

A Game-Theoretic Framework for Explaining Professional Boundary Dynamics

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November 16, 2025

Abstract

Professions are dynamic social structures whose jurisdictional boundaries are continually drawn, contested, and redrawn. Existing accounts in sociology, organizational studies, and history richly describe these processes but often lack micro-foundations that make the mechanisms transparent and comparable across settings. This paper proposes a game-theoretic framework to analyze professional boundary change as strategic interaction among practitioner groups, using accounting as the primary empirical context. This paper models merger (boundary elimination) and split (boundary construction) as outcomes of coalition formation (cooperation) versus noncooperation, with payoffs shaped by market revenues (MKT), avoidable operating costs (CST), and non-economic benefits (NEB) such as identity, autonomy, and status. Four games escalate in complexity: (1) two players in one market, (2) three players in one market, (3) three players across a regulated and an unregulated market, and (4) two players with differential growth and per-member payoffs. The framework formalizes conditions for individually rational (IR) merger, examines when transferable utility (TU) enables otherwise infeasible cooperation, and clarifies how external threats, regulation, branding spillovers, and growth alter equilibrium outcomes. This paper also discusses governance, government intervention, international bodies, and nested market power within a profession. The

framework offers accounting scholars a portable analytic tool for diagnosing merger feasibility, explaining persistence of fragmentation, and designing policy levers that work by changing game parameters rather than imposing outcomes. This paper conclude with implications, contributions, and limitations, including challenges in empirically measuring expected market shifts and the rarity of clean merger events for testing.

Keywords: Accounting profession, Professional boundary change, Merger and fragmentation, Jurisdictional competition, Game-theoretic modeling, Coalition formation,

JEL codes: M41, M48, D02, L22

I. INTRODUCTION

Professions are not static entities; they are dynamic social structures that emerge, evolve, and sometimes decline in response to technological change, economic pressures, new knowledge, and shifting societal needs. A central feature of this evolution is how professional boundaries are drawn, contested, and redrawn. In accounting and other fields, these boundary changes frequently take the form of mergers between professional bodies, splits that carve out specialist jurisdictions, and recomposition within professions that affects market access, identity, and status.

While existing literatures provide rich macro-narratives and institutional accounts, scholars still lack a profession-level mechanism explaining when groups will cooperate to remove a boundary (merge) versus maintain or construct a boundary (split). This paper offers a game-theoretic framework—grounded in coalition formation and noncooperative bargaining—that makes explicit the incentives of practitioner groups. Mergers (or a larger union of practitioners) are modeled as cooperation and independence (multiple small and identifiable groups of practitioners) as noncooperation, with payoffs composed of market revenues (MKT), avoidable costs (CST), and non-economic benefits (NEB, e.g., identity, autonomy, and status).

The contribution of this paper is threefold. First, it synthesizes insights from sociology

of professions, organizational studies, and political economy into a unified analytic structure. Second, it formalizes core drivers—branding, competition, regulation, and growth—using standard game theory concepts such as individual rationality (IR), transferable utility (TU), and the Nash bargaining solution (NBS). Third, it provides clear qualitative predictions useful to accounting scholars and policymakers: for instance, when the expected loss from a strong entrant (third player) or from deregulation raises the value of cooperation, or when differential growth makes merger privately efficient for both parties. This paper builds the framework progressively: a baseline two-player game, a three-player extension, a two-market model with regulation and spillovers, and a growth model with per-member outcomes. The following section discusses how governance, government intervention, and internationalization shift these games. Our conclusion highlights how altering game parameters (rather than mandating outcomes) can move practitioner groups toward merger or stable independence.

II. LITERATURE REVIEW

This review synthesizes key research on professional change—mergers, splits, and internal recomposition—and clarifies the theories, domains, and empirical lenses deployed. The literature is rich but often fragmented across disciplines, methods, and local insights, with limited generalizable mechanism-based frameworks. A profession-level analytic structure would therefore be helpful.

2.1 Existing fields of research

The Sociology of Professions provides the core theoretical language for understanding professions as groups competing for social closure, status, and control over a domain of work (Abbott 1988; Freidson 2001; Macdonald 1995; Lamont and Molnár 2002). Organizational and Business Studies investigate the relationship between the organization of work and workers through institutional and organizational lenses (Zietsma and Lawrence 2010; Alvehus, Eklund, and Kastberg 2020). Profession-specific studies—often

by insider scholars—are abundant in health (Parry and Parry 1976; Freidson 1988), law (PueLawyersvampirescultural2003), and accounting (Carey 1970; T. A. Lee 1996). In addition, historical accounts are essential for long-run dynamics, showing how professions gain or lose jurisdiction and respond to societal shifts (Garrett 1961; Saks 2021).

2.2 Frameworks to explain the phenomenon of professions

Functionalist accounts portray professions as organic elements serving social functions (Barber 1963). Although this approach remains influential in public discourse and legislation, it has lost scholarly traction in profession research for being ahistorical (Robson and Cooper 1990) .

From a political economy perspective, Marxist analyses view professionals as agents of the ruling class or as a distinct class, positioning professions as vehicles of stratification (Ehrenreich and Ehrenreich 1979). In a strong version, professional autonomy is expected to erode as capital reorganizes labor (Braverman 1998).

Foucauldian studies emphasize governmentality, positioning professions as instruments through which states govern (Lemke 2016). This perspective is especially persuasive in corporatist settings (Harston 1993; Rodrigues, Gomes, and Craig 2003). Weberian analyses stress strategies such as knowledge control and credentialing to monopolize markets (Ritzer 1975).

Boundary work and jurisdictional competition frame professions as competing for legitimate control over problem domains (Zietsma and Lawrence 2010). Professions are thus defined by their ongoing success in claiming and defending jurisdictions rather than by fixed traits. In this view, merger (coalition formation) enhances boundary defense, while splits can strengthen closure by excluding rivals. Yet because mergers and splits are typically irreversible and significantly restructure competition, they deserve mechanism-based analysis rather than only narrative description.

2.3 Drivers of inter-profession dynamics

All frameworks acknowledge a mechanism by which some practitioners are labeled “professional” and others “lay.” Boundaries often appear merit-based (education, experience) but can encode non-merit attributes such as nationality, gender, ethnicity, or membership in local business communities (Poullaos 2009; Richardson 2020; Hammond 1997a, 1997b). Boundary change typically follows two routes: (1) carving out a new profession by exclusion, or (2) removing a boundary by integrating groups. Durable change rarely arises from a single authority alone, since practitioners’ consent and participation matters: practitioners can lobby, exploit loopholes, opt out of sanctioned domains, or create voluntary associations to maintain differentiation (Carr-Saunders and Wilson 1933). In addition, from regulatory capture theory, regulation often serves practitioner interests rather than the public (Stigler 1984). Thus, practitioner motivation is central.

Government motivations include political necessity, service affordability, public reassurance, administrative efficiency, modernization, and exchanging professional support for social control (Carr-Saunders and Wilson 1933; Cook 1990; Rodrigues, Gomes, and Craig 2003; Carey 1969). Practitioner motivations include building barriers to deter entrants, differentiating from competitors, and controlling supply to protect rents (Carr-Saunders and Wilson 1933; Richardson and Kilfoyle 2012), framed publicly as quality assurance, brand clarity, or public interest protection (Carr-Saunders and Wilson 1933; T. Lee 1995). Smaller groups may find independent maintenance too costly and seek merger for pragmatic reasons (Carr-Saunders and Wilson 1933). Identity is a powerful status quo force: collective identities become internalized and can resist boundary changes that threaten them (Richardson and Jones 2007; Looknauth and Bélanger 2018).

These drivers are illustrative, not exhaustive. Our framework accommodates such multi-dimensional factors and clarifies how they shape the equilibrium of boundary change.

2.4 A new framework is needed

Existing frameworks illuminate macro-level, historical dynamics but offer limited profession-level mechanisms for when mergers versus splits occur. This paper therefore constructs a game-theoretic framework that integrates extant factors—government, institutions, boundary work, knowledge control—into explicit payoff structures and equilibrium conditions during the birth of new professions (via merger or split).

III. A GAME THEORY-BASED FRAMEWORK

This paper models boundary elimination as cooperation (merger) and boundary construction as noncooperation (independence). The analysis proceeds in steps: foundational assumptions and notation, followed by four games of increasing complexity. Throughout, standard game theory terminology is used in parentheses to ensure clarity for cross-disciplinary readers.

3.1 Fundamental assumptions

This paper analyzes two regimes: Cooperation (no boundary; merged or unified professional identity) and Noncooperation (boundary; separate professional identities). Movement from Noncooperation to Cooperation includes merger of professional bodies or absorption of non-members; movement in the opposite direction includes splits that create a new designation.

Players choose Cooperation or Noncooperation to maximize payoffs comprised of:

- MKT: expected market (revenue) outcomes due to branding and competition;
- CST: avoidable costs of operating independently (e.g., administration, defensive marketing, price competition);
- NEB: non-economic benefits of independence (identity, autonomy, status), net of

any non-market benefits from merging (e.g., public-interest signaling from simplification).

Simplifying assumptions for tractability are adopted as follows:

- Two focal players have overlapping functions and compete in the same market (though relative competitive strength may differ).
- Group preferences reflect member aggregation (governance endogeneity is discussed later).
- The state does not directly dictate outcomes but can regulate markets by granting monopoly/duopoly in response to practitioner justification. (Government policy is determined by the balance between regulatory capture and public pressure.)
- Players are domestic unless otherwise noted.
- Members within a player are homogeneous for payoff purposes.

These restrictions are relaxed in discussion sections.

3.1.1 Economic gains: competition and branding

Although in modern studies, free-from-competition is treated as the ultimate achievement of professionalisation, such status is seldom a reality. As shown in many historical cases, jurisdictions of professions were under continuous competitions by other professions even with legal sanction (Abbott 1988; Carr-Saunders and Wilson 1933). In some domains, clients have multiple choices to solve their problems (e.g., emotional distress addressed by psychologists, psychiatrists, pastoral counselors, or lay support), while even in strictly regulated domains, clients can arbitrage across jurisdictions (e.g. travel across borders to procure health service). In addition, sanction today does not guarantee sanction tomorrow; neoliberal reforms and globalization have repeatedly altered access. Therefore, this framework assumes that the players have to compete for market share with their

brand. Legal sanction is still preferable but players act with the assumption that legal sanction could change.

3.1.2 Notation for MKT, CST, and NEB

In Games 1–3, competition affects (1) the division of market revenue (MKT) and (2) the costs of competing (CST), including lower prices and defensive marketing. Independent operation also entails administrative costs, included in CST. NEB captures identity, autonomy, and other institutional non-market benefits of independence (net of any non-market benefits of merger). In these three games, the overall benefit is considered, ignoring the number of members of each player. But, in the growth-oriented Game 4, per-member payoffs is discussed.

3.1.3 Comparative strength

Players are indexed by comparative strength, which reflects brand, client ties, social status, and political or regulatory connections. “Strong” and “weak” are not judgments of service quality; they summarize market power under competition.

In Games 1–3, market size is constant, and the state’s role is indirect. Game 4 adds differential growth.

3.1.4 Information available to the players

Since the market is observable by all parties, it is assumed that information about the market, costs, and non-market benefits is available to all parties. However, the absolute probability that the government will mandate a monopoly or duopoly is not available to players. Players could only anticipate the comparative probability of government actions.

In cases where information is not available to all parties, the decision of parties in cooperation or non-cooperation could be distorted by a lack of information, and the bargaining friction could influence the result in both ways. Therefore, the case of incomplete information is not discussed in this section.

3.2 Game 1: A two-player game

Two players compete in one market without direct regulation (see Appendix A for a formal treatment). If they merge, the stronger player (Player 1) sacrifices some brand-based advantage (MKT) but both avoid competitive and administrative costs (CST) while forgoing NEB. Aggregate revenue available to Players 1 and 2 is unchanged by merger; thus, the coalition's combined gain is $CST - NEB$. With transferable utility (TU), merger is feasible if the net coalition surplus is positive and transfers can make both individually rational (IR). Without TU, each player's IR constraint must be individually satisfied.

In practice, CST savings rarely outweigh NEB losses for the stronger player. Identity and autonomy loom large: members who invested in a prestigious designation may resist unification that dilutes status or cedes governance influence, particularly under simple majoritarian governance where the larger body dominates. Consequently, pure two-player mergers for cost reasons alone are uncommon in accounting.

Conversely, independence can be attractive. Elites often accept CST to preserve differentiation, autonomy over standards, and agenda-setting power. This pattern aligns with the proliferation of professional bodies (Friedman and Afitska 2023). In an extreme case, in Australia, some founding members left their inclusive body¹ to form a public-practice-focused institute² which ultimately secured a royal charter, trading CST for stronger brand positioning in public practice (Carnegie, Edwards, and West 2003).

3.3 Game 2: A three-player game

Introducing a third player (Player 3) changes the calculus (Appendix B). If Players 1 and 2 merge to form U_{1-2} , the unified brand can take market share from Player 3, yielding an additional MKT gain. The coalition surplus becomes $MKT + CST - NEB$. The more

1. Incorporated Institute of Accountants, Victoria, later, the Certified Practising Accountant Australia.

2. Australasian Corporation of Public Accountants, later, the Institute of Chartered Accountants in Australia

formidable Player 3 is (e.g., a strong foreign professional body), the larger the potential MKT gain from unification. If TU is available, merger is feasible whenever total surplus is positive; without TU, each player's IR must hold, which is more likely when Players 1 and 2 are similar (small brand loss for 1) or when their market-share gains against Player 3 are comparable.

By symmetry, if the game starts from a unified body and contemplate a split under pressure from a strong third player, the threat of external competition can stabilize the union: Player 1 prefers to remain unified when Player 3's expected strength makes independent branding too costly.

3.4 Game 3: A three-player, two-market game

Game 3 is built with a regulated Market 1 and an unregulated Market 2 (Appendix C). Regulation is probabilistic and depends on the configuration (no merger vs. types of merger). If U_{1-2} forms, it can lobby more credibly for monopoly in Market 1, especially if Player 3's expected strength is high but current share is low. Branding spillovers from Market 1 enhance Market 2 outcomes (Evans and Honold 2007). Thus, Market 1 power is disproportionately valuable because it generates both direct (regulated rents) and indirect (spillover to unregulated domains) benefits. When monopoly in Market 1 is likely regardless of merger, the game collapses to the Game 2 logic.

Credible threats of alternative mergers matter for bargaining. If Player 2 can credibly merge with Player 3, Player 2 gains bargaining power vis-à-vis Player 1. However, if all pairwise mergers are credible, no player can be bluffed easily, and theoretical prediction is indeterminate. In practice, three-way mergers are rare, but exist (e.g. CPA Canada) ; strongest–weakest pairings are usually not credible.

3.5 Game 4: Considering growth

In a two-player setting, even without a third competitor, merger can be privately efficient if it resolves a prisoner's dilemma over entry control (Appendix D). Competing bodies

have incentives to lower entry barriers to gain influence, which pushes prices down for both. A merger can restore collective control of entry pathways—typically by shutting the weaker body’s entry route “for quality”—and protect per-member revenue. With TU, merger is feasible if the price-equalization gains exceed NEB losses; without TU, Player 1 must believe that the sacrifice of brand advantage is offset by reduced future competition, which is more plausible when Player 2’s expected growth is large but its current membership is small.

From Player 2’s perspective, to remain an attractive merger partner it helps to (1) keep current membership small, (2) improve brand quality, and (3) cultivate a large student pipeline—despite tensions among these goals. Over time, a large pipeline typically becomes a large membership base, which can then deter merger by raising Player 1’s expected brand dilution.

IV. OTHER FACTORS THAT MAY INFLUENCE THE GAME

4.1 Mergers across different disciplines

Professional bodies from related but distinct disciplines can merge to share administrative costs and leverage a broader umbrella brand while preserving jurisdictional autonomy (e.g., chartered surveyors) (Carr-Saunders and Wilson 1933). In such cases: (1) each discipline may gain MKT in its own unsanctioned markets via umbrella branding; (2) CST falls through shared infrastructure; and (3) NEB losses reflect sharing a designation with a different discipline rather than conceding intra-discipline status.

4.2 Governance

Even when merger is IR in expectation, governance can block execution. Incumbent leaders may prefer status preservation and resist value-creating mergers; opportunistic founders may create new bodies for personal gain (registration fees, reputation) (Gavens and Gibson 1992). Conversely, capable leadership is often required to launch viable splits.

Given the “iron law of oligarchy,” member oversight is frequently weak (Friedman and Afitska 2023). Governance quality thus materially affects real-world outcomes, beyond model primitives.

4.3 Government influence

States grant legal sanction and can help close markets to outsiders (Carr-Saunders and Wilson 1933). Yet government is neither necessary nor sufficient to determine professional boundaries. First, legal sanction is not essential to build brand; elite practitioners can signal distinction even under forced unification (see Section 4.5). Second, regulatory capture implies that regulation often reflects practitioner interests (Stigler 1984). Third, in corporatist arrangements the state needs professions to govern effectively and must trade concessions (Rodrigues, Gomes, and Craig 2003). Bureaucrats may also be socialized into professional identities, further complicating unilateral policy (Annisette 2000).

Policy is most effective when it changes game parameters rather than dictating outcomes. Examples include: permitting international entrants to strengthen the third-player threat (raising MKT gains from unification); mandating democratic governance to align leadership with member preferences; legislating enforceable transfer arrangements (TU) to implement mergers; or compensating losers—if fiscally and politically feasible—when change is otherwise blocked. As these policies could easily attract resistant (e.g. counter-lobbying) from the practitioners, it is necessary that the policies are supported by sufficient political resources mobilized from the public.

4.4 International professional bodies

When Player 1 is international and Player 2 domestic, merger implicates cross-jurisdictional recognition. International bodies may preserve “sanctioned” labels for members with specific rights, limiting domestic equalization post-merger. Domestic bodies (Player 2) may mobilize nationalism to counter the merger.

When the roles are reversed (domestic body merging with a large international body),

domestic markets may be opened to overseas members, turning the domestic body into an international organization and creating administrative and geopolitical challenges. For instance, ACCA’s overseas examination strategy complicated consolidation with chartered bodies (Briston and Kedsle 1997), and several jurisdictions relied on ACCA to build local capacity (Annisette 2000; Bakre 2005). Mergers designed to close international pathways may thus conflict with wider diplomatic and developmental goals of the state and attract state’s intervention.

4.5 A profession inside another profession

Large firms can achieve de facto jurisdictional dominance within a de jure unified profession by segmenting markets. The Big Four’s control over listed-company audits is a case in point. Lower-tier firms maintain market breadth that deters new entrants and softens calls for statutory restructuring, while the top tier retains high-margin segments by reframing services (e.g., consulting) and leveraging reputation (Zeff 2003). This nested hierarchy resembles a club-good structure within a shared professional brand.

V. DISCUSSION ON THE ACCOUNTING PROFESSIONAL BODIES

The modern accounting profession can be traced to the establishment of three accounting bodies in Scotland. Although the historical narrative often depicts a group of accountants differentiating themselves from penmasters through the assumption of receivership responsibilities, the episode can alternatively be interpreted as receivers forming organized associations—initially at the city level—in order to compete with external claimants, most notably lawyers, and ultimately persuading Parliament to bar lawyers from entering the receivership market (T. Lee 1995; Carr-Saunders and Wilson 1933). This trajectory corresponds to a successful unification strategy, consistent with the logic of Game 3, in which players consolidate to secure a monopoly in Market 1.

The history of accountants as tax representatives in the United Kingdom illustrates the consequences of non-cooperation. Prior to the introduction of a new income tax scheme,

both chartered accountants and incorporated accountants had established a network of reputable practitioners with clearly distinguishable designations, and the government recognized the legitimacy of both groups (Carr-Saunders and Wilson 1933). However, the new scheme permitted all accountants from incorporated bodies, without privileging a single designation, thereby facilitating the entry of newly incorporated accountants who could form organizations to preserve market access (Carr-Saunders and Wilson 1933). This development later prompted chartered and incorporated accountants to conclude that unification was necessary to maintain competitiveness against the emerging bodies. Their agreement led to the dissolution of the incorporated accountants, whose members were subsequently admitted into the chartered institutes (Garrett 1961). Although the consolidated chartered bodies did not obtain exclusive legal rights in the audit market, they came to represent the vast majority of public practitioners in the United Kingdom nowadays: all large audit firms (with more than 50 principals) and 95% of medium-sized firms (with 11–50 principals) are registered with one of the chartered institutes (ICAEW, CAI, and ICAS) (Financial Reporting Council 2024).

An example of games in an unregulated market is the merger between AICPA and CIMA. This case does not concern regulatory privileges, as neither organization possessed statutory audit rights in the United Kingdom or the United States at the time of their merger. Instead, in the market for management accounting, it involved the union of chartered-incorporated management accountants and a voluntary association of accountants. Consistent with expectations regarding brand enhancement, the merger produced a new designation—the CGMA—awarded unconditionally to CIMA members and conditionally to CPA members (Journal of Accountancy 2011). The designation received approval from the Privy Council, although no exclusive legal rights accompanied it (Privy Council Office 2025). The merger narrative asserted that a strengthened brand, combined with effective branding practices, would increase members’ competitiveness against other accounting designations in the management accounting market (Journal of Accountancy 2011).

Empirical developments, however, indicate limits to such expectations. The market for management accounting appears geographically segmented, with little overlap between

the membership bases of CIMA and AICPA in the United Kingdom and the United States. As a result, anticipated synergies in brand construction did not materialize: in the United Kingdom, CIMA continued to compete independently. Assuming the accountants working in industry and commerce represent the management accounting market in the UK, in 2011, CIMA members working in industry and commerce encountered strong competition from ICAEW (whose membership was almost twice as large as CIMA, while 42% of the members worked in industry and commerce), ACCA (with a comparable number of members, and 56% members worked in industry and commerce), and other professional bodies (Financial Reporting Council 2012). At the same time, CIMA's overseas presence was limited, numbering only 18,278 members (20% of total members), suggesting that in the United States, AICPA members continued to compete independently against IMA and non-incorporated accountants. CIMA experienced a notable surge in student registrations (17% growth) in 2012 after the merger, but the momentum dissipated by 2014 (Financial Reporting Council 2017); member growth began declining by 2020 and peaked in absolute terms in 2022 (Financial Reporting Council 2024). Thus, although the merger initially empowered CIMA, its longer-term competitive implications remain undetermined, and the incremental advantage attributable to the new brand has not been extensively documented. This case also shows the limitation of this framework: while the framework could explain the strategies of the players, there is no guarantee that the the assumptions by the two players necessarily reflect the reality.

In addition to mergers, many professional bodies have historically relied on close cooperation rather than organizational independence. In jurisdictions with smaller populations, professional accountants often utilized training and examination systems developed by overseas institutes (Annisette 2000; Briston and Kedsle 1997; Bakre 2005). Even after decolonization, this model persisted: a domestic professional body could maintain formal affiliation with foreign bodies, enabling candidates to sit examinations administered by the latter while receiving practical training within local firms and ultimately graduating with dual memberships (Annisette 2000; Bakre 2005). Moreover, cooperation could serve as a mechanism for local practitioners to discourage the development of university-based

accounting programs by emphasizing that continued collaboration required fewer public resources, thereby preserving control over the profession’s knowledge base (Annisette 2000). Though not a merger in a strict legal sense, domestic accountants did not displace overseas bodies to reassert exclusive control over the local market.

The rationale for collaboration through cost-sharing remains relevant even in developed contexts where accounting education has become increasingly complex. For example, after CPA Ontario and CPA Quebec separated from CPA Canada, both continued to participate in shared systems for standard setting, examinations, and related activities (Steer 2024). Thus, cooperative cost sharing persists as a viable strategic approach for professional bodies in contemporary settings.

VI. CONCLUSION

This paper develops a game-theoretic framework for analyzing professional boundary dynamics, using accounting as the illustrative domain. The framework integrates market competition (MKT), avoidable costs (CST), and non-economic benefits (NEB) and applies standard concepts—individual rationality (IR), transferable utility (TU), Nash bargaining (NBS), and credible threats—to explain when practitioner groups merge or remain independent. Four games capture escalating complexity: two players in one market; a three-player setting that clarifies how external threats increase merger value; a two-market model with regulatory spillovers; and a growth model that turns a price-entry prisoner’s dilemma into a rationale for merger.

The framework is not intended to predict exact numeric thresholds but to structure comparative analysis. For example, stronger expected third-party entry or higher probability of monopoly under unification raises the returns to merger; conversely, strong identity benefits or large brand dilution for the leading group dampen merger feasibility. Policy interventions are most effective when they alter game parameters (e.g., external threats, governance rules, enforceability of transfers) rather than mandating outcomes.

VII. CONTRIBUTION

This paper contributes a portable, mechanism-based framework for studying professional mergers, splits, and recombination. It synthesizes current literature into a tractable structure that clarifies how branding, regulation, governance, and growth jointly shape boundary decisions. Beyond accounting, the framework helps explain why professions consolidate in some industries but not others, and why competition may be organized through firms rather than professional bodies.

VIII. IMPLICATION

The main implication are for practitioners and the government. From the practitioners' point of view, this framework can help them to analysis their social context to form strategies to facilitate or prevent changes according to their interests. From the government's point of view, this framework can help them to analysis the professions and social context so that they can successfully facilitate changes by changing the social context subtly instead of face confrontation head one with the practitioners.

IX. LIMITATIONS

Two primary limitations remain. First, expected market-share (or revenue) shifts are difficult to measure ex ante, complicating empirical calibration. Second, profession–profession mergers are relatively rare and confounded by multiple moving parts, limiting clean empirical tests. Nonetheless, the framework offers clear qualitative predictions to guide archival, case-based, and comparative research.

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APPENDICES

A. GAME 1: TWO PLAYERS, ONE MARKET (MERGER VS. NO MERGER)

A.1 Notation alignment

For consistency with the main text: CST corresponds to c_i , NEB to b_i , and MKT to revenue shares m_i^x .

A.2 Basic assumptions

Players $I = \{1, 2\}$ operate in one market with total revenue normalized to 1. Each player i has avoidable cost $c_i > 0$ (CST) and non-economic benefit $b_i \geq 0$ (NEB), where:

- each receives a market revenue share (MKT);
- each pays CST only if operating independently; and
- each enjoys NEB only if operating independently.

Player 1 has a stronger brand than Player 2; thus, if merged, Player 1 loses some MKT advantage relative to independence.

A.3 Structure and notation

- One market with total revenue 1.
- Regimes $x \in \{N, M\}$ (no merger, merger). Let $m_i^x \in [0, 1]$ denote player i 's revenue share; $\sum_{i=1}^2 m_i^x = 1$ for each x .
- Let $c_i > 0$ denote CST and $b_i \geq 0$ NEB.
- Period payoff of player i in regime x is $u_i^x \equiv m_i^x - \mathbf{1}_{\{x=N\}} c_i + \mathbf{1}_{\{x=M\}} b_i$.
- Under merger, $m_1^M < m_1^N$ and $m_2^M > m_2^N$.

A.4 Objective and IR

Each player maximizes own payoff. A merger is implemented only if both individual rationality (IR) constraints hold.

Define the individual gain from merging: $\Delta_i \equiv u_i^M - u_i^N = (m_i^M - m_i^N) + c_i - b_i$.

A.5 Proposition

Proposition 1 (Merger feasibility in Game 1). *A merger occurs if and only if both IR constraints hold: $\Delta_i \geq 0$ for $i = 1, 2$, i.e., $m_i^M - m_i^N \geq b_i - c_i$ for $i = 1, 2$.*

Proof Under N , $u_i^N = m_i^N - c_i + b_i$; under M , $u_i^M = m_i^M$. Necessity and sufficiency of $\Delta_i \geq 0$ for both players follows by direct comparison and the requirement of mutual consent.

A.6 Discussion

- Branding loss for Player 1: Since $m_1^M < m_1^N$, $c_1 - b_1$ must be sufficiently large to cover lost MKT. Larger c_1 promotes, larger b_1 deters merger.
- Player 2's incentive depends on $(m_2^M - m_2^N)$ and $(c_2 - b_2)$. If $(c_2 - b_2) > 0$, 2 is more likely to accept; but NEB can bind.
- Transferable utility (TU): Even if $\sum_i \Delta_i > 0$, absence of TU can block merger if some $\Delta_i < 0$. With TU, total surplus determines feasibility.

B. GAME 2: THREE PLAYERS, ONE MARKET (MERGER OF 1 AND 2 WITH BARGAINING)

B.1 Notation alignment

CST corresponds to c_i , NEB to b_i , and MKT to revenue shares m_i^x . The loss in Player 3's share due to unification is δ .

B.2 Basic assumptions

Players $I = \{1, 2, 3\}$ operate in one market with total revenue 1. Each player i has CST $c_i > 0$ and NEB $b_i \geq 0$:

- each receives MKT;
- each pays CST only if operating independently; and
- each enjoys NEB only if operating independently.

B.3 Structure and notation

- No merger (regime N): revenue shares (m_1^N, m_2^N, m_3^N) with $\sum_i m_i^N = 1$; payoffs $u_i^N = m_i^N - c_i + b_i$ for all i .
- Merger of 1 and 2 (regime M): Player 3 loses share due to unified branding; let $\delta \equiv m_3^N - m_3^M \geq 0$. Feasibility requires $m_1^M + m_2^M + m_3^M = 1$, so the coalition's incremental revenue equals δ .
- The merger's MKT gain δ is allocated between Players 1 and 2 by bargaining:

$$m_1^M = m_1^N + \lambda\delta, \quad m_2^M = m_2^N + (1 - \lambda)\delta, \quad \lambda \in [0, 1].$$
- Payoffs under M : $u_1^M = m_1^M - c_1 + b_1$, $u_2^M = m_2^M - c_2 + b_2$, and $u_3^M = m_3^M - c_3 + b_3$.
- Individual gains for $i \in \{1, 2\}$: $g_1(\lambda) = \lambda\delta + (c_1 - b_1)$, $g_2(\lambda) = (1 - \lambda)\delta + (c_2 - b_2)$.
- A merger is implementable if there exists $\lambda \in [0, 1]$ such that $g_1(\lambda) \geq 0$ and $g_2(\lambda) \geq 0$.

B.4 Proposition

Proposition 2 (Feasibility iff nonnegative total surplus). *Define coalition surplus $S \equiv \delta + (c_1 + c_2) - (b_1 + b_2)$. There exists $\lambda \in [0, 1]$ such that $g_1(\lambda) \geq 0$ and $g_2(\lambda) \geq 0$ if and only if $S \geq 0$. If $\delta = 0$, feasibility reduces to $(c_1 - b_1) \geq 0$ and $(c_2 - b_2) \geq 0$.*

Proof Necessity: $g_1(\lambda) + g_2(\lambda) = S$, so if both are nonnegative then $S \geq 0$. Sufficiency: If $S \geq 0$ and $\delta > 0$, let $\underline{\lambda} = (b_1 - c_1)/\delta$, $\bar{\lambda} = 1 - (b_2 - c_2)/\delta$. Then $g_1(\lambda) \geq 0$ iff $\lambda \geq \underline{\lambda}$ and $g_2(\lambda) \geq 0$ iff $\lambda \leq \bar{\lambda}$. $S \geq 0$ iff $\underline{\lambda} \leq \bar{\lambda}$, ensuring feasibility. For $\delta = 0$, $g_i(\lambda) = c_i - b_i$.

B.5 Bargaining solution

Let $\beta \in (0, 1)$ be Player 1's weight in a weighted Nash bargaining solution (NBS) with threat points u_i^N . Choose λ to maximize $[g_1(\lambda)]^\beta [g_2(\lambda)]^{1-\beta}$ over feasible λ .

Proposition 3 (NBS allocation of δ). *If $\delta > 0$ and $S > 0$, the interior NBS satisfies $\lambda^* = \frac{\beta[\delta + c_2 - b_2] - (1-\beta)[c_1 - b_1]}{\delta}$, provided $\lambda^* \in [\underline{\lambda}, \bar{\lambda}]$; otherwise the constrained maximizer lies at the boundary. Under symmetric bargaining ($\beta = \frac{1}{2}$), $\lambda^* = \frac{1}{2} + \frac{(c_2 - b_2) - (c_1 - b_1)}{2\delta}$.*

Proof The interior FOC equates $\beta/g_1(\lambda) = (1 - \beta)/g_2(\lambda)$, yielding the stated λ^* . Feasibility requires $S > 0$ (Proposition 2.1).

B.6 Discussion

- Larger δ (bigger loss by Player 3 created by unification) expands feasibility and raises S .
- Larger c_i or smaller b_i increases g_i and shifts λ^* toward compensating the player with the tighter IR.
- Player 3's payoff strictly falls with δ .

C. GAME 3: THREE PLAYERS, TWO MARKETS (MERGER TYPE AND REGULATION)

C.1 Notation alignment

CST corresponds to c_i , NEB to b_i , and MKT to market revenues $\pi_i^{(s)}$ built from shares $m_{i,k}^{(s)}$.

C.2 Basic assumptions

Players $I = \{1, 2, 3\}$ operate in two markets: Market 1 has revenue $r \in (0, 1)$ and Market 2 has revenue $(1 - r)$. Each player i has CST $c_i > 0$ and NEB $b_i \geq 0$:

- each receives MKT from both markets;
- each pays CST only if independent; and
- each enjoys NEB only if independent.

C.3 Structure and notation

- Cases $t \in \{N, UM, EM\}$ with prior probabilities $P(N), P(UM), P(EM) \in [0, 1]$, summing to 1. Here UM and EM denote two merger types (e.g., unequal vs. equalized power in Market 1).
- Within each case t , regulation scenarios $s \in \mathcal{S}_t$ occur with conditional probabilities $p_{s|t}$ summing to 1: $\mathcal{S}_N = \{1, 2, 3\}$, $\mathcal{S}_{UM} = \{4, 5\}$, $\mathcal{S}_{EM} = \{6, 7\}$.
- In scenario s , let $m_{i,1}^{(s)}$ and $m_{i,2}^{(s)}$ denote shares in Markets 1 and 2 with $\sum_i m_{i,1}^{(s)} = 1$ and $\sum_i m_{i,2}^{(s)} = 1$. Branding in Market 1 spills over to Market 2 via higher $m_{i,2}^{(s)}$ when $m_{i,1}^{(s)}$ is high.
- Payoff in scenario s : $\pi_i^{(s)} = r m_{i,1}^{(s)} + (1 - r) m_{i,2}^{(s)}$.
- Expected payoffs in case t : $U_i(t) \equiv \sum_{s \in \mathcal{S}_t} p_{s|t} \pi_i^{(s)} + \chi_t(i)$, where $\chi_N(i) = -c_i + b_i$, $\chi_{UM}(i) = \chi_{EM}(i) = 0$ for $i \in \{1, 2\}$, $\chi_t(3) = -c_3 + b_3 \forall t$.

C.4 Probability implications

- $p_{5|UM} = p_{7|EM} > p_{3|N}$: monopoly in Market 1 is more likely under cooperation.
- $p_{4|UM} = p_{6|EM} < p_{1|N}$: full deregulation is less likely under cooperation.

C.5 Merger decision and bargaining

If $t = N$, no merger occurs; payoffs are $U_i(N)$. If a merger occurs, the type $t \in \{UM, EM\}$ is chosen by bargaining between Players 1 and 2 with threat points $U_1(N), U_2(N)$ and bargaining weight $\beta \in (0, 1)$ for Player 1. Define incremental payoffs $\Delta_i^{t|N} \equiv U_i(t) - U_i(N)$.

Proposition 4 (Feasibility of cooperation). *A merger type $t \in \{UM, EM\}$ is acceptable if and only if $\Delta_1^{t|N} \geq 0$ and $\Delta_2^{t|N} \geq 0$.*

Proof Immediate from IR.

Between feasible types, select t to maximize the Nash product $\mathcal{N}(t) \equiv [\Delta_1^{t|N}]^\beta [\Delta_2^{t|N}]^{1-\beta}$.

Proposition 5 (Merger type selection). *Assume both UM and EM are IR (i.e., $\Delta_i^{t|N} > 0$ for $i = 1, 2$). Then UM is chosen iff $\beta \log\left(\frac{\Delta_1^{UM|N}}{\Delta_1^{EM|N}}\right) + (1 - \beta) \log\left(\frac{\Delta_2^{UM|N}}{\Delta_2^{EM|N}}\right) \geq 0$, with the reverse inequality for EM ; equality yields indifference.*

Proof Maximize $\log \mathcal{N}(t) = \beta \log \Delta_1^{t|N} + (1 - \beta) \log \Delta_2^{t|N}$.

C.6 Economic interpretation

- Probability shifts: Higher $p_{5|UM}$ or $p_{7|EM}$ (relative to $p_{3|N}$) raise both $\Delta_1^{t|N}$ and $\Delta_2^{t|N}$ by increasing the likelihood of monopoly; Player 3 is harmed.
- Branding spillovers and r : Since $\pi_i^{(s)} = r m_{i,1}^{(s)} + (1 - r) m_{i,2}^{(s)}$, larger r increases the value of Market 1 outcomes, amplifying the incremental value of cooperation when Market 1 is more favorable under UM or EM .
- UM vs. EM: If UM disproportionately favors Player 1 in Market 1 while EM allocates power more evenly, then for large r and high β , UM is more likely; otherwise, EM may prevail.
- Costs and NEB: Larger c_i or smaller b_i increase $\Delta_i^{t|N}$, promoting cooperation.

C.7 Addition

This game assume that government is more likely to grant monopoly to Union 1 consists of Player 1 and Player 2 than Player 1 and Player 2 compete in the market. However, the situation could be the opposite when the government intentionally maintain competition between professional bodies. Still, no case is found that a government deregulate a market after a merger of domestic professional bodies citing the reason to be encouraging market competition.

D. GAME 4: TWO PLAYERS, ONE MARKET, DIFFERENTIAL GROWTH AND PER-MEMBER REVENUES

D.1 Notation alignment

CST corresponds to c_i , NEB to b_i ; MKT refers to per-member prices derived from total revenue and membership sizes.

D.2 Setup

Two players $I = \{1, 2\}$ operate in one market. Present total revenue is 1; future total revenue is $1 + G_M$. Each player i has CST $c_i > 0$ and NEB $b_i \geq 0$.

D.3 Primitives

- Present sizes: $SIZE_i > 0$; future no-merger sizes: $SIZE_i^F = SIZE_i + Growth_i$ with proportional growth slower for Player 1: $Growth_1/SIZE_1 < Growth_2/SIZE_2$.
- Present per-member revenues: $PRICE_{1,P} = \frac{MKT_{1,P}}{SIZE_1}$, $PRICE_{2,P} = \frac{MKT_{2,P}}{SIZE_2}$, $MKT_{1,P} + MKT_{2,P} = 1$.
- Comparative strength stable under competition: $\frac{PRICE_{1,P}}{PRICE_{2,P}} = \frac{PRICE_{1,F}^N}{PRICE_{2,F}^N} = k > 0$.

D.4 No merger (future competition)

Let $S_1^F \equiv \text{SIZE}_1 + \text{Growth}_1$ and $S_2^F \equiv \text{SIZE}_2 + \text{Growth}_2$. With total future revenue $1 + G_M$, $\text{PRICE}_{2,F}^N \equiv \pi = \frac{1+G_M}{kS_1^F+S_2^F}$, $\text{PRICE}_{1,F}^N = k\pi$.

D.5 Merger (future cooperation)

If they merge: (i) both avoid CST and lose NEB; (ii) Growth_1 continues, Growth_2 is shut down; (iii) per-member revenue is equalized: $\text{PRICE}_{1,F}^M = \text{PRICE}_{2,F}^M \equiv \bar{p} = \frac{1+G_M}{S_1^F+\text{SIZE}_2}$.

D.6 Individual proposal criteria

Player i proposes merger if $\underbrace{\text{PRICE}_{i,F}^M - \text{PRICE}_{i,F}^N}_{\text{per-member price gain}} + c_i - b_i \geq 0$.

D.7 Closed-form gains

- Player 1: $g_1 = \bar{p} - k\pi + c_1 - b_1 = (1 + G_M) \left[\frac{1}{S_1^F + \text{SIZE}_2} - \frac{k}{kS_1^F + S_2^F} \right] + c_1 - b_1$.
- Player 2: $g_2 = \bar{p} - \pi + c_2 - b_2 = (1 + G_M) \left[\frac{1}{S_1^F + \text{SIZE}_2} - \frac{1}{kS_1^F + S_2^F} \right] + c_2 - b_2$.

Proposition 6 (Price-equalization effects, ignoring CST/NEB). *(i) Player 1's per-member revenue increases under merger ($\bar{p} \geq k\pi$) iff $S_2^F \geq k \text{SIZE}_2 \Leftrightarrow \text{Growth}_2 \geq (k - 1) \text{SIZE}_2$. (ii) Player 2's per-member revenue increases under merger ($\bar{p} \geq \pi$) iff $kS_1^F + S_2^F \geq S_1^F + \text{SIZE}_2 \Leftrightarrow (k - 1)S_1^F + \text{Growth}_2 \geq 0$.*

Proof Algebraic rearrangements of $\bar{p} \geq k\pi$ and $\bar{p} \geq \pi$ yield the stated conditions.

Corollary 1 (Including CST/NEB). *Player 1's merger criterion becomes $\text{Growth}_2 \geq (k - 1) \text{SIZE}_2 - \frac{c_1 - b_1}{1 + G_M} \cdot D_1$, and Player 2's becomes $(k - 1)S_1^F + \text{Growth}_2 \geq \frac{c_2 - b_2}{1 + G_M} \cdot D_2$, where $D_1, D_2 > 0$ arise from rearranging $g_i \geq 0$. Larger c_i (or smaller b_i) relaxes player i 's criterion.*

D.8 Discussion

- Faster proportional growth of Player 2 lowers its competitive per-member revenue π and raises g_2 , making Player 2 pro-merger; Player 1 benefits when Player 2's prospective growth is sufficiently large relative to k .
- If $k \geq 1$ (Player 1's advantage under competition), part (ii) shows Player 2 weakly benefits from equalization even before CST/NEB.
- CST and NEB enter additively as $+c_i - b_i$. Large CST or small NEB make merger more likely for both.
- A merger occurs iff both $g_1 \geq 0$ and $g_2 \geq 0$.