Does a CEO's Cultural Heritage Affect Performance under Competitive Pressure?

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Abstract
We exploit variation in the cultural heritage across U.S. CEOs who are the children or grandchildren of immigrants to demonstrate that the cultural origins of CEOs matter for corporate outcomes. Following shocks to industry competition, firms led by CEOs who are second- or third-generation immigrants are associated with a 6.2% higher profitability compared with the average firm. This effect weakens over successive immigrant generations and cannot be detected for top executives apart from the CEO. Additional analysis attributes this effect to various cultural values that prevail in a CEO's ancestral country of origin. (*JEL* G30, M14, Z1)

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Do the cultural values we inherit from our ancestors affect our decision-making in the present time? A growing literature documents how various characteristics of chief executive officers (CEOs) shape firm outcomes (Dittmar and Duchin 2016; Bernile, Bhagwat, and Rau 2017; Cronqvist and Yu 2017; Schoar and Zuo 2017). However, this literature faces measurement challenges when it comes to identifying the impact of a CEO's cultural heritage on corporate outcomes. The impact of culture—regardless of how defined or measured—is easily confounded with economic and other institutional factors that, much like culture, can vary across nations.

The empirical setting we use in this paper addresses this measurement challenge. We hand-collect a novel data set that tracks the family trees of US CEOs and focus on CEOs who are the children or grandchildren of immigrants (henceforth *Gen2-3* CEOs). While Gen2-3 CEOs are exposed to the same legal, social and institutional influences as other US-born CEOs, they possess a cultural heritage that is different from those of other CEOs. Specifically, the cultural preferences and beliefs of Gen2-3 CEOs are likely to bear the cultural mark of the countries from which their parents or grandparents have emigrated. In this paper, we test whether the cultural values prevailing in the country that a Gen2-3 CEO's ancestors originate from shape firm policy choices and performance in a changing industry environment.

To study the impact of culture on economic outcomes, it is central to understand how a person's cultural values are formed and transmitted. Some studies posit that cultural attitudes adapt quickly to changes in economic incentives and opportunities. For instance, Gruber and Hungerman (2008) show that when the opportunity costs of religious participation increase, church attendance and donations drop sharply. Others argue that cultural values are deeply rooted and slow moving (Glazer and Moynihan 1963). For instance, several studies document

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that the descendants of immigrants show a degree of cultural distinctiveness over several subsequent generations (e.g., Guiso, Sapienza, and Zingales 2006; Fernandez and Fogli 2009; Giavazzi, Petkov, and Schiantarelli 2015). In line with the latter view, our paper documents distinct behavior among Gen2-3 CEOs and offers an explanation based on cultural heritage.

To identify a CEO's cultural heritage, we hand-collect data on the country of origin of a CEO's ancestors from ancestry.com, the world's largest genealogy database with access to almost 17 billion family histories. Our main approach, as described in detail in Section 1.1, maps out a CEO's family tree. Specifically, we search for a CEO's family records to identify information about their parents which we then use to identify their ancestors. We search census records, birth and marriage certificates, and other publicly available information to accurately track a CEO's ancestral history, as well as whether he or she is a Gen2-3 CEO. This detailed data set enables us to construct precise tests of the role of CEO cultural heritage on firm outcomes.

To identify the effect of CEO's cultural heritage on firm outcomes, we employ a methodology similar in spirit to Opler and Titman (1994) and Yonker (forthcoming). Our research design exploits competitive shocks at industry-level that are unanticipated by both the CEO and the firm. This allows us to circumvent ambiguity over whether CEOs imprint their preferences on a firm or whether CEOs and firms match on unobserved factors. The basic idea is that an industry shock forces the CEO to make decisions to navigate the firm through a changing industry environment. The ensuing decisions are likely to be complex, nonroutine, and unstructured, and CEO characteristics therefore are likely to be salient in how CEOs respond. If the cultural heritage of a CEO matters to corporate outcomes, we should observe systematic post-shock differences across firms led by CEOs with different ancestry.[1]

[1] Gneezy, Leonard, and List (2009) demonstrate that cultural values are salient in how individuals behave in a competitive environment. The authors explore gender differences in competitive behavior across two distinct

Since the banking industry experiences a series of profound shocks to competition in the 1990s, our study focuses on banks. We use the Interstate Banking and Branching Efficiency Act (IBBEA) of 1994 that legalizes interstate branching across the United States and markedly increases competitive pressures in some U.S. states (see Rice and Strahan 2010; Cornaggia et al. 2015). Our identification relies on the staggered (and unanticipated) deregulation of interstate branching applicable to banks in individual U.S. states. IBBEA therefore introduces substantial variation in industry competition along both geographical and temporal dimensions.

Our analysis of how a CEO's cultural heritage shapes firm policy choices and performance under competitive pressure rests on three main parts. First, we document a detectable performance effect linked to Gen2-3 CEOs. When competition intensifies, banks led by Gen2-3 CEOs are associated with a 6.2% higher return on assets compared to an average bank. Intriguingly, when examining the different generations of immigrants that a CEO belongs to, we observe a monotonic reduction in bank performance under competitive pressure as we move from CEOs who are second-generation descendants of immigrants to later generations. Further, the Gen2-3 effects we document are uniquely linked to the CEO and cannot be detected for other senior executives, such as the chief financial officer (CFO) or other members of a bank's top management team.

Second, we demonstrate that the descendants-of-immigrants effect is rooted in culture (rather than other characteristics shared by Gen2-3 CEOs). To do so, we trace the performance effect linked to Gen2-3 CEOs to cultural values that prevail in the country of a CEOs' ancestors. Using a broad range of 16 cultural values from Hofstede, Hofstede, and Minkov (2010),

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societies in an experimental setting: the (patriarchal) Maasai in Tanzania and the (matrilineal) Khasi in India. In the experiment, participants can either opt to compete based on their own performance or based on competitive performance (i.e., dependent on them outperforming the other participant). The results show that Maasai men opt to compete at roughly twice the rate as Maasai women. By contrast, Khasi women choose the competitive more often than Khasi men and even more often than Maasai men.

Schwartz (2007), the GLOBE Project, and the World Value Survey (WVS), we find that most cultural dimensions explain competitive performance.

The cultural values that enter significantly broadly contrast group- vs. self-oriented cultures and how comfortable members of a culture are with uncertain future outcomes. When competition intensifies, bank performance is positively related to the cultural dimensions *Restraint, Long-term irientation, Uncertainty avoidance*, and *Harmony* and is negatively related to *Individualism, Performance orientation, Importance of freedom, Intellectual autonomy, Importance of selflessness*, and *Patriotism*. In contrast, the cultural dimensions *Importance of income equality, Humane orientation*, *Trust in others*, *Power Distance*, and *Masculinity* do not explain competitive performance. These dimensions mainly revolve around values reflecting a culture's attitude towards hierarchy versus equality, which, intuitively, should be less relevant to strategic decision-making and firm outcomes (see Judge et al. 2002 for an overview of the traits of effective corporate leaders).[2]

Third, we offer direct evidence that explains the culture-performance nexus. We show that a CEO's cultural heritage is linked to specific bank policy choices. Specifically, when competition intensifies, banks led by CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness, uncertainty avoidance and long-term orientation (1) engage in fewer acquisitions, (2) realize higher acquisition announcement returns, (3) display lower risk, and (4)

[2] Given the large number of cultural dimensions we examine, interpreting the effects of each individual dimension becomes a complex undertaking. Further, the results on the individual dimensions suggest that some cultural dimensions cluster to represent more general characteristics of different cultural heritages (e.g., the group-mindedness of a particular culture). Therefore, we employ factor analysis, a common empirical approach to identify multifaceted personalities and traits (e.g., Kaplan, Klebanov, and Sorensen 2012; Custodio, Ferreira, and Matos 2013; Adams, Akyol, and Verwijmeren 2016; Kaplan and Sorensen 2016) and assign the 16 cultural variables to more general sets of cultural characteristics. We find that the 16 individual dimensions can be grouped into three factors. The first factor contrasts self-oriented with group-oriented values, the second factor contrasts equality with hierarchical values, while the third factor is related to assertiveness and autonomy. We obtain similar results when linking the three factors (instead of the 16 individual dimensions) to competitive performance.

are more cost efficient. Since our analysis traces the cultural heritage effects to more granular policy choices, it further explains why culture matters to performance.

For identification purposes, our main analysis focuses on how a CEO's cultural heritage affects performance under heightened industry competition. A natural question that arises is whether culture also matters to performance under a stable environment. We find that, absent heightened competition, banks run by Gen2-3 CEOs are, in fact, less profitable than those run by Gen 4+ CEOs. This implies that while Gen2-3 CEOs are more effective leaders under a changing environment, Gen4+ CEOs are better leaders under a more predictable environment. In a similar vein, many cultural values that enhance performance following increased competition, including *Restraint, Long-term orientation*, *Uncertainty avoidance*, and *Harmony*, curb performance in the absence of competition. Jointly, these results suggest that individual cultures are neither unequivocally beneficial nor harmful for performance, but that different cultures have strengths and weaknesses that are context dependent.[3]

We rule out several alternative interpretations for our findings. First, we address identification concerns related to endogenous CEO-bank matching. Unobserved firm heterogeneity may simultaneously explain the matching between banks and Gen2-3 CEOs, as well as bank policies. Our IBBEA identification already partially mitigates this issue. Since banks will not know ex ante whether and when a state opens to interstate competition, they cannot plausibly appoint CEOs in anticipation of this event.[4] We present two additional tests to show that endogenous CEO-bank matching is unlikely to drive our results. We first compare CEOs who assume office at least three years before a state opens for deregulation (these

[3] This is in line with Hutton, Jiang, and Kumar (2015), who find that different cultures have different value implications depending on the specific contexts.

[4] We construct several validation tests to ensure that the IBBEA shock is indeed unforeseen by banks and CEOs. For instance, we employ the methodology of Bertrand and Mullainathan (2003) and confirm there are no prior trends in bank profitability or risk-taking surrounding the period of deregulation.

appointments are plausibly exogenous to performance post-deregulation) with CEOs who assume office within three years of deregulation. We do not find any difference in the effect of CEOs on performance depending on how long before IBBEA CEOs were appointed. We then use a set of exogenous CEO turnovers (arising from CEO death, illness or long-planned retirements) and confirm that Gen2-3 are linked to an increase in competitive performance.

Second, deregulation may not affect all banks within the same state uniformly. For instance, out-of-state banks may be more likely to open new branches in local areas with the most growth potential, and if banks located in these areas were headed by Gen4+ CEOs, our results may simply reflect the fact that these banks face stiffer competition. We address this by showing that our results are robust to controlling for county-year fixed effects. This set-up allows us to compare banks in the same county and year (which are likely to share the same customer base, face the same investment cycle and local competition) that are led by CEOs of different ancestral backgrounds.

Third, we address concerns that omitted variables at the level of the CEO, bank location or a CEO's country of origin explain our results. In additional tests, we control for various CEO characteristics (including demographic, career history, and pay incentives), county-level variables (population, labor force, income per capita, and religiosity) and institutional and economic variables in a CEO's ancestral country of origin (GDP per capita, life expectancy, and the legal system). Our results remain robust to including these controls.

Our paper contributes to several active research areas. First, our paper is related to the growing literature that studies the impact of CEO attributes on corporate outcomes. Bertrand and Schoar (2003) identify significant time-invariant "managerial styles" in a range of policy choices. Various studies have subsequently attempted to explain heterogeneity in managerial

styles with reference to a manager's physiology (Adams, Keloharju, and Knüpfer 2016), life experiences (Bernile, Bhagwat, and Rau 2017; Cronqvist and Yu 2017), or career experience (Custodio and Metzger 2013; Dittmar and Duchin 2016; Schoar and Zuo 2017). Our findings make an important contribution to this line of research, because they can be interpreted as evidence pointing to some of the *origins* of time-invariant manager heterogeneity.

Second, our findings are consistent with the hypothesis that culture is slow moving and that the effects of cultural heritage are more pervasive than previously reported in a literature that links cultural heritage to personal choices, such as labor force participation or family planning (e.g., Giuliano 2007; Fernández and Fogli 2009; Giavazzi, Petkov, and Schiantarelli 2015). Our study implies that the effects of cultural heritage go beyond personal decisions and affect entire organizations through their effects on various firm-level policies.[5]

Third, we document distinct behavior among CEOs who are second- and third-generation immigrants, offer an explanation for this based on cultural heritage, and show that this effect fades away over successive generations. Collectively, our paper therefore offers novel insights into the formation and persistence of an individual's cultural preferences (e.g., Bisin and Verdier 2000; 2001; Robalino and Robson 2013).

1. Data and Identification

1.1 Bank sample and CEO ancestry information

Our paper studies how a CEO's cultural heritage shapes banks' reaction to the staggered liberalization of interstate branching that occurs during the late 1990s and early 2000s. . We build a sample of publicly listed U.S. banks from 1994 to 2006 by matching data on commercial

[5] In a related study, Pan, Siegel, and Wang (forthcoming) find that uncertainty avoiding CEOs are less likely to undertake acquisitions. This is consistent with the results we report in this paper, where we link various cultural variables, including uncertainty avoidance to a firm's acquisition propensity.

banks and bank holding company call reports (forms FFIEC 031/041 and FR Y-9C) with market data from the Center for Research in Securities Price (CRSP). We choose this sampling period because 1994 is the first year in which U.S. states were permitted to introduce regulatory barriers to interstate branching and 2006 is one year after the last regulatory change was enacted. We then complement this sample with data from ExecuComp, BoardEx, and Edgar DEF14A forms to retrieve a range of demographic information on CEOs. This yields a sample of 939 CEOs serving 726 U.S. banks.

To obtain data on the ancestry of CEOs, we use the Census Bureau records, which are accessed via ancestry.com, the world's largest genealogy database. The exact approach we use to identify ancestral information depends on when a CEO was born.

Since the latest publicly available Census Bureau records stem from the 1940 census, we can retrieve ancestry information for all 209 CEOs born before 1940 directly from census records.[6] Census records contain detailed demographic information on all members of a household (including names, birth dates, and places of birth). We start by locating a CEO's census records to obtain information on their parents (and their respective places of birth). If both parents are born outside the United States, we classify a CEO as a second-generation immigrant from the country in which their parents were born. If either parent is born in the United States, we continue to locate earlier census records of a CEO's parents to identify the CEO's grandparents. If the CEO's grandparents are born outside the United States, the CEO is classified as a third-generation immigrant from the country in which his or her grandfather is born. Otherwise, we continue our search using earlier census records as far back as data availability permits, usually to the mid-19th century.

[6] The U.S. Census Bureau conducts a population count every ten years in years ending with a zero. However, to protect the privacy of those who are alive, the census records are only made publicly available 72 years after the original census day.

For the 730 CEOs born after 1940 (about 78% of the sample), we use two approaches to collect ancestry information. The first approach relies on the fact that since all the parents of sample CEOs are born before 1940, their census records are accessible. If we know the names of a CEO's parents (via ancestry.com or other public sources), we can map out the parents' family tree and locate their ancestors using the same technique we use for CEOs born before 1940. To do this, we search ancestry.com for a CEO's birth and marriage certificates that occasionally list the names of parents.[7] If we cannot identify a CEOs parents this way, we search a CEO's biographies, interviews, or obituaries for information on their parents.

When we cannot identify the parents of a CEO, we use a second approach that lets us infer ancestry information where this information cannot be directly sourced from census records. Specifically, we can infer a CEO's heritage if all families with the same surname as the CEO and live in the birth county of the CEO have immigrated to the United States from the same country and the same number of generations ago.

The following example illustrates this approach. Say, we search for ancestors of a CEO with the surname Pantilione who is born in 1945 in Cumberland County, New Jersey.[8] To do this, we search Census records for all Pantilione families that live in Cumberland County in 1940. Census records indicate that two families with the surname Pantilione live in Cumberland County in 1940 and that both families emigrated from Italy at about the same time. Therefore, it is reasonable to assume that the CEO will be born to one of these two families in 1945 and is of Italian ancestry.[9] Crucially, if we were to discover inconsistencies regarding a CEO's origins

[7] The level of detail in birth or marriage certificates significantly varies across counties and states.
[8] We identify a CEO's birthplace from various sources, including ancestry.com's School Yearbooks, Marquis Who's Who, NNDB.com, LinkedIn, or through extensive Google searches.
[9] This strategy relies on some assumptions. First, the CEO's family does not move house between 1940 and 1945. Second, no new families with the same surname move to Cumberland County between 1940 and 1945. We later show that our results are robust to restricting the analyses to CEOs born before 1940 (where all data are directly obtained from census records).

(e.g., one Pantilione family emigrated from Italy and one from Poland or the families arrived in the United States a different number of generations ago), we remove that CEO from the sample. This way, we maintain a high level of precision when identifying the cultural heritage of CEOs.

In total, we are able to find ancestry information for 406 out of 730 CEOs born after 1940. Combined with the 209 CEOs born before 1940, this gives us a sample of 615 CEOs. In subsequent sections, we expand this detailed collection of ancestry data to other senior executives to test whether the cultural heritage effects extend to senior executives other than the CEO.

Throughout the paper, we restrict our sample to CEOs where the paternal and maternal ancestors originate from the same country and migrate to the United States the same number of generations ago. This ensures that the cultural heritage of CEOs is clearly identifiable. CEOs of mixed ancestry may have inherited values from either or from both cultures, depending on cultural and personal factors we cannot observe. Fortunately, cross-cultural intermarriages were not common amongst 20th century immigrants (e.g., Pagnini and Morgan 1990; Kalmijn 1999). Fewer than 15% of CEOs are classed as mixed ancestry. In unreported tests, we find that mixed-ancestry CEOs do not outperform under competitive pressure, consistent with the notion that these CEOs do not inherit a cultural heritage that is distinct from the CEO population.

A major advantage of our approach is that it provides precise information on the immigrant generation and origin of a CEO's ancestors. Several contemporaneous studies (e.g., Du, Yu, and Yu forthcoming; Pan, Siegel, and Wang forthcoming) rely on surnames to infer ancestral origin which is a noisier approach. For instance, a person with the surname Welch could come from Britain, Ireland, or Germany. The drawback of targeting such a high level of accuracy in determining a CEO's cultural heritage is that we lose 44% post-1940 CEOs whose

heritage we cannot identify precisely. To account for potential self-selection, we base all our regression models on a standard Heckman two-step procedure (1979). This procedure ensures that our conclusions regarding CEO heritage and other factors that drive bank performance are not driven by unobservable factors that make sample inclusion more likely.[10]

1.2 Identification: Competitive pressures in the U.S. banking sector

To study how a CEO's cultural heritage effects firm outcomes, we employ a methodology similar to Opler and Titman (1994) and Yonker (forthcoming). The basic idea is that causality is identified through a series of unexpected shocks at industry-level that force a CEO to act. Since the ensuing decisions are nonroutine, complex, and unstructured, CEO characteristics, such as cultural heritage, are likely to be salient in shaping how firms respond to a changing industry environment.

We use the staggered liberalization of interstate branching in the 1990s, which introduces an unexpected and significant increase in industry competition at the level of individual states as shocks that are unanticipated by banks (see Cornaggia et al. 2015). The Interstate Banking and Branching Efficiency Act (IBBEA) of 1994 allows unrestricted interstate banking and interstate branching across the United States from 1997. IBBEA leads to an exponential growth of banking

[10] The first step of the Heckman procedure estimates the probability that banks are included in our sample using data on banks included and banks we are unable to include in our sample due to data restrictions. Identification rests on the exclusion restriction that requires the first stage to be estimated using a set of variables that is larger by at least one variable than the set of variables in the second stage. Because CEOs with longer surnames are more likely to be uniquely identified (e.g., Pantilione vs. Mike), the length of the CEO's surname affects the likelihood that a CEO is included in the sample. Therefore, we use the length of a CEO's surname as an additional variable that is included in the first but not the second stage. At the same time, this instrument is plausibly exogenous to bank performance (the correlation between the length of a CEO's surname and bank ROA is -0.03 and is statistically insignificant). The first-stage results are shown in Table A3 (see appendix). The second stage of the Heckman procedure (as shown in the tables in this paper) includes *Lambda*, which contains information from the first step to control for unobservable factors which make sample inclusion more likely.

activities across state borders. While there are only 64 out-of-state banks in 1994, this number increases to 24,000 by 2005 (Johnson and Rice, 2008).

Our identification strategy relies on a unique feature of IBBEA: the ability of individual US states to block competition by adopting barriers against deregulation any time between the passage of IBBEA in September 1994 and its effective date in July 1997. Further, some US states continue to revise their barriers to interstate branching until 2005, providing further variation in competitive pressures. The key advantage of our identification is that different states enact the roadblocks at different points in time thus giving us multiple competitive shocks that vary across states and time. Further, decisions on interstate branching are made at state level and cannot be anticipated by individual banks or the CEO. Therefore, IBBEA offers an experimental setting to gauge how CEOs react to changes in competitive pressures that are exogenous to the bank that they work for (Rice and Strahan 2010).

Specifically, IBBEA grants U.S. states the option to (1) impose a minimum age of three years on target institutions of interstate acquirers; (2) not to permit de novo interstate branching; (3) not to permit the acquisition of individual branches by an out-of-state bank; and (4) impose a deposit cap of 30% or lower. We define a state as competitive if it chooses *not* to adopt either (3) or (4). This is because banks can easily circumvent the restrictions on age and de novo interstate branching or their effects are subsumed to those of (3) and (4) (Johnson and Rice 2008).[11] Table A1 (see the appendix) lists the changes to the interstate branching rules by state and by year.

[11] Column (6) of Table A9 (see the appendix) shows that our results remain robust to using all four roadblock provisions.

2. Empirical Results

2.1 Difference-in-differences test: Baseline specification

Our empirical strategy adopts a difference-in-differences (DiD) method to analyze how a CEO's cultural heritage affects a bank's reaction to a shock in industry competition. This approach exploits (1) within-state variation in a CEO's cultural heritage across banks and (2) across- and within-state variation in competitive pressures across time.[12] The latter is exogenously created by the adoption of roadblocks to interstate competition permitted under IBBEA (Rice and Strahan 2010; Cornaggia et al. 2015). Our main outcome variable is return on assets (ROA).[13]

The following example illustrates our empirical approach. Consider two identical banks—bank 1 and bank 2—both headquartered in New York in 1996. Bank 1 has a Gen2-3 CEO, while bank 2 has a Generation4+ CEO. The state of New York decided against adopting roadblocks to interstate branching on January 6, 1997, exposing both banks to a sudden increase in industry competition. This allows us to relate post-shock performance differences across these banks to the cultural heritage of a CEO. In addition, our identification also utilizes Bank 3 and Bank 4, which are both headquartered in California, one with a Gen2-3 CEO and one with a Generation4+ CEO. Crucially, California does not experience an increase in competition in 1997. Therefore, Banks 3 and 4 absorb the general economic conditions as well as differences that are specific to banks led by CEOs of a certain cultural heritage.

We control for several bank and CEO characteristics. First, we control for the size of the bank using the natural logarithm of the book value of total assets. Since the size distribution of US banks is highly skewed, we also include its square term, Ln $(asset)^2$, to account for possible

[12] Column (7) of Table A9 (see the appendix) shows that our results remain robust to using an alternative specification that only exploits within-state variation.

[13] Several recent studies (e.g., Ellul and Yerramilli 2013) use ROA as a proxy for bank performance. Our results are also robust to other market and accounting measures of bank performance (see Section 5.4).

nonlinearity between the bank size and performance (see, Ellul and Yerramilli (2013)). Further, we control for heterogeneity in banks' balance sheets using the ratios Deposits/Assets, Loans/Assets and Liabilities/Assets. We use stock volatility to control for bank risk and the Herfindahl-Hirschman index (HHI) of deposits by state and year to control for state-level concentration of banking activities. Finally, we control for CEO characteristics by including the natural logarithm of the CEO age and tenure, as well as their square terms. This is to account for the nonlinearity between CEO career horizons and his or her behavior (see, for instance, Custodio and Metzger 2013). Our result is robust to controlling for several additional measures of CEO unobserved and observed heterogeneity. Table 1 reports the summary statistics.

[Tables 1 & 2 around here]

Before conducting our multivariate analysis, we confirm that the assignment of banks to competitive and noncompetitive states is random (as indicated by the two groups not being significantly different). We compare the characteristics of the treatment group (banks located in states that eventually liberalize interstate branching) to the control group (banks located in noncompetitive states) in the fiscal year before treatment takes place (i.e. a state liberalizes interstate branching). Panel A of Table 2 shows that there are no statistically significant differences in bank performance (ROA), bank risk (measured by stock volatility and leverage) or the distribution of Gen2-3 CEOs across treatment and control banks. Further, treatment and control banks are also similar in terms of other key control variables (size, lending, deposit, CEO age and tenure).

Next, we check whether the parallel assumption holds in our sample of treatment and control banks. The parallel assumption states that in the absence of treatment (deregulation), the coefficient on the DiD estimator is zero. Thus, it requires a similar pre-event trend for both

treatment and control groups. Panel B of Table 2 calculates the growth rates in bank profitability (ROA) and bank risk (leverage and stock volatility) one- and two-years prior to shocks and find no statistically significant differences between treatment and control banks. This suggests that the parallel trend assumption is likely to hold. In the multivariate regressions, we further control for pre-trends in the data by including state-year trends fixed effects.

2.2 Multivariate results

Next, we perform DiD tests in a multivariate framework. We estimate the following model:

$$ROA_{itk} = \alpha + \beta_1 \text{Gen2-3 CEO}_{it} * \text{Competitive state}_{tk} + \beta_2 \text{Gen2-3 CEO}_{it} + \beta_3 \text{Competitive state}_{tk} + \text{Controls} + \text{Fixed effects} + \varepsilon_{itk}, \quad \textbf{(1)}$$

where *t* indexes time, *i* indexes banks and *k* indexes US states. The dependent variable is ROA. *Competitive state* is a dummy that equals one if the state does not block key dimensions of interstate branching between 1994 and 2005 under powers granted following the passage of IBBEA (see Section 1.2 for more details on those powers). Our coefficient of interest is the interaction term β_1 that tells us how the profitability of banks with Gen2-3 and Gen4+ CEOs differs under the two different competitive regimes.

Our controls include bank and CEO characteristics as described in Section 2.1. We also control for Gen1 (i.e., foreign-born) CEO to ensure that the coefficients on Gen2-3 estimate the performance difference of second and third generation immigrants relative to later generation immigrants. Various types of fixed effects are included in the models (such as firm, state-year trends, and county-year fixed effects). We also account for the interactive effects of regulatory changes on bank performance by including interaction terms between competitive state and all

controls in our model.[14] Standard errors are double-clustered by bank and year to account for temporal and cross-sectional correlation (Petersen 2009).

Table 3 indicates that Gen2-3 CEOs exert a detectable performance difference relative to other CEOs, implying that these CEOs behave differently from the CEO population. The interaction term between Gen2-3 CEOs and their competitive state is positive and statistically significant at the 1% level. When competition increases, banks led by CEOs who are the children or grandchildren of immigrants exhibit a 6.2% increase in ROA compared to an average CEO. The magnitude of Gen2-3 is therefore higher than that of important controls such as deposit funding or state-level (HHI) competition (each about 3%). Further, the economic magnitudes become even more pronounced when we link specific cultural dimensions directly to performance in the sections below.

[Table 3 around here]

In contrast, the coefficient on Gen2-3 is negative and significant. While an F-test in panel B confirms that the net effect of Gen2-3 CEOs under competitive pressure is indeed positive and statistically significant, our results suggest that absent state-level deregulation, banks run by Gen2-3 CEOs are less profitable than those run by Gen 4+. It appears therefore that Gen2-3 CEOs are more effective decision-makers when the context of decision-making experiences major shocks. In contrast, Gen4+ CEOs may be more effective when the decision-making context is more stable. We revisit this finding later and explain it based on the cultural values that prevail in the CEO's ancestral country of origin.

Our findings hold under different fixed effect models. We sequentially add state and year fixed effects (Column 1), state-year fixed effects (Column 2) to absorb all variables that do not vary across banks within a given state and year (e.g., investment opportunities or business

[14] For brevity, we do not report the interaction terms between competitive state and the controls in the tables.

cycles), state-year trend fixed effects (Column 3) to control for pre-trends in the data, county-year fixed effects (Column 4) to control for within-state omitted factors, and firm fixed effects (Column 5) to control for time-invariant firm-specific factors. Finally, Column (6) replicates the model in Column (1), but excludes the inverse Mills' ratio.

2.3 Intergenerational transmission of culture

Next, we analyze whether the effect that CEOs have on performance varies according to how many generations ago a CEO's ancestors arrived in the United States. The previous literature indicates that the values of successive generations of immigrants slowly converge to U.S. values (see, e.g., Giavazzi, Petkov, and Schiantarelli 2015). This suggests that the effects we document above should be stronger for immigrants of recent generations compared with immigrants of earlier generations. Table 4 reports the results.

[Table 4 around here]

In line with this expectation, we observe a monotonic decline in the magnitude of the effect that CEOs have on performance when moving from first-generation to fourth-generation immigrant CEOs. While Gen1, Gen2, and Gen3 CEOs are associated with a significant and positive performance under pressure, the coefficient estimate for Gen1 CEOs is larger than that of Gen2, which, in turn, is larger than that of Gen3 CEOs.[15] This positive performance effect disappears when we examine Gen4 CEOs. Thus, distinct ancestry effects are only detectable for CEOs for up to three generations.

[15] We are cautious when interpreting the positive coefficient on Gen1 CEOs as capturing cultural heritage. Since Gen1 CEOs are born outside the United States, they differ from second- and later-generation CEOs in more than just their cultural heritage. Gen1 CEOs experience different economic, social, and legal influences, which makes it difficult to attribute the observed performance effect of Gen1 CEOs to cultural heritage.

2.4 The cultural heritage of non-CEO top executives

In this section, we examine whether the performance effect linked to Gen2-3 CEOs extends beyond the CEO. Recent studies show that top executives other than the CEO matter for some firm outcomes. For instance, Dittmar and Duchin (2016) find that the professional experience of the CEO and the CFO each have distinct effects on a firm's financial policies. Pan, Siegel, and Wang (forthcoming) document commonalities in the risk attitudes of a firm's top management team and show that risk attitudes within the top management team shape a firm's risk taking.

To test whether the cultural heritage of non-CEO top executives explains how banks react to an increase in competition, we collect data on the cultural heritage of the four highest paid non-CEO executives across all banks. We obtain the name, age, tenure, and total compensation from ExecuComp (for S&P 1500 banks) and from Edgar DEF14A forms (for smaller banks).[16] To identify the ancestral heritage of non-CEO top executives, we employ the same data collection approach we use for CEOs (see Section 1.1). In total, we are able to locate ancestry information for 2,462 out of 3,416 executives who are in office between 1994 and 2006.

[Table 5 around here]

Our regression specifications focus on three groups of non-CEO executives: (1) The second-highest paid executive; (2) the CFO, and (3) the team of the four most highly paid non-CEO executives. We use the same DiD approach with identical controls as in Equation (1). Table 5 reports the results. Columns (1)-(3) control for ancestry information on non-CEO executives, while Columns (4)-(6) control for ancestry information on CEOs and non-CEO executives simultaneously.

[16] We focus our analyses on the five highest-paid executives (based on total compensation). Next to the CEO, the group of top-five executives typically includes the Chairman, President, Chief Operating Officer (COO), CFO, and the Senior or Executive Vice President.

As shown in Table 5, the interaction terms between Gen2-3 and any of the groups of non-CEO executives we analyze do not enter significantly. Crucially, Gen2-3 CEOs continue to be significantly associated with higher competitive performance after we control for the ancestry information of non-CEO executives. Overall, our results buttress the view that because CEOs are the most important decision-maker in a bank, their cultural heritage exerts a detectable effect on bank performance in how banks respond to a changing industry environment. No such effects are detectable for other senior executives.[17]

3. Impact of a CEO's Cultural Values on Firm Performance

The previous sections show that Gen2-3 CEOs behave differently from the general population of CEOs and that this effect varies across immigrant generations. To demonstrate that the descendants-of-immigrants effects are due to culture, rather than other characteristics shared by Gen2-3 CEOs, this section traces the performance effect linked to Gen2-3 CEOs back to specific cultural values that prevail in the country of a CEOs' ancestors.

3.1 Cultural values

We obtain cultural variables from four prominent cultural databases: Hofstede, Schwartz, the GLOBE Project, and the World Value Survey. In total, we collect data for 16 cultural variables. Arguably, any selection of individual cultural variables remains arbitrary to some extent. However, our approach of collecting a relatively large number of cultural variables from different sources is designed to minimize the effects that arbitrary choices linked to any individual cultural index may have on our conclusions.

[17] Our findings do not rule out that the cultural heritage of non-CEO executives may shape decision-making in their particular areas of responsibilities. However, our results indicate that, should such effects exist, they are not traceable in aggregate firm performance.

We start with the cultural variables identified by Geert Hofstede, because this framework has been widely applied across many disciplines. We use all six Hofstede dimensions: *Power distance* indicates the importance of hierarchy in a culture, *Individualism versus collectivism* reflects the integration of individuals in groups, *Uncertainty avoidance* is the extent to which individuals are not comfortable with unpredictability and ambiguity, *Masculinity versus femininity* describes "tough versus tender" cultures, *Long-term versus short-term orientation* is related to (short-term) normative versus (long-term) pragmatic cultures, and *Restraint versus indulgence* reflects the extent to which members of a society try to control their desires and impulses.

Despite its popularity, Hofstede's framework faces criticisms notably for its reliance on theoretical reasoning to construct a relatively low number of cultural dimensions (see Karolyi (2016) for a critical review of the key databases used to proxy cultural values). Therefore, we complement Hofstede's cultural dimensions with additional cultural variables not captured in Hofstede's framework.[18]

We first consider the cultural variables developed by Schwartz (2007), who derives three broad measures of societal traits based on extensive interviews conducted between 1988 and 2004. While many of the Schwartz spectra are similar to Hofstede's dimensions, two Schwartz variables capture additional cultural attributes which we include in our analysis: *Intellectual autonomy versus embeddedness* reflects the freedom to pursue one's own thoughts and ideas, and *Harmony versus mastery* captures the degree to which members of a society are uncomfortable with confrontation and assertiveness.

[18] In unreported tests, we also contrast cultural dimensions where Hofstede and other dimensions directly overlap and find that they explain competitive performance in a similar manner. For instance, regardless of whether we measure *Uncertainty avoidance* using Hofstede or GLOBE, both are associated with higher competitive performance.

We then add cultural variables from GLOBE.[19] Since seven out of nine of GLOBE's cultural dimensions overlap with dimensions already included, we add the two dimensions that capture additional cultural attributes: *Humane orientation,* which reflects the extent to which a society encourages individuals to be altruistic, generous and kind to others, and *Performance orientation*, which reflects the extent to which a society encourages and rewards performance.

Our final source of cultural variables is the World Value Survey (WVS). There are six waves of surveys since 1981, and the most recent 2012 survey includes 258 items on various topics including perceptions of life, work, politics, and society. Given the comprehensive nature of the survey, we start with the 14 WVS items that Karolyi (2016) identifies as particularly relevant for finance research and select six items that capture attributes not already captured by other cultural dimensions in our analysis: *Trust in others*, *Importance of freedom*, *Importance of selflessness*, *Importance of income equality*, *Importance of self-respect*, and *Patriotism.*

3.2 Cultural values and competitive performance

To examine how the 16 cultural dimensions we collect explain competitive performance, we first scale each dimension to a range between zero and one. We then assign cultural values to CEOs according to their ancestral background.[20] We sequentially relate each cultural dimension to bank performance under competitive pressure by running the following model:

$$ROA_{itk} = \alpha + \beta_1 \text{Cultural dimension}_{it} * \text{Competitive state}_{tk} + \beta_2 \text{Cultural dimension}_{it} + \beta_3 \text{ Competitive state}_{tk} + \text{Controls} + \text{Fixed effects} + \varepsilon_{itk}, \quad \textbf{(2)}$$

[19]The project was launched in the early 1990s by Robert House, and now involves over 200 scholars from 62 countries. See https://test.uvic.ca/gustavson/globe/about/index.php.

[20] For example, if a CEO has ancestors coming from Germany, he or she will be assigned a power distance score of 0.35, an uncertainty avoidance score of 0.65 and so on.

where *i* indexes bank, *t* indexes time, and *k* indexes U.S. states. We include controls similar to those in Equation (1) and use state-year fixed effects in all specifications.

Table 6 displays the results for each of the 16 cultural dimensions. Each row presents the results of a regression based on a different cultural dimension. For ease of presentation, we only show the coefficients on the interaction between the cultural dimension and the state-level competition indicator (β_1) and its constituent variables (β_2, β_3). Our main coefficient of interest is β_1, which tells us how the profitability of banks led by CEOs with different cultural values differs by competitive regime.

[Table 6 around here]

The results show that most (10 out of 16) of the cultural variables significantly affect competitive performance. On a broad level, this confirms our interpretation that the performance effect linked to Gen2-3 CEOs is indeed rooted in culture. More specifically, we find that competitive performance is positively related to the dimensions of *Restraint*, *Long-term orientation*, *Uncertainty avoidance*, and *Harmony*. In contrast, performance is negatively related to the dimensions of *Individualism*, *Performance orientation*, *Importance of freedom*, *Intellectual autonomy*, *Importance of selflessness*, and *Patriotism*.

In general terms, the cultural values that enter significantly appear to broadly contrast group- versus self-oriented cultures and cultures reflecting how comfortable one is with uncertain future outcomes. Following a competitive shock, CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness, uncertainty avoidance, and long-term orientation are associated with positive performance effects while a cultural heritage that values personal achievements and self-reliance and believes success is linked to individual ability.

Intriguingly, many of the cultural values exert opposite effects depending on whether state-level deregulation has taken place. For instance, *Uncertainty avoidance* or *Restraint* improves performance when states are competitive. However, unconditional on state-level deregulation, CEOs who come from cultures that score high on these dimensions are linked to lower performance. While the strategy literature links leader attributes such as group-mindedness to outstanding leadership (Den Hartog et al. 1999) and short-termism to unsustainable investment behavior and poor long-term prospects (e.g., Porter 1992; Marginson and McAulay 2008), our findings paint a more nuanced view. They suggest that the performance effects of certain cultures are not consistently positive or negative, but that different cultures have strengths and weaknesses that are context dependent.

The cultural dimensions that do not explain competitive performance are *Importance of income equality*, *Importance of self-respect*, *Humane orientation*, *Trust in others*, *Power distance*, and *Masculinity*. These dimensions mainly revolve around values that reflect a culture's attitudes towards hierarchy versus equality, which, intuitively, should be less relevant to strategic decision-making and, by extension, firm outcomes. Consistent with this, Judge et al. (2002) conduct an extensive qualitative review and a metaanalysis of research into the personality traits of outstanding corporate leaders and do not list attitudes toward hierarchy amongst the traits of effective leaders.

The effects of individual cultural values on performance are economically meaningful. For instance, a one-standard deviation increase in *Uncertainty avoidance* increases competitive performance by 9.4%, while a one-standard-deviation increase in *Individualism* decreases competitive performance by 18.3%. Interestingly, the economic magnitudes of most cultural variables are substantially larger than the descendants-of-immigrants effect (Gen2-3 CEOs) on

competitive performance. This is in line with our interpretation that culture is the key driver behind the Gen2-3 effects.

In Section 4, we analyze *how* a CEO's cultural heritage affects firm policies under competitive pressure. However, given the large number of cultural variables and firm policies we analyze, demonstrating how each dimension affects a particular policy becomes a complex undertaking. Furthermore, the results in Table 6 suggest that some individual cultural dimensions cluster around more general characteristics of national cultures (e.g., whether a culture is group- or self-oriented). Therefore, we next employ factor analysis to assign the 16 cultural variables to more general sets of cultural characteristics and analyze which sets of cultural characteristics are relevant for performance and firm policy choices.

3.3 Factor analysis: CEO factor scores and performance

Factor analysis is a popular approach to summarize multifaceted personal characteristics, such as abilities or skills (e.g., Kaplan, Klebanov, and Sorenson 2012; Adams, Akyol, and Verwijmeren 2016; Kaplan and Sorenson 2016). Factor analysis captures the variability among the 16 cultural variables and reduces them to a lower number of factors that describe characteristics that tend to vary together.

[Table 7 around here]

Our analysis extracts three main factors.[21] Panel A of Table 7 shows the three factors and how they load on individual cultural variables. Factor 1 captures most (54%) of the variation in cultural values. Factor 1 shows high positive loadings on *Individualism, Performance orientation*, and *Importance of freedom* and high negative loadings on *Restraint*, *Long-term*

[21] The number of factors is determined by the Kaiser criterion that retains factors with eigenvalues ≥1. In our analysis, three factors satisfy this criterion (and jointly explain around 80% of the total variance in the cultural values).

orientation, *Uncertainty avoidance*, and *Harmony*.[22] Factor 1 therefore describes a person who values personal achievements and self-reliance and believes success is linked to individual ability (in contrast to a person who emphasizes restraint, group-mindedness, uncertainty avoidance, and a long-term orientation).

The second and third factors have significantly lower explanatory power and account for 17% and 9% of the variation in the cultural dimensions, respectively. Factor 2 loads positively on *Importance of income equality*, *Humane orientation*, and *Trust in others* and negatively on *Power distance.* As such, factor 2 seems to contrast equality with hierarchical values. Finally, factor 3 loads positively on *Masculinity* and *Intellectual autonomy*. Factor 3, thus, combines assertiveness and autonomy of thought.

Before proceeding with our analysis of how culture affects firm policies in Section 4, we first confirm that the three factors explain competitive performance in a way that is broadly consistent with the previous results based on the 16 individual cultural dimensions (Table 6). We obtain the scores for each factor and then regress these on ROA using our previous DiD approach with identical controls as in Equation (1).[23]

Panel B of Table 7 shows that factor 1 is negatively related to performance under competitive pressure. That is, banks led by CEOs whose ancestral origins lie in cultures that value self-reliance and individual achievement are associated with lower performance. By the same token, this implies that CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness, uncertainty avoidance, and long-term orientation are associated with positive performance effects. This is broadly consistent with the results on the individual

[22] In line with the literature, we focus on variables with high loadings, that is, those that are greater than |0.3|.
[23] Component scores are calculated using all the cultural variables with their weights based on the component loadings.

dimensions reported in Table 6.[24] In contrast, factors 2 and 3 are not related to competitive performance. This is also consistent with the results in Table 6 which show that many of the cultural variables embedded in factors 2 and 3 (e.g., *Masculinity* or *Power distance*) do not have measurable performance effects.

Between them, the three factors therefore identify performance-relevant sets of cultural values. In the next section, we use the three factors to study how the cultural value sets affect a firm's policy choices.

4. Why Cultural Heritage Affects Performance: CEO Factor Scores and Firm Policy Choices

This section sheds light on the economic mechanisms underlying our results by studying *how* a CEO's cultural heritage affects firm policies under competitive pressure. We regress the three factors estimated above on specific bank policies in the same DiD setting as before. We focus on three bank policies for which CEOs have major input and which parsimoniously capture some of the key challenges faced by banks during an episode of deregulation: expansion via acquisitions, risk-taking, and cost efficiency.

First, we examine how a CEO's cultural heritage affects a bank's propensity to engage in acquisitions as well as the expected performance effects of these acquisitions. For instance, banks may react to increased competition by acquiring competitors, and many of these deals may turn out to be value-destroying for shareholders of the acquiring bank (e.g., Schoenberg and

[24] Interestingly, the coefficient on factor 1 is positive and significant. CEOs with a high factor 1 score are uncertainty seeking and may therefore pursue a range of short-term expansionary corporate strategies that may well help the bank capture market shares. This finding is also line with Pan, Siegel, and Wang (forthcoming), who show that firms whose managers have an ancestral background which scores low on Hofstede's Uncertainty Avoidance are linked to various risky outcomes. More generally, finding that the effect that factor 1 exerts depends on whether or not deregulation takes place in a state confirms our interpretation that the effects of culture and cultural values are context dependent.

Reeves 1999). We study a bank's acquisition propensity by running a regression on the number of deals announced in a given year. We study acquisition performance by estimating the cumulative abnormal returns (CARs) over a five-day [-2, +2] event window surrounding the merger announcement.[25]

Second, the ability of banks to manage portfolio and financing risks effectively is an important driver of their performance. Particularly during periods of deregulation, some CEOs may pursue overly risky strategies that could lead to underperformance. We use stock return volatility as a proxy for bank risk-taking. Third, some banks may enjoy a higher level of profitability because they cut costs when competition intensifies. To proxy for cost efficiency, we measure a bank's total expenses scaled by income. Lower values of this ratio indicate more economical use of expenses to produce a given level of income.

Table 8 reports our results. Panel A examines acquisition propensity, panel B acquisition performance, panel C bank risk-taking, and panel D cost efficiency.

[Table 8 around here]

Our previous analysis shows that CEOs whose cultural heritage loads negatively on factor 1 (i.e., whose heritage emphasizes restraint, group-mindedness, uncertainty avoidance, and long-term orientation) are linked to higher performance under increased competition. Table 8 offers some evidence that explains this result. The results show that CEOs who load negatively on factor 1 are linked to banks that, following an increase in competitive pressures, (1) engage in fewer acquisitions, (2) realize higher acquisition announcement returns, (3) display lower volatility, and (4) are more cost efficient. Jointly, this offers an explanation for why CEOs whose

[25] We focus on M&A deals that are publicly announced between 1994 and 2006 by US banks. We obtain data on bank acquisitions from Thomson Financial merger database (SDC). All deals must be at least $250 million and be subsequently completed. We drop all observations in which data are missing or when other major news is released on the same day. This yields a sample of 264 deals.

ancestral origins lie in cultures that place an emphasis on restraint, group-mindedness, uncertainty avoidance, and long-term orientation are linked to higher performance under competitive pressure.[26] Factors 2 and 3 do not exert a significant influence on any of the bank policy choices we analyze, which is consistent with our analysis of cultural value sets on ROA (where neither factor affects performance).

5. Alternative Explanations and Robustness Tests

5.1. Alternative explanations based on CEO-firm matching

CEOs and firms do not match randomly. CEOs with certain desired characteristics could be strategically appointed to take firms in a direction determined by the board. If ancestry was a criterion for the appointment of CEOs, endogenous matching between CEOs and firms could bias our results. Our IBBEA identification partially mitigates concerns over CEO-firm matching, because banks that do not know whether and when a state will open for interstate competition cannot appoint CEOs in anticipation of this event.

To further alleviate concerns over CEO-firm matching, we conduct two additional tests. First, we split our sample into two subsamples: The first subsample contains CEOs who assume office at least three years before a state opens for competition (i.e., plausibly before changes in competition could have informed CEO selection and therefore, CEO appointment is plausibly exogenous to post-deregulation performance) and the second subsample contains CEOs who assume office within three years of deregulation. If unobserved matching were to drive our results, we would expect a stronger performance effect among recently hired CEOs. As shown in

[26] This finding is consistent with the literature showing that culture matters for acquisition outcomes. For instance, Ahern, Daminelli, and Fracassi (2015) find that national cultural differences influence merger volume and gains in cross-border acquisitions. Similarly, Pan, Siegel, and Wang (forthcoming) find that uncertainty avoiding CEOs (which is one of the cultural dimensions underlying factor 1) are less likely to undertake acquisitions.

panel A of Table A4 (see the appendix), the effect of CEO ancestry is similar regardless of whether a CEO was hired within three years of deregulation.

Second, we focus on exogenous CEO turnovers to identify banks that experience a shock to the ancestry of their CEO.[27] Following Dittmar and Duchin (2016), we define CEO turnover events as exogenous if they meet one of the following conditions: the departing CEO dies, departs due to health-related reasons, is at least 60 years old, or the departure is part of a firm's succession plan (with the date of departure announced in public at least six months prior to departure). To identify exogenous turnovers, we read the financial press and the press releases associated with a CEO turnover event. In total, 72% of CEO turnovers in our sample are exogenous, which is consistent 67% reported by Dittmar and Duchin (2016).

Panel B of Table A4 (see the appendix) estimates (1) a firm fixed effects panel regression on ROA based on banks that experience exogenous CEO turnover during the sample period and (2) difference regressions that compare bank performance two years prior to CEO turnover and two years afterwards (ΔROA, in percentages). This empirical design allows us to exploit cross-sectional variation within the subset of exogenous CEO turnovers. In both specifications, we exclude the turnover year to mitigate the effects of potential volatility in performance surrounding the turnover event. The results show that when a new Gen2-3 CEO is appointed, banks enjoy an increase in performance after a competitive shock. These results hold across both regression models and offer further support for a causal interpretation of our results.

[27] We focus on exogenous turnovers to ensure that CEO departures are not driven by poor performance or changes in firm policies. For example, if CEO departures were systematically the result of underperformance, any new CEO could be expected to implement policies that improve performance. This could add noise to our estimations.

5.2 Omitted location and CEO variables

Our Gen2-3 variable may correlate with omitted location or CEO variables. One example of an omitted location variable is that immigrants tend to settle in populous areas. If banks located in populous areas are more likely to recruit talented CEOs, our results may simply reflect CEO talent. To address this, we control for additional location characteristics. Table A5 (see the appendix) shows that our results remain robust to controlling for various location variables at the county-level: Ln (population), civilian labor force, Ln (personal income), and religiosity.[28,29]

Further, omitted CEO characteristics could equally bias our results. For instance, immigrant households tend to invest heavily in the education of their children (Portes and Rumbaut 2001), and our results could reflect the fact that Gen2-3 CEOs have more qualifications than other CEOs. In Table A6 (see the appendix), we control for various observable CEO characteristics: whether a CEO graduated from an Ivy League university, holds an MBA degree, has prior work experience as a top executive, or has lived through the Great Depression. We also control for CEO incentives: CEO ownership (the fraction of shares held by the CEO), bonus payments, and risk-taking incentives relative to pay-performance sensitivity (*vega/delta*).[30] The results in Table A9 (see the appendix) show that controlling for these additional CEO characteristics does not significantly alter the coefficients on Gen2-3 CEOs, suggesting that cultural heritage is orthogonal to these factors.

[28] Data on local religiosity are obtained from the Association of Religion Data Achieves (ARDA) and data on population and labor are from the U.S. Census Bureau.

[29] Interestingly, our results show that banks located in more religious counties outperform under competitive pressure. This is consistent with Adhikari and Agrawal (2016), who find that banks located in religious counties tend to undertake more prudent policies. In contrast to Adhikari and Agrawal (2016), who focus on religion as a local factor external to firms, our paper mainly focuses on culture within firms by studying the ancestral backgrounds of CEOs.

[30] The sensitivity of CEO wealth to bank risk (*vega*) measures changes in CEO wealth to stock return volatility. The sensitivity of CEO wealth to bank performance (*delta*) measures changes in CEO wealth to stock price performance. We are grateful to Jeffery Coles, Naveen Daniel, and Lalitha Naveen for sharing their data on CEO equity-based incentives online. Please refer to Coles, Daniel, and Naveen (2006) and Core and Guay (2002) for detailed calculation of the variables.

5.3 Legal and institutional heterogeneity in the CEO's country of origin

The key advantage of looking at Gen2-3 CEOs is that it allows us to hold constant the economic and institutional factors that all CEOs face while exploiting variation in the cultural values Gen2-3 CEOs inherit from their foreign-born ancestors. However, one could argue that the omitted institutional and economic factors at the time when a CEO's ancestors immigrate to the United States could drive our results. For instance, immigrants from the United Kingdom could belong to different socioeconomic strata than those from Russia (Carroll, Rhee, and Rhee 1994). To rule this out, we collect data for a CEO's ancestral country of origin (in the year 1900) on GDP per capita, life expectancy and the legal system. As shown in Table A7 (see the appendix), our results remain robust to the inclusion of the country controls.

In unreported analyses, we confirm that CEOs with ancestry linked to countries with less developed capital markets (Germany, Italy, Poland, and Russia) have a largely similar profile with those whose ancestry is linked to countries with more developed capital markets (the United Kingdom and Ireland). Specifically, there is no statistical difference in age, tenure, education, or executive experience between the two groups. Collectively, this confirms that our results are unlikely to be driven by the differences among these two groups.

5.4 Additional robustness tests

This section presents additional robustness tests. First, we mitigate concerns that IBBEA can be anticipated by examining the dynamics of bank performance surrounding deregulation. Following Bertrand and Mullainathan (2003), we decompose *Competitive state* into five dummies associated with five periods: up to, and including, two years before deregulation ($Before^{2+}$), one year before deregulation ($Before^{1}$), the year of deregulation (*Present*), one year

post-deregulation ($After^{1}$), and two years and after post-deregulation ($After^{2+}$). As indicated in panel A of Table A8 (see the appendix), the interaction terms with $Before^{2+}$, $Before^{1}$, and *Gen2-3 CEOs* are not significant while interaction terms with *Present*, $After^{1}$ $After^{2}$, and *Gen2-3 CEOs* are significant. This shows that the shock does not appear to have been anticipated by banks.

Second, there could be omitted factors, say macroeconomic conditions, coinciding with the timing of the shock that also affect bank performance. We address this by conducting a placebo test where we randomly (i.e., inaccurately) assign states to the groups of competitive and noncompetitive states. If omitted factors were to drive our results, we should continue to find significant results even under this random assignment. As shown in panel B of Table A8 (see the appendix), the interaction term is statistically indistinguishable from zero.

Third, we study alternative outcome variables. We replace ROA with returns on equity (ROE), Tobin's q and a bank's exposure to market downturns (via marginal expected shortfall (MES)).[31] As shown in Columns (1)-(3) of Table A9 (see the appendix), when competition intensifies, Gen2-3 CEOs are associated with a higher ROE and Tobin's q and a lower exposure to market downturns.

Fourth, we address concerns that our data collection process could be noisy. While we retrieve the census records for all CEOs born before 1940, we need to infer the ancestry information of some CEOs born after 1940 based on their surname and birthplace. We split the sample into two groups—CEOs born before 1940 and those born after 1940—and show in Columns (4) and (5) of Table A9 (see the appendix) that our results are not driven by either group of CEOs.

[31] Following Acharya et al. (2017), we calculate MES as the average return for each bank on days when the returns of the overall financial markets are in the bottom 5% in a given year. The more negative the MES measure, the worse returns of the individual bank when the return from the overall market is low.

Fifth, we use an alternative definition of competitive state (*#liberalizations*), which takes into account all four regulatory barriers (instead of just two as in the rest of the paper). As shown in Column (6) of Table A9 (see the appendix), our results are robust to this alternative definition of competitive pressures.

Sixth, we use an alternative DiD set-up. Instead of using both within- and across-state variation, we restrict identification to within-state variation in CEO heritage. That is, we restrict the sample to competitive states only and assign banks with Gen2-3 CEOs to the treatment group and those with Gen4+ CEOs to the control group. Column (7) shows that the results are robust to this alternative DiD setup.

Seventh, we test whether our results are driven by the quality of board governance. We include board size and the fraction of independent directors as additional controls. Board data are from BoardEx, Riskmetrics, and Edgar DEF14A forms. Column (8) displays qualitatively similar results when we control for board governance.

Eighth, banks located in rural areas could face less competition. If rural banks were led by Gen4+ CEOs, our results may simply reflect a drop in profitability when competition erodes noncompetitive rents for banks led by Gen4+ CEOs. We address this by controlling for bank profitability in 1994 (the year before IBBEA becomes effective) and show in Column (9) that our key results remain robust.

Ninth, one can argue that our measure of Gen2-3 CEOs could relate to a bank's foreign operations. Banks with a view to expand internationally could be more likely to recruit a Gen2-3 CEO. We control for a bank's foreign operations using its share of foreign loans and foreign deposits. As shown in Column (10), our results remain robust.

6. Conclusions

This paper tests a new hypothesis on the link between CEO cultural heritage, firm policy choices and performance. To distinguish the effects of culture from those of other institutional and economic factors, we focus on U.S.-born CEOs who are the children or grandchildren of immigrants. We use a quasi-natural experiment—the staggered introduction of interstate branching (IBBEA) —as a source of exogenous variation to industry competition. Our paper offers novel evidence on whether and how CEO cultural heritage affects firm-level outcomes.

We find that the cultural heritage of the CEO shapes the way a bank reacts to a changing competitive environment. Banks led by a CEO with immigrant parents or grandparents are associated with higher profitability when competition intensifies. However, we observe the opposite effects that these CEOs are linked to lower performance when the environment remains stable. Such effects are uniquely linked to the CEO and not to other senior decision-makers. Further, the effects weaken over successive immigrant generations and can be explained by specific cultural values that prevail in the country of a CEO's ancestry.

We show that banks led by CEOs whose cultural heritage emphasizes restraint, group-mindedness and long-term orientation are safer, more cost-efficient and are associated with more cautious acquisitions which, in turn, explains the outperformance. Overall, our work is consistent with the hypothesis that the culture of a CEO's ancestors influences his or her decision-making behavior, firm policy choices and performance in the present time. However, our results also show that the performance effects of a certain cultural heritage depend on the market environment in which a CEO operates. Therefore, the strengths and weaknesses of particular cultures are ultimately context dependent.

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Table 1. Summary statistics

A. CEO's immigrant generation

	N	Shares of total
Gen1	5	0.8%
Gen2-3	293	47.6%
Gen4+	317	51.6%
Total	615	100.0%

B. CEO and firm characteristics

Variables	N	Mean	STD	p1	p50	p99
Dependent variables: Bank performance and policies						
ROA (%)	3,060	1.110	0.681	-0.109	1.096	2.465
ROE (%)	3,060	12.460	6.056	-1.555	12.850	25.520
Tobin's q	2,364	1.004	0.004	1.000	1.003	1.016
Marginal expected shortfall (%)	3,013	-0.011	0.011	-0.042	-0.010	0.011
Expenses/Income	3,060	0.758	0.085	0.562	0.758	0.987
Competitive measures						
Competitive state	3,060	0.561	0.496	0.000	1.000	1.000
#liberalizations	3,020	1.846	1.529	0.000	2.000	4.000
CEO cultural measures						
Harmony	3,038	0.399	0.021	0.377	0.386	0.460
Restraint	3,043	0.416	0.163	0.310	0.320	0.800
Uncertainty avoidance	3,047	0.539	0.171	0.290	0.460	0.950
Long-term orientation	3,047	0.403	0.222	0.240	0.260	0.830
Importance of income equality	2,810	0.444	0.056	0.322	0.428	0.560
Power distance	3,047	0.429	0.150	0.130	0.400	0.930
Importance of self-respect	2,810	0.775	0.045	0.676	0.790	0.860
Masculinity	3,047	0.598	0.125	0.100	0.620	0.790
Humane orientation	3,015	0.553	0.008	0.532	0.551	0.580
Trust in others	2,810	0.135	0.007	0.119	0.136	0.159
Individualism	3,047	0.801	0.158	0.370	0.910	0.910
Importance of selflessness	2,810	0.335	0.119	0.069	0.391	0.547
Importance of freedom	2,810	0.745	0.058	0.585	0.754	0.798
Performance orientation	3,015	0.427	0.029	0.350	0.445	0.447
Patriotism	2,810	0.352	0.029	0.286	0.368	0.377
Intellectual autonomy	3,038	0.430	0.013	0.386	0.430	0.453
CEO-specific measures						
Ln (CEO age)	3,060	4.035	0.137	3.689	4.043	4.357
Ln (CEO tenure)	3,060	1.916	0.802	0.000	2.001	3.466

B. CEO and firm characteristics (cont.)

Variables	N	Mean	STD	p1	p50	p99
Depression baby	3,060	0.036	0.185	0.000	0.000	1.000
Ivy League	2,809	0.158	0.365	0.000	0.000	1.000
MBA	2,809	0.246	0.431	0.000	0.000	1.000
Experienced executives	2,809	0.208	0.406	0.000	0.000	1.000
Ln (bonus comp)	831	7.165	1.005	5.740	7.048	9.473
CEO vega/delta	785	0.301	0.252	0.000	0.253	0.993
CEO ownership	801	0.020	0.055	0.000	0.003	0.333
Bank-specific measures						
Ln (assets)	3,060	14.690	1.801	12.080	14.260	19.870
Leverage	3,060	0.910	0.040	0.820	0.914	0.953
Lending	3,060	0.641	0.134	0.103	0.663	0.869
Deposit	3,060	0.746	0.119	0.280	0.766	0.909
Stock volatility	3,060	0.020	0.009	0.008	0.019	0.048
HHI	3,060	0.380	0.198	0.109	0.326	1.000

This table reports the summary statistics for various CEOs and bank variables. Panel A classifies CEOs as *Gen1*, (foreign-born CEOs), *Gen2-3*, (children or grandchildren of immigrants to the United States), and *Gen4+* (fourth (or higher) generation immigrants). Panel B reports the summary statistics for other CEO and bank variables. Our sample covers all public U.S. banks for the period of 1994–2006. Table A2 (see the appendix) provides the definitions for all variables.

Table 2. Univariate DiD test: Diagnostics and results

	Treatment	**Control**	**Treatment *minus* control**	
	Mean	Mean	Difference	*p*-value
A. Characteristics of treatment and control banks				
ROA (%)	1.150	1.003	0.148	.280
Gen2-3	0.340	0.424	-0.084	.284
Ln (assets)	15.014	14.615	0.399	.207
Leverage	0.909	0.913	-0.005	.593
Lending	0.621	0.629	-0.008	.679
Deposit	0.753	0.800	-0.047	.180
Stock volatility	0.021	0.022	-0.001	.584
HHI	0.329	0.457	-0.128	.101
Ln (CEO age)	4.038	4.027	0.011	.592
Ln (CEO tenure)	1.869	1.768	0.101	.445
B. Trends in performance and risk				
$\Delta ROA_{1\text{-year}}$ (%)	0.079	-0.026	0.105	.510
$\Delta ROA_{2\text{-year}}$ (%)	-0.009	0.388	-0.397	.383
$\Delta Leverage_{1\text{-year}}$ (%)	0.000	0.001	-0.001	.535
$\Delta Leverage_{2\text{-year}}$ (%)	-0.003	-0.002	-0.002	.456
ΔStock volatility$_{1\text{-year}}$ (%)	-0.071	-0.040	-0.031	.426
ΔStock volatility$_{2\text{-year}}$ (%)	-0.110	-0.024	-0.086	.147

This table compares the characteristics of treatment banks (operating in a state that removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions) and control banks located in states that implement no such changes. Panel A shows the mean differences and the *p*-values in the key characteristics of treatment and control banks in the year before changes in interstate branching. Panel B shows the mean differences and their *p*-values in the growth rates of the key characteristics of treatment and control banks one and two years prior to changes in interstate branching. Table A2 (see the appendix) provides the definitions for all variables.

Table 3. CEO cultural heritage and performance

A. Interaction analyses						
	Heckman two-stage					OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Gen2-3*Competitive state	0.158***	0.160***	0.146***	0.215***	0.102**	0.155***
	(4.326)	(4.333)	(3.942)	(3.917)	(2.289)	(4.321)
Gen2-3	-0.114***	-0.103***	-0.109***	-0.059	-0.061	-0.115***
	(-3.933)	(-3.528)	(-3.691)	(-0.376)	(-1.405)	(-4.206)
Gen1*Competitive state	0.984**	1.351***	0.854*	1.117***	0.596*	0.956***
	(2.195)	(2.676)	(1.910)	(6.063)	(1.765)	(5.376)
Gen1	-0.157	-0.114	-0.114	-0.707**	-0.068	-0.129
	(-1.423)	(-1.067)	(-1.027)	(-2.087)	(-0.368)	(-0.631)
Competitive state	-30.835***	-32.762***	-28.639***	-3.031	-12.245	-27.489**
	(-3.065)	(-3.112)	(-2.750)	(-0.239)	(-1.046)	(-2.274)
Ln (assets)	0.536***	0.492***	0.546***	0.231	-0.073	0.535***
	(4.722)	(4.193)	(4.660)	(0.825)	(-0.410)	(4.274)
Ln (assets)^2	-0.015***	-0.013***	-0.015***	-0.015*	-0.003	-0.015***
	(-4.081)	(-3.469)	(-4.018)	(-1.887)	(-0.511)	(-3.928)
Leverage	-10.399***	-10.456***	-10.503***	-4.740***	-5.943***	-10.998***
	(-32.184)	(-31.924)	(-32.353)	(-9.971)	(-11.412)	(-11.910)
Lending	0.110	0.128	0.118	-0.293**	-0.028	0.135
	(0.896)	(0.978)	(0.918)	(-2.298)	(-0.180)	(1.010)
Deposit	-0.304**	-0.185	-0.250*	0.214	-0.615***	-0.311*
	(-2.125)	(-1.221)	(-1.671)	(1.469)	(-3.012)	(-1.782)
Stock volatility	-5.959***	-2.457	-3.556**	-3.495***	-8.717***	-6.503***
	(-3.986)	(-1.469)	(-2.368)	(-3.109)	(-6.018)	(-2.581)
HHI	-0.164*	0.210	-0.159	-0.442	-0.054	-0.157*
	(-1.760)	(0.247)	(-1.330)	(-1.138)	(-0.648)	(-1.778)
Ln (CEO age)	-11.372**	-13.390***	-11.410**	2.266	8.461	-5.648
	(-2.439)	(-2.752)	(-2.354)	(0.262)	(1.422)	(-1.167)
Ln (CEO age)^2	1.415**	1.661***	1.418**	-0.227	-1.053	0.697
	(2.428)	(2.732)	(2.341)	(-0.210)	(-1.415)	(1.156)
Ln (CEO tenure)	0.137**	0.128**	0.156***	-0.098**	0.007	0.109*
	(2.419)	(2.102)	(2.690)	(-2.392)	(0.122)	(1.919)
Ln (CEO tenure)^2	-0.024	-0.022	-0.030*	0.032**	0.010	-0.020
	(-1.477)	(-1.280)	(-1.810)	(1.989)	(0.573)	(-1.318)
Lambda	0.192**	0.302***	0.247***	-0.089	-0.334**	-
	(2.110)	(3.314)	(2.683)	(-0.313)	(-2.287)	-
Year FE	Yes	No	No	No	No	Yes
State FE	Yes	No	No	No	No	Yes
State-year trends FE	No	No	Yes	No	No	No
State-year FE	No	Yes	No	No	No	No
County-year FE	No	No	No	Yes	No	No
Firm FE	No	No	No	No	Yes	No
Observations	3,059	3,059	3,059	3,059	3,059	3,059
B. H0 = Gen2-3 CEOs*Competitive state + Gen2-3 CEOs = 0						
F-test	3.58*	2.57*	6.22**	7.82**	0.94	2.88*

The dependent variable is ROA. Gen2-3 is a dummy that equals one if the CEO is the child or grandchild of immigrants to the United States. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions. Columns (1) to (5) present OLS results controlling for self-selection bias by including the inverse Mills ratio from a first-stage probit regression. Column (6) replicates the model in Column (1) after excluding the inverse Mills ratio. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 4. Generation of immigrant effects

A. Interaction analysis				
Dependent variable: ROA				
	Gen1	Gen2	Gen3	Gen4
	(1)	(2)	(3)	(4)
Gen1*Competitive state	1.218**			
	(2.395)			
Gen1	-0.062			
	(-0.592)			
Gen2*Competitive state		0.153***		
		(3.015)		
Gen2		-0.076**		
		(-2.170)		
Gen3*Competitive state			0.113***	
			(2.704)	
Gen3			-0.032	
			(-0.965)	
Gen4*Competitive state				-0.116
				(-1.445)
Gen4				0.099
				(1.366)
Competitive state	-35.699***	-28.375***	-24.285**	-27.006**
	(-3.436)	(-2.872)	(-2.469)	(-2.498)
Lambda	0.379***	0.109*	0.148**	0.135**
	(4.254)	(1.688)	(2.246)	(2.021)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2,569	2,569	2,569	2,569
B. H0 = Generation of immigrant CEOs*Competitive state + Generation of immigrant CEOs = 0				
F-test	5.40**	4.39**	9.95***	0.24

The dependent variable is ROA. Gen1 indicates CEOs who are born outside the United States. Gen2/Gen3/Gen4 indicates CEOs who are second-, third-, and fourth-generation immigrants. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions. All models include state-year fixed effects. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 5. The cultural heritage of non-CEO top executives and performance

Dependent variable: ROA						
	Second executive	CFO	Top team	Second executive	CFO	Top team
	(1)	(2)	(3)	(4)	(5)	(6)
Gen2-3 second executive *Competitive state	-0.001			-0.046		
	(-0.008)			(-0.862)		
Gen2-3 second executive	-0.004			0.014		
	(-0.029)			(0.320)		
Gen2-3 CFO*Competitive state		(-0.100)			-0.050	
		-0.041			(-0.566)	
Gen2-3 CFO		(-0.058)			-0.053	
					(-0.649)	
Gen2-3 Top team*Competitive state			-0.099			-0.158
			(-1.083)			(-1.435)
Gen2-3 Top team			0.120			0.105
			(1.634)			(1.121)
Gen2-3 CEO*Competitive state				0.118**	0.293***	0.107**
				(2.010)	(3.023)	(2.516)
Gen2-3 CEO				-0.048	-0.332***	-0.054
				(-0.943)	(-3.639)	(-1.595)
Competitive state	-38.113	288.096	-70.932***	-19.293	40.990	-45.172**
	(-0.675)	(0.576)	(-4.967)	(-0.967)	(1.462)	(-2.389)
Lambda	-2.090	6.820	-0.084	0.635	-0.111	0.018
	(-0.711)	(0.857)	(-0.377)	(0.803)	(-0.343)	(0.588)
Gen1 controls	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,159	854	2,615	1,619	701	1,991

This table tests for the cultural heritage effects of non-CEO top executives. We examine three groups of non-CEO top executives: (1) the second-highest paid executive, (2) the CFO, and (3) the team of the five highest-paid executives (less the CEO). Columns (1)-(3) only control for the cultural heritage of non-CEOs, while Columns (4)-(6) control for the cultural heritage of CEOs and non-CEOs. The dependent variable is ROA. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 6. Individual cultural values and performance

			β_1		β_2		β_3	
	Cultural dimension	Obs.	coefficient	(t-stat)	coefficient	(t-stat)	coefficient	(t-stat)
1	Harmony	3,049	2.813***	(3.335)	-2.383 ***	(-3.605)	-33.689 ***	(-3.213)
2	Restraint	3,035	0.373***	(3.450)	-0.241 ***	(-2.800)	-33.167 ***	(-3.089)
3	Uncertainty avoidance	3,039	0.357***	(3.470)	-0.225 ***	(-2.855)	-34.592 ***	(-3.231)
4	Long-term orientation	3,039	0.236***	(2.958)	-0.186 ***	(-2.929)	-31.283 ***	(-2.921)
5	Importance of income equality	2,803	0.486	(1.496)	-0.370	(-1.419)	-27.221 **	(-2.486)
6	Power Distance	3,040	0.242	(1.317)	-0.067	(-0.471)	-32.138 *	(-1.719)
7	Importance of self-respect	2,803	-0.299	(-0.704)	0.177	(0.512)	-27.824 **	(-2.568)
8	Masculinity	3,040	-0.230	(-1.598)	0.039	(0.346)	-34.755 ***	(-3.211)
9	Humane-orientation	3,007	-0.628	(-0.305)	-0.424	(-0.282)	-29.649 ***	(-2.805)
10	Trust in others	2,803	-1.731	(-0.627)	0.275	(0.139)	-27.895 ***	(-2.586)
11	Individualism	3,039	-0.508***	(-4.487)	0.226 **	(2.556)	-38.051 ***	(-3.539)
12	Importance of selflessness	2,803	-0.670***	(-4.542)	0.366 ***	(3.058)	-28.419 ***	(-2.641)
13	Importance of freedom	2,803	-1.352***	(-3.949)	1.014 ***	(3.533)	-24.400 **	(-2.284)
14	Performance orientation	3,007	-2.022***	(-3.198)	1.513 ***	(2.951)	-30.066 ***	(-2.848)
15	Patriotism	2,803	-2.093***	(-3.446)	1.487 ***	(3.150)	-24.496 **	(-2.273)
16	Intellectual autonomy	3,049	-3.556***	(-2.766)	1.062	(1.077)	-31.568 ***	(-2.964)

This table reports the estimation results of the following regression specification:

$$ROA_{itk} = \alpha + \boldsymbol{\beta_1}\text{Cultural dimension}_{it}*\text{Competitive state}_{tk} + \boldsymbol{\beta_2}\text{Cultural dimension}_{it} + \boldsymbol{\beta_3}\text{Competitive state}_{tk} + \text{Controls} + \text{State-year FE} + \varepsilon_{itk}.$$

The dependent variable is ROA. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. A total of 16 cultural dimensions are obtained from Hofstede, Schwartz, GLOBE, and WVS. We assign the values of each cultural dimension to CEOs according to their ancestral background. Table A2 (see the appendix) provides the definitions for all all cultural dimensions and variables. We sequentially display the coefficient estimates for regressions on each cultural dimension. For brevity, the table reports the coefficients on the interaction term between the cultural dimensions and competitive state (β_1) and the coefficients on its constituent variables (β_2 and β_3). All models include state-year fixed effects. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 7. Factor analysis

A. Factor loadings for individual cultural dimensions

	Factor 1	Factor 2	Factor 3
Eigenvalue	7.023	2.204	1.501
% explained	0.540	0.170	0.085
Cumulative % explained	0.540	0.710	0.795
Harmony	**-0.308**	0.140	0.102
Restraint	**-0.340**	-0.065	0.008
Uncertainty avoidance	**-0.325**	-0.228	-0.008
Long-term orientation	**-0.328**	0.189	0.083
Importance of income equality	-0.052	**0.485**	0.264
Power distance	-0.233	**-0.370**	-0.222
Importance of self-respect	0.210	0.068	-0.154
Masculinity	0.059	-0.197	**0.569**
Humane orientation	-0.066	**0.409**	-0.290
Trust in others	0.187	**0.408**	-0.258
Individualism	**0.329**	0.032	0.154
Importance of selflessness	0.221	-0.231	-0.057
Importance of freedom	**0.300**	-0.059	-0.124
Performance orientation	**0.313**	0.080	0.137
Patriotism	0.282	-0.269	-0.149
Intellectual autonomy	0.089	0.052	**0.532**

B. Competitive pressures, factor scores, and performance

Dependent variable: ROA

	(1)	(2)	(3)	(4)
Factor 1*Competitive state	-0.025***			-0.026***
	(-3.793)			(-3.898)
Factor 1	0.014***			0.014***
	(2.643)			(2.616)
Factor 2*Competitive state		0.015		0.016
		(1.390)		(1.497)
Factor 2		-0.014		-0.013
		(-1.642)		(-1.572)
Factor 3*Competitive state			-0.011	-0.014
			(-0.904)	(-1.157)
Factor 3			-0.008	-0.007
			(-0.848)	(-0.796)
Competitive state	-29.900***	-25.678**	-29.421***	-31.287***
	(-2.765)	(-2.361)	(-2.706)	(-2.848)
Lambda	0.301***	0.319***	0.322***	0.319***
	(3.262)	(3.448)	(3.491)	(3.429)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2,799	2,799	2,799	2,799

Panel A presents factor loadings on three factors with eigenvalue >1 based on 16 cultural dimensions. Factor loadings greater than |0.3| are shown in bold. Panel B links each CEO's factor scores to bank performance under competitive pressure. The dependent variable is ROA. Factor 1, factor 2, and factor 3 are the predicted scores obtained from factor analysis. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 8: Factor regressions on bank policies

A. Acquisition propensity				
Dependent variable: # acquisitions announced in a given year				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.008**			0.008*
	(1.978)			(1.711)
Factor 1	-0.006*			-0.006
	(-1.816)			(-1.606)
Factor 2*Competitive state		0.006		0.007
		(1.162)		(1.169)
Factor 2		-0.016**		-0.016**
		(-2.213)		(-2.024)
Factor 3*Competitive state			-0.005	-0.003
			(-0.636)	(-0.321)
Factor 3			-0.001	0.001
			(-0.109)	(0.112)
Competitive state	-0.358	-3.875	-1.287	-3.207
	(-0.058)	(-0.574)	(-0.210)	(-0.434)
Lambda	-0.150	-0.252	-0.028	-0.275
	(-0.513)	(-0.827)	(-0.102)	(-0.714)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2,609	2,609	2,609	2,609
B. Acquisition performance				
Dependent variable: CARs [-2, +2] %				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	-0.004**			-0.004**
	(-1.973)			(-1.976)
Factor 1	0.003*			0.003
	(1.697)			(1.578)
Factor 2*Competitive state		-0.001		-0.001
		(-0.413)		(-0.439)
Factor 2		-0.001		-0.001
		(-0.652)		(-0.501)
Factor 3*Competitive state			-0.006*	-0.005
			(-1.710)	(-1.462)
Factor 3			0.001	0.001
			(0.705)	(0.278)
Competitive state	-0.010	-0.008	-0.007	-0.009
	(-1.623)	(-1.330)	(-1.169)	(-1.331)
Deal-specific controls	Yes	Yes	Yes	Yes
Observations	239	239	239	239

C. Bank risk-taking				
Dependent variable: Stock return volatility				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.036**			0.037**
	(2.079)			(2.111)
Factor 1	-0.014			-0.014
	(-1.000)			(-1.018)
Factor 2*Competitive state		0.019		0.021
		(0.877)		(0.959)
Factor 2		-0.015		-0.016
		(-0.810)		(-0.868)
Factor 3*Competitive state		45.858	-0.004	-0.003
		(1.356)	(-0.149)	(-0.107)
Factor 3			0.013	0.014
			(0.542)	(0.609)
Competitive state	50.105	45.858	45.359	54.279
	(1.501)	(1.356)	(1.360)	(1.639)
Lambda	0.006	0.006	0.006	0.007
	(0.016)	(0.016)	(0.016)	(0.016)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2,756	2,756	2,756	2,756
D. Cost efficiency				
Dependent variable: Expense/Income				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.006***			0.006***
	(3.369)			(3.569)
Factor 1	-0.001			-0.001
	(-0.686)			(-0.682)
Factor 2*Competitive state		0.004		0.004
		(1.286)		(1.426)
Factor 2		0.001		0.001
		(0.291)		(0.285)
Factor 3*Competitive state			0.003	0.003
			(0.985)	(1.026)
Factor 3			-0.000	-0.000
			(-0.055)	(-0.061)
Competitive state	3.617	2.491	2.252	4.553
	(0.940)	(0.653)	(0.590)	(1.160)
Lambda	0.106***	0.105***	0.106***	0.106***
	(2.999)	(2.933)	(2.964)	(2.982)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2,799	2,799	2,799	2,799

This table links a CEO's cultural factor scores to bank's policy choices under competitive pressure. The dependent variables are acquisition propensity (panel A), five-day [2, +2] merger announcement returns (panel B), annual stock return volatility (panel C), and total expense scaled by total income (panel D). Factors 1, 2, and 3 are estimated using factor analysis (in Table 7). Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Appendix

Table A1. The deregulation of interstate banking

State	Effective date	Single branch acquisition restriction	State-wide deposit cap on branch acquisition	Age restriction	De novo interstate branching restriction
Alabama	May 31, 1997	Yes	30%	5	Yes
Alaska	Jan 1, 1994	No	50%	3	Yes
Arizona	Aug 31, 2001	No	30%	5	Yes
Arizona	Sep 1, 1996	Yes	30%	5	Yes
Arkansas	Jun 1, 1997	Yes	25%	5	Yes
California	Sep 28, 1995	Yes	30%	5	Yes
Colorado	Jun 1, 1997	Yes	25%	5	Yes
Connecticut	Jun 27, 1995	No	30%	5	No
Delaware	Sep 29, 1995	Yes	30%	5	Yes
Washington DC	Jun 13, 1996	No	30%	No	No
Florida	Jun 1, 1997	Yes	30%	3	Yes
Georgia	May 10, 1997	Yes	30%	3	Yes
Georgia	Jun 1, 1997	Yes	30%	5	Yes
Hawaii	Jan 1, 2001	No	30%	No	No
Hawaii	Jun 1, 1997	Yes	30%	5	Yes
Idaho	Sep 29, 1995	Yes	No	5	Yes
Illinois	Aug 20, 2004	No	30%	No	No
Illinois	Jun 1, 1997	Yes	30%	5	Yes
Indiana	Jul 1, 1998	No	30%	5	No
Indiana	Jun 1, 1997	No	30%	No	No
Iowa	Apr 4, 1996	Yes	15%	5	Yes
Kansas	Sep 29, 1995	Yes	15%	5	Yes
Kentucky	Mar 22, 2004	Yes	15%	No	Yes
Kentucky	Mar 17, 2000	Yes	15%	No	Yes
Kentucky	Jun 1, 1997	Yes	15%	5	Yes
Louisiana	Jun 1, 1997	Yes	30%	5	Yes
Maine	Jan 1, 1997	No	30%	No	No
Maryland	Sep 29, 1995	No	30%	No	No
Massachusetts	Aug 2, 1996	No	30%	3	No
Michigan	Nov 29, 1995	No	No	No	No
Minnesota	Jun 1, 1997	Yes	30%	5	Yes
Mississippi	Jun 1, 1997	Yes	25%	5	Yes
Missouri	Sep 29, 1995	Yes	13%	5	Yes
Montana	Oct 1, 2001	Yes	22%	5	Yes
Montana	Sep 29, 1995	N/A	+1% per year from 18% to 22%	4	N/A
Nebraska	May 31, 1997	Yes	14%	5	Yes
Nevada	Sep 29, 1995	Limited	30%	5	Limited
New Hampshire	Jan 1, 2002	No	30%	No	No
New Hampshire	Aug 1, 2000	No	30%	5	No
New Hampshire	Jun 1, 1997	Yes	20%	5	Yes
New Jersey	Apr 17, 1996	No	30%	No	Yes
New Mexico	Jun 1, 1996	Yes	40%	5	Yes
New York	Jun 1, 1997	No	30%	5	Yes
North Carolina	Jul 1, 1995	No	30%	No	No

North Dakota	Aug 1, 2003	No	25%	No	No
North Dakota	May 31, 1997	Yes	25%	No	Yes
Ohio	May 21,1997	No	30%	No	No
Oklahoma	May 17, 2000	No	20%	No	No
Oklahoma	May 31, 1997	Yes	15%	5	Yes
Oregon	Jul 1, 1997	Yes	30%	3	Yes
Pennsylvania	Jul 6, 1995	No	30%	No	No
Rhode Island	Jun 20, 1995	No	30%	No	No
South Carolina	Jul 1, 1996	Yes	30%	5	Yes
South Dakota	Mar 9, 1996	Yes	30%	5	Yes
Tennessee	Mar 17, 2003	No	30%	3	No
Tennessee	Jul 1, 2001	No	30%	5	No
Tennessee	May 1, 1998	No	30%	5	Yes
Tennessee	Jun 1, 1997	Yes	20%	5	Yes
Texas	Sep 1, 1999	No	20%	No	No
Texas	Aug 28, 1995	N/A	20%	N/A	N/A
Utah	Apr 30, 2001	No	30%	5	No
Utah	Jun 1, 1995	No	30%	5	Yes
Vermont	Jan 1, 2001	No	30%	No	No
Vermont	May 30, 1996	No	30%	5	Yes
Virginia	Sep 29, 1995	No	30%	No	No
Washington	May 9, 2005	No	30%	5	No
Washington	Jun 6, 1996	Yes	30%	5	Yes
West Virginia	May 31, 1997	No	25%	No	No
Wisconsin	May 1, 1996	Yes	30%	5	Yes
Wyoming	May 31, 1997	Yes	30%	3	Yes

The Interstate Banking and Branching Efficiency Act (IBBEA) grants U.S. states the option to (1) impose a minimum age of three years on target institutions of interstate acquirers; (2) not to permit de novo interstate branching; (3) not to permit the acquisition of individual branches by an out-of-state bank; and (4) impose a deposit cap of 30% or lower, that is, block out-of-state banks from acquiring an in-state bank that holds more than 30% of the deposits in that state. This table shows the regulatory changes to instate branching over the period 1994–2006. Each column refers to one roadblock that a state adopts against the IBBEA provisions. N/A means not applicable where states block competition completely. *Source*: Rice and Strahan (2010).

Table A2. Variable definitions

Variable	Definition	Source
CEO's cultural heritage measures		
Gen2-3	Equals one if the CEO is a child or grandchild of immigrants	ancestry.com
Gen4+	Equals one if the CEO is a fourth or higher generation of immigrants	ancestry.com
Gen1	Equals one if the CEO is a foreign immigrant	ancestry.com
Gen2	Equals one if the CEO is a child of foreign immigrants	ancestry.com
Gen3	Equals one if the CEO is a grandchild of foreign immigrants	ancestry.com
Gen4	Equals one if the CEO is a great-grandchild of foreign immigrants	ancestry.com
Harmony	Related to the freedom to pursue own thoughts	Schwartz
Restraint	Related to the ability to control desires	Hofstede
Uncertainty avoidance	Related to the level of stress in the face of an unknown future	Hofstede
Long-term orientation	Related to the choice of focus for people effort	Hofstede
Importance of income equality	Related to the importance of income equality	WVS
Power distance	Related to the basic problem of human inequality	Hofstede
Importance of self-respect	Related to the importance of self-respect	WVS
Masculinity	Related to the division of emotional between gender	Hofstede
Humane orientation	Related to the extent to which altruism and generosity is rewarded	GLOBE
Trust in others	Related to the willingness to trust in others	WVS
Individualism	Related to the integration of individuals into group	Hofstede
Importance of selflessness	Related to the importance of selflessness	WVS
Importance of freedom	Related to the importance of freedom	WVS
Performance orientation	Related to the extent to which performance is rewarded	GLOBE
Patriotism	Related to the importance of patriotism	WVS
Intellectual autonomy	Related to the discomfort with confrontation and assertiveness	Schwartz
Bank competition measures		
Competitive state	Dummy equals one if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition	Rice and Strahan 2010
#liberalizations	Number ranges from zero (highly regulated) to four (deregulated) based on regulation changes in a given state	
Before^{2+}	All years up to and including two years before the deregulation	
Before^{1}	One year prior to deregulation	
Present	The year of deregulation	
After^{1}	One year post-deregulation	
After^{2+}	Two years after the deregulation	
Bank outcomes		
ROA (%)	Earnings before interest and taxes (EBIT) divided by book value of total assets (BHCK2170)	CRSP, FR Y9-C
ROE (%)	EBIT divided by book value of total equity (BHCK3210)	CRSP, FR Y9-C
Tobin's q	Market value of equity divided by book value of total equity (BHCK3210)	CRSP
Stock volatility	Standard deviation of a firm's stock return in a given year	CRSP
Expense/Income	Total expenses (BHCK4073+ BHCK4093) divided by total income (BHCK 4107+BHCK4079)	FR Y9-C
Marginal expected shortfall	The average return for each bank on days when the returns of the overall financial markets are in bottom 5% in a given year	CRSP
Other CEO characteristics		
Ln (CEO age)	Natural logarithm of the CEO age	BoardEx
Ln (CEO tenure)	Natural logarithm of the number of years the CEO has served in	BoardEx

	this position	
Ivy League	Equals one if the CEO has an Ivy League education	BoardEx
MBA	Equals one if the CEO has an MBA degree	BoardEx
Experienced executives	Equals one if the CEO with previous executive appointments	BoardEx
Depression baby	Equals one if the CEO was born between 1920 and 1929	BoardEx
Ln (bonus comp)	Natural logarithm of the CEO bonus compensation	ExecuComp
CEO ownership	The fraction of shares owned by the CEO	ExecuComp
CEO vega	Sensitivity of CEO compensation to stock return volatility, expressed in $‘1000	ExecuComp
CEO delta	Sensitivity of CEO compensation to share price, expressed in $‘1000	ExecuComp
Other bank characteristics		
Ln (assets)	Natural logarithm of total assets (BHCK2170)	FR Y-9C
Leverage	Book value of liabilities divided by book value of total assets	FR Y-9C
Lending	Ratio of total loans (BHCK2122) divided by total assets	FR Y-9C
Deposits	Ratio of total deposits (BHDM6631+BHFN6631 + BHDM6636 + BHFN6636) divided by total assets	FR Y-9C
HHI	Index measuring the concentration of deposits at the state level	FR Y-9C
Foreign loans	Total foreign loans divided by total assets	FR Y-9C
Foreign deposits	Total foreign deposits divided by total assets	FR Y-9C
County-level characteristics		
Ln (population)	Natural logarithm of the county population	U.S. Census Bureau
Civilian labor force	Fraction of the population who have jobs or are seeking jobs, are at least 16 years old, are not serving in the military and are not institutionalized	U.S. Census Bureau
Ln (personal income)	Natural logarithm of the individual’s income from wages, investment enterprises and other ventures	U.S. Census Bureau
Religiosity	The number of religious adherents divided by the total population. Data are available for 1990, 2000, and 2010 and are interpolated for the remaining years	Association of Religion Data Archive
Characteristics at origin in 1900		
Ln (GDP) at origin	Natural logarithm of GDP in the ancestral country of origin of the CEO	UN Statistics Division
Ln (life expectancy) at origin	Natural logarithm of life expectancy in the ancestral country of origin of the CEO	UN Statistics Division
Legal system at origin	Equals one if the CEO ancestral country of origin has a French Civil with German Civil law influence, two if German Civil law, three if Common law, four if Nordic law, and five if mixed between Napoleonic law and German law	UN Statistics Division
Corporate governance measures		
Board size	The number of directors sitting on the board	BoardEx
Board independence	The fraction of nonexecutive directors on the board	BoardEx

Table A3. Probit estimates on available data about a CEO's ancestors (first-stage Heckman results)

Dependent variable: Equals one if data on the CEO's ancestor is available		
	(1)	(2)
Ln (assets)	0.116***	0.113***
	(3.014)	(2.605)
Ln (assets)^2	-0.002	-0.002
	(-1.559)	(-1.241)
Competitive state	-0.049**	0.486***
	(-2.042)	(14.656)
Leverage	0.041	0.067
	(0.283)	(0.482)
Lending	-0.102**	-0.070
	(-2.233)	(-1.372)
Deposit	0.318***	0.332***
	(4.899)	(4.581)
HHI	0.059	1.349***
	(1.416)	(53.368)
Stock volatility	0.389	0.534
	(0.632)	(0.699)
Ln (CEO age)	-12.994***	-12.866***
	(-8.257)	(-7.277)
Ln (CEO age)^2	1.635***	1.619***
	(8.402)	(7.406)
Ln (CEO tenure)	0.079***	0.111***
	(3.150)	(3.816)
Ln (CEO tenure)^2	-0.010	-0.016**
	(-1.353)	(-2.022)
CEO's surname length	0.029***	0.028***
	(9.220)	(8.039)
Year FE	Yes	No
State FE	Yes	No
State-year FE	No	Yes
Observations	5,649	5,649

This table estimates the likelihood that we are able to identify a CEO's country of origin from ancestry.com. This analysis is estimated over a full sample of 5,636 bank-year observations from 1996 to 2004. The dependent variable equals one when we can retrieve data on the CEO's ancestor. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. CEO's surname length is the length of a CEO's surname. Standard errors are double-clustered by firm and year. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A4. Does endogenous CEO-firm matching drive our results?

A. Are our results driven by CEOs appointed closer to deregulation?		
	Tenure before deregulation >= 3	Tenure before deregulation < 3
	(1)	(2)
Gen2-3*Competitive state	0.264***	0.204***
	(5.155)	(3.758)
Gen2-3	-0.158***	-0.122***
	(-4.153)	(-2.658)
Competitive state	16.890	-30.593*
	(1.029)	(-1.731)
Lambda	-0.059	0.452***
	(-0.595)	(4.319)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	1,503	1,503
B. Exogenous CEO turnovers		
	ROA	ΔROA
	(1)	(2)
Gen2-3*Competitive state	0.282**	1.093***
	(2.426)	(2.668)
Gen2-3	-0.224**	-1.271***
	(-2.207)	(-3.582)
Competitive state	-11.414	-47.839
	(-0.376)	(-0.428)
Lambda	-0.231	-1.275
	(-1.008)	(-1.554)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
Firm FE	Yes	Yes
Observations	523	520

This table reports various tests to address concerns about endogenous CEO-firm matching. Panel A tests whether our results are driven by CEOs who have been appointed closer to deregulation. Column (1) includes firm-year observations in which the CEO assumes office at least three years before a state opens for deregulation. Column (2) includes firm-year observations in which the CEO assumes office within three years of deregulation. Panel B evaluates bank performance around exogenous CEO turnover events (arising from CEO death, illness, or long-planned retirements). Column (1) reports a bank fixed effects panel regressions on ROA, and Column (2) reports difference regressions on performance differences (ΔROA, in percentages). Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A5. Controlling for additional county characteristics

Dependent variable: ROA		
	(1)	(2)
Gen2-3*Competitive state	0.147***	0.161***
	(3.864)	(4.226)
Gen2-3	-0.093***	-0.105***
	(-3.104)	(-3.519)
Ln (population)*Competitive state	-0.117	-0.134*
	(-1.524)	(-1.739)
Ln (population)	0.159**	0.175**
	(2.089)	(2.290)
Civilian labor force*Competitive state	0.530	0.635
	(1.092)	(1.302)
Civilian labor force	-0.099	-0.137
	(-0.255)	(-0.352)
Ln (personal income)*Competitive state	0.018	0.025
	(1.058)	(1.439)
Ln (personal income)	-0.029**	-0.031**
	(-2.203)	(-2.309)
Religiosity*Competitive state	1.580	0.510***
	(0.973)	(2.782)
Religiosity		-0.309*
		(-1.916)
Competitive state	1.580	1.546
	(0.973)	(0.942)
Lambda	0.313***	0.346***
	(3.410)	(3.714)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	2,983	2,946

This table reports estimation results that control for additional county-level controls: *Ln (population)*, the natural logarithm of the county population; *Civilian labor force*, the fraction of the population who have jobs or are seeking jobs, are at least 16 years old, are not serving in the military and are not institutionalized; *Ln (personal income),* the natural logarithm of the individual's income from wages, investment enterprises and other ventures; and *Religiosity,* the number of religious adherents divided by the total population. Data on religiosity are available for 1990, 2000, and 2010 and are interpolated for the remaining years. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A6. Controlling for additional CEO characteristics

Dependent variable: ROA		
	(1)	(2)
Gen2-3*Competitive state	0.126***	0.135*
	(3.296)	(1.954)
Gen2-3	-0.107***	-0.072
	(-3.458)	(-1.393)
Ivy League*Competitive state	-0.069	
	(-1.303)	
Ivy League	0.102**	
	(2.487)	
MBA*Competitive state	0.170***	
	(3.833)	
MBA	-0.102***	
	(-2.817)	
Experienced executives*Competitive state	-0.054	
	(-1.251)	
Experienced executives	-0.117***	
	(-3.598)	
Depression baby*Competitive state	-0.027	
	(-0.231)	
Depression baby	-0.119	
	(-1.293)	
Ln (bonus comp)*Competitive state		-0.314***
		(-5.534)
Ln (bonus comp)		0.478***
		(10.445)
CEO ownership*Competitive state		-0.808***
		(-4.765)
CEO ownership		0.270**
		(1.986)
CEO vega/delta*Competitive state		-0.456
		(-0.586)
CEO vega/delta		-0.014
		(-0.021)
Competitive state	1.209	-9.798**
	(0.828)	(-2.438)
Lambda	0.277***	0.082
	(3.413)	(0.700)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	2,808	784

This table reports estimation results that control for additional CEO characteristics. Column (1) controls for observable CEO characteristics: *Ivy League* indicates CEOs who graduated from an Ivy League institution; *MBA* indicates CEOs with an MBA degree; *Experienced executives* indicates CEOs with prior experience as a top executive; and *Depression baby* indicates CEO born between 1920 and 1929. Columns (2) controls for CEO pay incentives: *ln(bonus comp)*, the natural logarithm of the CEO bonus compensation; *CEO ownership*, the fraction of shares owned by the CEO; *CEO vega/ CEO delta*, CEO's risk-taking incentives relative to pay-performance sensitivity. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. All models include state-year fixed effects. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A7. Economic development and institutional quality in the CEO's country of origin

Dependent variable: ROA	
	(1)
Gen2-3*Competitive state	0.121**
	(2.444)
Gen2-3	-0.086**
	(-2.223)
Ln (GDP) at origin*Competitive state	-0.003
	(-0.024)
Ln (GDP) at origin	0.109
	(1.219)
Ln (life expectancy) at origin*Competitive state	-0.390
	(-1.410)
Ln (life expectancy) at origin	-0.122
	(-0.567)
Legal system at origin*Competitive state	0.045*
	(1.802)
Legal system at origin	-0.008
	(-0.431)
Competitive state	1.310
	(0.816)
Lambda	0.160*
	(1.739)
Gen1 controls	Yes
Other controls	Yes
State-year FE	Yes
Observations	2,888

This table reports estimation results that control for the economic development and quality of institutions of the CEO's ancestral country of origin, measured in 1900 terms. *Ln (GDP) at origin* is the natural logarithm of GDP in the ancestral country of origin of the CEO; *Ln (life expectancy) at origin* is the natural logarithm of life expectancy in the ancestral country of origin of the CEO; *Legal system at origin* is equals one if the CEO ancestral country of origin has a French Civil with German Civil law influence, two if German Civil law, three if Common law, four if Nordic law, and five if mixed between Napoleonic law and German law. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A8. The dynamics of bank profitability during deregulation

A. Dynamics of bank profitability		
Dependent variable: ROA		
	(1)	(2)
$Before^{2+}$*Gen2-3	0.031	0.062
	(0.455)	(0.857)
$Before^{1}$*Gen2-3	-0.001	0.084
	(-0.009)	(0.809)
Present*Gen2-3	0.135	0.173*
	(1.502)	(1.780)
$After^{1}$*Gen2-3	0.140*	0.127
	(1.762)	(1.527)
$After^{2+}$*Gen2-3	0.192***	0.200***
	(4.383)	(4.667)
Gen2-3	-0.135***	0.062
	(-3.868)	(0.857)
$Before^{2+}$	0.247	-0.137***
	(1.006)	(-4.011)
$Before^{1}$	0.304	0.038
	(1.229)	(0.123)
Present	0.127	0.075
	(0.471)	(0.242)
$After^{1}$	0.071	0.745
	(0.265)	(0.550)
$After^{2+}$	-0.017	0.789
	(-0.063)	(0.580)
Lambda	0.161*	0.275***
	(1.754)	(3.013)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
Year FE	Yes	No
State FE	Yes	No
State-year FE	No	Yes
Observations	3065	3065
B. Placebo checks		
Dependent variable: ROA		
	(1)	
Gen2-3*Competitive state	0.041	
	(1.137)	
Gen2-3	-0.038	
	(-1.573)	
Competitive state	18.349*	
	(1.696)	
Gen1 controls	Yes	
Other controls	Yes	
State-year FE	Yes	
Observations	3,018	

This table provides additional evidence on the validity of our shock. Panel A tests the dynamics of bank profitability during deregulation by replacing the competitive state dummy with a set of dummies around the year in which the state removes barriers to interstate branching. Panel B displays a placebo test in which we inaccurately assign states into two competitive categories. All models include state-year fixed effects. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table A9. Alternative regression specifications: Performance, industry competition, and empirical model

	ROE (%)	Tobin's q	MES	CEO birth year ≤1940	CEO birth year >1940
	(1)	(2)	(3)	(4)	(5)
Gen2-3*Competitive state	2.203***	0.498***	-0.127*	0.280***	0.200***
	(4.712)	(4.609)	(-1.893)	(3.748)	(4.372)
Gen2-3	-1.644***	-0.347***	0.030	0.172	-0.130***
	(-4.461)	(-3.883)	(0.560)	(0.829)	(-3.456)
Competitive state	-14.047	-16.363***	7.830***	-0.363	-2.299
	(-0.805)	(-3.807)	(3.155)	(-0.102)	(-1.284)
Lambda	1.383	1.114***	0.576***	-0.152	0.388***
	(1.256)	(2.788)	(3.242)	(-0.894)	(4.228)
Gen1 controls	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Observations	3,059	2,363	3,012	828	2,231

	All relaxations	Within-state only	Add board controls	ROA in 1994	Add foreign controls
	(6)	(7)	(8)	(9)	(10)
Gen2-3*Competitive state	0.041***	0.180***	0.213***	0.164***	0.148***
	(-3.337)	(2.627)	(4.784)	(4.343)	(4.296)
Gen2-3	-0.055**	-0.112*	-0.132***	-0.063**	-0.095***
	(1.995)	(-1.766)	(-3.565)	(-2.055)	(-3.514)
Competitive state	0.072	-18.053	0.892	-20.465**	0.016
	(0.183)	(-0.732)	(0.533)	(-2.098)	(0.011)
Lambda	0.281***	0.598***	0.224**	0.047	0.155*
	(3.078)	(3.711)	(2.280)	(0.591)	(1.901)
Gen1 controls	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Observations	3,066	2,012	2,409	2,374	3,025

This table reports alternative regression specifications. Columns (1), (2), and (3) use alternative performance measures as dependent variables: ROE (%), Tobin's q, and MES. Columns (4) and (5) test whether our results are driven by the data collection process, Column (4) includes observations in which the CEO is born before 1940, while Column (5) includes observations in which the CEO is born after 1940. Column (6) uses an alternative measure of industry competition: *#relaxations*, the number of relaxations (as opposed to barriers) the state adopts towards interstate branching. Column (7) only considers banks operating in competitive states where banks with Gen2-3 CEOs are assigned to the treatment group and those with Gen4+ are assigned to the control group. Column (8) includes two additional board characteristics: *board size*, the total number of directors on the board; and *board independence*, the fraction of nonexecutive directors on the board. Columns (9) controls for *ROA in 1994*, which is the performance of the bank at the beginning of the sample period. Column (10) controls for *foreign loans*, which is total foreign loans divided by total assets; and *foreign deposits*, which is total foreign deposits divided by total assets. Competitive state is a dummy that equals one if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Table A2 (see the appendix) provides the definitions for all variables. *t-statistics* are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.