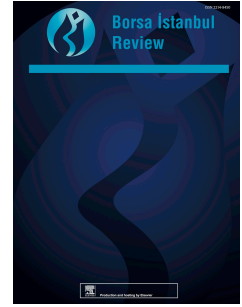


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Do Ex-Bureaucrats on Boards Improve Efficiency in Intellectual Capital? Evidence from an Emerging Country

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Do Ex-Bureaucrats on Boards Improve Efficiency in Intellectual Capital? Evidence from an Emerging Country

Abstract

Relying on the resource dependence theory, this study investigates the effect on intellectual capital efficiency and its components of having board members who are former bureaucrats, using a sample of banks in Turkiye. The study uses a sample of 344 firm-year observations of banks in Turkiye between 2005 and 2018 to investigate the relationship between ex-bureaucrat board members and intellectual capital efficiency. In addition to ordinary least squares (OLS), the current study employs instrumental variables with a two-stage least squares model to mitigate potential endogeneity concerns. Our findings show that ex-bureaucrat board members have a significantly positive association with intellectual capital efficiency at banks in Turkiye.

Keywords: Banks, boards, ex-bureaucrats, ICE

JEL classifications?

1. Introduction

Many studies discuss the potential association between intellectual capital efficiency and board characteristics, such as size (Appuhami & Bhuyan, 2015; Aslam & Haron, 2020; Asare et al., 2021), gender diversity (Al-Musali & Ismail, 2015; Makkonen et al., 2018; Nadeem et al., 2019, Shahzad et al., 2020), expertise (De Viller et al., 2011; Kroll et al., 2005), education background (Al-Musali & Ismail, 2015), and independence (Mooneepen et al., 2022). They rely on various theories, including resource-based theory and resource dependence theory, and employ

different samples covering industries such as banking and manufacturing across institutional settings.

Recent empirical studies explore the effect of directors with experience in working for the government on various firm-level outcomes, distinguishing three main categories: ex-politicians, ex-bureaucrats, and a mixture of the two. These studies emphasize the importance of these types of board members on company financial performance (Wang et al., 2022), firm value (Kang and Zhang, 2017), environmental costs (Lo et al., 2018), international business opportunities (Nam et al., 2018), export performance (Agrawal & Knoeber, 2001), and firm internationalization (Rivas et al., 2009). They argue that these board members have: political roles (Agrawal & Knoeber, 2001), extensive networks across government agencies (Awasthi & George, 2021), valuable connections, special networks (Hillman, 2005), the likelihood of attracting greater media attention (Lo et al., 2018), and unique information about the public policy process (Kang & Zhang, 2017). These potential benefits can help enhance firm outcomes, such as performance, value, and cost reduction.

Specifically, Awasthi and George (2021) argue that ex-bureaucrats have some advantages over ex-politicians with respect to the kind of benefits that they can bring to boards. According to Awasthi and George, ex-politicians and ex-bureaucrats differ in terms of human capital and social capital in two ways. First, in Türkiye, as in the rest of the world, politicians are elected by the public (YSK, 2022). By contrast, bureaucrats at high levels of a government agency, such as accounting specialists, tax inspectors, sworn auditors, the chief deputy, and general secretaries, are appointed after a government-run examination, whereas appointments to these bureaucratic positions depend on the scores received on central examinations (Awasthi & George, 2021; KPSSY, 2002). Second, in general, former bureaucrats who are appointed to boards after retiring from a government agency have long career experience at government agencies, hold a bachelor's degree from a reputable university, and have networks across

different government agencies, however, former politicians might not have a long tenure, do not need to have a bachelor's degree, and generally have limited networks that consist mostly of other politicians (Awasthi & George, 2021).

Recent studies investigate the association between ex-bureaucrats and/or ex-politicians on boards and various firm outcomes. However, the potential impact on intellectual capital efficiency of ex-bureaucrats on the board is not clear as previous research has not focused on this effect. Motivated by this gap in the literature and considering the likelihood that ex-bureaucrats could have some advantages over ex-politicians with respect to what they could bring to boardrooms, we pose the following research question: "In Turkiye, do ex-bureaucrats on the board of banks enhance intellectual capital efficiency?" To answer this question, we use a unique hand-collected dataset based on the résumés of 3,329 directors on the board at private Turkish banks between 2005 and 2018 in order to determine which directors have bureaucratic experience and how many years of experience they have.

The study employs a dataset that comprises 344 bank-year observations, proxying intellectual capital efficiency with Pulic (2000)'s value-added intellectual coefficient (VAIC) and its components (capital employed efficiency [CEE], human capital efficiency [HCE], and structural capital efficiency [SCE]). We also include two indicators for the variables of interest: the percentage of ex-bureaucrats on the board at private banks and the logarithmic mean value of the number of years of work experience of ex-bureaucrats at a government agency. To compare the results for ex-bureaucrats with those for ex-politicians, we add control variables for the percentage of ex-politicians and the logarithmic value of work experience of ex-politicians.

We perform empirical tests, such as a linear regression model (OLS) and an instrumental variable regression with two-stage least squares (IV-2SLS), to mitigate potential endogeneity

problems. For additional analysis, we combine ex-bureaucrats and ex-politicians into one variable and present the results for the joint effect.

The results demonstrate that ex-bureaucrats on the boards of private banks positively and statistically significantly affect intellectual capital efficiency. In addition, ex-bureaucrats on the board at private banks appear to affect the components of their intellectual capital efficiency—namely, capital employed efficiency, human capital efficiency, and structural capital efficiency. Among these components, the impact at banks is the greatest on human capital efficiency. Moreover, the estimation results are less significant for ex-politicians than for ex-bureaucrats. The main results remain unchanged after we mitigate the endogeneity issue by employing an IV-2SLS regression. Finally, in the additional analysis, the results are more robust for the combined variable than for the separate variables for former bureaucrats and former politicians. The study contributes to the extant literature in several ways. First, based on resource dependence theory, we construct a theoretical model on the potential association between ex-bureaucrats on bank boards and the intellectual capital efficiency of banks. From the perspective of resource dependence theory, ex-bureaucrats on the board are human capital resources for the firms, who can provide valuable advice on the public policy environment of firms and communicate effectively with government officials, bureaucrats, and government decision-makers. The theory is useful for clarifying how ex-bureaucrats can enhance firms' intellectual capital efficiency. Second, Kang and Zhang (2017), Agrawal and Knoeber (2001), Wang et al. (2022), Lo et al. (2018), Nam et al. (2018), and Rivas et al. (2009) find that ex-bureaucrats or ex-politicians on boards influence various firm outcomes, such as firm value, environmental cost, firm profitability, stock price, and firm internalization, respectively. However, the impact of ex-bureaucrats on bank boards on intellectual capital efficiency has received little or no attention. The study fills this gap in the literature by providing supportive arguments and

demonstrating that ex-bureaucrats on bank boards have a positive effect on intellectual capital efficiency and its components positively.

The remainder of this study is organized as follows. Section 2 presents the institutional setting of the Turkish bank industry. Section 3 covers the theoretical framework used to explain the association between ex-bureaucrats on the board and intellectual capital efficiency. Section 4 presents literature review and hypothesis development. Section 5 presents the research design of the study. Section 6 presents the results regarding the research model. The conclusion is presented in Section 7.

2. The Institutional Setting in the Turkish Bank Industry

According to the latest statistics from its Banking Regulation and Supervision Agency (BRSA, 2022), Turkiye has fifty-six banks: thirty-two are deposit banks, fifteen are development and investment banks, six are participation banks, and the remaining three are under the control and management of the Saving Deposit Insurance Fund of Turkiye. Some of them are state banks, and others are private banks. Likewise, some of them are owned by foreign corporations, and the rest are locally owned. As of 2022, five are foreign banks with branches in Turkiye.

Banking activities in Turkiye date back to the early years of the establishment of the republic. At that time, the country had thirty-five banks, of which twenty-two were Turkish, and thirteen were foreign (Yetiz, 2016). The first private bank began operations in 1924.

Banks in Turkiye are subject to the Banking Regulation and Supervision Agency (BRSA), agency was established in 1999 by Bank Law No. 4389, revised in 2005. This agency has administrative and financial autonomy and is a public legal person. It ensures that credit systems function efficiently, that the rights and interests of savers are protected, and that banks perform their operations safely and legally (BRSA, 2022).

According to the 2006 revision of the Banking Law, banks must comply with the corporate governance principles issued by the BRSA. These principles were revised in 2011 (BKYY, 2011) to require a minimum of five members on the boards of banks, which are responsible for determining bank strategies and for creating corporate values and ethical rules based on these principles. The members of bank boards ensure that banks' relationships with the regulatory and supervisory authorities are effective. These responsibilities reveal the importance of the board of directors, particularly those who are former bureaucrats, on company outcomes, such as performance, value, and intellectual capital efficiency.

3. Theoretical Underpinnings

According to resource dependence theory, the board of a firm has an important role in connecting with its external environment and in obtaining access to new resources. This argument is based on the fact that firms are open systems and depend on their external environment (Hillman et al., 2007; Pfeffer & Salancik, 1978; Shahzad et al., 2020). The human and social capital held by directors are a function of firms' access to resources (Kazgi & Guha, 2018; Lester et al., 2008). According to Lester et al. (2008), Awasthi and George (2021), and Freeman (1984), the government is considered an important source of dependence for firms and a key stakeholder because government regulations and policies can affect a firm's performance, competitive advantage, working conditions, and tax status. As a mechanism for reducing uncertainty and connecting to a firm's external environment (Hillman et al., 2007; Kilic & Kuzey, 2016; Pfeffer & Salancik, 1978), directors with government experience, such as former bureaucrats, should be included on boards. They can offer valuable advice concerning the public policy environments of firms. They can also communicate effectively with government officials, bureaucrats, and decision-makers about firms' ability to withstand and manage environmental uncertainty and complexity (Boyd, 1990; Hillman, 2005; Lester et al., 2008).

Thus, ex-bureaucrats on bank boards can increase banks' IC efficiency as they improve ties with third parties, such as the government, educational institutions, politicians, financial institutions, and other businesses (Kazgi & Guha, 2018; Singh, 2007).

4. Literature Review and Hypothesis Development

4.1 Ex-Bureaucrats in the Top Firm Management and Their Effects on Firm Outcomes

Recent studies provide significant empirical evidence regarding the importance of the overall experience of board members or board experience in specific areas on several characteristics, such as firm performance and value. Kroll et al. (2005) find that directors with acquisition experience and expertise in the industry in which a target firm operates are significantly associated with high returns. This is probably because experienced directors who learned, accumulated, and gained appropriate knowledge via prior experience ensure that strategic decisions are made about the firm acquisitions. Directors with appropriate experience are more suitable advisers to top managers at the time of the acquisition process. Vandenbroucke et al. (2016) also demonstrate that independent directors with marketing and sales experience enhance market performance, which is measured as the total number of products in the market. They claim that outside directors with marketing and sales experience can help to ship the first product for revenue and to build a product portfolio. De Viller et al. (2011) find that directors who have experience and expertise in the law increase a firm's environmental performance as they are more aware of the costs of environmental regulations. In addition, they are likely to have more analytical skills for appraising environmental opportunities and costs. Balsmeier et al. (2014) demonstrate that, at German companies, supervisory boards with innovation-related skills and experience perform a crucial role in improving firms' innovative outcomes, such as the number of patents. Fernandes et al. (2017) find that supervisory boards with banking experience performed better during the 2007-2008 financial crisis. This is probably because

they tend to have a deep understanding of regulatory issues and banking activity specificities/complexities.

In attempting to determine the driver of intellectual capital, Berezinets et al. (2016) conclude that the human and social capital of the members of board comprise the work experience of directors in the field and in a narrow area of specialization, directors' international job experience, and directors' relationship with political parties, government agencies, and other organizations. The inclusion of ex-politicians, ex-bureaucrats, and government-affiliated directors as the components of the intellectual capital of the board of directors of firms can affect firms' outcomes. Recent studies have generally focused on the impact on various firm outcomes of former politicians on the board, and most of them discuss the reasons for appointing an ex-politician or an ex-bureaucrat to the board. These studies argue that directors with political or bureaucratic experience would help create value (Agrawal & Knoeber, 2001; Awasthi & George, 2021; Fuller & Bart, 2015; Hillman, 2005; Hillman & Hitt, 1999; Kang & Zhang, 2017; Latif et al., 2013; Lester et al., 2008; Lo et al., 2018; Nam et al., 2018).

Agrawal and Knoeber (2001) investigate whether directors with political experience or law degrees play a political role in their firms. They state that firms engaged in activities such as exports and sales to the government are more likely to appoint directors with a political background, and firms with higher environmental costs are more likely to appoint directors with a legal background. This is because of the likelihood that, using their knowledge of government procedures, ex-politicians on the board or directors with a law degree might be able to predict government actions. Fuller and Bart (2015) investigate the reasons for the presence of ex-politicians or ex-bureaucrats on the board at Canadian firms. Their survey results indicate that it is because it is considered a reward for past service at a government agency, rather than for current service to a firm. In a similar way, Üstdiken et al. (2015) demonstrate that large family firms in Turkiye still tend to appoint former ministers, former mayors, and former members of

the Turkish parliament to the senior management because of the firms' current and planned takeovers of government enterprises. Ararat et al. (2010) state that former bureaucrats, former politicians, and former military officers are still part of the top management of some firms and exert control over those companies in Turkiye.

According to Calder (1989), corporate ties with the bureaucratic hierarchy are essential for the survival of firms. In Japan, ex-bureaucrats help (small) firms influence government policies by providing specific managerial experience and giving information to their organizations regarding regulatory actions and economic and political developments. According to Fan et al. (2010), the rationale for appointing ex-bureaucrats to high hierarchical levels of companies is that they are a highly selected group with a distinguished education background, skillset, and experience. In addition, they have a deep understanding of government processes and have close ties to their colleagues even after they depart from their government positions. Awasthi and George (2021) state that firms in regulated industries and firms with a large proportion of foreign corporate ownership have a higher likelihood of appointing an ex-bureaucrat to their board, instead of ex-politicians, because ex-bureaucrats have a unique combination of social and human capital, such as long experience, education, and networks across various departments and agencies of government, unlike ex-politicians. Ex-bureaucrats on boards serve as intermediaries and as an agent of insurance between a firm and the government. These directors might inform their companies about government procedures, actions, and expectations. They are also more likely than ex-politicians to obtain critical resources for firm growth. Rivas et al. (2009) investigate the impact of directors with government experience on firm globalization, drawing on the upper echelons theory and using European and US service and manufacturing firms, but do not elaborate on what kind of government experience.¹ They find no association between the firm globalization level and the presence of directors with

¹ They do not mention how government experience is measured.

government experience. They hold that testing this type of relationship in a more regulated environment yields more robust results regarding the importance of directors with government experience.

Although these studies focus on the reasons for adding ex-bureaucrats or ex-politicians to the board, the following studies reveal the relationship between ex-bureaucrats and ex-politicians on boards and the subsequent company outcomes, with interesting findings. According to Hillman (2005), government policies may affect the competitive environment of firms. Thus, firms are likely to appoint ex-politicians or ex-bureaucrats to their boards to turn government policies to their own advantage. She investigates the effect on firm performance of ex-politicians and ex-bureaucrats on the board, in terms of market capitalization, the market-to-book value, the return on assets, and the return on sales. She states that the depth (i.e., politicians' government tenure) and breadth (i.e., the last position of ex-politicians at a government agency) of the human and social capital of ex-politicians (i.e., serving in the cabinet and in the Senate) on the board increase its capacity to provide resources because they maintain an extensive network. Kang and Zhang (2017) explore the association between ex-politicians serving as independent directors on the board and firm value, proxied by Tobin's Q. Adopting the value-enhancing view of directors with political experience, they emphasize that ex-politicians on the board give firms valuable connections and unique information regarding the public policy process. Thus, they enhance firm performance by reducing the cost of information flows and understanding government politics better. These directors can also influence government decisions in the firm's best interest by communicating well with government agencies. Nam et al. (2018) find that firms that appoint former bureaucrats to boards are more likely to engage in exporting probably because former bureaucrats on boards are likely to act as lobbyists, using their particular networks and creating networks with government agencies, specifically export-related agencies.

Lo et al. (2018) investigate the relationship between environmental incidents caused by firms and the market value of firms. They find that firms with former bureaucrats in a local or national government on boards or senior management are more greatly affected when environmental incidents, such as air and water pollution, are caused by those companies. According to them, firms with these directors or managers attract greater media attention, which causes anxiety in the stock market and reduces firm value. Wang et al. (2022) focus on the association between top management team (TMT) members with government experience and firm performance. They divide government experience by TMT into the national, provincial, city, and district level. They state that firms with top management members who are former government officers seize more opportunities from the government, leading to increases in firm profitability. Moreover, TMT members with government experience generate R&D resources and expenditures, offer a competitive advantage, and convert these expenditures into profits. R&D expenditures require external investment, and TMT members with government experience are beneficial for obtaining bank financing, lower taxation, and regulatory preference. Latif et al. (2013) state that ex-bureaucrats on boards and who are founders of firms are positively associated with firm performance in Malaysia. The rationale for this positive association is that ex-government officers have a lot of experience in the public sector and have many contacts with government agencies. Chen et al. (2011) investigate the relationship between the investment efficiency of state-owned enterprises and whether the CEO or chairman of those enterprises are bureaucrats or ex-bureaucrats. They find that CEOs or chairmen who are bureaucrats or ex-bureaucrats do not aim to maximize firm value but, rather, to achieve government objectives.

4.2. Hypothesis Development

Former bureaucrats are considered “good” candidates for directors because they can help in avoiding heavy costs and balancing political and capital requirements. Firms benefit because of internal and external legitimacy, which enables them to develop strategies in response to the regulatory environment and manage uncertainty related to environmental concerns (Brown et al., 2018; Bucheli & Salvaj, 2018). Intellectual capital efficiency consists of efficiency in human capital, capital employed, and structural capital (Dalwai et al., 2021). Dalwai and Mohammadi (2020) state that corporate governance mechanisms affect intellectual capital and human capital efficiency. Because of the government connections, businesses receive preferential treatment in terms of tax relief and access to financial and government resources. They can also be beneficial in minimizing overall risk. However, the impact of ex-bureaucrats as a corporate governance mechanism for intellectual capital has not been investigated in the extant literature, though the impact of government connections on firm outcomes has been critically examined in prior studies (Faccio, 2006). Based on previous arguments and findings related to the potential positive contributions by ex-bureaucrat to firm resources, the following relationship is hypothesized:

Hypothesis 1: Ex-bureaucrats on the boards of banks positively affect the IC efficiency of banks, which is measured by VAIC.

The efficiency of capital employed is measured as the ability to manage firm resources as a form of capital assets. Capital employed covers physical capital and financial assets to generate profits. In other words, it covers the amount of financial capital available to the firm (Chen et al., 2005; Clarke et al., 2011; Marzo, 2021) or value addition made by capital invested by shareholders (Alhassan & Asare, 2016). One unit of capital employed can generate a greater return for the company (Pulic, 2004). The extant literature provides evidence that government-

connected firms can attract benefits from the government (Pastor & Veronesi, 2014), which leads to greater growth in resources, a lower cost of capital, a high loan acceptance rate along with lower loan rates, and fewer market shocks (Yu & Zheng, 2019). Low financing constraints are reported at Chinese government-connected firms, but not nonconnected firms (Chan et al., 2012). Although this is an advantage, prior studies also suggest that these types of firms have lower-quality earnings or higher earnings management (Chaney et al., 2012).

Government connections are also considered to affect the cash holdings of a firm. Prior studies report that firms in developed countries hold less cash, as they have government support through their government connections (Faccio, 2010). Firms in emerging countries are also found to have less cash holding with government connections, as they obtain government support during financially critical periods (Al-Najjar, 2013). Kusnadi and Wei (2012) and Lin et al. (2019) obtain alternative findings in emerging markets, where firms with government connections can hoard cash. Turkiye has a weak institutional environment (SolAbility Sustainable Intelligence, 2021), so it is likely that government-connected firms suffer agency problems, and such firms are more likely to hold more cash.

However, government-connected firms are more likely to have easier access to financial resources (Shi et al., 2018), such as loans (Claessens et al. 2008) and a lower cost of equity capital (Boubakri et al., 2012), as ex-bureaucrats on the boards have an important role by providing access to critical resources. In an empirical study, Boubakri et al. (2012) find that government-connected firms have a lower cost of equity capital than nonconnected firms. They argue that government connections give the assurance of corporate bailouts in the event of financial distress or crisis. In that case, investors in government-connected firms request a lower rate of return, that is, the cost of equity, because these government-connected firms are more valuable than nonconnected firms due to investor confidence.

In addition, banks obtain funds by borrowing from central banks, other banks, and corporations in order to have enough deposits to meet the amount required by central banks (Mishkin, 2004). Government-connected banks are more likely to be rescued by governments through capital injection (Faccio et al., 2006; Nys et al., 2015). Ex-bureaucrats on boards might provide banks with valuable connections to gain access to financial capital easily because their bureaucratic ties also support an informal policy network that allows information to be shared between the government and businesses (Kawai & Ko, 2012). Therefore, the following relationship between ex-bureaucrats and capital employed efficiency is hypothesized as:

Hypothesis 2: Ex-bureaucrats on the boards of banks positively affect the efficiency of the bank capital employed.

Firms do not possess human capital per se (Yaseen et al., 2016), but their human capital is represented by the employees' knowledge, prior experience, skills, competence, know-how, and abilities. Thus human capital indicates the contribution to the corporate added value of each unit of spending on the cost of employees (Reboredo & Sowaity, 2022; Shahzad et al., 2020). Bureaucrats are reported to have a high level of education, administrative experience, and a strong peer network (Awasthi & George, 2021). These characteristics and their sphere of influence (Ahuja & Yayavaram, 2011) affect the availability of resources (Chandra, 2015). As former civil servants, they have valuable experience in government functioning and hold close ties with officials in the government even after they stop working there (Wu et al., 2008). Masud et al. (2019) argue that government connections through the presence on the board have negative implications for stakeholders. Ex-bureaucrats pursue political benefits when they are on the board due to their government connections and not due to their expertise, resulting in lower management legitimacy and weak corporate transparency. EL Ammari (2022) reports a

negative association between government connections and firm performance by Tunisian firms because of a lack of management, professionalism, and know-how. However, Fan et al. (2020) find that Chinese companies led by ex-bureaucrats are more involved in more diversified business lines than firms with no government connections. Guo and Yu (2022) report that politicians on CSR (Corporate social responsibility) committees are associated with higher KLD (Kinder, Lydenberg, and Domini) CSR score ratings for S&P 500 firms.²

As mentioned earlier, ex-bureaucrats have high levels of education and experience (Awasthi & George, 2021). In the Turkish setting, they hold a bachelor's degree in a related field, pass personnel selection and personnel qualification exams, and have three years of on-the-job training at relevant government agencies in order to be appointed to government agencies. Boards and their subcommittees, such as compensation committees, play an important role in developing human capital and pay substantial attention to human resource and workplace issues, such as diversity, culture, and talent (KPMG, 2020). Accordingly, ex-bureaucrats on boards who survive this difficult appointment process can be expected to establish effective policies for retaining competent, talented, and distinguished bank personnel. In addition, they are expected to make effective investment in personnel and play a role in increasing the talent pool to add value in terms of human capital. Boards with ex-bureaucrats are also more likely to make effective investments in the remaining human resources of their banks and follow appreciative human research policies and take precautions to retain these "competent, talented and distinguished" personnel. Because government employees earn lower wages, qualified people might be unwilling to work as bureaucrats. However, A-class bureaucratic positions in Turkiye are valuable because they offer employment opportunities for life or until retirement.

² Kinder, Lydenberg, and Domini rating databases. It includes seven categories, such as community, governance, employee relations, environment, and diversity.

Thus, educated, well trained, and knowledgeable candidates might prefer to take these government positions, instead of working in the private sector. Based on these arguments, we hypothesize the following relationship.

Hypothesis 3: Ex-bureaucrats on the boards of banks have a positive effect on their human capital efficiency.

The structural capital of a firm refers to its company culture, working environment, databases, organizational processes, and innovation capital. Prior studies suggest that firm innovation is significantly affected by government policies (Laux & Stocken, 2018; Mayer et al., 2018). Thus, government connections provide firms with a special kind of social network that affects the innovation strategies of firms. Government connections signal that a firm has government backing and protection. Claessens et al. (2008) argue that government connections can affect policy formulation, making it firm-specific. Similarly, Correia (2014) shows that firms with government connections are less likely to face SEC (Securities and Exchange Commission) enforcement actions, and, when they do, they receive lower penalties. Su et al. (2019) indicate that government-connected firms have more innovation. Thus, innovation-related investment requires substantial resources and expertise. Political connections give firms more resources for facilitating innovation activities. Additionally, these firms can use these connections to quickly recognize market trends and to gain a competitive advantage. Thus, this study hypothesizes the following relationship:

Hypothesis 4: Ex-bureaucrats on the boards of banks positively affect their structural capital efficiency.

5. Research Design

5.1. Sample Selection

This study focuses on private banks in Turkiye to investigate the association between ex-bureaucrats on their boards and IC efficiency. The sample covers a fourteen-year period from 2005 to 2018. Twenty-eight banks and 344 observations are employed to test the hypotheses. As of the end of 2018, the Turkish bank industry comprised 47 banks. Participant banks are excluded because they have more homogeneous data. Several foreign banks have only one branch in Turkiye, so they are excluded from the sample. Some banks are under the control and management of the Saving Deposit Insurance Fund of Turkiye, and they are also excluded from the sample because the directors and managers of these banks can be determined by this fund. Some banks are government owned, and they are excluded from the sample as well, because this ownership makes them disproportionately likely to have ex-bureaucrats or incumbent bureaucrats on the board of directors, which may lead to biased results. Some banks are omitted because, despite searching for these reports on their website or the website of the Public Disclosure Platform of Turkiye, we could not access their corporate governance reports or annual reports. In addition, data on several characteristics and demographics for the board of directors of banks and some of our variables employed to measure IC efficiency or control variable are not readily available.

To calculate IC efficiency, we use data from the website of the Banks Association of Turkiye. The control variables (e.g., bank age, bank assets, leverage) at the bank level are obtained from the statistical reports on the website of the Banks Association of Turkiye. We also obtained information on whether a bank is listed on Borsa Istanbul from the website of the Banks Association of Turkiye. Information regarding the variable of interest and control variables at bank board level are obtained from the activity reports of banks. First, we gathered banks' annual activity reports. Then, we collected data on board members' demographics, such as

gender, education level, nationality, experience, and type of prior experience (i.e., bureaucratic experience, political experience), which were available for 3,329 directors. If these demographics were not accessible for a particular year, we omit that bank from the observations for that year. The sample selection procedure and the final sample are presented in Table 1, and the list of banks (31 banks) is in Appendix A.

5.2. Variable Measurement

5.2.1. Dependent Variable

The main dependent variable of interest is intellectual capital efficiency, measured by Pulic's (2000) value-added intellectual coefficient (VAIC). Numerous prior studies use this variable (Dalwai & Mohammadi, 2020; Ozkan et al., 2017; Shahzad et al., 2020) because it is easy to calculate and is consistent, which enables comparison between industries and countries (Madininos et al., 2011). The equation for VAIC is as follows.

$$\text{VAIC} = \text{CEE} + \text{HCE} + \text{SCE} \quad (1)$$

where

VAIC = value-added intellectual coefficient

CEE = efficiency of capital employed

HCE= efficiency of human capital

SCE = efficiency of structural capital

Total value-added (VA) is calculated as follows to measure these variables.

$$\text{VA} = \text{OP} + \text{EC} + \text{A} \quad (2)$$

OP is the operating profit of banks. EC is the employment cost of banks. A is the amortization and depreciation of banks. Total value added of banks (VA) is the sum of operating profit (OP), employment cost (EC), and amortization and depreciation (A). After calculating VA, we calculate each of its components.

First, capital employed efficiency (CEE) is measured as VA divided by the capital employed (CE) (i.e., the book value of assets) (Ozkan et al., 2017).

$$CEE = VA/CE \quad (3)$$

Second, human capital efficiency (HCE) is calculated as VA divided by the personnel expense of banks (HC).

$$HCE = VA/HC \quad (4)$$

Third, structural capital efficiency (SCE) is calculated as follows. Structural capital (SC) is the difference between VA and HC in Equation (5). Then, to calculate SCE, we divide SC by VA in Equation (6).

$$SC = VA - HC \quad (5)$$

$$SCE = SC/VA \quad (6)$$

The VAIC construct has been criticized in prior studies (Dzenopoljac et al., 2017; Habib & Dalwai, 2023; Ståhle et al., 2011; Vishnu & Kumar Gupta, 2014). For example, Ståhle et al. (2011) criticize the calculation of it using historical data from financial statements, which are

not the appropriate tool for long-term value creation. Dzenopoljac et al. (2017) argue that VAIC does not take into account the synergistic effect of tangible and intangible assets. Lastly, the SC components do not take into consideration relational and innovation capital (Nimtrakoon, 2015; Ståhle et al., 2011).

Alternative variable constructs have been proposed in prior studies to improve upon VAIC. For example, the modified VAIC (MVAIC) model was proposed by Ulum et al. (2014), however, it continued to be criticized for not incorporating the full scope of intellectual capital. The model's SC component would be efficient only if the efficiency of HC is low (Asutay & Ubaidillah, 2023). The adjusted VAIC (A-VAIC) model was proposed by Nadeem et al. (2019), however, Gupta et al. (2023) report that MVAIC has more detailed and precise results.

Thus, the results related to the various ICE constructs have been mixed. Soewarno and Tjahjadi (2020) report similar results for some of their hypotheses using VAIC and A-VAIC constructs and suggest that the IC measures needs to be improved in the future. Similarly, Pant and Nidugala (2022) report robust VAIC results using the MVAIC construct as an alternative measure. Despite the criticisms related to VAIC and the various other constructs proposed, the measure offers various advantages. For example, Iazzolino and Laise (2013) argue that VAIC as a construct is intended to measure the value of the investment in IC based on the accounting concept of value added. Shaban and Kavida (2013) summarize the VAIC advantages, saying that it is neutral to firm size, a quantitative measure that is easy to calculate and increases comparability between firms. Therefore, because of the lack of consensus in prior studies, continued gaps in various measures, and associated advantages, this study uses VAIC as a proxy for IC.

5.2.2. Test Variables

Two variables of interest are employed to test the hypotheses. First, *%Bureaucrat* is the percentage of ex-bureaucrats on the board, measured as the total number of ex-bureaucrats on

the board divided by the total number of directors of a given bank. Second, *LnBureaucratYear* is the logarithmic value of the mean value of the number of years of work experience of ex-bureaucrats at a government agency.³ Studies by Kang and Zhang (2017) and Awasthi and George (2021) measure an ex-bureaucrat's experience in this manner and use these variables as test variables when they investigate the effect of ex-bureaucrats on firm value.

In the current study, ex-bureaucrats are identified as those who formerly worked at government agencies, such as the Undersecretariat of the Treasury, Ministry of Finance, Ministry of Labor, Tax Inspector Board (for more detailed information on the government agencies at which ex-bureaucrats work and on their positions at those agencies, see Appendix B). Awasthi and George (2021) discuss the differences between politicians and bureaucrats in the Indian context. The following discussion focuses on the differences between ex-politicians and ex-bureaucrats and the differences in their effects in the Turkish setting.

To test our hypotheses, we do not consider ex-politicians affiliated with a political party directors with government experience, only former bureaucrats. The underlying rationale is as follows: politicians are elected (Awasthi & George, 2021) whereas bureaucrats—such as accounting specialists, former tax inspectors, former sworn auditors, former chief deputies, and former general secretaries in our sample—are appointed through a government-run examination, and appointment to these bureaucratic positions also depends on scores achieved on national exams (KPSSY, 2002). These exams cover a broad range of subjects, such as law, labor economics, economics, public finance, accounting, finance, international relations, business management, and statistics. Those appointed to these bureaucratic positions at a

³ For example, the board of directors of bank A consists of five members, of which two have bureaucratic experience. One has twenty-five years of bureaucratic experience, and the other has five years of bureaucratic experience. The mean of the two former bureaucrats' experience (*BureaucratYear (Raw)*) is ten years ($15 + 5 = 20/2 = 10$). *LnBureaucratYear* for bank A is the logarithm of this mean.

government agency must have sufficient knowledge of these subjects and receive high scores in them. By contrast, politicians are elected, not appointed. They do not need to prove their proficiency with an exam on certain subjects, such as law, labor economics, economics, public finance, accounting, finance, international relations, business management, and statistics, in order to be elected. According to the corporate governance principles of banks in Turkiye (BKYIY, 2011), board members should not be assigned to positions for which they lack the necessary knowledge and skills. Because bureaucrats are more likely than politicians to be educated and competent in these specific subjects, ex-bureaucrats on the board on ICE have a more appropriate effect (Awasthi & George, 2021).

Although bureaucrats such as those mentioned have an ongoing career, politicians' careers are temporary. These differences lead to difference in the benefits of their work, such as long career experience, managerial experience, and networks (Awasthi & George, 2021). For example, politicians might not have long experience compared to those in bureaucratic positions, such as those listed earlier. Parliamentary elections are held every five years in Turkiye, as set down by the Supreme Election Council of the Turkish Republic (YSK, 2022). When an election is held, there is always the possibility that a politician will not be re-elected. Because politicians are held accountable by voters, the relevant measure of politicians' performance is voters' utility. If politicians do not maximize voters' utility, they are not re-elected (Alesina & Tabellini, 2007). However, after bureaucrats are appointed to those positions at government agencies, they might be promoted to high positions at these agencies, such as undersecretary, vice-president, and general secretary. Thus, they can accumulate a variety of experience in those bureaucratic positions until they retire. Bureaucrats are likely to have longer experience than politicians.

Whereas politicians do not need to have higher education degrees to be elected (Parliamentary Election Law of Turkiye, 1983), bureaucrats must have a bachelor's degree to be appointed to

a government agency (Regulation 2002/3975, 2012). According to the latest statistics by the Supreme Election Council of Turkiye (2018), only 62.01 percent of the politicians have bachelor's degrees. Recent studies show that higher education makes people more competent, qualified, and productive (Velasco, 2014). Because bureaucrats are more likely than politicians to have higher education, they are expected to be more suitable for board membership and more likely to fulfill their responsibilities, such as effectively guiding bank activities.

Whereas politicians' ties might comprise a network only of other politicians, bureaucrats' ties include networks of other bureaucrats and politicians (Awasthi & George, 2021). As stated earlier, bureaucratic positions at a government agency, unlike political positions, are permanent. When politicians are not re-elected, or the political party to which the politicians belong loses power, they might lose their connections because political parties with different political views or opposition parties could come to power. Thus, politicians can lose their political power, and when that happens, their connections will be limited to their own political circle. By contrast, the Civil Servants Law of Turkiye forbids membership by bureaucrats in any political party (DMK, 1965). As a result, even if the political climate in the country or the political party in power changes, bureaucrats do not lose their connections.

5.2.3. *Control Variables*

Even though we investigate the effect of ex-bureaucrats on ICE efficiency, the percentage of ex-politicians on the board is also controlled for. Related literature generally combines ex-bureaucrats and ex-politicians in a single variable (Fuller & Bart, 2015; Hillman, 2005). Our hypotheses are related to the effect of ex-bureaucrats on the ICE of banks. However, we added the percentage of ex-politicians on the board and their political experience as two control

variables.⁴ Thus, we can see the effects on the ICE of banks of ex-politicians on the board for comparison.

This study also employs the most commonly used control variables in IC efficiency research. Nadeem et al. (2019) and Mooneepen et al. (2022) state that gender-diverse boards enhance IC efficiency and that having female board members increases firm value and creates a competitive advantage. They argue that this is because females are more efficient at using firms' IC resources by enhancing board monitoring (Shahzad et al., 2020) and improving communication channels with employees and third parties, such as customers (Lucas-Pérez et al., 2015). Al-Musali and Ismail (2015) demonstrate that board diversity in terms of education levels has a positive effect on IC performance because board educational diversity reflects boards' varying degrees of knowledge and skills. Diversity in education levels among board members may influence board capacity and make boards more flexible about adopting new ideas and accept innovative properties. According to Talke et al. (2010), directors with diverse education backgrounds can enhance strategic decision-making regarding a firm's innovative strategy as a result of their ability to combine different perspectives. Thus, directors with diverse education backgrounds focus on innovative fields. We control for boards' tenure in the study. According to Livnat et al. (2021), although long tenure demonstrates that a bank's parties are satisfied with the director, it also indicates effective monitoring of boards. In this study, we control not only for board overall tenure but also for ex-bureaucrats' tenure and ex-politicians' tenure (short tenure) because short tenure may be more (dis)advantageous than long tenure

⁴ When the percentage of ex-bureaucrats (the experience of ex-bureaucrats) is used as the test variable, we employ the percentage of ex-politicians (the experience of ex-politicians) as the control variable.

(Huang & Hilary, 2018; Sun & Bhuiyan, 2020). We control for whether the tenure of ex-bureaucrats and ex-politicians is less than two years.⁵

Large boards are more likely to comprise a variety of skilled directors and to have access to critical sources in their environment (Asare et al., 2021). People who have diverse education, gender, or experience are more likely to sit on the boards; thus, large boards can be effective in using IC efficiently and making more investment in IC (Appuhami & Bhuyan, 2015). Board members' overall experience reflects their expertise in the field, and experienced directors have valuable experience in different situations. Experience enables directors to find solutions to unusual problems. This leads them to monitor efficiently and to make strategic decisions related to enhancement of IC efficiency (Berezinets et al., 2016). The underlying rationale for using board members' overall experience as a control variable is that bank directors gain experience working in a variety of industries. For example, directors may have been promoted to their current position by working at the lowest level at the bank. Similarly, a lawyer may be on a bank board to address legal issues or be consulted about them. Thus, there might be a relationship between boards' overall work experience and IC efficiency. The control variables comprise not just those at the bank board level but some bank-level characteristics.

The effect of bank characteristics (e.g., bank performance, bank leverage, and bank age) on IC efficiency has also been discussed in the related literature (Kweh et al., 2019; Liu & Wong, 2011; Maditinos et al., 2011; Mitchell Williams, 2001; Morariu, 2014; Nawaz et al., 2021; Ozkan et al., 2017; Reboredo & Sowaity, 2022; Reed et al., 2006; Shahveisi et al., 2017). Firm age reflects firm experience in the market (He et al., 2022), and knowledge creation depends

⁵ For example, if bank A has an ex-bureaucrat (ex-politician) on the board with tenure of 1 year, then, the ex-bureaucrat's tenure (politician's tenure) is coded as 1; otherwise, 0. If bank B has two ex-bureaucrats (ex-politicians) on the board with tenure of 1 and 2 years, respectively, then, ex-bureaucrats' tenure (politician's tenure) is coded as 1; otherwise, 0, because the average value of their tenure ($(1 \text{ year} + 2 \text{ years}) / 2$) is less than 2 years.

on the age of the firm, thus IC efficiency could be affected by a firm's age (Reed et al., 2006). The higher performance of firms might push them to invest in IC to maintain their value. In other words, high firm performance has higher IC, and vice versa (Appuhami & Bhuyan, 2015; Ozkan et al., 2017). Large firms can be more efficient in innovation as they have a lower cost of research and development activities (Hsu & Sabherwal, 2012; Riahi-Belkaoui, 2003). Leverage is also employed as a firm-level control variable because recent studies demonstrate that leverage has an impact on IC efficiency (Dalwai & Mohammadi, 2020; Shahzad et al., 2020). Listed banks are more visible and have more analysts following them than their unlisted counterparts. This issue puts them under more pressure to perform well in terms of intangible capital performance (Kılıç & Kuzey, 2019; Mitchell Williams, 2001; Nawaz et al., 2021). Institutional ownership is also controlled for in the current study. Institutional owners make up a large group of shareholders and invest a considerable portion of their funds. Therefore, they monitor managers effectively to improve IC efficiency because of its vital importance for firms (Shahveisi et al., 2017). Another proxy for the ownership structure of banks is foreign ownership. Foreign banks may transfer their IC to their subsidiaries. Thus, they have an advantage over local banks (Riahi-Belkaoui, 2003). We also control for bank types in the study, because the type of IC component may differ (Dalwai & Mohammadi, 2020). Our sample covers two main types of banks (bank type fixed effect): deposit banks and investment banks. Finally, years are controlled for because of the unobservable time effect (the variables in the study are measured in Table 2). In addition, banks and types of banks (foreign, investment, and deposit) are controlled for in the model because of the unobservable fixed effects (bank fixed effect, bank type fixed effect).

5.2.4. *Model Specification*

First, we use ordinary least squares (OLS) regression, and, then, we use an instrumental variable regression with two-stage least squares (IV-2SLS) to mitigate potential endogeneity and reverse causality concerns. The main estimation model is as follows.

$$\begin{aligned}
 ICE_{it} \text{ (VAIC, CEE, HCE, or SCE)} = & \beta_0 + \beta_1 \% \text{Bureaucrat}_{it} \text{ (or } \text{LnBureaucratYear}_{it}) + \\
 & \beta_2 \% \text{Politician}_{it} \text{ (or } \text{LnPoliticianYear}_{it}) + \beta_3 \text{LnBoardOverallExp}_{it} + \beta_4 \text{BoardGender}_{it} + \\
 & \beta_5 \% \text{BoardEdu}_{it} + \beta_6 \text{LnBoardSize}_{it} + \beta_7 \text{BoardTenure}_{it} + \beta_8 \text{ShortTenure_Bureaucrat}_{it} + \\
 & \beta_9 \text{ShortTenure_Politician}_{it} + \beta_{10} \text{LnBankAge}_{it} + \beta_{11} \text{LnBankSize}_{it} + \beta_{12} \text{Listing}_{it} + \beta_{13} \text{BankROE}_{it} \\
 & + \beta_{14} \text{Leverage}_{it} + \beta_{18} \text{InstOwn}_{it} + \beta_{19} \text{Foreign}_{it} + \text{Year Fixed} + \text{Bank Fixed} + \text{Bank Type} \\
 & \text{Fixed} + \text{Error Term} \tag{7}
 \end{aligned}$$

%Bureaucrat and *LnBureaucratYear* are positively and significantly associated with the IC efficiency of banks (VAIC) and its components (CEE, HCE, SCE) (the variables are measured in Table 2).

6. Estimation Results

6.1. Descriptive Statistics, Univariate Analysis, and Correlation Matrix

Table 3 presents the descriptive statistics for the variables. The mean values of the variables for bank boards with an ex-bureaucrat are compared with the mean of variables of bank boards with no ex-bureaucrats in Table 4. Table 5 gives the correlation matrix for the variables.

The average value VAIC score is 3.555, and the mean HCE score (2.964) is the highest among the VAIC components. The mean VAIC score is very close to the mean obtained (3.886) by Ozkan et al. (2017), who investigate the relationship between IC efficiency and the financial performance of banks in Turkiye between 2005 and 2014. In addition, our results indicate that

banks in Turkiye use HC efficiently to maintain their value, which is consistent with the results by Dalwai and Mohammadi (2020) about Oman's financial sector.

The mean percentage of ex-bureaucrats on the bank boards (*%Bureaucrat*) is 6.7. On average directors with bureaucratic experience (*BureaucratYear*) have 7.727 years of experience. The logarithmic mean (*LnBureaucratYear*) is 1.136.

Among the control variables for bank boards, the mean of *%BoardFemale* and *%BoardEdu* is 9.4 percent and 46.3 percent, respectively. We find a lower average *%BoardFemale* than Nadeem et al. (2019) and Shahzad et al. (2020), who investigate the relationship between board gender diversity and IC efficiency in two developed countries, the United Kingdom and the United States. The average board size of banks (*BoardSize*) is 8.95, and the logarithmic mean (*LnBoardSize*) is 2.162, higher than the values found by Dalwai and Mohammadi (2020) and Asare et al. (2020). The mean of directors' overall experience (*BoardOverallExp*) is 29.12 years, and the logarithmic mean (*LnBoardOverallExp*) is 3.357. Also, we control for ex-politicians on the banks of boards in the study. The mean value of the percentage of ex-politicians on the banks' of board (*%Politician*) is 5.1. The average value of the experience of directors with political experience (*PoliticianYear*) is 1.890 years, and the logarithmic mean (*LnPoliticianYear*) is 0.548. The average board tenure (*BoardTenure*) is 4.18 years. The mean ex-bureaucrats' tenure (*ShortTenure_Bureaucrat*) and ex-politicians' tenure (*ShortTenure_Politician*) are 8.7 percent and 6.3 percent, respectively.

Among the control variables for bank characteristics, the mean bank age (*BankAge*) is 48.62 years, and the logarithmic value (*LnBankAge*) is 3.535. This result indicates that banks in Turkiye are older than the banks studied by Dalwai and Mohammadi (2020). Banks' ROE (*BankROE*) and bank leverage (*Leverage*) have a mean of 0.113 and 0.511, respectively. Among the observations in the sample, 63.9 percent are listed on the Borsa Istanbul or a foreign

stock market (*Listed*). The mean logarithmic bank size (*LnBankSize*) is 10.34. The average share of institutional owners (*InstOwn*) is 83.7 percent.

Table 4 compares the mean of the two samples—boards with no ex-bureaucrat vs. boards with ex-bureaucrat—showing that the latter group (*BureaucratDummy* = 1) makes up 42.7 percent of the observations. The most notable point in the results is that the mean VAIC, HCE, CEE and SCE are statistically higher for boards with an ex-bureaucrat than for boards with no ex-bureaucrats. In the comparison of the two groups in terms of the characteristics of bank boards, the average board size (*BoardSize*) and overall board experience (*BoardOverallExp*) is higher in the sample of boards with an ex-bureaucrat than the sample with no ex-bureaucrats.

Table 5 gives the Pearson correlation coefficient matrix of the variables, showing the absence of high correlation among the variables, which would lead to multicollinearity problems. CEE, HCE, and SCE are regressed separately because each of them is a component of VAIC.

6.2. Main Results (OLS Results)

The OLS estimation model for 344 observations examining the association between ex-bureaucrats on bank boards and IC efficiency are presented in Table 6. The *F*-statistics for all the results are significant at the 1 percent level, and their explanatory power is generally greater than 54.9 percent, except for SCE.

%Bureaucrat is significantly and positively related to IC efficiency (VAIC, CEE, HCE, and SCE) (coefficients: 3.466, 0.040, 2.911, and 0.752), which means that more directors with bureaucratic experience on the boards of banks (*%Bureaucrat*) are likely to take more action to enhance IC efficiency. In addition, longer tenure at a government agency (*LnBureaucratYear*) makes ex-bureaucrats more capable of raising the IC efficiency in terms of VAIC, CEE, HCE, and SCE (coefficients: 0.231, 0.003, 0.185, and 0.045, all of which are statistically significant).

The results demonstrate that ex-bureaucrats on boards improve the IC efficiency of banks and its components through providing valuable connections and special networks (Hillman, 2005; Kang & Zhang, 2017)), increasing the talent pool to add value in terms of human capital (Al-Musali & Ismail, 2015), and being better informed by lawmakers and government agencies (Díaz-Díaz et al., 2022). As Dalwai and Mohammadi (2020) state, the presence of ex-bureaucrats on boards as a corporate governance mechanism affects IC efficiency because businesses receive preferential treatment, such as tax relief, have easier access to financial and government resources, and minimize overall risks, due to potential government connections.

We add the percentage and the experience of ex-politicians in the estimation model to provide a comparative analysis, in testing the effect of the percentage and experience of ex-bureaucrats on ICE. *%Politicians* is significantly and positively associated with IC efficiency, except for SCE (coefficients: 2.113 for VAIC, 0.030 for CEE, and 1.633 for HCE). *LnPoliticianExp* is insignificantly (except for CEE, whose coefficient is 0.002) related to IC efficiency. These results demonstrate that former politicians are not as effective as former bureaucrats in increasing the IC efficiency of banks. As Awasthi and George (2021) state, ex-bureaucrats have some advantages over ex-politicians, such as unlimited/uninterrupted networks consisting only of other politicians, experience in government activities, and more education.

Even though former bureaucrats on boards enhance the IC efficiency of banks in Turkiye, the logarithmic value of the mean number of years of work experience of directors, in other words, the board's overall experience, generally has a negative, but insignificant effect on the IC efficiency of banks. The possible explanation for this effect is that a board's overall experience also includes the experience of the directors in different industries, and a variety of experience in different industries does not have a positive effect on IC efficiency. *%BoardEdu* generally has a positive and significant link to IC efficiency and its components when the variable of interest is *%Bureaucrat*. According to Al-Musali and Ismail (2015) and Talke et al. (2010),

board education diversity reflects boards' varying degrees of knowledge and skills, and educated boards may adopt new ideas and focus on innovative fields.

BankROE is positively and significantly related to IC efficiency, except for SCE. High performance has higher IC efficiency because banks try to maintain their value (Appuhami & Bhuyan, 2015; Ozkan et al., 2017). *BankSize* positively and significantly affects IC efficiency, except for CEE. Large banks may have greater economies of scale in R&D than small banks, therefore, large banks use IC investment more efficiently (Hsu & Sabherwal, 2012). The results are mixed for some variables, such as *LnBoardSize*, *Leverage*, *Foreign*, *InstOwn*, *Listing*, and *LnBoardSize*. No significant associations are seen between IC efficiency and *%BoardFemale*, *LnBankAge*, *LnBoardTenure*, *ShortTenure_Bureaucrat*, *ShortTenure_Politician*, and *Listing*. *Board female percentage*, *bank age*, *all types of tenure*, *listing*, and *board size* do not affect the IC efficiency of banks.

6.3. IV-2SLS

The research on the relationship between IC and corporate governance always suffers from the potential problem of endogeneity (Dalwai & Mohammadi, 2020; Nadeem et al., 2019). To address potential endogeneity, this paper uses an instrumental variable regression with two-stage least squares (IV-2SLS). These variables (instruments) should be correlated with the variables of interest (*%Bureaucrat* and *LnBureaucratYear*) but not the dependent variables (*VAIC*, *CEE*, *SCE*, and *HCE*). We employ two instruments in the first stage of IV-2SLS. Recent studies employ similar types of instruments (Ling et al., 2016; Masulis et al., 2012). Ankara is Turkiye's official capital. Class A bureaucrats (see Appendix B) and politicians live there while performing civil service because most government agencies are located in the city. The first instrument is the logarithmic value of the distance (kilometers) between the location of a bank's headquarters and Ankara (*AnkaraCity*). To calculate the geographic distance, we used Google

Maps. First, we found the addresses of the bank headquarters on their websites. We set these addresses as the starting points on Google Maps, and the center of Ankara as the destination. The logarithmic value of the distance (kilometers) between the starting point (bank headquarters) and the destination (the center of Ankara) is the second IV. The second instrument is the logarithmic value of the number of board members (*LnBoardSize*). The results in the correlation matrix demonstrate that IVs are not correlated with the dependent variables (*VAIC*, *CEE*, *SCE*, and *HCE*) but are correlated with the variables of interest (see Table 5). We use this IV in the first stage because the board characteristics can be instrumented by the bank's geographic location (Wahid, 2019). Banks whose headquarters are farther from Ankara are less likely to have a former bureaucrat on their board. The reason for employing the number of board members as an IV is that larger boards are likely to have more ex-bureaucrats as members. Table 8 presents the results of IV-2SLS. The Sargan and Basman tests are insignificant throughout, indicating that the instruments are valid. The Durbin and Wu-Hausman test results are statistically significant, which means that no exogeneity is found. R^2 is not useful, therefore, we do not report it in the IV-2SLS results, but they are generally in accordance with the OLS estimation. Ex-bureaucrats on bank boards clearly have a positive effect on IC efficiency and its components after endogeneity concerns are addressed (coefficients for *%Bureaucrat*: 10.81, 0.181, 9.158, and 1.706; for *LnBureaucratYear*: 3.288, 0.051, 2.915, and 0.393).

6.4. Additional Analysis (Combined Effect of Directors with Government Experience on ICE)

Recent studies have combined the effect of ex-bureaucrats and ex-politicians on the outcome at various companies (Agrawal & Knoeber, 2001; Fuller & Bart, 2015; Hillman, 2005). In Turkey, appointment to these kinds of high-level positions, such as a directorship or CEO, might be merit based. Thus, we combine ex-bureaucrats and ex-politicians as former government officials (*%Govern*). *%Govern* is the percentage of ex-bureaucrats and ex-

politicians on bank boards. This is first alternative variable for government experience. The second is the logarithmic value of the mean of the number of years of work experience of directors as ex-politicians or ex-bureaucrats (*LnGovernYear*). Finally, we combined the short-tenure variables (*ShortTenure_Bureaucrat*, *ShortTenure_Politician*) into a single variable. *ShortTenure* equals 1 if the average value of the tenure of ex-politicians and ex-bureaucrats is less than two years, and 0 otherwise. The results are presented in Table 8.

The significance and the sign of the coefficient for *%Govern* and *LnGovernYear* are in line with those for *%Bureaucrat* and *BureaucratYear*. In addition, these results demonstrate that the impact on IC efficiency is greater when ex-bureaucrats and ex-politicians are on bank boards at the same time than with solely ex-bureaucrats on the board.

7. Conclusion and Implications

This paper examines the effect of having ex-bureaucrats on bank boards on banks' IC efficiency. To proxy for intellectual capital efficiency, we use value-added intellectual coefficient (VAIC) (Pulic, 2000), which is made up of three components: the efficiency of capital employed (CEE), the efficiency of human capital (HCE), and the efficiency of structural capital (SCE). We use two variables, the percentage of former bureaucrats on bank boards and their prior experience at government agencies, to test our four hypotheses, with a sample comprising 304 bank-year observations. These hypotheses are constructed based on resource dependence theory, and they are tested through several statistical methods. First, we use OLS, followed by an IV-2SLS method to mitigate any potential endogeneity problems.

Our findings of the paper show that the percentage of ex-bureaucrats on bank boards has a positive and significant impact on IC efficiency and its components (CEE, HCE, and SCE). In addition, IC efficiency and its components (CEE, HCE, and SCE) increase with greater prior experience at government agencies by ex-bureaucrat board members. The results remain

unchanged to our use of an IV-2SLS method to deal with endogeneity problems. The results indicate that the resource dependence theory can explain the relation between ex-bureaucrats on bank boards and IC efficiency, which suggests that former bureaucrats might have a seat on the boards to enhance IC efficiency. The coefficients of the control variables for ex-politicians are not significant. However, combining the variables for ex-bureaucrats and ex-politicians into one variable yields stronger results.

Our study contributes to the existing literature by offering insight into the effects of ex-bureaucrats on IC efficiency and its components, employing resource dependence theory, with a sample of banks in Turkiye. These findings can have important implications for policy makers and bank governance. Banks should consider the inclusion of former civil servants on their boards when selecting their membership. The corporate governance principles of banks in Turkiye would do well to increase diversity in terms of board members' prior experience. Ex-bureaucrats on bank boards can provide this diversity because of their bureaucratic experience (Awasthi & George, 2021).

This study has a few limitations. First, the most important is that the sample is small and covers only one country. So future studies on ICE and ex-bureaucrats should consider cross-country samples. Second, the sample covers only banks. Future research should examine a similar topic with samples of nonfinancial firms or financial firms other than banks. In addition, future research should increase the sample period considered. VAIC is a construct, a quantitative measure of investment in intellectual capital, and suffers from certain limitations. Future studies could use a content analysis of annual reports to measure the intellectual capital of firms or, alternatively, gather data from questionnaires distributed to firms. Our observations show that many directors have prior experience at tax and tax-related government agencies, so they have in-depth knowledge of related issues. Further research could also investigate the relationship of these directors with tax evasion, tax avoidance, and tax aggressiveness.

Third, a limitation arises regarding the IV-2SLS model. To run this model, we employed two IVs, *AnkaraCity* and *LnBoardSize*, and explained our rationale for doing so. Even though the post-estimation results pass the Sargan, Durbin, and Wu tests, our determination of the correct instruments might be biased. Hence, the IVs may not be satisfactory, so the results from the IV model may also be insufficient. Further research should employ alternative IVs in an IV-2SLS model.

Finally, our sample covers data up to 2018. In 2018 Turkiye changed its political regime from a parliamentary system to a presidential system, which may have affected the appointment to boards, particularly the boards of listed banks, in a way that is largely political. This issue could have affected the ICE of banks.

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Table 1. Sample Selection

<i>Panel A. Sample Selection and Final Sample</i>															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Total number of banks	48	47	47	46	46	46	45	45	45	47	47	47	47	47	650
Foreign banks that open branches in Turkiye	7	7	7	6	6	6	6	6	5	6	6	6	5	5	84
Government-owned	2	3	3	3	3	3	3	3	3	3	3	3	3	3	41
Under the control of fund	1	1	1	1	1	1	1	1	1	1	1	1	1	2	15
Missing corporate governance (CG) reports and CG variables	25	19	18	14	13	10	9	9	9	9	9	7	7	8	166
Final Sample	13	17	18	22	23	26	26	26	27	28	28	30	31	29	344
<i>Panel B. Final Sample by Year and Bank Type</i>															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Deposit	12	16	17	19	19	21	21	21	22	23	23	25	26	24	289
Development and investment	1	1	1	3	4	5	5	5	5	5	5	5	5	5	55
Total	13	17	18	22	23	26	26	26	27	28	28	30	31	29	344

Table 2. Variable Measurement

Variable	Measurement	References	Source
<i>VAIC</i>	Defined in Section 5.2.1.	Ozkan et al. (2017), Dalwai and Mohammadi, (2020), Pulic (2000)	Bank Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59/
<i>CEE</i>			
<i>HCE</i>			
<i>SCE</i>			
<i>%Bureaucrat</i>	Percentage of ex-bureaucrats on the boards of banks	Awasthi and George (2021), Kang and Zhang (2017)	Bank activity reports; see Appendix A
<i>LnBureaucratYear</i>	Logarithmic value of the mean value of the number of years of working experience of ex-bureaucrats in a government agency	Awasthi and George (2021), Kang and Zhang (2017)	Bank activity reports; see Appendix A
<i>%Politician</i>	Percentage of ex-politicians on the boards of banks. Ex-politician is defined as a director who served as a parliamentarian, a ministry, or a political party member	Fuller and Bart (2015), Hillman (2005)	Bank activity reports; see Appendix A
<i>LnPoliticianYear</i>	Logarithmic value of the mean value of the number of years of working experience of directors as ex-politicians	Fuller and Bart (2015), Hillman (2005)	Bank activity reports; see Appendix A
<i>BoardGender</i>	Measured as the total number of female members in the boards of banks divided by the total number of members of boards of banks	Nadeem et al. (2019), Mooneeapen et al. (2022), Shahzad et al. (2020)	Bank activity reports; see Appendix A

<i>BoardEdu</i>	Measured as the total number of members with masters' or PhD degrees in the boards divided by the total number of members of boards	Musali and Ismail (2015), Talke et al. (2010)	Bank activity reports; see Appendix A
<i>LnBoardOverallExp</i>	Logarithmic value of the mean value of the number of years of working experience of directors in their working life	Berezinets et al. (2016)	Bank activity reports; see Appendix A
<i>BoardSize</i>	Measured as the natural logarithmic value of the number of directors	Asare et al. (2021)	Bank activity reports; see Appendix A
<i>BoardTenure</i>	Natural logarithm of the average value of board members' tenure (total years of each board member tenure/total number of board members)	Livnat et al. (2021)	Bank activity reports; see Appendix A
<i>ShortTenure_Bureaucrat</i>	Equals 1 if the average value of tenure of ex-bureaucrats is lower than 2 years, 0 otherwise (average value of tenure of ex-bureaucrats = total years of ex-bureaucrats' tenure/Total number of ex-bureaucrats)	Huang and Hilary (2018), Sun and Bhuiyan (2020)	Bank activity reports; see Appendix A
<i>ShortTenure_Politician</i>	Equals 1 if the average value of tenure of ex-politicians is lower than 2 years, 0 otherwise (average value of tenure of ex-politicians = total years of ex-politicians' tenure/total number of ex-politicians)	Huang and Hilary (2018), Sun and Bhuiyan (2020)	Bank activity reports; see Appendix A
<i>BankAge</i>	Natural logarithmic value of years since the formation	He et al. (2022), Reed et al. (2006)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>BankROE</i>	Performance proxy of the banks, and it is the ratio of net profit (loss) to equity capital	Appuhami and Bhuyan, (2015), Ozkan et al. (2017)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>LnBankSize</i>	Calculated as the logarithm of the total assets of a bank	Hsu and Sabherwal (2012), Riahi-Belkaoui (2003)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>Leverage</i>	Ratio of book value of total debt and total assets	Dalwai and Mohammadi (2020), Shahzad et al. (2020)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>Listing</i>	Equals 1 if a bank in the sample is listed in borsa istanbul or foreign capital market, zero otherwise	Kılıç and Kuzey (2019), Mitchell Williams (2001), Nawaz et al. (2021)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>InstOwn</i>	Percentage of institutional owners	Shahveisi et al. (2017)	Bank activity reports; see Appendix A

<i>Foreign</i>	Equals 1 if the bank is foreign, zero otherwise	Rihai-Belkaoui (2003)	Banks Association of Turkiye https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59
<i>AnkaraCity</i>	Logarithmic value of the distance (kilometers) between the location of a bank's headquarters and the capital of Turkiye	Masulis et al. (2012), Ling et al. (2016)	Google Maps https://www.google.com/maps

Table 3. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
VAIC	344	3.555	2.156	-4.494	13.05
CEE	344	0.037	0.028	-0.102	0.279
HCE	344	2.964	1.940	-5.570	11.86
SCE	344	0.553	0.418	-2.424	4.117
BureaucratDummy	344	0.427	0.495	0	1
%Bureaucrat	344	0.067	0.099	0	0.571
BureaucratYear (Raw)	344	7.727	10.31	0	39
LnBureaucratYear	344	1.136	1.390	0	3.663
%Politician	344	0.051	0.087	0	0.444
PoliticianYear (Raw)	344	1.890	3.758	0	19
LnPoliticianYear	344	0.548	0.891	0	2.995
BoardOverallExp (Raw)	344	29.12	4.674	16.33	39.83
LnBoardOverallExp	344	3.357	0.169	2.793	3.684
%BoardFemale	344	0.094	0.097	0	0.5
%BoardEdu	344	0.463	0.203	0	1
BoardSize (Raw)	344	8.959	2.111	5	14
LnBoardSize	344	2.162	0.251	1.609	2.639
BoardTenure (Raw)	344	4.183	1.872	1	9.660
LnBoardTenure	344	1.317	0.506	0	2.267
ShortTenure_Bureaucrat	344	0.087	0.282	0	1
ShortTenure_Politician	344	0.063	0.245	0	1
BankAge (Raw)	344	48.62	36.83	1	155
LnBankAge	344	3.535	0.944	0	5.043
LnBankSize	344	10.34	3.085	4.330	18.20
Listing	344	0.639	0.480	0	1
BankROE	344	0.113	0.132	-1.786	0.396
Leverage	344	0.511	0.251	0.001	0.853
InstOwn	344	0.837	0.201	0.393	1
Foreign	344	0.343	0.475	0	1
AnkaraCity (Raw)	344	426.5	88.00	3	454
AnkaraCity	344	5.893	0.989	1.098	6.118

Table 4. Univariate Analysis

Variable	(0) Mean Obs = 197	(1) Mean Obs = 147	T-Test (Mean comparison)
VAIC	2.963	4.348	-6.20***
CEE	0.035	0.040	-1.45*
HCE	2.439	3.666	-6.09***
SCE	0.488	0.641	-3.40***
%Politician	0.048	0.054	-0.63
PoliticianYear (Raw)	1.390	2.561	-2.89***
LnPoliticianYear	0.437	0.697	-2.69***
BoardOverallExp (Raw)	28.39	30.11	-3.52***
LnBoardOverallExp	3.330	3.394	-3.53***
%BoardFemale	0.096	0.091	0.41
%BoardEdu	0.455	0.473	-0.77
BoardSize (Raw)	8.568	9.482	-4.06***
LnBoardSize	2.117	2.223	-3.98***
BoardTenure (Raw)	4.076	4.326	-1.22
LnBoardTenure	1.280	1.365	-1.55*
ShortTenure_Politician	0.050	0.081	-1.15
BankAge (Raw)	45.18	53.23	-2.01**
LnBankAge	3.470	3.621	-1.47*
LnBankSize	10.18	10.56	-1.15
Listing	0.581	0.738	-3.23***
BankROE	0.088	0.147	-4.12***
Leverage	0.538	0.475	2.31**
InstOwn	0.901	0.750	7.34***
Foreign	0.431	0.238	4.04***
AnkaraCity (Raw)	431.5	419.9	1.21
AnkaraCity	5.945	5.823	1.13

Notes: *0.10, **0.05, ***0.01. 0 = Boards with no ex-bureaucrat, 1 = Boards with ex-bureaucrat

Table 5. Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	1																							
2	0.51***	1																						
3	0.98***	0.51***	1																					
4	0.55***	0.19***	0.39***	1																				
5	0.29***	0.12*	0.28***	0.16**	1																			
6	0.32***	0.07	0.32***	0.17***	0.75***	1																		
7	0.18***	0.004	0.18***	0.11*	-0.01	-0.002	1																	
8	0.11*	-0.04	0.11*	0.08	0.06	0.10*	0.87***	1																
9	0.01	-0.07	0.01	-0.01	0.13*	0.25***	0.15**	0.14**	1															
10	-0.11*	-0.14**	-0.11*	-0.09	-0.06	-0.004	-0.17**	-0.12*	-0.02	1														
11	-0.09	-0.15**	-0.09	-0.05	0.11*	0.05	-0.21***	-0.12*	-0.06	0.15**	1													
12	0.11*	-0.04	0.12*	0.04	0.01	0.11*	0.001	0.01	0.35***	0.08	-0.16**	1												
13	-0.01	-0.08	-0.03	0.05	0.08	0.01	0.33***	0.39***	-0.02	-0.07	-0.09	-0.18***	1											
14	0.10	0.10	0.10*	0.01	0.21***	0.31***	0.08	0.11*	0.04	0.01	0.001	-0.20***	0.15**	1										
15	0.10*	-0.18***	0.11*	0.06	0.17**	0.08	0.28***	0.24***	0.10*	-0.02	-0.19***	0.24***	0.13*	-0.08	1									
16	0.05	-0.23***	0.01	0.18***	0.15**	0.006	0.12*	0.14**	-0.17**	-0.06	0.03	-0.12*	0.09	-0.05	0.42***	1								
17	0.06	-0.22***	0.05	0.07	0.01	0.10	0.08	0.18***	-0.18***	0.03	0.31***	-0.10	0.08	0.04	0.11*	0.33***	1							
18	0.54***	0.41***	0.56***	0.17**	0.25***	0.18***	0.07	0.04	0.03	-0.12*	-0.09	0.20***	-0.11*	0.04	0.20***	0.15**	0.04	1						
19	-0.42***	-0.40***	-0.43***	-0.14**	-0.01	-0.18***	-0.03	-0.001	-0.01	0.07	0.18***	-0.05	0.05	-0.08	0.26***	0.46***	0.27***	-0.04	1					
20	-0.25***	-0.09	-0.24***	-0.20***	-0.18***	-0.18***	-0.07	0.02	-0.15**	0.18***	0.44***	-0.19***	-0.07	-0.03	-0.28***	-0.18***	0.29***	-0.17**	0.15**	1				
21	-0.28***	0.01	-0.27***	-0.19***	-0.17**	-0.38***	-0.09	-0.11*	-0.09	0.05	0.24***	-0.20***	-0.16**	-0.05	-0.19***	-0.24***	-0.27***	-0.08	0.002	0.49***	1			
22	-0.30	-0.17	-0.28	-0.24	-0.22***	-0.20***	-0.18***	-0.06	0.02	0.26***	0.28***	-0.01	-0.17**	-0.04	-0.30***	-0.21***	-0.03	-0.16**	-0.03	0.47***	0.44***	1		
23	-0.03	-0.22	-0.03	-0.02	0.008*	0.17**	-0.09	-0.05	0.02	0.23***	0.13*	0.16**	0.01	0.04	0.24***	0.09	0.17**	-0.05	0.08	-0.06	-0.20***	0.04	1	

Notes: 1: VAIC, 2: CEE, 3: HCE, 4: SCE, 5: %Bureaucrat, 6: LnBureaucratYear, 7: %Politician, 8: LnPoliticianYear, 9: LnBoardOverallExp, 10: %BoardFemale, 11: %BoardEdu, 12: LnBoardTenure, 13: ShortTenure_Politician, 14: ShortTenure_Bureaucrat, 15: LnBankAge, 16: LnBankSize, 17: Listing, 18: BankROE, 19: Leverage, 20: Foreign, 21: InstOwn, 22: AnkaraCity, 23: LnBoardSize
* $p < 0.5$, ** $p < 0.01$, *** $p < 0.001$.

Table 6. Main Results (OLS Estimation)

Variables	(1) VAIC	(2) CEE	(3) HCE	(4) SCE	(5) VAIC	(6) CEE	(7) HCE	(8) SCE
Constant	-5.722 (4.154)	0.249*** (0.067)	-0.989 (3.461)	0.253 (0.596)	5.952*** (2.212)	0.294*** (0.066)	5.219*** (1.958)	0.529 (0.589)
%Bureaucrat	3.466*** (1.311)	0.040* (0.021)	2.911*** (1.092)	0.752** (0.363)				
LnBureaucratYear					0.231** (0.091)	0.003** (0.001)	0.185** (0.081)	0.0451* (0.024)
%Politician	2.113** (1.045)	0.030* (0.016)	1.633* (0.871)	0.302 (0.289)				
LnPoliticianYear					0.041 (0.110)	0.002* (0.001)	0.035 (0.097)	0.008 (0.029)
LnBoardOverallExp	-0.386 (0.587)	0.001 (0.009)	-0.446 (0.489)	0.032 (0.143)	-0.170 (0.567)	-0.003 (0.009)	-0.129 (0.502)	-0.023 (0.151)
%BoardFemale	-0.335 (0.829)	0.002 (0.013)	-0.601 (0.690)	-0.103 (0.232)	-0.074 (0.873)	0.0002 (0.01)	0.051 (0.773)	-0.110 (0.233)
%BoardEdu	5.734*** (1.572)	0.047* (0.025)	5.003*** (1.309)	0.590 (0.454)	2.184 (1.430)	0.045** (0.020)	1.850 (1.266)	0.319 (0.381)
LnBoardSize	-0.240 (0.476)	0.009 (0.007)	-0.300 (0.396)	0.013 (0.112)	-0.751* (0.403)	0.0061 (0.007)	-0.647* (0.356)	-0.070 (0.107)
LnBoardTenure	0.298 (0.194)	-0.002 (0.003)	0.209 (0.161)	0.039 (0.051)	-0.094 (0.198)	-0.002 (0.003)	-0.127 (0.175)	0.039 (0.052)
ShortTenure_Politician	-0.013 (0.258)	-0.003 (0.004)	-0.049 (0.215)	0.062 (0.101)	0.087 (0.404)	-0.002 (0.004)	-0.028 (0.358)	0.117 (0.108)
ShortTenure_Bureaucrat	0.025 (0.212)	0.003 (0.003)	0.079 (0.176)	-0.082 (0.084)	0.0182 (0.334)	0.001 (0.003)	0.0901 (0.295)	-0.078 (0.088)
LnBankAge	0.124 (0.395)	0.006 (0.006)	0.347 (0.329)	-0.035 (0.029)	0.201* (0.112)	0.006 (0.006)	0.230** (0.099)	-0.028 (0.029)
LnBankSize	0.591***	-0.015***	0.268*	0.035***	0.080**	-0.017***	0.044	0.036***

	(0.186)	(0.003)	(0.155)	(0.009)	(0.036)	(0.002)	(0.032)	(0.009)
Listing	0.297	-0.003	0.170	0.067	0.409*	-0.002	0.351*	0.065
	(0.412)	(0.006)	(0.343)	(0.060)	(0.231)	(0.006)	(0.204)	(0.061)
BankROE	6.266***	0.104***	6.164***	0.283	7.658***	0.105***	7.244***	0.316*
	(0.478)	(0.007)	(0.399)	(0.178)	(0.668)	(0.007)	(0.591)	(0.178)
Leverage	1.192*	0.016	0.805	-0.398***	-3.723***	0.019*	-3.357***	-0.346***
	(0.621)	(0.010)	(0.518)	(0.106)	(0.418)	(0.010)	(0.370)	(0.111)
Foreign	1.275	-0.043***	0.450	-0.099	-0.156	-0.044***	-0.048	-0.111
	(0.979)	(0.015)	(0.816)	(0.067)	(0.262)	(0.015)	(0.232)	(0.069)
InstOwn	-1.363	-0.013	-1.097	-0.038	-1.320**	-0.014	-1.323**	0.018
	(0.894)	(0.014)	(0.745)	(0.153)	(0.623)	(0.014)	(0.551)	(0.166)
Year Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Type Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	344	344	344	344	344	344	344	344
R-squared	0.850	0.769	0.871	0.157	0.549	0.772	0.564	0.154
F-statistic	27.29***	16.02***	32.63***	3.81***	24.69***	16.08***	26.16***	3.69***

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7. IV-2SLS

VARIABLES	(1) VAIC	(2) CEE	(3) HCE	(4) SCE	(9) VAIC	(10) CEE	(11) HCE	(12) SCE
Constant	4.003* (2.056)	0.102*** (0.037)	3.653** (1.741)	0.193 (0.554)	1.639 (4.833)	0.069 (0.094)	1.436 (4.306)	0.033 (0.891)
%Bureaucrat	10.81*** (2.990)	0.181** (0.092)	9.158*** (2.604)	1.706** (0.806)				
LnBureaucratYear					3.288* (1.699)	0.051 (0.044)	2.915* (1.514)	0.393* (0.218)
%Politician	3.184*** (1.051)	0.020 (0.017)	2.807*** (0.979)	0.373 (0.283)				
LnPoliticianYear					0.186 (0.222)	0.001 (0.003)	0.164 (0.198)	0.022 (0.027)
LnBoardOverallExp	-0.147 (0.529)	-0.015* (0.008)	-0.147 (0.432)	0.018 (0.143)	-3.411* (2.020)	-0.067 (0.045)	-3.030* (1.800)	-0.384 (0.268)
%BoardFemale	-0.342 (0.847)	-0.029** (0.014)	-0.184 (0.762)	-0.136 (0.228)	-3.004 (2.296)	-0.068 (0.051)	-2.563 (2.045)	-0.435 (0.363)
%BoardEdu	9.712*** (2.833)	0.191** (0.084)	8.316*** (2.529)	1.412* (0.764)	32.01* (16.46)	0.528 (0.436)	28.46* (14.66)	3.706* (2.121)
LnBoardTenure	-0.018 (0.192)	-0.004 (0.003)	-0.063 (0.160)	0.052 (0.051)	0.048 (0.418)	-0.004 (0.007)	-0.0001 (0.372)	0.056 (0.065)
ShortTenure_Politician	-0.239 (0.370)	-0.001 (0.004)	-0.305 (0.326)	0.069 (0.099)	2.268 (1.489)	0.034 (0.035)	1.919 (1.326)	0.367* (0.208)
ShortTenure_Bureaucrat	-0.326 (0.339)	-0.004 (0.008)	-0.209 (0.434)	-0.126 (0.091)	-3.629* (2.139)	-0.056 (0.054)	-3.163* (1.906)	-0.495* (0.281)
LnBankAge	0.205* (0.109)	-0.0002 (0.001)	0.236*** (0.086)	-0.029 (0.029)	0.469* (0.271)	0.003 (0.005)	0.473* (0.241)	-0.0009 (0.051)
LnBankSize	0.091** (0.035)	-0.001* (0.0006)	0.055** (0.028)	0.036*** (0.009)	0.170** (0.083)	0.0001 (0.001)	0.126* (0.074)	0.046*** (0.013)
Listing	-0.164 (0.232)	-0.010*** (0.003)	-0.178 (0.193)	0.029 (0.062)	-0.534 (0.482)	-0.016** (0.007)	-0.498 (0.429)	-0.023 (0.064)
BankROE	7.143*** (0.678)	0.089*** (0.018)	6.810*** (1.735)	0.228 (0.183)	6.905*** (1.463)	0.085*** (0.022)	6.570*** (1.303)	0.226 (0.395)
Leverage	-3.764*** (0.386)	-0.024*** (0.005)	-3.374*** (0.445)	-0.360*** (0.104)	-0.132 (2.195)	0.032 (0.055)	-0.146 (1.956)	0.066 (0.311)
Foreign	0.010 (0.216)	-0.006* (0.003)	0.089 (0.194)	-0.076 (0.058)	-1.850 (1.143)	-0.035 (0.028)	-1.566 (1.019)	-0.293** (0.149)

InstOwn	-1.625*** (0.630)	0.004 (0.014)	-1.596*** (0.547)	-0.007 (0.170)	7.399 (5.368)	0.143 (0.141)	6.450 (4.782)	1.026 (0.715)
Year Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Type Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	344	344	344	344	344	344	344	344
Wald χ^2	427.41***	145.33***	324.85***	60.96***	95.74***	47.91***	100.52***	37.11***
Sargan χ^2	2.30	0.01	2.70	0.049	0.62	1.27	0.47	1.21
Basmann χ^2	2.20	0.01	2.60	0.047	0.59	1.21	0.45	1.15
Durbin χ^2	3.54*	3.78*	3.09*	3.54*	14.24***	8.25***	14.52***	3.22*
Wu-Hausman F	3.40*	3.63*	2.97*	3.40*	14.12***	8.03***	14.41***	3.09*

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8. Combined Effect Results

Variables	(1) VAIC	(2) CEE	(3) HCE	(4) SCE	(5) VAIC	(6) CEE	(7) HCE	(8) SCE
Constant	-5.295 (4.124)	0.253*** (0.066)	-0.584 (3.439)	-4.964*** (1.702)	-2.880 (4.156)	0.295*** (0.066)	1.423 (3.461)	-4.598*** (1.711)
% Govern	5.116*** (1.853)	0.066** (0.030)	4.079*** (1.546)	0.971 (0.765)				
LnGovernYear					0.264** (0.133)	0.006*** (0.002)	0.234** (0.111)	0.023 (0.054)
LnBoardOverallEx p	-0.419 (0.582)	0.002 (0.009)	-0.464 (0.485)	0.042 (0.240)	-0.466 (0.614)	-0.003 (0.009)	-0.537 (0.511)	0.074 (0.253)
% BoardFemale	-0.234 (0.821)	0.004 (0.013)	-0.492 (0.685)	0.254 (0.339)	-0.444 (0.836)	0.001 (0.013)	-0.672 (0.696)	0.228 (0.344)
% BoardEdu	4.808*** (1.236)	0.041** (0.020)	4.137*** (1.031)	0.631 (0.510)	4.129*** (1.187)	0.045** (0.019)	3.699*** (0.989)	0.384 (0.489)
LnBoardSize	-0.281 (0.473)	0.009 (0.007)	-0.340 (0.395)	0.049 (0.195)	-0.483 (0.475)	0.006 (0.007)	-0.503 (0.396)	0.013 (0.196)
LnBoardTenure	0.298	-0.002	0.210	0.090	0.293	-0.002	0.205	0.090

	(0.193)	(0.003)	(0.161)	(0.079)	(0.196)	(0.003)	(0.164)	(0.080)
ShortTenure	0.031	0.001	0.066	-0.035	0.0813	-1.37e-05	0.0768	0.0044
	(0.314)	(0.005)	(0.262)	(0.130)	(0.334)	(0.005)	(0.278)	(0.137)
LnBankAge	0.092	0.005	0.304	-0.217	0.124	0.006	0.329	-0.211
	(0.391)	(0.006)	(0.326)	(0.161)	(0.394)	(0.006)	(0.328)	(0.162)
LnBankSize	0.584***	-0.015***	0.261*	0.339***	0.482***	-0.017***	0.179	0.320***
	(0.186)	(0.003)	(0.155)	(0.076)	(0.185)	(0.002)	(0.154)	(0.076)
Listing	0.290	-0.003	0.171	0.122	0.336	-0.001	0.215	0.123
	(0.409)	(0.006)	(0.342)	(0.169)	(0.415)	(0.006)	(0.346)	(0.171)
BankROE	6.323***	0.106***	6.241***	-0.023	6.368***	0.106***	6.274***	-0.011
	(0.469)	(0.007)	(0.391)	(0.194)	(0.473)	(0.007)	(0.394)	(0.195)
Leverage	1.298**	0.016*	0.904*	0.377	1.354**	0.019**	0.968*	0.366
	(0.610)	(0.009)	(0.509)	(0.252)	(0.623)	(0.009)	(0.518)	(0.256)
Foreign	1.169	-0.044***	0.335	0.878**	0.841	-0.045***	0.103	0.783**
	(0.971)	(0.015)	(0.810)	(0.401)	(0.966)	(0.015)	(0.804)	(0.398)
InstOwn	-1.320	-0.012	-1.040	-0.268	-1.473	-0.013	-1.155	-0.305
	(0.890)	(0.014)	(0.742)	(0.367)	(0.896)	(0.014)	(0.746)	(0.369)
Year Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Type Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	344	344	344	344	344	344	344	344
R-squared	0.850	0.768	0.871	0.321	0.848	0.771	0.870	0.318
F-statistic	28.32***	16.57***	33.78***	2.37***	27.68***	16.72***	33.15***	2.32***

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix A. List of Banks

No	Bank	Type of Bank	Website
1	Adabank	Privately owned deposit bank	http://www.adabank.com.tr
2	Akbank	Privately owned deposit bank	https://www.akbank.com
3	Aktifbank	Privately owned investment and development bank	https://www.aktifbank.com.tr
4	Alternatifbank	Foreign-owned deposit bank	https://www.alternatifbank.com.tr
5	Anadolubank	Privately owned deposit bank	https://www.anadolubank.com.tr
6	Arap Türk Bank	Foreign-owned deposit bank	https://www.atbank.com.tr
7	Bank of China	Foreign-owned deposit bank	https://www.bankofchina.com.tr
8	Burgan Bank	Foreign-owned deposit bank	https://www.burgan.com.tr
9	Citibank	Foreign-owned deposit bank	https://www.citibank.com.tr
10	Denizbank	Foreign-owned deposit bank	https://www.denizbank.com
11	Deutbank	Foreign-owned deposit bank	https://country.db.com
12	Dilerbank	Privately owned investment and development bank	https://www.dilerbank.com.tr
13	Fibabank	Privately owned deposit bank	https://www.fibabanka.com.tr
14	FortisBank	Foreign-owned deposit bank	https://www.teb.com.tr
15	Garanti BBVA	Foreign-owned deposit bank	https://www.garantibbva.com.tr
16	GSD	Privately owned investment and development bank	https://www.gsdbank.com.tr
17	HSBC	Foreign-owned deposit bank	https://www.hsbc.com.tr
18	ICBC	Foreign-owned deposit bank	https://www.icbc.com.tr
19	İNG	Foreign-owned deposit bank	https://www.ing.com.tr
20	İşbank	Privately owned deposit bank	https://www.isbank.com.tr
21	MUFG	Foreign-owned deposit bank	https://www.tu.bk.mufg.jp
22	Nurol	Privately owned investment and development bank	https://www.nurolbank.com.tr
23	Odea	Foreign-owned deposit bank	https://www.odeabank.com.tr
24	QNB-Finansbank	Foreign-owned deposit bank	https://www.qnbfinsbank.com
25	Rabobank	Foreign-owned deposit bank	https://www.rabobank.com.tr
26	Şekerbank	Privately owned deposit bank	https://www.sekerbank.com.tr
27	TEB	Privately owned deposit bank	https://www.teb.com.tr
28	Turkishbank	Privately owned deposit bank	https://www.turkishbankgroup.com
29	Türk Sınai Bankası	Privately owned investment and development bank	https://www.tskb.com.tr
30	Turkland Bank	Foreign-owned deposit bank	https://www.tbank.com.tr
31	Yapı Kredi	Privately owned deposit bank	https://www.yapikredi.com.tr

Appendix B. The prior experience of ex-bureaucrats in government agencies

Prior Experience	Government Agency in Türkiye
Account Specialist	Ministry of Finance
Deputy Undersecretary	Undersecretariat of Treasury
Specialist	Undersecretariat of Treasury
Inspector	Ministry of Finance
Assistant Inspector	Ministry of Finance
Inspector	Ministry of Labor
Tax Inspector	Ministry of Finance
General Secretary	Undersecretariat of Treasury
Chief Deputy	Undersecretariat of Treasury
General Directorate	Undersecretariat of Treasury
Chief Controller	Undersecretariat of Treasury
Inspector	Social Security Agency
Specialist	State Planning Agency
Assistant Specialist	State Planning Agency
Member	Turkish Pension Fund
Sworn Auditor	Undersecretariat of Treasury
Vice-president	Undersecretariat of Treasury

Chief Controller	Undersecretariat of Treasury
Chairman of Inspection Board	Ministry of Health
Sworn Auditor	Banking Regulation and Supervision Agency
Vice-president	Tax Inspectors Boards
Inspector	Central Bank

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