

Interpersonal population diversity in the Bank Boardroom and corporate misconduct

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Abstract

Purpose

This research empirically establishes that the interpersonal population diversity of executive board members partly explains the differences in financial misconduct across US banks. It advances the hypothesis that heterogeneity in the composition of an interpersonal population and diverse traits of board members, originating from the prehistoric course of the exodus of Homo sapiens from East Africa tens of thousands of years ago, is an important factor explaining the effectiveness of executive board monitoring with respect to a bank engaging in financial misconduct. The underlying intuition is that population-fragmented societies, characterized by mistrust, preference heterogeneity and corruption, find it difficult to sustain collective integrity action.

Methodology/ Findings

Employing a panel of US banks from 1998-2019 we find that adding directors from countries with different levels of interpersonal population diversity is positively associated with financial misconduct as measured by enforcement and class action litigation against banks by the main regulatory agencies. These results are robust to controlling for bank-specific variables, including other board characteristics, and to the use of instrumental variables. Furthermore, we document that the more population-diverse bank boards are more likely to commit misconduct, consistent with a mechanism of inter-generational transmission of cultural norms of mistrust and non-cooperation.

Practical Implications

The findings suggest that reducing financial misconduct by banks likely requires reducing the interpersonal population diversity of banks' executive boards.

Keywords: Interpersonal population diversity, bank misconduct, US banks

JEL codes: G20, G21, G34

1. Introduction

Does the interpersonal population diversity of executive board members impact on the likelihood of a bank engaging in financial misconduct? In recent years, banks have been growing perpetrators of misconduct, which can have adverse consequences for financial intermediation and the stability of financial markets and institutions (Chaly *et al.*, 2017). It can also damage a bank's reputation (Murphy *et al.*, 2009), increase employee turnover (Demirtas and Akdogan, 2015), harm customers and other stakeholders (Hora *et al.*, 2011), and lead to losses for shareholders (Murphy *et al.*, 2009; Pierce, 2018). Preventing misconduct is therefore an important issue that has given rise to a large and varied literature on its determinants (for surveys see Cumming *et al.*, 2018, 2015a). Boards of directors are traditionally viewed as the cornerstone of the internal governance framework of firms given their role as monitors of firms' management with respect to policies affecting firm behavior and performance (Fama and Jensen, 1983). One thread of the executive board-related literature considers the relationship between characteristics of firms' boards, the effectiveness of the board monitoring function, and the likelihood of the firm engaging in misconduct. In this paper, we develop this thread by incorporating research that has highlighted the role of the importance of interpersonal population diversity in shaping economic performance (Ashraf and Galor, 2018, 2013ab; Spolaore and Wacziarg, 2009). Specifically, we link genetic diversity in the country of origin of banks' board members to the effectiveness of the board in reducing the likelihood of the bank engaging in financial misconduct.

Ashraf and Galor (2013ab) argue that interpersonal population diversity has positive and negative impacts on economic performance. On the one hand, in a theory of diversity approach,

the positive forces relate to the beneficial effect of the heterogeneity of individuals in expanding the production possibility frontier, for example, by contributing to firms' technological advancements and product innovation, improving operating efficiency, making expansion abroad easier, and providing a superior overall performance (Nehring and Puppe, 2002; Docquier *et al.*, 2014). On the other hand, in a theory of conflict approach, interpopulation diversity could enhance confusion and mistrust and be linked to increased operating inefficiency, lower productivity, and inferior performance (Pelled *et al.*, 1999). Our premise is that the different perspectives, skills, and abilities associated with interpersonal population diversity also impact the effectiveness of board guidance and monitoring. We posit that the genetic characteristics of the countries of directors' origins impact the effectiveness of board monitoring with respect to banks engaging in financial misconduct, and this impact is quite separate from that of the cultural, gender, and other characteristics of board members' countries of origin. The basic idea is that deep-rooted effects shaped thousands of years ago are common to groups of people who moved away from the birthplace of humanity in East Africa and formed today's modern countries (Ashraf and Galor, 2013ab). These characteristics are genetic in that they are not captured by country fixed effects or other cultural and institutional characteristics. Research into the impact of interpersonal population diversity on firm performance is still its infancy. However, the possibility that interpersonal population diversity in the boardroom might be a factor determining firm misconduct is given credence in recent studies by Delis *et al.* (2017), Giannetti and Zhao (2019) and Kizys *et al.* (2023) of its effects on firm performance. In this paper, we test for a relationship between the interpersonal population diversity of executive board members and firm financial misconduct employing a sample of 675 US banks, of which 243 were involved in class action litigation judgements over the period 1998 to 2019. The underlying idea is that greater variation in the genetic diversity in

executive boards reflects interpersonal heterogeneity in members' values, beliefs, and preferences and that this might result in a lack of board cohesiveness that undermines the effectiveness of the board, including in monitoring and constraining management with respect to engaging in financial misconduct.

We measure a boards' interpersonal population diversity in line with Ashraf and Galor (2013ab). The interpersonal population diversity score is a number, measured with data from the HGDP-CEPH Human Genome Diversity Cell Line Panel, and the framework of Ramachandran *et al.* (2005). We calculate the standard deviation by firm-year of interpersonal population diversity across the country-specific diversity scores assigned to each board member of a bank in our dataset. By focusing on the standard deviation, we examine whether differences in the directors' countries of origin affect the likelihood of misconduct irrespective of whether the differences come from a genetically less diverse or more diverse country on the assumption that it is the diversity that helps shape behavior (see Delis *et al.*, 2017). To quantify a bank's misconduct, we rely on detected misconduct as indicated by the number of enforcements and class action litigation judgements for financial misconduct against publicly listed US banks by the main bank US regulatory agencies.

Our results imply that greater variation in the interpersonal population diversity of executive boards is associated with more bank financial misconduct. Specifically, we report three key findings. First, the interpersonal population diversity in the board members' country of origin plays an important role in affecting bank financial misconduct. That is, banks that have boards whose membership has more variation in interpersonal population diversity are associated with greater financial misconduct. Specifically, we find that a 1 standard deviation increase in diversity

(0.002) is associated with an increase in bank financial misconduct of between 0.24 to 0.03 points. Second, we find an inverted U-shape (or hump-shaped) effect of the standard deviation of interpersonal population diversity on bank misconduct. That is, a greater variation in diversity undermines the monitoring function vis-a-vis misconduct initially and on average, but at some stage the variation can become so large as to no longer be an impediment to the board's monitoring function. This suggests that there is a trade-off between the beneficial and the detrimental effects of diversity. Third, a mediation analysis indicates that the prevalence of mistrust among executive board members is a key mechanism underlying the association between variations in interpersonal population diversity and bank misconduct. These results are robust to controlling for other executive board characteristics and bank-specific variables, and to the use of instrumental variables.

Our paper makes several contributions to the literature. First, it provides evidence on the microeconomic effects of interpersonal population diversity and therefore complements recent research that has explored how this diversity affects economic performance (Ashraf and Galor, 2018, 2013ab; Spolaore and Wacziarg, 2009). Second, it contributes to the emerging literature exploring the effects of the ancestry of executive board members and CEOs on firm performance (Giannetti and Zhao, 2019; Nguyen *et al.*, 2018; Ellahie *et al.*, 2017; Delis *et al.*, 2017; Kizys *et al.*, 2023). Third, by introducing the genetic characteristics of the countries of executive directors' origins as a key factor in whether boards are effective mitigators of misconduct, it contributes to the literature on internal governance and bank performance (for surveys, see De Hann and Vlahu, 2016; Srivastav and Hagendorff, 2016). That literature typically advocates organizational diversity as a means of improving firm performance (e.g., Fang *et al.*, 2018; Bernile *et al.*, 2018; Gompers

et al., 2016). Our results show that while some aspects of board diversity might improve the monitoring role, this is not the case with respect to interpersonal population diversity and the likelihood of a bank engaging in financial misconduct. In this regard, governance would appear to be better served by having executive boards with a lower variations of interpersonal population diversity.

The rest of the paper is organized as follows. Section 2 provides a brief review of the relevant literature. In section 3 we describe the data and in section 4 we present our model. The empirical results are presented in section 5 and section 6 concludes.

2. Related literature

Our paper is related to two well-established lines of inquiry. The first is research that has focused on uncovering the evolutionary roots of comparative economic development across regions, countries, and ethnic groups. This line of inquiry explores the influences of human evolution and the composition of human traits on comparative economic development. It highlights the roles played by the Neolithic Revolution and the prehistoric “out of Africa” migration of *Homo sapiens* in shaping variations in the composition of human traits among populations globally (e.g., Ashraf *et al.*, 2021; Ashraf and Galor, 2018, 2013ab, Cesarini *et al.*, 2009; Wade, 2014). The hypothesis is that the variation in migratory distance to various settlements across the globe affected the genetic diversity of populations with implications for comparative macroeconomic performance, with that performance being better in countries with low genetic diversity populations. The hypothesis is built on two foundations: first, that migratory

distance from East Africa effected on the degree of genetic diversity in early settlements across the world, with settlements further away being less genetically diverse; and second, that there is an optimal level of genetic diversity that make societies more capable of developing productivity enhancing production methods, but beyond which society is characterized by levels of disarray and mistrust that reduce cooperation, undermine the socioeconomic order and undermine productivity.

In the context of comparative economic development, Ashraf and Galor (2013b) show that the low interpersonal population diversity of Native American populations and the high diversity of African populations have been detrimental for the development of these regions, while the intermediate levels of interpersonal population diversity associated with European and Asian populations have been more conducive to development. Arbatli et al. (2020) extend the use of interpersonal population diversity to show that greater diversity at the national or subnational level may contribute to intergroup and intragroup conflicts, which they attribute to a variety of factors including that it can give rise to mutual mistrust, resentment rooted in inequality, and divergences in preferences for public goods and redistributive policies. Recent research in this vein has shifted attention from its potential macroeconomic effects to the potential effects for microeconomic performance. For example, Delis *et al.* (2017) report that adding board directors from countries with different levels of genetic diversity (either higher or lower) was associated with an improvement in firms' profitability and value in a sample of 1,085 US firms during the period 1999 to 2012. More recently, Kizys *et al.* (2023) find that genetic diversity in the boardroom was associated with an improvement in corporate ESG performance and disclosures in a sample of US

3,690 US firms over the period 2005 to 2019. Our paper is very much in the spirit of these two studies.

The second line of inquiry relates to the growing body of research on the relationship between corporate governance and firms' misconduct. Traditional agency theory argues that the separation of ownership and control creates agency problems. In the case of public listed companies, this means that opportunistic managers are able to exploit corporate resources to their own advantage because it is difficult and expensive for owners to monitor their behavior and decisions (Jensen and Meckling, 1976). The minimization of agency costs to shareholders relies primarily on boards of directors' ability to protect their interests through effective monitoring. One theoretical approach argues that boards are of value in this respect (Adams and Ferreira, 2007, Adams *et al.*, 2010; Faleye *et al.*, 2011), but the empirical literature offers divergent opinions on their efficacy. Of the many features of boards that the literature has shown to affect the monitoring role, we examine—in addition the interpersonal population diversity—the roles of board size, independence, gender, the presence of foreign directors, and CEO/Chair duality as these features relate to good governance and the likelihood of a bank engaging in financial misconduct.¹

Large boards may be beneficial because they increase the pool of expertise and resources available to the firm, which may benefit the monitoring role of the board (e.g., Dalton *et al.*, 1999; Upadhyay and Sriram, 2011). In particular, a board whose members serve on several other boards may enable the firm to gain access to needed resources and critical information through these

¹ Other board characteristics that have been shown to affect firms' engaging in misconduct that we do not consider include the political ideology of directors (Park *et al.*, 2020), director expertise (Nguyen *et al.*, 2016) and directors' social networks (Chidambaran *et al.*, 2010).

multiple directorships (Bhagat and Black, 1999; Zahra and Pearce, 1989). For example, such directors may be able to observe investigations and legal proceedings brought against other firms on whose boards they serve and bring information back that enables firms to take action to avoid similar legal pitfalls and litigation (Schnake *et al.*, 2005). However, large boards have also been associated with free-riding problems amongst directors and increased decision-making time and thus with less effective monitoring (Lipton and Lorsch, 1992; Jensen, 1993). They might also face problems of greater levels of conflict (Goodstein *et al.*, 1994) and lower group cohesion (Evans and Dion, 1991). In empirical studies related to misconduct, Altunbas *et al.* (2018) report that the incidence of regulatory enforcements was less in banks with smaller boards and Schnake and Williams (2008) report a negative relationship between board size and enforcements with small boards whose directors have multiple directorships. However, most studies do not appear to find any significant influence of board size on the incidence of misconduct (e.g., Hasnan *et al.*, 2020; Nguyen *et al.*, 2016; Romano and Guerrini, 2012; Razali and Arshad, 2014; Tan *et al.*, 2017).

Independent directors (i.e., directors without social or business connections to management) may result in boards that are effective in their monitoring and guidance functions because they may be less beholden to management (Adams and Mehran, 2012; Devriese *et al.*, 2004), and because they may seek to protect their reputations (Fama and Jensen, 1983; Pathan, 2009). On the other hand, independent directors have been associated with a reduction in the board's information production and its monitoring role, especially if the CEO responds to more independent directors by providing less information (Adams and Ferreira, 2007). The results from empirical studies with respect to firm misconduct are rather mixed. For example, Altunbaş *et al.* (2018), Baber *et al.* (2012), Khoufi and Khoufi (2018), Razali and Arshad (2014) and Romano and

Guerrini (2012) all report a negative relationship between the percentage of independent board members and either financial accounting restatements or regulatory enforcements for financial misconduct. Similarly, in a meta-analysis of 135 studies, Neville *et al.* (2019) report that the board independence–corporate misconduct relationship was generally negative, but varied according to whether independence was that of the whole board, the audit committee, or between the roles of CEO and board chair. On the other hand, Zaman *et al.* (2021) report a positive relationship between coopted boards (i.e., directors appointed after a CEO assumes office) and corporate misconduct. Studies by Boivie *et al.* (2016), Cumming *et al.* (2015b), Dah *et al.* (2014); Ghafoor *et al.* (2019), Hasnan *et al.* (2020, 2013), Nguyen *et al.* (2016), and Tan *et al.* (2017) find no significant impact of board independence on firm financial accounting restatements, regulatory actions, or fraud events.

A recent literature has examined the governance role of a specific type of independent board director, namely foreign independent directors (defined as independent directors domiciled in foreign countries) given the increased reliance by firms on them (Gianneti *et al.*, 2015; Masulis *et al.*, 2012). As for other directors, the issue is whether foreign directors reduce or increase agency problems through their impact on board monitoring. On the one hand, foreign directors can provide valuable international expertise, especially to firms that have or plan to have foreign operations (Adams *et al.*, 2010). On the other hand, they may be less effective as monitors given the greater oversight costs associated with their geographic distance from corporate headquarters, the lack of exposure to information provided by local networks (Coval and Moskowitz, 2001, 1999), and a likely unfamiliarity with national accounting rules, laws and regulations, and governance standards, which can make it more difficult for them to evaluate managerial performance or

challenge managerial decisions (Masulis *et al.*, 2012). In empirical evidence, Ghosh *et al.* (2021) report that foreign directors have a significantly positive impact on cross-listed firms' value, especially for firms from countries that are culturally and institutionally different than the home country. Conversely, Masulis *et al.* (2012) find that firms with foreign directors exhibit significantly poorer performance except in the case of cross-border acquisitions when the targets are from the home regions of foreign director.

The empirical evidence specifically on the impact of foreign directors on firm misconduct is scant and mainly indirect. Masulis *et al.* (2012) report that firms with foreign directors are associated with a greater likelihood of intentional financial misreporting. Deng *et al.* (2020) explore the influence of the localness of independent directors on Chinese listed firms' fraudulent and non-compliant practices and report that local independent directors at both the provincial and the city-levels reduce the frequency and magnitude of firm misconduct, and that the monitoring effect is stronger for independent directors who are in the same province/different. This would be consistent with foreign directors being less effective monitors of management. Haans and van den Oever (2021) compare entrepreneurs in the UK who were solely responsible for their venture and who were disqualified from being a director by the government following unfit conduct to a matched sample of entrepreneurs who did not engage in such misconduct, and report that foreign entrepreneurs are substantially less likely to commit misconduct than native entrepreneurs. This would be more consistent with foreign directors being more as effective monitors.

Agency theory suggests that gender diversity in the boardroom is effective in strengthening basic board functions (e.g., meeting attendance, discussion quality, monitoring) and corporate

governance (Adams and Ferreira, 2009; Campbell and Minguez-Vera, 2008; Carter *et al.*, 2003; Fields and Keys, 2003; Girardone *et al.*, 2021; Hermalin and Weisbach, 2003; Terjesen *et al.*, 2009), although empirical studies of the effects of board gender diversity on firm performance have produced mixed results (Adams and Ferreira, 2009; Adams and Funk, 2012; Ahern and Dittmar, 2012; Mateos de Cabo *et al.*, 2012). One strand of the literature suggests that the relationship between female directors and financial performance is nonlinear, with women able to add value when they reach a critical mass of three or more directors (Liu *et al.*, 2014; Schwartz-Ziv, 2017).

The empirical evidence with respect to board gender diversity and firm misconduct is generally suggestive that gender diversity deters it. For example, Arnaboldi *et al.* (2021) show that greater female board representation significantly reduces the frequency of misconduct fines received by European banks from US regulators, and that female directors are more influential when they reach a critical mass and are supported by women in leadership roles. Cumming *et al.* (2015b) investigate the effect of board gender diversity on securities fraud and find that it reduces both the frequency and the severity of fraud. García Lara *et al.* (2017) report that a larger percentage of women among independent directors is significantly associated with lower earnings management practices in a large sample of UK firms. Richardson *et al.* (2016) find that more gender-diverse boards are associated with lower tax avoidance in a sample of Australian firms. Wahid (2019) reports that listed US firms with gender-diverse boards commit fewer financial reporting mistakes and engage in less fraud, but that the benefit derived from increasing the number of female directors on corporate boards seems to diminish at higher levels of gender diversity. Finally, Liu (2018) finds that US firms with more gender-diverse boards receive fewer sanctions

for environmental violations. On the other hand, Altunbaş *et al.* (2018) find no significant impact of board gender diversity on regulatory enforcements of US banks.

CEO duality (where the CEO simultaneously serves as board chairman) can impact firm governance through its implications for the separation of firm ownership and control. Agency theory literature suggests that when one person is in charge of both tasks it indicates the absence of separation of decision management and decision control (Fama and Jensen, 1983). Managerial dominance is encouraged because board independence is compromised with board members more likely to align with management than with shareholders (Malette and Fowler, 1992), and the capacity of the board to monitor and oversee management is correspondingly reduced (Lorsch and MacIever, 1989). On the other hand, a combined role of CEO and chairman may provide a single focal point for company leadership allowing it to project a clear sense of direction (Anderson and Anthony, 1986). It may also create stability for a firm by reducing the likelihood of conflict between management and the board of directors, which could contribute to improved performance (Stoeberl and Sherony, 1985). In terms of the impact of duality on firm misconduct, Neville *et al.* (2019), Khoufi and Khoufi (2018) and Yang *et al.* (2017) report that it is associated with more misconduct, but Romano and Guerrini (2012) and Tan *et al.* (2017) all find no significant impact.

In this section, we have reviewed briefly two key literatures: on the effect of interpersonal population diversity on comparative economic performance; and on firms' executive board characteristics as they impact on the effectiveness of its monitoring function with respect to firm misconduct. This has provided the context for our research question as to whether interpersonal population diversity in the boardroom effects the likelihood that a firm (in our case, a bank) will

engage in financial misconduct. In the following two sections, we present the data that we employ and the methodologies that we use.

3. Data

3.1 Measuring bank misconduct

We follow Altunbaş *et al.* (2021, 2018) and define bank misconduct narrowly by focusing on detected misconduct as indicated by the number of enforcements and class action litigation judgements for financial misconduct against publicly listed US banks by the main US regulatory agencies (the Board of Governors of the Federal Reserve System Enforcement Action database, the Office of the Comptroller of the Currency Enforcement Actions database, the Federal Deposit Insurance Corporation Enforcement Decisions and Orders database, Stanford Law School Securities Class Action Clearinghouse Filings Database, and the Office of Thrift Supervision Enforcement Order Archive).² Only enforcement actions and class action litigations of institutions are taken into consideration. In total, we found 15,236 adjudications of misconduct cases in the period 1998 to 2019. We match these enforcements against the list of US banks as of December 2019 gathered from SNL Financial using the unique RSSD identifier assigned to banks by the Federal Reserve Board, which allows us to exclude those cases not matched against listed banks. This reduces the sample of enforcements to 1,818 cases involving 243 banks out of a total of 675 banks sampled, making it clear that many banks were repeat offenders.

² We examine publicly listed banks because they tend to be larger than non-listed banks, are subject to additional information disclosure regulations, and because data on these institutions is readily available.

3.2 Measuring genetic diversity

Following Delis *et al.* (2017) and Kizys *et al.* (2023), we apply the expected heterozygosity of genetic diversity to construct a measure of board heterogeneity with respect to the interpersonal population diversity of the executive boards in our sample of banks. Expected heterozygosity is constructed by using sample data on the frequency with which a “gene variant” occurs in the population sample in question. Given the frequencies for a particular gene, it is possible to compute the probability that two randomly selected individuals differ with respect to a given gene that, when averaged over multiple genes, yields the overall expected heterozygosity for the population sample. The genetic diversity score is measured using data from the HGDP-CEPH Human Genome Diversity Cell Line Panel.³

In a pioneering application to economics, Ashraf and Galor (2013ab) use this data to calculate country-specific interpersonal population diversity values and demonstrate the importance of genetic diversity as a factor in country’s economic development. We combine the country-specific interpersonal population diversity values calculated by Ashraf and Galor (2013ab) with information from BoardEx on the nationality of each executive board member. We then calculate the firm-year measure of board heterogeneity as the *standard deviation* of the Ashraf and Galor (2013ab) values assigned to each board member in a given bank and year in our dataset. More formally it is measured as:

³ The data is available at: http://www.cephb.fr/en/hgdp_panel.php.

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (d_i - m)^2} \quad (1)$$

where σ is the standard deviation of the interpersonal population diversity score d attached to the n board directors of each bank. Each director's interpersonal population diversity score is linked to the country of nationality i , and m is the mean score of each board.⁴ By focusing on the standard deviation, we examine whether and to what extent differences in the directors' countries of origin affect financial misconduct, irrespective of whether these differences come from a genetically more or less diverse country. Most importantly, the measure does not relate a firm engaging in financial misconduct to the mean score of genetic diversity in the boardroom and so does not allow us to say whether misconduct is associated with more or less genetic diversity—only that is associated with more *variation* in genetic diversity.

3.3 Other variables

We draw on the governance and misconduct literature discussed above to control for indicators of firm governance and for bank balance sheet variables that have been shown to impact on the likelihood of a bank engaging in misconduct. Accordingly, we control for the executive board characteristics of size, CEO/Chair duality, and the proportions independent, foreign, and female directors. The bank-specific variables that we control for have been previously in the misconduct literature (e.g., Altunbaş *et al.*, 2021, 2018; Nguyen *et al.*, 2016) and include bank leverage, profitability, liquidity, asset quality, the capital-asset ratio, efficiency, and bank size.

⁴ Delis *et al.* (2017) call σ the “deviation effect” of interpersonal population diversity on corporate performance.

Descriptive statistics for all of the variables are given in Table 1 and variable definitions are presented in Table 2. A correlation matrix for the key variables is presented in Table 3 and shows generally very low levels of correlation between the variables.

4. Methodology

For our baseline equation, we estimate the following model:

$$M_{it} = \alpha_0 + \beta_1 D_{it} + \beta_2 X_{it} + \varepsilon_{it} \quad (2)$$

where M is the number of regulatory enforcements or class action litigations against bank i in quarter t . D is a measure of the variation in interpersonal population (genetic) diversity of the boardroom, X is a vector of the executive board and bank balance sheet control variables discussed above, and ε is the stochastic error term.

We first run fixed effects estimates, but we suspect the results to be biased because of endogeneity. At least two sources of endogeneity are possible here. The first is the inverse causality between some covariates and the dependent variable. This could arise, for example, if misconduct resulted in banks changing the composition of the executive board by adding directors with a view to changing the variation in interpersonal population diversity. In this case, diversity would be driven partly by misconduct rather than the converse. A second possible source of endogeneity is omitted variable bias since we are certainly not controlling for all the determinants of bank financial misconduct.

Accordingly, we need to identify one or more variables that affect interpersonal population diversity but do not directly affect the likelihood of a bank engaging in financial misconduct. We employ two instruments for this purpose. The first instrument is adapted from Ashraf and Galor (2013ab) and is the migratory distance of a board directors' country of origin from East Africa. This instrument is used on the basis that since the emergence of Homo sapiens in Africa 300,000 years ago, diversity has facilitated the adaption of human beings (e.g., progressively better hunters and gathers) enabling them to increase food supply and increase the size of the human population. Living space and natural resources available per person declined and sometime as early as 60,000 to 90,000 years ago, Homo sapiens embarked on a large-scale exodus out of the African continent in search of additional fertile living grounds. This migratory process was associated with a reduction in interpersonal population diversity of the population that settled at greater migratory distances from Africa.

If we used only migratory distance as an instrument, our equation would be exactly identified, which would raise the possibility of under-identification and would undermine the validity of the instrument. To achieve over-identification, we complement migratory distance with a second instrument, which is a measure of ultraviolet (UV) exposure. The intuition in using this variable is based on the biology literature. It is well known that UV radiation can cause mutation of genes, thus affecting alleles (Sturm and Duffy 2012). Moreover, differences in UV radiation affect the natural landscape with indirect but very important implications for the way humans live their lives and form their societies. At the same time, there is no reason to believe that UV radiation

in executive board directors' origin country would directly affect banks' misconduct given that our regressions include fixed effects.

5. Empirical results

5.1 Baseline and IV results

Table 4 reports the fixed effects (columns 1 to 3) and instrumental variables (columns 3 to 6) estimates of Equation (2). We first report the result for the variation of interpersonal population diversity and the other executive board variables and then add the bank-specific balance sheet variables. There is little difference between the two sets of estimates. The coefficients on the variation of interpersonal population diversity are always positive and statistically significant at the 1% level. That is, greater variations in genetic diversity amongst bank board members are associated with more financial misconduct by banks. The diversity effects are also economically significant with a 1 standard deviation increase in the variation (0.002) increasing bank misconduct by about 0.04 points.⁵ For a bank with the average number of misconduct judgements (0.685), this implies an increase in misconduct (judgements) of between 25 and 32 per cent.

With respect to the other executive board characteristics, there is some evidence that misconduct is associated with larger boards, which is consistent with large boards having less effective monitors (Lipton and Lorsch, 1992; Jensen, 1993), though the coefficients are not always statistically significant, and the economic effects are small. The coefficients on board

⁵ For example, $-0.038 = -19.253(\text{coefficient on genetic diversity in column 4}) * 0.002(\text{the standard deviation of genetic diversity reported in Table 3})$.

independence are always negative and statistically significant, which is consistent with independent directors being more effective because they are less beholden to management (Adams and Mehran, 2012; Devriese *et al.*, 2004) and/or because they seek to protect their reputations (Fama and Jensen, 1983; Pathan, 2009). The coefficients on gender diversity are also negative and statistically significant consistent with a larger share of females on the board increasing board effectiveness in mitigating misconduct (Arnaboldi *et al.*, 2021; Cumming *et al.*, 2015b). We find no influence on bank misconduct of CEO/Chair duality or of the proportion of foreign directors on the board. The findings for the bank balance sheet variables suggest that misconduct is more likely in larger banks, that have more deteriorated assets (reflected in higher loan provisions), are more leveraged, and are less well capitalized, which is in line with recent findings by Altunbaş *et al.* (2018).

5.2 Nonlinearity concerns

In their work on interpersonal population diversity and macroeconomic performance, Ashraf and Galor (2013a) report a “hump-shaped” effect of interpersonal population diversity on comparative economic development, reflecting a trade-off between the beneficial and the detrimental effects of diversity on productivity. We search for the potential existence of such a U-inverted shaped relationship between the interpersonal population diversity of bank boards and bank misconduct by including the squared term of the variation of diversity as a determinant. These results are reported in Table 5 and indicate that such an effect does indeed exist. The estimated linear and quadratic coefficients are both statistically significant at the 1 percent level. and imply that a 1 percentage point decrease in the variation of diversity would be associated with

a rise in misconduct by 10.15-12.20 percentage points, whereas a 1 percentage point increase would be associated with a rise in misconduct by 169.74 to 207.12 percentage points. In addition, the coefficients indicate that there is an “optimum” degree of genetic fragmentation of bank boards of 0.030 points beyond which more variation in genetic diversity is associated with a reduction in bank financial misconduct. This supports the notion of a trade-off between the detrimental and the beneficial effects of interpersonal population diversity on board monitoring and guidance vis-à-vis misconduct—i.e., at some point (0.030 points of genetic fragmentation in this case) the variation in interpersonal population is so great that differences in members’ values, beliefs, and preferences are no longer a barrier to effective board monitoring vis-à-vis the bank engaging in misconduct. The size, signs and significance of the remaining executive board and other bank-specific variables are broadly consistent with the results reported in Table 4.

5.3. Other robustness results

Finally, we examine whether the mitigating impact of the deviation in diversity on misconduct persists as more misconduct takes place or whether its influence weakens. For example, Dorminey *et al.* (2012) point out that repeated misconduct makes the offender desensitized such that misconduct becomes more continuous in time. Applied to our case, it suggests the possibility that the influence of the deviation effect might weaken in the face of persistent misconduct, for example, if executive boards accepted that some financial misconduct was an inevitable part of the banking business. Table 6 reports results from estimates in which the sample of banks is limited to the 243 that were subject to enforcement and litigations. The columns report results from banks that have been subject to at least one, two, three, four and five misconduct

judgements respectively. The coefficients on the variation in interpopulation diversity are always negative and statistically significant at the 1% level suggesting no weakening of the effect on misconduct even when it is persistent. In these estimates, the impact of the other executive board and bank balance controls is also broadly in line with the results reported in Table 4.

5.4 Mechanisms

Having established robust evidence of the effect of variations in interpersonal population diversity of bank board members on corporate misconduct, we carry out an additional empirical exercise in an attempt to uncover potential mechanisms behind the main findings. For this purpose, we collect country-level measures of potential channels of transmission. We consider as possible channels the level of societal trust, the quality of a country's institutions, the level of corruption in a country, and adherence to law and order in a country. For example, Alesina and La Ferrara (2002), Arbatlı *et al.* (2020), Ashraf *et al.* (2021) and Ashraf and Galor (2018, 2013ab) show that mistrust can arise as a result of societal non-cohesiveness and tends to prevail in genetically fragmented societies. Tabellini (2008) shows that cooperation values are transmitted from parents to children and these values affect political beliefs and thereby shape the quality of institutions; and Blanco (2013) argues that institutional quality can lead to criminal and violent actions.

We construct the average level of measures of trust, institutional quality, corruption and adherence to law and order for countries based on the nationality of the directors that comprise the boardroom of each bank. For this, we collect data at the country level from the World Values survey to measure trust, from Polity V for institutional quality, and from the International Country

Risk Guide for corruption and law and order. We then use the two-step regression model of Acharya *et al.* (2016) to estimate the Average Controlled Direct Effects (ACDE). This method allows us to understand the causal influence of a treatment variable (in our case, variations in interpersonal population diversity) on bank misconduct while keeping all the other factors constant. In the first step, we assess the impact of various factors on the outcome variable. With these results, we isolate the impact of the mediating variable. In the second step, we analyze the relationship between the adjusted outcome variable and the treatment variable, which provides us with ACDE estimates. If these ACDE estimates are statistically insignificant, it suggests that the treatment variable's impact on the outcome is mainly through the proposed pathway. Conversely, if the ACDE estimates are statistically significant, it indicates that there are other channels of transmission at work. The results are reported in Table 7. It is the trust variable (column 1) that is statistically insignificant indicating that trust is the main channel through which the variation in genetic diversity of board members impacts the likelihood of a firm engaging in misconduct. That is, the statistical precision of the estimated coefficient on variation in genetic diversity reduces significantly when we account for the mediating role of the average social trust among board members.

6. Conclusions

In this paper, we asked whether variations in the interpersonal population diversity of the executive board members of US banks influenced the likelihood of the bank engaging in financial conduct as measured by enforcements and class action litigation by the main US regulatory agencies. We drew on recent research that has stressed the importance of variations in genetic

diversity in shaping macroeconomic development (e.g., through the impact of new ideas and perspectives on decision-making processes and knowledge accumulation). To measure the variations in the interpersonal population diversity of bank boards, we combine country-specific interpersonal population diversity values calculated by Ashraf and Galor (2013ab) with information from BoardEx on the nationality of each executive board member. The firm-year measure of board heterogeneity was then calculated as the standard deviation of the Ashraf and Galor (2013ab) values assigned to each board member in a given bank and year in our dataset.

Our results indicate that the effect of variations in interpersonal population diversity on misconduct is positive and statistically significant—i.e., banks whose executive board members exhibit larger variations in genetic diversity are more likely to engage in misconduct. The result is robust to controlling for other board characteristics, bank balance sheet variables, and to estimation with instrumental variables. We also find that the relation between the variation in interpersonal population diversity and bank misconduct is a U-inverted shape suggesting that there is a trade-off between the beneficial and the detrimental effects of interpersonal population diversity on board monitoring and guidance. Our results also indicate that the variations in such diversity of executive boards remains a strong positive influence on financial misconduct even in banks where misconduct is a persistent feature of behaviour. Finally, a key mechanism through which interpersonal population diversity impacts board monitoring with respect to bank misconduct is trust issues that might arise between board directors.

As regards the influence of other executive board characteristics and bank balance sheet variables, our results support recent research showing that misconduct is less likely to take place

when executive boards are smaller and have a larger proportion of independent and female directors, and that misconduct is more likely to be committed by larger banks that have more deteriorated assets and are more leveraged and less well capitalized. Our study is the first to relate elements of genetic diversity to bank misconduct and one of the very few to relate it to firm performance more generally. Thus, the findings partially corroborate at the microeconomic level those of Ashraf and Galor (2013ab) on the importance of variations in interpersonal population diversity on countries' macroeconomic performance.

Overall, our findings are at odds with theories and recent empirical studies that have emphasized the benefits of board diversity as a means of improving firm performance. We are not arguing that all aspects of diversity are harmful as regards the effectiveness of board monitoring—indeed, many studies have shown the benefits to firm performance from diversity with respect to, for example, gender, race, age, and culture. Our point is that not all types of diversity are necessarily beneficial to the board monitoring function, and in particular, that the effects of interpersonal population diversity—at least as bank engagement in financial misconduct—may be better understood from a conflict theory point of view. In terms of policy, it seems that one way to tackle bank financial misconduct is to limit the variation in the genetic diversity of the executive board.

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Table 1.

Data sources and variable definitions

Variables	Source	Description
Dependent variable		
Financial misconduct	BOG; OCC; FDIC; SLS; OTSE ¹	The absolute number of regulatory enforcements or class action litigations against the bank in a given quarter for financial misconduct
Independent variables		
Variation in interpersonal population diversity (IPD)	Ashraf and Galor (2013), Delis et al. (2016) and own calculations	$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (d_i - m)^2}$, where σ is the standard deviation of the interpersonal population diversity score d attached to the n board directors of each bank. Each director's interpersonal population diversity score is linked to the country of nationality i and m is the mean score of each board.
Bank size	BoardEX	Natural logarithm of total assets in a given quarter
Loan provisions	BoardEX	The ratio of loan loss provision to total loans in a given quarter
Leverage	BoardEX	The ratio of total book value of liabilities to total assets in a given quarter
Capital	BoardEX	The ratio of total capital to risk-weighted assets in a given quarter
Liquidity	BoardEX	The ratio of liquid assets to total assets in a given quarter
Profitability	BoardEX	The ratio of earnings before interest and taxes to book value of total assets in a given quarter
Board size	BoardEX	The number of directors sitting on the board in a given quarter
Board independence	BoardEX	The percentage of independent non-executive directors on the board in a given quarter
Duality	BoardEX	Dummy variable equal to 1 if the CEO is also the board chairman in a given year and zero otherwise
Board gender	BoardEX	Percentage of female directors on the board
Foreign directors	BoardEx	Percentage of foreign directors on the board
Instrumental variables		
Migratory distance	Ashraf and Galor (2013) and own calculations	Natural logarithm of migratory distance from East Africa
UV exposure	Ashraf and Galor (2013) and own calculations	A measure of ultraviolet light exposure.

¹ BOG=Board of Governors of the Federal Reserve System; OCC=Office of the Comptroller of the Currency Enforcement; FDIC=Federal Deposit Insurance Corporation; SLS=Stanford Law School; OTSE=Office of Thrift Supervision Enforcement.

Table 2.
Summary statistics

Variable	Observations	Mean	Standard deviation	Maximum	Minimum
Financial misconduct	11,512	0.685	1.673	18.000	0.000
Variation in IPD	11,512	0.016	0.002	0.087	0.000
Bank assets	11,512	9.330	1.929	15.333	8.517
Loan provisions	11,512	0.320	0.382	5.409	0.000
Leverage	11,051	0.635	1.934	96.400	0.007
Capital	11,512	10.420	4.240	25.160	0.140
Liquidity	11,512	22.804	11.712	86.520	0.330
Profitability	11,512	0.377	1.941	9.510	9.990
Board size	11,512	10.790	3.077	1.000	34.000
Board independence	11,512	0.768	0.154	0.850	0.000
Duality	11,512	0.497	0.500	1.000	0.000
Board gender	11,512	0.583	0.154	0.850	0.000
Foreign directors	11,512	0.063	0.218	0.218	0.218
Migratory distance	11,512	2.111	1.835	12.35	0.000

Source: see data sources listed in Table 1.

Table 3
Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Financial misconduct	1.000												
(2) Variation in IPD	-0.168	1.000											
(3) Bank assets	0.145	-0.053	1.000										
(4) Loan provisions	0.001	0.000	-0.004	1.000									
(5) Leverage	0.023	-0.003	-0.039	-0.008	1.000								
(6) Capital	0.020	-0.010	0.014	0.001	0.003	1.000							
(7) Liquidity	0.000	-0.008	0.000	0.009	0.005	-0.007	1.000						
(8) Profitability	0.012	-0.004	0.015	0.003	0.014	-0.010	-0.005	1.000					
(9) Board size	0.075	-0.018	0.562	-0.002	0.000	0.008	-0.001	0.009	1.000				
(10) Board independence	-0.034	-0.004	0.191	0.009	-0.037	0.007	-0.007	0.014	-0.083	1.000			
(11) Duality	0.003	-0.005	-0.002	0.007	0.010	0.010	-0.014	0.007	0.005	0.015	1.000		
(12) Board gender	-0.393	0.022	0.050	0.008	-0.019	-0.006	-0.010	-0.011	-0.025	0.106	0.008	1.000	
(13) Foreign directors	-0.004	-0.007	-0.002	0.004	0.002	0.012	0.005	0.000	-0.011	-0.006	-0.001	0.012	1.000

Note: Variable definitions and data sources are listed in Table 1

Table 4
The determinants financial misconduct

	Fixed effects			Instrumental variables		
	1	2	3	4	5	6
Variation in IPD	20.155*** (1.143)	20.978*** (1.268)	19.423*** (1.157)	19.253*** (1.363)	20.396*** (1.512)	18.587*** (1.380)
Board size	0.026*** (0.005)		-0.009 (0.006)	0.026*** (0.005)		-0.009 (0.006)
Board independence	-0.550*** (0.106)		-0.646*** (0.115)	-0.550*** (0.106)		-0.647*** (0.115)
Duality	0.009 (0.027)		0.015 (0.027)	0.009 (0.027)		0.015 (0.027)
Board gender	-4.012*** (0.0880)		-4.305*** (0.092)	-4.014*** (0.088)		-4.306*** (0.092)
Foreign directors	0.068 (0.303)		0.029 (0.306)	0.069 (0.303)		0.030 (0.306)
Bank size		0.061*** (0.008)	0.106*** (0.009)		0.061*** (0.008)	0.107*** (0.009)
Loan provisions		0.026*** (0.009)	0.039*** (0.006)		0.026*** (0.009)	0.039*** (0.006)
Leverage		0.020** (0.008)	0.014* (0.007)		0.020** (0.008)	0.014* (0.007)
Capital		-0.005** (0.000)	-0.004** (0.000)		-0.005** (0.001)	-0.004** (0.001)
Liquidity		-0.000 (0.001)	-0.001 (0.001)		-0.000 (0.001)	-0.001 (0.001)
Profitability		0.007 (0.008)	0.004 (0.007)		0.007 (0.008)	0.004 (0.007)
Observations	11,512	11,051	11,051	11,512	11,051	11,051
R2	0.185	0.134	0.280	0.179	0.031	0.194
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F-test				54	58	66

Source: Author estimates.

Notes. The dependent variable is the number of regulatory enforcements or class action litigations for financial misconduct in a given quarter and zero otherwise. IPD is interpersonal population diversity (e.g., Ashraf and Golor, 2013ab). The sample period is 1998-2019. Robust standard errors are clustered at bank level and reported in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Nonlinearity in the determinants financial misconduct

	Fixed effects				Instrumental variables	
	1	2	3	4	5	6
Variation in IPD	97.824*** (3.343)	104.295*** (3.713)	95.467*** (3.392)	88.315*** (7.227)	97.735*** (8.041)	86.781*** (7.359)
Variation in genetic diversity squared	-1649.856*** (66.947)	-1770.283*** (74.384)	-1614.808*** (67.930)	-1470.298*** (138.273)	-1646.371*** (153.906)	-1450.773*** (140.807)
Board size	0.023*** (0.005)		-0.008 (0.006)	0.024*** (0.005)		-0.008 (0.006)
Board independence	-0.524*** (0.103)		-0.594*** (0.113)	-0.528*** (0.103)		-0.601*** (0.113)
Duality	0.013 (0.026)		0.019 (0.026)	0.012 (0.026)		0.018 (0.026)
Board gender	-3.924*** (0.086)		-4.207*** (0.090)	-3.936*** (0.087)		-4.219*** (0.091)
Foreign directors	0.029 (0.295)		-0.005 (0.298)	0.034 (0.295)		-0.000 (0.298)
Bank size		0.053*** (0.008)	0.097*** (0.009)		0.054*** (0.008)	0.098*** (0.009)
Loan provisions		0.019*** (0.008)	0.032*** (0.005)		0.019*** (0.008)	0.033*** (0.005)
Leverage		0.020*** (0.007)	0.014** (0.007)		0.020*** (0.007)	0.014** (0.007)
Capital		-0.004*** (0.001)	-0.003*** (0.001)		-0.004*** (0.001)	-0.003*** (0.001)
Liquidity		-0.000 (0.001)	-0.001 (0.001)		-0.000 (0.001)	-0.001 (0.001)
Profitability		0.006 (0.007)	0.003 (0.007)		0.006 (0.007)	0.003 (0.007)
Observations	11,512	11,051	11,051	11,512	11,051	11,051
R2	0.185	0.177	0.315	0.220	0.078	0.233
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F-test				25	84	71

Source: Author estimates.

Notes. The dependent variable is the number of regulatory enforcements or class action litigations for financial misconduct in a given quarter and zero otherwise. IPD is interpersonal population diversity (e.g., Ashraf and Galor, 2013ab). The sample period is 1998-2019. Robust standard errors are clustered at bank level and reported in parenthesis.. *** indicates statistical significance at the 1% level.

Table 6

Linear probability estimates of the determinants financial misconduct with instrumental variables—the persistence of misconduct

	At least one misconduct case	At least two misconduct cases	At least three misconduct cases	At least four misconducts cases	At least five misconduct cases	At least six misconduct cases
Variation in IPD	0.187*** (0.002)	1.148*** (0.209)	1.148*** (0.209)	1.170*** (0.133)	1.008*** (0.117)	0.999*** (0.110)
Board size	0.004*** (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.001* (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
Board independence	-0.155*** (0.027)	-0.068*** (0.018)	-0.011 (0.010)	-0.031* (0.009)	0.005 (0.006)	-0.000 (0.006)
Duality	-0.005 (0.006)	0.002 (0.004)	0.001 (0.003)	0.003 (0.002)	0.002 (0.002)	0.001 (0.002)
Board gender	-1.538*** (0.022)	-0.281*** (0.021)	-0.168*** (0.016)	-0.119*** (0.014)	-0.084*** (0.011)	-0.079*** (0.011)
Foreign directors	0.102 (0.071)	-0.005 (0.043)	-0.004 (0.030)	-0.011 (0.027)	-0.021 (0.021)	-0.033* (0.019)
Bank size	0.045*** (0.002)	0.022*** (0.002)	0.020*** (0.002)	0.017*** (0.002)	0.015** (0.001)	0.014*** (0.001)
Loan provisions	0.014*** (0.000)	0.014*** (0.005)	0.011** (0.004)	0.006* (0.002)	0.002** (0.001)	0.002** (0.001)
Leverage	0.002** (0.000)	0.003* (0.001)	0.002*** (0.001)	0.001*** (0.001)	0.001*** (0.000)	0.001*** (0.000)
Capital	-0.001 (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)
Liquidity	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Profitability	-0.004** (0.002)	0.001 (0.001)	0.001 (0.001)	0.001* (0.000)	0.000 (0.000)	0.000 (0.000)
Observations	11.051	11.051	11.051	11.051	11.051	11.051
R ²	0.360	0.084	0.096	0.086	0.095	0.094
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F-test	66	90	110	98	87	75

Source: Author estimates.

Notes. The dependent variable is the number of regulatory enforcements or class action litigations for financial misconduct in a given quarter and zero otherwise. IPD is interpersonal population diversity (e.g., Ashraf and Galor, 2013ab). The table reports the marginal effects and their robust standard errors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Results from mediation analysis

	Trust	Corruption	Law and order	Institutions
Panel A. OLS estimates				
Variation in IPD	11.234 (10.123)	19.234*** (1.231)	20.121*** (1.385)	20.246*** (1.222)
Panel B. IV estimates				
Variation in IPD	13.125 (13.342)	18.293*** (1.698)	18.392*** (1.823)	18.123*** (1.218)
Control variables	YES	YES	YES	YES
Fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES

Source: Author estimates.

Notes: Notes: This table reports the average controlled direct effects (ACDE) of financial misconduct. The results capture the contribution of the variation in IPD to misconduct when holding the mediators fixed at a particular level. The standard-error estimates are computed through a bootstrapping procedure with 1000 replications. *** represents statistical significance at the 1% and 5% levels.