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The Boeing 737 MAX Crisis as a Case Study in Aviation Safety Governance

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The Boeing 737 MAX Crisis as a Case Study in Aviation Safety Governance

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Abstract:

This thesis examines whether the Federal Aviation Administration (FAA) demonstrated meaningful institutional learning following the Boeing 737 MAX crisis (2018-2019). Using qualitative thematic analysis of two U.S. congressional hearings—before and after the formal investigation—it analyzes how the FAA responded to systemic regulatory failures exposed by the crashes of Lion Air Flight 610 and Ethiopian Airlines Flight 302. Drawing on theories of regulatory capture (Stigler, 1971; Peltzman, 1976, 1989; Dal Bó, 2006) and organizational learning (Argyris, 1976) the study investigates how the FAA framed its actions, accountability, and reform process—particularly with regard to the Organization Designation Authorization (ODA) system.

Findings show that the FAA's initial response was characterized by single-loop learning and deflection, with a strong reliance on technical fixes and minimization of its own role. This reflects entrenched patterns of structural and cultural capture, where industry influence shaped regulatory behavior and weakened independent oversight. However, the second hearing presents signs of partial double-loop learning, with reforms targeting underlying assumptions of delegation, whistleblower suppression, and certification oversight. The Aircraft Certification, Safety, and Accountability Act, along with new safety initiatives and oversight mechanisms, signal a shift, though perhaps not a complete transformation.

The research contributes to debates on regulatory accountability and crisis-driven reform by illustrating how post-crisis governance can vacillate between symbolic and substantive change. It calls for sustained attention to organizational learning processes following a crisis event.

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Chapter 1: Introduction

In October 2018 and March 2019, two Boeing 737 MAX aircrafts crashed, killing 346 people (Fang, 2020). This event spanning 6 months started a domino effect that lead to one of the most consequential crises in recent history of aviation safety governance (Fang, 2020). The ensuing investigations done by regulatory bodies revealed not only surface-level technical flaws in Boeing's Maneuvering Characteristics Augmentation System (MCAS), but also fundamental weaknesses in the American regulatory structure (GAO, 2020). At the focal point of this crisis stood the Organization Designation Authorization (ODA) program, a delegation system that permitted Boeing to conduct key parts of its own aircraft certification on behalf of the regulatory body: the Federal Aviation Administration (FAA) (FAA, n.d.).

The ODA program, introduced in 2005 and developed over time, was designed to address the increasing complexity of modern aircraft that had outpaced the FAA's capacity (FAA, 2022). Delegation to qualified manufacturers was seen as a way to ensure efficiency without compromising safety. The ODA program helps the administration leverage product-specific expertise among qualified employees of manufacturers to determine a new product's compliance with the applicable provisions of the Federal Aviation Regulations (U.S. House of Representatives, 2019; U.S. House of Representatives, 2021). With time, the ODA became a type of crutch and a catch-all solution for nuanced problems, as admitted by Administrator Dickinson (U.S. House of Representatives, 2021).

The crisis revealed how a tool intended for efficiency can undermine regulatory independence when applied incorrectly or recklessly (Dal Bó, 2006). Boeing's ability to certify untested critical software like MCAS, with barely any FAA supervision reflects a broader institutional drift toward industry interest protection (Fang, 2020). Congressional hearings exposed the extent to which oversight had become formal rather than functional, owing to the FAA's heavy reliance on Boeing's own engineers, limited information, and the suppression of internal dissent and whistleblowing (Near & Miceli, 1996; Peltzman, 1976; Dal Bó, 2006; U.S. House of Representatives, 2019; U.S. House of Representatives, 2021). Aviation is indeed a complex industry, yet reliance on a manufacturer to adhere to guidelines independently is not a safe method of regulation (Stoop & Kahan, 2014).

This thesis answers the question: To what extent did the Boeing 737 MAX crisis lead to meaningful institutional reform within the FAA? The main argument of this thesis is that the misapplication of the ODA system became a symptom of a deeper regulatory failure, raising urgent questions about the FAA's capacity for independent regulation.

The MAX crisis is used as a case study to explore the intersection of regulatory capture and post-crisis organizational learning. Specifically, this thesis investigates how the FAA responded to the crisis. Did the agency engage in meaningful institutional reform, or did it revert to technical and rhetorical solutions without challenging the assumptions that led to the failure? Most importantly, did regulatory capture act as a major obstacle to organizational learning.

To answer this, the thesis applies a dual theoretical lens. First, the literature on regulatory capture, particularly Stigler (1971), Peltzman (1976), Dal Bó (2006), and Carpenter and Moss (2014), all provide a foundation for understanding how producers can influence the entities meant to regulate them. The literature emphasizes different mechanisms of influence, from direct lobbying and political pressure to more subtle forms like cultural alignment, information asymmetry, and simple inaction. This theory is central to evaluating how the FAA came to rely so heavily on the ODA framework, and whether post-crisis reforms are capable of breaking that dependence.

Second, in order to evaluate the policy change aspect, the thesis draws on Argyris' (1976) theory of organizational learning. This theory helps differentiate between surface-level responses and deeper institutional change. This framework allows the analysis distinguish whether reforms introduced after the 737 MAX crisis represent a shift in underlying logic or just a surface level change.

The methodology consists of a qualitative thematic analysis of U.S. congressional hearings, before and after the formal investigation, as its primary data source. By examining the ODA as both a policy tool and organizational component, this research contributes to a broader understanding of how regulatory agencies respond to failure. It situates the FAA's post-crisis behavior in the ongoing literary body of how events can cause rapid changes in policy.

Chapter 2: Literature Review

2.1 Stigler and Economic Regulation

Stigler and Friedland's (1962) paper on electricity rates was the first economic paper to develop an empirical method to evaluate regulation (Peltzman, 1993). Upon the foundation of this paper, Stigler (1971) develops his seminal work on the theory of economic regulation. Stigler's (1971) paper on the economic theory of regulation marks a significant shift in how economists understand regulatory behavior. He argues that regulation is not a neutral or altruistic public service, but the byproduct of political transactions between two groups: organized producer with interests and political suppliers of regulatory power. Stigler shows how producers tend to have more influence over regulation than "rationally ignorant", disorganized consumers (Stigler, 1971).

Regulators are motivated by political utility (reelection, resources, etc.), and respond rationally to these pressures . A core tenet of this theory is that regulators are above all rational actors, which paves the way to further generalized arguments about the nature of regulation (Stigler, 1971). This theory presents a change to the earlier "public interest" theory (Ogus, 1995), that posits regulation exists purely to aid the public and correct market failure, which dominated the field in the 1960's (Peltzman, 1993). Along with Posner (1974), another scholar who criticized "public interest" theory, Sitgler's (1971) work replaced it with skepticism towards organized interest groups. Both Posner (1974) and Stigler (1971) view public interest theory as inconsistent with observed regulatory behavior. Later scholars like Peltzman (1976) and Dal Bó (1983) expand upon and altered the theory to include broader constituencies. While a product of its time, Stigler (1971) laid a foundation through which organized interest-group pressure can be analyzed and critiqued empirically. Stigler (1971) stopped short of Posner's (1974) view, as he did not think of regulation as interest groups using regulation to distribute wealth in their favor. For this reason, Stigler's (1971) work is focused on more than Posner's (1974)

2.2 Peltzman and Move Towards General Theory

Following Stigler's (1971) article, Peltzman (1976; 1989) further develops upon the theory with several contemporary additions. Despite agreeing with many of Stigler's points, Peltzman expresses dissatisfaction with the original model's narrow scope and static assumptions. He specifically seeks to explain how regulatory balance shifts over time as well as

how changes in demand, wealth distribution, and economic cycles all influence the behavior and bias of regulatory policy.

Peltzman (1976) emphasizes that regulation is often erroneously viewed as a "free good", used for correcting market failures. Instead, he grounds it as a political commodity shaped by supply and demand, where interests of producers and consumers compete for influence. His central question builds on Stigler's: why do small groups succeed in influencing regulatory outcomes? Peltzman argues that the answer is in the different costs of political participation: smaller groups face lower organizational costs and are able to translate their interests to political action. Regulatory behavior is then similar to an auction in which interests groups "bid" for favorable rules by offering political support, campaign resources, or other forms of influence (Becker, 1983).

Peltzman's (1976) notable contribution to the theory is his emphasis on the dynamic nature of regulation. He poses that the bias of regulation depends on macroeconomic conditions: during economic downturns, regulation tends to favor producers; in booms, the tilt shifts toward consumers. This introduces a cyclical logic to regulatory politics, contrasting with the static assumptions of earlier models. Regulation is also framed as a "normal good," meaning that political demand for regulation grows with income and societal complexity. This view supports a structural understanding of regulation—not as an episodic response, but as a persistent and endogenous feature of political economy.

Another significant contribution from Peltzman (1976) is his challenge to the argument that profit levels can be used to infer capture. Contrary to this assumption, he argues that high profits may invite regulation precisely because they attract political scrutiny. Therefore, a negative correlation between profit and regulatory stringency may emerge, not because capture is absent, but because politically responsive regulators aim to redistribute rents to secure broader coalitions.

Peltzman (1989) further refines his earlier work by applying Stigler's (1971) work to explain deregulation. He argues that when regulation reduces the total wealth available for redistribution, political coalitions shift, making deregulation a rational outcome. This marks a departure from the earlier focus on regulatory persistence and introduces the idea that regulatory rollback can be consistent with capture theory. He also identifies key limitations: the theory's

weak predictive capacity regarding regulatory entry and its failure to explain institutional design choices. These additions frame regulation as a dynamic, politically responsive process.

2.3 Dal Bó and the Institutionalization of Regulatory Capture

Dal Bó (2006) frames regulatory capture not as an outlier but as a structural feature of political systems. His framework mainly focuses on organizational incentives, control over information, and limiting factors on regulatory integrity. Dal Bó (2006) distinguishes narrow and broad definitions of capture. Narrow means that regulated monopolies manipulate their regulators. The broad understanding of capture describes the manipulation of state intervention by organized interests. In the broader definition, capture moves beyond traditional microeconomics and includes tax policy, health and safety standards, and industrial oversight. This addition to capture theory helps us understand it as a general political condition, not an anomaly, which helps understand how resilience and change become possible over time.

A factor of Dal Bó's (2006) framework is information asymmetry, as regulators often depend on the firms they oversee for technical knowledge, data, and context. This misbalance of information gives producers power to shape oversight decisions, not necessarily through bribery, but through lies of omission. Capture in this view is a consistent and systemic re-alignment of values between regulators and producers.

Notably, capture is framed not as an external influence but as something that can become endogenous to institutions. Capture can shape hiring practices, norms, and organization culture. It renders an organization resistant to change, even following crisis. This naturally has implications for organizational learning. Institutions may acknowledge failure, initiate reforms, or update policy, but these may only be surface-level changes that fail to address entrenched capture. This means that genuine reform can become constrained by the very structures that are meant to implement it.

Dal Bó (2006) also discusses how regulatory discretion, the freedom to interpret or prioritize guidelines, can be both a necessity and threat. Some degree of discretion is inevitable, especially in complex industries, yet it also creates space for informal influence. In Dal Bó's (2006) view, the challenge is not to eliminate discretion but to design institutional safeguards that prevent its abuse. However, he is skeptical of traditional fixes like performance-based pay or oversight boards, arguing that these fail to overcome the embedded nature of capture.

Dal Bó (2006) stresses that capture is maintained through both positive incentives (e.g., job offers, reputational benefits, political support) and negative pressures (e.g., threats to credibility, political retaliation). This dual structure helps explain the durability of capture even under democratic accountability. Regulators, in effect, are constrained by a web of informal signals and institutional expectations that discourage confrontation with powerful interests.

In the context of this thesis, Dal Bó's (2006) framework is critical to understanding why some regulatory agencies fail to learn after catastrophic failures. His framework allows the ODA to be understood through the broader understanding of capture. If capture is embedded in information flows, incentives, and norms, then even fatal crises may fail to cause any change. Regulatory learning, in this sense, is not a passive process but one that needs to take capture into account.

2.4 Carpenter & Moss and Preventing Regulatory Capture:

Carpenter and Moss (2014) shift the regulatory capture to a prevention-oriented framework. While they acknowledge capture as a risk to regulatory integrity, they argue that existing scholarship often overuses the concept, treating it as a universal diagnosis for failure without sufficient evidence. To address this, they propose a "graded" understanding of capture, distinguishing between strong and weak forms. Strong capture renders regulation so compromised that it produces net harm whereas weak capture refers to situations where special interests sway regulatory design but do not remove its overall public benefit. They argue that most real-world cases as weak, where reform is still possible.

In contrast to older models focused on lobbying or economic pressure, Carpenter and Moss (2014) emphasize subtler mechanisms—such as cultural capture, where regulators internalize industry norms through repeated interaction; and corrosive capture, where the erosion of regulation serves industry interests through inaction or under-enforcement rather than rule-making.

Importantly, they do not see capture as inevitable. Instead, they call for greater theoretical attention to the "immune systems" of regulation such as institutions, practices, and norms. This more optimistic perspective reinforces the idea that capture is another structural barrier to organizational learning rather than absolute.

2.5 Regulatory Capture as Barrier to Organizational Learning

Argyris' (1976) theory of single-loop and double-loop learning offers a critical framework for evaluating whether regulators, are capable of institutional reform after failure. While Dal Bó (2006) and Carpenter and Moss (2014) show that capture can become embedded in organizational culture, Argyris expands this insight by distinguishing between forms of learning. Single-loop learning describes corrective action that leaves underlying assumptions intact, while double-loop learning means rethinking the very values and goals that shape decision-making.

Argyris (1976) argues that real learning is obstructed by "defensive routines" that protect organizations from embarrassment or threat. In regulatory contexts, these can be bureaucratic inertia, incentive misalignment, and cultural capture—consistent with the dynamics outlined by Dal Bó (2006) and Carpenter and Moss (2014). Therefore, single-loop reforms (e.g., technical fixes, process audits) may be insufficient if they fail to address core assumptions that allowed failure in the first place. This thesis uses Argyris' (1976) framework to evaluate whether the FAA's post-crisis reforms reflect double-loop learning. It treats regulatory learning not as a given, but as an empirical question. A question that is conditioned by the very forces of capture that may prevent it.

Chapter 3: Research Design and Methods

3.1 Research Design

To answer the research question, a qualitative, single-case study design employing a thematic analysis was chosen. Instead of aiming for generalizability, the case study is well-suited for a real world example of regulatory mechanisms that explain how capture may act as a barrier to organizational learning. Thematic analysis differs from methods like narrative analysis and content analysis in that it is not attached to existing theoretical frameworks (Braun and Clarke, 2006), which allows for more freedom in the way of application to the case study.

3.2 Epistemological Position

This research adopts a contextualist epistemology, which sits between essentialist/realist and constructionist paradigms (Braun and Clarke, 2006). A general assumption is that statements, documents, and testimonies are simultaneously reflections of organizational behavior and shaped by political structures. This position enables the analysis to critically interpret how regulatory

actors present and rationalize failure, while acknowledging the real-world consequences of those rationalizations. This position allows the research to identify discursive patterns that are the results of regulatory dynamics and interest group pressure while being mindful of the practical parameters policymakers find themselves in.

3.3 Data Selection

This study focuses on two strategically selected U.S. congressional hearings that bookend the regulatory discourse surrounding the Boeing 737 MAX crisis. Rather than casting a wide net across multiple sources, the analysis privileges depth over breadth by centering on two high-profile, publicly accessible hearings:

- Pre-reform phase: "Status of the Boeing 737 MAX," House Subcommittee on Aviation, May 15, 2019
- Post-reform phase: "Three Years After Lion Air 610: FAA Implementation of the 2020 Aircraft Certification, Safety, and Accountability Act," Senate Subcommittee on Aviation Safety, Operations, and Innovation, October 21, 2021

These two hearings were selected using purposive sampling, as they allow an analysis of discursive elements and policy during the crisis and an observation of the regulatory changes made afterwards. They were chosen for the following reasons: The first reason is data saturation. Each transcript spans over 100 pages of testimony and questioning, featuring detailed exchanges between legislators, FAA officials, and Boeing executives. Their length offer sufficient empirical material for robust, theory-driven thematic analysis. The second reason is theoretical fit. These hearings are discursive events where institutional accountability is emphasized. They provide a focused sample for the observation of how regulatory capture through the ODA is framed, denied, or reframed—and whether any genuine organizational learning is articulated in the post-crisis period. The third reason is verifiability, as congressional hearings are fully transcribed as they occur. They are also publicly available and clearly attributable to a specific speaker, which supports quotation.

While a larger dataset might have offered broader coverage, the aim of this thesis is not to generalize across all hearings, but to analyze how regulatory institutions narrate, justify, and potentially reform their behavior during crises. These two hearings were selected for their temporal and institutional significance.

3.4 Method of Analysis: Thematic Analysis

The study uses thematic analysis as outlined by Braun and Clarke (2006), following their six-phase process: (1) familiarization with data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. This method allows for the identification of recurrent patterns, rhetorical framings, and institutional logics within the transcripts. A hybrid deductive-inductive approach was used:

- Deductive coding was informed by regulatory capture theory (Stigler, 1971; Peltzman, 1976, 1989; Dal Bó, 2006), focusing on themes such as "delegated oversight," "producer influence," and "rationalization of failure."
    - Deductive codes were also created with Argyris' (1976) theory. These codes are: "technical solution framing" and "safety vs. efficiency tradeoff"
- Inductive coding allowed for the emergence of themes unique to the dataset, such as "whistleblower suppression", "deflection", and "public accountability"

Themes were analyzed at a latent level, which allowed for deeper reading of the regulatory incentives and discursive strategies underlying surface-level testimony and prepared statements. While latent themes are often constructionist in nature, this thesis uses a contextualist epistemology. This position acknowledges both the material aspects that shape policy and the sociocultural/market forces that inform institutional behavior. For the coding and organization of the empirical data, Atlas.ti software was used.

3.5 Operationalization of Key Concepts

The table below outlines how the core concepts of the thesis were operationalized within the dataset:

Concept	Operational Definition	Codes
Institutional Capture	Evidence of industry influence on regulator behavior, priorities, or framing (Dal Bó, 2006)	Delegated Oversight, Regulatory Capture (Cultural), Regulatory Capture (Structural), Whistleblower Suppression
Organizational Learning Response	Signs of internal reflection, policy change, or structural reform rooted in lessons from the crisis (Argyris, 1976)	Deflection, Technical Solution Framing, Safety vs. Efficiency Tradeoff
Post-Crisis Governance	Discursive emphasis on change without corresponding structural or procedural shifts (Carpenter & Moss, 2014)	Legislative Responsive, Crisis Framing, Public Accountability

3.6 Limitations

Congressional hearings are rich in data, yet they are above all political, influenced by legal limitations and institutional self-interest. The testimonies, especially those during and shortly after the crisis, may diminish accountability of Boeing and the FAA or exaggerate reform efforts. The exclusion of internal FAA documents, Boeing reports/disclosed emails, or investigative journalism limits the scope to publicly sanctioned narratives. However, this limitation is purposeful: the goal is to assess how regulatory capture is rationalized and addressed in public forums, not to conduct a full forensic reconstruction of the crash. Further research into this topic could take full advantage of a triangulation-style approach, incorporating internal emails that were made public, along with SOCAC meeting agendas. Another limitation is the use of only two empirical data sources. As mentioned previously, while they do allow for data saturation, future research could take a more expansive look at the case study in relation to both data set and temporality.

Chapter 4: Results

This section presents findings from the thematic analysis of two U.S. congressional hearings on the Boeing 737 MAX crisis. The results are organized under three core themes: Institutional Capture, Organizational Learning Response, and Post-Crisis Governance.

4.1 Institutional Capture

Delegated Oversight

In the first hearing, the FAA's structural reliance on Boeing was repeatedly implied. Administrator Elwell explained to Representative Graves that ODA designees "are delegated with that authority that we then oversee," (U.S. House of Representatives, 2019, p. 27) framing the ODA program as a privilege rather than a regulatory middle-ground. He stressed that responsibility of FAA regulation compliance falls squarely on the manufacturer, effectively redirecting responsibility for certification outcomes back onto Boeing.

In contrast, the second hearing reveals a major shift. Administrator Steve Dickson explicitly states that the FAA is not a partner to Boeing and that the FAA is "delegating fewer responsibilities to manufacturers."(U.S. House of Representatives, 2021, p. 12) He frames the new reforms as systemic, emphasizing that the FAA is "focused across the agency on continuous

improvement"(U.S. House of Representatives, 2021, p. 12) and cites efforts to move towards a more oversight holistic and transparent form of regulation.

Regulatory Capture – Cultural & Structural

The data reveal indications of cultural capture in the earlier hearing, where FAA officials echoed Boeing's rationale and defended the certification process's legacy rather than scrutinizing its flaws. Elwell's defense of ODA as "critical to the success and effectiveness of the certification process" (U.S. House of Representatives, 2019, p. 22) reflects a deep institutional commitment to delegation—even amid public scrutiny. Structurally, the FAA's limited internal resistance mechanisms were also evident. Oversight was portrayed as passive and risk-based, reinforcing Carpenter and Moss's (2014) concept of weak capture where enforcement exists but is undercut by structural design.

Whistleblower Suppression

In the aftermath of the investigation, testimony increasingly highlighted whistleblower suppression within the ODA structure. Chairman Larsen emphasized that the new law "extends airline whistleblower protections to U.S. aviation manufacturing employees" (U.S. House of Representatives, 2021, pp. xiii-xv) FAA documents further listed this reform as "COMPLETE," noting the agency was monitoring and addressing claims of retaliation against whistleblowers. These findings validate long-standing concerns from Near and Miceli (1996) regarding suppressed dissent within regulatory environments, mainly that whistleblowing is not a sign of mental instability. However it does conflict with Near and Miceli's (1996) claim that most whistleblowers do not suffer retaliation. This case represents an exception.

4.2 Organizational Learning Response

Minimization / Deflection

In the first hearing, several statements illustrate a minimization of regulatory responsibility. Administrator Elwell highlighted the longevity and congressional endorsement of the designee program, framing it as a legacy tool refined over time. He described the FAA's role as one of confirmation rather than enforcement: "The FAA is responsible for determining that the applicant has shown that the overall design meets the safety standards," subtly distancing the itself from direct accountability.

Technical Solution Framing

The first hearing exhibited a strong emphasis on technical fixes over structural reform. FAA testimony following the crashes focused heavily on software updates to MCAS, pilot training improvements, and updated flight manuals. For example, Elwell detailed how the FAA "tested a prototype of this [MCAS] enhancement...in both the simulator and the aircraft." (U.S. House of Representatives, 2019, p. 23)

The FAA's response to Representative's questions probing their responses to the crisis included lists of activities completed to ensure continued operational safety (U.S. House of Representatives, 2021, pp. 45-46). These were activities such as updates to crew procedures and design enhancements—reinforcing a preference for manageable technical interventions.

Safety vs. Efficiency Trade-off

While less frequently stated explicitly, the hearings implicitly framed safety improvements as administratively and politically burdensome. Administrator Elwell's justification of ODA delegation repeatedly referenced efficiency and FAA "resource leverage."

The second hearing, however, is rife with the opposite. Administrator Dickinson explicitly cites this skewed prioritization as a problem that needs solving moving forward. The FAA in his eyes needs to move away from fraternization with manufacturers and towards a more deliberate, even if slower, regulatory style.

4.3 Post-Crisis Governance

Public Accountability

In the second hearing, Administrator Dickinson appeared more openly reflective than his predecessor. At multiple points, Dickinson spoke of "resetting the relationship" with Boeing, emphasizing the agency's independence and renewed commitment to transparency (U.S. House of Representatives, 2021, pp. 12, 22, 45, 71). "We will not accept the status quo," he stated, in a clear attempt to reassure both legislators and the families of victims (U.S. House of Representatives, 2021, p. 12).

However, public accountability statements remained abstract, often framed as pledges rather than documented structural changes. The language focused on raising the bar rather than describing internal accountability mechanisms. This theme presented itself as a sentiment aimed at the families of victims rather than an attempt at structural changes (U.S. House of Representatives, 2021, p. 12).

Legislative Response

The legislative response theme was the most extensively coded across both hearings. In the first hearing, congressional members used it to criticize the evolution of the ODA system. Chairman Larsen posed that “putting faith in the evolution of the system... isn’t necessarily a positive assessment,” (U.S. House of Representatives, 2019, p. 27) suggesting that the ODA had over-evolved beyond acceptable oversight limits.

In the second hearing, legislators demonstrated a shift from critique to enforcement. Administrator Dickson highlighted the Aircraft Certification, Safety, and Accountability Act and described over 100 new provisions aimed at reforming the FAA’s oversight capacity. Meanwhile, Representative DeFazio criticized the FAA for lagging in implementing mandates from prior legislation, pointing to possible inertia: “The deadline passed two years ago... Still, no order or final rule.” (U.S. House of Representatives, 2021, p. 9). This needs to be taken into account, as mentioned previously, these hearings are political artifacts and not every promised mandate is implemented punctually or effectively.

Crisis Framing

The crisis framing theme remained relatively consistent across hearings. Both FAA officials and legislators referred to the emotional and political weight of the accidents, using the victims and their families to justify urgency. However, these appeals mostly served to contextualize other claims and were rarely elaborated upon. Similar to public accountability, this code appeared more performative than operational.

4.4 Thematic Patterns

Changes in thematic emphasis are evident within both hearings. Earlier testimonies show us a strong presence of minimization, deflection, and a preference for technical fixes. In contrast, the second hearing reflects stronger rhetorical commitments to transparency and structural reform, particularly around delegated oversight and whistleblower protection. Above all the second hearing showcases a humble admittance of the FAA’s capture by Boeing. Many times within his testimony, Administrator Dickinson shows full awareness of how muddled the line between the FAA and Boeing has become and makes his commitment to fixing that known. However, consistent patterns of technical solution framing and implementation lag suggest that some deeper learning barriers remain. These findings set the stage for a critical discussion on whether the FAA's response to the Boeing 737 MAX crisis constitutes genuine institutional learning or reputational damage control.

Chapter 5: Discussion

This discussion evaluates whether the FAA's response to the Boeing 737 MAX crisis constitutes meaningful institutional learning or merely reputational recovery. This section looks at both the structural causes of failure and the depth of the FAA's post-crisis reform effort.

5.1 ODA and Informational Capture

The Organization Designation Authorization (ODA) system emerges as a core vehicle of regulatory capture in both hearings. In the first hearing, FAA representatives openly acknowledged their dependence on Boeing personnel to perform key certification functions. These findings are consistent with Dal Bó's (2006) account of structural capture, where asymmetric information allows private actors to shape oversight without overt coercion. FAA officials routinely justified this arrangement by emphasizing resource constraints and workload distribution, echoing Carpenter and Moss's (2014) notion of "weak capture," where regulatory capacity is technically intact but practically compromised.

What sets the second hearing apart, however, is a rhetorical shift. Administrator Dickson stated that the FAA is not a partner to Boeing and that they are delegating fewer responsibilities to manufacturers (U.S. House of Representatives, 2021, pp. 12, 22, 45, 71). This reframing signals an effort to distance the FAA from perceptions of undue closeness, possibly as a response to the reputational fallout from the crisis. Yet the true test of reform lies not in rhetoric, but in structural change.

In this regard, the legislative provisions that emerged after the crisis, which includes annual reviews of ODA performance, civil penalties for interference, and whistleblower protection. These provisions indicate a move toward counteracting informational and cultural capture. These reforms fulfill Dal Bó's (2006) call for institutional safeguards that rebalance informational asymmetries. However, the persistence of technical framing elsewhere in the discourse suggests that not all assumptions underpinning delegation have been abandoned.

5.2 Technical Framing and Single-Loop Learning

The dominance of technical solutions in the FAA's early response is consistent with Argyris' (1976) theory. Rather than questioning the underlying structures that enabled failure, the agency focused on patches and fixes. Statements such as those from Administrator Elwell,

detailing MCAS updates, show us a skin-deep response that aims more to restore the system's reputation than reexamining foundational flaws.

MCAS was implemented as a cost-saving workaround to avoid pilot retraining, reflecting a surface-level fix to a deeper design conflict (Fang, 2020). The FAA's endorsement or lack of scrutiny for this system is an example of how deeply entrenched the "efficiency-first" mentality is in their organizational culture. These actions reflect single-loop correction—adjustments within the existing system—rather than a critical reassessment of institutional logic.

This mode of problem-solving is consistent with defensive routines, another concept introduced by Argyris (1976), where organizations avoid confronting uncomfortable truths in order to protect institutional legitimacy. FAA representatives repeatedly emphasized the legacy and congressional endorsement of the ODA program—rather than its role in enabling a fatal oversight—thereby avoiding accountability. Even the assertion that "it is the applicant's responsibility" (U.S. House of Representatives, 2021, p. 22) to ensure compliance illustrates this tendency to minimize institutional responsibility.

These routines point toward a broader pathology within regulatory organizations that have been captured, structurally or culturally, by the entities they oversee. As Carpenter and Moss (2014) argue, such behaviors can be reinforced by cultural norms, economic rationalizations, and informal pressures that make reform both personally and professionally costly for individual actors within the agency.

5.3 Evidence of Double-Loop Learning

Despite the initial signs of defensive adaptation, several reforms following the second hearing suggest the emergence of double-loop learning. One prominent example of this is the legislative focus on whistleblower protection. By explicitly prohibiting retaliation and mandating open communication between FAA personnel and ODA members, the reforms address systemic power imbalances and suppressive dynamics that had previously silenced dissent. These moves suggest an institutional recognition that oversight integrity cannot be maintained without protecting internal transparency.

Another key shift is seen in how the FAA reinterprets the purpose and limits of the ODA system. In the second hearing, officials acknowledged that ODA was originally intended for well-understood, non-critical, or low-risk designs and not for novel software like MCAS (U.S.

House of Representatives, 2021, pp. ix, 27, 63). This reassessment reflects a deeper interrogation of the assumptions that previously justified extensive delegation, indicating movement toward a more cautious, risk-sensitive certification model. Moreover, the creation of an independent review panel to assess Boeing's use of ODA marks a meaningful reallocation of evaluative authority—aligning with Carpenter & Moss's (2014) emphasis on regulatory "immune systems" as a defense against capture.

The passage of the Aircraft Certification, Safety, and Accountability Act further solidifies these developments. Provisions such as mandatory Safety Management Systems (SMS), integration of human factors into certification protocols, and expanded international harmonization efforts show an effort to restructure the very tools and processes used in certification.

5.4 Whistleblower Suppression and Protection

While institutional reports mention concerns raised by Boeing employees and FAA engineers, few of these warnings made it to actionable policy discussions prior to the second crash. ODA employees and engineers who raised concerns were quickly shut down and threatened (U.S. House of Representatives, 2021). This reflects not only a failure of procedure, but also a erosion of organizational culture, specifically in informal structures that support internal accountability.

Near and Miceli's (1996) work on whistle-blowing applies a framework to this prominent point of the hearing. Whistle-blowing is defined by Near and Miceli (1996) not as a single act but a multistage process in which an employee or privileged party reveals perceived wrongdoing to a party capable of correcting it, in many cases this is the media or a regulatory body. Near and Miceli's (1996) research debunks the myth that whistleblowers are inherently irrational or vengeful actors. On the contrary, whistleblowers are predominantly experienced, high-performing professionals who first attempt internal channels and, when that fails, escalate externally (Near & Miceli, 1996).

This mirrors the FAA and Boeings's situation, where internal warnings about MCAS and test pilot testimonies were reportedly softened or outright ignored. Organizational loyalty was seen as an end-goal in and of itself. Hierarchical rigidity without any oversight or protection for those with engineering expertise wanting to speak out, discouraged any meaningful reporting or

follow-up. Near and Miceli (1996) note, the likelihood of retaliation is highest when whistleblowers lack power relative to the wrongdoer or upper management. Retaliation in this case being formal or informal punishment.

Boeing and the FAA's structural resistance to whistleblowing reveals a double bind: while the organizations officially encourages safety reporting, keeping up appearances expected of aviation-safety governance entity and manufacturer. Yet both of their internal cultures and structures, especially Boeing, have been shown penalize those who speak out U.S. House of Representatives, 2021). This is in line with what Argyris (1976) called "defensive routines," wherein critical feedback is filtered out before it can challenge core assumptions. These routines represent yet another obstacle to double-loop learning. The resulting single-loop learning that comes from such organizational attitude can lead to stagnation (Argyris, 1976), and in a worst case scenario, fatal accidents.

Furthermore, the whistle-blower suppression theme signals a deeper entrenchment of regulatory capture. Rather than denoting the presence of capture, this theme allows us to see the intensity of the capture that is present. Regulators internalize the interests of the regulated, characteristics of both cultural or corrosive capture (Carpenter and Moss, 2014), then dissent within the agency becomes not just inconvenient but subversive. In this way we can see one of the most observable mechanisms of regulatory capture. By staggering concerned voices of experts, the Boeing-FAA duo effectively locked itself out of institutional learning, reinforcing a status quo aligned more with Boeing's priorities than with public safety. This is one of the status quos that Administrator Dickinson spoke of overturning (U.S. House of Representatives, 2021).

Whistleblower suppression in this case is not an anomaly but a late-stage systemic symptom of captured institutions. It reinforces both capture and learning failure, acting as a pressure-release valve that on the surface preserves compliance while preventing any meaningful reform.

5.5 Boundaries of Reform

While these reforms reflect movement toward double-loop learning, they are not uniformly deep or comprehensive. For instance, the continued reliance on efficiency language—particularly the notion that ODA allows the FAA to leverage resources (U.S. House of Representatives, 2019, pp. ix, 23), remains prominent even in the reformed discourse. This

suggests that some rationales for delegation persist, albeit in a more guarded and rhetorically sanitized form.

Additionally, the FAA's slow implementation of certain mandates, such as secondary flight deck barriers and crew rest regulations, reinforces Carpenter and Moss's (2014) argument that capture often manifests as "corrosive" inaction. As Rep. DeFazio noted, these delays occurred despite clear legislative direction, reflecting bureaucratic inertia and structural misalignment between political mandate and institutional execution.

The FAA's expanded use of data analytics and internal safety culture assessments are still in early stages and lack external accountability mechanisms. The success of these initiatives will depend on whether they are treated as end goals or as tools for continual reflexivity.

5.6 Implications for Regulatory Theory

The FAA's post-crisis behavior challenges both pessimistic and optimistic readings of capture theory. On one hand, the initial response aligns with Stigler's (1971) and Peltzman's (1976) insights about the dominance of organized interests and the inertia of delegated regulation. The FAA's passive oversight and deferential tone toward Boeing illustrate how capture can distort public institutions into serving producer interests.

On the other hand, the shift observed in the second hearing—particularly around whistleblower protections, redefinition of delegation scope, and SMS implementation—supports Carpenter & Moss's (2014) claim that capture can be mitigated through institutional reform. These measures reflect a recalibration of regulatory posture and a willingness to reconfigure internal norms and assumptions.

Moreover, Argyris' (1976) learning framework allows us to evaluate these reforms not only by their content but by their orientation. While the FAA has not undergone a complete transformation, certain changes like those targeting information flows and organizational culture represent an initial but significant move toward double-loop learning.

5.7 Summary

The FAA's response to the Boeing 737 MAX crisis reflects both the challenges and possibilities of post-crisis regulatory reform. While early actions conformed to patterns of capture and single-loop adaptation, the later testimony and legislative developments suggest a tentative move toward deeper institutional learning. By reconceptualizing oversight responsibilities, incorporating human factors, and enhancing whistleblower protections, the FAA

has begun to address not only what went wrong, but why it was allowed to happen. Whether these changes will be sustained and deepened remains an open question—but the presence of second-loop mechanisms gives reason for cautious optimism.

Chapter 6: Conclusion

Beyond the scope of this research paper, I above all wanted to engage in this topic out of sympathy for the family members of those deceased. The purpose of this thesis was and is to understand how events such as this, ones without a single perpetrator(s) to blame, can happen and how those of us remaining can pick up the pieces. This is all done both in memory of those that passed prematurely and in an effort to make sure it never happens again.

This thesis investigated whether the Federal Aviation Administration (FAA)'s response to the Boeing 737 MAX crisis reflects meaningful organizational learning or if it remains constrained by structural regulatory capture. Using a thematic analysis of two U.S. congressional hearings separated by a formal investigation, we examined changes in oversight rhetoric, institutional accountability, and internal reform. Grounded in regulatory theory (Stigler, 1971; Peltzman, 1976; Dal Bó, 2006, Carpenter and Moss, 2014) and Argyris' (1976) theory of organizational learning, this analysis identifies the limits and potential of regulatory transformation under crisis conditions.

The results indicate that the FAA's initial response aligned with single-loop learning. Agency leaders focused on technical fixes, particularly software updates to the MCAS system and adjustments to pilot training, rather than interrogating the structural causes of failure. Consistent with Argyris' (1976) concept of defensive routines, responsibility was often shifted onto Boeing or pilot behavior, minimizing the FAA's own role in approving flawed systems under the Organization Designation Authorization (ODA) framework.

This pattern supports Dal Bó's (2006) account of regulatory capture as a systemic and informational asymmetry. The FAA's reliance on Boeing for safety assessments under the ODA system created conditions where oversight was structurally weak, and cultural alignment between regulator and industry inhibited independent judgment. These findings also align with Carpenter and Moss's (2014) concept of "weak capture," where formal oversight exists but is undermined by institutional design and trust-based delegation.

However, the second hearing displayed partial evidence of double-loop learning. FAA leadership acknowledged the structural risks embedded in the ODA system, committed to reduced delegation, and implemented legal reforms. The Aircraft Certification, Safety, and Accountability Act introduced over 100 legislative mandates, many of which addressed root-level assumptions. The introduction of Safety Management Systems (SMS), new guidance on human factors, and international coordination initiatives reflect an emerging shift in how oversight is defined and operationalized.

These developments suggest that some level of institutional learning has taken place. The FAA has begun to re-evaluate the purpose and implementation of delegation, enhance internal accountability, and incorporate external perspectives into its certification processes. While these reforms do not guarantee capture has been eliminated, they demonstrate a move beyond purely cosmetic or reputational responses.

The findings of this thesis suggest that the FAA is engaged in a hybrid process: partly constrained by legacy systems and efficiency logics, yet also undergoing incremental cultural and structural change. Regulatory learning is not binary; it exists along a continuum shaped by political pressure, legal constraints, and organizational norms. The FAA's trajectory post-737 MAX indicates a shift away from passive oversight, but the extent to which these reforms are sustained and institutionalized remains to be seen.

Further research should extend this analysis over a longer time horizon to assess whether current reforms are maintained, expanded, or eroded under industry and political pressure. Comparative studies with other aviation regulators, such as the EASA or China's CAAC, could also help contextualize whether the FAA's learning process is exceptional or part of a broader realignment in global aviation governance. Finally, future work could examine internal FAA documents, audits, or interviews with frontline staff to assess whether stated reforms are reflected in practice, not just policy.

The FAA's response shows signs of moving beyond surface-level fixes, suggesting an ongoing shift toward deeper institutional learning. This is a lengthy process, neither linear nor guaranteed, but it provides a valuable case for understanding how the presence of government guardrails and clear regulator roles can ensure that policy can change after a catastrophic event such as this.

The case of Boeing and the FAA helps answer the question of change coming from sudden events, but leaves us with an enduring question posed by Juvenal: when power is delegated, who will watch the watchmen?

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Appendix:

1. Codebook

Concept	Code	Description
Institutional Capture	Delegated Oversight	FAA's over-reliance on Boeing for self-certification through the ODA (Dal Bó, 2006)
	Regulatory Capture-Cultural	Evidence that FAA identifies too closely with Boeing in terms of values and goals (Carpenter and Moss, 2014)
	Regulatory Capture-Structural	Weak enforcement or oversight mechanisms (Carpenter and Moss, 2014)
	Whistleblower Suppression	Indications of ignored or punished internal warnings from ODA members (Near and Miceli, 1996)
Organizational Learning Response	Minimization / Deflection	Avoidance of responsibility for MCAS or oversight failures (Argyris, 1976)
	Technical Solution Framing	Focus on software fixes rather than structural change (example of Single-Loop Learning) (Argyris, 1976)
	Safety vs. Efficiency Trade-off	Framing safety reforms or precautions as a burden to organizational efficiency (Carpenter and Moss, 2014)
Post Crisis Governance	Public Accountability	Acknowledgment of public trust, transparency, and reform needs (Carpenter and Moss, 2014)
	Legislative Response	Mentions of policy or regulatory changes following the crash (Dal Bó, 2006)
	Crisis Framing	How the FAA and Boeing describe the crashes and the human impact for the crashes (Dal Bó, 2006)

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