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Evaluating Policy Interventions for Audit Quality Improvement: Market Competition versus Audit Firm Separation

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Abstract

We consider an environment wherein a multidisciplinary firm providing audit (AS) and non-audit services (NAS) competes with an AS-specialty firm and a NAS-specialty firm, and show how we should intervene in the markets for AS quality improvement. We assume that the multidisciplinary firm faces the service provision restriction: it cannot provide the NAS to the clients who purchase its AS and maximize the total profit (centralized decision). We find that policies which intensify competition do not necessarily improve and may rather reduce the AS quality since such policies incentivize the multidisciplinary audit firm to earn profits in the NAS market by moving away from competing in the AS market. Moreover, the multidisciplinary firm's separation is the most effective policy for AS quality improvement, as it allows the service provider to avoid the service provision constraint and delegate their decision in audit quality.

JEL Classification Code: M42, L51, G34

Keywords: Separation of Multidisciplinary Firm, Hotelling Model, Audit Service Competition

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1 Introduction

Promoting audit market competition has emerged as a central focus of audit reforms in the UK in recent years. Following the Carillion case, the UK Parliament's Joint Committee concluded that it had failed to wait for the statutory market to compete and naturally improve audit quality, and recommended that the Competition and Markets Authority (CMA) consider an approach that includes both breaking up the Big Four into more audit firms and separating the audit section from firms providing non-audit services (NAS) (Carillion, 2018).

However, the idea of breaking up the Big Four is no longer widely discussed in subsequent policy discussions in the UK (CMA, 2019). Instead, alternative measures to foster market competition have been proposed, such as implementing a managed shared audit regime and imposing market share caps (*BEIS*, 2021, 2022). Concurrently, regulators have promoted quality competition in the audit market. For example, strengthening directors' legal liability encourages appointing auditors who can improve audit quality. The UK government recommends strengthening directors' liability for fraud (*BEIS*, 2022). In addition, auditing standards have been revised to make auditor specialization more valuable to management (auditing complex estimates via International Standards on Auditing (ISA) 540 and requiring more detailed disclosures in audit reports via ISA 701). If auditor specialization adds value to the management, they will engage such auditors.

In contrast, if audit services (AS) are so differentiated that an audit engagement can only be audited by a particular audit firm, this weakens competition in the audit market. Thus, another factor that increases audit quality competition is uniformity in audit practice instead of differentiation strategies. Regulators seek to standardize audit practices by establishing detailed audit standards and tightening quality control in audit firms. If AS' are not easily differentiated, audit firms will have to pay more to gain market share.

Meanwhile, the UK government recommends operational separation for the mandatory separation of audit and non-audit functions (*BEIS*, 2022). In operational separation, a new board for audit practice (Audit Board) will be established independent of the existing audit firm boards. The Audit Board will be responsible for remuneration, and developing and maintaining audit quality

standards, and profits should not be shared between the AS and NAS sections. In other words, the audit section will be decentralized from the audit firm through operational separation.

In response to this recommendation, the major audit firms considered voluntary separation. This voluntary separation has happened after journalists reported in May 2022 that separation was being considered at EY (Sainsbury, 2022). The voluntary separation proposed by EY was more thorough than the separation and can be called a spin-off involving establishing a different brand. In addition, the Wall Street Journal reported in June that Deloitte was also considering separation (Eaglesham and Driebusch, 2022). However, Deloitte immediately denied the news, while EY dropped its separation plans in April 2023.

Empirical studies of the Big Four in the US, cited by the UK CMA, found a negative relationship between the importance of NAS' at the firm level and audit quality (Meckfessel and Sellers, 2017). The study explains this conceptual background as audit culture damaged by commercialism (Zeff, 2003; Wyatt, 2004). Our economic model complements these observations with audit markets, audit regulation, and audit firm structure. In other words, for a centralized audit firm under the NAS provision restriction, the best interests of the firm as a whole often come from losses in the audit market.

Well-functioning quality competition measures for the audit market depend on audit regulation characteristics and audit firm structure. We prove three key sets of results. First, in the current regulatory environment, auditors have incentives to not improve audit quality under certain conditions because the NAS provision restriction may allow centralized audit firms to choose opportunities to acquire NAS clients rather than acquiring audit clients through high audit quality with high costs.

Second, some policies that intensify audit quality competition are harmful under the NAS provision restriction. Specifically, increased audit market competition under this restriction will increasingly reduce the incentives for centralized audit firms to improve audit quality and gain audit market share. Rather, the firms will favor profits in the NAS market. Increased quality competition in the audit market appears to improve audit quality; however, audit quality declines in some situations in our model.

Third, separation measures not only enhance audit efforts but also help competition policy work well. Audit firm decentralization allows audit sections to make their own decisions, which increases the incentive for audit firms to increase their audit effort and gain market share in the audit market. They do not intentionally lose their AS market share to gain the NAS market's share, as do centralized audit firms under the constraints.

Our study is in line with several strands of the audit literature. Many theoretical studies have been conducted on the NAS and have focused on the advantages (Beck and Wu, 2006; Simunic, 1984) and disadvantages (Liu and Chan, 2012) of providing NAS. In recent years, some studies have focused on the interaction between the AS and NAS markets. Wu (2006) analyzes a model of oligopolistic competition in two markets in which accounting firms compete for AS (quality competition) and NAS (price competition). Wu (2006) argues for a trade-off between these two economic forces (knowledge spillovers and competition crossovers) in the two oligopolistic markets. Friedman and Mahieux (2021) show that when audit and NAS demand are positively correlated, prohibiting auditors from providing NAS to audit clients leads to higher investments in audit quality; however, it can decrease average audit quality if marginal clients switch to lower-quality auditors. Our model assumes a situation similar to Friedman and Mahieux (2021), where multidisciplinary audit firms, and stand-alone service audit or consulting firms compete on quality (price) in the AS (NAS) market.

Models have been developed in which differentiated audit firms compete in the audit market. A few studies have also identified the institutional factors that affect such competition. Chan (1999) develops a two-period (three-stage) specialization model to demonstrate that the practice of “low-balling” is a natural consequence of competition among audit firms. This study adopts a variant of Hotelling's 1929 spatial competition model (a continuum of clients uniformly distributed along the unit interval $[0, 1]$). Bleibtreu and Stefani (2018) address the rotation issue by extending Salop's (1979) market matching model. The authors find that the effect of rotation on independence (importance of the audited firm) and audit market oligopoly depends on the audit firm's degree of specialization. Our model starts from a situation where the NAS provision restriction regulates the

differentiated continuous audit market. We apply Hotelling's model, as in Chan (1999), to the NAS market in addition to the audit market and assume the NAS provision restriction.

To the authors' knowledge, the theoretical study of auditing has yet to explicitly address decentralization. Aghion and Tirole (1997) points out that, under asymmetric information, decentralization is effective in some cases to incentivize agents. Here, we analyze the impact of the decentralization (centralization) of audit firms on audit quality in cases where a regulation prohibits the simultaneous provision of NAS (or where the regulation is removed).

This remainder of this article is organized as follows: In Section 2, we present our basic model for analyzing multidisciplinary audit firms under multiple professional services markets. In Section 3, we investigate a setting under current regulation. In Section 4, we analyze the effects of policy interventions: increased market competition and audit firm separation. Section 5 presents our conclusions and discusses the limitations of our model.

2 The model

There are two types of service markets, AS and NAS, that client firms potentially consume. An audit firm (A) and a consulting firm (C) provide only AS and NAS, respectively, and a multidisciplinary audit firm (M) operates in both the AS and NAS markets. We consider these services to be horizontally differentiated. In general, most audit firms and consultants have specialized or advantageous areas of expertise, and their services are unsuitable for all companies or industries. To capture these characteristics, we assume that clients are continuously and uniformly distributed on the Hotelling line of length 1. Each client firm's location is denoted by $x \in [0, 1]$, representing the type of client, such as the industry they operate in, firm's organization, or countries/regions.

The clients obtain utility by receiving the AS. As mentioned above, the difference in specialization between the service provider and client firm may affect the AS' benefit. The AS providers cannot deliver the same utility for all clients. Moreover, as previous studies assumed, the benefit increases with quality improvement efforts by the providers. Here, we denote the audit quality of

provider $i = \{A, M\}$ as e_i . Then, we assume that the client net utility of AS u^a is as follows:

$$u^a = v^a + \rho e_i - p_i - \tau|x - x_i^a|,$$

where v^a is the intrinsic value of AS, ρ is the marginal value of the audit quality improvement, p_i is the AS fee by firm i , x_i^a is the specialization of the provider i , and τ is the parameter value representing the magnitude of the specialization gap captured by $|x - x_i^a|$.

Next, we consider the NAS market. As in the AS market, the clients' utility from the NAS differs with the gap between the service provider expertise and client firms' type. Furthermore, we acknowledge that, in NAS, the service providers may improve the quality; however, to focus our discussion on the AS quality, we assume that the service providers do not invest in NAS quality (the results we show later are qualitatively not affected even if they can improve the NAS quality). Then, we can assume that the client utility of the NAS u^n is as follows:

$$u^n = v^n - f_j - \alpha|x - x_j^n|,$$

where v^n is the gross utility of the NAS, f_j is the NAS fee by firm $j = \{M, C\}$, and α is the parameter value of the effectiveness of the specialization gap captured by $|x - x_j^n|$. The client firms decide whether to purchase AS or NAS and, if so, from whom, considering the net utility of each service. Moreover, we normalized the utility when the clients do not buy the service to zero.

One may argue that the multidisciplinary audit firm M , which provides both the AS and NAS, can share knowledge within the firm. Then, if it has the expertise of a certain type of client firm in the AS market, it can also demonstrate it in the NAS market, which implies $x_M^a = x_M^n$. It may be better if firm M can provide the same quality of services to all firms in both markets. Still, as mentioned above, this is impossible because all markets are horizontally differentiated. Therefore, the firms A and C provide the AS and NAS, respectively, that are not specialized enough to be provided by firm M . Summing up, we assume that $x_M^a = x_M^n = 0$ and $x_A^a = x_C^n = 1$.

[Figure 1 about here.]

Under the current regulations, there is a provision restriction, as explained in the Introduction. In the model, we assume that the multidisciplinary audit firm M cannot provide NAS to the client firms who are using its AS.

Additionally, we assume that the profit of the provider i in AS is as follows:

$$\pi_i^a = p_i Q_i^a - \frac{k}{2} e_i^2,$$

where Q_i^a is the AS demand for firm i and k is the cost parameter for investment. Moreover, we assume that the profit of provider j in the NAS market is as follows:

$$\pi_j^n = f_j Q_j^n,$$

where Q_j^n is the NAS demand for firm j . The multidisciplinary audit firm M operates in both the AS and NAS markets. Thus, we can obtain the aggregated profit as follows:

$$\pi_M = \pi_M^a + \pi_M^n.$$

In the AS, we assume that the audit fee p_i is fixed to p since there is sufficient price competition, as previous studies show.

The timing of the game is as follows:

1. The providers in the AS market compete in the audit quality e_i .
2. The providers in the NAS market compete in the NAS fee f_j .

3 Analysis under current regulation

3.1 Demand for AS and NAS

First, we derive the AS demand for each firm. Let us define the indifferent client firm between M and A as x^a , that is,

$$\begin{aligned}v^a + \rho e_M - p - \tau|x^a - x_M^a| &= v^a + \rho e_M - p - \tau|x^a - x_A^a| \\ \Leftrightarrow v^a + \rho e_M - p - \tau x^a &= v^a + \rho e_M - p - \tau(1 - x^a),\end{aligned}$$

and we obtain

$$x^a = \frac{\tau - \rho(e_A - e_M)}{2\tau}.$$

Then, the demand for each firm is as follows:

$$\begin{aligned}Q_M^a = x^a &= \frac{\tau - \rho(e_A - e_M)}{2\tau}, \\ Q_A^a = 1 - x^a &= \frac{\tau + \rho(e_A - e_M)}{2\tau}.\end{aligned}$$

Since the provision restriction exists, firm M cannot supply the NAS to clients in $x \in [0, x^a]$, even if they prefer the service by M over that provided by C . Then, let us define the client type who is indifferent between buying the NAS by C and not buying as \hat{x} , that is,

$$0 = v^n - f_C - \alpha(1 - \hat{x}),$$

and we obtain

$$\hat{x} = \frac{-v^n + f_C + \alpha}{\alpha}.$$

The clients in $x \in [x^a, 1]$ can utilize the NAS by M if they prefer it. Then, let us define the client type who is indifferent between M and C is as x^n ,

$$\begin{aligned} v^n - f_M - \alpha|x^n - x_M^n| &= v^n - f_C - \alpha|x^n - x_C^n|, \\ \Leftrightarrow v^n - f_M - \alpha x^n &= v^n - f_C - \alpha(1 - x^n), \end{aligned}$$

and we obtain

$$x^n = \frac{\alpha - (f_M - f_C)}{2\alpha}.$$

If $x^n > \hat{x}$ holds, firm M 's provides the NAS exist ($Q_M^n > 0$ holds), and the condition holds when v^n is large enough. That is,

$$v^n > \frac{\alpha + f_C + f_M}{2}. \quad (1)$$

To simplify our analysis, we assume that (1) holds. Then, we can derive the NAS demand for each firm as follows:

$$\begin{aligned} Q_M^n &= x^n - x^a, \\ Q_C^a &= (x^a - \hat{x}) + (1 - x^n). \end{aligned}$$

[Figure 2 about here.]

3.2 AS quality and NAS fee in Equilibrium

Here, we derive the equilibrium AS quality and NAS fee. We first derive the NAS fee competition with given e_i by applying backward induction. The optimization problems of firm M and C ,

respectively, are as follows:

$$\begin{aligned} & \max_{f_M} \pi_M, \\ & \max_{f_C} \pi_C^n, \end{aligned}$$

and the first-order conditions are respectively as follows:

$$\begin{aligned} f_M &: \frac{\tau[\alpha - (f_M - f_C) - \alpha(\tau - \rho\Delta e)]}{2\alpha\tau} - \frac{f_M}{2\alpha} = 0, \\ f_C &: \frac{\tau[\alpha + (f_M - f_C) + \alpha(\tau - \rho\Delta e) - 2\tau(v^n + f_C + \alpha)]}{2\alpha\tau} - \frac{f_M}{2\alpha} = 0, \end{aligned}$$

where $\Delta e = e_A - e_M$. By solving, we obtain the equilibrium NAS fee:

$$\begin{aligned} f_M^* &= \frac{5\alpha\rho\Delta e + 2\tau v^n}{11\tau}, \\ f_C^* &= \frac{-\alpha\rho\Delta e + 4\tau v^n}{11\tau}. \end{aligned}$$

Next, we derive the equilibrium audit quality. Let us define the multidisciplinary and audit firm profits under $f_M = f_M^*$ and $f_C = f_C^*$ as π_M^* and π_A^* , respectively, and the optimization problem at this time is as follows:

$$\begin{aligned} & \max_{e_M} \pi_M^*, \\ & \max_{e_A} \pi_A^*. \end{aligned}$$

The first-order conditions are as follows:

$$\begin{aligned} \frac{\partial \pi_M^*}{\partial e_M} &= p \frac{\rho}{2\tau} - ke_M - \frac{5\alpha\rho}{11\tau} Q_M^{n*} - \frac{5\rho}{22\alpha} f_M^* = 0, \\ \frac{\partial \pi_A^*}{\partial e_A} &= p \frac{\rho}{2\tau} - ke_A = 0, \end{aligned} \tag{2}$$

where Q_M^{n*} is the NAS demand for the multidisciplinary firm under $f_M = f_M^*$ and $f_C = f_C^*$. Based on

the conditions, we can conclude the characteristics of the equilibrium audit quality e_A^* and e_M^* are as follows:

Proposition 1. $e_A^* > e_M^*$.

Improvements in AS quality, which increase demand for the AS and shrink the NAS market size, allowed to be supplied by the multidisciplinary firm due to the provision restriction. Then, the multidisciplinary firm has less incentive to improve AS quality to avoid losing the opportunity to sell the NAS.

4 Policy intervention for audit market

This section evaluates two policy interventions for the AS and NAS markets.

4.1 Increase competition in the AS market

This section considers two policies that intensify the AS market competition: i) deregulating the audit report content and ii) strengthening the management's responsibility for accounting irregularities. The former means that the regulatory authority requires less specialized content for the audit, and the AS providers can supply AS with higher values even if they are not specialized in the clients' field. In the model, this policy decreases τ . By some computations, we obtain the following proposition.

Proposition 2. e_M^* is decreasing (increasing) in τ when p is low (high) enough.

Proof. See Appendix.

Next, we consider the latter policy. Strengthening penalties by accounting deficiencies increases client firms demand for more high-quality AS, which can be captured by the increase in ρ in the model. Similarly to the above, we obtain the following proposition.

Proposition 3. e_M^* is increasing (decreasing) in ρ when p is low (high) enough.

Proof. *See Appendix.*

Our results suggest that the policy of simply intensifying quality competition in the AS market is meaningless and may have an unexpected side effect. This is because a policy to increase AS market competition means that multidisciplinary firms give up attempts to acquire clients in the AS market. To prevent this, policies are needed which do not force firms to stop competing, i.e., policies that improve profitability in the AS market by AS fee regulation.

4.2 Separation of the multidisciplinary firm

This subsection considers the effect of the separation of the multidisciplinary audit firm. We consider two effects of separation. One is the decentralization of the providers' decision-making. Without separation, the multidisciplinary audit firm maximized the total profit π^M . Meanwhile, under the separation, each section maximizes its own profit; that is, π_M^a and π_M^n are maximized separately. Second, the separation removes the constraint of the provision AS and NAS. This subsection analyzes the AS and NAS market competition in this environment.

Without any provision constraint, the clients purchase NAS from the preferred suppliers. Then, the clients in $[0, x^n]$ and $[x^n, 1]$ purchase NAS by firm M and C , respectively. Subsequently, the demand for NAS for each firm is as follows:

$$\begin{aligned}Q_M^{n'} &= x^n, \\Q_C^{n'} &= 1 - x^n.\end{aligned}$$

Moreover, the profit functions are the following:

$$\begin{aligned}\pi_M^{n'} &= f_M Q_M^{n'}, \\ \pi_C^{n'} &= f_C Q_C^{n'}.\end{aligned}$$

They maximize the profit function as follows:

$$\begin{aligned} \max_{f_M} \pi_M', \\ \max_{f_C} \pi_C'. \end{aligned}$$

We obtain the following first-order conditions:

$$\begin{aligned} f_M : \frac{\partial \pi_M'}{\partial f_M} &= \frac{\alpha - (f_M - f_C)}{2\alpha} - \frac{f_M}{2\alpha} = 0, \\ f_C : \frac{\partial \pi_M'}{\partial f_C} &= \frac{\alpha - (f_C - f_M)}{2\alpha} - \frac{f_C}{2\alpha} = 0. \end{aligned}$$

In this environment, the firms are symmetric. Then, the equilibrium NAS fee is as follows:

$$f_M^{**} = f_C^{**} = \alpha.$$

In the AS market, the demand structure is identical to the analysis in previous sections. However, the profit function of the divided firm changes. That is, its optimization problem is as follows:

$$\max_{e_M} \pi_M^a.$$

Then, we obtain the following first order condition:

$$\frac{\partial \pi_i^*}{\partial e_i} = p \frac{\rho}{2\tau} - ke_i = 0 \text{ for } i = \{M, A\}. \quad (3)$$

By comparing (2) and (3), we can summarize the analysis as follows.

Proposition 4. $e_A^* = e_M^{**} > e_M^*$

Audit independence has often been discussed in audit research. It is often argued that the intervention by the NAS section in the multidisciplinary firm's AS section hurts audit quality. Our analysis does not capture this factor but still implies the need for independence to improve audit

quality. Specifically, we suggest that the independence of AS and NAS can enhance AS quality to avoid the provision restriction and delegate the decision in the AS section.

5 Conclusion

The UK's audit reforms focus on competition, considering joint audits and market share caps. Meanwhile, regulators are trying to motivate audit firms to compete on quality through increased legal liability for directors and, in particular, revised professional auditing standards. The UK government is also proposing the decentralization of audit departments from audit firms and separate operations to promote competition and quality.

This study analyzes the incentives of multidisciplinary firms providing the AS and NAS. Our results demonstrate that their motivation for improving the AS quality is distorted under current regulations. This is consistent with prior research, which does not consider the providers' incentive distortion. Moreover, our analysis implies that some policies expected to intensify AS quality competition are inappropriate. We argue that multidisciplinary firm separation is suitable for correcting the incentive distortion since it allows them to avoid the provision restriction.

Furthermore, our results suggest that audit firm separation has benefits for audit quality which are not expected by regulators. Under current regulations, the NAS requirement distorts audit firm incentives. Audit firm separation will remove this incentive distortion. These results are consistent with the observation in prior studies that firms with higher NAS salience have lower audit quality (Meckfessel and Sellers, 2017), which theoretically strengthens these claims.

Appendix

Proof of Proposition 2

Proof. Let us define F as follows:

$$F := p \frac{\rho}{2\tau} - ke_M - \frac{5\alpha\rho}{11\tau} Q_M^{n*} - \frac{5\rho}{22\alpha} f_M^*.$$

By applying the implicit function theorem, we obtain:

$$\frac{\partial e_M^*}{\partial \tau} = -\frac{F_\tau}{F_{e_M}}.$$

The second-order condition ensures that $F_{e_M} < 0$. Moreover,

$$F_\tau = -\frac{\rho}{2\tau^2} p + \frac{5\alpha\rho}{121\tau^2} (Q_M^{n*} + f_M^*) + \frac{5\alpha\rho}{11\tau} \left(\frac{5\rho\Delta e}{2\tau} + \frac{5\alpha\Delta e}{11\tau^2} \right),$$

and the second and third terms are always positive.

Q.E.D.

Proof of Proposition 3

Proof. Again, by applying the implicit function theorem, we obtain:

$$\frac{\partial e_M^*}{\partial \tau} = -\frac{F_\rho}{F_{e_M}}.$$

Moreover,

$$F_\rho = \frac{p}{2\tau^2} p - \frac{5\alpha}{11\tau} \left[Q_M^{n*} + f_M^* + \frac{5\Delta e(1+2\alpha)}{22\tau} \right],$$

and observe that the second term is always negative.

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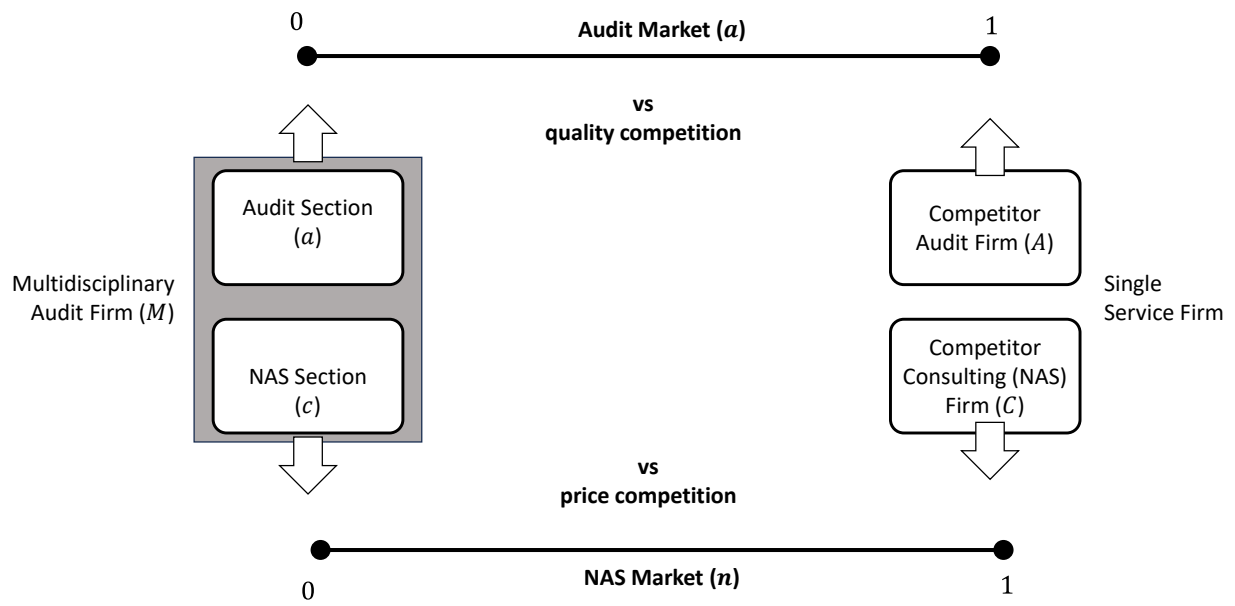


Figure 1: Market Structure

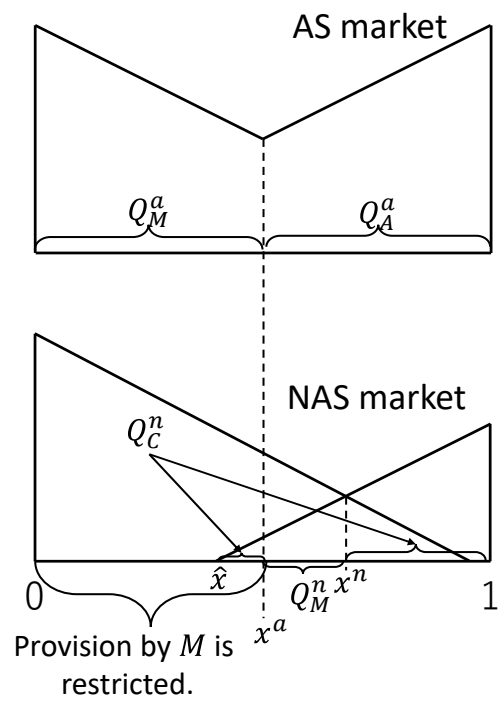


Figure 2: Demand under Current Regulation