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Financial bureaucracy featuring innovation bureaucracy – insights from diverging pathways in Estonia and Lithuania

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ABSTRACT

The paper investigates the integration of innovation-centric characteristics within traditional financial bureaucracies as they confront the rise of the FinTech sector. From the financial governance perspective, FinTech acts as a significant disruptive force, challenging the established operational mandates of state financial institutions and compelling them to reassess their role in the digital economy. The paper explores this dynamic through the theoretical lens of ‘transformative capacity’, which analyses how organisational roles, resources and abilities enable or constrain adaptation to a socio-technical change underpinned by FinTech, focusing on the core tension between fostering innovation and ensuring financial market integrity and stability. Using a comparative case study of Estonia and Lithuania, the research reveals divergent national trajectories. Lithuania displays a change-embracing, ‘innovation-oriented’ bureaucracy (at least initially), characterised by strong leadership, a unified institutional structure and robust coordination and learning mechanisms. In contrast, Estonia exhibits a fragmented, ‘stability-oriented’ bureaucracy marked by resource constraints, weaker coordination and a reactive posture that leverages its e-state capacity more for internal efficiency than sector-wide support. The study concludes that institutional structures, resource allocation and leadership are critical in shaping a financial bureaucracy’s capacity for agile stability, thereby determining the state’s effectiveness in navigating the FinTech landscape.

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Introduction

The advent of modern technologies has fundamentally transformed the types of services that public sector organisations (PSOs) can deliver and how these services are organised (Pollitt 2012). Moreover, technological advancements have changed the nature of tasks performed by public officials (Fountain 2001, Pollitt 2011). While these dynamics are prevalent across various policy domains, they have been particularly pronounced in the

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field of financial policy, especially with the emergence of the financial technology (FinTech) that is defined as ‘technology-enabled innovation in financial services with associated new business models, applications, processes or products, all of which have a material effect on the provision of financial services’ (FSB 2017, p. 7).

The rise of the FinTech sector is a significant disruptive force that presents numerous challenges for national regulators (Omarova 2020, Hodson *et al.* 2026). This disruption has fundamentally altered the policy landscape, primarily by requiring financial regulators to balance a complex and often competing set of objectives, including financial inclusion, stability, consumer protection, integrity, innovation and competition. The new mandate to foster innovation and competition marks a considerable shift from the traditional risk-reduction model that shaped financial regulation and supervision following the 2008 financial crisis. In this new paradigm, the state is expected not only to promote market innovations through various policies but also to innovate within its own institutions and organisations (Kattel *et al.* 2022, Hodson and Milne 2026).

Some financial authorities have taken an assertive stance, exploring whether using blockchain technologies could enhance their own operations (Berryhill *et al.* 2018, Tõnurist 2018) and implementing regulatory approaches such as innovation hubs and regulatory sandboxes (Buckley *et al.* 2020). From an organisational perspective, those new approaches and innovative initiatives focusing on FinTech have been adopted either independently or collaboratively by financial bureaucratic institutions such as Central Bank (CB), Ministry of Finance (MoF) and Financial Supervisory Authority (FSA). This suggests, at least partially, the integration of innovation bureaucracy¹ elements (see Kattel *et al.* 2022 on innovation bureaucracy) within financial authorities and demonstrates their transformative capacity (see Borrás *et al.* 2024) to guide developments in FinTech and its various subdomains. Therefore, it can be hypothesised that financial bureaucracies capable of proactively addressing FinTech-related issues must possess specific innovation-oriented capacities and capabilities.

The existing literature on innovation bureaucracy (for example, Karo and Kattel 2015, 2016, Breznitz *et al.* 2018, Kattel *et al.* 2022) tends to address bureaucracy and innovation in general terms, with limited attention to sector-specific dynamics and, in particular, to the financial sector and FinTech. Additionally, the innovation studies literature tends to simplify the state’s role as either market-correcting or market-shaping, neglecting its more nuanced roles and dynamic aspects (see Borrás and Edler 2020). Therefore, this paper addresses the existing knowledge gap by exploring how the general expectations of the innovation bureaucracy apply to finance. It identifies the specific challenges and roles of innovation bureaucracy in the field of financial policy. For doing that, we undertake an exploratory comparative study of two Baltic States – Estonia and Lithuania. Analysing the diverging trajectories of these two countries in their responses to FinTech allows us to highlight how the FinTech disruption in financial governance has played out in creating a dichotomy of either proactive risk-taking or reactive risk-averse attitudes (see Omarova 2020). The stance towards risk in turn has led to differing regulatory routines and capabilities as well as diverging business models by FinTech companies, as exemplified by the cases of Revolut and Wise. In doing so, the paper speaks directly to the fifth vector of FinTech disruption identified in the Special Issue Introduction – ‘disrupting financial governance’ (Hodson *et al.* 2026) – by demonstrating how nation states

develop divergent responses and institutional trajectories in confronting the FinTech wave.

Our case selection proceeded from the following considerations. Estonia and Lithuania share a common historical background and similar political and economic structures, while also boasting vibrant local start-up communities, particularly in finance and technology. Both countries have been considered as emerging hubs for FinTech innovation and activity (Aalto Capital 2021). However, they have adopted different approaches to FinTech policy (Raudla *et al.* 2025a) and vary in the extent to which they have embraced innovative institutional measures – such as regulatory sandboxes – to support FinTech companies and innovation (Raudla *et al.* 2025b). Thus, one would expect that there is also a significant variation in the roles, available resources and embedded abilities of the financial bureaucracies in these two Baltic States.

The paper is structured as follows. Section 1 details the theoretical framework, while section 2 outlines the methodological approach. Section 3 introduces the analysis of the two country cases, followed by a discussion in section 4 and conclusions in section 5.

Theoretical considerations

This paper draws on theoretical perspectives from the literature on public sector management and governance (Wu *et al.* 2018, Förster *et al.* 2021) as well as innovation studies and innovation bureaucracy (Weber and Rohrer 2012, Kattel and Mazzucato 2018, Borrás and Edler 2020, Kattel *et al.* 2022) to examine how public sector organisations (PSOs) in the financial bureaucracy develop innovation-supporting activities – a function not traditionally associated with them. A key aspect of an ‘innovation bureaucracy’ is its ability to create space for both agility and stability, simultaneously taking risks while providing stability by minimising uncertainties (Kattel 2018). To achieve this balance, governments have established new structures such as innovation labs, development agencies or incubators, often complementing traditional bureaucracies (see Tönurist *et al.* 2017, Breznitz *et al.* 2018). Incorporating such structures and functions into the financial sector, where prudential supervision prevails, requires new mandates and a focus on the capacity of PSOs to foster innovation. To explore this challenge, we utilise the conceptual model of ‘transformative capacity’, complemented by insights from the innovation bureaucracy literature, because we focus on the organisational rather than policy (or system) level.

Transformative capacity

Borrás *et al.* (2024) defined the transformative capacity of a PSO for the transformation of socio-technical systems as the interaction between its situational resources, abilities and the purposeful roles it performs. States play multiple roles in innovation systems, from providing knowledge to organising demand and supporting firms (Edquist and Hommen 2009). Borrás and Edler (2020) identified 13 distinct roles of the state in socio-technical systems – such as Observer, Warner, Facilitator – that move beyond traditional market creation and correction. These roles reflect the state’s involvement in addressing grand challenges and can aim to disrupt, create or maintain institutions. However, the accompanying composition of resources and abilities required for each role remains a subject for further research.

The public governance literature emphasises the importance of human, financial and informational resources (Wu *et al.* 2018, Bowen and Panagiotopoulos 2020). Innovation bureaucracies rely on diverse expertise, organisational fluidity (for example, cross-departmental multidisciplinary teams) and key personnel such as technical experts and professional managers (Kattel and Mazzucato 2018, Kattel *et al.* 2022). Beyond tangible assets, it is suggested that network resources, legitimacy (for example, social authority) and political mandates are essential for supporting innovation and experimentation (Royles and McEwen 2015, Tönurist *et al.* 2017, Borrás *et al.* 2024). Financial regulators need clear authorisation to experiment with new regulatory approaches (see Millo and Lezaun 2006, Bauknecht *et al.* 2020, Ranchordás 2021). While the transformative capacity framework groups political mandates under 'resources', from an institutionalist perspective they can also be seen as distinct coercive institutional factors (DiMaggio and Powell 1983). A clear legal and political mandate not only provides resources but also grants the legitimacy and authority necessary for a bureaucracy to move beyond its traditional functions and engage in riskier, innovation-oriented activities. The absence of such a mandate can act as a powerful constraint, regardless of the tangible resources available. The specific composition of resources, though, available to PSOs varies depending on their sociopolitical position and size (Borrás *et al.* 2024).

The abilities of PSOs are essential for fostering innovation. The transformative capacity framework categorises abilities, manifested in daily routines and practices, as:

- (1) Analytical – gathering, assessing and interpreting information for decision-making (see Kattel 2024, Meijer 2019).
- (2) Operational – managing administrative tasks, embedding new routines and enforcing policies (see Börzel and Buzogany 2019, Bowen and Panagiotopoulos 2020, Kattel *et al.* 2022).
- (3) Coordination – collaborating internally and with external public and private stakeholders (see Gieske *et al.* 2016, Kattel 2024).
- (4) Learning and Reflection – adapting through experimentation or self-assessment and incorporating new understandings into routines (see Bos and Brown 2014, Gieske *et al.* 2016, Meijer 2019, Kattel 2024).

Crucially, the ability to coordinate is not merely a matter of communication but is deeply tied to the structure of state-society relations. The development of transformative capacity requires 'embedded autonomy' – the state's ability to combine bureaucratic insulation with intense immersion in the surrounding social structure through dense institutionalised networks (Evans 1995, Weiss 1998). For a financial bureaucracy, this implies possessing not only strong internal analytical capabilities but also demands strong leadership and the adoption of innovative working practices that create channels for collaboration and reflexive learning. Practices such as design thinking, regulatory sandboxes and innovation labs serve as the practical mechanisms through which the state can co-design and implement complex, long-term strategies for technological transformation with the private sector, civil society and other government agencies (see Weber and Rohrer 2012, Tönurist *et al.* 2017, Breznitz *et al.* 2018, Kattel and Mazzucato 2018, Tönurist 2018, Förster *et al.* 2021, Kattel and Takala 2021, Kattel *et al.* 2022).

In the context of FinTech, policymakers must also grasp the impacts of technology and the evolving expectations of innovators. Regulators need to continuously invest in advanced technological tools and cultivate deep technical expertise (Tönurist 2018, Omarova 2020). This requirement for continuous investment and expertise can be encapsulated in the concept of technological capacity: the ‘ability to explore, develop and/or adapt new technological solutions in public service design, delivery, and evaluation’ (Lember *et al.* 2018, p. 4).

Potential tensions and contradictions

The principles of the financial and innovation bureaucracies appear contradictory. As discussed above, innovation bureaucracy thrives on experimentation and agility. Financial bureaucracy, on the other hand, tends to focus on stability, risk aversion and regulatory compliance (Kregel and Tonveronachi 2014, Masciandaro and Quintyn 2016, Montanaro 2016). This dichotomy creates a tension between a culture of control and accountability versus one of creativity and collaboration (O’Reilly and Tushman 2008, Omarova 2020).

With the rise of the FinTech industry – alongside the ongoing operations of traditional banks and financial service providers – financial regulators mandated to promote innovation face the challenge of balancing these conflicting positions. Mitigating risks to support existing industries may require a stability-oriented bureaucratic set-up, whereas managing radical innovation may demand a change-embracing one (Kattel *et al.* 2022, Kattel 2024). However, achieving a pro-innovation posture in finance is particularly challenging for several reasons. First, merely possessing financial and legal skills is inadequate for effectively responding to FinTech’s evolution, necessitating a restructuring or establishment of departments to include diverse expertise (Chatzara 2020). Second, agility and risk-taking are more common in PSOs with high autonomy and simple, standalone services unencumbered by legacy systems (Karo and Kattel 2015, 2016, Lember *et al.* 2018) – conditions rarely found in the complex world of financial policy and bureaucracy. Third, the traditional roles of rule interpreter and enforcer often conflict with the need to be an arbiter of innovation, which requires a significant shift towards a more proactive, consultative approach (Ahern 2020).

Despite these tensions, effective innovation bureaucracies must establish and maintain ‘agile stability’. This means embodying both traditional and new innovation-mandated elements in the financial bureaucracy, allowing for internal dynamism, learning and adaptability. Thus, successful innovation bureaucracy – including in the domain of financial policy – requires long-term policy capacity alongside dynamic learning capabilities to manage the uncertainties inherent in innovation (Kattel *et al.* 2022).

Analytical framework

While the transformative capacity model provides a holistic framework, it has limitations. Borrás *et al.* (2024) link roles to resources and abilities but do not specify the ideal composition of resources and abilities required for each role or how they arise, acknowledging that similar PSOs might enact transformative capacity in very different ways. The model also notes that the relationship between a PSO’s transformative capacity and socio-technical transitions develops over time, but the specific interactions between the roles,

resources and abilities – and the sector-specific challenges that arise – remain underexplored. Thus, we propose a framework of hypothetical relationships between roles,² abilities and resources with a degree of potential tensions, which we will then illustrate through our comparative study of Estonia and Lithuania. While our framework suggests that more demanding roles (e.g. ‘Initiator’, ‘Lead-User’) might require higher levels of resources and abilities, the objective is not to establish definitive causal relationships, but rather to explore the characteristics and dynamics of financial bureaucracies as they adopt different innovation-related roles. Concerning the gap of unspecified priors in the original model, our study sheds light on how institutional structures, in particular, can be a key determinant of resource availability as well as abilities and, consequently, the roles a bureaucracy can sustain (Figure 1).

Research design and methods

Our strategy for case selection – Estonia and Lithuania – was informed by several considerations. These two Baltic States are particularly well-suited for employing a most-similar systems design (Seawright and Gerring 2008), as both are small, open European Union (EU) and euro area economies that share similar historical, economic and political contexts. Our analysis focuses on the period from 2016 to 2017 onwards, when policy measures targeting FinTech subdomains were first introduced in both countries. Concerning FinTech, both countries have developed dynamic start-up ecosystems, yet their sector profiles differ, reflecting divergent policy paths. Lithuania reported 263 FinTech firms by 2022, an increase from 170 in 2018, with a high concentration of payment institutions.

Roles of the PSO (characters and types)		The level of potentially required human resources and political mandates (high, medium, low)	The level of potentially required financial resources (high, medium, low)	The level of potentially required analytical and learning abilities (high, medium, low)	The level of potentially required coordination abilities (high, medium, low)	Potential conflict with the underlying principles (stability, market integrity, risk aversion, consumer protection) of financial bureaucracy (high, medium, low)
Maintaining and/or stabilizing institutions / socio-technical systems	<i>Warner</i> (identifying potential risks and issuing warnings)	Low to medium	Low	Medium to high	Medium to high	Low to medium
	<i>Mitigator</i> (trying to reduce the negative effects that might arise from change) <i>Observer</i> (monitoring the course of events)					
Disrupting institutions / socio-technical systems	<i>Facilitator</i> (making a process easier by supporting agents' change initiatives)	Medium to high	Medium to high	Medium to high	High	Medium to high
	<i>Promoter</i> (acting as a champion, proponent and exponent of change) <i>Gatekeeper</i> (controlling access for change agents, opening up or closing down spaces for experimentation and transformation)					
Creating institutions / socio-technical systems	<i>Opportunist</i> (taking up the opportunity arising from socio-technical change (e-krona or digital euro example))	High	High	High	High	High
	<i>Lead-user</i> (initiating market creation by acting as lead user and co-designer) <i>Initiator</i> (identifying early on opportunities, and pro-actively using its own knowledge and resources to work in concrete ways for the transformation of the socio-technical system)					

Figure 1. Potential relationships between the roles, resources and abilities, and the degree of tensions within the financial bureaucracy. Source: authors' elaboration based on Borrás and Edler 2020, Borrás et al. 2024.

This profile is a direct result of a state-led strategy to attract UK-based firms post-Brexit (Invest Lithuania 2025a, Raudla *et al.* 2025a, 2025b). In contrast, Estonia's ecosystem grew from 84 firms in 2018 to 264 in 2022, dominated by crypto-asset service providers due to early regulatory efforts aimed at this subdomain (Laidroo *et al.* 2023, Raudla *et al.* 2025a, 2025b). While Latvia provides a valuable case, it was deliberately excluded from this analysis, as Latvia's FinTech policy represents a hybrid or intermediate position (see Raudla *et al.* 2025a, 2025b). By focusing on the two more clearly divergent, 'polar-opposite' cases of Estonia and Lithuania, our research design allows for a more focused and in-depth examination of the key factors driving these distinct pathways.

Data was collected from key policy documents and 18 semi-structured interviews conducted between July 2022 and September 2023 (see Appendix I; henceforth in the empirical analysis marked as Est and Lit for Estonia and Lithuania, respectively). We used purposive sampling to select interviewees who were significantly involved in FinTech policy, including current and former officials from MoFs, CBs and FSAs, as well as industry representatives from both countries. The interviews explored themes aligned with our theoretical framework, covering mandated roles, available resources and capabilities, inter-institutional cooperation, and the political and regulatory challenges of addressing FinTech.

All interviews were recorded, transcribed and analysed qualitatively. The data was coded using themes derived from our theoretical framework, with all four authors participating in the analysis to ensure the accuracy of interpretations and to identify both converging and diverging viewpoints.

Empirical analysis

Estonia

Institutional changes promoting innovation

Initial steps to support financial innovation in Estonia began in 2017 with legislation for virtual currency services, establishing a minimal registration requirement (Interview Est1). In 2019, the Financial Supervisory Authority (FSA) created a dedicated Innovation Department, followed by an Innovation Hub in 2021 to foster dialogue with innovative firms (FI 2020, FI 2021). In 2023, the Hub opened a testing laboratory – not a formal regulatory sandbox – to allow prolonged testing of financial solutions in collaboration with supervisors (FI 2023). Concurrently, the Central Bank of Estonia revised its strategic objectives in 2020 to increase collaboration with the financial sector, launching a financial innovation roundtable to facilitate discussions between state institutions and private stakeholders (Eesti Pank 2020).

Erratic roles of the financial bureaucracy

Despite the abovementioned changes, a predominantly conservative and cautious stance persists within the Estonian financial bureaucracy, marked by delayed innovation-promoting reforms (Est1-Est5, Est8). One interviewee articulated this 'prudence' priority as follows: 'The roles must be maintained – one is still conservative. The main role is to protect depositors and investors and should not fail in this' (Est4). Another noted that 'the Central Bank is a stable organization where we do not have very daring experiments'

(Est2). This risk aversion was confirmed by an industry representative who stated, 'The FSA says that ... they generally do not like risks. The less risk, the better' (Est8).

The roles within the financial bureaucracy have fluctuated, sometimes revealing contradictions. After establishing a legal framework for cryptocurrency providers in 2017, the state initially signalled its role as both a Facilitator (by streamlining processes through support for specific dynamics) and a Promoter (by advocating for transformative change within the cryptocurrency market). An official remarked, 'Initially, we thought it was a good idea to get a good overview of crypto companies, and we also wanted crypto companies to come to Estonia' (Est3). However, following the country's traumatic experiences with major money-laundering scandals in the banking and crypto sectors, the roles of Warner (that is, identifying potential risks to users and communicating cautionary narratives) and Watchdog (that is, ensuring compliance with established norms) became dominant (Ylönen *et al.* 2024, Est3).

This role inconsistency was also evident when a 2017 proposal for a state-backed cryptocurrency was opposed by regulators, yet by the early 2020s, the concept of a digital euro was embraced as an opportunity to experiment with blockchain technology. A central banker explained, 'It was our own initiative ... knowing what our e-government infrastructure is ... We also want to take this idea to Europe ... [to] sell the success story of Estonia's digital country whenever it is possible' (Est2). In the digital euro context, the bureaucracy adopted the roles of Lead-User (that is, co-designing necessary public solutions), Initiator (that is, proactively identifying opportunities and utilising resources for transformation) and Opportunist (that is, capitalising on opportunities to actively benefit from the cryptocurrency sector) – a significant departure from its earlier stance.

These contradictory roles have fostered a reactive, *wait-and-see* approach, hindering proactive market development (Est2, Est5, Est7, Est8). As will be detailed in the next section, this strategic uncertainty stems directly from the absence of a clear national framework for financial innovation. In sum, two opposing roles are discernible. Outwardly, facing the FinTech market, the bureaucracy has adopted a cautious Watchdog and Warner stance, driven by reputational damage from past scandals. Inwardly, however, there is greater openness to using technology for its own purposes such as supervisory technology (SupTech) and supporting infrastructure projects, for instance, the digital euro. In this internal context, the bureaucracy acts as a Facilitator, Initiator and Lead-User.

Missing critical resources

A primary constraint for the Estonian financial bureaucracy is the lack of clear legal and political mandates to promote innovation. As one participant noted, 'the problem in Estonia is precisely that we at the Financial Supervision Authority do not have the mandate to encourage and support competition' (Est5). Without a national FinTech strategy, ambiguity prevails regarding which sectors to develop and what resources are needed (Est3, Est4, Est8). The resulting strategic vacuum means that 'If things are not written in the strategy, nothing happens' (Est5). The problem is further compounded by a perception that without a clear vision, '... every decision seems like a big risk' (Est8). The cautious approach is also reinforced by a rigid legal framework. At the same time, however, major crises such as the COVID-19 pandemic or conflict in Ukraine have

been the few catalysts for digitalisation and experimentation with offline payment systems or SupTech solutions for online cross-border anti-money laundering oversight (Est1-Est5).

Another significant limitation is the lack of personnel with the requisite capabilities for technological experimentation. Public financial institutions are predominantly staffed by legal and financial professionals with backgrounds in law and economics, not technology (FI 2017, Est3). Consequently, the bureaucracy relies heavily on external expertise through procurements and consultations rather than developing in-house innovation capacity (Est2, Est3, Est5). This dependency was evident in the digital euro experiment, where an official stated that it ‘would not have been born without Guardtime [a deep-tech company] ... Couldn’t have done it with the in-house capabilities’ (Est1). Similarly, another acknowledged that the FSA’s Innovation Department was staffed by only ‘two people who are rather just being aware of the field’ (Est1) and specific expertise, for example in machine learning or data science is absent (Est4). While funding for specific projects is not seen as a major barrier (Est3), concerns remain about the low return on investment from initiatives such as regulatory sandboxes, and the conflicts inherent in the FSA’s funding model (Est4, Est5, Est7).

Finally, a lack of strong leadership and political advocacy for financial innovation has been considered as contributing to limited proactivity. FinTech is often a low priority, leading to modest communication among stakeholders (Est5-Est8). As one interviewee noted, ‘... no field can develop if there is no leader. Someone must stand for it’ (Est5). Another emphasised that innovation typically requires a political mandate from the ministerial level, which has been absent: ‘politically we don’t have that leadership’ (Est8).

(In)abilities within the financial bureaucracy

Estonia’s financial bureaucracy has demonstrated capabilities in certain areas while lagging in others. On one hand, it has undertaken ‘in-house’ innovation projects such as the digital euro experiment and real-time surveillance tools in collaboration with private partners and universities (Est1-Est3, Est5, Eesti Pank 2023, FI 2017). On the other hand, industry representatives expressed dissatisfaction with the limited engagement and responsiveness to the concerns of FinTech companies, with one stating: ‘Friendliness would be listening to the concerns of FinTech companies and looking at how to clear them up. There is no such thing’ (Est8).

The financial bureaucracy’s primary activities have focused on analytical work: mapping trends, studying business models and gathering international data to inform decision-making (Est1-Est6). This emphasis on analysis is a reaction to past operational failures, particularly in overseeing the crypto market. As one interviewee recalled, the initial registration-based scheme for crypto firms meant ‘we didn’t have any monitoring mechanism ... that was one of our biggest failures in financial supervision ever’ (Est1). In response, the FSA centralised its innovation functions into the Innovation Hub in 2021 and improved its oversight tools (Est4).

However, this reactive posture has led to institutional inertia. The slow implementation of new practices such as the testing environment reflects a culture where routine-based processes inhibit experimentation. A central banker noted, ‘If your organization has been designed in such a way that it has been ticking for a very long time ... then this can inhibit experimentation’ (Est1). Overall, while analytical capabilities are adequate, the

coordination, learning and reflection abilities required for market-facing innovation are underdeveloped.

Potential conflicts and emerging patterns

A significant challenge for Estonian regulators is navigating the trade-off between innovation and market integrity as well as stability. It turns out to be a difficult balancing act, as protecting consumers is found to require stringent measures that can stifle new business models (Est3, Est6). As one interviewee remarked, 'It is very difficult to change a risk-based organization into an opportunity-based organization ... I do not really see old regulators becoming great innovators' (Est5). Embodying these contradictory roles can engender distrust among market participants (Est5) and create conflicts, especially given that the FSA is funded by the entities it supervises (Est3, Est8).

The Estonian case reveals a financial bureaucracy caught in a state of strategic inertia. The core deficiencies identified – a lack of a clear political mandate, insufficient in-house technical, weak inter-institutional coordination capacity and absent leadership – have created a cascade of consequences. These include the adoption of erratic and contradictory roles and an identity conflict that pits the need for innovation against a deeply ingrained, stability-focused culture. Ultimately, this has led the financial bureaucracy to leverage Estonia's renowned digital state capacity primarily for internal efficiency projects, while falling short of fostering a dynamic, market-facing FinTech ecosystem.

Lithuania

Lithuania's FinTech approach contrasts sharply with Estonia's (Raudla *et al.* 2025a). From 2016 to 2020, Lithuania executed a coordinated, inter-institutional strategy to foster FinTech development, spearheaded by key leaders at the Central Bank and the Ministry of Finance. Adopting the roles of Promoter and Facilitator, the financial bureaucracy aimed to tackle a perceived lack of competition in the domestic financial sector and capitalise on the opportunity presented by Brexit to attract FinTech firms to Lithuania. This led to rapid sector expansion dominated by payments companies. Subsequently, around 2020, a palpable shift occurred as the roles of Watchdog and Warner came to the fore, signalling a more cautious, risk-averse stance that de-emphasised quantitative growth. A crucial institutional feature in Lithuania is its integrated model of financial supervision, granting the Central Bank a broad mandate for designing FinTech policy (see Raudla *et al.* 2025a). As a former official noted, 'In Lithuania there is one [institution] ... There is no country in the world where the Central Bank has such a broad mandate' (Lit4).

Key institutional developments

Since 2016, Lithuania has implemented significant institutional and policy initiatives, including a significant inter-institutional working group, Innovation Hub and regulatory sandbox, and new structural divisions within the Central Bank. An inter-institutional working group comprising the Central Bank, the Ministry of Finance and Invest Lithuania was key in driving the initial FinTech policy approach (Lit3). The Central Bank launched several important tools, including the Newcomer Programme (Innovation Hub), which provided FinTech companies with 'initial consultation and familiarization before licensing' (Lit1) and acted as a filter for new entrants (Lit10). In 2018, it established a regulatory

sandbox – one of the first in Europe – which served more as a signal of openness to innovation and a learning opportunity for the bureaucracy than as a widely used testing environment (Lit2, Raudla *et al.* 2025b). An inter-departmental Innovation Committee was formed in the Central Bank to assess sandbox applications, allowing new perspectives to emerge, separate from traditional supervision (Lit2).

Furthermore, the Central Bank developed the LBChain platform to test blockchain applicability, offered the Centrolink system for access to European payments and introduced a specialised banking license regime (Lit1, Lit10). In 2022, the Financial Market Development Centre (FMDC) was created to oversee the Newcomer Programme and the regulatory sandbox, formally separating market development from supervision to avoid conflicts of interest. As one official described it, ‘Supervision and development are separated by a great Chinese wall’ (Lit5). Responding to growing money laundering risks, a public-private Anti-Money Laundering (AML) Centre was established in 2020, combining the efforts of the government and financial institutions in a unique and cost-effective model (Lit3, Bank of Lithuania 2023).

The initial phase: deliberate coordinated effort

The 2016–2020 period was marked by strong, trust-based cooperation among key institutions to realise the vision of Lithuania as a FinTech hub. FinTech promotion was a top priority for the Ministry of Finance (Lit3), and the joint effort was characterised by a focus on concrete action (Lit4). Lithuania deliberately adopted a risk-tolerant attitude, a stance its Baltic neighbours were hesitant to take due to their histories with money laundering scandals (Lit4). The country offered ‘very FinTech-friendly regulation at the beginning’ (Lit6) and a ‘proactive supervisory authority’ (Lit7), all part of a clear, shared strategy that resulted in a consistent message and fast implementation (Lit2). The approach, especially initially, was heavily top-down (Lit6) in a market setting driven by inertia (Lit2).

Driven by strong leadership and political entrepreneurship, institutions streamlined licensing procedures, translated documents into English and built supportive infrastructure (Lit1, Lit6, Lit7). Policy tools such as the Newcomer Programme and the regulatory sandbox were adopted quickly, facilitating rapid learning. Organisational changes were made at the Central Bank, with dedicated staff for new initiatives, though resources were initially modest (Lit1, Lit2, Lit4). There was also coordination among institutions in terms of meeting with potential investors and new start-ups, including with the Ministry of Foreign Affairs and Invest Lithuania. This proactive approach led to rapid growth, establishing Lithuania as a European FinTech hub with the highest number of electronic payments institutions in Continental Europe by 2019 (Lit5).

The shift towards caution

Around 2020, Lithuania’s stance shifted. This was driven by a turnover of key individuals with different risk appetites, new national priorities like dealing with the pandemic, and a growing wariness of money laundering risks after some FinTech-related scandals (Lit2–Lit7). The focus moved from quantitative growth to qualitative development and maturity. As one official stated, ‘We are no longer looking at how to attract more FinTech companies, but how to grow the existing ones’ (Lit6). This strategic shift was formalised in the National FinTech Strategy for 2023–2028,³ which emphasised quality, competencies and risk management.

The new approach was particularly mindful of risks from the payments and crypto sectors (Lit1, Lit5, Lit7). The Central Bank became stricter in its supervision, and authorities publicly signalled their reduced risk appetite, pointing to potential reputational damage (Lit4, Lit5). There was also growing scepticism about FinTech companies using Lithuania merely as a gateway to the EU market rather than serving domestic consumers (Lit7).

Largely adequate resources and capabilities

Unlike in Estonia, most interviewees did not consider resources a major constraint on Lithuania's FinTech strategy, despite the limitations of a small state. The Central Bank's integrated model with a broad mandate and the strong leadership of key institutions allowed bureaucratic and legal hurdles to be overcome (Lit2). Analytical and human resources were deemed sufficient, supported by horizontal working groups and extensive intra and inter institutional best practice sharing and dedicated staffing (Lit1, Lit3). However, some interviewees did note that resource constraints could hinder broader national ambitions (Lit6, Lit7) and as the sector grew, concerns emerged that resource allocation, particularly for AML and financial crime investigation, was not keeping pace (Lit3). While resource-intensive tools such as the regulatory sandbox were adapted to the local context – 'we choose our market participants very carefully' (Lit1) – the general impression was that with a clear vision and strong leadership, capabilities could be adequately nurtured.

With higher investment and more attention, Lithuanian authorities' capabilities expanded, in particular, regarding AML and fraud prevention (Lit2, Lit3). Still, the dynamic approach required new skills, including communication, technological understanding, creativity and a proactive, forward-looking mindset (Lit1, Lit3, Lit4). Proactivity was key, as incompetence was described as a *wait-and-see* approach (Lit4). Leadership played a crucial role in fostering this new thinking, encouraging professionals to be 'active participants' rather than observers (Lit1). As one official noted, 'what matters most is the attitude of the management' (Lit3), suggesting that when priorities are set by leaders, resources can be flexibly allocated.

Networking and learning among institutions were active and effective, fuelled by initiatives such as the regulatory sandbox (Lit1, Lit3-Lit5, Lit8, Lit10). Lithuanian regulators often noted that other countries learned from their pioneering experience (Lit1). Communication with the now-sizable FinTech sector became frequent, a notable change from the traditional model (Lit1, Lit4-Lit7). Learning was iterative and firsthand, happening in response to real life changes (Lit2, Lit4).

Overall, the Lithuanian integrated model enabled fast flow of information and effective horizontal best practice creation. At the same time, it may have also led to certain contradictions, ambiguities and tensions involving different explicit and implicit mandates, in particular, the different goals of FinTech promotion versus risk mitigation and financial market integrity.

Contradictions and the role of the regulator

The Central Bank's broad mandate created an environment resulting in the pursuit of many policy objectives that at times 'seem to contradict each other' (Lit4). Initially, proactive leadership and favourable conditions allowed for the simultaneous pursuit of goals such as increasing market competition and attracting foreign investment, with the

benefits of experimentation seen as outweighing the risks. One official noted, 'If you don't take any risks, maybe that's where the biggest risk lies' (Lit3). This diversity of goals was even seen as beneficial, preventing groupthink (Lit3). However, as leadership changed and the sector matured, the trade-off between innovation and financial market integrity became more pronounced, leading to a reassessment of this balance.

Another tension has been related to the business models of FinTech firms. Initially, Lithuania was positioned as a gateway to Europe, a necessary value proposition for investors (Lit4). Over time, however, authorities began to question this model, emphasising the need for firms to provide services to the domestic market: 'The aim is to avoid a situation where market players come only for a European license' (Lit1).

Interviewees described the regulator as both a 'partner' and a strict enforcer, a dual role necessitated by the small size of the supervisory authority (Lit1). Views diverged on whether a regulator could remain neutral, with some believing it was impossible and dependent on leadership's views (Lit2), while others argued that pursuing public interest goals such as increasing competition was not a breach of neutrality (Lit3, Lit4). A key emphasis was placed on technology neutrality (Lit3). Ultimately, the ambiguity was summarised by one official as follows: 'Someone has to have that mandate in the country and take responsibility for what the financial market in Lithuania will be' (Lit4).

Discussion

On one hand, the existing literature on financial bureaucracy has explored a range of topics, including policy learning (Raudla *et al.* 2019) and the process of Europeanization (Juuse *et al.* 2019). On the other hand, the literature on innovation bureaucracy offers a broad perspective on innovation capacity and capabilities within the public sector but without conducting a detailed sectoral analysis. Our paper seeks to synthesise insights from these two streams of research by examining the emergence – or lack thereof – of innovation-supporting elements within the financial bureaucracy of two Baltic countries. This study aims to enhance our understanding of the emerging patterns as well as tensions related to the roles, resources and abilities of financial bureaucracies in facilitating financial innovation. Drawing on the analytical framework, our comparative analysis reveals that a financial bureaucracy's capacity to adopt transformative roles – such as disrupting or creating socio-technical systems – is contingent upon its access to greater financial and human resources, as well as its development of sophisticated analytical and coordination abilities. We will subsequently discuss our key empirical findings in relation to the analytical framework.

First, our examination of the specific roles assumed by financial bureaucracies reveals the following patterns. In the two examined countries, the role of the state in the FinTech sector has evolved over the years from an initial pro-innovation stance (for example, Facilitator, Promoter, Opportunist) to increasingly cautious and conservative roles (for example, Warner, Watchdog). This shift contradicts the static role profile posited by Borrás and Edler (2020) and illustrates a dynamic interplay of both stabilising and disruptive roles within the socio-technical environment of FinTech. Furthermore, our study contributes an additional layer to the role profiling of financial bureaucracies, differentiating their focus between public sector innovation – characterised by an inward-looking, proactive approach to technological advancements as observed in Estonia – and market-

oriented financial innovation, exemplified by Lithuania's outward-directed management of the FinTech sector. This distinction also compels us to broaden the conventional, market-focused definition of FinTech. Our empirical findings demonstrate that the transformative capacity of a financial bureaucracy is not only tested by its response to private sector innovators, but also by its ability to initiate and manage technological innovation within its own institutional boundaries (see also Hodson and Milne 2026). The Estonian case, with its focus on developing technical solutions for a digital euro, real-time supervisory tools and other public financial infrastructure, shows that FinTech can also be conceptualised as a form of public sector innovation. In this view, technologies like Central Bank Digital Currencies fall under the FinTech umbrella not as market products, but as state-led institutional innovations. Therefore, a bureaucracy's transformative capacity is revealed in its ability to master both dimensions: the outward-facing governance of a market ecosystem and the inward-facing development of its own technological capabilities. Importantly, what can be noted is that the roles adopted and transitions undertaken by financial bureaucracies – which follow their own 'zig-zag' paths, as demonstrated in this special issue (see Chia and Wang 2026, Hodson *et al.* 2026) – are influenced not only by their internal capacity but also by external developments and events such as Brexit, money laundering scandals, changes in the FinTech landscape and EU initiatives.

Secondly, as expected according to our analytical framework, the varying roles of financial bureaucracies can be traced to disparities in resource availability. In Lithuania, the strategic commitment and broad mandates of the financial bureaucracy empower it to proactively support the FinTech sector. In contrast, Estonia has lacked a broad-based and sustained political commitment to FinTech. A fleeting cryptocurrency frenzy that lacked robust safeguards ultimately collapsed and led to a more cautious approach toward FinTech. Although financial bureaucracies in both countries face constraints related to funding and human capital – characteristic features of small states (Sarapuu and Randma-Liiv 2020) – these challenges are often self-imposed and influenced by organisational and structural arrangements. For example, Lithuania has consolidated its resource pool (including state budget allocations) and dedicated personnel for supervisory and innovation-supporting functions within a unified Central Bank. In contrast, Estonia has adopted a model with separate institutions, where the FSA derives funding from fees charged to supervised entities. Thus, beyond considering functional aspects or organisational size in assessing transformative capacity (Borrás *et al.* 2024), our analysis underscores the significant impact of institutional configurations on the availability of abilities and resources such as funding and personnel for addressing financial innovation.

Thirdly, analogously to the situation regarding resources, we observe variations in the abilities of financial bureaucracies in Estonia and Lithuania. A crucial distinction between the cases of Estonia and Lithuania lies in their respective coordination, learning and reflective capabilities. Estonia has exhibited technological proficiency, adequate resources and collaboration to advance supporting functions (such as digital euro technical solutions, real-time supervisory tools and offline payment systems) by leveraging the existing digital state infrastructure. Conversely, Lithuania has demonstrated a willingness to learn and cooperate through the regulatory sandbox and the sharing of best practices via intra- and inter-institutional working groups and committees, reflecting a more outward-looking focus on market-based innovation with strong inter-institutional support for the FinTech sector. A pivotal factor in the Lithuanian case has been strong

leadership and political entrepreneurship within a centralised approach to FinTech affairs, coupled with a clear strategic vision – elements that have been notably absent in Estonia. This divergence in capacity explains why Estonia's brief attempt in the mid-2010s to adopt Promoter and Facilitator roles proved unsustainable, as it lacked the resources and skills to meet their demands. Consequently, the subsequent breach of AML regulations within the cryptocurrency sector effectively triggered a transition in the role profile of Estonia's financial bureaucracy towards that of a Warner and Watchdog.

The implications of these divergent bureaucratic capacities are vividly illustrated by the contrasting journeys of two FinTech giants with their presence in two Baltic States: UK-founded Revolut and Estonia-founded Wise. The UK's Brexit decision created an opportunity that Lithuania's change-embracing bureaucracy seized. With its proactive 'promoter' role and its streamlined licensing process, Lithuania positioned itself as the ideal EU gateway for Revolut to acquire a Specialised Bank license in 2018, alongside an Electronic Money Institution (EMI) licence that ensured a continuing access and provision of financial services to the EU single market after Brexit. While there was a broader trend of Fintech companies from the UK opting for Lithuanian licences, Revolut's high-profile decision further reinforced this development (Invest Lithuania 2025b), solidifying Lithuania's reputation as a post-Brexit EU hub. The Lithuanian case demonstrates how a proactive, market-oriented bureaucracy with strong political leadership and coordination abilities can leverage external shocks to attract major international players.

In contrast, the journey of Wise highlights the consequences of Estonia's stability-oriented and fragmented bureaucracy. Founded by Estonians, Wise's growth was more a result of a strong product and the inherent digital capabilities rather than a proactive, FinTech-specific promotional strategy from the government (Wise 2021, Dantas 2025). Eventually, Wise pursued its primary financial regulation and public listing not in its home country, but in the UK, under the supervision of the Financial Conduct Authority (Wise 2021). This decision reflects a strategic choice to anchor its global operations in a world-leading financial centre with deep capital markets, but it also underscores the limitations of Estonia's financial bureaucracy. While the Estonian e-state provided a fertile ground for the company's technological founding, the Financial Supervisory Authority with its limited resources and stability-focused mandate was not positioned to function as the primary regulator for a global public company. Thus, Wise represents a division of labour between Estonia and the UK. Engineering and development take place in Estonia, leveraging the network of tech founders and engineers who have built multiple global companies (Hinrikus 2021, Dantas 2025). The UK division manages leadership, legal compliance, global marketing and capital access (Wise 2021). Such a geographic split reflects a corporate response to Estonian bureaucracy, which is more adept at fostering internal e-state innovation but lags in proactive, global-scale financial market creation.

These cases illustrate how transnational linkages manifest in two distinct ways, conditioned by domestic bureaucratic capacity. In Lithuania, the proactive strategy of attracting foreign firms created deep integration with EU and UK financial markets. While successful, this also imported transnational risks, as seen when the German Wirecard scandal had negative repercussions for the Lithuanian FinTech sector, prompting a shift towards a more cautious regulatory stance. In Estonia, the transnational dynamic is characterised more by an 'exit' threat than an 'entry' pull. The stability-oriented bureaucracy and domestic regulatory hurdles have led a significant number of Estonian-founded

FinTechs to consider registering the company or moving key operations abroad – to the UK, Germany, or even Lithuania – to access larger markets and gain credibility (Laidroo *et al.* 2023). This demonstrates that while a proactive bureaucracy can leverage transnational flows to build a domestic hub, a reactive one may inadvertently push its own innovators into foreign ecosystems.

Lastly, both Lithuania and Estonia have grappled with the challenge of enhancing the technological capabilities of their financial bureaucracies, while simultaneously mediating the objectives of ensuring financial market integrity and stability as well as fostering financial innovation – tasks that are seemingly incompatible from the perspective of financial bureaucracy. That said, the notion of ‘agile stability’ (Kattel *et al.* 2022) – depicting a framework wherein both agility and stability aspects are addressed – could still be effectively and coherently pursued within the financial domain, particularly concerning FinTech. Achieving this, however, assumes that there are broad-based multi-stakeholder engagement and strong collaborative ties between financial bureaucracies and other public sector entities that support innovation, including various ministries and investment promotion agencies, as exemplified by the Lithuanian case. Conversely, Estonia’s fragmented and decentralised approach, characterised by minimal coordination between the FSA and other ministries, innovation agencies or incubator platforms, has tilted the scales in favour of the ‘stability’ objective. Thus, we can differentiate between two types of financial bureaucracies. On the one hand, we can observe a predictability- and stability-oriented bureaucratic configuration in Estonia, marked by limited resources (human, financial, political mandates) and a lack of coordination and leadership abilities for supporting financial innovation. On the other hand, we can discern a change-embracing and innovation-oriented bureaucratic structure in Lithuania. Its success has benefited from multi-stakeholder engagement and strong leadership, creating a form of ‘embedded autonomy’ (see Evans 1995, Weiss 1998) where close state-society relations facilitate reflexive learning and coordinated action, all supported by an adequate resource base.

Concluding remarks

The goal of the study was to explain the divergent pathways of Estonia and Lithuania in governing FinTech by analysing how their financial bureaucracies developed distinct levels of ‘transformative capacity’ – the organisational ability to balance innovation with stability. The paper addressed a key research gap at the intersection of two fields. While the innovation bureaucracy literature is often too general, neglecting the state’s more nuanced roles and dynamic aspects, the financial bureaucracy literature has not sufficiently explored how these traditionally risk-averse institutions build the specific organisational capacities required to govern disruptive technological change.

Our research reveals two distinct models of state capacity for governing FinTech. Estonia exemplifies a stability-oriented model, where a fragmented institutional design, a lack of proactive leadership and a history of negative policy learning have created a deeply conservative and reactive bureaucracy. Lithuania, at least in its initial phase, represents an innovation-oriented model, where a unified institutional structure, driven by strong policy entrepreneurs and a focus on future opportunities, enabled a proactive and market-shaping stance. These models are not accidental – they are the product of deliberate political and institutional choices.

Our study faces several limitations. First, it has focused exclusively on the transformative capacity of the financial bureaucracy within two Baltic States that constrains drawing conclusions beyond the sample of case studies. That said, our study was not designed for the purpose of statistical generalisation, but instead to achieve analytical generalisation through a most-similar systems research design in order to maximise variation on the key theoretical variables of interest, instead of variation in country type. Future research would benefit from a broader sample that includes larger states, thereby facilitating a more comprehensive examination of how varying institutional contexts influence the transformative capacity of financial bureaucracies. Secondly, one of the primary objectives of our study was to synthesise two streams of literature – financial bureaucracy and innovation bureaucracy. By doing that, we grounded our discussion in a specific conceptual framework of transformative capacity, which constrained our analysis to a limited set of factors. Future research should also explore additional, previously unexamined dimensions and, crucially, analyse the causal linkages between these dimensions and concrete policy outcomes and impacts. Lastly, our analysis pertains to a specific segment of the bureaucratic apparatus within the wider financial domain and particularly focuses on financial innovation and FinTech. Consequently, due to the unique characteristics of the financial policy field, the findings of this study may not satisfy the criteria for external validity required for broader generalisations applicable to bureaucracy engaged in innovation across other policy domains. Future investigations should explore how the dynamics of roles, resources and capabilities manifest in other branches of government and within different public policy domains.

Notes

1. In short, we define innovation bureaucracy as public sector organizations tasked with fostering innovation through various policy instruments, including procurement, funding and regulation, among others (Kattel *et al.* 2022).
2. Including those ascribed to the state by Borrás and Edler (2020), when dealing with the cryptocurrencies (and FinTech in general).
3. See 2023–2028 FinTech strategy of Lithuania.

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Appendix 1

List of interviewees

Estonia

- Est1, Bank of Estonia, 15 December 2022.
- Est2, Bank of Estonia, 27 January 2023.
- Est3, Ministry of Finance, 21 December 2022.
- Est4, Financial Supervision Authority, 9 November 2022.
- Est5, Financial Supervision Authority, 28 October 2022.
- Est6, Ministry of Finance, 21 October 2022.
- Est7, Ministry of Economic Affairs and Communications, 8 July 2022.
- Est8, Finance Estonia Association, 19 April 2023.

Lithuania

- Lit1, Bank of Lithuania, 05.07.2022 and 07.07.2022.
- Lit2, Bank of Lithuania, 27.09.2022.
- Lit3, Ministry of Finance, 05.12.2022 and 16.12.2022.
- Lit4, Bank of Lithuania, 27.12.2022.
- Lit5, Bank of Lithuania, 06.01.2023.
- Lit6, Ministry of Finance, 31.03.2023.
- Lit7, FinTech sector representative, 8.07.2022.
- Lit8, Bank of Lithuania, 11.08.2023.
- Lit9, Bank of Lithuania, 20.03.2024.
- Li10, Bank of Lithuania, 20.04.2024