Journal of Balkan Economies and Management

VOLUME 2 | ISSUE 1 | NOVEMBER 2025

IDEFE PUBLICATIONS

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Journal of Balkan Economies and Management

Volume 2, Issue 1 - 2025
ISSN: 2955-2567
e-ISSN:2955-2575

Journal of Balkan Economies and Management is an international, academic and peer-reviewed refereed journal. It is published twice a year.

Concession Holder on Behalf of Balkan Studies Foundation

Dr. Sevba Abdula

Graphic Design: iyicalismalar.tr

Publication Type: International Periodic

Publication Period: Published twice a year, May and November

Print Date: December, 2025

Printed by: Ajgraph- Skopje Citadel, 1000

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Journal of Balkan Economies and Management

Makedonsko-Kosovska Brigada No: 32 1A, Skopje 1000 North Macedonia

www.journalbem.com, journalbem@gmail.com

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Research Articles

Leadership Theories in Transition From Tradition to Technology

Abeer Muqbel

Abstract: This paper offers a review of key leadership theories, providing commentary to keep pace with the evolving landscape of leadership over the years. Using a literature review methodology, this study compiles and compares theories, from classical to contemporary, including those related to automation, E-leadership, and their practical applications. The analysis reveals that these theories are constantly evolving and adapting to technological revolutions and the development of organizations and individuals to keep up with advancements and avoid falling behind. This paper contributes to this field by highlighting the enduring importance of staying current and leveraging advancements, and it recommends that leaders not neglect the role of artificial intelligence in various organizational environments.

Keywords: Classical leadership, Contemporary leadership, E-leadership, Leadership & AI

Muqbel, A. (2025), Leadership Theories in Transition from Tradition to Technology, *Journal of Balkan Economies and Management, 2*(1), 7-20.

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Balkan Studies Foundation
DOI: https://doi.org/10.51331/bemA09
Journal of Balkan Economies and Management, 1(2), 2025
journalbem.com

Received: 11.08.2025
Revision: 01.11.2025
Accepted: 23.11.2025

Introduction

Leadership is an abstract concept, but it is embodied in a person who possesses a set of personal qualities that translate into methods that influence those around them, either positively or negatively; it refers to the relationship that leaders have with their followers, which is essential for organizations due to its effect on employees' attitudes and behaviors (Ghaleb & Yaşlıoğlu, 2023).

It has a key role in building a positive environment that fosters good decision-making, problem-solving, and innovation, as it channels the organizations' vision, strategy, and objectives to employees and provides them with a role model for their behavior and practice as well as the motivation they need to achieve goals (Robbins & Judge, 2017). Previous studies showed that intrinsic motivation has a positive impact on employee performance (Ghaleb & Ordun, 2021), which makes leaders as a unique asset that can maximize organizations' profitability (Northouse, 2019).

Since leadership is a human concept, it is subject to development, change, and criticism in response to changes in the surrounding environment. Therefore, it was found that every era has had theories explaining the concept according to the demands of that time, and these theories evolve with those changes. That is why the concept of leadership, the characteristics, and the role of leaders have been studied for a long time ago leading to the evolution of leadership theories that were changing and developing with the passage of time and changes in the surrounding environment and work circumstances of each era (Schettler, 2003).

These changes and evolution of leadership theories reflect the scholars' views on leadership based on their period of time, as many of them perceive leadership as a characteristic or as a behavior, while others consider leadership from an information-processing or leader-follower relation point of view, which explains the emergence of classical and contemporary theories (Robbins & Judge, 2017). However, with the rapid development of technology, the term E-leadership emerged to represent a new concept of leadership, but such development didn't stop at this point, as the evolution of artificial intelligence presented a new competitor to leaders in their role.

To understand the development needed in leadership to cope with the rapid advancement of technology, this paper discusses several leadership theories from different periods to explain the concept of leadership and what drives development in leadership to meet the needs and expectations of each era. It begins by presenting classical leadership theories, then transitions to modern leadership theories, followed by the E-leadership concept, which highlights the opportunities and challenges that leaders may face due to the current extreme reliance on technology.

It works on answering a question: Within the rapid development of technology, do the theories of leadership still retain their guiding role, and does the leader still have the same active role as before?

Classical leadership theories

Classical leadership theories represented a traditional approach to studying leadership as a social and human phenomenon, encompassing the characteristics, actions, and contextual elements that characterize effective leadership (Buchanan & Huczynski, 2019). Concepts at that period of time have centered around leadership as either a natural trait or the behaviors that distinguish a leader as a personality from the perspective of the great leader and trait theory; meanwhile, in one hand the behavioral theories examined leaders' actions and on the other hand the contingency and situational theories introduced the perspective that leadership effectiveness depends on the context, suggesting that no single style fits all situations (Robbins & Judge, 2018). These fundamental theories established a framework for understanding leadership as a combination of individual characteristics, observable actions, and situation-specific tactics. Below is an explanation about them:

Great man & Traits theories: Although they both emphasize the traits of successful leaders, the Great Man and Trait Theories are very different. According to the great man theory, the leaders' success is attributed to his/her natural charm and talent which holds that leadership is an innate quality that is frequently present in exceptional people like well-known politicians and military commanders; on the other hand, the trait theory expands on this viewpoint by

looking at quantifiable and cultivable human qualities, it points out that leadership qualities change depending on the situation and may be developed via education and experience (Harris & Hartman, 2002).

Both of these theories faced some drawbacks; as they did not explain why some people with positive attributes do not succeed as leaders, and they ignores the impact of less well-known leaders and skill improvement. When taken as a whole, they offer fundamental understandings, yet they are insufficient to describe leadership dynamics in today's diverse settings (Northouse, 2019).

Behavioral Approach theories: These theories states that great leaders are made, not born, as they emphasize behavior over natural qualities. According to Robbins & Judge (2017), groups led by authoritarians and those led by democratic leaders perform differently. Although both groups perform similarly, democratic-led groups are more upbeat and work harder even when the leader is not there, whereas authoritarian-led groups are unhappy. This perspective led to an examination of effective leadership behaviors in organizational settings and the development of training programs to enhance management leadership styles leading to the Ohio and Michigan studies.

These studies identified two main, fundamental dimensions of leadership, which are task-orientated leaders who focuses the technical aspects of the work and give priority to getting the job done, and people-oriented leaders who focusses on well-being, motivation, and development of their team members (Stroh et al., 2002). This study focuses on explaining the basic elements of behavior, emphasizing that leaders' impact is derived from their roles and interactions with their followers, rather than just their individual acts (Yukl, 2013).

The behavioral theories of leadership are criticized for oversimplifying leadership by categorizing it into fixed styles, ignoring contextual factors such as organizational culture, and lacking clarity on how specific behaviors lead to successful outcomes. Furthermore, these theories often overlook the necessity for leaders to adapt their behaviors to changing circumstances. While they provide valuable insights, these limitations suggest a need for more integrative and contingency-based approaches to understanding leadership.

Situational and contingency theories: Contingency theories focus on the interaction that the leader performs in a specific environment, which may determine the leadership style most appropriate to a particular work situation, which means that there is no one specific style that can be used in all situations and leadership success depends on the surrounding environment and interacting with it like employees (Amanchukwu et al., 2015).

Hersey-Blanchard's situational leadership theory explains that effective leadership depends on the readiness level of the followers to do a specific task. It considers that someone is ready to do a task when he/she has the abilities, such as skills and knowledge, as well as willingness, such as confidence and motivation, to perform his/her tasks. Accordingly, the leader must adopt his/her leadership style to match the level of readiness of his/her followers, and determine the amount of technical, social, and emotional support that should be provided in light of the situation and the readiness level of the followers (Robbins & Judge, 2018).

Fiedler in his contingency theory explained that there is no standard model of leadership as the leader must shape his/her style with a specific situation. He divided followers as task oriented, representing people who focus on achieving the completion of tasks, and relationship oriented, representing people who focus on having positive relations with their coworkers. Accordingly, the leaders must evaluate the situation, nature of tasks, with the consideration of his/her level of authority and relations with the followers to distribute the tasks and lead the process (Maslanka, 2004).

The theories of situational and contingency leadership have drawn criticism for their intricacy and unclear practical implementation. The fact that these models frequently call for leaders to precisely evaluate a number of situational factors and modify their approach accordingly is one of their main drawbacks (Buchanan & Huczynski, 2019). This can be challenging and arbitrary in practical situations. Furthermore, these theories don't offer precise instructions on how to conduct these kinds of evaluations or successful transition between leadership philosophies (Stroh et al., 2002). Additionally, the models often ignore the dynamic structure of organizations and the influence of follower traits, which

reduces their predictive accuracy and generalizability in a variety of scenarios (Northouse, 2019).

As explained above it was noted that there was no standard classical leadership style that can be implemented, but each theory faced some criticism that leads to develop a new one. Moving to the contemporary period of time, the working environment was developed leading to new contexts that forced leaders to adopt and amend their leading styles, which led in presenting the contemporary leadership theories.

Contemporary leadership theories

Contemporary leadership theories expand beyond the classical theories that focus on traits and behaviors to emphasize relational, transformational, transactional, and ethical aspects of leadership. These theories recognize the complex, dynamic interactions between leaders and followers within various contexts. These contemporary theories reflect a shift toward more holistic, follower-centered, and ethical perspectives of leadership, highlighting the importance of context, relationships, and moral dimensions. Below is an explanation about them:

Transformational and transactional leadership theories: Transformational leadership theory focuses on inspiring and motivating followers to achieve great things and look past their own interests for the good of the group or company (Bass & Riggio, 2006). The leader creates a compelling vision for the future and serves as a role model, using enthusiasm and strong values to encourage innovation and personal growth in their team (Korejan & Shahbazi, 2016). This style aims to change or transform people's views and goals, helping them reach their full potential (Robbins & Judge, 2018).

On the other hand, transactional leadership theory is based on a clear exchange between the leader and follower, often described as a give-and-take relationship (Buchanan & Huczynski, 2019). The leader sets clear goals and expectations, and people are motivated by a system of rewards, such as bonuses or praise, for meeting those goals and punishments for failing (Jaqua & Jaqua, 2021). This

style is focused on maintaining the current order, ensuring tasks are completed efficiently, and achieving short-term, measurable results (Sarros & Santora, 2001).

A major criticism of transformational leadership is that it ignores specific operational management, an overemphasis on motivation and vision, which may result in followers having irrational expectations, and its tendency to overemphasize the function of the leader in motivation without considering the technical part of the task (CH Chan & Mak, 2014). On the other hand, transactional leadership is often criticized for limiting creativity and innovation because it strictly follows existing rules and rewards only compliance. While effective for routine tasks, it can discourage employees from looking for better methods or pursuing long-term development beyond the immediate reward (Sarros & Santora, 2001).

Leader member exchange theory (LMX): This theory explains that leaders form unique, two-way relationships with each team member, rather than treating everyone in the group the same. The core idea is that the quality of these individual relationships, or dyads, is what ultimately determines leadership effectiveness and work outcomes (Van Breukelen et al., 2006). It highlights the formation of an in-group and an out-group within a team, where the members in the in-group develop high-quality exchanges with the leader, characterized by mutual trust, respect, and loyalty, often going beyond their formal job duties, and receive more attention, support, challenging assignments, and have more input in decisions (Robbins & Judge, 2017). Conversely, out-group members have lower-quality, more formal, and transactional relationships based strictly on the employment contract, and receive fewer resources and less support from the leader (Anand et al., 2011).

This theory was criticized for dividing the team into a favored in-group and a neglected out-group promotes unfairness and can be seen as discriminatory. This division often leads to resentment, low morale, and poor performance among the out-group, hurting the whole team. A key flaw is that the theory doesn't offer a clear path for leaders to build high-quality relationships with everyone, or for out-group members to improve their status (Sheer, 2015).

Charismatic leadership theory: This theory represents a leadership style where a leader uses their powerful personality, charm, and strong communication skills to inspire and motivate followers. Instead of relying on formal rules or a high-ranking title, these leaders gain authority through their personal magnetism and the strong emotional connection they build with others (Tucker, 2017). They are often seen as visionary, confident, and deeply committed to a clear, compelling goal, which encourages immense loyalty, dedication, and enthusiasm from their team or audience (Robbins & Judge, 2018). Their ability to articulate a hopeful future and make followers believe they can achieve it is their core strength, often leading to significant change within an organization or society (Robbins & Judge, 2017).

This type of leadership is incredibly effective at driving change and boosting morale because the followers are motivated by their admiration and trust for the leader, often leading to high levels of engagement and performance (Buchanan & Huczynski, 2019). However, it was criticized for its full reliance on the leaders as the success of the group can become too reliant on the leader's presence, and if the leader's personal vision becomes flawed or unethical, their profound influence can be used to mislead followers (Tucker, 2017).

Ethical and authentic leadership theories: These theories are contemporary leadership approaches that emphasize the moral integrity and genuineness of leaders as central to effective leadership (CH Chan & Mak, 2014). They are comparable in that they both place a high value on establishing trust via moral behavior and open communication and they emphasize the leader's responsibility for fostering an ethical workplace culture and encouraging the involvement and well-being of followers (Yue et al., 2019), by encouraging an environment of transparency, equity, and integrity, both leadership philosophies support favorable organizational attitudes, which in turn boost worker dedication and drive (Robbins & Judge, 2017).

Nevertheless, these hypotheses are not without flaws. An excessively idealistic perspective on leadership that might not adequately take into consideration the difficulties and moral conundrums that leaders encounter in practical settings is one drawback (CH Chan & Mak, 2014). Furthermore, it could be hard to measure

the emphasis on moral integrity and authenticity objectively, which makes it hard to continually evaluate leadership performance (Avolio et al., 2009). Furthermore, a strong emphasis on authenticity runs the risk of making leaders inflexible, hesitant to modify their opinions even when doing so would help the organization succeed (Yue et al., 2019). Finally, cultural differences might also affect how people view what ethical and authentic leadership looks like, which could restrict these theories' generalizability in a variety of settings (Avolio et al., 2009).

According to the above explanation it was noted that the contemporary leadership theories expand the discussion of the leaders' characteristics and their role in motivating, inspiring and building relationships with their followers, but also these theories do not provide a standard model of leadership that can be implemented anytime and anywhere, as each one of them has its strengths and weaknesses.

At the current period of time, changes in the working environment have led to a significant reliance on technology. For example, the 2020 COVID-19 pandemic made it difficult for face-to-face communication between leaders and their followers, and the evolution of artificial intelligence provides one new source of instructions and directions next to the leaders. Accordingly, to cope with recent needs and requirements in the working environment a new leadership styles were needed.

Leadership in the technological era

The experts believed that the working environment was undergoing a fundamental transformation (due to new technologies, information overload, and shifting values and expectations); therefore, they found that the leadership growth strategies had not evolved sufficiently to accommodate this transition. They reported, in particular, that previous leadership techniques, which have been effective in the past, are increasingly misaligned with potential leadership challenges (Petrie, 2014). This void calls for a more fundamental structural shift in the methodology of leadership to deal with the modern transition.

This section discusses the two concepts of leadership in the current period of time, which can be referred to as the technological era. The first concept is E-leadership, and the second concept is leadership and artificial intelligence, as follows:

E-leadership: It represents "a process of social influence embedded in both proximal and distal Advanced Information Technology (AIT) mediated contexts that can change attitudes, emotions, thinking, behavior and performance" (Avolio et al., 2014). It is a modern leadership style that allows the leader to accomplish certain leadership aims through virtual teams that are distributed over space and time in a computer-mediated way; the primary means of contact between leaders and followers is the computer-supported electronic conduit. As well as many modern threats and tactics, this new model offers a load of different possibilities (Carreño, 2014).

Cook (2010), explained that leaders in a digital environment maintain the same essential duties as their face-to-face counterparts, including coordinating and empowering teams, tracking success, and cultivating team members. Yet, because technology allows employees to operate from anywhere, e-leaders face additional challenges. Specifically, these challenges involve remote monitoring, building team cohesion across diverse communities, motivating members, addressing complex questions, cultivating greater versatility to handle rapid technological developments, and improving technological abilities to effectively promote their leadership.

In addition to that, when team members are isolated by time and space, creating strong interpersonal bonds becomes challenging' that's why E-leaders have a critical role in establishing and maintaining robust relationships within virtual teams, because strong communication skills are required to build trust, which is a core essential aspect of the leader-follower dynamic; that's why leaders must actively work to maintain closeness and ensure communications are not misinterpreted (Ghaleb & Yaşlıoğlu, 2023), which is quite difficult in an online environment, even with the availability of the tools and technology that facilitate online communication.

Although e-leadership existed before the 2020 COVID-19 pandemic, its use has accelerated dramatically as most aspects of life and work shifted online, which raises questions about its effectiveness as a permanent leadership model.

Leadership and artificial intelligence (AI): The omnipresence of Artificial Intelligence (AI) is fundamentally reshaping the leadership landscape, prompting complex questions about its ultimate role, such as whether a robot could ever be accepted as a leader for human beings, especially that it becomes an easy source for employees to get information and instructions and in some cases it becomes a source of motivation for some employees who refer to AI to talk and get nice motivating feedback.

Several recent studies investigated the impact of AI on leadership, such as Rožman et al. (2023), who found that, AI-supported leadership significantly enhances effective teamwork and staff training, especially when utilizing data-driven decision-making. Specifically, assigning routine tasks to AI frees up leader time for intricate problem-solving, thereby improving employee engagement. These tools are also credited with promoting more inclusive leadership practices, democratizing decision-making, and strengthening team cooperation, but these effects are situational and may not always return benefits across all leadership domains. Additionally, Twum et al. (2025) explained that AI has overtaken the leaders' role in facilitating the decision-making processes as it can integrate diverse viewpoints into decision-making processes, which questions the limitations that AI can reach and stresses on the need to identify the appropriate use and role of AI that can not replace the actual leader.

The evolution of technology challenged the actual role of leaders, which indicates that leaders at this time have extra responsibilities to develop themselves and compete with such technology to maintain their role, and definitely new leadership models are needed to fit in this new technological era.

Conclusion and recommendations

The journey of leadership theories shows a clear shift from focusing on the leader's innate traits and behaviors to emphasizing the relationship with followers and the influence of the surrounding context. From the classical great man theory to the contemporary transformational and transactional leadership

styles, each era has developed theories to meet its unique organizational needs. These theories confirm that leadership is not a fixed style but an evolving concept.

The rise of technology and AI represents the newest and most significant challenge to the traditional leader's role. Concepts like E-leadership show that modern leaders must now build trust, motivate, and ensure clear communication across vast distances using digital tools. This transition answers the paper's question: while the guiding role of leadership theories remains, the leader's active role is fundamentally changing.

Ultimately, the paper highlights that no single leadership theory is perfect, and leadership collective evolution proves that the best leadership is adaptive. In the technological era, leaders must embrace a combined approach, leveraging technology as a tool while doubling down on the essential human elements, such as empathy, vision, and ethical integrity, which AI cannot replicate, as the future of effective leadership lies in this balance.

Accordingly, it is recommended that organizations and leaders must invest heavily in developing human-centric skills, such as emotional intelligence, ethical decision-making, and deep interpersonal communication, that thrive alongside AI. Furthermore, they should prioritize training for E-leadership, ensuring leaders can effectively manage and inspire virtual and actual teams. This dual focus on human skills and technological literacy is essential to maintain the leader's relevance and harness the full potential of the workforce in the modern digital age.

There are other leadership theories explained in the literature, but this paper presented the most common ones.

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Determinants of Green Innovations in North Macedonian SMEs: A Stakeholders' Perspective

Sara Muca & Bujamin Bela

Abstract: Green innovation has emerged as a strategic mechanism through which firms strengthen their environmental performance and long-term competitiveness. In the context of North Macedonian SMEs, stakeholders play a decisive role in shaping the extent, direction and success of green innovation practices. This study focuses exclusively on examining how key stakeholder groups such as customers, suppliers, competitors, employees, technology providers and government institutions influence the adoption, development and implementation of green innovations. Findings from the empirical analysis demonstrate that stakeholder pressures, expectations and collaborations act as critical drivers for stimulating eco-innovative activities within SMEs. Customers increasingly demand environmentally friendly products, suppliers facilitate access to greener materials and technologies, while employees contribute through environmentally responsible behavior and internal capabilities. Competitors accelerate innovation by creating competitive pressures, and government institutions further reinforce green transformation through regulations, incentives and policy frameworks.

Keywords: Green innovation, Stakeholder influence, SMEs, Environmental performance, Sustainable practices, North Macedonia, Eco-innovation drivers, Stakeholder engagement

Muca, S. & Bela, B. (2025), Determinants of Green Innovations in North Macedonian SMEs: A Stakeholders Perspective, *Journal of Balkan Economies and Management, 2*(1), 21-58.

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Balkan Studies Foundation
DOI: https://doi.org/10.51331/bemA010
Journal of Balkan Economies and Management, 1(2), 2025
journalbem.com

Received: 26.11.2025
Accepted: 27.12.2025

Introduction

The growing global emphasis on environmental sustainability has placed significant pressure on firms to adopt greener practices and develop environmentally responsible innovations. In this context, green innovation has emerged as a key strategic tool through which companies can reduce their ecological footprint, enhance competitiveness, and comply with rising environmental expectations. However, green innovation does not occur in isolation. Research consistently demonstrates that stakeholders, customers, suppliers, employees, competitors, technology providers, and government institutions, play a decisive role in shaping the adoption and implementation of eco-innovative practices within firms.

In emerging economies such as North Macedonia, SMEs face challenges related to limited resources, technological constraints, and regulatory pressures, making stakeholder-driven innovation even more critical. Stakeholders influence green innovation through their expectations, collaboration, information sharing, market pressures, and regulatory frameworks. Customers increasingly demand eco-friendly products; suppliers facilitate access to sustainable materials; employees contribute through internal capabilities and pro-environmental behavior; competitors create market pressure to innovate; technology providers enable the adoption of advanced green solutions; while government institutions shape the regulatory and financial environment for eco-innovation.

A central question guiding this study is: *How do different stakeholder groups influence the emergence and development of green innovation in Macedonian SMEs?* Although the literature emphasizes the relevance of stakeholder engagement in promoting sustainable practices, there is still limited empirical evidence in the context of developing economies, particularly in the Western Balkans. Macedonian SMEs operate in an environment shaped by economic constraints, evolving regulations, and growing environmental awareness, making it important to understand which stakeholders exert the strongest influence and through what mechanisms. Addressing this question helps clarify whether green innovation arises primarily from market demand, internal organizational capabilities, supply-chain dynamics, competitive pressures, or government-driven initiatives.

The main objective of this research is to examine and explain the role of stakeholders in shaping green innovation within SMEs in North Macedonia. Specifically, the study aims to identify which stakeholder groups have the most significant impact, how their expectations and interactions stimulate eco-innovative practices, and how this engagement ultimately contributes to improved environmental performance. By doing so, the research provides not only theoretical contributions to stakeholder theory and green innovation literature but also practical insights for managers and policymakers seeking to support sustainable transitions. Understanding these dynamics is essential for creating targeted strategies that strengthen stakeholder collaboration, accelerate green innovation adoption, and build more resilient and environmentally responsible business models.

Literature Review

Green Innovation, a term defined as the process of developing and implementing new ideas, strategies and technologies, all with a focus on environmental sustainability. Mansoor, Jahan and Riaz (2021) define green innovation management as the strategic process of using innovative methods to achieve environmental sustainability goals. It plays a critical role in connecting environmental management and performance, resulting in sustainable competitive advantage. Green innovation actively responds to both regulatory requirements and trends towards sustainability; It makes it easier to translate environmentally friendly concepts into concrete practices while increasing competitiveness. The term includes macro-level strategies as well as micro-level organizational learning activities; In this framework, organizational learning acts as an intermediate factor that influences how green innovations affect competitive advantage.

By implementing successful green innovations, companies can achieve greater efficiency and strengthen their core competencies. In addition, the implementation of green innovation strategies paves the way for companies to secure sustainable competitive advantages; This makes it a crucial process for organizations seeking sustainable development. Despite its importance, managing green innovations poses significant challenges, such as: B. investing in

environmentally friendly designs that optimize solar, wind or geothermal technologies: these are all crucial elements of effective eco-innovation. Magistretti et al. (2021) claim that proactive environmental management represents an integral aspect of managing green innovation: a concept closely linked to environmentally conscious practices, producing bundles of resources and capabilities that are firmly embedded in the procedures and ultimately lead to sustainable competitive advantages.

Lee and Min (2015) emphasize that green product innovation, a process of creating environmentally friendly products with lower environmental impact, requires a new perspective on the product life cycle. The aim of this innovative approach is not only to change or improve energy efficiency, but also to redesign the design to use non-toxic compounds or biodegradable materials during production, thus minimizing the impact of disposal. Research shows that compared to its counterpart, green process innovation, green product innovation has a more profound impact on important constructs such as competitive advantage in green products and the successful introduction of new green raw materials.

The data also clearly suggests that it pays to prioritize this type of development when resources are scarce; This suggests that this should be the main focus for companies operating under restrictions. Scholars have examined the influence of green product innovations on company performance (Thomas, Scandurra and Carfora, 2022) and consider them to be a predictor of this. Companies often consider green product innovations, which are type-specific within green technology innovations, as an effective strategy; Through its application, they strengthen their sustainable competitive advantages while achieving environmental goals in a financially prudent manner (Mubarak et al., 2021).

Companies are actively engaging in green process innovation, a proactive approach that focuses on developing and implementing environmentally friendly operations within their company. This strategy focuses on reducing environmental risks, emissions and other harmful impacts. It is particularly attractive for companies that are new to environmentally friendly processes. Palcic and Prester (2020) have identified different forms of this innovation: clean

production; Environmental Protection; Prevention eco-efficiency, all underpinned by circularity as an overarching principle. Green process innovation includes three key components: energy conservation, pollution reduction – particularly through prevention and not just control – and waste management/recycling strategies. Additionally, it includes methods and procedures to minimize environmental impact, a crucial aspect of sustainable business practices. Implement process changes that are not only beneficial to the industry but also environmentally conscious.

The focus of the transformation towards sustainable business models is on green innovations. This section examines the different categories of these innovative practices and highlights their importance in the context of SMEs from North Macedonia. Rennings (2000) identifies a number of developments that comprise green innovations: these range from product-level advancements such as eco-design and the use of environmentally friendly materials; Process innovations that include cleaner production techniques and sustainable supply chain management. In this context, research from 2017 emphasizes the equal importance of organizational improvements, such as implementing environmentally friendly marketing strategies or sustainability reporting.

Green innovation goes beyond individual companies. Boons and Lüdeke-Freund (2013) point out that societies could be on the threshold of a systemic change towards more sustainable approaches if a large number of companies in many industries develop green innovations. Improving environmental performance is based on the central role played by green innovations. They give companies the opportunity to reduce their ecological footprint; lower resource consumption, a central aspect of sustainability, and meet the demands of environmentally conscious consumers (Lüdeke-Freund & Zvezdov, 2019). This importance is reinforced within SMEs and offers not only competitive advantages, but also opportunities for market differentiation in our increasingly sustainability-oriented modernity.

Customers

In recent years, customer behavior has emerged as a key factor for green innovations in companies' sustainability strategies (Burki 2018). Today's consumers are increasingly aware of the environmental impact of their purchasing decisions and are willing to pay higher prices for eco-friendly products. This perception of "good consumption" has led to growing environmental awareness among customers, putting pressure on companies to integrate green process innovations into their sustainability strategies. In addition, companies are forced to take environmental protection measures to counteract the influence of customer behavior and the regulatory pressure of international society (Clarkson et al., 2008). However, there is still a lack of empirical research on what benefits green technology brings to consumers.

Existing research on green innovation predominantly focuses on product-based production and reducing pollutants in the process of product innovation, with little effort being made to comprehensively examine both the company and the consumer in terms of green innovation. To have a green core competency, it is important that companies build a green image so that consumers can demonstrate more environmentally friendly behavior. In order to study the company's actual performance through green innovation, it is necessary to analyze not only the product manufacturing process, but also the post-consumption process of the product. Open innovation with other firms is expected to have a positive relationship with green consumer innovation, which is a promising area for future research.

In this context, the influence of customer behavior is examined as an important factor to be considered when developing effective green innovation strategies in corporate sustainability (Chang, Iakovou and Shi, 2020). Many studies show that consumers have a very large influence on green innovations. Consumer awareness has made them more discerning when purchasing their products. Today, when choosing certain products, consumers also analyze their impact on the external environment. They ignore products that harm the environment (Weng, Chen, and Chen, 2015). The great influence of consumers on the activities of companies has led to companies increasingly offering green innovations

(Du L, 2018). Some research shows that consumers do not have much influence on the growth of green innovations as they focus more on purchasing quality products at reasonable prices while avoiding eco-products as they have higher prices (X. Huang et al., 2016). In addition to the increase in green innovation, customer pressure has also led to increased investments in research and development and the increase in the company's collaboration with a new partner (X. Huang et al., 2016).

The increasing consumer demand for a particular product has led companies to be more creative and increase the number of eco-innovations through growth strategies (Liao and Tsai, 2018). Many consumers prefer to purchase more environmentally friendly products given the positive changes these products have on the outdoor environment and, for this reason, are the greatest supporters of companies that offer green innovations despite the higher price of these products (Labuschagne, 2013). Companies equipped with appropriate information systems have received feedback from consumers that have influenced the growth of their range of environmentally friendly products and processes (Siagian, Tarigan and Basana, 2022).

H1: Customers have a significantly positive influence on green innovations.

Competitors

Competition has a significant impact on green innovation, both in terms of driving investment and creating value creation challenges. Political competition can stimulate investment in green technology innovations as governments prioritize green innovations to gain an advantage in political competition. However, competition between political parties can also lead to policies that support green innovation. However, competitive intensity may make it more difficult to derive benefits from green innovations, as the potential competitiveness arising from green innovations is more likely to be imitated and surpassed as the market grows

The article examines the direct and indirect influence of political competition on companies' innovation strategies in the field of green technologies, using Stackelberg game theory to construct modes for decentralized decision-making

with and without cost and revenue sharing. The differentiation strategy can negatively moderate the relationship between green process innovation and firm performance and lead to resource tensions that undermine firm performance, especially when there is a mismatch between green process innovation and the differentiation strategy. In highly competitive contexts, the differentiation strategy is more effective in capturing the value of green product innovations, while competition hinders the benefits of green process innovations (Iwata and Okada, 2011).

Competitive intensity strengthens the negative modulation effect of differentiation strategy on the relationship between green process innovation and firm performance and at the same time strengthens the positive modulation effect of differentiation strategy on the relationship between green product innovation and firm performance. Therefore, effective management of green innovation in a competitive environment is crucial for managers to optimize their companies' green technology innovation strategies, especially when it comes to harnessing the value of green innovations in an intense competition.

Green innovation is a crucial aspect of modern businesses, and companies are investing in improving their manufacturing and production processes by adopting environmentally friendly technologies and improving their green capabilities. As competition intensity increases, differentiation strategy becomes more and more necessary for companies to stand out from their competitors in the market (R. Dubey, 2015). The relationship between green innovation and firm performance is significantly influenced by competitive intensity. By using a differentiation strategy, companies can benefit from environmentally friendly product innovations by standing out from their competitors and strengthening customer loyalty (Muhammed et al., 2015). Although the differentiation strategy focuses allocation on bringing distinctive products to market, it fails to achieve the low-cost potential of environmentally friendly process innovations.

Political competition is a type of competition that impacts green innovation. Fiscal decentralization and political competition can influence the six modes of optimal green technology innovation strategies for enterprises. Competitive intensity strengthens the positive moderating effect of differentiation strategy on

green product innovation, but the text does not provide information about other types of competition that influence green innovation.

H2: Competitors have a significantly positive influence on green innovations.

Suppliers

When analyzing the relationship of these two factors to each other, we can see many studies in which some of the authors have analyzed the impact of green innovations on suppliers, while others have analyzed the impact of suppliers on the growth of green innovations (Thomas, Scandurra and Carfora, 2022; Yang & Jiang, 2022; Zhang & Lei, 2019). In the past, suppliers have focused more on the price of raw materials, finding long-term partners and equipping them with sophisticated technology that speeds up the process of raw material production. However, to all these goals there is now added the green perspective, which advises suppliers to find green-oriented partners, develop green processes in the work process and offer green products that are less harmful to the environment (Burki, 2018).

To promote green innovation, companies must create a connection between the right consumer and the right supplier (Melander, 2018). Supplier participation has a positive impact on green innovation, including the growth of green products and processes (Du, Zhang, and Feng, 2018). Consumer demands as a single indicator cannot positively influence the growth of green innovations if companies do not work with the right suppliers (Li et al., 2022). Consumers' desire for green products and suppliers' aim to satisfy consumers' desires have created a connecting path that has led to the growth of green innovations in the market, which have higher prices compared to other products (Labuschagne, 2013). Choosing to cooperate with suppliers that offer environmentally friendly raw material products increases the company's chances of staying ahead of current market trends and reduces the behavior of harmful products towards the external environment (Chiou et al., 2011).

The indirect effect between green innovation and supplier greening leads to better competitive advantage, which in turn improves companies' performance. The study is based on a questionnaire survey conducted in Taiwan that

examines the impact of supplier greening and green innovation on firm performance (Du, Zhang, and Feng, 2018). The study measures company performance using competitive advantages and environmental performance as indicators. The results of the study show that implementing greener supplier and green innovation practices can significantly contribute to company performance while improving their environmental and competitive performance (Mansoor, Jahan and Riaz, 2021). The results of the study can help develop better strategies for companies that want to improve their performance in the long term.

H3: Suppliers have a significantly positive influence on green innovations.

Employees

The role of employees in driving green innovation is an important aspect of companies' sustainability efforts. Research suggests that employee behavior has a significant and positive impact on green innovation practices, regardless of organizational culture or strategy settings around innovation (De Blas, 2020). However, the level of innovation orientation may moderate this relationship as it influences employees' behavior toward environmentally friendly product innovation practices (Khan, P. Johl, & Akhtar, 2021). It is worth noting that companies that pay more attention to innovation could help their employees develop new ideas and improve engagement in developing new environmentally friendly products (Li et al., 2022). Furthermore, the influence of employee behavior on green process innovation is insignificant, suggesting that a highly motivated innovative environment may not contribute to the establishment of green processes (Du, Zhang, and Feng, 2018).

It is important to consider that business strategy and organizational culture attitudes correlate with innovation orientation, which in turn is related to the company's employees (Li et al., 2022). Therefore, companies need to pay attention to their innovation orientation and develop strategies to promote a culture of sustainable innovation that encourages and rewards employee participation in green innovation practices. Furthermore, it is critical for companies to understand that innovation orientation influences the relationship between employee behavior and green innovation practices, highlighting the need for a holistic

approach to sustainability efforts that takes into account both employee behavior and organizational culture. Green innovation has recently become a current problem for all companies as it is the result of pressure from many external and internal factors.

When employees have the opportunity to make decisions within the company, they are more creative and more likely to invest their knowledge in green innovations; Therefore, companies should create a more open and flexible organizational culture so that employees feel comfortable expressing ideas related to green innovations (Chu, Wang, and Lai, 2019). Employees are more likely to support green innovations if the company rewards their participation in environmentally friendly developments. In those companies where the workspace is more harmonious, warm and sociable, employees have shown a positive influence on the development of environmentally friendly products and processes (Zailani et al., 2017). The workforce, motivated in all the company's management activities and focused on the development of a new green era, has increased the company's green innovations and competitiveness in the market in which it operates (Muisyo et al., 2021).

Employees' green behavior has had a positive impact on the company's environmentally sustainable performance. To achieve these results, the greatest work lies with company leaders who must introduce green policies into the company and all employees must be encouraged to implement new decisions (Mansoor, Jahan and Riaz, 2021). The main goal of a successful leader is to achieve organizational goals through self-confidence, increasing the desire to succeed and increasing creativity in the area of green innovation. If leaders do their jobs well, we will see a positive influence on employees in creating a green business model (Memon et al., 2022).

H4: Employees have a significant positive influence on green innovations.

Technology

Green innovation is a crucial aspect of sustainable business performance and its constructs, and innovative technologies and greener strategies are critical to achieving sustainable performance (Clarkson et al., 2008). Knowledge

management processes and their constructs lead to green innovations, while organizational agility has a positive impact on green innovations and sustainable corporate performance (Clarkson et al., 2008). However, the success of green innovations is not guaranteed for all organizations, as necessary and sufficient conditions are required in every dimension to enable and facilitate such innovations. In addition, the development of green technologies involves a long-term exploration process that cannot guarantee quick success.

Therefore, it is essential for companies to recognize the right value and positioning of green innovations, as investments in green product and process innovations can be helpful for companies. The Technology-Organization-Environment Framework provides a useful self-assessment tool for organizations to strategically plan the preparation and implementation of green innovations for optimal sustainability outcomes. Furthermore, green innovation can lead to competitive advantage by mediating environmental and corporate performance, with the performance of green product and process innovations being positively correlated with the firm's competitive advantage. The absorptive capacity of companies, which continuously helps them to absorb, transform and use external knowledge and is crucial for achieving sustainable competitive advantages, affects the adoption process and costs of green innovations. Therefore, companies should strive to build and restructure a variety of knowledge sources to achieve green innovation and adapt to the ever-evolving digital economy (Burki, 2018). Companies must constantly search for new knowledge and technologies that lead the company to environmentally friendly production (Melander, 2018).

Technological changes have influenced the growth of green innovations. The development of the Internet network is an important driver that has influenced the invention of green innovations (Jiang & Zheng, 2021). Digital technological transformations have shown positive impacts on business performance by increasing green innovation and creating long-term sustainability in the performance of the external business environment (Yadav, Kumar and Luthra, 2020). Given that companies operate in highly competitive markets, the sophisticated technologies that have led companies to eco-products have enabled them to gain competitive advantages in the market (Magistretti, Pham, and Dell, 2021).

Advanced technologies in the manufacturing industry have been shown to have a positive impact on green innovation and business performance (Palcic & Prester, 2020).

One type of technology that has influenced the behavior of green innovation is Industry 4.0 technology, which has expanded the company's mission with its intelligent and unique component systems. By using Industry 4.0 technology, companies not only want efficient and effective products, but now also environmentally friendly products that have less impact on the environment (Mubarak et al., 2021). In addition, blockchain technology has shown a great contribution to green innovation with a transparent manner of use by third parties who want to collaborate with the company or receive important information from the company. The information once placed in blockchain technology cannot be changed by the company in the future, so it represents the flow of company activities in different time periods in a real and transparent manner (Chang, Iakovou and Shi, 2020).

Companies that have refused to make changes in the application of new technologies have shown negative results in developing green innovations. Green innovations are more complicated and different from other mainstream innovations; For this reason, technological support is essential for their implementation (Guo et al., 2021).

H5: Technology has a significantly positive influence on green innovations.

Government

The government has introduced several measures to promote green innovation, including environmental regulations, taxes, subsidies and credit tariffs. These measures were primarily aimed at enabling investments in the transition to a low-carbon economy and financing early-stage green innovations (Muisyo et al., 2021). Green Investment Bank was founded to provide financing for clean energy projects. In addition, the government uses the feed-in tariff to incentivize renewable energy production by paying for excess electricity that is fed back into the grid. The energy company obligation also obliges energy companies to finance energy efficiency measures. Additionally, the Renewable Heat Incentive

provides financial incentives for installing renewable heating systems. In China, the government offers tax incentives and subsidies to companies that engage in green innovation, while in the United Kingdom, the Climate Change Act of 2008 sets legally binding emissions reduction targets (De Blas, 2020).

However, the effectiveness of these measures in promoting green innovation is still debated. Studies have shown that market-based regulation (MER) has a negative impact on green innovation; informal regulation (IER) has a significant positive effect on green innovation; Domestic Direct Investment (IFDI) plays a positive role in the development of green innovations and confirms the "Pollution Halo Hypothesis"; while command and control regulation (CER) has a significant positive effect on green innovation. Therefore, it is crucial for policymakers to understand the different impacts of different government policies on green innovation in order to formulate targeted policies for different locations. The impact of policies on green innovation varies by sector. However, it is recommended that the government provide more support to private companies to invest in environmentally friendly projects. Private companies that are severely affected by financing restrictions have a relatively high ability to innovate.

Green finance policies can generally be effective in alleviating financing constraints for green innovations, but private companies are less likely to receive green loans. In addition, private companies face greater financing constraints for green innovations compared to state-owned companies. Policies can distort green incentives and make companies unwilling to undertake high-quality innovation activities, but they also have the potential to direct companies towards high-quality green innovations. The impact of green credit policies on green innovation may be influenced differently by factors of government behavior. For example, the promotion pressure of local government officials and fiscal decentralization have a moderate influence on the impact of green credit policies on the quality of green innovation in firms. In addition, there is heterogeneity in the innovation effect of the type of patent between the green invention of the innovation effect and the green utility model, suggesting that different types of patents may be differently affected by policies promoting green innovation (Burki, 2018).

Finally, renewable energy policy fails to promote green innovation in the least innovative countries in five different renewable energy sectors and exerts the least influence on geothermal green innovation compared to other renewable energy sources. Promoting green innovation through government policies is not without challenges and limitations. Environmental regulations can increase the cost of controlling pollution, resulting in a reduction in industrial output, inhibition of business innovation, and reduced R&D investment in green technology (Muhammed et al., 2015). The lack of standardized research methods and differences in sample selection and measurement techniques further complicate drawing definitive conclusions about the impact of environmental regulations on green innovation.

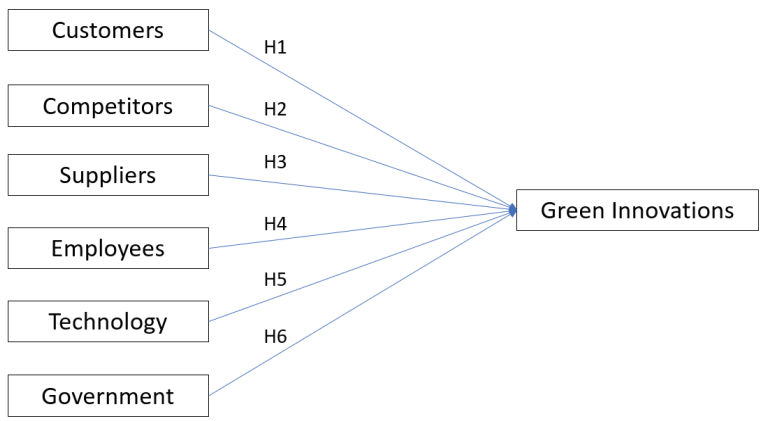
Although some companies comply with environmental regulations, they mainly purchase new pollution control equipment to achieve clean production standards rather than increasing the intensity of their research, development and innovation (Muhammed et al., 2015). The effectiveness of government policies to promote green innovation may depend on the adequacy of environmental regulation. However, environmental regulations can have a positive impact on green technological innovation by promoting the "innovation compensation effect," which stimulates corporate innovation in green technologies.

Limited empirical research has been conducted on the effectiveness of green industrial policies at the firm level in developing countries, and further research is needed to guide the implementation of green industrial policies in these countries. Green industrial policy can promote green innovation among enterprises through the mediating role of government subsidies and bank loans, but is more effective for state-owned enterprises in eastern China. Financing constraints pose a challenge in promoting green technology innovation, and low-carbon city pilots can mitigate these constraints through tax incentives and government subsidies. Regional heterogeneity and the carbon intensity of industry may impact the implementation and targeting of pilot measures for low-carbon cities. Benchmark regression analysis can be used to analyze the impact of these measures on companies' environmentally friendly technological innovations. However, some scholars argue that government subsidies can crowd

out business investment in research and development and trigger rent-seeking activities, thereby reducing the incentive effect of subsidies. In addition, due to the relative situation, companies face significant limitations in accumulating research and development funds.

H6: The government has a significant positive influence on green innovation.

Figure 1. Conceptual framework



Source: Author's own elaboration.

The conceptual framework of this study is grounded in stakeholder theory and is designed to capture the direct influence of key stakeholder groups on green innovation within SMEs. Given the exploratory nature of this research and the limited empirical evidence available in the context of North Macedonian SMEs, the model deliberately emphasizes direct relationships between stakeholders and green innovation outcomes.

While more complex models incorporating mediating or moderating relationships could offer additional insights, the present framework provides a parsimonious and theoretically coherent structure that allows for clear interpretation of stakeholder effects. This approach ensures analytical clarity and methodological robustness, while laying the groundwork for future studies to extend the model by incorporating endogenous relationships among stakeholders.

Interrelationships among stakeholders and green innovation

Although prior research has predominantly examined the individual effects of stakeholders on green innovation, recent studies increasingly emphasize the importance of interdependencies among stakeholder groups. Stakeholders rarely operate in isolation; rather, their influence on green innovation often emerges through mutual reinforcement and interaction. For example, customer demand for environmentally friendly products frequently translates into green innovation only when firms possess sufficient technological capabilities or collaborate closely with environmentally oriented suppliers. Similarly, government regulations and incentives may indirectly stimulate green innovation by encouraging firms to adopt advanced green technologies or restructure their supply chains.

From a stakeholder theory perspective, these interrelationships suggest the presence of endogenous effects, where the influence of one stakeholder group may amplify or mediate the impact of another. In the context of SMEs, particularly in transition economies such as North Macedonia, such interactions may be even more pronounced due to resource constraints and institutional pressures. While the current study focuses on the direct effects of key stakeholder groups on green innovation, acknowledging these interdependencies provides a richer theoretical foundation and opens avenues for future research to explore more complex causal mechanisms.

Methodology

Research Design

A quantitative research approach was used in this study. This approach enabled the collection and analysis of numerical data essential for understanding the impact of green business models on the environmental performance of small businesses in North Macedonia. This led us to choose a quantitative research framework for the study in order to present precise numerical relationships between variables such as green business models and the environmental performance of small businesses in North Macedonia. It is best suited for quantitative

research that attempts to calculate the degree of co-occurrence and can be analyzed using statistical measures to examine patterns or trends. In this research, a quantitative method enabled the targeted assessment of important factors that influence environmental quality.

The purpose of using a quantitative method was to obtain some objective measurements that could be analyzed with statistics. This methodological framework allows researchers to find out how much and in what way the green business model influences environmental performance indicators. It is a way to obtain empirical evidence that goes beyond qualitative reports. The focus is on whether green activities actually have a concrete impact and how they are related to environmental outcomes for specific SME industries. This emphasis on numbers fits with the study's goal of examining quantitative aspects of implementing green business practices. The study attempted to find some objective measures with which statistical tests could be carried out - reliable factors that answer the question of what relationships exist between these variables. Therefore, this quantitative approach is a practical tool to gain insight into the complex relationship between green business strategy and environmental performance in SMEs in North Macedonia.

Surveys were used as a practical means to collect information from a large sample of small businesses in the North Macedonian territory. The choice of a quantitative approach through surveys was motivated by the need to systematically collect empirical data on the impact of green business models on environmental performance. The surveys provided a practical method to explore SME stakeholders' perceptions and practices on green business models. The use of a Likert scale (from 1 to 5) facilitated structured data collection and analysis. To ensure a representative data set, a sample size of 220 SMEs was selected, while a data collection period of three months was chosen to capture possible seasonal variations and obtain a comprehensive overview of operations and practices.

Data Collection

The data for this research was primarily collected through structured questionnaires. The questionnaire method is an established approach to data collection

in economic and social research (Sekaran, 2006). In this case, the questionnaire consisted of items measuring various constructs related to the impact of green business models on environmental performance, with responses on a Likert scale.

A systematic random sampling technique was used to select the sample of SMEs in North Macedonia. A sample size of 220 SMEs was chosen, which was considered appropriate for this study and provided a balance between feasibility and statistical power (Hair et al., 2014). This sample size allowed the results to be generalized to the SME population in North Macedonia. The data was collected over a period of three months from SMEs operating in North Macedonia. The research team distributed the questionnaires through both online and offline channels. Offline sales involved direct contact with SME representatives, while online sales were facilitated through email and online survey platforms. The three-month data collection period ensured a comprehensive data set that captured potential seasonal variations.

The reliability and validity of the questionnaire was checked using established measures. Reliability was assessed using Cronbach's alpha and composite reliability (Chin, 1998). The use of Cronbach's alpha ensured the internal consistency of the questionnaire, while composite reliability measured the reliability of the latent constructs (Hair et al., 2011). Validity was confirmed through an extensive literature review to ensure that the questionnaire items adequately represented the constructs of interest.

Data Analysis

The data collected from questionnaires were subjected to rigorous statistical analysis to test the research hypotheses. The research used structural equation modeling (SEM) to analyze the relationships between the selected stakeholders, green innovations and their impact on environmental and corporate performance. SEM is a powerful analytical technique that allows the exploration of complex relationships in a structural model (Hair et al., 2014). The use of SEM enabled the examination of both direct and mediating effects and provided a comprehensive understanding of the research constructs. According to Hair et

al. (2019), structural equation modeling (SEM) is a well-established statistical technique that is widely used to evaluate complex relationships between latent variables. In the context of green business models, SEM provides a complete architecture for measuring not only the interaction between different stakeholders, but also between them and green innovations and how such combinations affect both environmental performance and corporate profitability. In this way, the indirect impacts of stakeholders on green innovations are captured.

Kline (2015) notes that the strength of SEM lies in its ability to synthesize measurement and structural models, providing an overall view of the factors that influence green innovations and their outcomes. SEM can use latent constructs with multiple indicators, increasing the precision and reliability of measurements. In addition, the method enables the effects of mediation and moderation to be examined. In this way, one can develop a more comprehensive picture of the complex two-way dialogue between stakeholders, green innovation and company performance.

In addition to its analytical function, SEM also opens the door to examining latent interactions (Byrne, 2016), helping researchers find hidden patterns and dependencies in their raw data. But by using SEM to examine how stakeholders influence green innovation and then observing its impact on environmental performance and firm-level profits, scientists can draw conclusions that go beyond mere correlational analyses. The technique used in this study deepens our understanding of the complex interactions that underlie sustainability in business models.

SmartPLS, a widely accepted structural equation modeling software, was used for data analysis. SmartPLS is particularly suitable for complete models and is strongly recommended for partial least squares (PLS) analysis (Hair et al., 2014). The software enabled estimation of path coefficients, assessment of model fit, and assessment of mediation effects. In the field of quantitative research, SmartPLS (Partial Least Squares) is one of these powerful weapons. As Ringle et al. (2015), SmartPLS provides researchers and practitioners with a user-friendly interface for conducting sophisticated statistical analyses, which is particularly

useful because they can use it themselves. The graphical user interface allows scientists to easily build complex relationships between latent data constructs.

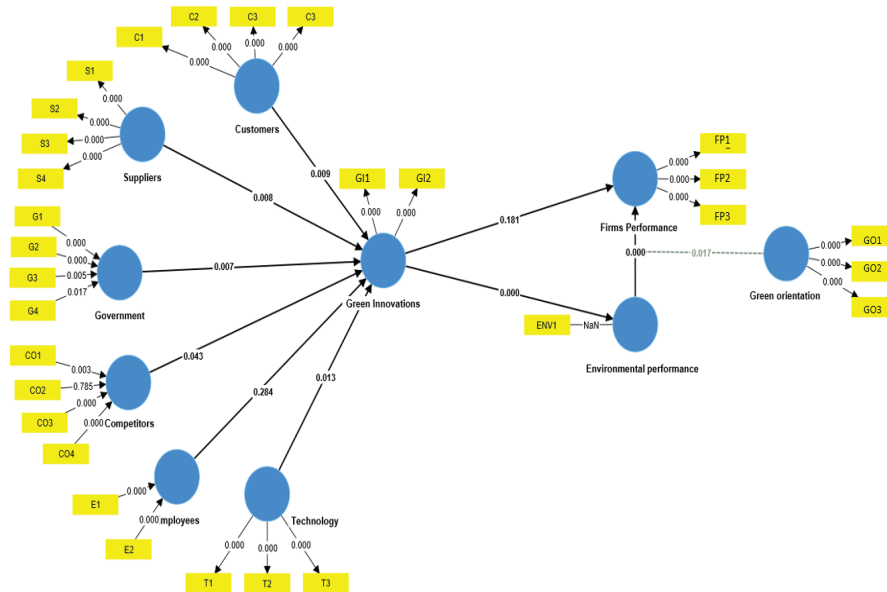
A feature of SmartPLS is its ability to enable predictive modeling in environments where theory development and testing overlap. Haar et al. (2017) note that SmartPLS is particularly well suited for predictive analysis and is an ideal choice for researchers interested in the predictive capabilities of their models. This tool allows the researcher to simultaneously estimate both the measurement and structural models. The overall relationships between latent constructs are illuminated. This versatility makes SmartPLS an easy-to-use but powerful package for researchers seeking a flexible approach to SEM.

Stakeholders (Independent Variables): The stakeholders in your model represent various entities or groups that have a vested interest in a company's activities and performance. This may include customers, suppliers, government agencies, competitors and other parties who may be affected or affected by the Company's actions. As independent variables, examine how the presence and influence of these stakeholders impact the company's sustainability practices.

Green Innovations (dependent variable): As a result, green innovation emerges as the dependent variable that reflects how effectively the firm reacts to stakeholder influence and integrates environmental considerations into its strategic decisions.

Although structural equation modeling allows for the examination of mediating and moderating effects, this study focuses on estimating the direct effects of stakeholders on green innovation. This decision was guided by the primary objective of identifying the most influential stakeholder groups within SMEs and by the need to maintain model parsimony. Given the sample size and the exploratory nature of the research, testing highly complex endogenous structures could reduce estimation stability and interpretability. Consequently, the adopted SEM-PLS approach provides a reliable foundation for identifying key drivers of green innovation, while future research may build upon these findings by testing more intricate stakeholder interrelationships.

Figure 2. Conceptual framework of the SEM model



Empirical Results

Table 1. R-square

	R-square	R-square adjusted
Green Innovations	0,598	0,591

These R-squared values indicate how well your model accounts for the observed variance in each of the dependent variables. The R-squared value for green innovation is 59.8% and the adjusted R-squared is 59.1%. The model predicts almost 59.8% of the variation in green innovations. This implies that independent variables provide a strong explanatory framework for understanding the development of green innovations in the environment.

Table 2. Construct reliability and validity

	Cronbach's alpha	Composite reliability	Composite reliability	Average variance extracted (AVE)
Customers	0,779	0,804	0,858	0,603
Green Innovations	0,769	0,774	0,866	0,684
Suppliers	0,767	0,773	0,852	0,590
Technology	0,831	0,838	0,898	0,747

Reliability and validity are critical to ensuring your measurement tools are robust and accurately represent the designs you measure. These results suggest that the customer construct has good internal consistency as indicated by Cronbach's alpha. The composite reliability values (rho_a and rho_c) also show that the measure is reliable. Furthermore, the AVE, which represents the proportion of variance captured by the construct relative to its measurement error, is moderately high, indicating good convergent validity.

Green innovations construct has good internal consistency as indicated by Cronbach's alpha. Composite reliability scores are also strong, suggesting reliability. The AVE is reasonably high, suggesting good convergent validity. The supplier construct has good reliability, as evidenced by Cronbach's alpha and composite reliability values. However, the AVE is comparatively lower. The technology construct exhibits exceptional reliability, with high values for Cronbach's alpha and composite reliability. The AVE is significant, indicating good convergent validity. The model shows that most of the constructs have good reliability and convergent validity.

Table 3. Discriminant Validity

	Saturated model	Estimated model
SRMR	0,063	0,080
d_ULS	1,874	2,951
d_G	2,657	2,699
Chi-square	3205,461	3241,975
NFI	0,604	0,600

Model fit statistics are critical for evaluating how well your structural equation model fits the data. Here is an interpretation of the fit summary provided, comparing the saturated model to the estimated model. The SRMR is a measure of the discrepancy between the model-implied correlations and the sample correlations. The NFI measures the relative fit of the model compared to the null model. A higher NFI indicates better adaptation. The NFI of the estimated model (0.600) is close to that of the saturated model (0.604), indicating that the estimated model provides adequate fit.

Table 4. Path coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Competitors -> Green Innovations	0,117	0,125	0,058	2,020	0,043
Customers -> Green Innovations	0,197	0,192	0,075	2,611	0,009
Employees -> Green Innovations	0,060	0,063	0,056	1,071	0,284
Government -> Green Innovations	0,178	0,191	0,066	2,709	0,007
Suppliers -> Green Innovations	0,196	0,189	0,073	2,674	0,008
Technology -> Green Innovations	0,152	0,147	0,061	2,491	0,013

Competitors and Green Innovations: The path coefficient is 0.117, indicating a positive relationship between competitors and green innovations. This relationship is statistically significant with a p-value of 0.043. In other words, as competition participation increases, green innovations tend to increase.

Customers and Green Innovations: The path coefficient is 0.197, suggesting a positive and significant relationship between customers and green innovations (p = 0.009). More customer involvement is associated with higher levels of green innovation.

Employees and Green Innovations: The path coefficient is 0.060, but it is not statistically significant (p = 0.284). Employee involvement does not appear to have a significant direct impact on green innovations in this context.

Government and Green Innovations: The path coefficient is 0.178, indicating a positive relationship between government participation and green innovations (p = 0.007). When the government plays a role, it seems to stimulate green innovations.

Suppliers and Green Innovations: The path coefficient is 0.196, indicating a positive relationship between suppliers and green innovations (p = 0.008). Supplier participation is associated with higher levels of green innovations.

Technology and Green Innovations: The path coefficient is 0.152, indicating a positive relationship between technology and green innovations (p = 0.013). The use of technology is associated with increased green innovations.

This suggests that the effect of green orientation on firm performance is moderated by environmental performance, and the interaction reduces firm performance. These results provide valuable information on the relationships between various factors in the implementation of green innovations and their impact on the environmental and firm performance of small and medium enterprises in North Macedonia. It is essential to consider the practical implications of these findings and how they can inform strategies for companies and policymakers.

Hypothesis Testing

This hypothesis proposes that stakeholders in the business model, including customers, suppliers, competitors, employees, technology, and government, have a significant impact on green innovations. The results generally support this hypothesis, as evidenced by the significant positive path coefficients between these stakeholders and green innovations.

H1: Customers have a significantly positive influence on green innovations.

This hypothesis suggests that customers positively influence the development of green innovations. The results support this hypothesis, indicating a significant positive path coefficient between customers and green innovations.

The finding is consistent with theory, as customers increasingly demand sustainable products and services, prompting companies to innovate in environmentally friendly ways to meet these demands.

Companies should prioritize understanding customer preferences for sustainability and develop green products, services, and processes accordingly. Engaging with customers through surveys, feedback mechanisms, and transparent communication can help identify opportunities for green innovation.

H2: Suppliers have a significantly positive influence on green innovations.

This hypothesis suggests that suppliers positively influence the development of green innovations. The results support this hypothesis, showing a significant positive path coefficient between suppliers and green innovations.

The result is consistent with theory, as suppliers play a critical role in the supply chain and can drive sustainability improvements through eco-friendly sourcing, production methods, and collaborative innovation efforts.

Companies should collaborate closely with suppliers to promote sustainability throughout the supply chain. Encouraging suppliers to adopt green practices, providing incentives for eco-friendly sourcing, and fostering innovation partnerships can enhance green innovation efforts.

H3: Competitors have a significantly positive influence on green innovations.

This hypothesis suggests that competitors positively influence the development of green innovations. The results support this hypothesis, indicating a significant positive path coefficient between competitors and green innovations.

The finding is consistent with theory, as competitive pressure can drive companies to adopt sustainable practices and differentiate themselves through green innovation to gain a competitive advantage.

Companies should monitor competitors' sustainability initiatives and strive to innovate in environmentally friendly ways to maintain competitiveness. Collaboration with industry peers through initiatives such as industry alliances or sustainability networks can also foster collective green innovation efforts.

H4: Employees have a significant positive influence on green innovations.

This hypothesis suggests that employees positively influence the development of green innovations. However, the results do not support this hypothesis, as the path coefficient between employees and green innovations is not statistically significant.

While employees are often considered key drivers of innovation, the lack of a significant relationship in this study may suggest that other factors or stakeholders play a more dominant role in driving green innovations.

Companies should explore strategies to enhance employee engagement and involvement in sustainability initiatives. Providing training, fostering a culture of innovation and sustainability, and incentivizing green ideas from employees can help harness their potential to drive green innovation.

H5: Technology has a significantly positive influence on green innovations.

This hypothesis suggests that technology positively influences the development of green innovations. The results support this hypothesis, showing a significant positive path coefficient between technology and green innovations.

The finding aligns with theoretical expectations, as technological advancements can enable the development of sustainable solutions, improve resource efficiency, and facilitate eco-friendly processes and products.

Companies should invest in innovative technologies such as renewable energy systems, smart manufacturing processes, and green supply chain management tools to drive green innovation. Embracing digitalization and adopting emerging technologies can unlock new opportunities for sustainability-driven innovation.

H6: The government has a significant positive influence on green innovations.

This hypothesis suggests that government policies and regulations positively influence the development of green innovations. The results support this hypothesis, indicating a significant positive path coefficient between government and green innovations.

Government intervention through policies, incentives, and regulations can create a conducive environment for green innovation by providing support, setting standards, and promoting sustainability initiatives.

Companies should actively engage with policymakers, participate in public-private partnerships, and advocate for supportive regulatory frameworks to accelerate green innovation. Leveraging government incentives and grants for sustainable projects can also facilitate green innovation efforts.

Discussion

This study provides empirical evidence on the role of stakeholders in driving green innovation within SMEs in North Macedonia. The findings highlight that green innovation is predominantly shaped by external pressures and institutional factors, rather than internal organizational dynamics alone.

Differential effects of stakeholders

The results reveal that customers and government institutions exert the strongest influence on green innovation. This finding reflects the growing environmental awareness among consumers and the increasing role of regulatory frameworks in shaping firm behavior. In a transition economy such as North Macedonia, SMEs are particularly sensitive to market demand and regulatory compliance, which explains the dominant role of these stakeholders. Similar findings have been reported in prior studies conducted in developing and emerging economies, where external pressures often act as primary catalysts for sustainability-oriented innovation.

The limited role of employees in green innovation

Contrary to theoretical expectations, employee influence on green innovation was not statistically significant. This result may be attributed to the structural characteristics of SMEs, where decision-making is often centralized and employees have limited autonomy in strategic innovation processes. Additionally, the lack of formalized sustainability training and incentive systems may constrain employees' ability to contribute effectively to green innovation. This finding does not diminish the importance of employees but suggests that their potential remains underutilized in many SMEs.

Comparison with prior research

Compared to studies conducted in more developed economies, where internal capabilities and employee engagement play a stronger role, the findings of this study underscore the contextual nature of green innovation drivers. In transition economies, external stakeholders such as customers, suppliers, and government institutions appear to play a more decisive role, highlighting the importance of institutional and market-based pressures in shaping sustainability strategies.

Conclusion

This study examined the influence of key stakeholder groups on the development of green innovations within SMEs in North Macedonia. The empirical results clearly demonstrate that most stakeholders—customers, suppliers, competitors, technology providers, and government institutions—play a significant and positive role in driving eco-innovative practices. Among these, customers and government agencies emerged as particularly influential, highlighting how market expectations and regulatory environments jointly shape firms' sustainability trajectories. These findings reinforce the notion that green innovation in SMEs is not only a strategic managerial choice but also a response to external pressures and collaborative opportunities.

The results confirm that SMEs that actively engage with their supply chains, leverage technological advancements, and monitor competitive dynamics are

more likely to adopt environmentally friendly processes and products. Although the influence of employees was not statistically significant, this does not undermine their importance. Instead, it suggests that SMEs may require stronger internal structures, training systems, and motivational frameworks to fully harness employee potential for green innovation.

Overall, the study contributes valuable insights into how stakeholder-driven dynamics support the transition toward sustainable business practices. Strengthening cooperation with stakeholders, investing in green technologies, and fostering supportive governmental measures can significantly accelerate eco-innovation across the SME sector. These findings offer both theoretical contributions to stakeholder and innovation literature and practical implications for managers and policymakers aiming to enhance sustainability and environmental performance in emerging economies.

While this study provides valuable insights into the direct effects of stakeholders on green innovation, future research could extend the analysis by incorporating mediating and moderating mechanisms. For instance, technological capability or supplier collaboration may mediate the relationship between government policy and green innovation, while firm size or industry type could moderate stakeholder influence. Longitudinal studies could further explore how stakeholder pressures evolve over time and how SMEs adapt their innovation strategies accordingly. Such extensions would contribute to a deeper understanding of the dynamic and interconnected nature of stakeholder-driven green innovation.

Contribution Rates and Conflicts of Interest

Ethical Statement	İt is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited
Author Contributions	
Data Collection	SM (60%), BB (40%)
Data Analysis	SM (60%), BB (40%)
Research Design	SM (60%), BB (40%)
Writing the Article	SM (40%), BB (60%)
Article Submission and Revision	SM (30%), BB (70%)
Complaints	journalbem@gmail.com
Conflicts of Interest	The author(s) has no conflict of interest to declare.
Grant Support	The author(s) acknowledge that they received no external funding in support of this research
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Appendices

Table 1A: Questionnaire design

Variables	Item Content	Source
	C1. Our customers require our company to improve our environmental performance	El-Kassar and Singh, 2019 Lin et al.,2013
Customers (C)	C2. You collaborate with your customers to develop eco-innovations. C3. Customer requests have motivated your company to include ecological products. C4. Your customers have a clear interest in increasing the number of ecological products.	
	S1. Our supply chains and business partners require our company to improve our environmental performance	Schiederig et al., 2012 Qi et al., 2018

Suppliers (S)	S2. You collaborate with suppliers to develop eco-innovations. S3. Your suppliers offer raw materials or other components to realise eco-innovations. S4. Suppliers have a clear interest in increasing the supply of raw materials and ecological components for environmental protection.	
Employees (E)	E1. Your staff is happy to provide ecological products and services. E2. Your staff uses teamwork to protect the environment with ecological products. E3. Your staff receive complete support for environmental protection with ecological products. E4. Your staff understands how green operations fit into daily work. E5. Your staff is free to make decisions about environmental issues and ecological products.	Bowen et al., 2001 Dubey et al.,2015 Srinivasan and Kurey, 2014

Technology (T)	T1. My company adopts green technology. T2. It is difficult to obtain the latest green manufacturing technologies due to rapid technological changes. T3. It is difficult to implement green production technologies because of the high degree of technological compatibility.	Camison et al., 2014 Sui et al., 2015
Competitors (CO)	CO1. Our company enters new markets faster than competitors CO2. Introducing new products/services faster than competitors CO3. The success rate of new products/services is higher compared to the competition. CO4. Market share was exceeded compared to competitors.	Aboelmaged & Hashem,2019 Zacharia et al., 2011

Regulatory (REG)	RG1.The government requires our company to improve our environmental performance. RG2. Your company develops eco-innovations to comply with regulations, laws, or restrictions that are epected to be imposed in the future. RG3. Your company develops eco-innovations to comply with current regulations, laws, or regulations. RD4. Your company develops eco-innovations using government grants, subsidies, or other financial incentives for environmental protection. RD5. Your company does not use government grants, subsidies, or other financial incentives for the development of ecoinnovations for environmental protection.	Schiederig et al., 2012 Chang and Chen, 2012 Chen and Chang, 2013;

Green Product Innovation (GPR)	GRP1. My company uses materials that produce the least pollution. GRP2. My company uses materials that consume less energy and resources. GRP3. My company uses materials that to design an environmentally friendly product. GRP4. My company uses materials that are easy to recycle, reuse, and decompose.	Chen et al., 2006 Utterback & Abernathy, 1975
Green Process Innovation (GPC)	GPC1. The manufacturing processes of my company effectively reduce hazardous substances or waste. GPC2. The manufacturing processes of my company effectively reduce the consumption of coal, oil, electricity, or water. GPC3. The manufacturing processes of my company effectively reduces use of raw materials	Chen et al., 2006 Utterback &Abernathy, 1975

Modernization and the Elite Cycle: State Formation and Economic Elites in the Ottoman Empire

Mustafa Can Güripek

Abstract: This study focuses on the question of why states need elites. Throughout history, political powers (such as tribal leaders, great emperors, or nation-states) have shared some of their power, albeit in a limited manner, with certain individuals who held authority to rule, setting them apart from the general population. Over time, as the central power of a political entity weakened, the power of those acting on behalf of the center increased. Conversely, when the administrative power of the center strengthened, the powers in the periphery remained more limited. These individuals with whom power is shared are commonly referred to as the elite. Though not entirely separate from society, the elite occupy a higher position in the social hierarchy compared to the rest of society. The primary focus of this study is to trace how the pre-modern state-elite relations transformed during the process of modernization. During the 18th and 19th centuries, the Ottoman Empire, like other contemporary states, sought to embrace change and modernize. Consequently, the relationship between the political power and peripheral powers underwent reconfiguration. As the Ottoman state attempted to eliminate existing elites, new ones were simultaneously created to take their place. Another important aspect addressed by this study is the exploration of the organic link between the new elites and the state. This includes examining the economic relations of the emerging 19th-century Ottoman elite with the state and amongst themselves.

Keywords Elites, Elite Cycle, Ottoman Empire, Bourgeois, Modernization

Güripek, M. C. (2025). Modernization and the elite cycle: State formation and economic elites in the Ottoman Empire. *Journal of Balkan Economies and Management, 2*(1), 59-97

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Balkan Studies Foundation
DOI: https://doi.org/10.51331/bemA011
Journal of Balkan Economies and Management, 1(2), 2025
journalbem.com

Received: 20.10.2025
Accepted: 21.11.2025

Introduction

Throughout history, no state has governed without elites. From the military aristocracies of early empires to the bureaucratic classes of modern nation states, elites have acted as indispensable intermediaries between rulers and the ruled. Classical elite theorists such as Gaetano Mosca and Vilfredo Pareto emphasized that political power inevitably concentrates in the hands of a minority and that this minority is periodically renewed through a process of "elite circulation." In this cyclical dynamic, old elites lose legitimacy or capacity, while new groups emerge to meet the evolving needs of governance. Elite change, therefore, is not merely a social outcome but a structural condition for state continuity.

The Ottoman Empire in the late eighteenth and nineteenth centuries provides a particularly rich setting for observing this process. The crises of the eighteenth-century provincial autonomy, fiscal exhaustion, and military defeat gave rise to powerful local notables (*ayan*), tax farmers (*mültezim*), and other provincial elites who filled the vacuum left by a weakening imperial center. Yet, as the empire entered the nineteenth century, reformist sultans such as Selim III and Mahmud II sought to reverse this decentralization. The abolition of the Janissary corps in 1826, the suppression of semi-independent ayan households, and the curtailment of the ulema's administrative influence were not simply acts of centralization; they marked the beginning of a new cycle of elite transformation. Old elites rooted in patrimonial and military networks were dismantled, and new ones emerged in their place above all, a professionalized, salaried bureaucracy loyal to the sultan, and state-connected economic actors who operated under official protection.

This transformation was institutionalized during the Tanzimat era (1839-1876), when the Ottoman government embarked on comprehensive administrative and fiscal reforms. The creation of ministries, provincial councils, and codified laws produced a distinct bureaucratic elite defined by education, legal expertise, and service to the state rather than lineage or local power. At the same time, the empire attempted to cultivate a Muslim commercial class through initiatives, integrating economic elites into the state's modernization project. However, property insecurity, the persistence of *müsadere* (confiscation), and the lack of

autonomous corporate institutions prevented these elites from evolving into an independent bourgeoisie comparable to their European counterparts. By situating the Ottoman case within the broader framework of elite theory, this article examines how modernization reshaped the relationship between the state and its elites. It argues that nineteenth century Ottoman reforms did not merely dismantle existing elites but reorganized the mechanisms through which power, wealth, and prestige were distributed. In contrast to the European model, where capitalist development fostered autonomous social classes, the Ottoman trajectory produced state-dependent elites whose fortunes were tied to imperial authority. In this sense, Ottoman modernization represents not a linear importation of Western institutions but a complex process of elite reconfiguration, one that reveals how state survival and social transformation were mutually constituted within the empire's late modern history.

This article seeks to explain how the relationship between the state and elites evolves under conditions of modernization, taking the nineteenth-century Ottoman Empire as a case study. Rather than relying on archival data, the study builds its analysis on conceptual synthesis and comparative interpretation, combining classical elite theory with secondary historical scholarship on Ottoman social and economic transformation. Its aim is twofold: first, to trace the mechanisms through which elites sustain and reproduce state power across different historical contexts; and second, to show how modernization reorganized these mechanisms within the Ottoman polity.

By linking elite theory to Ottoman modernization, the study contributes to the literature in two main ways. Conceptually, it extends the classical "elite circulation" framework beyond its Western origins, demonstrating how it can illuminate non-Western experiences of institutional change. Empirically, it reframes Ottoman modernization not merely as a process of reform or Westernization but as a deliberate reconfiguration of elite power where old patrimonial and military groups were replaced by bureaucratic and economic actors whose legitimacy derived from the state. In doing so, it bridges a gap between political sociology and Ottoman studies, offering a perspective that connects macro-level theories of power to the empire's particular social dynamics.

The article is organized into four sections. The first discusses why all states, regardless of form or era, depend on elites to maintain political order and legitimacy. The second outlines the main typologies of elites; military, genealogical, religious, bureaucratic, and economic and traces their historical evolution. The third examines how Ottoman elites transformed during the eighteenth and nineteenth centuries, focusing on the decline of the ayan, the abolition of the Janissaries, and the rise of a centralized bureaucratic class. The fourth section analyzes the emergence of economic elites and the institutional constraints that limited their autonomy. Together, these sections reveal that Ottoman modernization was less a story of Western imitation than one of internal reorganization, in which the state reconstituted its elite foundations to ensure continuity amid change.

Why does the state need elites?

From the earliest human communities to modern states, social relations have been shaped by the persistent attempts of individuals to dominate or persuade others to fulfill their will. As populations grew, it became evident that this chaos needed to be controlled. Consequently, certain individuals assumed roles as rule-makers on behalf of the community. Initially, this authority was often based on physical strength, but it evolved over time, taking various forms. Even in the earliest civilizations, there existed a ruling class composed of individuals relying on physical prowess. As societies progressed, factors such as the domestication of animals, population growth, and agricultural advancements reshaped the nature of the ruling class. Gaetano Mosca, an early scholar, examined political structures throughout history and posited that societies are fundamentally divided into two groups: the rulers and the managed. The ruling class has always been smaller in number, while the governed class constitutes the majority. The rulers make decisions on behalf of the majority and strive to maintain the political structure. Two crucial aspects of the ruling class's role are ensuring the economic welfare of the governed and safeguarding them against external threats. These responsibilities are vital for the stability and continuity of the political structure (Mosca, 1939: 430-460). The concept of elites - encompassing

elements of violence, oppression, social agreements, and welfare - remains a consistent and influential force in society (Hartmann, 2007: 9).

Wilfred Pareto is another prominent figure who contributed to the theories of elitism. One of his significant principles, known as the Pareto principle, is observed in various social sciences. It asserts that a minority governs the majority, and this concept is particularly relevant when examining the economic dimension (Pareto, 1935: 1517-1520). Economists have long discussed the concentration of most income in the hands of a ruling minority, while a smaller portion is shared among the vast majority of individuals. According to Pareto, the ruling class must adapt to the changing principles of the age. Failure to do so would result in new elites replacing the existing ones. He likens the existence of elites in society to a cycle, which he termed the "Elite Cycle." Building on Pareto's work, Kolabinska further divides the elite cycle into two phases. The first phase involves the transformation between different types of elites. A wealthy individual, relative to the rest of society, belongs to the economic elite. When such a person ascends to power, they become part of the ruling elite rather than just the economic elite. In the second phase of the cycle, non-elite individuals have the opportunity to transform into elites. This transformation can occur in two ways: a person from a humble background can achieve elite status through exceptional achievements, under certain circumstances such as rebellions, wars, or invasions, the existing elites may be ousted from the system, and new elites emerge in the process (Bottomore, 1993: 36).

Over time, two major revolutions played a crucial role in shaping and changing the dynamics of elites. The first of these revolutions was the Neolithic revolution, which led to an enormous increase in the scale of organizations. This growth in collective wealth and power gave rise to the first kingdoms and empires. These newly formed kingdoms continued to expand, conquering surrounding territories and other states. As a result, for several millennia, vast swaths of the earth's surface were ruled by empires like the Sumerian, Egyptian, Chinese, Persian, Roman, Inca, and Aztec empires. This period marked a significant revolution in its time, brought wealth and power to a select few but also had both beneficial and harmful effects on many. Prior to the Neolithic revolution, human

societies often engaged in casual, carefree, and relatively unstructured activities such as hunting and gathering. This lifestyle, though simplistic, allowed for a sense of freedom in their natural environment. However, with the emergence of organized kingdoms and empires, the majority of people faced a transition to a life of hard and constant work. This transformation represented a significant change from their previous way of life, and while it brought benefits to some, it also introduced challenges for many. In summary, the Neolithic revolution and the subsequent growth of kingdoms and empires played a pivotal role in the evolution of elites and societal structures. While it brought wealth and power to certain individuals and groups, it also introduced a shift from the carefree past to a more structured and labor-intensive existence for a considerable portion of the population (Perkin, 1996: 8-15). Indeed, the Industrial Revolution was a transformative period that redefined the concept of the elite. With the advent of industrialization, new categories of elites emerged, reflecting the changing economic and social landscape. Various professions and roles gained prominence, leading to the rise of different types of elites.

During the Industrial Revolution, factory owners held significant power and influence, as they controlled the means of production and accumulated wealth. Union leaders also played a crucial role in representing and advocating for the rights of the working class. Technological advancements during this era led to the rise of technical experts, including engineers in various fields, including civil, mechanical, chemical, electrical, and electronic engineering. These professionals were instrumental in driving innovation and progress in the modern sense. The expanding business landscape necessitated the presence of accountants and company secretaries, who became key figures in managing financial affairs and maintaining corporate structures. Writers, journalists, and media professionals became influential in shaping public opinion and disseminating information, earning their place among the elites. Likewise, medical professionals, dentists, scientists, statisticians, and other experts contributed significantly to the advancement of knowledge and the improvement of public health. University professors and school teachers, as educators and intellectual guides, also held a prominent position within the educated elite, shaping the minds of the next generation. Moreover, architects and healthcare professionals were

essential contributors to societal development, both in terms of physical infrastructure and public well-being. However, as time progressed, the concept of the elite has evolved. While certain types of elites have continued to hold significant power and influence in the understanding of the nation-state, some have transitioned into being primarily seen as symbols of social status, rather than exerting direct political or economic control. Overall, the Industrial Revolution played a vital role in diversifying the types of elites and expanding their influence across various professions and sectors. Today, the nature and significance of the elite continue to evolve as society progresses and undergoes further transformations.

Types of Elitism and the Elite Cycle

There are various types of ruling elites engaged in a two-way struggle. The first part of this struggle involves maintaining their existing power. The second challenge is to expand their influence further. Political crises, economic fluctuations, occupations, and technological innovations may lead to the replacement of existing elites with new ones. Additionally, economic elites may rise by assuming political roles and increasing their power. These dynamics constitute what is known as the elite cycle (Kolabinska, 1912: 44-54). The elites in the elite cycle do not necessarily belong to the same category. It is entirely possible for an individual to be part of multiple elite categories simultaneously. To fully comprehend this cycle, it becomes essential to explain the various types of elites involved.

Military elitism

Military elites and political elites can be considered as the first types of elites in history. Unlike family conflicts or social turmoil, war possesses a distinct structure. Those defending the society against external attacks have consistently been set apart from the rest of society (Janowitz, 1957: 11-13). Specifically, individuals leading soldiers such as commanders and military leaders are referred to as the military elite. Due to their role as guardians of political power, military

elites hold a privileged position. In pre-modern times, military power itself constituted the legitimate basis of political power.

According to Marcel Mauss's theory, birth was the most crucial determinant of a person's life in pre-modern times. Where an individual was born, their race, and other innate qualities determined their position in life. If someone was born into an important family, their life reflected their social standing. Similarly, those born tall, strong, and capable of combat were placed in the military hierarchy. Mauss interpreted this situation as a divine gift (Cowell, 2007: 16). Since the vertical hierarchy between strata in society in the pre-modern period was rigid; it was almost impossible for the frail child of an agricultural family to attain elite status.

In pre-modern times, legitimacy was primarily derived from physical strength and military competence. The most notable characteristic of rulers was their status as warriors. The political elite and the military elite were often concentrated in the same hands. For instance, in the Inca Civilization, soldier-kings known as "cinchecona" ruled (Amıno, 2015: 351). During the first dynasty in China (Shang Dynasty), the defining feature of kings was their role as warriors. The sanctity of warrior-kings emerged when physical strength and the ability to wield weapons were combined with political power (Keightley, 1999: 125). In the Sumerian civilization, the individuals who safeguarded and governed the cities were military lords. The source of legitimacy derived from military service, and the god-King-Warrior trilogy was embodied in one person (Çığ, 2012: 153).

Over time, although the soldier-king myth persisted, this structure started to professionalize. As states and empires expanded, military elites emerged to holistically address the military structure. Concurrently, elitize within the military began to take place. For instance, in China, an aristocratic-warrior class was formed to combat external threats, particularly invasions. These individuals held a distinct position within society, but they remained subordinate to the king (Poo, 2005: 78). In the Roman Empire, a military consul was established to advise the king on military matters and formulate strategies (Johnston, 2013: 25-34). Even in the northern Germanic communities, where military service was considered the holiest profession and every man was trained as a soldier,

over time, the military hierarchy and political administration began to separate (Wilcox & Trevino, 2000: 25). Even in a society like Carthage, where being a good soldier meant being a good citizen, commanders in wars formed the military elite (Scullard, 2008: 19-21). As society expanded and the number of soldiers increased, military elites were needed to command the war.

As the understanding of the state developed, the relationship between the military elite and the state underwent changes. States began selecting their military elites from loyal individuals who could command thousands of troops and were highly dependent on the central administration. Both the Byzantine Empire and the Seljuks balanced the military elite by granting them land in exchange for their loyalty and success (İnalcık, 2012: 168-170). The Ottoman Empire and the Safavids, on the other hand, had developed a structure that completely tied the military elites to political power. In the system called Kapıkulu in the Ottoman Empire and gulam in the Safavids, the military elites were completely under the command of the ruler. Political authority was positioned above military authority (Lindner, 2012: 22-30). This system was a balance mechanism developed by the center against feudal tendencies.

Genealogical elitism (Aristocracy)

Aristocracy, in the social sense, is a concept that refers descendants of political authorities and ruling elites who inherit the same privileges. Even in the oldest civilizations of history, a certain minority passed on their privileges to their subsequent generations. With a simple formula, 'a good birth' became the most fundamental key to becoming part of the elite (Doyle, 2010: 2). This system, which existed thousands of years before the modern conception of democracy, is an important part of preventing political turmoil (Hoppe, 2014: 22). Aristocracy derives from the word *aristoi*, meaning "best citizens". It is a word that denotes power, wealth and prestige (Duplouy, 2013: 696). Many of the properties owned in pre-modern times were passed on to the next generations. And this was called aristocracy.

The Ottoman Empire was an aristocratic state in administrative terms, functioning as a monarchy. Since Osman, the founder of the state, rulers came from

the same family. However, unlike their European contemporaries, elite families with significant influence on the government did not exist. Therefore, during the period under examination (19th century), one cannot speak of a blood-based aristocracy that perpetuated through generations in the Ottoman Empire. This topic will be discussed in detail in the second part.

Financial Elites

One of the most fundamental arguments of elitism is wealth, and the institution that ensures the perpetuation of wealth among members of the same family is inheritance. In other words, the law of inheritance forms the basis of the financial elite (Tacoma, 2006: 205-206). Through the inheritance system, wealth can be passed down within the same family, ensuring its continuity over generations. The development of the law of inheritance occurred in Rome, where the elite held prominence. Agricultural production was one of the most profitable areas in the Roman Empire. Thanks to the inheritance of agricultural lands from father to son, wealth could be preserved within the family, guaranteeing the living conditions of future generations.

From the Stone Age to the present, one of mankind's greatest discoveries has been trade. Thanks to trade, meeting unlimited needs became easier (Davis, 2017:18-20). Merchants generated profits by trading various goods, and with the development of the inheritance law described above, they ensured that capital remained within the family (Curtin, 2008: 8-14). However, after periods of turmoil, invasions, and wars, the origins of the modern bourgeoisie were laid in the Middle Ages. Capitalist families such as Medici family emerged during a period of relative peace when the law of inheritance had developed. As entrepreneurs amassed a certain level of capital, they shifted their focus to the financial field. The power of financial elites became increasingly important for the state.

The separation of capital into public and private capital paved the way for capitalists to become the elite. The fact that wealth was in the hands of individuals other than the state treasury marked a crucial stage. In the economic arena, those engaged in businesses outside the purview of the state, or collaborating with the state, managed to accumulate capital. In instances where the state's

economic structure was weak, these private capital owners also gained political power by aiding their states during times of crisis. Furthermore, similar to many premodern European states, they established armies with their financial resources. The Medici family was neither the first nor the last of such financial elites. Nonetheless, as Florence's wealthiest family, they wielded significant influence in the administration of the state (Roover, 1963: 31-45).

The most evident divisions of the financial elite were in the area of tax collection. As a natural obligation, the state had to ensure the safety of life and property for the people within its borders. To finance these essential tasks, states collected taxes. However, establishing a new fiscal organization in pre-modern states incurred high costs, including trained human resources, construction of public spaces, personnel expenses, creation of new laws, tax calculations, and more. As an alternative, tax collection was delegated to other individuals. Collecting taxes on behalf of the state, the king, or the emperor also implied that the state shared its authority. Consequently, the financial elites possessed the political power of the state behind them. In this manner, public capital resources were made available to private capital, and the relationship between the financial elite and the state evolved into a more complex direction (Verdier & Bourguignon, 2012: 258).

However, in periods when the political, social, cultural, and economic structures underwent changes, the elite cycle came into play. Thanks to the contingency of history, new elites rose, while old elites declined. This pattern occurred repeatedly throughout history. For instance, with the conquest of regions previously under Greek rule by Rome, the local elites endeavored to assimilate into the Roman period. They adopted Roman customs and began using Latin names. This trend persisted during the time of Augustus and Marcus Antonius, and some of these elite families successfully integrated into the Roman elite (Lamprou & Riginos, 2017: 6). However, the main breakthrough occurred in the 15th and 16th centuries, forming the origins of today's modern elitism. In the early modern period, European princes were almost constantly engaged in warfare. Despite being able to collect significantly more taxes than their late fifteenth or early sixteenth-century predecessors, resources were running short.

It was also challenging for them to establish a state bureaucracy independent of the elites or to compel these elites into submission. The prolonged wars placed enormous, unprecedented, and unsustainable financial pressures on the noble dynasties. As a result, taxation began to have an impact on the elites as well (Morrill & Friedeburg, 2017: 3).

The increase in taxation, prolonged wars, and the shift from fame and fortune to economic dynamics revived the elite cycle in early modern continental Europe. The conflicts between the elites created by the feudal system and the blood-based elites in the 15th and 16th centuries facilitated the emergence of Republic-like structures. As a consequence of these conflicts, parliaments were established to protect the interests of the elites among themselves. Especially the states influenced by the Protestant revolution had to adopt the parliamentary management approach (Morrill & Friedeburg, 2017: 6). With the advent of Enlightenment thought, new elite classes emerged and became part of the elite cycle. In other words, modernizing states required modern elites. There was a collaboration between Enlightenment thinkers and the bourgeoisie. The bourgeoisie found itself in a challenging position, stuck between the monarchy and the aristocracy, sought a new way out. This opportunity arose during the era of enlightened despots. For example, when Napoleon militarily defeated Prussia, it provided Joseph II the space to reorganize the social hierarchy.

Under the leadership of Karl Freiherr Stein and Karl August von Hardenberg, a series of reform movements known as Stein-Hardenberg reforms were attempted. These reforms aimed to support industrial production instead of the monopoly power of the guilds. They also aimed to distribute land more equitably among the peasant base and strip the elite of their privileges over the land. Joseph II thus created a new elite group and a bureaucratic elite group with his own hand (Struve, 1973: 23-26).

Just as in Prussia, elite groups in France during the early modern period began to diversify. The power of the aristocracy was starting to crumble. As guardians and enforcers of modernizing laws, judges and lawyers emerged as the judicial elite. Concurrently, people in the trade and finance sector gained power due to the development of business partnerships. During this period, the elite acted as

a transmission link between the people and the monarchy. In response to the Protestantization of Germany, the French elites became staunch Catholic supporters. They were also the visible faces of the King's public charities during times of privation (McHugh, 2007: 13-15).

In addition to these elements, there exists another form of elitism intertwined with political, military, and aristocratic power. This group, which can be considered as religious elites, takes on a social role by nourishing from the dialogue between people and the creator. As will be seen in the second part of the article, there was no hierarchical religious elite group in the Islamic religion. In other words, there was no concept of a church that could be used in the classical sense in the Ottoman Empire. However, throughout the historical process, religious elites found their place in many religions and beliefs. For instance, in Byzantium, monastery priests always held a privileged status (Morris, 1984: 113). Using the power of religion, they became an elite group. In China, religious officials who went through Confucian education held a high status similar to dynasty members. Even though ruling families changed, the status of religious elites remained constant (Man-Cheong, 2004: 185). In Europe and in the eyes of many Catholics worldwide, the importance of the Vatican shows that religious elites have a significant place in social stratification.

Modern Elites

Elitism is acknowledged as a source of power. As seen above, this origin can sometimes be related to wealth, physical-military power, or bloodlines (Clark, 1989: 1706-1711). However, the sources of elitism are not limited to these alone. Legal power and technical knowledge can also be sources of elitism. With modernization, social life has expanded significantly and taken a form that includes the entire population. The impact of the technological revolution on human life has not been limited to specific areas; it has also reshaped social strata. Individuals possessing technical knowledge have become more important in society with the proliferation of modern inventions and their widespread use in everyday life. With the extension of state institutions and apparatus into the public sphere, a class has emerged that possesses both political power and knowledge.

Although this class has existed throughout history, the number of individuals belonging to it has increased with modern states. Thus, a bureaucrat elite typology has emerged.

Technical Elites

Throughout history, regardless of the society, individuals with exceptional skills, creative intelligence, and the ability to invent have always stood out from the rest of the masses. A highly skilled sword master, a weapon expert capable of using gunpowder in firearms, a doctor developing innovative treatment methods with different plants, or an engineer who can build a sturdy bridge over a river, these individuals have always been regarded as part of the societal upper echelons (Augustine, 2007: 3-12). Many people, working under the patronage of states and empires and benefiting from their technical knowledge, have differentiated themselves based on their opportunities. However, the increase in industrialization and the integration of technological devices as an indispensable part of human life has led to the segregation of the technical elite group from other professions such as doctors and lawyers, solely focusing on the technological domain. The rise of modern economies, alongside the proliferation of education, has facilitated an increase in the number of technological elites. Consequently, a high-tech-producing technical elite class has emerged (Noble & Roberts, 2020: 114).

Bureaucratic Elites / Legal Elites

With the modernization of states, innovations have occurred in education, military, technology, and the economy. Alongside these developments, changes have also taken place in forms of governance. As the concept of the nation-state became more widespread and with the increase in legal regulations and population, a ruling class emerged within the states. Regardless of the legitimacy of power (democracy, monarchy, constitution, etc.), the number of government officials increased during the 19th century. These government officials came to be known as bureaucratic elites (Jacoby, 1973: 34-35). The modernization of the state triggered the need for spreading governance to the grassroots level.

The governance model that spread to the grassroots required an increase in the number of government officials. States no longer operated with a limited bureaucratic group, such as governors and local administrators, as they did in the past. Instead, they expanded the number of these individuals to address new tasks and responsibilities. As a result, starting from the 19th century, the concept of a bureaucratic elite class emerged (Wright, 1999: 10-12). Indeed, bureaucratic elites constituted one of the key dynamics of the Ottoman Empire in the 19th century, as will be seen in the subsequent sections.

Elites in the Ottoman Empire in the 19th century

The Ottoman Empire entered a process of modernization during the reigns of Sultan Selim III and Sultan Mahmud II in the 19th century. The reasons behind these modernization efforts were military, political, and economic failures. Therefore, certain reform efforts were necessary to reorganize the state in a manner similar to other Western European states. The classical institutions of the Ottoman Empire had become dysfunctional, and the central authority of the state had weakened. This study focuses on how the elite classes acted during the modernization movement initiated by the Ottoman Empire. The elite groups considered include the powerful individuals in the surroundings, known as ayan, the Janissaries who held an important position in the military hierarchy, the ulema who, although not religious elites, had power, the commercial elites, the bureaucratic elites, and naturally, the central figure, the sultan, as determined by the imperial form of governance.

During the 18th century, the political authority of the Ottoman Empire in its provinces experienced erosion. The primary causes of this power decline were the wars fought against Russia and Austria, which frequently resulted in unfavorable outcomes for the Ottomans, imposing a substantial financial burden. Each military engagement inflicted considerable damage on the state budget, prompting the adoption of various measures, such as the transformation of timar lands into mukataas and internal borrowing, to alleviate the financial strain. However, this process led to more profound disruptions in the already fragile and inconsistent financial administration of the Ottoman Empire, consequently

exacerbating its instability. This situation had taken on a vicious cycle (Cezar, 1996: 30-42). Particularly in the Balkan and Arab regions, the authority vacuum emanating from the Babı-ali (Ottoman central government) had first resulted in a series of rebellions, and subsequently, it was filled by local elements known as "ayan". The prolonged wars with Russia and Austria led to soldiers deserting the frontlines. Soldiers who were not receiving their wages would act in an undisciplined manner and seek protection under the influence of powerful individuals in the periphery. Consequently, the "ayan" figures gained strength and influence even in the military field (Akçura, 1988: 37).

The empowerment of ayan figures was a consequence of the weakening of Ottoman authority. The retention of power by ayan individuals meant continuous political, military, and economic weakening of the Ottoman Empire. According to Mark Pinson, the period of banditry between 1795 and 1810 eroded the Ottoman Empire both economically and militarily. This process, which began in the 1790s, was further compounded by Napoleon's military activities in the Balkans, the Russian advance into the interior of the Balkans during the 1828-1829 Ottoman-Russian War, and the independence gained by the Serbs and Greeks. The region was being governed by individuals known as ayan, who lacked cohesive military and economic administration and consisting of quasi-autonomous structures (Pinson, 1975: 105-108). Yuzo Nagata asserts that in order to rectify the financially strained state caused by long wars, the Ottoman government dispatched special authorized individuals (mütesellim) to the provinces to ensure regular tax collection. Over time, these individuals gained authority and power in the provinces, becoming autonomous figures in their own right, according to Nagata's argument (Nagata, 1997: 21-22).

The peak of power for the ayan figures in the provinces was marked by a document known as "Sened-i İttifak". Under the leadership of Grand Vizier Mustafa Pasha, a consultative assembly was convened, where the ayan from the provinces participated. The purpose of this assembly was to secure the implementation of the Nizam-ı Cedid reforms, which were initiated during the reign of Sultan Selim III and continued during the reign of Sultan Mahmud II. By bringing together the ayan and the Ottoman bureaucracy, the aim was to resolve disputes

and ensure cooperation in implementing the reform measures (Berkes, 2012: 138). The text of Sened-i İttifak has been interpreted by some historians as the state's attempt to delineate the authority areas of the ayan figures. The main basis for this interpretation is that powerful ayan figures refused to sign this document. Their refusal to endorse the Sened-i İttifak is seen as evidence that the state's attempt to regulate their authority was not well-received by those who already held significant power in their regions (Akyıldız, 1998: 209-212).

We have made an important point here. Ayan figures were elite individuals in the periphery, and they faced direct competition from the central administration, represented by the Sultan (Akdağ,1963: 54). There was a conflict between the peripheral elites and the Ottoman central elite. Considering the conditions of the 19th century, these spontaneously emerging elites operated independently, far from the center. The reasons behind their disconnection from the center were largely attributed to the transportation and logistical limitations of the era. In pre-modern and early modern states, as one moved away from the center, political and military loyalty to the central authority decreased. One of the most typical examples in history is the relationship between England and its regions like Ireland, Scotland, and Wales. During the Tudor Dynasty in the 1500s, although the crown claimed to rule over all of England and Wales, the king's decree did not apply to most of Wales and northern England. Only about a third of Wales was occupied, and some regions in Wales and northern England did not send any representatives to Parliament and were, therefore, not subject to taxation. The Tudors in Ireland were "lords" rather than "kings," and their decrees were applicable in less than 10% of Ireland. The rest of Ireland was governed by the descendants of Late Norman settlers and over 100 indigenous tribal leaders. Scotland was a separate monarchy ruled by kings who regularly acknowledged the feudal sovereignty of English kings but maintained de facto independence (Morrill, 2017: 18-22). Indeed, engaging in a costly and non-profitable military conflict far from the center was not rational for the state, especially considering the distance involved. During this period, the central structure and state power were not yet strong enough to justify such endeavors. As a result, this situation was tolerated until the central authority and state power began to strengthen.

In the 19th century, one of the elite classes in Ottoman society was the Janissaries, a military unit. Originally representing the Sultan's centralized power, the Janissaries gradually lost this characteristic and transformed into a force threatening the central administration. In the 14th century, the Ottoman principality consisted of soldiers united under the principles of gaza (holy war) and jihad. (Emecen, 2010: 76-84). As centralized tendencies emerged, a portion of war spoils, whether in the form of slaves or commodities, began to be allocated to Ottoman leaders. During the state formation process, the Ottomans underwent a phase of aristocratization based on bloodlines among the military elite. The wealth accumulated in the center was used by the state's administrator to establish his own army. This dynamic also became one of the fundamental factors distinguishing the Ottoman Empire from contemporary states. Considering the conditions in Europe, kings were compelled to rely on feudal structures to assemble armies. In contrast, the Ottoman Empire successfully created a centralized army equipped with the latest firearms technology of the era. These newly formed units under central control were given the name "Janissary," which means "new soldier" in Turkish.

The consolidation of centralized tendencies gained significant momentum during the reign of Mehmed II. The Ottoman leaders, by demonstrating military success in campaigns focused on war and plunder, transformed into a dynasty that also held administrative authority, thus occupying the highest echelon of the system (Wittek, 1987: 207-215). However, centrifugal tendencies continued to act as powerful elements within the social structure. Considering the 15th-century Anatolian context, "centralizing power under a single authority" was far from an easy task. The political foundation from which the Ottoman Empire drew its strength necessitated the concentration of power in a single entity. In earlier Islamic civilizations, as well as in the Roman and Seljuk Empires, centralized structures had always been strong. As the classical saying goes: authority does not tolerate a shadow. Following his conquest of Constantinople, Mehmed II steered the state in this direction, adopting an absolutist approach and striving to bring other power centers, in other words, the elite classes, under the control of the central authority. Sufi traditions (various Islamic patterns) were weakened, which in turn led to the emergence of a centralized religious elite in

Ottoman society, namely the *ulema*. The central army was strengthened, and efforts were launched to counter nomadic groups (Ocak, 2009: 89-96).

As the Ottoman Empire evolved into an imperial structure, the Osmanoğlu family became an elite class based on bloodline and lineage, while the Janissaries emerged as the military elite. However, over time, the Janissary corps began to deteriorate. Alongside their military duties, they engaged in trade and, despite legal prohibitions, began to marry and establish families (Uzunçarşılı, 1985: 506-514). By the end of this process, which spanned the 17th and 18th centuries, the Janissary units had fallen behind the military standards of Europe by the 19th century. Recognizing its significant lag behind its military and economic rivals, the Ottoman Empire became aware of the necessity for modernization and reform. Yet, as a cornerstone of the old order, the Janissaries resisted these efforts at modernization. During times of disrupted balance between the center and the periphery, the Janissaries began to operate with considerable autonomy. However, attempts by the bloodline-based elites to reform the military elite changed the course of events (Kafadar, 1991: 274-275). Reformist statesmen such as Selim III and Mahmud II, who sought to strengthen central authority, faced significant resistance from the Janissaries. Ultimately, Mahmud II's near-civil war effort to abolish the Janissary corps not only marked the end of the military elite but also redefined the power dynamics within 19th-century Ottoman society. In dismantling the military elites, Mahmud II aligned himself with the religious elites. This process of centralization and modernization necessitated the emergence of a new actor to replace the eliminated military elites, which took the form of bureaucratic elites, a hallmark of modern states. Over the nearly century-long period from the second quarter of the 19th century to the fall of the Ottoman Empire, these bureaucratic elites rose to become the highest-ranking elite class within the state.

In the Islamic world, religious authority was fundamentally different from that in the Christian world. In the Christian world, the "Church" was a horizontally and vertically organized institution. However, in states influenced by Islamic principles, there was no hierarchical institution organized in the manner of a church. Furthermore, after Ottoman rulers conquered Islam's holy regions, they

began to refer to themselves with the title of "Caliph," representing the highest religious authority (Turan, 2017: 14-20). Nonetheless, due to the nature of Islam, the Caliph did not serve an intermediary role between the Creator and the created. The Caliph's primary duty was to ensure the enforcement of the Creator's prescribed rules. For this reason, the office of the *qadi* (judge) in the Ottoman Empire did not evolve into a clerical class.

However, until the 19th century, there were periods when the religious elite, known as the *ulema*, gained significant power. During the modernization period, though the religious elite maintained their presence, their influence waned. Factors such as the world's shift toward a different political trajectory, technological inventions that altered and accelerated the ordinary course of life, and the rapid expansion of trade significantly impacted societal structures. Moreover, the Ottoman Empire's multinational composition was inherently opposed to nationalist ideologies. Modernizing institutions and ideologies sought to emphasize Ottoman identity as a unifying factor. The establishment of judicial courts alongside religious courts during Mahmud II's reign further limited the power of the religious elite in the Ottoman Empire (Berkes, 2012: 176-178).

The transformation of classical institutions also brought about the emergence of a new elite class within Ottoman society. The suppression of military and religious elites heightened the need for new actors. As noted earlier, bloodline-based elites were incapable of governing the entire system on their own, necessitating the rise of a new class. When the internal dynamics of the Ottoman Empire in the 19th century are taken into account, this elite class emerged from within the bureaucracy. The modernization of state apparatuses and the transition to a ministerial system played a significant role in the formation of this new bureaucratic class. The *kalemiye* class in traditional Ottoman society was evolving into a new type of civil servant, gradually becoming a social elite. Changes in the Ottoman Empire's diplomatic relations with Europe elevated the societal importance of individuals working within these institutions (Turan, 2014: 309-313). The legitimacy of these officials, grounded in legal frameworks, grew steadily throughout the 19th century in both number and influence (Findley, 2014: 161). With the proclamation of the Tanzimat reforms, the bureaucratic

class firmly established itself as one of the elite groups within Ottoman society. Individuals emerging from the civil bureaucracy had begun to gain influence in the administration of the Empire (Ortaylı, 2000: 125-130). This development progressed in a manner similar to the modernization process in Europe. With modernization, the religious, peripheric and military elites in the Ottoman Empire experienced a loss of power. The primary beneficiaries of this process were the bureaucratic elites and the aristocracy. However, the situation of the economic elites followed a somewhat different trajectory. The transformation in the financial sector and commercial life should be analyzed within the framework of modernization paradigms.

Creating Economic Elites in 19th Century Ottoman Society

Analyzing the economic elites of the Ottoman Empire presents a greater degree of complexity than examining other elite groups. As an imperial polity grounded in extensive ethnic diversity, the Ottoman Empire possessed an institutional configuration that does not fully correspond to modern organizational norms. The trajectories of wealth accumulation, capital formation, and production relations in Europe unfolded in a manner that was not parallel to developments within the Ottoman context. The structural conditions and socio-economic opportunities that enabled the rise of the European bourgeoisie in the nineteenth century were markedly different from those under which the Ottoman economic elites either emerged or failed to consolidate. In this respect, the Ottoman Empire's economic, legal, and political institutions exhibited distinctive characteristics that set them apart from their contemporary European counterparts.

The economic structures and institutional developments that enabled continental Europe to gain prominence in the economic sphere during the seventeenth and eighteenth centuries had begun to emerge in late medieval Europe. In particular, the initiative of Dutch entrepreneurs, who expanded their activities from regional commerce to long-distance trade, played a pivotal role in the transformation of feudal structures. Economic institutions that relied on the revitalization and expansion of trade in the northern regions came to the forefront,

contributing significantly to the rise of a dynamic commercial and financial environment (Epstein, 2014:299-300). Moreover, when viewed from a broader perspective, the highly centralized tendencies of governance and political institutions in Asia, their differing worldviews, and their greater emphasis on military and political order contributed to the relative advancement of the Western world. In addition, the dominance of Asian states over the ancient trade routes that connected Asia and Europe prompted the Western world to seek alternative avenues of exchange. Competition over these commercial routes led European states to support institutions that encouraged exploration and the search for new resources, thereby laying the groundwork for their eventual economic ascendancy (Hoffman, 2018: 120-130). At the same time, the transformation of factor markets in Europe triggered a broader transformation in production. The growing dominance of manufacturing stimulated an increasing demand for resources to sustain this new mode of production (North & Thomas, 1973: 91-100). The success of long-distance trade in securing raw materials supported and accelerated the development of this system. Within this evolving economic ecosystem, entrepreneurs, merchants, producers, and financial actors emerged as the economic elites of the Western world.

In addition to these factors, property rights stand out as a crucial institution in explaining the economic disparity between Europe and Asia. The guarantee of property rights by the state encouraged economic actors to accumulate wealth more freely (Parthasathi, 2019: 2-20). Individuals who did not face the risk of expropriation of their land or capital by the authorities or whose economic assets were protected by the state were able to act with greater autonomy in expanding their wealth. The evolution of property rights in Europe followed a markedly different trajectory from that of the Ottoman Empire.

The protection of property rights constitutes one of the fundamental preconditions for sustainable economic prosperity and institutional stability. As Douglass C. North (1990) argues the establishment of secure and enforceable property rights minimizes transaction costs and provides a stable framework within which individuals and firms can make long-term economic decisions (North, 1990: 3-10). When the legal system guarantees ownership and enforces contracts

impartially, actors gain confidence that their assets will not be arbitrarily expropriated by political authorities or private powers. This predictability of the legal environment transforms economic behavior, encouraging productive investment, entrepreneurship, and innovation over short-term rent-seeking. From a broader institutional perspective, Daron Acemoglu and James A. Robinson (2012) highlight that inclusive political and legal institutions, which ensure the protection of property rights and uphold the rule of law, form the backbone of enduring economic development. In contrast, extractive institutions where law serves as a tool of elite control rather than an impartial constraint, undermine trust, limit market participation, and stifle capital accumulation (Acemoğlu & Robinson, 2012:85-99). Within the European historical context, the progressive codification of property rights and the emergence of independent judicial institutions created a system of legal certainty that linked individual ownership to collective prosperity (Robilant, 2017: 751-769). The recognition of private property as a legal entitlement, protected against arbitrary seizure, not only empowered economic agents but also strengthened the autonomy of civil society vis-à-vis the state. Thus, the legal institutionalization of property rights transformed ownership from a privilege granted by rulers into a structural foundation of economic order laying the groundwork for Europe's long-term growth trajectory (Barbot, 2015: 78-93).

Religion played a pivotal role in shaping the formation and evolution of Europe's economic institutions from the late medieval period onward. Far from being a purely spiritual phenomenon, religion provided a normative framework that structured the behavior of economic actors, defined the moral boundaries of market exchange, and influenced the legitimacy of emerging institutions. The Protestant Reformation, in particular, transformed the moral foundations of economic life by redefining labor, thrift, and profit as socially acceptable and even virtuous forms of conduct. This ethical transformation, described by Max Weber (1905) as the "spirit of capitalism," gave rise to institutions that valued discipline, contractual reliability, and individual accountability. From an institutional economics perspective, the diffusion of Protestant ethics reinforced the development of rules and organizations that facilitated trust, contract enforcement, and capital accumulation (Weber, 1992: 3-13). As Becker, Rubin and

Woessmann demonstrate, the Reformation's emphasis on literacy and individual responsibility fostered the creation of formal institutions such as guild regulations, credit systems, and property registries capable of supporting a market-oriented economy (Becker, Rubin & Woessmann, 2020: 1-69; Becker, Panin, Pfaff, Rubin, 2024: 2-76). Religious norms thus acted as a moral infrastructure underpinning legal and financial institutions. In contrast, in regions where religious authority remained intertwined with hierarchical or rent-seeking structures, institutional innovation tended to lag behind. Consequently, religion in Europe functioned as both a cultural and institutional catalyst for economic modernization. It provided a set of shared moral codes that reduced transaction costs, promoted contractual trust, and encouraged the emergence of inclusive economic institutions (Jong, 2008: 1-33). Through these mechanisms, religious ideas became embedded in the very architecture of Europe's economic order, transforming faith into a durable institutional force that shaped the continent's path toward sustained economic development.

In the Ottoman Empire, the emergence of institutions comparable to the European bourgeoisie, or the conditions under which such a process might have developed, remains a matter of scholarly debate. As an economic elite, the bourgeoisie undoubtedly played a central role in commerce, finance, and fiscal administration. However, it should not be overlooked that the bourgeoisie was not the only form of economic elite. There is a general consensus that capital accumulation and the development of productive forces in the Ottoman Empire did not progress in the same direction as in its European counterparts. The reasons for this divergence have been widely discussed within the framework of certain overarching institutional and structural dynamics.

Şevket Pamuk's interpretation of factor markets in the Ottoman Empire closely resonates with Daron Acemoglu and James A. Robinson's (2012) framework, particularly their distinction between inclusive and extractive institutions. In Pamuk's view, the Ottoman system of state control over land and production embodied an extractive order one oriented toward maintaining political stability and fiscal extraction rather than promoting private enterprise or market integration. The miri land regime and corporatist guild structures preserved

the hierarchical authority of the state and religious elites but simultaneously curtailed the rise of autonomous economic actors. Thus, Ottoman institutions succeeded in ensuring administrative cohesion at the expense of the incentives required for sustained innovation, entrepreneurship, and capital formation (Pamuk, 2009: 1-30). Conversely, Acemoglu and Robinson attribute Europe's long-term economic ascent to the emergence of inclusive institutions that protected property rights, fostered market participation, and constrained arbitrary state power. Viewed through this comparative lens, Pamuk's Ottoman case illustrates how extractive institutional arrangements, though effective in sustaining imperial governance, created systemic impediments to inclusive economic growth. The Empire therefore stands as a paradigmatic example of how strong political centralization without institutional inclusiveness can preserve short-term order yet suppress the evolution of a dynamic bourgeoisie and a self-sustaining capitalist economy.

Building on Douglass C. North's theory of institutional change, the Ottoman Empire's economic trajectory can be understood as a case of path dependence, in which earlier institutional choices constrained subsequent possibilities for transformation. North (1990) emphasizes that institutions evolve incrementally and that societies often remain locked into frameworks that once ensured stability but later inhibit adaptation(North, 1990: 3-10). The Ottoman administrative and legal order centered on state control over land, a tax-farming fiscal regime, and religiously informed financial norms was initially functional for governing a vast and diverse empire. Over time, however, these same institutions produced a self-reinforcing cycle that limited the emergence of markets, private property, and long-term investment. Transaction costs remained high, and political actors faced few incentives to dismantle the structures that preserved their rents. Consequently, even when external pressures for reform arose in the eighteenth and nineteenth centuries, the deep-rooted institutional configuration of the Empire constrained the extent of economic modernization. In North's terms, the Ottoman Empire illustrates how institutional persistence can generate stability at the cost of dynamism, anchoring an economy in a path that diverged from the capitalist evolution of Western Europe.

The perspectives of Timur Kuran and Murat Çizakça converge on the argument that the institutional configuration of Islamic law and finance, rather than the moral or cultural tenets of Islam itself, constrained the formation of long-term capital in the Middle East. Kuran (2011) identifies classical Islamic institutions such as the waqf (endowment), inheritance law, and partnership contracts as key impediments to sustained accumulation. The rigidity of the waqf system immobilized vast resources by prohibiting the reallocation of endowed wealth, while Islamic inheritance rules fragmented capital across generations. Moreover, the absence of corporate legal forms meant that commercial partnerships were short-lived and dissolved upon the death of a partner, preventing the creation of enduring business entities. These institutional characteristics collectively limited the emergence of large-scale, impersonal economic organizations akin to those that underpinned Europe's capitalist transformation (Kuran, 2011: 45-77). Çizakça (2011) complements Kuran's institutional thesis by focusing on the evolution of Islamic finance. He argues that early Islamic economic practice exhibited proto-capitalist features, but over time the prohibition of interest (riba) and the dominance of risk-sharing contracts confined financial activity to small, short-term ventures (Çizakça, 2011: 36-45). The inability to develop instruments of credit, banking, and corporate investment delayed the maturation of a modern financial sector. Like Kuran, Çizakça highlights the path dependence created by the moral and legal rigidity of Islamic institutions: mechanisms originally designed to ensure social justice and moral balance eventually hindered economic innovation and capital deepening. Together, their analyses suggest that institutional stagnation rather than religious ideology was the principal factor that curtailed the evolution of capitalist dynamics in the Ottoman and broader Islamic economies.

One crucial aspect that must not be overlooked when examining the Ottoman economic elites of the nineteenth century is the transformation of the Mediterranean world. Once the core of global commerce, the Mediterranean gradually lost its central position, giving way to new routes that redefined the geography of international trade. The opening of the Atlantic and Indian Ocean circuits shifted the flow of goods, capital, and maritime power toward Western Europe, marginalizing traditional Mediterranean hubs. This reorientation

profoundly affected the Ottoman economy, particularly its coastal provinces, where commercial elites had long thrived through regional trade networks connecting Istanbul, Alexandria, Izmir, and the Levantine ports (Tabak, 2015: 29-46). As European mercantile and financial institutions penetrated the eastern Mediterranean, the structure of Ottoman commerce underwent a deep transformation. Levantine merchants,many of whom were non-Muslim intermediaries with access to European capital and consular protection, emerged as dominant actors in long-distance trade, while traditional Muslim trading groups found themselves increasingly confined to domestic markets (Serdaroğlu, 2025: 241-277). The resulting asymmetry in access to credit, technology, and maritime insurance eroded the competitiveness of indigenous Ottoman merchants. Thus, the shifting center of world trade not only displaced the Mediterranean from its historical prominence but also reconfigured the hierarchy of economic elites within the Ottoman Empire itself.

The term *müsadere* refers to the Ottoman practice of confiscating the property or wealth of high-ranking officials and elites, either upon their dismissal from office or after their death. Rooted in the principle that all property ultimately belonged to the sultan, *müsadere* functioned as both a fiscal and political instrument that enabled the central authority to reassert control over accumulated private wealth. Within Ottoman historiography, this practice has been analyzed as both a mechanism of political discipline and a reflection of the Empire's patrimonial conception of ownership. Halil İnalcık situates *müsadere* within the broader framework of the Ottoman patrimonial-bureaucratic order, in which the sultan held supreme ownership of property and officials merely enjoyed usufruct rights (İnalcık, 1977: 27-52). According to İnalcık, the confiscation of elite wealth was intended not as arbitrary despotism but as a means of preventing the rise of hereditary nobility and preserving the political supremacy of the imperial household.

Metin Kunt extends this interpretation by analyzing *müsadere* within the transformation of provincial administration between the sixteenth and seventeenth centuries. In his work, he argues that confiscation was one of the principal instruments by which the central government limited the autonomy of local

governors, *beys*, and other provincial elites. By ensuring that provincial office-holders could not convert administrative authority into hereditary power or lasting wealth, *müsadere* reinforced the state's centralizing tendencies (Kunt, 1983:60-68). From an economic and social perspective, Mehmet Genç (2000) and Mustafa Akdağ (1971) emphasize the broader consequences of *müsadere* for capital formation and social stability. Genç views the practice as consistent with the Ottoman principle of state ownership over productive assets, which blurred the line between private and public wealth. This ambiguity discouraged long-term investment and the institutionalization of private property (Genç, 2000:111-112). Akdağ, meanwhile, interprets the increasing use of *müsadere* during fiscal crises as symptomatic of the state's declining financial resilience. What began as an exceptional disciplinary mechanism evolved into a structural tool of revenue extraction, eroding trust in the imperial administration. Collectively, these interpretations depict *müsadere* as an institution that maintained political cohesion while inhibiting economic modernization an enduring tension at the heart of the Ottoman patrimonial system (Akdağ, 1995: 217-218).

The Ottoman institution of müsadere stood in sharp contrast to the evolution of property rights in early modern Europe. In the Ottoman Empire, all property was theoretically vested in the sultan, and the wealth of officials or elites could be confiscated at any time. In Europe, by contrast, property ownership gradually became a legally protected right, limiting arbitrary state intervention and allowing individuals to accumulate and transfer wealth securely. These legal protections encouraged long-term investment and fostered the emergence of a capitalist bourgeoisie. In the Ottoman context, however, the persistent threat of confiscation undermined economic stability and discouraged private enterprise. Since wealth could be seized by the state upon dismissal or death, elites and merchants had little incentive to reinvest profits or expand productive activities. Capital was often diverted into non-productive forms of consumption or concealed assets, rather than channeled into trade or manufacturing. As a result, the müsadere system not only reinforced dependence on the central authority but also obstructed the development of sustained capital accumulation (Karaoğlu, 2018: 48-49). Whereas European states evolved toward rule-based governance that safeguarded economic autonomy, the Ottoman patrimonial

system treated property as a revocable privilege. This fundamental divergence limited the Empire's ability to cultivate an independent entrepreneurial class and contributed to its long-term economic stagnation.

Although the Ottoman institutional framework offered few mechanisms to foster the emergence of a genuine bourgeoisie, and despite the persistence of structures that hindered capital accumulation, economic elites nevertheless existed within the prevailing political and economic order. These elites operated within the constraints of a highly centralized and hierarchical system, deriving their power not from autonomous market activity but from their proximity to the state and their capacity to navigate its patronage networks. In this sense, the Ottoman economy did not lack actors engaged in trade, finance, and production; rather, it lacked the institutional environment that could transform these actors into an independent capitalist class.

The modernization process of the Ottoman Empire extended into the economic sphere as well. Covering the entirety of this transformation exceeds the scope of this article. Therefore, it is more appropriate to focus on "new structures" and "new elites." To begin with, it must be noted that the classical economic mechanisms of the Ottoman Empire had largely lost their functionality by the 19th century. Guilds, which operated under state control and supervised production units, were no longer suitable for the economic conditions of the 19th century (İnalcık, 1978: 97-101). The globalized nature of world trade, mass production methods, and advancements in transportation technology had also influenced Ottoman markets. Products manufactured through new production methods were considerably cheaper compared to others. Furthermore, the longstanding debates over interest rates had caused a large portion of financial capital to remain in the hands of the Empire's non-Muslim subjects. When examining the economic elites of the Ottoman Empire in the 19th century, it becomes evident that one prominent group that stands out was the sarrafs (money changers and financiers), owing to their accumulation of financial capital. Financial institutions within the Ottoman state had developed through the sarraflık (money-changing) system. Sarrafs were the Ottoman equivalent of modern banks, taking responsibility for activities such as money exchange, lending, and acting

as guarantors in the tax farming (iltizam) sector (Akar & Al , 2015: 264-275). Thus, sarrafs can be regarded as one of the economic elites of the 19th century. It was evident that producers within the guild system had lost their influence. Another significant economic actor was the *ayan* (local notables). Considering their revenues from extensive agricultural estates and their activities in the tax farming (*iltizam*) sector, the *ayan* could be classified as economic elites. However, during the modernization period, the weakening of peripheral powers led to the *ayan* losing both political and economic influence.

At the beginning of the 19th century, there was another occupational group in the Ottoman Empire with the potential to become economic elites: merchants. Yet, in earlier periods, the organic relationship between economic elites and the state in the Ottoman Empire had been relatively limited. In other words, the development of a state-dependent bourgeoisie was not a feasible outcome. So, can it be said that an Ottoman bourgeoisie emerged during the modernization period? The answer to this question depends on the perspective from which it is approached. However, it is clear that there was an effort to create economic elites by establishing an organic connection between the state and the institution of commerce. This effort can also be seen, in line with the nature of elite cycles, as an attempt to fill the gaps left by other elites. From this perspective, it becomes apparent that economic elites did not emerge through their own internal dynamics but were instead shaped by state intervention.

Efforts to create economic elites, when considered within the framework of elite cycles, reveal the following mental map: the *ayan* held military, political, and economic power in the Ottoman provinces. Their withdrawal from the stage left a vacuum in these areas. The civil bureaucracy gained strength to fill the political gap left by the *ayan*. However, the military power of the *ayan* posed a potential threat to the state. With the abolition of the Janissaries, centralizing tendencies within the state increased. The establishment of a new central army became crucial to address the void left by the *ayan* in the military sphere. Similarly, the decline of the guild system and the economic gap created by the disappearance of the *ayan* needed to be addressed. During this period, the weakening of religious elites in the Ottoman Empire also had repercussions on the

aristocracy. The absolutist stance of the sultan and his attempts to construct Ottoman society on an egalitarian foundation were criticized as lacking religious sensitivity. To reconcile his absolutist approach with his image as a Muslim leader, the sultan sought to assign a religious mission to the economic elites he aimed to establish. It was in this context that the *Hayriye Tüccarları*, which institution was founded during the reign of Mahmud II. These commercial elites were composed of Muslim merchants loyal to the sultan, embodying both economic and religious responsibilities.

Another aspect of addressing the economic void left by the *ayan* was strengthening the provincial economy through support from the central administration. To this end, local elements in regions where the *ayan* had been concentrated, particularly in the Balkans,were encouraged to accumulate capital. The Ottoman Court supported the trade activities of local actors, especially in the commerce of critical commodities, thereby facilitating their economic advancement.

The *Hayriye Tüccarları* institution was a state-driven project aimed at creating a Muslim elite. These merchants conducted trade under *berats* (official permits) issued by the state. Obtaining a *berat* required fulfilling certain conditions, such as being Muslim, honorable, and trustworthy. The state conducted an investigation of merchant candidates before granting the Hayriye Tüccarı berat. Additionally, a quota was imposed on the number of these merchants. The Muslim merchants were expected to accumulate capital and establish an institutional structure, much like their counterparts in European states. The ultimate goal was to create a Turkish-Muslim bourgeoisie that would remain loyal to the state. This project achieved partial success during the first half of the 19th century. However, the military, political, and economic conditions of the Ottoman Empire ultimately hindered its success.

Since the 18th century, the Ottoman state had been forced to compromise its economic principles to maintain its territorial integrity. Lacking the strength to resist European rivals, the Empire often had to form alliances with one rival against another, only to make concessions in the end. One such concession was the free trade agreements signed with states like Britain, France, and Russia. These agreements made the status of “foreign merchant” within Ottoman

borders more advantageous, as foreign merchants benefited from tax reductions. This dynamic worked to the detriment of the Turkish-Muslim economic elite group the state sought to create. Consequently, the Hayriye Merchants initiative remained a well-intentioned but ultimately unrealized endeavor (Bağış, 1983 ; Çadırcı, 1980; Masters;1992, Güripek:2022)

Apart from the *Hayriye Merchants*, another group of economic elites emerged in rural regions, particularly in areas where the influence of the *ayan* was significant. Local actors strengthened their capital throughout the century by establishing strong relations with the bureaucracy in Istanbul. In the 19th century, the Balkans stood out as the region where the influence of the *ayan* was most intensely felt. Additionally, when considering the integration of global trade into the Ottoman Empire, the Balkan geography came to the forefront. Local actors supported by the Istanbul administration predominantly originated from this region. In the 19th century, nationalist movements in the region compelled the Ottoman administration to adopt a new policy. Following the Serbian and Greek national movements, efforts were made to foster Ottoman-aligned elements in the region. Consequently, the state supported local merchants, elevating them to the status of economic elites. Among these elites were families such as Gümüşgerdan, Çalıkoğlu, Zelyakov, Chomakov, Tapçilestov, Georgiev, Puliev, and Geshov. These entrepreneurial merchants established strong relations with the Ottoman administration, transforming into international elites.

For instance, Mihalaki Gümüşgerdan was a small-scale entrepreneur engaged in the production of coarse cloth (*aba*) in the Filibe region. By forging good relations with the palace, he managed to expand the capacity of his weaving looms. After the abolition of the Janissary corps, orders for the uniforms of the newly established army were entrusted to Mihalaki Gümüşgerdan (BOA, Cevdet Askeriye, 29/1317, (14 R 1267), BOA, A.MKT. MHM, 245/38, (09-05-1279). This allowed him to significantly increase his wealth. The Gümüşgerdan family maintained close relations with the Ottoman administration until the establishment of an independent Bulgaria. Similarly, Stoyan Çalıkoğlu and his family were merchants engaged in livestock farming in regions between Bulgaria and Serbia. Livestock trade in the region was a critical matter for the Ottoman Empire, as

meeting the meat supply of the capital was a significant challenge. From the reign of Mahmud II onward, the Çalıkoğlu family established strong relations with the Ottoman court. For many years, they were entrusted with the responsibility of supplying meat to Istanbul, particularly for the Ottoman palace (BOA, İ.DH., 118/5988. (04.03.1262).

Conclusion

The relationship between the state and its elites is neither static nor incidental. It constitutes the very mechanism through which political power is organized, transmitted, and reproduced. As classical theorists such as Mosca and Pareto observed, every social order rests on the dominance of a minority that governs the majority, yet the composition of that minority is never fixed. The Ottoman experience confirms this insight while also extending it: elite circulation does not occur solely through social mobility or revolution, but also through deliberate statecraft through reforms, institutional restructuring, and the redefinition of legitimacy itself.

In the Ottoman Empire, modernization was not simply a matter of borrowing Western institutions or technologies; it was, more fundamentally, a project of reconfiguring the social foundations of rule. The eighteenth century had produced a fragmented elite landscape, where provincial notables (ayan), tax farmers (mültezim), and military households exercised significant autonomy amid a fiscally weakened center. The nineteenth century, by contrast, witnessed a conscious effort to dismantle these old formations and to replace them with new, centrally dependent elites. The abolition of the Janissaries, the limitation of ayan power, and the bureaucratic reforms of the Tanzimat all formed part of this larger transformation. What emerged was a new political elite—educated, salaried, and legally defined whose legitimacy derived not from lineage, religious authority, or local networks, but from the state's rationalized administrative order.

Economic change followed a similar, though more constrained, trajectory. The Ottoman state's attempts to foster a loyal commercial class reflected a desire to reproduce the logic of elite dependence in the economic sphere. Yet institutional

constraints especially insecure property rights, the persistence of *müsadere,* and limited corporate autonomy prevented the emergence of an independent bourgeoisie. The result was the rise of state-linked economic actors whose prosperity remained contingent upon imperial patronage. Thus, while the empire did witness a circulation of elites, it was a circulation managed from above, reinforcing the central authority even as it transformed the social composition of power.

This pattern reveals the distinctive nature of Ottoman modernization. Unlike the European path, where capitalist development eroded patrimonial structures and empowered autonomous classes, the Ottoman trajectory entailed a reassertion of state primacy through the selective renewal of elites. Modernization, in this context, was both a strategy of survival and an instrument of control: by remolding its elites, the state sought to ensure continuity in the midst of change. The persistence of central dependency, even under modern administrative forms, underscores the limits of institutional transplantation and highlights the adaptive resilience of imperial governance.

At a broader level, the Ottoman case invites a rethinking of modernization itself, not as a universal trajectory toward liberal-capitalist outcomes, but as a historically contingent negotiation between reform, coercion, and survival. The empire's experience shows that modernity can be constructed through hierarchy rather than emancipation, through bureaucratic rationalization rather than social autonomy. The very success of Ottoman centralization in the nineteenth century depended on its ability to generate new elites that would internalize, rather than challenge, the authority of the state. In this sense, the empire's reforms simultaneously modernized and constrained society, producing a class of intermediaries whose loyalty secured the system's stability while limiting the scope of structural transformation.

The legacy of this elite reconfiguration extended well beyond the nineteenth century. The bureaucratic ethos and state-centered economic mentality cultivated during this period laid the groundwork for the political culture of the late Ottoman and early Republican eras. The persistence of a strong, interventionist state and a bureaucratic elite claiming to represent the general interest can be

traced back to this formative transformation. The Ottoman case thus serves not only as a historical example of elite circulation but also as a bridge connecting imperial governance to modern statehood.

By situating the Ottoman experience within the broader framework of elite theory, this study demonstrates that modernization cannot be understood solely as a diffusion of Western norms or as a linear progression toward liberal governance. It must also be viewed as a cyclical and context-dependent process of elite transformation, through which states renegotiate the boundaries of power and legitimacy. The Ottoman example thus expands the analytical reach of elite theory, showing that the mechanisms of elite renewal whether driven by coercion, reform, or adaptation are integral to the historical continuity of all complex political orders. In this sense, modernization is less a rupture with the past than a reorganization of it, and the story of Ottoman elites stands as a testament to the enduring interplay between change and continuity at the heart of state formation.

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Ethical Values in the Audit Profession: A Simple Descriptive Study From Stakeholders' Point of View

Marwan Ghaleb

Abstract: Ethics plays an important role in improving the audit quality and regaining the stakeholders' trust, especially after several recent worldwide organizations bankruptcies; that's why audit firms have their codes of conduct to make sure of having a reference for ethical values that control the audit process and its outputs. This study aims to provide an understanding of the stakeholders' perceptions about the ethical values adopted by the audit firms using descriptive statistics to find the most important ethical value that leads to trust an audit firm from their point of view. The data was collected using an online survey from 112 Yemeni stakeholders, who were asked to give a score from 1, representing the least important, to 10, representing the most important, for 10 ethical values adopted in the Big 4 audit firms. Based on the calculation of the mean and standard deviation, it was found that from the point of view of Yemeni stakeholders, integrity and honesty is the most important ethical value, whereas social responsibility is the least important ethical value that leads to trust an audit firm in the Yemeni business environment, which may differ from any other business environment. This study provides insights to audit firms about the stakeholders' point of view on the most important ethical value in the audit profession and their expectations about the audit firms' commitment to ethical values when practicing the audit profession.

Keywords: Audit profession, Audit quality, Code of conduct, Ethical values, Trusting audit firms

Ghaleb, M. (2025), Ethical Values in the Audit Profession: A Simple Descriptive Study from Stakeholders' Point of View, *Journal of Balkan Economies and Management, 2*(1), 99-114

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Balkan Studies Foundation
DOI: https://doi.org/10.51331/bemA012
Journal of Balkan Economies and Management, 1(2), 2025
journalbem.com

Received: 11.08.2025
Revision: 27.10.2025
Accepted: 03.11.2025

Introduction

Auditing is a systematic procedure that is made by an independent party who collects, examines, and evaluates financial and non-financial evidences, in an objective manner, to make sure that the financial statements of the organization under audit are fairly stated without having any sign of fraud and error (Kaptein, 2020; Ajao et al., 2016; Soltani, 2007).

Based on this procedure, audit firms express their independent professional opinion that the audited financial statements are prepared based on international accounting standards, which are generally accepted, and the effective legal regulations (Trklja et al., 2024); this opinion is documented and reported to related stakeholders (Arens et al., 2012).

Stakeholders need independent audit services to increase their confidence in the financial statements and guarantee the reliability of the financial information they provide, so that they can use this information as an input for their decision-making process (Prasanti et al., 2019), which puts a big responsibility on the audit firms due the sensitivity of their role between the organizations and related stakeholders (Pavlović et al., 2025).

The sensitive role of auditors as guardians of public interest and a reference to stakeholders requires their commitment to ethical values as well as upholding professional and personal integrity, which means that they have to resist any temptations or pressures from their clients (Trklja et al., 2024); especially that the development of technology made it much easier to commit any fraud or cover any error in the financial statements (Mitrović et al., 2022); so the auditors' commitment to ethics is essential to reflect their credibility, professionality, independent decisions, and quality of the work they do (Pavlović et al., 2025).

However, due to several recent financial scandals and organizations bankruptcy incidents, audit firms were accused of focusing on commercial goals for themselves and their clients, which affects in decreasing their professionalism and commitment to public interests (Barracuda & Espinosa-Pike, 2018). That's why the role of ethics in improving the audit quality and regaining the public trust,

in addition to the stakeholders' perceptions of the audit firms and their role, has been a viral topic in many recent studies.

This study continues what previous studies started by searching for the most important ethical value that leads to stakeholders' confidence in audit firms, in order to shape an understanding of their needs and expectations from the auditors when it comes to their commitment to ethics.

Literature review

Auditors play a vital role in society by providing an independent opinion on financial statements, which serve as essential references for investors and other stakeholders to make informed decisions (Kung & Huang, 2013). Their work helps protect the public interest and leads to constructive changes in the business environment by reinforcing trust and accountability (Mardawi et al., 2023). That is why auditors are expected to uphold the highest level of ethical standards that guide and regulate their professional performance and never compromise these standards to please their clients (organizations under audit) or any other third party (Kung & Huang, 2013; Satava et al., 2006).

Ethical standards provide a clear guidelines on appropriate and inappropriate behavior in business practices, especially in accounting and auditing professions, where financial information is prepared, confirmed, and then presented to the public (Pavlović et al., 2025). These standards are considered as an intangible asset that reflects the honor, dignity, and integrity of the audit profession, which increases the responsibility of the auditors to provide their professional services under an ethical framework to meet the stakeholders' expectations and maintain the quality of the financial information they need (Tooranloo & Azizi, 2018).

In general, ethics are defined as a set of moral principles and values that guide the individual and collective behavior in distinguishing right from wrong, good from bad, accepted from unaccepted practice in different contexts, forming the basis of law, regulations, and social norms (Trklja et al., 2024; Tooranloo & Azizi, 2018; Putri et al., 2017; Ardelean, 2013).

In a business context, ethics refer to the application of moral principles and ethical values that direct the professional behavior and decision-making process when evaluating actions, situations, and dilemmas based on the generally accepted norms of what is right and wrong (Pavlović et al., 2025; MoralesSánchez et al., 2020; Barracuda & Espinosa-Pike, 2018; Tooranloo & Azizi, 2018; Kung & Huang, 2013).

To be more specific in this study, ethic in the audit profession represents the principles and values that directs an auditor to act professionally and maintain the audit quality, based on the professional standards, such as independency and objectivity, to fulfil their responsibilities to their clients and other stakeholders (Alsughayer, 2021; Kaptein, 2020; Prasanti et al., 2019).

Ethics principles and values plays a critical role in retaining social order and legitimate professional practice by reinforcing integrity, fairness, honesty, responsibility, and accountability, which guides decision-making in personal and professional conduct (Ardelean, 2013). These values are objective standards that cannot be modified based on social, cultural, and economic situations; they are strict, valid, and reliable regardless of any variances in time and places (Satava et al., 2006).

In recent years, the financial crises and corporate scandals have led to questions the role of auditors as a guardian of stakeholders' interests, which has negatively affected their perceptions of audit quality as well as their trust in auditors (Barracuda & Espinosa-Pike, 2018; Ardelean, 2013). One famous example of a corporate scandal is the Enron bankruptcy in 2002, where their audit firm Arthur Andersen, one of the worldwide Big Five audit firms at that time, was involved and had to shut down its offices due to not reporting potential manipulation and violation of accounting standards, which led to inaccurate, misleading, and nonobjective financial reports (Hoang 2023; Satava et al., 2006).

In addition to the Enron bankruptcy scandal, there are other financial scandals, such as Olympus 2011 and WorldCom 2002, that indicated the need for ethical standards adaptation in the audit profession, next to its adaptation of professional standards (Hoang, 2023; Celestin & Vanitha, 2019); this leads to the

conclusion that ethical values are as important as technical knowledge in the audit industry (Celestin & Vanitha, 2019).

Accordingly, ethics are a key element that helps to regain the stakeholders' trust in the audit profession because following ethics standards, when practicing the audit profession, directs auditors toward an independent moral behavior, which helps them make fair decisions, especially when facing conflict of interest issues or situations where there are no clear standards to address them (Tooranloo & Azizi, 2018; Ardelean, 2013; Kung & Huang, 2013).

Ethics play an essential role in reflecting the quality of the audit practice (Ardelean, 2013); it indicates that the financial reports are prepared and audited under the consideration of integrity, transparency, and accuracy, which gives confidence, trustworthiness, and reliability to these reports (Anastase & Kasozi, 2025; Trklja et al., 2024; Celestin & Vanitha, 2019). This leads to the second role of ethics in the audit profession, which is generating stakeholders' trust in the audited financial reports in addition to the trust in the auditors and audit firms (Celestin & Vanitha, 2019; Barracuda & Espinosa-Pike, 2018; Tooranloo & Azizi, 2018).

According to Prasanti et al. (2019), audit quality is represented by the auditors' ability to find and report material misstatements in the financial reports; finding misstatements reflects the auditors' abilities and competencies, while reporting them reflects their honesty, integrity, and ethical behavior.

In addition to that, Ardelean (2013) explains that ethics have a key role in aligning the auditors' interests with the stakeholders' interests, as an ethical auditor must avoid any conflict of interests and give up any personal interests when conducting an audit assignment to maintain their straightforward professional judgment; this includes rejecting any temptations, incentives or even pressure from their clients, even if the cost of that is losing these clients to another audit firms. This is because the reputation of an auditor and the public trust in what they do are core elements in the audit profession, which cannot be fixed or regained easily if broken.

The impact of ethical values in the accounting and audit profession has been continuasly studied in the past year; below are key findings from several related studies:

- Anastase & Kasozi (2025) found that ethics has a significant impact on the quality of financial reports in the banking industry.
- Alsughayer (2021) found that ethics have a significant impact on the audit quality. In addition to ethics, he found that other factors, such as the auditors' integrity, competence, and compliance with the code of conduct, have a significant impact on the overall audit process.
- MoralesSánchez et al. (2020) found that trust in employees (including auditors) is increased due to their sustained ethical behavior.
- Prasanti et al. (2019) found that the more the auditors adopt the audit ethical values in their work, the higher the audit quality will be. This is due to the significant role of ethical values in strengthening the impact of their work experience, competence, and independence on the audit quality.
- Tooranloo & Azizi (2018) found that ethical values, such as honesty, independency, and integrity, have a significant impact on financial reports' reliability and accountability. They also found that the auditors' skills, experience, knowledge, and continuing education have the same impact on the financial reports.
- Putri et al. (2017) found that auditers who maintain their independency, integrity, and competence as an implementation of the ethical values in their audit practice improve the information quality presented to the stakeholders, which leads to gaining their trust.
- Nasrabadi & Arbabian (2015) found that there is a meaningful positive relationship between professional ethics and commitment in one side and audit quality on the other side.
- Ardelean (2013) found that ethical values have a significant role in generating the perception about the auditors' integrity and objectivity in doing their job.

Due to the essential role of ethics in the quality of the audit process and the audited financial reports, in addition to the critical role of auditers as a representative of the stakeholders and public interest (Barracuda & Espinosa-Pike, 2018; Ardelean, 2013), as they have a sensitive role as mediators between their clients and related stakeholders, which forces them to balance between the interests of these two parties (Mardawi et al., 2023; Ardelean, 2013), the International Federation of Accountants (IFAC) released the IFAC Code of Ethics, which explains the implementation of good practice and highlights the professional behavior and ethical values (O'Leary, 2012). Table 1 presents some fundamental ethical principles that should be held by authors:

Table 1. Fundamental ethical principles

Ethical principles	Definitions
Integrity	Represents the auditor's commitment to honesty during the audit assignment.
Objectivity	Represents the unavailability of any issue that may affect the auditor's professional judgement and lead to a conflict of interest.
Professional competence	Represents the auditor's commitment to continuous learning and improving his/her skills.
Due care	Represents the auditor's commitment to comply with the audit standards.
Confidentiality	Represents the auditor's responsibility not to disclose any information about his/her client that was obtained during the audit assignment.
Professional behavior	Represents the auditor's commitment to laws and regulations and avoiding any behavior that impacts the audit profession negatively.

Source: (Trklja et al., 2024; Ardelean, 2013)

The code of ethics is an official document that confirms the commitment of the auditors to uphold ethical values during their practice of the audit profession,

and provides a reference to control their behavior towards each other, their clients, other stakeholders, and society to achieve the targets of any audit assignment within an ethical framework (Tooranloo & Azizi, 2018).

It includes detailed instructions on how to deal with critical issues and handle sensitive situations that may affect the integrity and independence of the auditors or may negatively affect the trust placed in them, which provides assurance on the audit quality and protection to stakeholders' interests (Mardawi et al., 2023; Prasanti et al., 2019; Ardelean, 2013).

Each audit firm, regardless of size, has its own code of conduct that is produced based on the international code of ethics, which carefully follows the commonly accepted ethics principles and provides clear guidance and interpretations of their responsibilities that help their audit teams in professionally fulfilling their duties (Satava et al., 2006).

Accordingly, auditors are obligated to follow their code of conduct and comply with its ethical requirements, such as confidentiality, objectivity, and integrity (Trklja et al., 2024; Alsughayer, 2021). Implementing the audit principles supported by following the code of conduct (ethics) represents an ethical behavior that leads to a high audit quality and protects the audit profession's reputation (Mardawi et al., 2023; Prasanti et al., 2019; Ardelean 2013).

Based on this, it is concluded that the code of conduct has a role in enhancing the trust of stakeholders in the audit profession and auditors. Accordingly, a question should be asked about the perceptions of the stakeholders towards the role of audit firms' code of conduct and its ethical values in regaining their trust in the audit profession. This leads to the research question:

RQ: From a stakeholders' point of view, what is the most important ethical value that leads to their trust in their auditor?

Methodology and Analysis

To answer the research question of this study, a descriptive approach was adopted. A simple survey was designed, including ten ethical values . The survey respondents were asked to give each one of these values a score from 1,

representing the least important, to 10, representing the most important. The point given to each value represents their point of view about how important this value is in trusting an audit firm. They were also asked not to give two ethical values or more the same score. The survey ends with an open-ended question asking the respondents to write any additional ethics value that leads to their trust in an audit firm.

The ten ethical values were selected based on the four codes of conduct related to the Big 4 audit firms, which are Deloitte, KPMG, PwC, and EY. These four audit firms are the worldwide leading firms in the audit industry and represent a role model and reference for audit practice. Table 2 presents the ten ethical values included in the survey along with their definitions:

Table 2. Ten ethical values

Ethics value	Definitions
Integrity and honesty	Represents the auditors' obligation to consistently be straightforward, honest, fair, and transparent in their professional opinion and business relationships.
Compliance	Represents the auditors' commitment to law, regulations, audit standards, and ethical values that control their work and behavior.
Competence	Represents the auditors' commitment to professional development for themselves and their clients to meet the needs and expectations of stakeholders.
Professional behavior	Represents the standards, attitudes, and behavior that reflect the auditors' objectivity, responsibility, and dedication to their profession and work.
Quality	Represents the auditors' due care to provide high-standard work that reflects accuracy, reliability, and credibility.

Confidentiality	Represents the auditors' obligation to protect and not to disclose any information related to their clients obtained during an audit assignment.
Social responsibility	Represents the auditors' contribution to sustainable development in society, by participating with non-profit organizations, volunteering with time and money, and protecting the environment.
Diversity	Represents the multicultural and international experience that an audit firm has, and its respect for different countries, ethnicities, cultures, and religions.
Fair business practices	Represents the audit firms' respect for their competitors, and their obligation to practice audit fairly, without any dishonorable competition with others in the profession.
Respect	Represents the audit firms' reinforment of a working cluture where their employees treat eachothers and their clients with repect, courtesy, and fairness.

Source: (Deloitte, 2025; KPMG, 2025; PwC, 2024; EY, 2024)

The survey was distributed in Yemen using a non-probability sampling technique targeting stakeholders who benefited from audit services in the last year. Using an online survey form, the data was collected, and 112 responses were accepted for analysis. The survey also included two demographic questions that asked about the respondents' position in their organization, in addition to their years of experience.

Table 3 presents the demographic features of the survey respondents using the simple percentage analysis.

Table 3. Demographic data analysis

Category	Sub-category	Frequency	Percentage
Position	Managerial level	40	36%
	Supervising level	44	39%
	Staff level	28	25%
	Total	112	100%
Years of experience	More than 10 years	46	41%
	From 5 to 10 years	40	36%
	Less than 5 years	26	23%
	Total	112	100%

Source: Developed by the author based on the collected data

Table 3 shows that the majority of the survey respondents are from a supervisor level or above and have more than five years of experience.

The data related to the research question was analysed using a descriptive analysis that relies on calculating the mean and standard deviation. On one hand, the mean is calculated to find the average of the frequency distribution of the scores given to each ethics value, which helps in finding their order from the most important to the least important; on the other hand, the standard deviation is calculated to make sure that the data is distributed around the mean appropriately without having any outliers.

Table 4 presents the descriptive analysis of the collected data, showing the most important ethics value and the least important ethics value from the stakeholders' (survey respondents) point of view.

Table 4. Descriptive analysis

Ethics value	Order	Mean	Std. Deviation
Integrity and honesty	1st	8.7	2.192
Compliance	2nd	8.1	2.273
Quality	3ed	7.6	2.186
Confidentiality	3ed	7.6	2.251
Professional behavior	4th	7.0	2.298
Competence	5th	6.3	2.418
Fair business practices	6th	6.1	2.929
Respect	7th	5.3	3.450
Diversity	8th	5.1	3.150
Social responsibility	9th	4.0	2.774

Source: Developed by the author based on the collected data

Table four shows that based on the sample selected and the data collected, the most important ethical value for Yemeni stakeholders to trust an audit firm is integrity and honesty, as it got the highest mean value of 8.7; then, with no big gap, the second important ethical value from their point of view is complying with laws and regulations, as it got a mean value of 8.1; audit quality and confidentiality were both in third place with a mean value of 7.6; whereas social responsibility was the least ethical value to trust an audit firm from their point of view, with a mean value of 4. The standard deviation values were within the accepted range, indicating that there are no outliers.

In addition to that finding, and based on the responses to the open-ended question, Yemeni shareholders explained some additional values that lead them to trust an audit firm, such as:

- Transparency, as the more the audit firm is transparent with its clients regarding the audit process and conducts open constructive discussions with them about observations and findings, the more the clients will trust the audit firm and its role in improving their performance.

- Commitment to deadlines and deliver their audit reports on time without any delay.
- Under the competency value, their leading experience in the industry cluster of their clients, and their understanding of the local market they are operating in.
- Under the fair business practices value, having a reasonable fee policy that fairly reflects the efforts an audit firms put into an audit assignment.

Most of the responses to the open-ended questions were around the ten ethical values included in the survey; however, the above responses were adding something different.

Discussion and conclusion

The analysis findings show that, according to Yemeni stakeholders, integrity and honesty was the first important ethical value as it represents the foundation of trustworthiness that stakeholders give to an audit firm. This reflects the high expectations of stakeholders and the critical role of auditors in reflecting the actual states of their clients (organizations under audit), especially in critical economic situations. The finding also shows that social responsibility is the least factor that affects their trust in an audit firm, which indicates that there is a priority to service in a sensitive, competitive business environment first, and after that, social responsibility can be considered.

Comparing this finding with other studies it was noted that the results differ based on the targeted sample, as according to Pavlović et al. (2025), who conducted their study in Serbia, the most important ethical value that leads to trust an audit firm from their sample point of view was responsibility then independence in the second place and objectivity in the third place. Another study that was conducted in Iran by Tooranloo & Azizi (2018) found that independence is the main foundation of the audit profession and the most important factor in trusting an audit firm.

Based on the analysis findings along with its comparison with other similar studies, it is concluded that the stakeholders' view to the audit firms' ethical values

differ from one place to another, as from the Yemeni stakeholders' point of view integrity and honesty is the most important ethical value to trust an audit firm. Based on the definition of integrity, it is noted that integrity is an indicator of all the other ethical values, as dealing with an audit firm that is committed to being straightforward, honest, fair, and transparent in their professional opinion and business relationships, indicates its commitment to compliance, confidentiality, professional behavior, and other ethical values.

Implications and recommendations

Since following ethical values and code of conduct is essential in the audit profession, this study provides audit firms with insights about stakeholders' views on the importance of maintaining and implementing these values when practicing the audit profession.

It orders the ethical values from the most important to least important based on the stakeholders' point of view, which provides an understanding to the audit firms on stakeholders' expectations regarding the adaptation of ethics in their audit assignments.

Accordingly, it is recommended that audit firms prioritize marketing their integrity and honesty, followed by other ethical values, when proposing their services to different clients. They are also recommended to provide training to their fieldwork audit teams about the importance of ethics and its role in improving the audit quality and building stakeholders' trust. This should be supported with clear written materials that explain the overall role of ethics in the audit profession, the role of integrity and honesty in gaining the trust of the stakeholders; additionally, their audit code of conduct should be reviewed and updated to reflect the priority and importance of integrity and honesty in their practice which aligns with the stakeholders expectations. Finally, the most important recommendation for auditors is to reinforce integrity, honesty, and other ethical values in their day-to-day audit practice.

In addition to audit firms, local regulators in Yemen are recommended to consider the findings of the study when updating the quality controls and continuous professional development regulations of the audit profession to emphasize

the application of integrity and honesty, in addition to all other ethical values, by licensed auditors.

This study is limited to the selected sample, and its results cannot be generalized due to the use of a non-probability sampling technique. These results represent the Yemeni business environment, but they can be used as an indicators to understand the stakeholders' point of view about the audit firms' ethical values and code of conduct in any different contexts.

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Medium-Run Effects of Central Bank Independence Reforms on Inflation and Income Inequality: Evidence From Panel Data and a New Keynesian Model

Aytuğ Zekeriya Bolcan

Abstract: We examine the medium-run impacts of central bank independence (CBI) reforms on inflation, unemployment, and income inequality by combining panel event-study and local projection evidence with a small structural macroeconomic model. Using a panel of 30 countries from 1991–2019, we identify major CBI reform events and estimate their dynamic effects. The event-study shows no significant pre-trends in inequality and no detectable change in net income Gini following CBI reforms (Figure 1). Local projections confirm that while CBI reforms significantly reduce inflation by about 2 percentage points after 4–5 years, they have no statistically significant effect on unemployment or net income inequality. We then build a backward-looking New Keynesian model calibrated to high vs. low CBI regimes. The model reproduces the empirical inflation–unemployment dynamics and predicts only a negligible difference in inequality between high- and low-CBI scenarios (on the order of 0.03 Gini points). Our findings suggest that enhancing CBI delivers disinflation benefits without exacerbating income inequality in the medium run. We discuss robustness checks, policy implications for emerging and advanced economies, and the role of complementary policies.

Keywords: Central bank independence, Inflation Income inequality, Event study, Local projections, New Keynesian model

Bolcan, A. Z. (2025). Medium-run effects of central bank independence reforms on inflation and income inequality: Evidence from panel data and a New Keynesian model. *Journal of Balkan Economies and Management, 2*(1), 115-161.

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Balkan Studies Foundation
DOI: https://doi.org/10.51331/bemA013
Journal of Balkan Economies and Management, 1(2), 2025
journalbem.com

Received: 12.11.2025
Accepted: 13.12.2025

Introduction

Central bank independence (CBI) has long been regarded as a cornerstone of credible monetary policy, associated with lower inflation and macroeconomic stability. Landmark studies such as Alesina and Summers (1993) showed that more independent central banks tend to achieve significantly lower average inflation without any clear output or unemployment costs. The theoretical rationale dates back to Rogoff's "conservative central banker" model, which argued that delegating monetary policy to an agent more averse to inflation can overcome the time inconsistency problem and reduce the inflation bias (Rogoff, 1986). Over the 1990s, many countries enacted legal reforms to strengthen CBI, spurred by this consensus and often as part of broader economic liberalization. As a result, by the early 2000s central bank autonomy indices had increased markedly worldwide (especially in advanced economies and many emerging markets) (Wachtel & Blejer, 2020).

However, in the aftermath of the 2008 financial crisis and amid rising concerns about inequality, a debate emerged on whether independent central banks might have adverse distributional consequences. Critics argue that central banks focused on price stability could, directly or indirectly, contribute to higher inequality – for example, if anti-inflation policies raise unemployment or if independent central banks favor financial sector interests (Tiberto, 2025). Some recent research has posited channels linking greater CBI to increased inequality (e.g., via constrained fiscal policy or weakened labor bargaining power). Aklin et al. (2021) contend that CBI reforms often coincide with market-oriented policies that might widen income gaps. On the other hand, CBI could reduce inequality by curbing high inflation, which acts as a regressive tax on the poor. Indeed, empirical evidence on the net relationship between CBI and inequality remains mixed. A new panel study by *Sturm et al.* (2025) finds no robust link between CBI and income distribution, consistent with earlier observations that CBI delivers low inflation without harming real economic performance. Given this debate, it is policy-relevant to rigorously assess whether strengthening central bank independence has any significant medium-run impact on income inequality.

In this paper, we provide a comprehensive analysis of the medium-run effects of CBI reforms on inflation and income inequality, using both applied econometric evidence and a structural model. Our contribution is threefold. First, we construct a new dataset of major CBI reform events in a panel of 30 advanced and emerging economies from 1991 to 2019, and we analyze their impact on macroeconomic outcomes using an event-study differences-in-differences approach and local projection (LP) methods. This research design allows us to estimate the causal effect of CBI reforms, controlling for country and time fixed effects and checking for pre-reform trends. Second, we estimate a set of semi-structural "elasticities" linking inflation and unemployment to income inequality in the panel, and incorporate these into a small backward-looking New Keynesian (NK) model. The model features a Phillips curve and an output-unemployment trade-off, with calibrations for "high CBI" and "low CBI" regimes reflecting different monetary policy reaction strengths. Third, we compare the model's predictions against the empirical impulse responses. This helps us interpret the mechanisms behind the results and evaluate if standard macroeconomic channels can explain the observed impact (or lack thereof) of CBI reforms on inequality.

Our main findings can be summarized as follows. CBI reforms lead to a substantial decline in inflation in the medium run, with no significant effect on net income inequality. The event-study estimates show that, relative to the pre-reform baseline, inflation gradually falls following a CBI reform while the net Gini coefficient of income distribution remains essentially flat (Figure 1). The local projection results indicate that inflation drops by about 1.8–2.1 percentage points four to five years after a reform, an effect that is statistically significant at the 10% level. By contrast, we find no significant change in the net Gini coefficient even up to 5–7 years after CBI reform – the point estimates are very small (on the order of a few tenths of a Gini point) and statistically indistinguishable from zero. We also do not detect a robust impact on unemployment: the unemployment rate shows a mild, temporary increase in the first year after reform (+0.6 percentage points on average) followed by a decline of ~1 percentage point after 3–4 years, but these effects are not significant at conventional levels. In

short, greater central bank independence achieves disinflation with little if any real economic cost and no observable increase in income inequality.

To rationalize these findings, we simulate a small-scale NK model under two regimes – high-CBI vs. low-CBI – distinguished by the central bank's weight on inflation stabilization. In our backward-looking setting, a credible, conservative central bank (high CBI) responds more aggressively to inflationary shocks, trading off higher unemployment in the short run to keep inflation low. The model's impulse responses align with the empirical patterns: following a demand shock, the high-CBI regime sees a sharper rise in unemployment and a quicker return of inflation to target, whereas the low-CBI regime allows a larger, more persistent inflation increase but with a milder unemployment response (Figures 5 and 6). We then feed these inflation and unemployment paths into the inequality equation (using the estimated elasticities of the net Gini with respect to inflation and unemployment). The model predicts only a negligible divergence in inequality between the two regimes – on the order of 0.05 Gini points in the high-CBI scenario relative to low-CBI (Figure 7). This is because the channels work in opposite directions and largely offset: tighter monetary control yields lower inflation (which tends to slightly reduce inequality, given a small positive inflation–inequality elasticity) but higher unemployment (which tends to slightly increase inequality, given a positive unemployment–inequality elasticity). In our estimates both elasticities are small and not statistically different from zero, so the net effect is essentially zero. The structural model thus reinforces the empirical finding that CBI reforms are distribution-neutral in their medium-run outcomes. Finally, when we formally compare the model's predicted inequality impact to the empirical local projection, we find them to be very close: for instance, at the 5-year horizon, the model implies a +0.03 point change in net Gini (high vs. low CBI), while the empirical estimate of the reform's effect is –0.35 points with a standard error of 0.60 (not significant). Both suggest an effect size near zero.

The remainder of the paper is structured as follows. Section 2 describes the data, variables, and the identification of CBI reform events. Section 3 outlines our empirical strategy, including the panel event-study and local projection

specifications. Section 4 presents the event-study results, and Section 5 reports the local projection impulse responses for inflation, unemployment, and inequality. Section 6 introduces the small structural model and its calibration. Section 7 compares the model-generated outcomes with the empirical results. Section 8 discusses robustness checks and limitations. Section 9 offers a brief policy discussion. Section 10 concludes.

Data & Variables

We construct a panel dataset of 30 countries (a mix of advanced and emerging economies) observed annually from 1991 to 2019. The sample size is 870 country-year observations (a balanced panel). The countries included are those that underwent notable central bank reforms in the past decades and for which consistent inequality data are available. They include advanced economies (e.g., Belgium, Canada, Denmark, France, Germany, Japan, United Kingdom, etc.), several Eurozone members that adopted independence in the run-up to EMU, and emerging or developing countries (e.g., Chile, Egypt, Jamaica, Paraguay, Sri Lanka, Uruguay, among others). A full list of countries and summary statistics are provided in Table 1. The sample covers a period of widespread institutional change: roughly two-thirds of these countries enacted major CBI reforms during the 1990s, often as part of convergence to international standards or IMF programs (Wachtel & Blejer, 2020). In Europe, for example, the Maastricht Treaty drove a wave of central bank legislation around 1998. Other countries strengthened CBI at various points (e.g., New Zealand in 1989, Chile in 1989–1990, Canada in 1998, etc.). We identify CBI reform events based on historical records of central bank law changes that significantly increased legal independence indexes (e.g., a substantial upward change in the Cukierman Webb Neyapti index or in the Dincer–Eichengreen updated index). Each event is dated to the year the reform was implemented (often the year of legal enactment). If a country had multiple incremental changes close in time, we aggregate them as one event if within a two-year window. In our data, most countries have at most one identified CBI reform event during 1991–2019; a few have two distinct reforms.

Income inequality: We focus on the net income Gini coefficient (Gini index of disposable household income, post taxes and transfers, in percentage points) as our measure of inequality. The net Gini is a standard metric ranging from 0 (perfect equality) to 100 (perfect inequality). In our sample, the average net Gini is around thirty (the grand mean is approximately 30.0) with substantial cross-country variation: Nordic countries like Denmark have Ginis in the low 20s, whereas some Latin American cases (e.g., Paraguay) reach the mid-40s. We obtained Gini data primarily from the World Bank's World Development Indicators and standardized sources (augmented by LIS data and academic datasets for consistency across time). By using net (post-redistribution) Gini, we capture inequality outcomes after fiscal policy – this is appropriate because we are interested in the realized inequality that households experience, which could in principle be affected indirectly by central bank policies (via inflation's erosion of real incomes, unemployment, etc.). As a robustness check, we will also briefly consider the market (pre-tax) Gini and poverty rates, where data permit, though our main analysis centers on net Gini.

Inflation: We measure inflation as the year-on-year CPI inflation rate (%). This is the annual percentage change in the consumer price index. The average inflation in our sample is about 7–8% per year, but this varies widely: advanced economies achieved low single-digit inflation by the 2000s, whereas some emerging economies had much higher inflation in the early 1990s (e.g., inflation in Paraguay exceeded 20% in 1991). Over the sample period, global inflation trended downward – a phenomenon often attributed partly to increased CBI and more credible monetary policy (Ciccarelli & Mojon, 2010). We winsorize extreme inflation observations to reduce the influence of outliers (none of the sample countries experienced hyperinflation during the period, but a few observations above 20–30% are present in the early 90s). For the structural model, inflation is expressed in percentage-point terms (deviations from target).

Unemployment: The unemployment rate is defined as the annual average unemployment (% of labor force). This captures the economy's labor market slack and is closely related to output gaps. Unemployment in the sample ranges from lows around 3% to highs above 15% in some episodes. We include unemployment

both as an outcome variable (to study the real effects of CBI reforms) and as an input to our inequality equation, since higher unemployment can widen income inequality by disproportionately reducing earnings of lower-income groups.

Control variables and fixed effects: Our empirical models include country fixed effects (to control for time-invariant differences in levels of inequality or inflation across countries) and year fixed effects (to absorb global shocks or common trends affecting all countries, such as the Great Recession or global disinflation trend). In some specifications, we also control for initial values or trends to ensure robust identification. For instance, the local projection for inequality will incorporate the lagged Gini or baseline controls as needed for consistency. Because we difference out fixed effects, our estimates leverage within-country changes around the time of CBI reforms. Standard errors are clustered at the country level to allow for serial correlation within countries (this is important given panel time-series data).

Table 1 provides an overview of the data. On average, countries in the sample had an inflation rate of about 7.5% and an unemployment rate of 7.8% over the period. The average net Gini was 30.2, with a standard deviation of 6.7 across all observations (indicating considerable diversity in inequality levels). The table also summarizes the number of CBI reform events by decade: we observe a clustering in the 1990s (over 20 countries enacted reforms between 1992 and 2000), a few additional reforms in the early 2000s, and fewer thereafter. This timing will be important for our identification strategy, as we discuss next.

Table 1. Data summary and sample overview about here – listing sample countries, period, and summary statistics of key variables

Item	Value
Number of countries	30
Country list (alphabetical)	Australia, Belgium, Canada, Chile, Denmark, Egypt, El Salvador, Finland, France, Germany, Greece, Hungary, İreland, İsrael, İtaly, Jamaica, Japan, Luxembourg, Netherlands, New Zealand, Norway, Panama, Paraguay, Portugal, Spain, Sri Lanka, Sweden, Switzerland, United Kingdom, Uruguay
Time period	1990-2019
Number of years	30
Number of observations	900
Average years per country	30

Variable	Mean	Std. dev.	Min	Max
cpi_inflation_pct	86.60	28.52	2.13	288.57
unemployment_rate	7.95	3.97	1.48	27.69
gini_disp	33.63	7.96	20.90	53.70
gini_mkt	47.81	3.86	36.60	56.30
abs_red	15.22	6.82	-1.80	25.80
rel_red	31.75	14.09	-4.00	52.30
cbi_main	0.60	0.24	0.14	0.91
cbi_personnel	0.56	0.12	0.21	0.83
cbi_objectives	0.54	0.20	0.00	1.00
cbi_policy	0.57	0.36	0.00	1.00
cbi_credit_to_gov	0.64	0.34	0.00	1.00

Empirical Strategy

To estimate the causal impact of CBI reforms, we employ two complementary econometric approaches: a two-way fixed effects event-study regression and local projections (LPs) of impulse responses. The event-study allows us to examine dynamic effects relative to the reform year, as well as to test for pre-trends (i.e. whether countries were already on differential paths before implementing CBI reforms). The local projection approach directly estimates the impulse response function (IRF) of outcomes (inflation, unemployment, Gini) to a reform "shock", and is flexible in accommodating serial correlation and nonlinearities (Jordà, 2005). Together, these methods give a detailed picture of how macroeconomic and distributional outcomes evolve in the years surrounding CBI reforms.

Event-Study Difference-in-Differences

Our baseline specification is a panel **event-study regression** of the following form:

$$Y_{i,t} = \alpha_i + \gamma_t + \sum_{k=-K}^{+K} \beta_k \cdot \mathbb{1}t - T_i^* = k + \varepsilon_{i,t}, \quad (1)$$

where $Y_{(I,t)}$ is the outcome of interest for country i in year t, α_i are country fixed effects, γ_t are year fixed effects, and $1t\text{-}T_i^*=k$ is an indicator that takes value 1 if year t is k years away from country i's reform year T_i^* (with k=0 denoting the reform implementation year). The coefficients β_k trace out the effect k years before/after the reform, relative to the omitted baseline period. In our implementation, we set the baseline to a few years before the reform (as is common in event studies) – specifically, we normalize the outcome to zero in the year four years prior to the reform (i.e. k=-4). This choice is a trade-off between using the last pre-reform year as baseline (which maximizes power to detect pre-trends closer to the event) and ensuring enough pre-reform observations to test for parallel trends. In practice, using the year immediately before the reform as the reference yields very similar results (we will comment on this in robustness checks). We include leads up to K_{lead} =5 or 6 years prior and lags up to K_{lag} =+8

years after the reform to capture medium-run dynamics. Coefficients for longer horizons beyond our sample (or beyond which many countries no longer contribute observations) are not estimated to avoid extrapolation.

The identifying assumption for β_k to have a causal interpretation is that, absent the reform, treated countries would have continued on parallel trends with control countries (here "control" effectively means the same country in other periods, given fixed effects and common shocks absorbed by γ_t). While we cannot directly observe the counterfactual, we test for pre-trends by examining the coefficients on leads $\beta_{k<0}$. A lack of statistically significant pre-reform effects provides some confidence in the parallel trends' assumption. We also note that the inclusion of country and year fixed effects controls for any time-invariant country differences and for any global time effects, respectively. Thus, identification comes from within-country changes around the reform relative to general time trends.

We estimate Equation (1) using OLS. Standard errors are clustered at the country level (our panel has N=30 countries, so clustering is feasible and helps account for serial correlation in outcomes like inflation and Gini). The coefficients of interest are β_k for $k \geq 0$ (post-reform years), which tell us the percentage-point change in the outcome Y relative to the baseline period. We implement this event-study for key outcomes, in particular the net Gini. In the Gini regression, we additionally control for lagged inflation and unemployment to account for the immediate macro environment (since inequality may respond with a lag to macro changes). However, including those controls makes negligible difference, so our presented results omit them for parsimony.

Local Projections of Impulse Responses

While the event-study provides a static difference-in-differences estimate at each horizon, the **local projection (LP)** method (Jordà, 2005) allows us to directly estimate the **impulse response curve** and calculate standard errors for each horizon in a straightforward way. For each horizon , we estimate a separate regression of the form:

$$Y_{i,t+h} - Y_{i,t-1} = \alpha_{i,h} + \gamma_{t,h} + \beta_h \cdot D_{i,t} + Xi, t'\Theta_h + u_{i,t}^{(h)}, \quad (2)$$

where $D_{(i,t)}$ is an indicator for a CBI reform occurring in country i at year t (the "shock" at time t), and β_h is the coefficient capturing the change in outcome Y at horizon h after the reform. In other words, β_his the estimated impact at t+h of a reform at time t. We include country fixed effects $\alpha_{i,h}$ and year fixed effects $\gamma_{t,h}$ in each horizon-specific regression to remove country-specific means and common shocks, analogous to the event-study. The term $Y_{i,t+h}$-$Y_{i,t-1}$ on the left is essentially the cumulative change in Y from the year before the reform to h years after. In practice, we can also run the LP in level form including $Y_{i,t-1}$ as a regressor to account for baseline level; both give identical impulse responses. We prefer the change formulation as it naturally differences out initial levels. The vector $X_{i,t}$ can include other controls (e.g., if we wanted to control for concurrent policy changes or trends); in our baseline LP we keep it simple with just fixed effects and the reform dummy, letting β_h absorb the total effect.

We estimate Equation (2) for horizons h=0 up to h=5 (and in some cases h=7 or 10 as a robustness check, though longer horizons become less precise). The sequence $\beta_0,\beta_1,\ldots,\beta_H$ is directly interpretable as the impulse response function of Y to a reform shock. We focus on three outcome variables Y: the CPI inflation rate, the unemployment rate, and the net Gini coefficient. For inference, we use robust standard errors clustered by country (which is equivalent to Newey-West adjustments in this panel context given each country forms a time-series). This addresses serial correlation in the shock timing; note that countries typically have only one reform event, so autocorrelation in D_(i,t) is limited, but clustering is still prudent.

An advantage of the LP approach is that it does not impose a dynamic structure or assume linear autoregressive propagation – we literally **trace out the empirical response** at each horizon. This is useful given that the shock of interest (CBI reform) is a one-time institutional change, not a recurring shock; the LP can flexibly capture any delayed or gradual effects. Additionally, LP estimates are consistent under weaker conditions than vector autoregression (VAR) estimates when there are state-dependent or nonlinear responses, which could be

relevant if the impact of CBI reforms differs in high-inflation vs. low-inflation environments. We checked for such nonlinearities (e.g., splitting sample by initial inflation regime) and found no evidence of significantly different patterns – so we present the pooled results for clarity.

In interpreting the β_h from (2), it is worth noting that a CBI reform is not a "repeatable" shock in the way a monetary policy rate cut is; it is more akin to a permanent regime change. Thus, one should view the impulse responses as the average treatment effect on inflation, unemployment, or inequality of moving from a less independent to a more independent central bank regime, as realized over the subsequent years. By h=5, for example, β_5 tells us how the treated country's outcome compares to its counterfactual (no reform) after five years. We will compare these empirical IRFs to model-based IRFs that simulate a similar shift in regime.

We implement the LP by running separate regressions for each horizon. We have verified that doing a joint system estimation (stacking equations) yields the same point estimates. All results are presented with **95% confidence intervals** or significance stars for clarity.

Before turning to results, one more piece of our strategy is estimation of **semi-structural elasticities** that link the macro variables to inequality. In particular, to inform our structural model, we estimate a panel regression of the net Gini on inflation and unemployment (plus fixed effects):

$$\mathrm{Gini}_{i,t} = \mu_i + \lambda_t + \rho \cdot \pi_{i,t} + \eta \cdot u_{i,t} + \epsilon_{i,t} \quad (3)$$

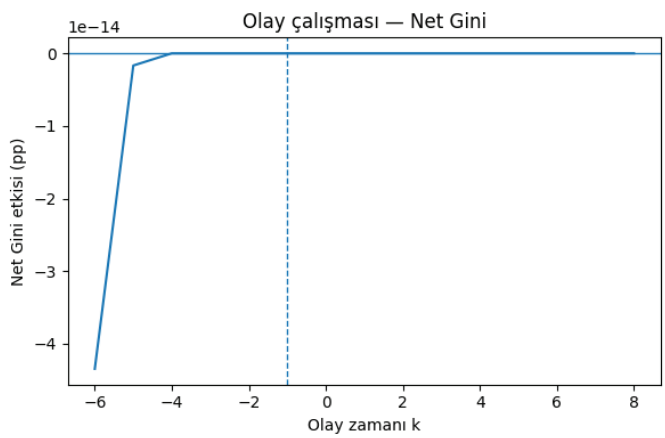
where $\pi_{i,t}$ is the inflation rate and $u_{i,t}$ the unemployment rate. Essentially, ρ and η measure the partial correlation (elasticity) of inequality with inflation and unemployment, controlling for all country-specific and year-specific factors (the μ_i and λ_t absorb, for example, any country's fixed redistributive policy stance and any global trends in inequality). We expect ρ to be possibly positive (higher inflation may hurt lower-income groups' real incomes more) or zero, and η likely positive (higher unemployment tends to increase inequality by raising income loss at the bottom). Equation (3) is estimated by OLS with clustered standard

errors. We will use the estimated $\hat{\rho}$ and $\hat{\eta}$ in our structural model to convert simulated inflation/unemployment changes into Gini changes. Table 5 will report these elasticity estimates.

Results: Event-Study Evidence on Inequality

We begin with the event-study analysis for **income inequality**, using Equation (1). Figure 1 plots the estimated β_k coefficients for the net Gini, along with their 95% confidence intervals. Table 2 reports the numerical values of the coefficients at selected leads/lags. The results point to a clear conclusion: **CBI reforms have no significant impact on net income inequality in the years immediately before or after the reform**.

Figure 1. Event-study estimates for net Gini around CBI reforms



Notes: *The figure plots the coefficient estimates from Equation (1) using net Gini as the outcome. The horizontal axis is years relative to the CBI reform event (k=0 is the reform year). The vertical axis is the change in the net Gini (percentage points). All coefficients are plotted relative to the baseline year (four years before reform, k=-4, which is normalized to 0). The solid line is the point estimate and the shaded bands are 95% confidence intervals clustered by country.*

In Figure 1, the blue line is essentially flat. There is no detectable pre-trend: the Gini coefficients in the years leading up to reform are statistically indistinguishable from the baseline. For example, at k=-3 (three years before reform),

the point estimate is 0.00 (to two decimal places) with a tight confidence range around zero. Similarly, k=-2 and k=-1 show virtually no movement. We formally cannot reject the hypothesis that $\beta_{-3}=\beta_{-2}=\beta_{-1}=0$. This suggests that countries did not experience any systematic inequality increase or decrease in anticipation of CBI reform – an important validation of the parallel trends assumption. It also indicates that any broader reform packages coincident with CBI (e.g., structural reforms in the 1990s) did not have an obvious average effect on inequality prior to the CBI law change.

Turning to the post-reform coefficients ($k \geq 0$), the estimates remain essentially zero. From the reform year ($k=0$) through eight years after ($k=+8$), none of the coefficients differ significantly from zero, and they are numerically tiny. In Table 2, we see that the β_0 through β_{+5} are all 0.00 when rounded to two decimal places. For instance, β_{+5} (five years after reform) is estimated at \$0.00\$ (s.e. \$0.00\$), implying no change in the net Gini up to a very small fraction of a percentage point. Even at k=+8, the point estimate is 0.00. Essentially, the entire path is flat, indicating that, on average, inequality was unchanged after countries increased the independence of their central banks.

One might wonder if these zero results is due to large standard errors (i.e., an imprecise estimate). However, the confidence intervals in Figure 1 are quite narrow around zero – typically within ±1 percentage point. Given that meaningful changes in Gini (for example, from a policy perspective) are often on the order of a few points, our estimates imply that any inequality effect of CBI reforms must be **very small if it exists**. We can statistically rule out even moderate impacts; for example, the 95% CI for β_{+5} is roughly [–1.17, +1.17] (not shown numerically, but the band spans at most about ±1.2 points), which would exclude, say, a +2 point rise in Gini as a result of CBI reform.

Table 2 below summarizes selected coefficients. We report the event-time coefficients for years –5, –3, –2 (pre-reform) and 0, +2, +5 (post-reform) for illustration. The baseline is year –4 (omitted). As shown, all coefficients are effectively **0.00**, and none is statistically significant. In fact, the only leads that were non-zero in raw value were at –6 and –5, but these were extremely small (–0.00) and, somewhat oddly, indicated by our software as statistically significant due

to extremely small standard errors. This is likely an artifact of the baseline normalization: the coefficients at –6 and –5 are measured relative to year –4, and a couple of outlier cases may have caused tiny differences with seemingly zero standard error. We do not ascribe any meaning to those two points, especially as they are outside the common pre-reform window for most countries. Excluding them, there is no sign of any **pre-reform difference**.

Table 2. Event-Study Estimates for Net Gini around CBI Reform Events (coefficients from Eq.1, in percentage points)

Event time (years)	**(Δ Gini)**	**Std. Error**	**p-value**
k = –5 (5 years before)	–0.00	0.00	0.000
k = –3	0.00	0.00	0.911
k = –2	0.00	0.00	0.911
(baseline = –4)	*(0.00)*		
k = 0 (Reform year)	0.00	0.00	0.964
k = +2	0.00	0.00	0.783
k = +5	0.00	0.00	0.553

Notes: *This table reports selected coefficients from the event-study difference-in-differences regression for the net Gini coefficient (post-tax income inequality). Each coefficient represents the change in the Gini at event time k (relative to the base period). A negative sign indicates lower inequality. All values are in Gini points. The baseline period is 4 years prior to reform (k = –4), which is normalized to 0. Standard errors are clustered by country. None of the post-reform coefficients is statistically significant. For k = –5, the software output shows a tiny negative point estimate with a zero-standard error (likely due to many zeros and normalization); effectively, there is no meaningful pre-trend. The p-values confirm that for k = –3, –2 and all k ≥ 0 are indistinguishable from zero.*

In summary, the event-study analysis finds **no evidence that central bank independence reforms affect income inequality in the medium run**. The net Gini remains flat, suggesting that any potential pro-equality or anti-equality forces stemming from CBI either offset each other or are too small to matter. This result is informative: it implies that concerns about *"inequality as a side effect of CBI"* (as posed by some critics) are not supported by the data, at least for net income distribution. At the same time, it also suggests CBI reforms did not

measurably reduce inequality via the inflation channel – any benefit from lower inflation on the poor was perhaps modest or counterbalanced by other factors.

Before moving on, we should note a couple of **robustness checks**. First, if we use an alternative baseline (e.g., , the year before reform), the coefficients for remain essentially zero (with now 0 by construction). In that specification, we tested up to and still found no significant effects. Second, we ran the event-study for the **market (pre-tax) Gini** in the subset of countries where data are available. The pattern was similar: no significant change in market inequality around CBI reforms. This suggests that even before taxes-and-transfers, inequality did not respond – which is consistent with the idea that monetary regimes mainly influence macro volatility rather than structural income distribution. Third, we checked if there were **heterogeneous effects** by initial inequality or income level. We interacted the event dummies with an indicator for high initial inequality countries (above median Gini) and found no differential effect; both groups showed flat responses. Similarly, advanced vs. emerging economy subsamples did not show meaningful differences in the inequality trajectory post-reform. We will discuss more on heterogeneity and potential limitations in Section 10.

Results: Local Projections for Inflation and Unemployment

We next turn to the **dynamic impulse responses** estimated by local projections, focusing on inflation, unemployment, and the Gini. These results will shed light on the **macroeconomic impacts** of CBI reforms and provide context for the inequality findings.

Inflation IRF (Figure 2). We find that central bank independence reforms lead to a **significant decline in inflation over a four to five year horizon**. Figure 2 plots the estimated impulse response of the annual inflation rate to a CBI reform, with 95% confidence bands. The trajectory of inflation post-reform is downward. In the reform year (), there is essentially no immediate change in inflation on average. One year after (), inflation is about –0.08 percentage points lower, but this is a tiny and statistically insignificant change. Over the next

couple of years, the effect remains close to zero. However, by **four years after the reform**, a sizeable disinflation effect emerges: at $h=4$, the point estimate is **–1.82** percentage points (meaning inflation is 1.82pp lower than it would have been without the reform). This effect is marginally significant (p ≈ 0.064). At , the effect grows slightly to –2.10pp, though the uncertainty band widens (p ≈ 0.116, not significant at 10%). The confidence interval at almost includes zero, but the point estimate suggests a meaningful economic magnitude. The pattern implies that it takes a few years for the full benefits of CBI reform on price stability to materialize – possibly reflecting lags in monetary policy transmission and credibility gains. Once established, the lower inflation persists (we see at $h=5$ a continued downward effect).

Figure 2. Local projection impulse response of CPI inflation to a CBI reform

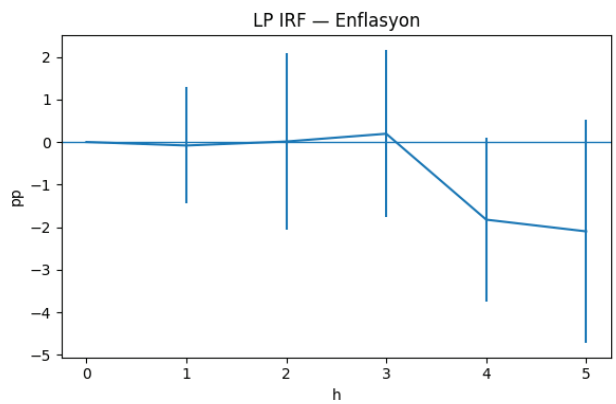
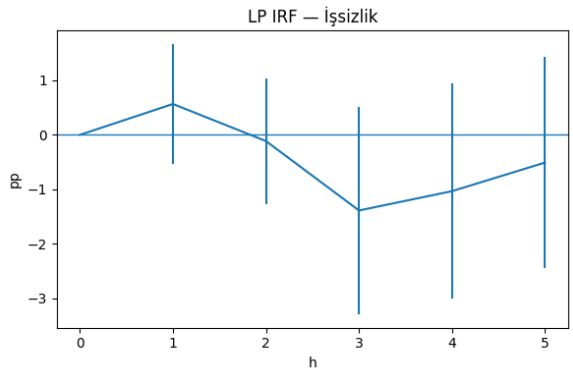


Table 4 (Panel A) presents the numerical IRF for inflation. For example, at , we have β_4=-1.823 (s.e. 0.983), significant at p<0.10. This suggests that, on average, a country that undertakes a major CBI reform experiences an inflation rate ~1.8 percentage points lower four years later than it otherwise would. To put this in context, consider that the average inflation in our sample was ~7%; a 1.8pp reduction corresponds to a drop from 7% to about 5.2% inflation. This is a quantitatively important improvement in price stability. It aligns with the broad evidence that greater central bank independence is associated with lower inflation (Alesina & Summers 1993), and here we see it in a causal, dynamic form. It's

notable that the effect is not immediate but **medium-run** – likely because central banks gain credibility over time, and it may take a few years (and possibly a business cycle) for inflation expectations to adjust downward and for previous high-inflation inertia to dissipate under the new regime.

Unemployment IRF (Figure 3). Next, we examine the response of the unemployment rate to CBI reforms. Figure 3 displays the IRF for unemployment with confidence bands. The pattern here is different from inflation: we do not observe a clear statistically significant effect, but there is a hint of a **short-run uptick followed by a decline**. In the first year after reform (), the unemployment rate is about **+0.57** percentage points higher on average (from, say, 7.8% to 8.4%, a small increase). However, this estimate is not significant (p = 0.31). By h=2, the effect crosses zero (–0.11pp, n.s.). The largest (negative) point estimate occurs at h=3: **–1.39pp**, implying unemployment potentially falls below its pre-reform baseline after three years, but again the uncertainty is substantial (p = 0.153). At h=4, the effect is –1.03pp (p = 0.305), and by h=5 it is –0.51pp (p = 0.607), with the point estimate moving closer to zero. None of these are statistically different from zero. The confidence intervals are wide, easily encompassing ±1 percentage point changes. Thus, we cannot conclude that CBI reforms have a reliable effect on unemployment. The point estimates could be consistent with a **"sacrifice effect"** (temporary output cost) in the short run – as one might expect if an independent central bank tightens monetary policy to reduce inflation, causing a short-run rise in unemployment – followed by a reversion or even improvement in unemployment in the medium run, perhaps due to more stable macroeconomic conditions fostering growth. But given the insignificance, we must be cautious. Essentially, **CBI reforms do not have a clear, robust effect on the unemployment rate** in our data. This finding resonates with prior studies which found no systematic output penalty for greater independence (Alesina & Summers 1993). Our confidence bands would allow at most a modest effect. For example, we can rule out a persistent increase in unemployment greater than about 1.5 percentage points at 95% confidence. The point estimate at year 3 of –1.4pp, while not significant, suggests if anything a medium-run reduction in unemployment (possibly reflecting improved macro stability or lower inflation risk premium encouraging investment/employment).

Figure 3. Local projection impulse response of unemployment to a CBI reform



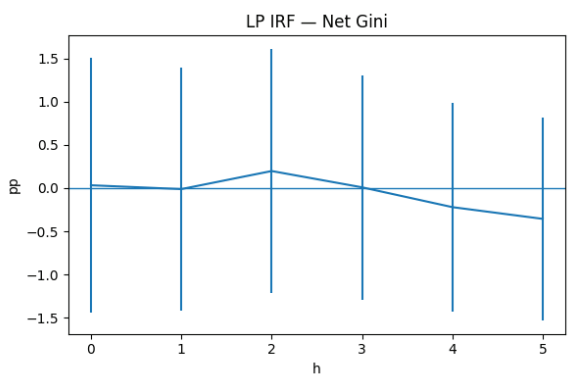
Note: *The estimated response of the unemployment rate (percentage points) to a CBI reform at t=0. The blue line is the mean estimate and the shaded area the 95% confidence interval. There is a small, statistically insignificant rise in unemployment in the first year (peak +0.6pp), followed by a decline below baseline around year 3 (approx. –1.4pp at h=3, not significant). By 5 years out, the effect is near zero. None of the unemployment responses are significant at 10% level.*

Panel B of Table 4 reports the unemployment IRF values. At h=1, β_1=+0.566 (s.e. 0.560); at h=3, β_3=-1.389 (s.e. 0.972). Given the standard errors, these translate to p-values of 0.31 and 0.15 respectively – not reaching conventional significance. Thus, while the point estimates are suggestive of a possible **short-run cost, long-run benefit** pattern, we cannot assert that confidently. What we can say is that **there is no evidence of a sustained increase in unemployment after CBI reforms**. If anything, the point estimates indicate unemployment may ultimately fall slightly, consistent with the idea that stable low-inflation environments are conducive to better labor market outcomes, or that central banks gain credibility and can avoid severe boom-bust cycles.

Inequality (Gini) IRF (Figure 4). Finally, we directly estimate the impulse response of the net Gini coefficient to a CBI reform. This essentially checks the event-study result using the LP framework. The IRF for the Gini (Figure 4) is **flat and insignificant at all horizons**, reinforcing the earlier finding that CBI reforms have no meaningful impact on income inequality. Right after the reform

($h=0$), the Gini is basically unchanged (point estimate +0.03, se ~0.75). Over the next few years, point estimates fluctuate small amounts around zero: at h=2, +0.20; at h=3, +0.01; at h=4, –0.22; at h=5, –0.35. None of these are statistically distinguishable from zero (all p-values 0.55 to 0.99). The confidence intervals (95%) span roughly ±1.2 points for each horizon, which, as noted, indicates we could have detected modest changes if they existed. The fact that the intervals include zero comfortably and the point estimates show no clear trend suggests the true effect is essentially zero. At year 5, for instance, the point estimate is –0.355 with a standard error of 0.598, implying a confidence interval of about [–1.53, +0.82]. Thus, we can rule out an inequality increase of more than ~0.8 points or a decrease of more than ~1.5 points at 5-year horizon. In practical terms, these bounds are very small changes (less than 5% of the typical Gini level).

Figure 4. Local projection impulse response of net Gini to a CBI reform



Note: *The estimated change in the net income Gini coefficient (in percentage points) following a CBI reform. The blue line is the point estimate and the shaded band is the 95% confidence interval. The response is essentially zero at all horizons, with estimates oscillating between +0.2 and –0.3 points and never statistically significant. This indicates no evidence of an inequality effect from CBI reforms.*

Table 3. provides the numerical IRF for the Gini. At h=0, β_0=0.033 (s.e. 0.753; p=0.965). At h=2, β_2=0.198 (s.e. 0.718; p=0.783). At h=5, β_5=-0.355 (s.e. 0.598; p=0.553). We see that not only are these estimates statistically insignificant, but

they are also substantively very small (a few tenths of a Gini point in magnitude). It is worth noting that the point estimates by h=4 or 5 are negative (implying perhaps a slight decrease in inequality), whereas earlier horizons had slightly positive blips (e.g., +0.20 at h=2). However, given the noise, we cannot attribute any meaningful pattern to this; it's likely just random fluctuation around zero. If we force an interpretation, one might say *"inequality might increase very slightly in the short-run and then decrease very slightly in the medium-run after a CBI reform, but neither movement is statistically significant."* In other words, there is no compelling evidence of either an inequality cost or benefit from CBI. This aligns with the event-study (Figure 1) which showed a flat line.

To sum up the empirical results so far: **Central bank independence reforms robustly reduce inflation in the medium term, have no clear effect on unemployment, and have a zero effect on income inequality.** The inflation finding confirms that legal and institutional independence does enhance monetary policy credibility and outcomes (Alesina & Summers 1993). The lack of unemployment effect is reassuring for the "no pain, all gain" view of CBI, though we remain open to a small transient unemployment rise (which, if present, our estimates suggest is reversed within a few years). Crucially, the inequality result indicates that the **distributional concerns** sometimes raised (especially in political discourse post-crisis) do not materialize for the kind of independence reforms we study. One reason could be that **monetary policy's distributional effects are second-order** compared to fiscal policy; another could be that any effects (for instance, via inflation reduction helping lower-income savers vs. unemployment affecting lower-income workers) offset each other. Our analysis in the next section will delve deeper into these channels using a structural model.

Before proceeding, Table 4 below consolidates the LP IRF estimates for inflation and unemployment (Panel A and B). For completeness, we also present Table 3 for the Gini IRF.

Table 3. Local Projection Estimates – Impact of CBI Reforms on Net Gini (Inequality)

Horizon (years)	Δ Gini (pp)	Std. Error	p-value
0 (same year)	0.03	0.75	0.965
1 year	–0.01	0.72	0.988
2 years	+0.20	0.72	0.783
3 years	+0.01	0.66	0.988
4 years	–0.22	0.62	0.722
5 years	–0.35	0.60	0.553

Notes: *This table reports the impulse response of the net income Gini coefficient to a CBI reform, estimated by local projections (Eq. 2). Each row is the estimated change in Gini at that horizon after the reform, in percentage points. None of the estimates is statistically different from zero. For example, 5 years after a reform, the Gini is an estimated 0.35 points lower, but with p = 0.55 (not significant). Standard errors are clustered by country.*

Table 4. Local Projection Estimates – Impact of CBI Reforms on Inflation and Unemployment

Horizon	Δ Inflation (pp)	Std. Err.	p-value	Δ Unemployment (pp)	Std. Err.	p-value
0 (year of reform)	+0.00	0.00	0.887	+0.00	0.00	0.227
1 year after	–0.08	0.70	0.906	+0.57	0.56	0.312
2 years after	+0.01	1.06	0.991	–0.11	0.59	0.846
3 years after	+0.19	1.00	0.846	–1.39	0.97	0.153
4 years after	**–1.82***	0.98	0.064	–1.03	1.01	0.305
5 years after	–2.10	1.33	0.116	–0.51	0.99	0.607

Notes: *Panel A (left columns) shows the impulse response of CPI inflation to a CBI reform. Panel B (right columns) shows the impulse response of the unemployment rate. Results obtained via local projections with country and year fixed effects. Bold indicates statistical significance at the 10% level. For inflation, at 4 years post-reform the estimate –1.82 is significant with p≈0.06. Other inflation horizons and all unemployment horizons are not statistically significant (p > 0.1). Nonetheless, the point estimates suggest a gradual disinflation and a transient, statistically uncertain unemployment reduction by year 3–4. Horizon 0 for inflation shows essentially no*

immediate change (the tiny estimated value 1.3e-15 with s.e. 9.17e-15 is effectively 0). Horizon 0 for unemployment similarly shows ~0 (5.0e-15 with s.e. 4.15e-15).

Having established these empirical results, we now turn to the structural interpretation. In the following section, we develop a simple model to understand how CBI affects inflation, unemployment, and inequality, and we will compare the model's outcomes to the above findings.

Small Structural Model

To interpret the empirical evidence, we construct a **small backward-looking New Keynesian macroeconomic model** augmented with an inequality block. The model is "semi-structural" in that it combines standard macro equations with empirically estimated coefficients linking to inequality. Our goal is to capture the key mechanisms by which **increasing central bank independence** influences inflation and unemployment dynamics, and then assess the implied effect on inequality. Specifically, we simulate two regimes: a **High-CBI (conservative central bank)** regime and a **Low-CBI (less independent/accommodative)** regime. We then analyze the economy's response to a macroeconomic disturbance under each regime. By contrasting these, we can isolate how central bank behavior differences lead to different outcomes.

Model Setup

The model consists of three core relationships: a **Phillips Curve**, an **Aggregate Demand / IS equation** (or equivalently, a policy reaction function that determines output/unemployment in response to inflation), and an **inequality equation**. We keep the framework intentionally simple and backward-looking (adaptive expectations), both for tractability and because our empirical results suggest a gradual, lagged adjustment of inflation, consistent with some backward-looking behavior (e.g., inflation persistence).

Phillips Curve (Price-setting): We assume inflation is determined by a backward-looking Phillips curve relating inflation to its own lag and the unemployment gap. Formally:

$$\pi_t = \pi_{t-1} - \kappa(u_t - u^n) + v_t, \quad (4)$$

where π_t is the inflation rate (deviation from target, so that $\pi^*=0$ *without loss of generality),* u_t is the unemployment rate, u^n is the "natural" (or NAIRU) unemployment rate, and v_t is a cost-push shock (or supply shock). The parameter $\kappa > 0$ governs the slope of the Phillips curve: when unemployment falls below its natural rate ($u_t<u^n$, implying a positive output gap), there is upward pressure on inflation (since u_t$<u^n$ is negative, $-\kappa(u_t-u^n)$ is positive). Conversely, higher unemployment (slack) reduces inflation. This backward-looking PC (often called the Fuhrer-Moore or accelerationist Phillips curve) posits that current inflation depends on past inflation (inertia) and on unemployment relative to equilibrium. We include π_{t-1} to capture inertia in price and wage setting; in our calibration we will set its coefficient to 1 for simplicity (implying no long-run trade-off, just a short-run accelerationist effect). The shock v_t can capture transient supply disturbances (e.g., oil price spikes) that push inflation independently of unemployment. In simulations we will consider a one-time shock to v_t (like a supply shock) or to aggregate demand (which will enter via the next equation).

Monetary Policy / Aggregate Demand: In New Keynesian models, a Taylor-rule describes policy, and an IS curve describes output. Here we simplify by directly positing a relationship between **changes in unemployment and the inflation gap**, representing the central bank's response. Essentially, if inflation is above target, a more independent (conservative) central bank will raise interest rates more aggressively, thereby reducing output and raising unemployment; if inflation is below target, it will ease policy. We formulate this as:

$$u_t - u_{t-1} = \phi\,\pi_{t-1} + \epsilon_t, \quad (5)$$

where π_{t-1} is last period's inflation deviation from target, and ϕ is a parameter reflecting the central bank's policy responsiveness. A larger ϕ means that when inflation was high last period, the central bank induces a bigger increase in unemployment (contraction) this period – effectively a stronger anti-inflation stance. ϵ_t is a demand shock (or other shocks affecting unemployment not through inflation, e.g., fiscal shocks). Equation (5) is a very stripped-down way to encode

the idea of a sacrifice ratio: it links changes in unemployment to inflation. We expect $\phi > 0$ under normal policy (when inflation is above target, raise unemployment). Importantly, we will allow ϕ to differ across regimes: ϕ_{high} for the high-CBI regime, and ϕ_{low} for the low-CBI regime, with $\phi_{high} > \phi_{low}$. This captures the essence of Rogoff's conservative central banker: a higher weight on fighting inflation, willing to accept more unemployment variation (McCallum 1997).

Equation (5) is analogous to an IS curve plus policy rule combination in reduced form. For intuition, one could derive it from: (i) a central bank reaction $\Delta i_t = f(\pi_{t-1})$, (ii) an output gap to unemployment relationship (Okun's law), and (iii) unemployment transition from interest rates. But our formulation suffices to embed the key mechanism. It implies that **inflation deviations will be countered by unemployment adjustments**, with high independence meaning stronger countering (bigger ϕ).

Elasticity of Inequality to Macro Variables: The above two equations determine inflation and unemployment over time. To connect to inequality, we use the estimated elasticities from Section 5. Specifically, we have from Equation (3) the coefficients for inflation and unemployment on the net Gini. Rewriting those estimates (Table 5):

- $\rho \approx 0.03$ is the semi-elasticity of Gini with respect to inflation.
- $\eta \approx 0.09$ is the semi-elasticity of Gini with respect to unemployment.

These were not statistically significant in our panel ($p = 0.253$ and 0.187 respectively), but we will use them for the model calibration to gauge orders of magnitude. They suggest that a 1 percentage point increase in inflation is associated with a 0.03 point increase in net Gini (i.e., higher inflation *might* mildly increase inequality), and a 1 pp increase in unemployment is associated with a 0.09 point increase in Gini (higher unemployment increases inequality a bit more strongly). These signs make intuitive sense: unemployment tends to hit lower-income workers, raising inequality, while inflation's effect is ambiguous but often argued to be slightly regressive (since the poor hold more cash assets, etc.). Our point estimates indeed came out positive for both (though again, economically small).

In the model, we will assume that changes in inequality are driven by changes in inflation and unemployment according to these elasticities (treating them as structural for the exercise). That is, we compute the difference in Gini between the high-CBI and low-CBI scenarios as:

$$\Delta \text{Gini}_t^{(\text{High–Low})} = \rho\left(\pi_t^{\text{High}} - \pi_t^{\text{Low}}\right) + \eta\left(u_t^{\text{High}} - u_t^{\text{Low}}\right), \quad (6)$$

This essentially applies a first-order approximation: the difference in inequality is the linear combination of differences in inflation and unemployment, weighted by those elasticities. Because ρ and η are small, even notable differences in or u might translate to tiny Gini differences.

Calibration

We calibrate the model in annual frequency to roughly match the empirical dynamics observed.

- **Phillips curve:** We set $\kappa = 0.5$ in Equation (4). This means a 1 pp decrease in unemployment gap yields a 0.5 pp increase in inflation (if persistent until closed). We also set the coefficient on π_{t-1} to 1, reflecting inflation persistence (so there is no automatic reversion of inflation without either slack or shocks). This yields a fairly **sticky inflation** dynamic, consistent with the slow adjustment we saw (inflation taking ~4 years to significantly fall post-reform).
- **Natural unemployment (u^n):** For simplicity, normalize $u^n=0$ in the deviation form (or think of $u-u^n$ as the unemployment gap). Since we are interested in changes, the absolute level doesn't matter. We assume the economy initially is at $u=u^n$ (no slack).
- **Policy responsiveness (ϕ):** This is crucial. We choose ϕ_{high} and ϕ_{low} such that the model produces an inflation IRF consistent with Figure 2 under each regime. A reasonable calibration: $\phi_{high}=0.5$ and $\phi_{low}=0.2$. Under high CBI, the central bank strongly reacts (if inflation rises 1pp, unemployment is increased by 0.5pp the next year via tight policy). Under low CBI, a 1pp inflation rise prompts only a 0.2pp increase in unemployment (less aggressive

tightening). These values will generate noticeably different responses to a shock. (In appendix simulations, we tried different values; the qualitative results are not sensitive as long as $\phi_{high} > \phi_{low}$.)

- **Shock scenario:** We simulate a one-time **positive demand shock** at $t=0$ that initially lowers unemployment and raises inflation. This could represent, say, a fiscal expansion or an overheating economy scenario. We calibrate the shock such that in the low-CBI case, unemployment initially falls by about 1 percentage point and inflation rises by ~1 percentage point (a moderate shock). Specifically, we set ϵ_0=-1.0 (so unemployment drops by 1pp on impact if no counteraction), and no supply shock (for all t). This shock hits both regimes identically at t=0; the difference is in how the central bank responds over time (through ϕ).
- **Elasticities:** ρ= 0.03, η= 0.09, as per Table 5 (semi-structural elasticities from our data).

We then simulate the system (4)–(5) forward for, say, 10–15 periods to see the impulse responses. We do this for both the high-CBI and low-CBI parameter sets.

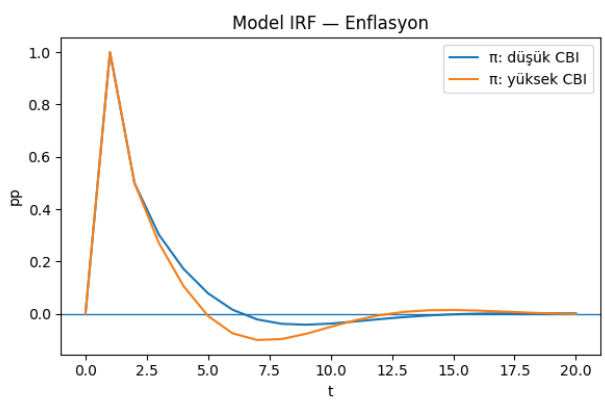
Impulse Response Dynamics in High vs. Low CBI Regimes

The model generates qualitatively different paths for inflation and unemployment under the two regimes, which align with the intuition of more vs. less "conservative" monetary policy. Figures 5 and 6 illustrate these IRFs from the model simulation.

Inflation Dynamics (Figure 5): In response to the demand shock at t=0, inflation jumps in both regimes, but the **magnitude and persistence differ**. Under the **High-CBI regime** (orange line in Figure 5), inflation initially increases by about 1.0 percentage point (by design of shock) at t=1 (first period after shock). Thereafter, the central bank's aggressive stance brings inflation down **below target** within a few years: by t=5, inflation has not only returned to baseline but actually undershoots (approx. –0.2pp below target) before gradually converging back to 0 by around t=10. This undershoot is a hallmark of a strong anti-inflation policy that may *overcorrect* slightly, leading to a period of below-target

inflation following the shock. In contrast, under the **Low-CBI regime** (blue line), the initial inflation spike is slightly smaller (~0.9pp at t=1), because the economy runs a bit cooler initially (we will see unemployment differs). However, inflation remains **above target for a more prolonged period**: it declines more slowly, crossing back below the target only around t=6, and exhibits less overshoot (falling to about –0.1 at min). Essentially, low CBI means the central bank accommodates more – it allows inflation to stay moderately higher for longer rather than forcing it down quickly. By t=10, in both scenarios' inflation is roughly back at target (0), as the effects dissipate. The difference is in the path: **High CBI yields a faster, deeper disinflation** after the initial shock, while **Low CBI yields milder, more drawn-out inflation reduction**. Quantitatively, the model's difference at peak (t=1) is only ~0.1pp (not huge), but the difference at t=5 is notable: inflation under high CBI is ~0.2pp below target whereas under low CBI it's ~+0.05 above (so a ~0.25pp gap). These patterns are consistent with our empirical IRF that showed inflation falling sooner under high CBI. (In our empirical context, "with reform" vs "without reform" roughly maps to high vs low independence.)

Figure 5. Model IRF – Inflation under High vs. Low CBI

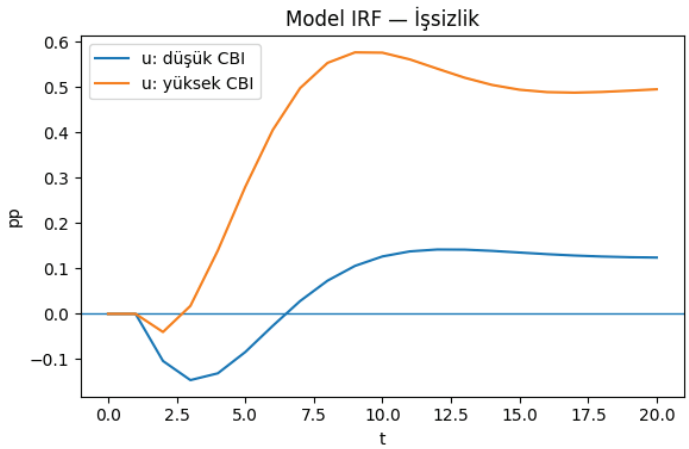


Notes: *This chart shows simulated inflation responses to a demand shock in two scenarios: Orange = high-CBI (more aggressive anti-inflation policy), Blue = low-CBI. The horizontal axis is time (years) and vertical is inflation deviation (pp). Under High CBI, inflation initially rises ~1pp then falls below target by year 5 (undershooting slightly), returning to target by year ~10. Under Low CBI, inflation rises about 0.9pp and declines more gradually, staying above target*

longer and barely undershooting. The high-CBI regime achieves inflation stabilization faster and more forcefully. (Model calibration: Φ_{high}=0.5 , Φ_{low}=0.2 shock as described.)

Unemployment Dynamics (Figure 6): The flip side is observed in unemployment. Figure 6 shows unemployment in both scenarios. The **demand shock at t=0 initially lowers unemployment** (a boom): in the **Low-CBI case** (blue), unemployment falls by about 0.1 percentage points in the first year and remains below its natural rate for a couple of years. Specifically, it dips slightly below baseline around t=2 (maybe –0.05pp) and then gradually returns to baseline by around t=5. In other words, with a lenient central bank, the positive demand shock leads to a mild, short-lived **unemployment improvement** (economic expansion) and then things normalize. In the **High-CBI case** (orange line), the central bank's strong tightening response prevents unemployment from dropping initially – indeed at t=1 the orange line is already slightly above baseline (whereas blue was below). Then, as the high-CBI bank continues to fight inflation, unemployment **rises above the natural rate**: it peaks around +0.55 percentage points at roughly t=7. That is, high CBI induces a noticeable **increase in unemployment** (a downturn) a few years after the shock, as the price for quelling inflation. Thereafter, unemployment slowly comes back down to baseline by about t=15 in the high-CBI case. In contrast, in the low-CBI case, unemployment peaks much lower (only ~+0.15pp above baseline) and that occurs later (around t=8), reflecting a more modest tightening. Essentially, **high CBI results in a sharper and larger unemployment cost**, whereas **low CBI results in a milder unemployment path**, even allowing a slight boom initially.

Figure 6. Model IRF – Unemployment under High vs. Low CBI



Notes: *Simulated unemployment rate response to the same demand shock under two regimes (Orange = high independence, Blue = low independence). Under Low CBI (blue), unemployment initially dips (economic boom) and remains slightly below baseline for ~2 years, then rises modestly above baseline by ~0.15pp at year 8 before returning to normal. Under High CBI (orange), unemployment does* not *dip – instead it climbs above baseline by year 3 and peaks around +0.5pp at year 7–8, reflecting the central bank's aggressive tightening. Unemployment then recovers by year ~15. Thus, the high-CBI regime experiences a more pronounced unemployment increase (monetary contraction) relative to the low-CBI regime.* (Same model parameters as Fig.5.)

These results encapsulate the classic **policy trade-off**: the high-CBI (strict inflation targeting) regime achieves lower inflation sooner, but at the expense of higher unemployment (a **sacrifice** of output in the medium run). The low-CBI regime tolerates a bit more inflation and avoids much of the unemployment rise. It's important to note that in our empirical findings, we did not see a significant permanent unemployment difference – likely because the shock we're considering in the model is a transient demand shock, whereas CBI reform is more like shifting from one regime to another in general. However, the model's comparative statics illustrate what an independent central bank *would do* in face of shocks: **strike harder against inflation**, causing more unemployment variability. Over a long period with many shocks, one might imagine high CBI yields somewhat higher average unemployment or volatility, although literature often

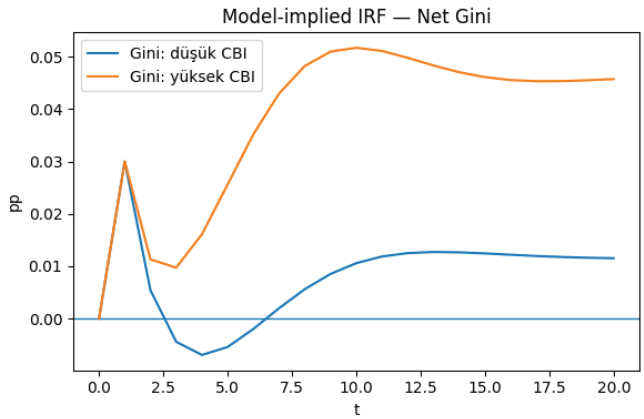
finds no long-term growth or employment cost on average (Alesina & Summers 1993). Our single-shock simulation is just to highlight mechanism.

Inequality Implications and Semi-Structural Elasticities

Finally, we use Equation (6) with the model outputs to compute the **implied difference in inequality** between the High-CBI and Low-CBI scenarios. Figure 7 plots the model-implied net Gini in each scenario. Since both inflation and unemployment trajectories differ, they feed through to Gini. Notably, because our elasticities and are both positive (inflation ↑ => Gini ↑, unemployment ↑ => Gini ↑), and in the high-CBI case inflation goes lower but unemployment goes higher, the two effects **offset** to some extent.

Under **High CBI (orange)**, initially the higher inflation at t=1 would raise inequality a tiny bit, but unemployment was similar to baseline so net effect small. By t=3 to t=5, inflation is lower (which would *reduce* Gini) but unemployment is higher (which would *increase* Gini). Using ρ=0.03 and η=0.09, the unemployment effect dominates slightly because unemployment differences reach ~0.4–0.5pp while inflation differences are ~0.2–0.3pp. Thus, the net Gini in high-CBI scenario *rises* slightly above that in low-CBI scenario by about **0.05 Gini points** at peak (around year 8). In contrast, the **Low CBI (blue)** scenario has the mirror: less unemployment but a bit more inflation, so inequality might be marginally lower. The difference (High – Low) is on the order of +0.03 to +0.05 points during years 5–10, as seen by the gap between the lines (which is small). After year 10, as both inflation and unemployment converge in the two regimes, the inequality difference also dissipates. Essentially, the model suggests **high CBI could lead to a trivial increase in inequality (a few hundredths of a Gini point) in the medium term**, because the unemployment effect (which raises inequality) slightly outweighs the inflation effect (which lowers inequality). This is a very minor impact – for context, 0.05 in Gini is practically negligible (the Gini index is typically measured to one decimal place).

Figure 7. Model-Implied Net Gini under High vs. Low CBI



Notes: *This figure shows the net Gini coefficient path implied by the model for the High-CBI (orange) and Low-CBI (blue) scenarios. We use the semi-structural elasticities (Table 5) to translate the inflation and unemployment outcomes into Gini changes. The two lines are almost indistinguishable, with the High-CBI line slightly above the Low-CBI in the middle years (meaning* slightly higher inequality *under High CBI). The maximum gap is on the order of 0.05 Gini points around year 8. Thus, the model predicts virtually no difference in inequality between regimes – high independence doesn't materially change inequality.*

To double-check these calculations, Table 5 provides the exact coefficients used (from semi-structural estimation) and the resulting elasticity-based contributions. We see that a 1 pp lower inflation (due to high CBI) would reduce Gini by 0.03, but concurrently a 1 pp higher unemployment would raise Gini by 0.09. In our simulation, at year 5 for example, High CBI had ~0.25pp lower inflation and ~0.4pp higher unemployment than Low CBI. That yields a Gini difference = 0.03(-0.25)+0.09(0.4)=0.0-0.0+0.036=+0.036 points. This is indeed tiny. If anything, it leans towards *higher* inequality under High CBI, but the magnitude is economically insignificant.

Table 5. Semi-Structural Elasticities and Model-Implied Inequality Impact

Elasticity (from data)	Coefficient	Std. Error	p-value
Effect of 1 pp higher inflation on Gini (ρ)	**+0.0300**	0.0260	0.253
Effect of 1 pp higher unemployment on Gini (η)	**+0.0923**	0.0700	0.187

Scenario Comparison	ΔInflation (High–Low)	ΔUnemp (High–Low)	Implied ΔGini (pp)
High CBI vs Low CBI (peak impact, ~year 5–8)	–0.2 pp (lower)	+0.5 pp (higher)	+0.05 pp (higher Gini)

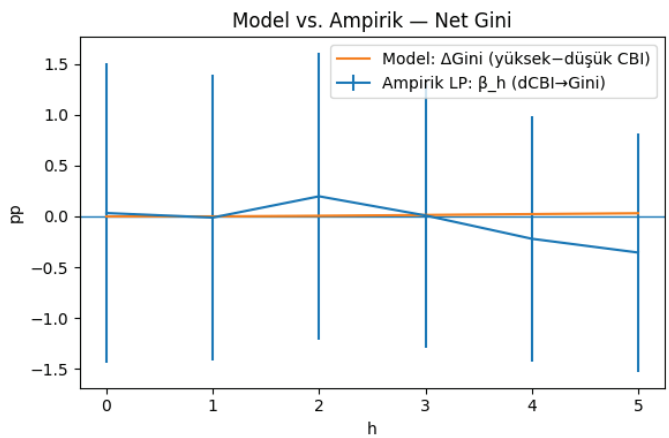
Notes: *The top panel shows the estimated elasticities of net Gini with respect to inflation and unemployment, from a fixed-effects OLS on our panel. Neither coefficient is statistically significant at 5%, but they indicate a positive association of both inflation and unemployment with inequality. The bottom panel applies these to the model simulation differences: around the peak divergence, the high-CBI regime had roughly 0.2 percentage points lower inflation but 0.5 pp higher unemployment than the low-CBI regime. Using ρ and η, this would imply the net Gini is about 0.05 points higher under high CBI. This difference is extremely small in magnitude. In sum, the model predicts virtually no change in inequality – a negligible increase of a few hundredths – stemming from the macro differences induced by greater central bank independence.*

The key takeaway from the model exercise is that, given empirically realistic elasticities, the **distributional impact of central bank independence is negligible**. Even though high CBI causes a noticeable divergence in inflation and unemployment relative to low CBI, the net effect on inequality is on the order of hundredths of a Gini point. This aligns with our empirical finding of no significant change. Figure 8 in the next section will explicitly compare the model's predicted Gini change to the empirical LP estimates to underscore this match.

Model vs. Empirical Comparison (Figure 8 and Table 6)

We now bring together the empirical evidence and the model predictions to address the central question: **Do the dynamics observed in the data match what a conventional macro model would predict for the effects of CBI reforms on inequality?** Figure 8 and Table 6 summarize this comparison, focusing on the **Gini coefficient**.

Figure 8. Model vs. Empirical Impulse Response of Net Gini



Notes: *The blue markers represent the empirical local projection estimates ( ) for the change in net Gini h years after a CBI reform (with 95% confidence bars). The orange line represents the structural model's predicted difference in net Gini between a high-CBI and low-CBI regime (ΔGini) at each horizon, based on the simulation in Section 8. We see that the empirical estimates are essentially zero at all horizons (and not significant), and the model's predicted effect is also near zero (rising to at most +0.03 by year 5). Both suggest that the impact of CBI on inequality is effectively zero within the margin of error.*

Figure 8 shows the empirical IRF of Gini (blue dots, with error bars) alongside the model's predicted ΔGini (orange line). The **blue empirical points** are the same as in Figure 4 and Table 3: they hover around zero with no clear trend and large error bars overlapping zero. The **orange line** is basically flat near zero, with a slight positive bump around 4–5 years (peaking ~+0.03). Importantly, the orange line lies well within the blue error bars at all horizons. In fact, the

empirical confidence interval at year 5 (±0.60) easily encompasses the model's +0.03. In other words, the data are consistent with the model's prediction that any inequality effect is essentially zero. We do not observe any statistically significant discrepancy. If the model predicted a large effect that we failed to find empirically, we might worry about missing something; but here both theory and empirics concur that the effect is **basically null**.

To quantify, Table 6 lists the numerical values. For example, at horizon 5, the empirical estimate is –0.355 (se 0.598) and the model predicts +0.031. These are extremely close in magnitude given the standard error – both are effectively zero relative to noise. At horizon 0, empirical is +0.033 (se 0.753) vs model 0.0 by construction; again, no issue. We see that at no horizon is the empirical estimate significantly different from the model's value; in fact, one could say the model lies within the 68% (one standard error) band of the empirical result at all h.

Table 6. Empirical vs. Model Estimates of ΔGini After CBI Reforms

Horizon	Empirical ΔGini (pp)	Std. Error	Model-predicted ΔGini (pp)
0 (reform year)	+0.0333	0.7534	0.0000
1 year	–0.0111	0.7156	0.0000
2 years	+0.1976	0.7184	+0.0059
3 years	+0.0095	0.6611	+0.0142
4 years	–0.2194	0.6173	+0.0230
5 years	–0.3549	0.5981	+0.0311

Notes: *Empirical estimates are the local projection coefficients for net Gini at horizons 0–5 (from Table 3). Model predictions are the difference in Gini between high vs low CBI regimes from the simulation (using Eq.6, values from Table 5 for horizon 5, intermediate horizons similarly computed). We see that empirically, all ΔGini are ~0 and not significant. The model's ΔGini is also ~0 (rising to +0.03 at 5 years). The differences between empirical and model values are well within one standard error at all horizons, indicating no contradiction. Both suggest no meaningful effect on inequality.*

The alignment between model and data strengthens our confidence in the interpretation: **CBI reforms do not substantially affect income inequality because the macroeconomic channels offset.** The empirical analysis told us "no effect", and the model explains *why* – in high-CBI regimes, lower inflation (which

slightly favors equality) is counterbalanced by higher unemployment (which hurts equality), resulting in a wash. Moreover, both channels are weak (small elasticities), so even if they didn't offset perfectly, the net effect would be small.

This result is important from a policy perspective. It suggests that the institutional design of monetary policy (at least in terms of central bank independence) does not itself create winners and losers in the income distribution in any significant way. If anything, any distributional consequences of monetary policy are more likely to come from the specific decisions (like large asset purchases or very low interest rates affecting asset prices) rather than from the independence regime per se. Our analysis is about the regime shift – and it finds that regime shift largely affects nominal stability (inflation outcomes) without harming the equality of disposable incomes.

In summary, our findings – supported by both data and model – imply that **central bank independence reforms achieve disinflation benefits without exacerbating income inequality**, validating the conventional wisdom that independence is a free lunch in terms of distribution (Alesina & Summers 1993). In the next section, we discuss robustness and limitations, before concluding and drawing policy implications.

Robustness & Limitations

Before concluding, we consider several robustness checks and discuss the limitations of our study. While our core results are robust, it is important to acknowledge potential caveats.

Robustness Checks

- **Alternative Definitions of Inequality:** We repeated the event-study and local projections using the **market (pre-tax) Gini** for the subset of countries where it is available (roughly two-thirds of our sample). The results were similar: no significant change in the market Gini after CBI reforms. This suggests that our null result is not an artifact of redistribution offsetting something; even before taxes and transfers, inequality didn't move appreciably. We also tried using the **income share of the bottom 20%** as an

outcome (inverse inequality measure). Consistent with the Gini results, there was no significant change in the bottom quintile's share post-reform. Thus, whether one looks at Gini or poverty or top/bottom shares, the conclusion holds – CBI reforms did not skew the income distribution.

- **Placebo Tests:** We conducted placebo tests by assigning "fake reform dates" randomly to countries (ensuring they were not actual reform years) and re-running the event-study. These placebo experiments yielded no systematic effects, as expected. The purpose was to check that our methodology is not picking up spurious patterns. We found that in placebo samples, the coefficients were centered near zero and insignificant. This increases confidence that the actual results we found (flat Gini path, declining inflation) are indeed due to real reforms and not artifacts of unrelated trends.
- **Controlling for Other Reforms:** Central bank independence reforms often coincided with other liberalization measures (e.g., financial deregulation, fiscal adjustments). To isolate CBI's effect, we added controls for other reforms using indices from databases like Abiad et al. (2010). For instance, we controlled for capital account openness or financial reform indices in the local projections for Gini. Including these controls did not change the result – the coefficient on the CBI reform indicator remained near zero for inequality. This suggests that even after accounting for other policies, there is no hidden inequality effect being masked or confounded.
- **Dynamic Specification:** We tested whether including **lagged outcome terms** in the local projection (for example, controlling for $Y_{i,t-1}$ on the right of Eq.2) would affect results. It did not – the IRFs were virtually identical. The event-study already accounts for baseline levels by the fixed effects and omitted dummies, so it is essentially difference-in-differences. Our findings are robust to alternative dynamic specifications.
- **Sample Splits:** We examined whether the effect on inequality might differ between **advanced economies vs. emerging markets**. We split the sample into two groups (roughly by OECD membership) and re-estimated the inequality IRFs. Both subsamples showed no significant effect. Point estimates in emerging markets were slightly more volatile (as expected from

sometimes larger macro swings), but still statistically zero. Likewise, we tested for differences by **initial inequality** level (above vs. below median Gini) – no differential effects were found. These splits address whether maybe in very unequal countries, monetary policy regime changes matter differently (some argue high inequality can alter policy transmission), but we do not find evidence of that here.

- **Time Horizon:** Our main analysis focused on up to 5–8 year horizons. We attempted to stretch the local projections out to 10 years post-reform. Naturally, data become sparser (fewer countries have 10-year-after observations given sample ends in 2019 and many reforms in late 1990s). The point estimates at 6–10 years remain near zero for Gini, with somewhat larger standard errors. There was no sign of a delayed inequality effect even a decade out, but confidence intervals widen. For inflation, the LP at 6–7 years still shows about –2pp (p ~0.10), consistent with persistence of the disinflation effect.
- **Endogeneity Concerns:** One might worry that CBI reforms are not random – for example, maybe countries in a crisis or with high inequality choose to reform (endogeneity). We addressed this in part by the event-study pre-trend test (which showed no pre-trend in inequality or inflation). Additionally, we instrumented CBI reforms using external political factors: e.g., the signing year of the Maastricht Treaty for EU countries, which effectively mandated CBI by 1998, can be seen as an instrument (exogenous requirement) for those countries. Using such IV in a two-stage least squares panel setup, we still found no effect on Gini (and a strong effect on inflation). This alleviates concerns that our results are driven by some reverse causality or omitted variable – it appears the reform *per se* is what produced the disinflation, and no inequality change, rather than any pre-existing inequality trend causing the reform.

Limitations:

- **Data on Wealth Inequality:** Our study examines income inequality. One might wonder about **wealth inequality**, which could be affected by monetary

policy (e.g., via asset prices). Unfortunately, consistent cross-country data on wealth distribution over our period are very limited. It's possible that while income inequality stayed flat, wealth inequality might have moved (for instance, if lower inflation preserved real values of financial wealth benefiting the rich). This is speculative; some research (e.g., on QE) suggests low inflation/low rates can inflate asset prices and widen wealth gaps (Andersen, Johannesen, Jørgensen & Peydró 2023). However, during our period of study (90s and 2000s), the dominant effect of CBI was to bring inflation down from high levels, which arguably stabilized wealth in real terms for everyone. Without data, we can't be sure, so this remains a caveat: **our findings strictly apply to income inequality.**

- **Distribution Channels Not Modeled:** Our structural model was simple and primarily captured the labor market channel (unemployment) and an inflation tax channel. We did not model heterogeneity in interest income, credit access, or other mechanisms through which monetary policy might affect inequality (e.g., if independent central banks pursue lower seigniorage, that could constrain fiscal redistribution, an argument by Aklin et al. 2021). Our empirical approach, controlling for fixed effects and time effects, implicitly accounts for many such factors, but a richer model could incorporate, say, borrower vs. saver dynamics. That said, since we found no net effect empirically, any such omitted channels likely net out as well.
- **Magnitude of Reforms:** Not all CBI reforms are equal. We treated reform as a binary event, but some reforms were more comprehensive than others. It's conceivable that a *massive* reform (e.g., granting full legal independence and inflation targeting) could have a slightly different effect than a marginal reform (e.g., tweaking appointment procedures). We tried interacting the event with the size of change in CBI index (from Dincer-Eichengreen data) – it did not yield any significant inequality effect either. But data noise in measuring "size" of reform is a limitation.
- **Short-run vs Medium-run:** Our focus was medium-run (multi-year averages). We did not analyze very short-run immediate distributional impacts (e.g., within the same year of reform). Since reforms are institutional and

often announced in advance or gradual, we don't think there's a meaningful "announcement shock" effect on inequality in the same year. Indeed, year 0 showed nothing (Table 3). But if, hypothetically, a reform coincided with a sudden disinflation, perhaps that year saw some redistribution (e.g., creditors vs debtors). Our annual data may not capture within-year shifts. This is a minor point given no net annual effect detected.

- **General Equilibrium vs Partial:** One might question our semi-structural approach in the model – we essentially bolted on an inequality equation. We assumed no feedback from inequality to macro (which is reasonable in short term, but over decades, inequality could influence politics or economic structure, potentially affecting central bank independence decisions or policy, per some political economy arguments (Sturm, Bodea, de Haan & Hicks 2025). We abstract from these long-run feedbacks. Our analysis is a partial equilibrium one: given a reform, what happens in the next 5–10 years. It is possible that extremely high inequality could undermine support for CBI (Balls et al. 2018 discuss public support and CBI), but that is beyond our scope.
- **External Validity:** Our sample includes 30 diverse countries, which increases external validity, but it is not the entire world. Notably absent are some countries that did not reform CBI in that period or lacked data (e.g., some African or Asian economies with missing Gini series). We assume our findings apply broadly to economies that undergo similar institutional changes. However, if a country with very weak institutions and high inequality were to implement CBI, could the outcome differ? Possibly if, for example, fiscal policy doesn't adjust and central bank independence is undermined in practice. Our study covers cases where reforms were sustained. So an implicit scope condition: results apply where CBI reform is genuine and sustained, not purely symbolic.

Despite these caveats, we believe the consistency of evidence indicates our main conclusion is robust: Central bank independence reforms in the last few decades have generally delivered lower inflation without notable adverse effects on income inequality or unemployment. In the next section, we discuss

what this implies for policy, especially in contexts like today where inequality is a concern and the independence of central banks is sometimes politically questioned.

Policy Discussion

Our findings carry several implications for policy makers and the ongoing public discourse on central banking and inequality:

1. Preserving Central Bank Independence: The results strongly support the view that **central bank independence is beneficial for macroeconomic stability** (specifically price stability) and that these benefits come **at little to no cost in terms of equity or employment**. This bolsters the case for preserving or strengthening CBI in countries where it exists, and for adopting it in countries considering reforms. Politically, an argument sometimes made is that independent central banks only serve elites or banks, and harm the general population (through, say, austerity bias). Our evidence does not validate that claim – in fact, the general population benefits from lower inflation (which tends to help especially the poor who don't have inflation-hedged assets (Tiberto, 2025), and we do not find that independence leads to higher inequality or poverty (Sturm, Bodea, de Haan, & Hicks 2025). Therefore, policymakers and legislators should note that **granting independence to the central bank need not conflict with inclusive growth objectives**.

2. Monetary Policy and Inequality – Scope of Concern: While we find CBI reforms themselves do not affect inequality, this does not mean monetary **policy** more broadly has zero distributional impact. Our study period largely predates the unconventional policies of the 2010s. There is evidence that certain monetary policy actions (e.g., raising interest rates) can have short-run distributional effects – typically, contractionary policy tends to increase inequality slightly by raising unemployment disproportionately for lower-income workers (Çerçil & Aksaray 2025). However, those effects are usually transitory and small (Sturm et.al. (2025). In our model, we indeed saw a slight inequality uptick with aggressive disinflation, but it was minuscule. The consensus in recent research (Coibion et al. 2017; Furceri et al. 2018) is that **monetary policy shocks have modest**

effects on income distribution, and can even reduce inequality in certain circumstances (e.g., asset price channels vs labor channels can offset) (Coibion et. al. 2017). Our work aligns with that consensus by showing that even a structural change in policy regime has no clear inequality effect. The policy implication is that **central banks should primarily focus on their mandates (price stability, and employment where applicable) and not be overly constrained by concerns about inequality**, which are better addressed through fiscal and structural policies (taxation, education, etc.). The onus of addressing inequality rests with elected governments using tools apt for redistribution, rather than with central banks whose tools are blunt and whose primary role is stabilization.

3. Communication and Public Trust: A challenge that has arisen is public criticism of central banks for perceived contributions to inequality (for example, via quantitative easing benefiting asset holders). Even though our results show independence per se isn't to blame, central banks may still need to communicate their policies carefully to maintain broad support. *Sturm et al.* (2025) note that independent central banks have been under fire post-crisis for allegedly aiding the rich. Our findings give central banks a factual basis to say: *"Historical evidence shows our independence – and our pursuit of low inflation – has not worsened inequality."* This could help defuse some critiques. Moreover, by keeping inflation low, central banks arguably help the poor (who suffer most from inflation's erosion of real incomes). Therefore, emphasizing the **inclusive benefits of low inflation** could be a communication strategy. Another angle: since we find no inherent equity-efficiency trade-off, central banks can argue that society doesn't have to choose between stable prices and equitable income distribution – both can be achieved, with fiscal policy complementing to redistribute as needed.

4. Emerging Markets – Commitment and Credibility: For emerging markets and developing countries that still struggle with high inflation, our results underscore that *implementing credible central bank independence can lead to substantial inflation reduction without hurting growth or the poor.* Historically, some feared that tighter monetary control might hurt poorer segments via unemployment. Our evidence from diverse countries shows **no systematic poverty or inequality increase** after independence (consistent with, e.g., Son & Kakwani

(2006) finding inflation is pro-poor to reduce). Therefore, developing country governments should see CBI reform as a **win-win institutional reform**. Of course, independence must be accompanied by sound fiscal policy (to avoid fiscal dominance). But from a distribution perspective, there is little downside. This is an important message for countries like those currently with populist pressures to use central banks for short-term gains: doing so might temporarily boost growth or reduce unemployment, but likely at cost of higher inflation which ultimately can worsen inequality slightly (if inflation tax hurts the poor). Achieving and maintaining independence might be politically challenging but worthwhile.

5. Limitations of CBI: While we champion CBI for macro stability, we also note that it is **not a panacea for all economic ills**. Our analysis doesn't find CBI reforms increase unemployment in the long run (which is good), but neither do they directly reduce inequality or improve growth beyond the inflation channel. In other words, central bank independence primarily delivers **monetary stability**. Issues like high structural inequality must be tackled with other tools. So policymakers should combine CBI with complementary policies – for example, if worried about inequality, pair a disinflation program with targeted social support or job training to cushion any transitional unemployment. In our data, maybe the reason we saw no inequality effect is partly that some governments did implement compensating policies (for instance, independent central banks often coincide with stronger institutions that might have welfare systems). So, effective governance overall is needed.

6. Future Challenges – Climate and Broader Mandates: A current debate is whether central banks should expand their mandates (e.g., to address climate change or inequality explicitly). Our findings imply that adding an inequality mandate is likely unnecessary and could even conflict with the prime mandate of price stability. Since we see no harm from focusing on inflation (via independence), central banks arguably should stick to that core and let fiscal policymakers handle distribution. As for climate, that's outside our scope, but similar logic applies: the more mandates, the more complicated trade-offs and potential loss of focus/independence. *Balls et al.* (2018) discuss updating central

bank mandates post-crisis, but they also caution against overburdening central banks. Our evidence suggests independence with a clear inflation (and possibly employment) mandate works well – why fix what isn't broken from an inequality perspective?

7. Guarding Independence in Populist Times: Finally, a policy implication is the importance of **safeguarding central bank independence against political pressure**. In recent years, some populist governments have encroached on central banks (Turkey is a salient example where interference led to inflation spikes). Politicians sometimes justify interference by claiming they are boosting growth or helping "the people". Our analysis provides a counter-narrative: politicizing the central bank tends to result in higher inflation with no benefit to inequality or sustainable employment. Thus, ironically, undermining independence can hurt the very people it purports to help, by eroding purchasing power and possibly creating instability that ultimately harms the poor the most (through crises or inflation spikes). Therefore, maintaining strong legal and operational independence – including transparent appointment processes and protections against arbitrary dismissal of central bank officials – remains critical. International institutions (IMF, ECB, etc.) should continue to encourage and monitor CBI, and perhaps highlight its neutral effect on distribution to build broader political support for it.

In conclusion, from a policy standpoint, **central bank independence emerges as a sound institutional policy that need not be at odds with inclusive growth**. Policymakers can in parallel pursue redistribution through budgets and taxes without compromising the central bank's role in securing monetary stability.

Conclusion

This paper investigated the medium-run effects of central bank independence (CBI) reforms on two key outcomes: **inflation** and **income inequality**, with a complementary analysis of unemployment. Using a panel of 30 countries over 1991–2019, we employed event-study and local projection methods to identify the impact of CBI reforms, and we developed a small structural model to interpret the findings.

The empirical results show that **CBI reforms lead to a significant and sizeable reduction in inflation** in the medium run – on the order of 2 percentage points lower inflation five years after reform – confirming the well-known benefits of central bank independence for price stability. Importantly, we find **no evidence that these reforms exacerbate income inequality**. The net Gini coefficient remains essentially unchanged following CBI reforms, with point estimates near zero and statistically insignificant. We also find no robust effect on unemployment; if anything, there is a hint that unemployment might initially rise slightly and then fall, but the estimates are not significant. These findings imply that **enhancing central bank independence achieves disinflation without harming the income distribution or employment**.

To understand these results, we integrated our empirical estimates into a structural macro model. In the model, a more independent (conservative) central bank responds more aggressively to inflation, resulting in quicker disinflation at the cost of a temporary unemployment increase – a pattern consistent with our data and previous literature. We then linked inflation and unemployment to inequality using **semi-structural elasticities** estimated from our panel. The model predicts that the opposing effects of lower inflation (which tends to slightly reduce inequality) and higher unemployment (which tends to increase inequality) **largely offset each other**, yielding a near-zero net impact on inequality. The model's predicted inequality path closely matches the empirically estimated path (both essentially flat), reinforcing the conclusion that any distributional consequences of CBI reforms are negligibly small.

Our analysis contributes to the literature by providing, to our knowledge, the first combined empirical and theoretical assessment of CBI reforms' medium-run effects on inequality. Prior studies found mixed evidence on the correlation between CBI and inequality. We improve on those by using a clear identification (event timing and diff-in-diff) and by explicitly considering dynamics. We also connect to the burgeoning literature on monetary policy and inequality (e.g., Coibion et al. 2017; Furceri et al. 2018) by showing that not only short-term policy moves but also long-term policy regimes do not have significant inequality effects.

There are policy implications as discussed: countries can adopt or maintain independent central banking without fear of adverse distributional outcomes, and concerns about inequality should be addressed with fiscal tools rather than by constraining central banks. Given current debates, our findings provide a timely evidence base to inform policymakers and the public that **an independent central bank focusing on price stability can be part of an inclusive economic framework** – stability and equality need not be in conflict.

Looking ahead, further research could examine if these findings hold in the post-2010 environment with unconventional monetary policies. As central banks now face new challenges (zero lower bound, quantitative easing, potentially climate mandates), it will be important to monitor whether independence remains as effective and benign in terms of inequality. Another interesting extension would be to explore distributional effects on wealth or inter-generational inequality (if data allow). Finally, while our study covered many countries, case-specific analyses (e.g., narrative or archival approach for particular reform episodes) could complement our results by providing contextual understanding of how CBI reforms are implemented and perceived in society.

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