

# Can unregulated Professional Business Services markets deliver effective competition?

Dr Paula Ramada and Rhys Williams<sup>1</sup>

**Abstract:** Professional business services (PBS) markets are subject to various forms of regulation which are purportedly unavoidable due to particular features of these markets, which are claimed to lead to ineffective competition and undesirable market outcomes. There is, nonetheless, significant debate in the theoretical and empirical literature about the motivations and effects of professional business services markets regulation.

This paper seeks to develop a theoretical framework on the basis of which to consider (a) the features that are relevant to PBS markets which prevent effective competition from developing and in what way, (b) how ineffective competition interacts with, and causes, undesirable market outcomes, and (c) how far market-based mechanisms can work to restore effective competition and prevent negative market outcomes.

## 1. Introduction

This paper presents a theoretical framework which synthesises relevant contributions from the existing literature, investigating what conditions must prevail in a given market for effective competition to develop and the extent to which certain features of PBS markets limit effective competition. As a result, such markets can experience adverse competitive and market outcomes.

Recognising that some of the identified features are common to various other markets, we examine market-based mechanisms and investigate the extent to which they can restore the necessary market conditions for effective competition to develop. This approach can inform targeted policies which can be used to promote particular market-based mechanisms, but also emphasises the limits of such mechanisms to tackle certain features of PBS markets. The specific PBS markets focused on in this study are architectural services, engineering, legal services and accounting.

To investigate how, and the extent to which, features that might be found in PBS markets limit competition, we take as a starting point a list of necessary or desirable elements that ought to be present in a given market in order for effective competition to develop. These conditions can be separated into two domains: customer-side and supplier-side.<sup>2</sup> On the customer-side, it is necessary

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<sup>1</sup> London Economics, London, UK

This paper originates from an ongoing study, entitled *competition and its economic outcomes in selected business services professions in the EU*, commissioned by the European Commission's Directorate General Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). The motivation for the study is to investigate the specific features of PBS markets that may inhibit effective competition and result in adverse competitive and market outcomes. In addition to the theoretical framework presented in this paper, the next stages of the study are to refine the methodology to assess the best-case scenario for competition in PBS markets (assuming the absence of regulation) and conducting an empirical analysis of the effects of regulation on competition. We note that the focus of this paper differs from, and is considerably more limited than, the focus of the main study.

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<sup>2</sup> In this paper, "customers" refers to the purchaser of the service and includes both individual and business customers. Furthermore, it should be noted that the service may be used by persons other than the customers, who are termed "users". Finally, the firms which provide services to customers are denoted as "suppliers".

that customers react to value for money (VFM). In order for them to react to VFM, they must be able to make themselves aware of the possible array of choices and assess and make comparison across these choices. This requires that there be low search and procurement costs. Additionally, customers must act upon this knowledge, which requires that they do not face high switching costs, that their choices are not encumbered by market segmentation and that they have an effective preference for suppliers offering higher VFM. On the supplier-side, it is necessary that low VFM suppliers lose market share to higher VFM competitors or new entrants. It must be the case that it is profitable to increase market share through offering better VFM, that low VFM suppliers are not protected by market segmentation and that suppliers have an incentive to innovate.

With the relevant criteria for effective competition outlined, we then examine the relevant features which can be encountered in PBS markets that are likely to result in a breakdown of effective competition. These features include:

- informational asymmetries, such as customers' inability to assess service requirements and expect quality;
- significant relationship-specific investments, by both customers and suppliers;
- multi-dimensionality of quality attributes and variability of customer preferences across these attributes;
- distorted demand behaviour arising from risk aversion, mandatory purchasing, and misalignment of 'buyer' and 'end-user' preferences;
- infrequent purchasing;
- low quality of service can cause significant negative externalities.

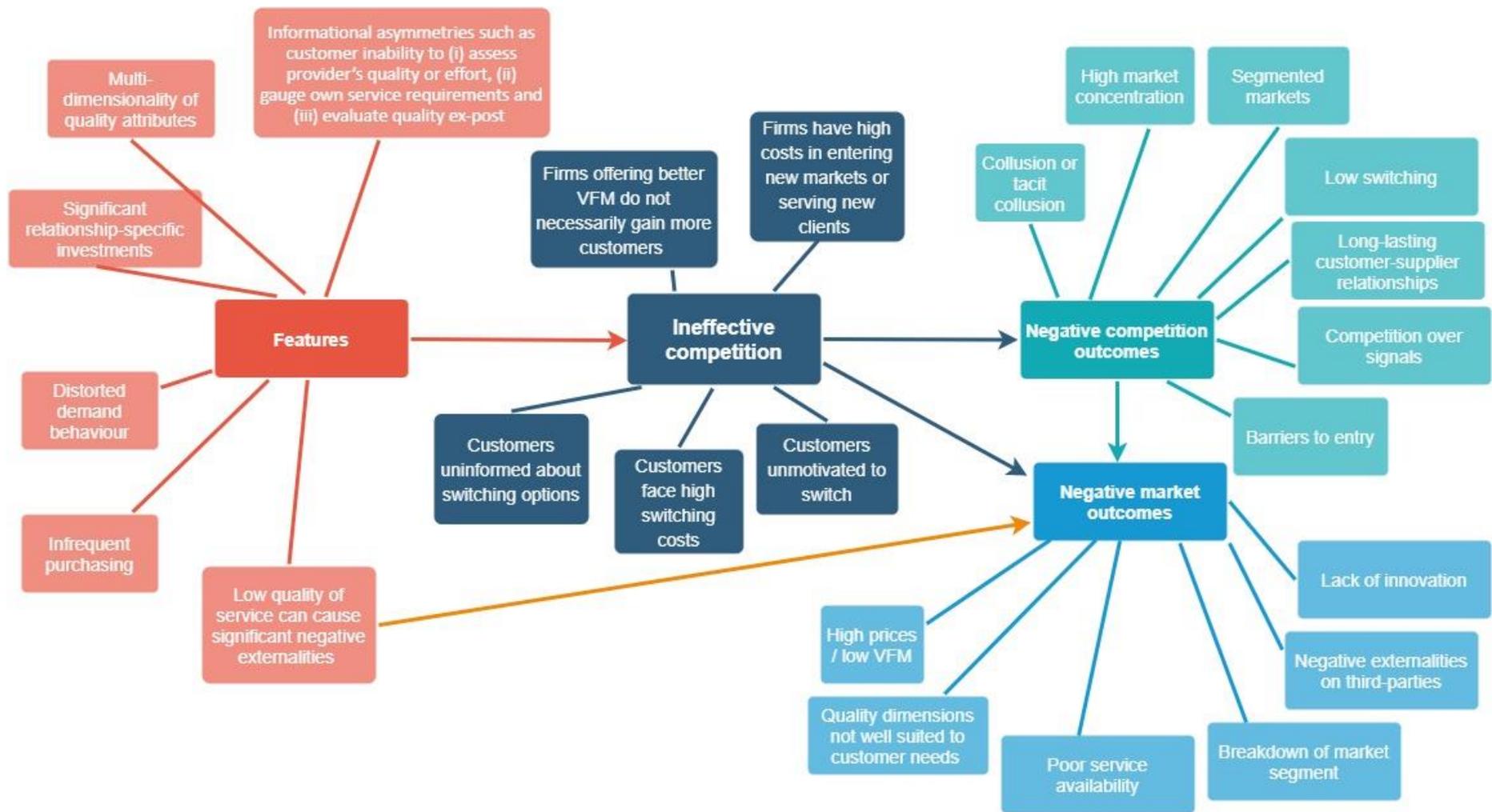
We link each feature to one or more of the requisite factors for effective competition that they are likely to affect and the mechanism through which this affects competition and market outcomes. An illustrative overview of this general framework is presented overleaf.

The advantage of this step is to focus attention on the actual effects of a certain market feature on competition. In this way, it delineates, as narrowly as possible, which, if any, elements of the competition mechanism may require addressing and can aid in designing solutions. Ultimately, this approach is a critique to sweeping interventions that may be suggested by looking at the problematic feature rather than its effects on competition and market outcomes.

It is particularly important to recognise that most of the specific features considered 'problematic' in the context of PBS markets, are in fact not uncommon and are present, to varying extents, in markets other than PBS. For example, a number of other markets are characterised by pervasive informational asymmetries, multi-dimensionality of product features and infrequent purchasing. Most of these markets have developed market-based mechanisms which are generally adequate to support the development of effective competition and resolve or limit the potential negative effects on market outcomes. Such mechanisms include reputational effects, contractual guarantees, the threat of litigation, standardisation, quality signalling, and digitalisation as a tool to disseminate information, facilitate standardisation, and widen market access. We analyse how these mechanisms can be applied to various PBS markets and evaluate their effectiveness in mitigating the impact of each feature discussed above.

The rest of the paper proceeds as follows, firstly, Section 2 considers the conditions required for effective competition to exist in a market. Secondly, specific features inherent to PBS markets are explained in Section 3, including how such features might result in effective competition breaking down. Ineffective competition is likely to lead to negative competition outcomes which likely also

leads to negative market outcomes (Section 4). The ability for market-based mechanisms to restore effective competition and mitigate the identified market failures on competitive and market outcomes, is explored in Section 5. Section 6 highlights work to date on applying the framework and presents a discussion on methods to measure market features, competition outcomes and market outcomes. Finally, Section 7 offers some concluding remarks.



## **2. What is effective competition and what general conditions does it require?**

There is no consensus in the economics literature about the meaning of the term ‘effective competition’. For our purposes, we shall consider effective competition to correspond to a market situation where customers are able to i) access information about available service choices that are relevant to them, ii) assess and compare these choices and determine how well they meet needs and iii) act on the information and respective assessment by moving away from low value-for-money (VFM) suppliers, towards higher VFM suppliers. In turn, suppliers’ incentives are such that informed action by customers drives firms to be rivalrous and to seek to win and retain customers by offering price and quality of service conditions which best suit customer needs.<sup>3</sup>

Several conditions are required for effective competition to develop, including on the customer-side and on the supplier-side. On the customer-side, customers must be informed and reactive:

- Customers are able, at reasonable cost, to make themselves informed about the options of services and suppliers that are available in the market and that are relevant to them; furthermore, they are able to assess and compare these options, in terms of value for money they deliver.
- Customers face low switching costs, so that they are able to react to the information gathered and assessed, translating that into choices that they make in the marketplace.
- Customers are motivated to switch so that they react to the different offers in the marketplace, leaving suppliers that offer low VFM in favour of higher VFM suppliers.

On the supply-side, firms must be incentivised to compete and be rivalrous:

- Suppliers offering better VFM are able to gain more customers so that firms compete amongst each other by providing services and service characteristics that are valued by users.
- Suppliers do not face high costs to enter new markets or to serve new customers so that firms offering low VFM to their customers can expect competitors to enter the market and vie for these customers.

Clearly, these ideal conditions are rarely all present in any real-world markets. However, it is helpful to describe what these conditions are in order to investigate the mechanism by which particular features of PBS markets (which we turn to next) might limit effective competition.

## **3. Features of some PBS markets and how they may limit effective competition**

Certain features, intrinsic to the nature of certain professional business services, may be present, to varying degree, in some PBS markets, and their presence is likely to prevent or limit the development of effective competition. These features can be grouped as follows:

- informational asymmetries, such as customers’ inability to (i) assess supplier’s quality or effort, (ii) gauge own service requirements and (iii) evaluate quality ex post,
- significant relationship-specific investments, incurred by both customers and suppliers,
- multi-dimensionality of quality attributes and variability of customer preferences across these attributes,
- distorted demand behaviour arising from risk aversion, mandatory purchasing, and misalignment of ‘buyer’ and ‘end-user’ preferences,
- infrequent purchasing,

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<sup>3</sup> This closely follows the UK energy regulator’s definition (Ofgem, 2019). This definition draws on early literature, including Clark (1940) and Sosnick (1958). Discussion can also be found in (Delp and Mayo, 2017).

- low quality of service can cause significant negative externalities.

We explore each of these features in turn, explaining how each might inhibit effective competition.

### *Information asymmetries*

Information asymmetries may arise in PBS markets because customers may be unable to (i) assess supplier's quality or effort *ex ante*, (ii) gauge own service requirements<sup>4</sup>, and (iii) evaluate quality *ex post*.<sup>5</sup> Outcomes of information asymmetry include under-provision, over-provision and over-charging (e.g. Kerschbamer and Sutter, 2017).

The first of these conditions implies that both the quality and the amount of effort that the supplier provides are often difficult to determine because the customer lacks both the information and the expertise to assess these inputs. It may also be the case that neither quality nor effort are proportionally related to output, such that merely observing the output does not allow the customer to determine the quality or level of the inputs. This gives the supplier an incentive to provide less input or behave opportunistically, potentially resulting in over-provision of the service treatment as well as over-charging (Bergh et al, 2019).<sup>6</sup>

Secondly, professional business services suppliers can be more qualified and better placed than their customers to assess the appropriate quality and level of provision for each customer in each situation (Sülzle and Wambach, 2005; Dulleck and Kerschbamer, 2006; Dulleck et al, 2011). The service supplier's expertise-advantage over its customers is often precisely the reason why customers contract the service from the supplier in the first place.<sup>7</sup> This particular form of information asymmetry allows the supplier to engage in over-provision of services.<sup>8</sup> Moreover, the customer's lack of expertise means that inefficient over-provision could in fact be reassuring, despite the extra services adding unnecessary cost. Similarly, the supplier may opt for under-provision, limiting the service elements delivered to those which are most profitable (Emons, 1997).

Thirdly, inability to assess quality *ex post* arises when the supplier has more information about the provision than the customer, who is unable to evaluate the service they received. The presence of this form of information asymmetry can result in over-charging and under-provision of treatment.

### *Impact on the conditions for effective competition*

Information asymmetry *ex ante* is likely to mean that customers are not well informed about characteristics and cannot compare across suppliers and, in consequence, does not satisfy the

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<sup>4</sup> In other words, they require both 'diagnosis' and 'treatment' (Emons, 1997).

<sup>5</sup> The latter two conditions are associated with the definition of *credence goods*. Credence goods can be defined as goods or services in relation to which (i) customers are unable to gauge the nature or level of service that they require, and/or goods or services in relation to which (ii) customers are unable to assess, *ex post*, the quality of the good or service that was actually delivered. The literature variously adopts either of these elements, and in some cases both, to define credence goods (for part (i) see, e.g., Darby and Karni (1973), for part (ii) see, e.g., Bonroy and Constantatos (2008), and for both (i) and (ii) see, e.g., Kerschbamer and Sutter (2017)).

<sup>6</sup> For example, in the case of a trial attorney, the input would be the time and resources dedicated to the case, which lead to the provision of a service which is the presentation of a defence. However, the outcome which the client observes, i.e. the sentence, is not necessarily indicative of the quality or level of inputs.

<sup>7</sup> Credence goods differ from experience goods, in the former it is not possible to evaluate quality *ex ante* or *ex post*, in the latter it is only possible to evaluate quality *ex post*.

<sup>8</sup> For example, in Ticino, Switzerland, the general population had 33% more of the seven most important operations than medical doctors and their families – suggesting over-treatment (Domenighetti et al, 1993).

criterion that customers are well informed to be able to switch suppliers. Such circumstances make it difficult for customers to select the best value for money supplier and so suppliers offering good value for money may not receive the same level of demand that they would receive in a competitive market with perfect information, thereby reducing the supplier's incentive to compete and be rivalrous.

Inability to judge effort input may result in sub-optimal input levels from service suppliers (under-provision). This could result in negative market outcomes, such as low quality, without customers being aware that they are receiving a sub-par service. As a result, customers will not be informed to switch to suppliers that are more honest or provide greater effort. If service quality cannot even be ascertained ex post, then low-quality suppliers are again unlikely to lose custom to better quality suppliers and thus good-quality suppliers are not rewarded by greater custom. This inhibits competition (low switching) and can, in the extreme, result in the market breakdown of certain market segments (Akerlof, 1970).<sup>9</sup>

### *Significant relationship-specific investments*

There are significant relationship-specific investments made by both suppliers and customers for a number of professional business services. This stems from the underlying heterogeneous nature of certain services, which often have to be specifically tailored to the requirements of the customer (and therefore cannot be standardised or homogenised). Importantly, such costs, both on the customer- and supplier-side, are typically made up-front, which can result in efficiencies for customers which repeat business, allowing the recoupment of the initial investment. This often results in the development of strong customer-supplier relationships, as it can be costly for either supplier or customer to exit the relationship once initial costs have been made (see competition outcomes). It is usually unlikely that such customer-specific investment can be transferred to other customers, even when they are of a similar nature, meaning that these costs are largely sunk. Furthermore, the heterogeneous nature of the offered services can often mean that a tendering process is required, further adding to (sunk) costs.

On the supplier-side, there is a high cost to obtaining customer-specific knowledge that may be required to provide the necessary service. This includes costs associated with understanding customers' needs, their business and the scope of the project.<sup>10</sup>

High relationship-specific investment requirements (particularly on the supplier-side) can mean that there are cost efficiencies from the same supplier both diagnosing and treating within the same engagement. Such cost-efficiencies typically arise due to the high cost of diagnosis (related to the need to invest in customer-specific knowledge) which is often highly compatible with treatment provision.<sup>11</sup>

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<sup>9</sup> In other words, the customer's difficulty or inability to ascertain quality could incentivise suppliers to reduce the overall service quality but charge the "average" market price, in a race to the bottom on quality that could drive high-quality suppliers out of the market, ultimately leaving only low-quality suppliers or result in complete market breakdown (Akerlof, 1970).

<sup>10</sup> For instance, an audit requires a detailed knowledge of the customer's financial and business operations and the final audit must consider all the exact details of the customer, many of which are unique to that one customer. There are thus large investments to a supplier taking on new customers in such markets, as they have to invest substantially in acquiring customer-specific knowledge.

<sup>11</sup> For instance, in law, there are often economies of scale from diagnosing the issue (e.g. determining which laws may have been infringed and devising a defence) and then using this diagnosis to develop/enact the treatment (e.g. use the defence in court).

On the customer-side, the cost is associated with undertaking effort to hire a supplier, which may include searching amongst suppliers, tendering the service requirement and evaluating the responses, and then “on-boarding” suppliers and giving them the required information necessary to provide the service.<sup>12</sup>

#### *Impact on the conditions for effective competition*

As alluded to above, high relationship-specific investment can result in contracts that last a sufficiently long time to be able to recoup the customer-specific investment. As a result, customers may be tied to a particular supplier for a fixed period of time and may be unable to switch to other suppliers (or face a cost from doing so), even if competitors provide better value for money. Whilst such contracts are likely to have break clauses if the supplier does not fulfil certain obligations, this does not incentivise the supplier to provide the best VFM services but instead ensure that service quality does not fall below a minimum level which would trigger the break clause. On the other hand, the desire for a given supplier – who has invested in the customer-specific knowledge – to provide good value for money may be increased if they wish to receive future business from the customer. In this case, high relationship-specific investments may incentivise suppliers to provide high effort in order to win the repeat business of a captivated customer.

Similarly, high supplier-specific investments may result in customers being less willing to switch to other suppliers as they will have to undertake investment costs associated with a new supplier. Such customers may stick with a supplier that offers them less value for money than competitors, simply because it would be costly to switch; thereby not rewarding competitors that offer better value for money.<sup>13</sup>

Tailored services often need to be tendered or individually inquired about, which makes it difficult for customers to be well-informed and to compare against a number of suppliers. There are thus high search costs associated with heterogeneous service requirements, potentially reducing consumer willingness to switch. Furthermore, tendering imposes a cost on suppliers which may prohibit entry or fierce competition, particularly if the probability of tender success is seen as low by non-incumbent suppliers.

Cost efficiencies between diagnosing and treating are likely to lead to both functions being provided by a single supplier. Combined with the information asymmetry that the customer may be unaware of how much service provision they require, this can lead to a situation of deceptive over-treatment, whereby customers are provided with more of a service than they need or want or are overcharged for a particular service. In markets where diagnosis and treatment are separated there is little incentive for the diagnoser to suggest that the customer engages with more treatment than is necessary because, under non-collusive conditions, they do not benefit from suggesting greater treatment. On the other hand, when the same supplier is both diagnosing and treating, they have an incentive to over-treat. The effect on competition is that dishonest and deceptive suppliers are likely to be rewarded, at the detriment of other, more honest and “better” suppliers. This is related to the lack of a suitable punishment device which would act to reward more honest suppliers and punish (through lack of custom) less honest suppliers.

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<sup>12</sup> For instance, in the auditing sector, the customer may need to put out a tender to fulfil its service provision needs, evaluate the tender documents submitted by suppliers and once having selected a supplier, ensure that the auditor has all the relevant information to fulfil the service requirement. This can often involve significant portions of management time which can be costly for the customer.

<sup>13</sup> For this reason, some suppliers offer discounts to customers for switching, or “low-balling” the price of service provision in early years (Keune et al, 2015).

### *Multi-dimensionality of quality attributes*

In addition to being difficult to measure and observe, quality is also highly multi-dimensional in PBS markets. Crucially, different customers are likely to have different preferences across quality dimensions.<sup>14</sup> Such dimensionality can exacerbate information asymmetries.

Relatedly, professional business service provision is often highly heterogeneous as customers have different requirements and preferences. This can manifest itself in high service differentiation, with multiple market segments existing to cater to the different needs of customers.

### *Impact on the conditions for effective competition*

If customers have different preferences for quality, then this may make comparison more difficult which will likely reduce switching behaviour. As such, suppliers offering less value for money can profitably remain in a sector at the expense of more competitive suppliers which may not acquire more custom despite their higher quality, thereby lowering supplier incentives to compete fiercely.

The heterogeneous requirements of professional business service provision exacerbates issues associated with information asymmetries and makes it more difficult for customers to compare products. Homogeneous services are rarely offered in markets with high service differentiation and this makes it harder for customers to be informed to switch to a higher VFM supplier.

Segmented markets can make it difficult for suppliers to operate across a number of market niches, particularly if they have to differentiate themselves to enter a particular market segment. As a result, there might not exist a sufficient number of competitors to switch to, as few suppliers may provide the actual service that a given customer wants or needs. Service differentiation can also give rise to monopolistic power when there are fewer suppliers in a given market segment. With fewer suppliers, there may be less of a competitive incentive to be rivalrous.

Service differentiation may also give rise to barriers to entry, as customers may be unwilling to switch between niche suppliers and there may be a smaller customer base in which to supply to, thereby making it more difficult to offset fixed costs associated with entry.

### *Distorted demand behaviour*

Demand may be inelastic when customers are unable to reduce their demand for a particular service, irrespective of the value for money offered by service suppliers. Conversely, customers may be unable to increase their demand for a service provided by a high value for money supplier. This feature can occur because of the discrete nature of services provided in some PBS markets and the impossibility of breaking up the quantity of provision.<sup>15</sup>

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<sup>14</sup> For instance, in the accountancy sector, some customers will have a strong preference for a supplier's international network/capability, others will prefer trustworthiness, others may prefer local suppliers.

<sup>15</sup> For instance, a customer which requires the services of an engineer to design a (single) bridge is unlikely to be able to increase their demand for that engineer's services unless they require more bridges to be constructed, which is unlikely. Similarly, a customer that requires annual accounting services to balance their books is unable to purchase more of the service from a good value for money supplier, as the service is only required annually.

Furthermore, in a number of PBS markets there is a legal requirement that the service is purchased (*statutory, or mandatory, purchasing*). Such a requirement means that the outside option of not purchasing does not exist for certain services.<sup>16</sup>

It is also the case that, in certain PBS segments, the entity purchasing the service is not the end user of the service and so may buy according to parameters that do not maximise value for ultimate end-users. This can lead to an *incentive compatibility* problem where the purchaser has an incentive to employ a particular supplier which is not the same supplier that the end-user would choose.<sup>17</sup>

Finally, demand behaviour may be affected by risk aversion in situations where a poor-quality service has the risk of very negative consequences. This may lead to customers being extremely conservative, never risking searching for new suppliers and thus becoming unreactive to prices.

#### *Impact on the conditions for effective competition*

If customers have no choice but to purchase a service then demand is likely to be made less responsive to changes in price and customers will have less of an ability to switch (demand is made more price inelastic). When customers are unable to alter their demand requirements, even in the face of high quality service provision, they are unable to reward good value for money suppliers and so there may be less of an incentive for suppliers to compete fiercely with one another.

Moreover, given the indivisible nature of certain professional business services and the fundamental inelasticity of demand, customers will be unable to alter their demand or level of purchases in response to the overall adequacy of service provision.

The incentive compatibility issue can also result in suppliers charging higher prices, particularly when the entity commissioning the service supplier is not the entity responsible for paying for the service. Again, this discourages effective competition by rewarding uncompetitive suppliers. This can also result in a negative externality (discussed below) if the buyer does not prefer a certain quality feature but this feature has important external value (e.g. safety for third-party users).

#### *Infrequent purchases of services*

Certain customers may be unlikely to purchase professional business services frequently and hence lack experience in assessing the quality and value for money of services on offer (OECD, 1999). Relatedly, search costs associated with finding out information on the available offer would be high relative to the total (lifetime) value of the purchase when the frequency of purchase is low.

#### *Impact on the conditions for effective competition*

If customers purchase infrequently then they are less likely to possess the necessary knowledge to make informed choices with respect to value for money. This means they might not necessarily select the highest VFM supplier and thus, such suppliers might not benefit through higher custom and the ability to build their reputation.

Moreover, if a given customer does not often purchase a service, then there will be less opportunity for that customer to “punish” suppliers that offer poor value for money. That is, when purchases are

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<sup>16</sup> For instance, for large public interest entities it is typically mandatory to purchase auditing services each year. Similarly, many firms face legal and accounting requirements and must fulfil certain conditions with respect to architecture and engineering.

<sup>17</sup> For instance, in the audit market, firms who purchase audit services may prefer suppliers to inflate their financial valuations, whilst users (investors) value an accurate assessment and independence of auditors.

frequent, competition works by customers switching to better value-for-money suppliers, thereby encouraging suppliers to improve. When purchases are infrequent there is no such mechanism and poor value-for-money suppliers can survive in the market.

#### *Low quality of service can cause significant negative externalities*

A separate feature, which is less related to the functioning of effective competition but is nonetheless prevalent in PBS markets is the inherent feature that poor service quality can result in a serious cost to both customers and society (third parties) as a whole (Carroll and Gaston, 1981). Fundamentally, service failure may be more important in PBS markets due to the specialised nature of the service, the importance of such services and the information asymmetry which may result in increased probability of service failure. Poor service, or service failure, can result in large costs for customers and third parties (negative externalities).

Customers are unlikely to consider the effect of quality on third parties, who rely on the service outcome, and may therefore select a lower quality supplier or a lower quantity of service provision than the social optimum (Barbou des Places, 2006). This feature is related to the multi-dimensionality of quality and the incentive compatibility concern discussed above. These externalities can give rise to serious welfare losses in unregulated or improperly regulated services markets.<sup>18</sup>

In other words, because quality is highly multi-dimensional in PBS markets, customers may choose a particular dimension of quality that is incompatible with the dimension preferred by the user of the product, or other third parties. This incentive compatibility issue can lead to poor-quality suppliers being selected which results in service failure (along a dimension that the purchaser does not care about) and thus a negative externality to customers. Such service failures can impose a large cost on society given the importance of some professional business services.

#### **4. Effect on competition and market outcomes**

##### *Competition outcomes*

Ineffective competition leads to undesirable competitive outcomes such as low levels of switching, long-lasting customer-supplier relationships, supplier's competing over signals rather than service delivery, high barriers to entry, collusive behaviour, high market concentration and segmented markets. We consider each of these outcomes in turn and discuss how ineffective competition results in such outcomes.

*Low levels of switching* – this outcome arises through customers being uninformed about switching costs, customers facing high switching costs and customers being unmotivated to switch. All three conditions directly result in low levels of switching behaviour.

*Strong customer-supplier relations* – this outcome can arise as a result of customers being uninformed to switch, unmotivated to switch and facing high switching costs as all three conditions result in customers being more likely to remain with their current supplier, rather than changing to a new supplier. In other words, on the customer-side, customers prefer to stick with the same supplier, rather than switch to a new/different supplier, leading to the development of strong and long-lasting relationships. On the supplier-side, if firms which offer better VFM do not gain more customers and

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<sup>18</sup> For example, an audited firm whose investors rely on an auditor's report in order to make key decisions may opt for a lower quality audit than would be optimal (OECD, 1999).

if there are high costs or barriers to entry then there is unlikely to be much turnover in the suppliers that customers can engage with, thus reinforcing strong customer-supplier relations.

*Competing over signals rather than value for money* – as a result of customers being uninformed about switching options, suppliers may find that it is more effective to signal their (high) quality to customers through spending on advertisement, lavish offices and well-paid employees with “fancy” qualifications. A large proportion of this spending may not increase the service provision or quality of service received by customers but is used solely to attract customers who are unable to switch on characteristics actually associated with VFM.<sup>19</sup> This can be considered a negative outcome as customers do not benefit from such signalling and are likely to face higher prices as a result.

Similarly, the condition that firms offering higher VFM do not attract more customers can also result in suppliers competing over signals rather than VFM.

*High barriers to entry* – arise due to the inability or unwillingness of customers to switch suppliers, which makes it harder for new entrants to obtain customers, reducing the expected profitability of entry. Furthermore, new entrants that offer better VFM are unlikely to obtain new customers and so will not enter the market. Obviously, high costs to enter a new market and obtain customers directly corresponds to higher entry barriers.

*Collusive behaviour or tacit collusion* – there may also be competitive concerns arising from *tacit or overt collusion* which may arise because ineffective competition can make collusion easier and tacit collusion can occur when suppliers do not compete fiercely with each other.<sup>20</sup>

*High market concentration* – is associated with firms having high costs in entering markets and serving new customers, which results in limited changes to the number of suppliers. Furthermore, a general condition of low switching is likely to reinforce existing market concentration and is unlikely to result in churn from market entry or exit.

Whilst these two conditions explain the persistence of market concentration, they do not directly explain how market concentration can reach high levels. Instead, this question can be answered by relying on the aforementioned features that are prevalent in such markets. In particular, significant relationship-specific investments and multi-dimensionality of quality attributes (especially service differentiation) can be used to explain observed high market concentrations.

*Segmented markets* – a final competition outcome that is observed as a result of PBS features is market segmentation. However, like high market concentration, this outcome differs from the other outcomes in that it is not necessarily associated with ineffective competition but arises through the features of PBS, namely from multi-dimensionality of quality attributes and service differentiation.

In addition to these direct associations between ineffective competition and competitive outcomes, it should also be noted that negative competition outcomes can reinforce one another. For instance, the outcome of low switching levels acts to reinforce barriers to entry, as new entrants may not be

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<sup>19</sup> Whilst there may be some pecuniary benefits from signal investing – hiring highly experienced staff may have positive benefits in terms of the quality of service provision – it is generally the case that customers do not benefit as much as if suppliers competed directly on value for money.

<sup>20</sup> In some PBS markets it may be likely that the number of suppliers is low and stable, and market participants are well-known to each other, which could allow suppliers to monitor behaviour and sustain collusive outcomes. Collusion is also more likely in markets where there is ‘multi-market contact’ – for instance, several competing suppliers operating in different market segments – and where suppliers have similar market shares and similar cost structures.

able to attain a sufficient customer base to maintain profitable operations, whilst high barriers to entry is likely to cause the persistence of high market concentration.

### *Market outcomes*

Ultimately, the purpose of well-functioning markets is that they deliver good outcomes for customers. This includes low/fair prices, high quality, high availability of suppliers, innovation and a lack of negative externalities. Such outcomes are unlikely to be observed in a market which lacks effective competition and is associated with negative competition outcomes. The channels through which ineffective competition can affect market outcomes, in addition to the effect of negative competition outcomes is explained in more detail below.

*High prices*<sup>21</sup> - when suppliers do not have an incentive to compete fiercely with one another then high price suppliers can remain in the market, and obtain customers, without needing to reduce price. Suppliers are unlikely to have an incentive to compete on price if customers are not informed to switch, are not able to switch or alter their demand or are unwilling to switch.

In addition to ineffective competition resulting in higher prices, this outcome may also arise indirectly as a result of the negative competitive outcomes, such as from tacit or overt collusion, which may be more likely in the absence of effective competition. Similarly, the competitive outcome of competing over signalling, rather than actual service provision and value for money, is likely to result in higher prices for customers. High barriers to entry and high market concentration can also be associated with high prices.

*Lower quality* - in a similar fashion, if suppliers do not have an incentive to compete and be rivalrous with one another then they have little incentive to compete across quality dimensions in order to obtain demand. Likewise, poor quality suppliers are able to retain customers and will face little pressure to increase their quality provision. On the other hand, (naturally) high quality suppliers will not see additional custom from being high quality, which may induce them to reduce their quality as high quality provision is likely to be costly. This may mean that (naturally) high quality suppliers reduce their effort input given the lack of competitive drive. Or it may be the case that they are driven out of the market by lower quality suppliers who can charge a slightly lower price, thereby encouraging a race to the bottom in terms of quality provision.

*Lower availability of provision* - with fewer suppliers operating in a given market segment, customers may find it difficult to obtain a supplier that has availability to meet the customer's demand. In extreme cases, customers will not be able to find any suppliers willing to engage in certain projects, depending on how tailored the project is.

It might be the case that suppliers do not wish to take on new customers (i) due to existing workloads<sup>22</sup>, (ii) where there might be conflicts of interest from taking on different customers<sup>23</sup>, or

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<sup>21</sup> A deadweight loss may arise from prices prevailing above the competitive level in that certain individuals are priced out of being able to afford a certain service. This is socially undesirable and is further exacerbated by the fact that the burden of deadweight loss falling on customers with lower incomes, with resulting distributional consequences that are undesirable. Furthermore, higher prices will have a knock-on effect in the final goods market, where prices are also likely to rise given that professional business services serve as an intermediary good.

<sup>22</sup> Suppliers may have constrained supply capacity and so may not be able to take on new customers given their existing workload or may only be able to offer their services at an inconvenient date in the future. In a well-functioning market new suppliers would enter the market to fulfil unsatisfied demand.

(iii) when the service supplier offers the same customer different services and is not able, or willing, to offer another service simultaneously.<sup>24</sup>

Therefore, ineffective competition could result in a lack of service supplier availability, particularly when supply constraints arise and when conflicts of interest arise. This is particularly relevant for PBS markets, where conflict of interest is often a prominent consideration given the nature of the services offered. Furthermore, there are often high barriers to entry and bottlenecks which constraint supply.<sup>25</sup> On the other hand, existing suppliers may still have an incentive to expand their operations to take on new customers if it results in higher profitability.

*Breakdown of market segments* – a further market failure which may arise in PBS markets is the breakdown of certain market segments, in particular, certain segments for high-quality service provision. This arises in a similar manner to the ‘market for lemons’ (Akerlof, 1970) whereby customers that are unable to verify claims of high quality by sellers have a reduced willingness to pay which may be low enough to deter all ‘high quality’ suppliers from engaging in the market. The result is that only low quality suppliers remain in the market in a race to the bottom in terms of service quality provision. Under such an outcome, the market for high-quality service provision would not exist and so customers would either not purchase or would be forced to purchase a low quality option.

*Lack of innovation* - ineffective competition is likely to reduce the competitive pressure for suppliers to innovate, given that suppliers do not have an incentive to compete fiercely with each other. Innovation and investment in technology can take the form of offering new products and services or offering the existing services at a lower cost through supply-side efficiencies and improvements in production techniques which would drive down prices in competitive markets (depending on the rate of pass-through to customers).

It might also be expected that innovative ideas comes from new and expanding suppliers, rather than incumbents. Therefore, the (negative) competitive outcome of lack of entry and market churn may result in lower levels of innovation than would be the case in a more competitive market.

## **5. The role for market-based mechanisms in strengthening competition and improving market outcomes**

Various market-based mechanisms exist which can, to some extent, prevent or limit the negative effects of particular market features on the development of effective competition. Such mechanisms include reputation, contractual guarantees, service testing, liability, standardisation of service, separation of ‘diagnosis’ and ‘treatment’, complex payment schedules, and digital solutions.

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<sup>23</sup> For instance, if the customers are themselves businesses which compete with each other, then the same service supplier may not be able to work for both customers.

<sup>24</sup> For instance, in many countries, audit suppliers are unable to offer the same customer both audit and non-audit services. There is thus a legal impediment from the same supplier offering both services to the same customer. That supplier may not be willing to forgo audit revenue in order to provide the customer non-audit services (or vice versa), thereby limiting service provision.

<sup>25</sup> Such bottlenecks largely arise due to the length of training required to employ additional employees, who are often highly specialised and require consumer- and firm-specific knowledge.

## *Reputation*

Reputation-based mechanisms disseminate information about the quality of supplier and service provision to potential customers. Methods for this information dissemination include word of mouth, reviews and quality ratings by former customers, and third-party endorsements from organisations that have developed to aid in information disclosure and dissemination (Bergh et al, 2019). For instance, consumer advocacy groups may issue advice on the quality of certain services or suppliers. They – along with other institutions – may also provide accreditation/certification schemes to verify that a supplier has achieved certain credentials and may produce rankings of suppliers (Feddersen and Gilligan, 2001).

Digital platforms such as comparison websites have increased in importance in recent years and greatly facilitate information dissemination thus potentially enhancing the power of reputational mechanisms. Nonetheless, not all comparison sites and digital platforms are reliable sources of information, some lacking systematic information collection and being possibly subject to manipulation.

Suppliers are also able to influence their reputation not only through providing good value for money and hiring well qualified and experienced staff, but also by signalling their quality through advertising and spending, for example, on extravagant offices. Spending on this type of ‘signalling’, although possibly informative, may be wasteful and thus costly for customers.

### *How can reputation overcome PBS features and enhance effective competition?*

Reputation-based mechanisms help to improve customers’ information about ex ante aspects of service quality and effort (Roberts, 2003), and they are particularly valuable in disseminating information in markets where customers make infrequent purchases.

Reputation incentivises suppliers to satisfy customers, even if they know that the same customer will not repeat purchase from them, as the supplier may receive future business from other customers that have received a positive recommendation.

If the service is purchased frequently and the service is not a perfect credence good then reputation can be used within a customer-supplier relationship and may encourage customers to purchase from suppliers which have provided value for money in the past. This incentivises suppliers to provide a high quality service to avoid losing customers (Resnick and Zeckhauser, 2002).

### *How effective is reputation in PBS markets and under what circumstances would it not be useful?*

Reputation effects can promote effective competition by rewarding suppliers who have the most satisfied customers with more demand and a greater willingness to pay for their services.

On the other hand, the lack of an established reputation may act as a barrier to entry, thus limiting competition from potential entrants. Relatedly, if reputational effects are strong, suppliers may have an incentive to spend on signalling, ultimately increasing costs to customers and entrenching barriers to entry.

Furthermore, reputation-based mechanisms may not be effective when the quality of service has multiple dimensions and customers differ in their preferences over these dimensions, or when the market is highly segmented and services are highly heterogeneous and therefore difficult to compare across segments, or if customers are unable to assess quality even after delivery of the

service. In all of these situations, a particular customer's experiences provides limited information on what a different customer might be likely to experience with the same supplier.

These features – multi-dimensionality of quality attributes, service differentiation and inability to assess quality of service ex post - are ubiquitous in PBS markets which suggests that there may be limits to the effectiveness of reputation-based mechanisms to restore the conditions for effective competition in PBS markets.

Consumer groups and similar organisations can play a role but their efficacy depends on the reputation earned by certifiers (d'Andria, 2013). There is theoretical evidence to suggest that certification (a form of reputation) may lead to overinvestment in signalling and could therefore be inefficient<sup>26</sup> compared to a situation without certification (Shapiro, 1986).

The effectiveness of quality signalling relies on both its credibility and on the ability to use proxies to measure quality (d'Andria, 2013).<sup>27</sup> Whilst such campaigns can be highly successful (Ekelund et al, 1995), such advertising may not accurately signal quality, so in markets with high information asymmetries there may be credibility concerns. Relatedly, if reputation can be manipulated by suppliers, then customers may be less inclined to believe reputation unless they believe it is credible or can be verified.

### *Contractual guarantees*

With contractual guarantees, suppliers promise to offer a refund, pay compensation, or offer to resolve the problem if service is assessed as being low quality. Such guarantees are intended to increase customer confidence in the supplier, because even if they select a poor supplier there is a remedy to mitigate customer harm.

### *How can contractual guarantees overcome PBS features and enhance effective competition?*

Guarantees can remove the customer's uncertainty caused by information asymmetry. Customers do not know whether a supplier is of high quality and may not purchase through such a supplier for fear that the service provision will be poor. Contractual guarantees can be used to reduce such fear, as customers will be able to recoup their cost, or are guaranteed a resolution in the case of poor provision. Moreover, contractual guarantees are often costly to provide, particularly if the service supplier is *actually* low quality. It might therefore be expected by customers that only high quality suppliers would make such guarantees and hence contractual guarantees may overcome asymmetries in information by signalling high quality suppliers/provision.

### *How effective are contractual guarantees in PBS markets and under what circumstances would it not be useful?*

Contractual guarantees can be used if quality can be assessed ex post, i.e. the service is not a credence good. Understandably, there are issues surrounding the definition of "low quality" defined in the contractual guarantee and this would need to be well-specified.

The more difficult it is to define "low quality" the less effective are such guarantees as resolution would not be automatic but may involve legal wrangling. On the other hand, contractual guarantees may be combined with reputational effects and a supplier may acquiesce and provide the

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<sup>26</sup> Efficiency in this paper refers to 'Pareto efficiency', a situation where no individual can be made better off, without another individual being made worse off.

<sup>27</sup> For instance, lawyers could advertise their success rate in courts (d'Andria, 2013).

contractual guarantee (e.g. refund), even when the supplier does not believe quality provision is low, in order to maintain reputation.

Relatedly, contractual guarantees can be used to attenuate negative effects associated with opportunistic behaviour encouraged by the difficulty in evaluating effort input (Bergh et al, 2019; Eisenhardt, 1989). These guarantees can improve quality directly – as there is a cost to poor quality provision – and may improve competition by reducing reliance on reputation and trust (although, reputation and trust may still be used and combined with contractual guarantees). This may encourage market entry and expansion and result in higher switching and a break down in customer-supplier relationships to the benefit of new and expanding competitors.

### *Service testing / trials*

Suppliers may be able to offer potential customers a trial or test of the product / service to signal quality to would-be customers who can ensure the product / service meets their needs before committing to purchase. Such precommitments can be made by suppliers to demonstrate to customers that the supplier is trustworthy and engaged and that the product / service is suitable for the customer's needs (Bergh et al, 2019).

Service testing is not very common in professional business services, but examples would be free initial consultations with lawyers and discounts offered to new clients by some professional firms.

### *How can service testing / trials overcome PBS features and enhance effective competition?*

Service testing can provide customers with information about the quality of the supplier and allow them better to gauge the adequacy of the services to their needs. This can lead to more informed customers who will be better placed to compare suppliers and select those who offer better value for money. Service trials can therefore encourage customers to switch suppliers and thereby reduce an important barrier to entry.

Furthermore, because service testing / trials are costly and may reveal information, the fact that suppliers offer them may indicate (or signal) to customers that the supplier is confident in their product/service, regardless of whether the customer actually engages in the trial themselves.

### *How effective is service testing / trials in PBS markets and under what circumstances would it not be useful?*

Service trials can be effective only if the supplier or the service can in fact be trialled. This is unlikely to work in markets where services are highly differentiated and customer-specific. It would therefore be too costly for a supplier to offer a trial, as they would need to tailor the service towards individual customers who may not purchase from the supplier, thereby resulting in large sunk costs. Moreover, for infrequently purchased services, a service trial results in the customer no longer requiring the service for possibly long periods of time.<sup>28</sup>

However, there might be certain services within PBS markets where trials could be used to reduce information asymmetry, increase switching and encourage suppliers to compete more aggressively.<sup>29</sup>

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<sup>28</sup> For instance, if an accountant offers a trial service to a customer and completes a tax return, that customer no longer needs the service until it next needs to file a tax return.

<sup>29</sup> It might, for example, be expected that trials of accounting software could be one such market where trials could be successfully used.

## *Liability*

Liability corresponds to service suppliers being legally responsible for negative customer outcomes attributable to their services. In markets where liability is enforceable suppliers typically purchase liability insurance, which pays out in the case of a claim for damages against service failure.

### *How can liability overcome PBS features and enhance effective competition?*

Liability operates by creating a cost, or the risk of a cost, to suppliers of low quality or of insufficient level of services (Dulleck et al, 2011). If effective, a liability regime may reduce the risk that customers encounter low quality suppliers, improving their ability to compare suppliers and to consider switching; and it may encourage suppliers to compete on service features that matter more for their customers.

An enforceable liability regime often leads suppliers to contract liability insurance. If a supplier has repeated claims against their services, their cost of liability insurance increases, which furthers the deterrent properties of the liability regime.<sup>30</sup>

### *How effective is liability in PBS markets and under what circumstances would it not be useful?*

The effectiveness of liability as a mechanism to restore the conditions for effective competition depends on service outcomes being verifiable and the liability being enforceable. Verifiability implies that customers, and at least some third party, are able, ex post, to observe and verify the type and quality of the delivered service. Verification is not always possible or may be extremely costly.<sup>31</sup>

Enforceability implies that, if a supplier is found to have been at fault, they will incur significant costs in compensating their customers. This requires that enforcing institutions exist and operate effectively.<sup>32</sup>

Similarly, liability may not be particularly effective if professional business services are measured not as a “final result” but as the input of skilled labour time (d’Andria, 2013).

Furthermore, liability does little to address supplier incentives for over-provision and for over-charging. Instead, a highly effective liability regime can encourage over-provision which protects the supplier against negative service outcomes.

Liability is therefore less likely to be effective if the probability of detection of low service quality is low, litigation success is unlikely, or where remedial costs are low.

## *Standardisation*

Standardisation occurs when a product can be made (relatively) homogeneous so that it can be applied to a range of customers without needing to be tailored to each customer<sup>33</sup>. Such

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<sup>30</sup> Moreover, if a supplier is low quality and faces many litigation claims then the higher cost of liability insurance is likely to increase the supplier’s costs, such that such suppliers are unable to offer a competitive price, compared with competitors who do not have such a high cost of insurance.

<sup>31</sup> A third-party expert may be able to verify the quality of a delivered service in situations where customers cannot. However, this can be quite costly; for example, verifying the quality of an audit or of delivered legal services may require largely re-doing the services in question.

<sup>32</sup> Full verifiability and enforceability are not strictly required and can be replaced by some probability of detection and of having to pay compensation for claims.

<sup>33</sup> For instance, a standardised template for a specified contract in legal services, or a similar template for filling out tax returns in accounting services.

standardised products can then be sold at a pre-defined price for a specified quality level which would be the same for each customer. This would permit clients to have a clearer idea of the typical level of service provision that they can expect to receive.

*How can standardisation overcome PBS features and enhance effective competition?*

Standardisation of services could alleviate problems of asymmetric information, increasing transparency as customers are aware of the packaged service they will receive and are able to compare the service with other customers, knowing that each customer received the same service.

This could improve competition by making comparability of service easier across suppliers, in the sense that customers can more easily compare prices, availability and have an expectation for the level of service quality they should receive. An increase in comparability should allow greater switching and more informed customers. Suppliers may thus have lower entry costs, as they will be able to steal customers more easily, and this customer-stealing motive may encourage suppliers to compete more fiercely with each other.

Additionally, standardisation may mean that certain services can be separated, which could allow customers to alter their demand across “smaller” components of an overall service.

*How effective is standardisation in PBS markets and under what circumstances would it not be useful?*

Standardisation may not be a particularly useful remedy in PBS markets given customer’s need for tailored products that are not standardised. Indeed, as has been highlighted, many such services are differentiated and bespoke. Nonetheless, certain service segments within PBS markets could still benefit from standardisation to some extent.

*Separation of diagnosis and treatment*

There may be an incentive for suppliers to engage in deceptive over-treatment when the same supplier both diagnoses and treats a problem. Such an incentive can be alleviated by separating the role of diagnoser and the role of treater (Emons, 1997; Dulleck and Kerschbamer, 2006).

The separation of treatment and diagnosis could lead to a well-developed market for *second opinions* (Wolinsky, 1993). This could even be the case when treatment and diagnosis are typically carried out by the same supplier.

*How can separation of diagnosis and treatment overcome PBS features and enhance effective competition?*

Separation can overcome issues related to information asymmetries and the potential incentive for suppliers to suggest over-treatment because customers do not know what they want and may be unable to check that they received what the supplier suggested. With separation, there is no longer an incentive for the diagnoser to suggest over-treatment as they do not benefit from such a suggestion.<sup>34</sup>

In the presence of a single supplier offering diagnosis and treatment, customers may receive negative market outcomes (such as high prices), which may result in customers not purchasing the service. Separation can overcome this and may increase demand for services as customers no longer fear being over-charged or over-treated. In addition to reducing negative market outcomes, separation may encourage willingness to switch, as customers are less reliant on trust or customer-

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<sup>34</sup> This assumes that there is no collusion between diagnoser and treater.

supplier relations. Furthermore, this can lead to reduced barriers to entry and greater competition between suppliers.

If second opinions are common in a market, then the supplier has less incentive to suggest over-treatment, as the customer will simply seek a second opinion, depriving the supplier of income with additional reputational risks. However, in certain markets it might be the case that opinions can differ justifiably and in such a case, reputational-damage may be less likely.

*How effective is separation of diagnosis and treatment in PBS markets and under what circumstances would it not be useful?*

There are often cost efficiencies for the same supplier to both diagnose and treat a given customer in many PBS markets, stemming from the features of differentiated services and the need for high customer-specific investments. There is thus a trade-off between (i) allowing a single supplier to both diagnose and treat, but risk deceptive over-treatment, or (ii) restrict a single supplier to choose between diagnosing or treatment, but potentially face inefficiencies.

If separation is possible/efficient then information asymmetry can be reduced, customers are likely to be more willing to switch and resultingly, entry ought to be easier and competition fiercer.

#### *Complex price structure*

A complex price structure can involve, for example, separate payment for 'diagnosis' and 'treatment', payment split over several stages of service delivery, possibly conditional on service delivery parameters, or payment delayed to sometime after the service provision is concluded. The latter could, for instance, involve an escrow system, where an intermediary verifies what is being delivered before the payment reaches the supplier.

*How can complex price structures overcome PBS features and enhance effective competition?*

Complex price structures such as the examples above can decrease the risk to customers of costs associated with poor service performance that are due to customers having little ability to assess quality or effort of suppliers. Such structures give customers more chances to gain information about their own service needs and to detect poor quality of service. In turn, this allows them to move away from poor quality suppliers and to better adjust service purchases to needs.

Better information and closer control over what they purchase can make customers more willing to switch and to purchase from new suppliers, thus incentivising rivalry and entry.

*How effective are complex price structures in PBS markets and under what circumstances would they not be useful?*

Complex price structures are most likely to be helpful for services that can be broken up into separate deliverables and where at least some of these deliverables have quality elements that can be verified by the customer and on which payments can be made contingent.

An alternative is to use an escrow system managed by a trusted third-party who monitors service delivery, determines when each element has been satisfactorily completed and provides permission for the funds in escrow to be paid to the supplier.<sup>35</sup> There might be difficulties associated with using and finding an appropriate third party that can fairly monitor the situation, often requiring specific contractual obligations be met where such obligations may not be perfectly observable when the

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<sup>35</sup> In a contract system, the courts essentially act as this trusted third party.

service is a credence good. On the other hand, where specific obligations can easily be written, escrow systems can play an important role in mediating between two parties and digital technologies have reduced the cost of finding such an intermediary, for example, through the use of blockchain technology (Cowen and Tabarrok, 2015).

### *The role of digitalisation in supporting market-based mechanisms*

The market-based mechanisms discussed in this section can be potentiated and enhanced through digitalisation, which can play an important role in addressing market failures and ineffective competition in PBS markets. This can happen through (i) easier provision of information about suppliers, (ii) digitalised methods of dissemination of reputation information, (iii) increasing access from suppliers outside a locality and (iv) direct competition from the digitalised provision of service.

Firstly, digitalisation has reduced search costs through easy access to advertisement, search engines and repositories of information such as supplier's websites.

Secondly, and relatedly, the internet, and use of social media and ratings platforms to share information on service and supplier quality, has allowed for easier sharing of such information and can act as repositories for reputation. This is a lot quicker and easier to access than more traditional methods of reputation and is usually more abundant.<sup>36</sup>

Thirdly, digitalisation can mean that certain services can be provided online and thus relaxes competitive constraints on suppliers being situated near to customers. In fact, the nature of PBS markets typically makes digitalisation easier, as most services can be provided remotely and conducted over the internet / electronic communication.

Fourthly, and finally, digitalisation has allowed for routine tasks to be automated. In PBS markets this means that some simple tasks can be completed by digital software or applications.<sup>37</sup>

In recent years, the rise of digital and information technologies has played a large role in reducing information asymmetries in a number of markets (Cowen and Tabarrok, 2015).<sup>38</sup> . Such advancements have reduced problems of information asymmetry but rely on the fact that quality can be well-defined, a feature which is less prevalent in a number of PBS markets. Consequently, digitalisation has had less of an impact on reducing information asymmetry and associated market failures in PBS markets compared with some other sectors. Existing evidence suggests that repetitive and low added-value tasks within PBS markets are the activities which are most likely to be digitised (DG for Internal Market, 2021).

### *How can digitalisation overcome PBS features and enhance effective competition?*

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<sup>36</sup> However, it is possible for suppliers to create "fake" reputation-based posts to promote their competitive offering, potentially reducing trust in such information. There is also a lot of discussion and concern for misinformation to transmit via social media which can cause issues to the well-functioning of reputation-based methods.

<sup>37</sup> For example, in the engineering sector, Building Information Modelling (BIM) is used as an automation tool to incorporate both building product design and construction process plans. Furthermore, technology has allowed software tools for design and construction management, systems for delivering information from the design to the field, robotic applications for construction and for systems gathering information on site (Sacks et al, 2020).

<sup>38</sup> This has included the use of measuring items such as odometers and digital storage of vehicle metrics in the used car market, and wearable sensors which can monitor movement, heart rate and rhythm, blood pressure and other health-related statistics in the health markets.

Digitalisation has enabled easier provision of information about suppliers which can allow customers to find the most appropriate supplier for their needs and one which offers the best value for money. Customers are more able to compare suppliers and are thus more informed to switch. Furthermore, suppliers are able to disseminate information more cheaply and easily, increasing entry into the market through reduced entry costs and giving a greater incentive for suppliers to compete fiercely with one another.

Digitalisation has increased the role of reputation and has enabled customers to share and access information on reputation much more quickly and widely than traditional means. In some sense, this can reduce information asymmetry as customers are able to access a wealth of information about a supplier and their customers' past experiences with service provision and supplier quality.

Digitalisation can increase the number of suppliers in a market substantially, given the availability to work remotely, thereby opening up the market to a wider range and quantity of suppliers. This increase in the number of suppliers increases the number of competitors, therefore making competition fiercer. Furthermore, access to a large market size may make entry more likely given the increased potential for profitability.

The automation of tasks offers a direct substitute for the services of some suppliers and ought to increase competition as it acts as an outside option for customers dissatisfied with the quality, price or availability of other suppliers. Automation can thus increase the number of competitors in a market and potentially may increase the willingness of customers to switch suppliers.

*How effective is digitalisation in PBS markets and under what circumstances would it not be useful?*

Digitalisation as a means of reputation dissemination is likely to be more appropriate for PBS markets where quality is easier to measure, where service differentiation is lower and where customers have a preference over the same dimensions of quality. Given the inherent nature of PBS markets (multi-dimensionality of quality and information asymmetry in particular) there may be relatively few professional business services which fulfil such criteria.

Digitalisation may also inhibit market entry if it enhances the need for reputation, which could become more costly to obtain. This may then give an incumbency advantage to suppliers which have existed for a relatively long time.

The availability for suppliers to offer their services remotely depends upon the ability of that supplier to be able to provide a given service in a given jurisdiction. In other words, they must have the necessary professional accreditation and knowledge to supply a service in a given area. Some customers may also have a preference to meet their supplier face-to-face which could limit the ability for suppliers to operate remotely.

Digitalisation as a means of substitute is most likely to be effective for services which can be standardised and are used repeatedly. Both factors may be limited in PBS markets where service differentiation is common and certain services are purchased infrequently. However, with increasing abilities of AI, service differentiation is becoming more possible through software customised to individual customers.

## **6. Application of the framework**

As explained in the introduction, this paper is an intermediate step as part of a larger project, the aim of which is to assess the scope for effective competition in PBS markets. The next step is thus to

develop an approach that can be applied to a given market to make an assessment of: a) which features, that are likely to hinder the development of effective competition, are present in this market and how strong is each? b) which of the factors necessary for effective competition are affected by these features and to what extent are they affected? c) how do (a) and (b) translate into competition and market outcomes? d) which market-based mechanisms could be relied on to address the limits to effective competition and which of these are feasible given the specificities of the market (or indeed already observed in this market)? e) taking (a), (b), (c) and (d) together, what is the best case scenario for unregulated outcomes in this market?

The first three of these steps rely on identification and measurement of market specificities and competition and market outcomes, which we turn to next.

### *Measurement of market features*

We present some suggestions on how to measure the various features that can be present in PBS markets. It should be remembered that the magnitude of these features may also vary by customer, for example, with information asymmetry being less of an issue for some customers (i.e. large business customers) than others (i.e. individual customers). It is possible that the magnitude of these features could be well quantified by experts involved in each market. However, a well-structured grading system would need to be developed in order for comparisons to be drawn across markets and to ensure that different experts would come to comparable conclusions.

#### *Information asymmetry*

One way to capture the extent of information asymmetry would be through the use of a survey to both customers and suppliers to ascertain how much information they have regarding the service, its quality and other aspects of the service provision. Responses could then be compared to see how much less customers know compared with suppliers.

It would be important to ask about different dimensions of information asymmetry such as information about ex ante quality and effort elements, information about the nature and level of customer needs, and ability to assess the quality of delivered services (ex post).

The surveys would have to be carefully designed, taking into account that customers can be unaware about what they do not know; and standardising answers so that responses can be combined and market-wide indices can be created.

#### *Multi-dimensionality of quality attributes*

It is difficult to quantify the extent to which quality is highly multi-dimensional but this could be explored by asking customers what dimensions of quality are most important to them. If there are only a small number of relevant dimensions, and these are consistent across customers, then such a feature is less problematic.

Multi-dimensionality of quality attributes is linked to service differentiation due to the different needs and preferences of customers over quality dimensions. An assessment of the scale of differentiation might include the following considerations:

- Customer importance of specific aspects of service,
  - This could include questions around how specific customers deem their needs to be and/or whether they require a specific or standard bundle of service characteristics.
- The similarity of services provided within the relevant market,

- Both in terms of characteristics of those services, the size of the market (i.e. the number of customers and the value of business) and the number of suppliers within that market.
- The similarity of services provided between the relevant market and close substitutes,
  - For instance, is the broader market of services for contractual agreements highly fragmented depending on precise characteristics of customer requirements? One way this could be determined is if different suppliers exist to supply different size firms.
- Whether tendering is prevalent – if so, this might suggest that services are particularly customer-specific and that service differentiation is high,
  - If so, further information on the supplier-time spent on tendering, the supplier-cost (including labour costs to prepare the tender and any other associated costs) and how much customer-specific knowledge is required.
  - Further information on the customer-time spent in writing the tender and associated terms of reference and the cost associated with evaluating tenders.

Indirectly, an observation of strong customer-specific relationships, and of customers repeating business with the same supplier without looking elsewhere, may provide an indication of high customer-specific costs and of high service differentiation. However, it should be noted that in its self, strong customer-specific relationships are an outcome, not a feature, and whilst they may indicate the existence of a feature, could exist for other reasons.

If the assessment reveals that tendering is high, then this would suggest large customer-investment is required which would suggest high service differentiation. Similarly, a finding that the relevant market is very narrow would again suggest high service differentiation. An index could be created to capture these different characteristics and put a quantitative figure on the scale of service differentiation.

#### *Significant relation-specific investments*

One method to evaluate the degree of relationship-specific investments is to survey customers on the cost of contracting with a new supplier, and suppliers on the savings associated with repeat customers.

Costs for customers include the preparation of tendering documents, evaluating the responses and ‘training’ the supplier to provide the relevant service.<sup>39</sup> This would include the hourly costs of personnel that are involved in “on-boarding” suppliers. Furthermore, the survey could incorporate questions around specific costs customers may face, associated with change service provision to a new supplier.

It is also likely that an informed market observer can judge the extent to which customers need to invest in a supplier but such a measure is unlikely to capture the high variance associated with actual customer responses.

#### *Demand distortions*

It is often a binary matter of whether a service is statutorily mandated or not. If a service is mandated then this would indicate that demand is somewhat inelastic by definition. It can also be assessed as to how divisible service provision is or whether it is “lumpy”. To ascertain the lumpiness of service provision, a customer survey could be employed to investigate the degree to which

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<sup>39</sup> Tendering costs may be more important a consideration (in this framework) for private customers who tender because they need specific services, rather than public sector customers who have to tender as a matter of procurement policy.

provision can be divided into separate “lots”. The survey could additionally investigate the price sensitivity of the entity purchasing the service, where such price sensitivity may differ between public and private purchasers and/or across dimensions of risk aversion.

Furthermore, there are a number of examples in the economics literature on how to measure (aggregate) price elasticity of demand which can yield a quantitative value for comparison across markets.

#### *Infrequent purchases of services*

This is perhaps the easiest feature to conceptually measure as data on the number of purchases by customers is easily quantifiable. It might be more problematic to obtain data on such a measure. A survey, questioning how often a given customer purchases a specified service is likely to be the easiest way of obtaining the data. The average number of purchases by customers in a given time period can then be calculated and compared across sector. It might also be possible to ask suppliers how many times a given customer purchases within a period of time. However, such a measure is likely to under-estimate the true frequency of purchase, in the event that a customer purchases from multiple suppliers.<sup>40</sup>

One difficulty in calculating such a measure is if the service is not well-defined and customers do not provide consistent responses.<sup>41</sup> This problem can be overcome by considering the price the customer paid for the service and comparing this with the price they usually pay to ensure that “engagements” are consistent.

#### *Measurement of competition outcomes*

##### *Market concentration*

There are several commonly used measures of market concentration, including the number of suppliers operating in the market, market shares and concentration ratios, and the Herfindahl Hirschman Index. Despite the wide-spread use of these measures, there is debate over the extent to which concentration measures can inform about the level of competition within markets or help predict market outcomes (Bottini and Molnar, 2010). For instance, a highly concentrated market with three participants could still be very competitive and have low price-cost markups, despite few suppliers in the market. There is thus a potential discrepancy between measures of market concentration and how this corresponds to market power and ultimately the magnitude of negative market failures.

Furthermore, the literature has also debated the use of market concentration indices which are typically based on industry classifications which do not match up to relevant markets or are overly dependent on appropriate market definition. As such, these measures do not accurately capture competitors in a market but lump all suppliers of a similar designation into the same ‘market’ (Affeldt et al, 2021). There is thus an issue arising from how to accurately define the relevant market. We assume that it is possible to define the relevant market, perhaps through the use of the SSNIP test.

Concerns have also been raised in the literature that such measures are focused on the domestic market and do not take into account *potential* as well as international competition (Okada, 2005).

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<sup>40</sup> Whilst such a hypothesis is presented, it is unlikely that a customer purchases from different PBS suppliers.

<sup>41</sup> For instance, if asking about the frequency of customers seeking tax advice, it might be that some customers consider brief, one-off, correspondence to be a separate purchase relative to an actual engagement.

### *Number of suppliers*

One of the simplest measures of competition is a simple measure of the numbers of suppliers operating within a particular market segment (Disney et al, 2003). The greater the number of suppliers, the greater competition is expected to be. However, this measure is highly imperfect, as it does not account for the size of suppliers.<sup>42</sup>

### *Price-cost mark-up and profitability*

Price mark-ups are the difference between the output price of the good and the marginal cost that a supplier incurs for producing the good.<sup>43</sup> Under perfect competition, price mark-ups are expected to be low (i.e. price should equal the marginal cost). However, in markets of imperfect competition, it can be expected that the price mark-up is positive and this can be used as a measure of market power. Industries achieving higher mark-ups tend to be considered less competitive, as suppliers have higher market power, and vice versa.<sup>44</sup>

Price mark-ups can be considered preferable to measures of market concentration because mark-ups measure how effectively suppliers in a given market are able to exercise market power (Bottini and Molnar, 2010). However, the method is highly sensitive to measurement errors and these are likely to occur given how difficult it is to measure marginal cost. Another problem with this method is that large mark-ups can exist in markets with large fixed costs, despite strong competition (Elzinga and Mills, 2011). It may therefore be more appropriate to consider changes in mark-ups over time, rather than across sector/country where fixed costs may differ significantly.

Sectors with high profitability might indicate that suppliers have market power and are able to charge prices high above cost, indicating a lack of competition. If competition was working effectively then profitability ought to be low as new suppliers would enter the market, or expand, offering a lower price and thus squeezing profitability downwards.

Profitability can be calculated in a number of ways, one such method used in the empirical literature is using the gross operating rate (Canton et al, 2014).<sup>45</sup>

### *Entry, exit and churn rates*

The number of suppliers entering and exiting a market can usually be obtained relatively easily. Entry and exit rates can then be calculated by dividing the number of entries/exits by the total number of suppliers in the market. The churn rate is often calculated as the sum of the entry and exit rates.

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<sup>42</sup> For instance, there might be ten suppliers in a market but nine of these suppliers might have a very small market share (e.g. 1%) with the remaining supplier having a large market share (e.g. 91%). Such a market would likely have a different competitive pressure than a market where the ten suppliers each have a 10% market share.

<sup>43</sup> Price-cost markups are sometimes referred to as the Lerner Index which is simply a formal way of expressing the mark-up and hence of measuring market power in an industry. The Lerner Index is given as  $L = \frac{p-c}{p}$  where  $p$  is the output price and  $c$  is the marginal cost.

<sup>44</sup> In practice, there are a variety of ways to estimate mark-ups empirically, such as the Roeger (1995) method. Such an approach uses supplier-level data (such as from Orbis) and can be created at either the sectoral level or at the market level if the market can be well defined by the researcher.

<sup>45</sup> The ratio of gross operating surplus to turnover.

It might be expected that entry rates will be lower in markets with higher barriers to entry. To aid in an assessment of this, it could additionally be useful to collect information on barriers to entry (qualitatively, what are the barriers) and estimates of entry costs. This could explain why entry rates are low and would aid in a competitive assessment.

It might be expected that high entry and high exit implies a competitive market where there is turnover in the number of suppliers. However, high exit by itself might lead to increasing concentration of a few suppliers.

#### *Allocative efficiency*

Allocative efficiency is the extent to which productive factors are allocated towards their most efficient use and is used to capture the resource allocation between suppliers in a sector (Canton et al, 2014). The idea is that in a competitive market, the most efficient suppliers will increase their market share by stealing customers from less efficient suppliers, leading to an increase in allocative efficiency. Allocative efficiency can be calculated using a productivity decomposition (Olley and Pakes, 1996).

#### *Import penetration*

Import penetration rates are defined as the value of imports as a percentage of total domestic demand. A higher degree of import penetration might imply that a domestic market is less competitive, hence enabling international suppliers to profitably enter (through imports). On the other hand, if import penetration is possible then it would imply that entry barriers are (relatively) low, which might imply that competition is not too ineffective.

Similarly, if there are high export rates from a given country, this could indicate that the suppliers are very competitive and can offer services at a low price and/or high quality and are thus able to export their services to other markets.

Fundamentally, these measures might not be indicative of competition in PBS markets where regulations and professional restrictions inhibit the ability for foreign suppliers to import to the domestic market or for domestic suppliers to export to foreign markets.

#### *Switching behaviour*

In a competitive market we might expect customers to switch suppliers frequently, and therefore would expect to observe a high switch rate. However, a low switch rate could still be consistent with a competitive market, if competitive pressures induce suppliers to offer good value for money without customers needing to switch. Nonetheless, switching rates can be useful metrics in which to evaluate the degree of competition and could usefully be included in a framework to evaluate the degree of competition.

Switch rates can be estimated by calculating the average number of suppliers customers have over a given period of time. For instance, switch rates could be calculated as the average number of suppliers a customer has over the course of the year which could then be benchmarked against rates in other sectors. Obviously, a number of 1 reflects the fact that no single customer switches whilst a higher number reflects that more customers switch. Switching is not useful in its own right – if anything excessive amount of switching might indicate that suppliers are not providing value for money – but can inform upon competitive pressures.

#### *Strength of customer-supplier relationships*

The strength of customer-supplier relationships could be measured through the number of repeat engagements between a given customer and supplier. More frequent interactions between the same entities might suggest a strong relationship, potentially a sign of weak competition or due to features of PBS markets that have been solved through the use of strong customer-supplier relationships.

It might also be informative to study how often customers automatically return to the same supplier without searching the market for alternative suppliers. This could be enacted by studying whether customers set out tenders or directly award contracts to a given supplier. If customers do not attempt to tender then this suggests that strong customer-supplier relationships exist.

#### *Extent of competition over signals*

The extent of competition over signals rather than value for money could be measured through data on expenditure on items that are typically considered signals. Whilst some items are necessary, heavy expenditure on them relative to other suppliers/markets may suggest that signalling is occurring.<sup>46</sup>

#### *Barriers to entry*

To determine whether entry barriers are high or low, it could be insightful to compose a list of barriers to entry (this could be done through surveying existing new entrants or firms which have recently considered entering a particular market) and then compare the number of barriers across sectors. Such a rudimentary measure can be improved by considering the magnitude of the barrier in terms of how costly it is to overcome. This could be measured directly, by examining how costly it would be to enter a particular market.

#### *Segmentation of markets*

Segmented markets can be observed through the existence of separate sets of suppliers for what is essentially the same service. Segmentation may be based, amongst others, on the size of the customer, very specific customer requirements, or geographic area.

#### *Breakdown of market segments*

It is relatively easy to observe the breakdown of market segments if they exist at some point in time but then collapse. However, it is more difficult to observe when market failures have resulted in the non-existence of a particular market segment. It is difficult to measure whether a market does not exist for a particular service when it has never existed. However, this could be evaluated by asking customers whether they would like a particular service to be provided for which no suppliers exist. In such a case, it might be informative to explore qualitatively with customers and suppliers what gaps exist in the market – where there is demand but no supply – and to explore whether such a gap arises due to market failures (e.g. information asymmetry prohibits a maverick from establishing such a market segment).

#### *Collusive behaviour*

Collusive behaviour is illegal and therefore will not be directly measurable. Instead, economic theory provides a set of conditions under which collusion is more likely to happen and be sustained. These

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<sup>46</sup> For instance, data on advertising expenditure could be collected and compared across suppliers within a particular market and more broadly. If advertising expenditure is particularly high then this suggests that suppliers are focusing on signalling rather than improving their competitive offering.

include: a small number of competitors, of similar market shares and cost structures, operating in a relatively transparent market (i.e. prices, quantity, or market shares are easily observed), where transactions occur frequently, in markets that expect future demand growth, have high barriers to entry, are not subject to shocks such as business cycle or macroeconomic shocks, with low degree of product differentiation and amongst suppliers that interact in multiple markets (Ivaldi et al, 2003).<sup>47</sup>

Analysis of pricing may reveal behaviour that is consistent with collusion but may not identify collusion in practice. For instance, prices clustered at a particular level can be consistent with both price fixing and with the market being highly competitive (where prices cluster around the competitive price).<sup>48</sup>

Finally, collusive behaviour might be revealed through leniency schemes which encourage those engaging in collusive behaviour to report such activities to the authorities in return for a reduced punishment.

Collusion indicators can be made more informative by considering the extent of historical collusion in a given market, including its prevalence, how long it lasted and how many suppliers were involved (as a percentage of total market).

### *Measurement of market outcomes*

#### *Prices*

Whilst the concept of price is straightforward, issues can arise as to what kind of price is applicable in practice. In an ideal situation, each service will be standardised such that each customer receives a comparable product and pays a similar price. However, as discussed above, in practice professional business services are heavily customised such that it is rarely the case that customers pay the same prices or receive the same service (i.e. service is customised not standardised). Given that each customer pays a unique price, and receives a different service, there are complications in calculating a value for price. Average prices – calculated as the sum of all prices charged in a market divided by the number of different transactions – would perhaps be the simplest measure but may not capture the fact that different services are provided. Such pricing data is usually obtained from national statistical offices which use an average aggregate measure of prices for construction of inflation indices.

Alternatively to service fees, customers may pay a retainer or an hourly fee, rather than paying for the direct outcome of a service. Differences in payment methods can make comparison across

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<sup>47</sup> Certain PBS markets operate as bidding markets. In such markets, warning signs of collusion include (i) the same supplier being the lowest bidder, (ii) each supplier taking a turn to be the winning bidder, (iii) geographic allocation of winning tenders, (iv) regular suppliers fail to bid for a tender they normally bid for and (v) some suppliers unexpectedly withdrawing from a bid, (vi) the same company always winning a particular type of procurement, (vii) some bids are much higher than published price lists, previous bids by the same firms, or cost estimates, (viii) A company appears to be bidding substantially higher on some bids than on other bids, with no apparent cost differences to account for the disparity, (ix) bid prices drop whenever a new or infrequent bidder submits a bid, (x) a successful bidder subcontracts work to competitors that submitted unsuccessful bids on the same project, and (xi) a supplier withdraws its successful bid and subsequently is subcontracted work by the new winning contractor (Iossa, 2015; OECD, 2006).

<sup>48</sup> In a fully competitive market with Bertrand competition we would expect the price to equal the marginal cost.

market segments difficult and may complicate the matter of data collection. In this case, it might be more pertinent to look at hourly rates rather than total rates.

### *Quality*

Measuring service quality of professional business services is a significant and well-recognised challenge (Pagliero, 2015; European Commission, 2019; Arentz et al, 2016). There are however various proxies and approaches that can be found in the literature. Proxies of service quality can be separated into (i) measures of process, (ii) measures of outcome, and (iii) other value-added proxies.

Measures of process include variables such as number of customer complaints, consumer ratings of practitioner behaviour, malpractice insurance premiums, number of malpractice lawsuits and number of disciplinary actions.

Outcome measures are highly sector specific.<sup>49</sup> A difficulty with outcome measures is that the final outcome may be stochastic or unverifiable, which can introduce issues with using such a measure (Koumenta et al, 2014).

Other value-added proxies include (i) the degree of availability and access of product/service to customers, (ii) the educational attainment of employees, (iii) the perceived ranking of professionals, (iv) degree of affordability and effect on price and (v) levels of substitution to do-it-yourself alternatives.

More specific and focused quality measures are likely to differ highly between sectors and depend on the precise characteristics of the market. Such measures can therefore only be calculated for the sector of interest and allow temporal or cross-country comparison. However, such measures are likely to be more precise than the generic measures discussed above. It could also be possible to compare the specific quality measure within a market with the maximum value and use this percentage to compare across sectors. To elaborate, if a specific measure of quality were designed for market X (which cannot be used to measure quality in market Y and is not directly comparable with the quality measure designed for market Y) and it was found that quality is 5 out of a possible score of 10, this would indicate that quality is 50% of its maximum value which can then be compared with similar percentages from other markets.

### *Service availability*

The simplest way to measure service availability would be to look at the number of suppliers operating in the market segment. The more suppliers operating the easier it is likely to be for customers to receive service provision. However, this obviously ignores the *actual* availability of service suppliers. It might therefore be necessary to ask suppliers directly, how much availability they have, potentially looking at capacity constraints. Alternatively, customers could be asked how long they had to wait to receive service provision. The latter method would also be more suitable in markets where service differentiation is high.

### *Innovation*

Innovation can be observed through measures of the introduction of new products and services, research and development spending<sup>50</sup>, number of patents (and other forms of intellectual property

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<sup>49</sup> For instance, the “win” rate for a lawyer or corporate failure rates in the audit market.

<sup>50</sup> There is much discussion in the literature around the relationship between R&D and competition, with some pointing out that under perfect competition, there will be little profit available to invest in R&D, yet others highlight that under imperfect competition there is less incentive for R&D investment (Moen et al, 2018).

protection) filed, improved production techniques (observed through productivity growth measures), improvements in quality and reductions in prices for a given product. Nonetheless, it is more difficult to evaluate when a market displays a lack of innovation and whether this is due to ineffective competition or other factors.

### *Negative externalities*

The negative externalities associated with poor service quality can be quite difficult to measure. Poor quality may increase the probability of negative societal outcomes instead of directly causing such outcomes.<sup>51</sup>

To measure the extent of such negative externalities, it would be necessary to estimate the additional probability of negative events that results from poor quality services as well as the costs that such events would cause. A base-level probability could be measured using historical data and gathering views from experts. The societal cost of a negative event may be relatively easier to estimate based on data for comparable events and experts' valuations.

There can also be externalities which relate to outcomes which are unknown and cannot be predicted or estimated.

## **7. Concluding remarks**

This paper has outlined features that are prevalent in some PBS markets and explored how they may result in ineffective competition. We discussed how such ineffective competition results in negative market and competition outcomes and how certain market-based mechanisms can ameliorate ineffective competition and help restore positive outcomes. However, it was also discussed that there are limits to the efficacy of such mechanisms. We then explained the broader aim of applying this framework to evaluating the question of what the best outcome for competition can be in PBS markets, in the absence of regulation. This question is part of ongoing research and issues of measurement (of features and outcomes) were discussed, as measurement plays a role in evaluating such questions.

Upcoming work intends to launch a large-scale survey of market participants in a selected sample of markets, applying the theoretical framework and empirically evaluating the impact of such market failures on the aforementioned outcomes of competition and consumer outcomes.

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<sup>51</sup> For example, poor engineering increases the probability that a bridge will collapse, corrupt auditors increase the probability of financial market volatility, incompetent lawyers increase the probability that courts reach incorrect verdicts.

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