*) (*ES*) Coercitive factors – environmental policy	**Year 2018. OECD data.** Environment-related taxes, % of GDP, / country. https://data.oecd.org/fr/envpolicy/taxes-liees-a-l-environnement.htm#indicator-chart **Year 2019. World Economic Forum. « The Travel and Tourism Competitiveness Report 2019 ».** Environmental Sustainability Score. Three dimensions: measurement of the rigor and enforcement of the country's environmental regulations, the status of natural resources (water, forest, ocean) and the sustainability of the national tourism sector. https://www.weforum.org/reports/the-travel-tourism-competitiveness-report-2019	Institutional theory. Hypothese : H5b Expected sign : +
(*ERTF*) Normative factor – environmental policy	**Year 2019. World Economic Forum. « The Global Competitiveness Report 2019 »** Score out of 100, item 1.26. "Environment-related treaties in force". https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf	Institutional theory. Hypothese : H5c Expected sign : +
(*EPI*) Environmental performance	**Years 2018 et 2020. Yale University, Columbia University, World Economic Forum. « Environmental Performance Index ».** (*EPI*). Average of the country's 2018 and 2020 EPI scores, out of 100. Two dimensions: ecosystem vitality (60%), environmental health (40%); 10 themes and 24 goals. https://epi.yale.edu/downloads/epi2018policymakerssummaryv01.pdf	Institutional theory. Hypothese : H5d Signe attendu : +
BANK – INTERNAL VARIABLES		
(*ASS*) Size	Size indicator. Logarithm of total assets in USD billion as of December 31, 2019. Two sources: 1/ Wall Street Journal (https://www.wsj.com/); 2/ banks' annual activity reports.	Legitimacy theory. Hypothese : H6 Expected sign : +
(*ROA*) Profitability	Profitability indicator in %. (Income before taxes / Total assets) * 100, as of December 31, 2019. Two sources: 1/ Wall Street Journal (https://www.wsj.com/); 2/ banks' annual activity reports.	Agency and signal theories. Hypothese : H7 Expected sign : +.

(*LIST*) List	Dichotomous variable: =1 bank listed on several financial markets; =0 otherwise. Several sources, in order: 1/ Wall Street Journal (https://www.wsj.com/); 2/ Stock Exchange Zone (https://www.zonebourse.com/); 3/ banks' annual activity reports.	Legitimacy theory. Hypothese : H8 Expected sign : +
	CONTROL VARIABLES	
(*GDP*)	**Year 2019. World Economic Forum. « The Global Competitiveness Report 2019 ».** Logarithm of GDP in USD per capita 2019. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf	External control variable, economic development. Expected sign : +
(*CO2*)	**Year 2018. World Bank.** Tons of CO2 per capita. https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?view=chart	External control variable, environmental footprint. Expected sign : +
(*COOP*)	Dichotomous variable: =1 if cooperative or mutualist structure; =0 otherwise. Two sources: 1/ Stock exchange area (https://www.zonebourse.com/); 2/ Banks' annual activity reports.	Internal control variable. Stakeholder theory (governance). Expected sign : +
(*PUB*)	Dichotomous variable: =1 if main public shareholder (State, province, regions, other communities) until level 2; =0 otherwise. Two sources: 1/ Stock exchange area (https://www.zonebourse.com/); 2/ Banks' annual activity reports.	Internal control variable. Stakeholder theory (governance). Expected sign : +/-
Regions-Countries	Home country region of the bank: AME (Africa-Middle East), AP (Asia-Pacific), EEE (Eastern Europe and Eurasia), EUR (Europe), LA (Latin America), NA (North America).	Fixed effects. Region and Country.

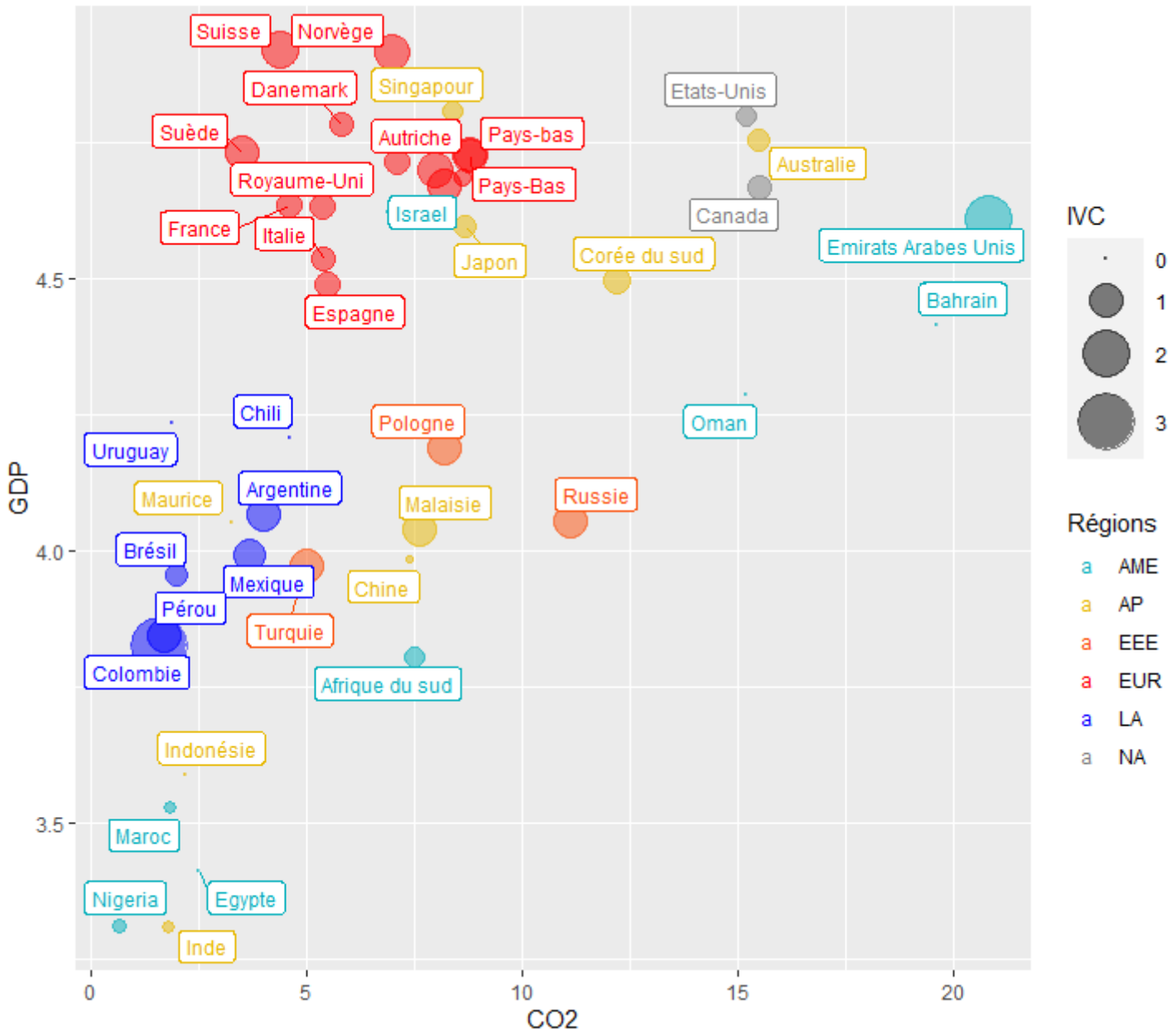

Figure 1 : VCI – GDP/cap – CO2/cap

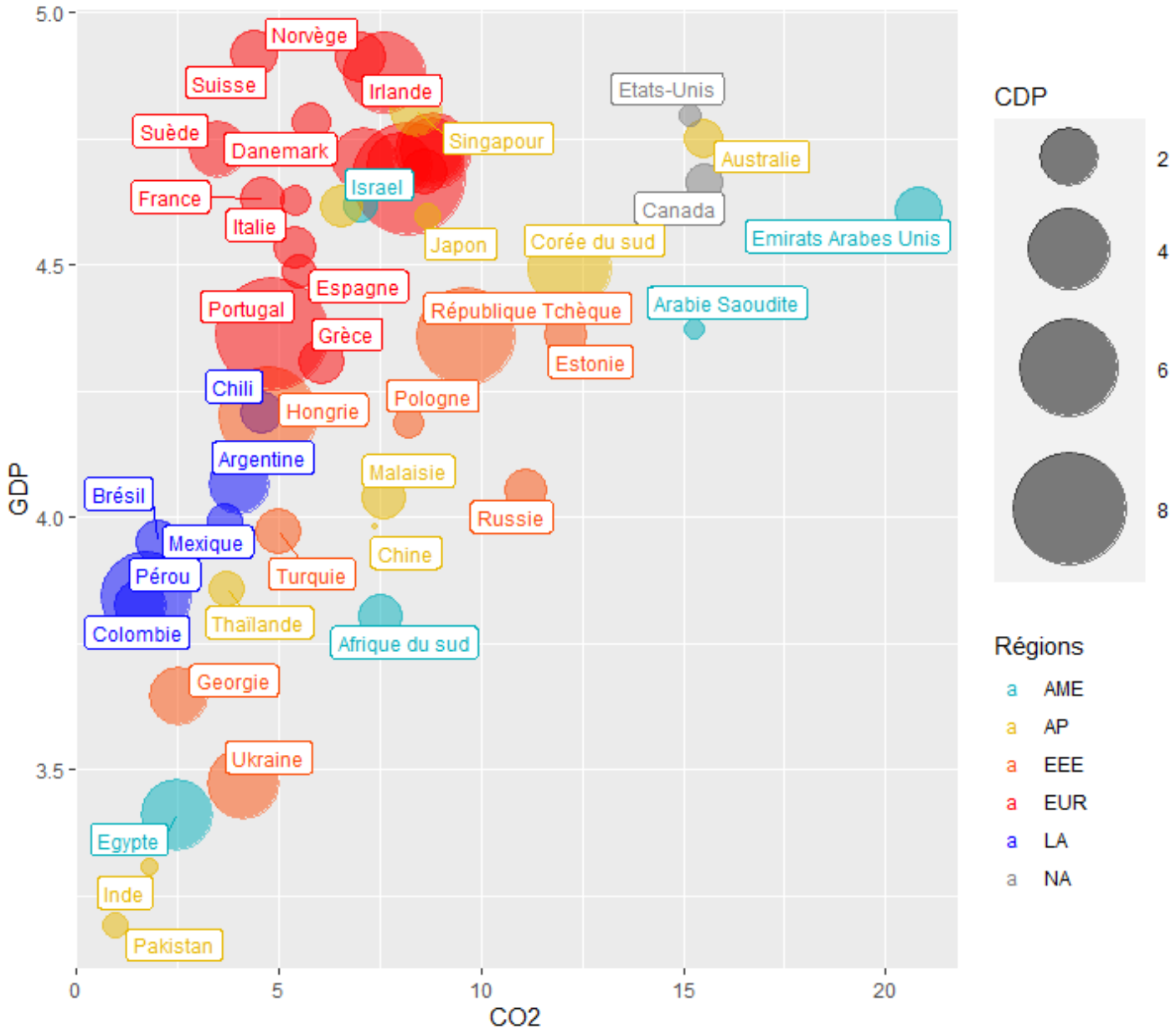

Figure 2 : CDP – GDP/cap – CO2/cap

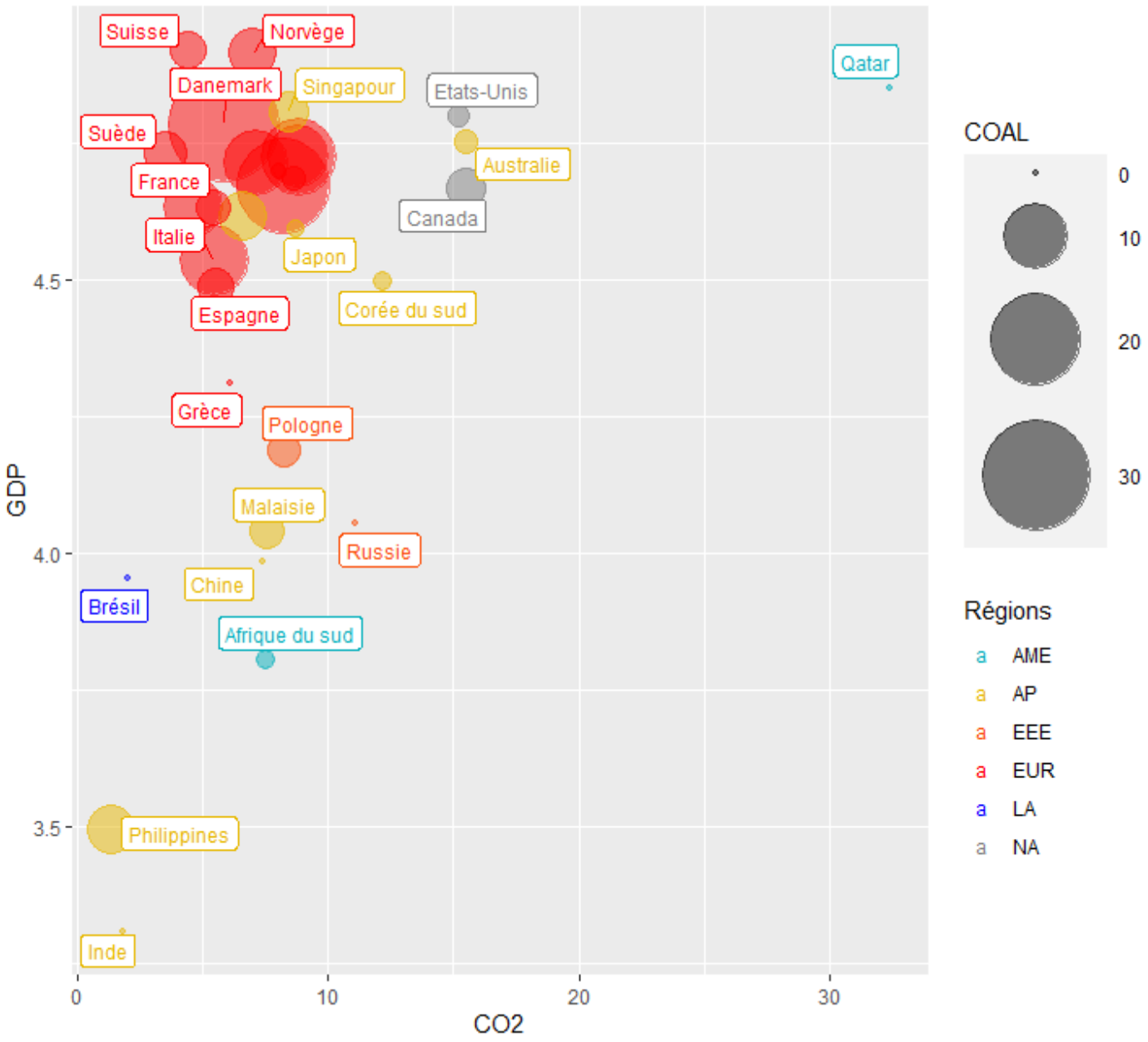

Figure 3 : COAL – GDP/cap – CO2/cap

Table 2: Geographical distribution of samples (Regions/Countries)

Region/Country	Banktrack Sample	CDP Sample	Coalexit Sample	Region/Country	Banktrack Sample	CDP Sample	Coalexit Sample
Asia-Pacific	***48 (33%)***	***83 (35%)***	***48 (41%)***	***Latin America***	***12 (8%)***	***18 (8%)***	***4 (3%)***
Australia	*5*	*8*	*5*	*Argentina*	*1*	*2*	*0*
China	*15*	*16*	*16*	*Brasil*	*5*	*6*	*4*
India	*7*	*19*	*2*	*Chile*	*1*	*1*	*0*
Indonesia	*1*	*0*	*0*	*Colombia*	*1*	*3*	*0*
Japan	*6*	*15*	*10*	*Mexico*	*2*	*5*	*0*
Malaysia	*1*	*2*	*2*	*Peru*	*1*	*1*	*0*
Mauritius	*1*	*0*	*0*	*Uruguay*	*1*	*0*	*0*
New Zealand	*0*	*1*	*1*	***Africa-Mid East***	***21 (14%)***	***18 (8%)***	***6 (5%)***
Pakistan	*0*	*3*	*0*	*Bahrain*	*1*	*0*	*0*
Philippines	*0*	*0*	*1*	*Egypt*	*3*	*1*	*0*
Singapore	*3*	*3*	*3*	*Israel*	*5*	*4*	*0*
South Korea	*3*	*2*	*6*	*Morocco*	*3*	*0*	*0*
Taiwan	*6*	*9*	*2*	*Nigeria*	*3*	*0*	*0*
Thailand	*0*	*5*	*0*	*Qatar*	*0*	*0*	*1*
East Europe & Eurasia	***3 (2%)***	***14 (6%)***	***4 (3%)***	*Oman*	*1*	*0*	*0*
Czech Republic	*0*	*1*	*0*	*Saudi Arabia*	*0*	*4*	*0*
Estonia	*0*	*1*	*0*	*South Africa*	*4*	*6*	*5*
Georgia	*0*	*1*	*0*	*Un. Arab Emir*	*1*	*3*	*0*
Hungary	*0*	*1*	*0*	***North America***	***15 (10%)***	***30 (12%)***	***14 (11%)***
Poland	*1*	*2*	*2*	*Canada*	*6*	*9*	*4*
Russia	*1*	*1*	*2*	*United States*	*9*	*21*	*10*
Turkey	*1*	*6*	*0*				
Ukraine	*0*	*1*	*0*				
Europe	***49 (33%)***	***74 (31%)***	***42 (36%)***				
Austria	*2*	*2*	*2*				
Belgium	*2*	*1*	*1*				
Denmark	*4*	*6*	*1*				
Finland	*2*	*3*	*2*				
France	*5*	*6*	*5*				
Germany	*7*	*4*	*8*				
Greece	*0*	*3*	*1*				
Ireland	*0*	*2*	*0*				
Italy	*3*	*7*	*2*				
Netherlands	*6*	*5*	*3*				
Norway	*2*	*5*	*1*				
Portugal	*0*	*1*	*0*				
Spain	*5*	*9*	*4*				
Sweden	*3*	*3*	*3*				
Switzerland	*2*	*6*	*4*				
United Kingdom	*6*	*11*	*5*				
TOTAL Samples	***148***	***237***	***118***				

Table 3 : Descriptive statistics

Variable	*N*	*Missing*	*Mean*	*Median*	*Stand. Dev.*	*Min*	*Max*	*25th Perc.*	*50th Perc.*	*75th Perc*
VCI	*148*	*0*	*1,53*	*1,00*	*1,35*	*0,00*	*6,00*	*0,00*	*1,00*	*2,00*
CDP	*237*	*0*	*4,67*	*5,00*	*3,14*	*1,00*	*9,00*	*1,00*	*5,00*	*8,00*
COAL	*118*	*0*	*8,02*	*5,00*	*10,6*	*0,00*	*50,0*	*0,00*	*5,00*	*10,0*
WGI6	*237*	*0*	*4,47*	*6,75*	*4,70*	*-5,93*	*10,7*	*-0,66*	*6,75*	*8,22*
RQ	*237*	*0*	*0,92*	*1,33*	*0,79*	*-0,83*	*2,16*	*0,10*	*1,33*	*1,60*
INST	*237*	*0*	*65,5*	*68,6*	*9,54*	*47,7*	*81,2*	*56,8*	*68,6*	*72,9*
BRCR	*237*	*0*	*96,5*	*96,9*	*3,24*	*90,3*	*100*	*94,3*	*96,9*	*100*
SAAS	*237*	*0*	*72,2*	*73,9*	*10,4*	*46,6*	*92,2*	*62,5*	*73,9*	*80,2*
EER	*237*	*0*	*71,4*	*72,4*	*12,3*	*32,2*	*89,2*	*66,4*	*72,4*	*82,0*
RER	*237*	*0*	*72,6*	*74,7*	*13,1*	*31,0*	*96,6*	*66,1*	*74,7*	*82,3*
Tgdp*	*205*	*32*	*1,64*	*1,39*	*0,87*	*0,00*	*3,69*	*0,90*	*1,39*	*2,26*
ES	*237*	*0*	*4,45*	*4,40*	*0,65*	*3,60*	*6,00*	*3,90*	*4,40*	*4,90*
ERTF**	*228*	*9*	*82,1*	*82,8*	*14,1*	*55,2*	*100*	*72,4*	*82,8*	*89,7*
EPI	*237*	*0*	*63,6*	*70,2*	*16,0*	*29,1*	*84,5*	*50,7*	*70,2*	*75,4*
ASS	*237*	*0*	*2,14*	*2,04*	*0,74*	*0,17*	*4,86*	*1,73*	*2,04*	*2,69*
ROA	*237*	*0*	*1,17*	*0,93*	*1,76*	*-7,06*	*16,0*	*0,50*	*0,93*	*1,39*
GDP	*237*	*0*	*4,35*	*4,53*	*0,48*	*3,19*	*4,92*	*3,98*	*4,53*	*4,71*
CO2**	*228*	*9*	*7,64*	*7,00*	*4,63*	*0,98*	*20,8*	*4,60*	*7,00*	*8,70*

Banktrack sample for VCI and *Coalexit sample* for COAL. Other statistics are for the *CDP sample*. * : missing data for Canada, Georgia, Pakistan, Saudi Arabia, South Korea, Taiwan, Ukraine and United Arab Emirates. ** : missing data for Taiwan. **VCD variables**: VCI: number of international voluntary carbon initiatives to which the bank has subscribed (December 2020); CDP: bank's CDP 2020 score; COAL: coal exclusion and exit strategy score (December 2020). **Strength of legal system (country variables)**: WGI6: overall governance score, WGI 2019; RQ: regulatory quality, WGI 2019; INST: "institutions pillar" score, GCR 2019; BRCR: banking regulation, GCR 2019; SAAS: quality of accounting and auditing standards, GCR 2019. **Environmental policy (country variables)**: EER: energy efficiency regulation; RER: renewable energy regulation (energy policy), GCR 2019; Tgdp: environment-related taxes as % of GDP, OECD 2018; ES: environmental sustainability index, TTCR 2019 (enforcement dimension); ERTF: ratification of international environmental treaties, GCR 2019; EPI: average of EPI 2018 and 2020 (environmental performance). **Internal variables (bank)**: ASS: Log of total bank assets, 2019; ROA: Return On Assets in %, 2019. **Control variables**: GDP: Log of GDP/capita, 2019; CO2: Log of tons of CO2/capita, 2019.

Table 4: Regression models: Y=IVC, *Banktrack sample*

Variables	*VCI1*	*VCI2*	*VCI3*	*VCI4*	*VCI5*	*VCI6*	*VCI7*	*VCI8*
Legal System								
WGI6	***0,104****	-	-	-	-	-	-	-
B/p-value 0,95	*0,000****							
RQ	-	***0,573****	-	-	-	-	-	-
B/p-value 0,95		*0,000****						
INST	-	-	***0,041****	-	-	-	-	-
B/p-value 0,95			*0,015***					
Banking Reg.								
BRCR	-	-	-	***0,126****	-	-	-	-
B/p-value 0,95				*0,006****				
Audit Stand.								
SAAS	-	-	-	-	***0,046****	-	-	-
B/p-value 0,95					*0,002****			
Env. Policy								
RER	-	-	-	-	-	-	-	-
Tgdp	-	-	-	-	-	-	-	-
ES	-	-	-	-	-	***0,725****	-	-
B/p-value 0,95						*0,001****		
EPI	-	-	-	-	-	-	***0,035****	-
B/p-value 0,95							*0,000****	
Internal Var.								
ASS	***0,573****	***0,579****	***0,589****	***0,776****	***0,729****	***0,724****	***0,556****	***0,589****
B/p-value 0,95	*0,012***	*0,009****	*0,014***	*0,000****	*0,000****	*0,000****	*0,017***	*0,058**
LIST	***0,457*****	***0,477*****	***0,498*****	***0,481*****	***0,482*****	***0,532****	***0,466*****	***0,498*****
B/p-value 0,95	*0,491*	*0,355*	*0,379*	*0,432*	*0,371*	*0,303*	*0,379*	*0,375*
Control Var.								
GDP	-	-	-	-	-	-	-	***0,943****
B/p-value 0,95								*0,004****
Intercept	***-0,570****	***-0,655****	***-2,849****	***-12,713****	***-3,856****	***-3,794****	***-2,322****	***-4,085****
B/p-value 0,95	*0,614*	*0,454*	*0,002****	*0,004****	*0,000****	*0,000****	*0,000****	*0,000****
N	*148*	*148*	*148*	*148*	*148*	*148*	*148*	*148*
Adjusted R^2	***0,378***	***0,369***	***0,323***	***0,336***	***0,354***	***0,357***	***0,388***	***0,334***
VIF Min;Max	*1,09;1,12*	*1,09;1,19*	*1,11;1,22*	*1,00;1,12*	*1,01;1,12*	*1,00;1,12*	*1,11;1,22*	*1,12;1,30*
Rainbow Test (p-value)	*0,241*	*0,092*	*0,003*	*0,123*	*0,044*	*0,099*	*0,003*	*0,291*
Durbin-Watson (p-value)	*0,136*	*0,079*	*0,068*	*0,027*	*0,140*	*0,356*	*0,068*	*0,182*
Shapiro-Wilk (p-value)	*0,014*	*0,023*	*0,014*	*0,022*	*0,046*	*0,022*	*0,014*	*0,061*
Breusch-Pagan (p-value)	*0,092*	*0,061*	*0,030*	*0,025*	*0,043*	*0,051*	*0,030*	*0,020*
Cook's Distance	*0,078*	*0,077*	*0,073*	*0,111*	*0,070*	*0,111*	*0,073*	*0,070*

p-significance at 10% *; 5% **; 1% ***. **Coefficient value**; *B/p-value 0.95: 95% p-value of the coefficient after Bootstrap of 1000 iterations*. VCI, number of international voluntary "carbon" initiatives to which the bank has subscribed (December 2020). **Strength of the legal system (country variables)**: WGI6: overall governance score, WGI 2019; RQ: regulatory quality, WGI 2019; INST: "institutional pillar" score, GCR 2019; BRCR: banking regulation, GCR 2019; SAAS: quality of accounting and auditing standards, GCR 2019. **Environmental policy (country variables)**: RER: renewable energy regulation (energy policy), GCR 2019; Tgdp: environment-related taxes as % of GDP, OECD 2018 and ES: environmental sustainability index, TTCR 2019 (coercive dimension); EPI: average of EPI indices 2018 and 2020 (environmental performance) **Internal variables (bank)**: ASS: Log of total bank assets, 2019; LIST: number of stock exchanges on which the bank is listed, 2019. **Control variable**: GDP: Log of GDP/capita, 2019.

Table 5: Regression models: Y=CDP, *CDP sample*

Variables	*CDP1*	*CDP2*	*CDP3*	*CDP4*	*CDP5*
Legal System					
WGI6	***0,167****	-	-	-	-
B/p-value 0,95	*0,029***				
RQ	-	***0,984****	-	-	-
B/p-value 0,95		*0,020***			
INST	-	-	-	-	-
Banking Req					
BRCR	-	-	-	-	-
Audit Stand.					
SAAS	-	-	-	-	-
Env. Policy					
RER	***0,025****	***0,029*****	-	-	-
B/p-value 0,95	*0,783*	*0,630*			
Tgdp	-	-	-	-	-
ES	-	-	***1,231****	-	-
B/p-value 0,95			*0,011***		
EPI	-	-	-	***0,053****	-
B/p-value0,95				*0,009****	
Internal Var.					
ASS	***1,000****	***1,002****	***1,120****	***1,004****	***0,969****
B/p-value 0,95	*0,035***	*0,030***	*0,017***	*0,040***	*0,049***
LIST	***0,717****	***0,682*****	***0,806*****	***0,606***	***0,677****
B/p-value 0,95	*0,846*	*0,828*	*0,683*	*0,838*	*0,820*
Control Var.					
GDP	-	-	-	-	***1,510****
B/p-value 0,95					*0,047***
Intercept	***-0,422***	***-0,892***	***-3,670****	***-1,210***	***-4,353*****
B/p-value 0,95	*0,252*	*0,936*	*0,289*	*0,872*	*0,341*
N	*237*	*237*	*237*	*237*	*237*
Adjusted R^2	***0,200***	***0,201***	***0,179***	***0,183***	***0,162***
VIF Min;Max	*1,04;1,15*	*1,04;1,10*	*1,01;1,04*	*1,05;1,07*	*1,05;1,10*
Rainbow Test (p-value)	*0,014*	*0,025*	*0,087*	*0,024*	*0,057*
Durbin-Watson (p-value)	*0,120*	*0,487*	*0,154*	*0,006*	*0,001*
Shapiro-Wilk (p-value)	*0,000*	*0,000*	*0,000*	*0,000*	*0,000*
Breusch-Pagan (p-value)	*0,886*	*0,964*	*0,036*	*0,832*	*0,786*
Cook's Distance	*0,087*	*0,087*	*0,108*	*0,107*	*0,098*

p-significance at 10% *; 5% **; 1% ***. **Coefficient value**; *B/p-value 0.95: 95% p-value of the coefficient after Bootstrap of 1000 iterations*. CDP, 2020 CDP score of the bank. **Strength of the legal system (country variables)**: WGI6: overall governance score, WGI 2019; RQ: regulatory quality, WGI 2019; INST: "institutional pillar" score, GCR 2019; BRCR: banking regulation, GCR 2019; SAAS: quality of accounting and auditing standards, GCR 2019. **Environmental policy (country variables)**: RER: renewable energy regulation (energy policy), GCR 2019; Tgdp: environment-related taxes as % of GDP, OECD 2018 and ES: environmental sustainability index, TTCR 2019 (coercive dimension); EPI: average of EPI indices 2018 and 2020 (environmental performance) **Internal variables (bank)**: ASS: Log of total bank assets, 2019; LIST: number of stock exchanges on which the bank is listed, 2019. **Control variable**: GDP: Log of GDP/capita, 2019.

Table 6: Regression models: Y=COAL, *Coalexit sample*

Variables	*COAL1*	*COAL2*	*COAL3*	*COAL4*	*COAL5*	*COAL6*	*COAL7*
Legal System							
WGI6	***0,605****	-	-	-	-	-	-
B/p-value 0,95	*0,063**						
RQ	-	***3,820****	-	-	-	-	-
B/p-value 0,95		*0,024***					
INST	-	-	***0,392****	-	-	-	-
B/p-value 0,95			*0,014***				
Banking Reg.							
BRCR	-	-	-	***1,380****	-	-	-
B/p-value 0,95				*0,001****			
Audit Stand.							
SAAS	-	-	-	-	-	-	-
Env. Policy							
RER	-	-	-	-	-	-	-
Tgdp	***4,808****	***4,750****	-	-	***3,840****	***3,964****	***4,870****
B/p-value 0,95	*0,002****	*0,002****			*0,083**	*0,019***	*0,001****
ES	-	-	-	-	***5,020****	-	-
B/p-value 0,95					*0,039***		
EPI	-	-	-	-	-	***0,265****	-
B/p-value 0,95						*0,000****	
Internal Var.							
ASS	***5,166****	***4,990****	***3,831****	***5,370****	***4,980****	***4,543****	***3,000***
B/p-value 0,95	*0,027***	*0,037***	*0,282*	*0,042***	*0,029***	*0,050**	*0,349*
LIST	***-4,378***	***-4,230***	***-3,585**	***-3,940***	***-4,440***	***-4,112***	-
B/p-value 0,95	*0,396*	*0,413*	*0,797*	*0,558*	*0,289*	*0,391*	
Control Var.							
GDP	-	-	-	-	-	-	***8,590****
B/p-value 0,95							*0,009****
Intercept	***-14,583****	***-14,860****	***-27,144****	***-137,71****	***-32,190****	***-26,191****	***-45,590****
	*0,027***	*0,020***	*0,002****	*0,000****	*0,000****	*0,000****	*0,000****
N	*118*	*118*	*118*	*118*	*118*	*118*	*118*
Adjusted R^2	***0,365***	***0,380***	***0,175***	***0,235***	***0,380***	***0,419***	***0,345***
VIF Min;Max	*1,13;1,17*	*1,12;1,17*	*1,03;1,18*	*1,02;1,16*	*1,15;1,35*	*1,16;1,22*	*1,05;1,07*
Rainbow Test (p-value)	*0,799*	*0,886*	*0,982*	*0,933*	*0,451*	*0,969*	*0,575*
Durbin-Watson (p-value)	*0,640*	*0,267*	*0,772*	*0,062*	*0,612*	*0,085*	*0,880*
Shapiro-Wilk (p-value)	*0,000*	*0,000*	*0,000*	*0,000*	*0,000*	*0,000*	*0,000*
Breusch-Pagan (p-value)	*0,016*	*0,010*	*0,219*	*0,278*	*0,013*	*0,009*	*0,054*
Cook's Distance	*0,118*	*0,111*	*0,092*	*0,106*	*0,171*	*0,115*	*0,126*

p-significance at 10% *; 5% **; 1% ***. **Coefficient value**; *B/p-value 0.95: 95% p-value of the coefficient after Bootstrap of 1000 iterations*. COAL, Score on policies to exclude coal finance. Score out of 50. **Strength of the legal system (country variables)**: WGI6: overall governance score, WGI 2019; RQ: regulatory quality, WGI 2019; INST: "institutional pillar" score, GCR 2019; BRCR: banking regulation, GCR 2019; SAAS: quality of accounting and auditing standards, GCR 2019. **Environmental policy (country variables)**: RER: renewable energy regulation (energy policy), GCR 2019; Tgdp: environment-related taxes as % of GDP, OECD 2018 and ES: environmental sustainability index, TTCR 2019 (coercive dimension); EPI: average of EPI indices 2018 and 2020 (environmental performance) **Internal variables (bank)**: ASS: Log of total bank assets, 2019; LIST: number of stock exchanges on which the bank is listed, 2019. **Control variable**: GDP: Log of GDP/capita, 2019.