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Working with Customers to Improve Regulation

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Executive Summary

This paper traces a new development in regulation that encourages utilities to engage directly with their customers. The aim of customer engagement is to better incorporate customer preferences in utility regulation. We propose a framework for improving the customer engagement process that applies modern tools of programme evaluation to learn about customer preferences and meet them effectively. We also suggest that regulators should rethink the incentive structure provided to regulated firms and customer groups for doing good customer engagement.

We make four contributions: First, we perform the most comprehensive analysis to date of how regulators are using customer engagement, and offer a simple model for understanding different customer engagement initiatives. At one extreme, we define “Negotiation” as a process in which the regulated firm and customer representatives directly negotiate prices and terms of service. In this form of customer engagement, the regulator plays a more passive role and may simply agree to implement outcomes of a successful negotiation. At the other extreme, we define “Customer-centric Regulation,” where regulated firms are required to engage with their customers. The regulator reviews these engagement efforts and may incorporate them in the outcome of the price review. The utility can receive rewards from the regulator for doing “good” customer engagement.

Second, we review assessments of customer engagement in the literature. We find that there are *no* quantitative, empirically robust assessments of the effectiveness of customer engagement as a regulatory tool. We argue that part of the problem is methodological: it is difficult to specify a counterfactual from which to measure the effectiveness of customer engagement efforts.

Third, we develop two detailed case studies of an energy regulator and a water regulator, Ofgem and Ofwat, that are in the forefront of customer engagement efforts. In both cases, utilities appear to have increased their engagement efforts after the regulators explicitly incorporated customer engagement in their price reviews. We find, however, that incentives for firms to engage with their customers, and to use particular tools in the process, are not clearly specified. There does not appear to be a direct link between the engagement strategy used and the economic incentives received by a firm based on the assessment of the business plan by the regulator.

Fourth, we discuss ways in which regulators could refine the current regulatory approach, and suggest a new framework for improving customer engagement. The new framework relies more heavily on microeconomics, modern tools of programme evaluation, and adjusting the incentive structure for doing customer engagement. We identify three ways in which this framework might improve the efficiency of customer engagement as currently practiced: first, by introducing economic efficiency explicitly as a yardstick for evaluating customer engagement; second, by providing firms and customer groups with direct incentives for good customer engagement; and third, by making greater use of field experiments and revealed preference techniques to provide

more robust estimates of customer preferences. The outcome of this new engagement process is an evidence-based business plan that not only incorporates what customers want, but also how these needs can best be met by regulated firms.

We identify six areas where regulators could help improve the effectiveness of customer engagement.

1. **Do more case studies on customer engagement.** Regulators are increasingly using customer engagement. More case studies could be informative as the regulatory process matures.
2. **Assess the effectiveness of customer groups.** The role of customer groups in the process deserves more careful scrutiny.
3. **Evaluate consumer wellbeing.** If rigorous programme evaluation is done as part of Customer-centric Regulation, it would be instructive to review the economic impacts of these evaluations on consumers.
4. **Elicit revealed preferences.** More work on the willingness to pay of customers for both local and global externalities could be helpful.
5. **Maximize returns to experimentation.** To maximize the insights gained from experimentation, regulators could encourage different firms to experiment with different types of programmes. At the same time, replication may be valuable in certain contexts to demonstrate the validity of particular policy interventions in different settings.
6. **Disseminate information and replicate.** After valuable evidence is collected, this information should be disseminated widely. Proven programmes can then be rolled out across firms to improve outcomes for more customers.

Formal customer engagement is in its infancy. We think this approach to regulation shows promise. To achieve its full potential, however, regulators may need to rethink the economics of customer engagement.

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1. Introduction

Regulation is pervasive throughout the world. The prices of water, gas, rail, electricity, mail, and phone are frequently regulated by government authorities in various ways. Objectives for this regulation vary, but they include promoting operational and economic efficiency, protecting against monopoly power, and addressing equity and environmental concerns.

During the last decade, efforts to encourage utilities to directly engage with their customers have become a more central part of regulatory proceedings. The essence of customer engagement is that regulated firms involve customers in their business decisions, particularly in preparing for price reviews. Utilities can engage with customers either directly or through negotiation with groups representing customers over prices and other dimensions of service. The novelty lies in the direct interaction with customers. This mechanism may discover what customers want and this information can be incorporated in the outcomes of regulation (Littlechild, 2014a).

Despite the increasing popularity of customer engagement, there is not one widely accepted definition.¹ In this paper, we define customer engagement as a regulatory approach aimed at understanding customer preferences *and* finding out how to best meet those preferences. In practice, this approach can take different forms. In some cases, customer groups directly engage and negotiate with regulated firms. In other cases, the formal analysis of customer demands by regulated firms is an important input in regulatory decision making.

This paper makes four contributions: First, we perform the most comprehensive analysis to date of how regulators are using customer engagement, and offer a simple model for understanding different customer engagement initiatives. At one extreme, we define “Negotiation” as a process in which the regulated firm and customer representatives directly negotiate prices and terms of service. In this form of customer engagement, the regulator plays a more passive role and may simply agree to implement outcomes of a successful negotiation. At the other extreme, we define “Customer-centric Regulation,” where regulated firms are required to engage with their customers. The regulator reviews these engagement efforts and may incorporate them in the outcome of the price review. The utility can receive rewards from the regulator for doing “good” customer engagement.

¹ Heims and Lodge (2016a, p.19) state that “in contrast to the previous era where there was broad agreement on [...] the application of price-capping methodologies, there is little agreement as to what consumer engagement might actually imply. For some, consumer engagement offers the promise of negotiated settlements. For others, it is mostly a way of encouraging regulated industries to become more responsive to their customers’ interests.”

Second, we review assessments of customer engagement in the literature. We find that there are *no* quantitative, empirically robust assessments of the effectiveness of customer engagement as a regulatory tool. We argue that part of the problem is methodological: it is difficult to specify a counterfactual from which to measure the effectiveness of customer engagement efforts.

Third, we develop two detailed case studies of an energy regulator and a water regulator in the U.K., Ofgem and Ofwat, which are in the forefront of customer engagement efforts.² In both cases, regulated firms appear to have increased their engagement efforts after the regulators explicitly incorporated customer engagement in their price reviews. We find, however, that incentives for firms to engage with their customers, and to use particular tools in the process, are not clearly specified. There does not appear to be a direct link between the engagement strategy used and the economic incentives received by a firm.

Fourth, we discuss ways in which regulators could refine the current regulatory approach, and suggest a new framework for improving customer engagement. The new framework relies more heavily on microeconomics, modern tools of programme evaluation, and adjusting the incentive structure for doing customer engagement. We identify three ways in which this framework might improve the efficiency of customer engagement as currently practiced: first, by introducing economic efficiency explicitly as a yardstick for evaluating customer engagement; second, by providing firms and customer groups with direct incentives for good customer engagement; and third, by making greater use of field experiments and revealed preference techniques to provide more robust estimates of customer preferences. The outcome of this new engagement process is an evidence-based business plan that not only incorporates what customers want, but also how these needs can best be met by regulated firms.

Section 2 reviews the theory and practice of customer engagement in utility regulation. It also provides an assessment of the effectiveness of customer engagement based on academic evaluations. Section 3 examines customer engagement from the perspective of the regulated firm using the two cases studies. Section 4 identifies ways in which regulators might improve firms' customer engagement efforts by expanding elements of the framework. Section 5 concludes.

2. Customer engagement in theory and practice

This section provides an overview of different approaches to customer engagement (CE) by regulators around the globe. We begin by outlining the origins of CE and the general role of CE envisioned by the regulator. To help frame the discussion, we

² Ofgem is the Office for Gas and Electricity Markets and Ofwat is the Office for Water Services Regulation Authority. Ofgem is the regulator for gas and electricity in Great Britain, and Ofwat regulates water and sewerage services in England and Wales. Ofgem and Ofwat are non-ministerial departments in the British government. They are part of a collection of UK economic regulators, including, for example, communication (Ofcom), rails and roads (ORR), and civil aviation (CAA).

present two stylised models of customer engagement. The models differ in the extent of regulator involvement in the engagement process. We then review how regulators interpret CE across a range of sectors and countries. This analysis reveals that the process of CE differs along several key dimensions for different regulators. We conclude by investigating the current state of the academic literature in evaluating the success of CE regulation. We find a lack of credible evidence on the economic impacts of CE on customers.

The origins of customer engagement

To understand the origins of customer engagement, we provide a brief overview of traditional models of regulation. Typically, regulators must balance the needs of customers with the needs of the firms that are regulated. This turns out to be a very difficult challenge (Kahn, 1970; 1971; Joskow and Noll, 1981). Regulators often have very limited information on the cost structure of the firms they are regulating and the willingness to pay of customers for various services (Laffont and Tirole, 1993; Joskow, 2008). Furthermore, in many cases, the objectives of the regulator are not well-specified in legislation. Often, for example, there are calls for the regulator to act in the “public interest,” but that term is not clearly defined (Joskow, 1974; Posner, 1974).

Economists generally agree that a market with a reasonable level of competition is preferable to a situation in which regulators regulate prices and/or quality of service (Stigler and Friedland, 1962; Joskow and Noll, 1981; Vickers and Yarrow, 1988). Beyond that consensus, there is not widespread agreement on the best forms of regulation. Furthermore, there are many different regulatory models that have been employed in different regulated sectors.

While the details differ, there are two general regulatory models that are typically discussed in the literature. The first is a model where firms are allowed to achieve a reasonable rate of return on their investments while expensing labour and energy costs. Prices are then set to recover the “costs of service” while allowing for a “fair” rate of return (Kahn, 1970; 1971; Joskow and Schmalensee, 1986). This is generally referred to as “rate-of-return” regulation. The basic idea is to allow the firm to charge a price that would arise in a hypothetical competitive market based on its fixed and variable costs.

Under rate-of-return regulation, firms may make excessive investments in their capital stock relative to labour to achieve more profits, thus leading to inefficiencies in production. The classic treatment is provided by Averch and Johnson (1962), and the resulting inefficiency is sometimes referred to as the “A-J effect”, named after these authors (also see Stigler and Friedland, 1962). Joskow (1974), in a seminal article, showed that the regulatory process is richer than that modelled by Averch and Johnson. Joskow found that regulators act much more passively in the real world than assumed by Averch and Johnson. Generally, price reviews are not a response to increasing rates of return but rather are “[...] triggered by firms attempting to raise the level of their rates or to make major changes in the structure of their rates .” (Joskow, 1974, p.12). If nominal prices stay constant or even decrease, the regulator remains largely passive despite the potential for rates of return to increase. As a consequence, regulators set

prices only periodically and usually in response to rate applications by a firm (Joskow, 1973). These reviews can be lengthy and require deep knowledge of cost structures (Joskow and Schmalensee, 1986; Newbery, 1998; Joskow, 2008). Thus, regulation adjusts only slowly to changes in the cost structure. Between regulatory reviews, firms aim to maximize profits (or other financial measures) and have incentives to improve efficiency to achieve this goal (Joskow and Noll, 1981; Joskow and Schmalensee, 1986; Armstrong and Vickers, 1991; Newbery, 1998).

Because of the large transaction costs and inefficiencies thought to be associated with rate-of-return regulation, economists searched for other models that might provide better incentives and regulatory outcomes. In 1983, Professor Stephen Littlechild suggested a model of “price-cap” regulation for the telecommunications sector in the United Kingdom (U.K.).³ This model was later adopted by many other regulators in the U.K. and elsewhere.⁴ The basic idea behind price-cap regulation is that the regulator sets a price limit on a service or group of services for a particular utility.⁵ The utility is allowed to charge customers no more than this price and can keep any savings associated with efficiency gains until the next price review commences (Littlechild, 1983). In practice, the price is based on an index that is usually adjusted by some measure of efficiency gains, using the “RPI-X” formula.⁶ RPI represents a retail price index (or consumer price index outside of the U.K.) that captures inflation and X often represents the average expected efficiency savings of a regulated firm in the sector.⁷ In theory, X could be set to represent efficiency gains that could be realized in a competitive market (Bernstein and Sappington, 1999).⁸

The main rationale for RPI-X was that it provides better incentives for firms to decrease their cost of production (Cabral and Riordan, 1989; Braeutigam and Panzar, 1993; Vogelsang, 2002). Because firms have flexibility in terms of price setting, they can increase their profit by producing more efficiently. There are also other benefits of this regulatory approach, such as efficiency and innovation, and promotion of competition (Greenstein et al., 1995; Littlechild, 2014a, p.154). Evidence from the U.S. generally supports these claims across different sectors (Mathios and Rogers, 1989; Kaestner and Kahn, 1990; Newbery, 1998).

Price-cap regulation is not without shortcomings, however. Substantial transaction costs are associated with the process, particularly the way initial prices and X are set

³ The 1983 report to the Secretary of State is known as The Littlechild Report (Littlechild, 1983). It introduced the idea of RPI-X regulation. Interestingly, the Report proposed RPI-X only as a temporary solution until sufficient competition emerges rather than as part of a periodic regulatory review process (Stern, 2003).

⁴ Price-cap regulation has since been applied to several privatized regulated firms in the U.K. and elsewhere (Beesley and Littlechild, 1989; Stern, 2003; Littlechild, 2012; Mirrlees-Black, 2014).

⁵ Alternatively, the regulator may set a revenue cap.

⁶ See Whittington (2017a) for an insightful interview with Littlechild describing how RPI-X regulation came about and how it was implemented in the first few years.

⁷ In cases of natural monopolies with high capital investment requirements (K), such as the water industry, this formula can be extended (e.g., RPI-X+K).

⁸ Littlechild (1983) did not recommend a particular approach to finding X. In practice, this value often represents the expected efficiency gains by the average firm in the sector.

(Newbery, 1998; Joskow, 2008; Littlechild, 2012; Joskow, 2014). Because the regulator is uncertain about a firm's true cost, prices may be set relatively high to ensure that high-cost firms can recover costs. In this case, firms may extract rent from customers by charging above their true cost (Newbery, 1998; Joskow, 2008). There may also be incentives to reduce the quality of a product to further increase profits (Kahn, 1970; 1971).

In practice, rate-of-return and price-cap regulation face similar challenges. Both regulatory approaches rely on extensive knowledge of a firm's cost structure, customer demands, and other important measures in the sector (Newbery, 1998; Joskow, 2008). Because of a constantly changing environment, both approaches also require periodic review (Joskow, 1974; Newbery, 1998). For the case of price-cap regulation, for example, Littlechild (2012) argues that such reviews gradually had to consider a wider range of elements, including potential efficiency improvements, investment programmes, and proposals for innovation (Krieger, 1995). Furthermore, in many cases, these regulatory processes were not immune from politics (Stigler, 1971; Peltzman, 1976; Noll, 1989).⁹

Problems with existing approaches led scholars and practitioners to search for improvements to the regulatory framework. One recent development in the regulatory landscape is a paradigm shift from regulator-focused regulation toward a more customer-focused regulation (Littlechild, 2014a; Bush and Earwaker, 2015; Heims and Lodge, 2016b). The novelty of this paradigm is not the consideration of customer needs per se – a goal that has been important in regulation for decades – but rather the direct engagement with customers. If successful, this process can help resolve some of the information asymmetries involving regulators, firms, and end customers.

Customer engagement is a concept that is now widely applied. We restrict the subsequent analysis to cases where customer engagement is a formal part of the regulatory process or where the regulator allows for direct negotiation between customers and regulated firms.¹⁰ We interpret customer engagement as a regulatory approach aimed at understanding customer preferences *and* finding out how to best meet those preferences. The goal from this perspective is to increase the benefits that the firm provides to customers, or overall benefits provided to both the regulated firm and the customer.

⁹ The practical implementation of the two forms of regulation may not differ substantially in many cases (Newbery, 1998; Joskow, 2008). To set the initial price in a price-cap regulation, for example, regulators must consider a reasonable rate of return for the regulated firms. Therefore, some regulatory frameworks that mix elements of both approaches have been discussed in the literature (Laffont and Tirole, 1993).

¹⁰ This contrasts with other approaches where customer engagement is seen as an important step in enabling customers to make informed decisions regarding service providers in a sector with competition (e.g., the British telecommunication sector or the retail energy market); or as a way to improve the overall customer experience (e.g., the efforts of many utilities in the U.S.). A report by the U.K. Regulators Network (2017) provides an excellent introduction to CE as used by nine different regulators in the U.K. across several sectors.

Customer engagement can fundamentally change the role of the regulator in price reviews. As Littlechild notes, “instead of taking all the key decisions about prices, capacities, quality of service, etc., the regulator seeks to facilitate a process whereby the market participants themselves [...] try to agree these parameters [...] and recommend them to the regulator.” (Littlechild, 2014a, p.163). The exact role of the regulator depends on the regulatory environment.¹¹

Stylised models of customer engagement

Figure 1 provides a stylised way of thinking about different forms of customer engagement that helps formalize some of the contributions to this literature. In this formulation, the regulator has two choices. The first choice is whether to require a formal assessment of the impacts of changes to prices or the terms of service on customers, or using analytical tools to estimate customer demands.¹² These demands are typically for a private good, such as energy or water, but could also be estimated for a local or global public good, such as environmental amenities. The second choice is whether the regulator allows (or even encourages) that the firm and the customers negotiate a deal on prices and terms of service directly.

There are four cells in Figure 1 associated with the two different choices. We will focus on the cells labelled “Negotiation” (top-right) and “Customer-centric Regulation” (bottom-left) because these cells represent the extreme cases for customer engagement. Under “Negotiation”, the regulated firm directly negotiates a deal with customer representatives and other stakeholders, such as environmental groups or worker unions. Only if no deal is reached, or if the deal violates fundamental expectations of the regulator, does the regulator perform a traditional price review.¹³ This approach to regulation does not require the firm to use formal assessments of impacts on customers or customer demands. The polar opposite within this framework is the cell labelled “Customer-centric Regulation.” With Customer-centric Regulation, the regulator determines the prices and terms of service after the firm engages with customers, and presents its findings formally to the regulator as part of its business plan.

There are two other cells in the table. One corresponds to “Traditional Regulation” (top-left), where the regulator sets the price and terms of service, but does not require the firm to formally assess customer demand or programme impacts. This cell can be thought of as the status quo and includes both traditional rate-of-return and price-cap regulation. The other combines Negotiation with a requirement for formal assessment. We label this “Negotiation Plus” (bottom-right). In this study, we focus on the two extreme cases of Negotiation and Customer-centric Regulation to highlight different roles of customer engagement in modern regulation.

¹¹ See the discussion below and the excellent treatment in Stern (2014).

¹² This engagement could be done by the regulator, the regulated firms, or both. There are differences across regulators in terms of who is expected to engage. We describe these different approaches in more detail below.

¹³ See Cooter and Rubinfeld (1989), Pollitt (2008), and Littlechild (2014a,b) for a discussion of the theoretical and practical advantages of negotiation.

With Customer-centric Regulation, the regulator remains a very active player in this “game” (Owen and Braeutigam, 1978; Noll and Owen, 1983). While the firm places greater focus on the customer to elicit customer preferences, the regulator still decides on the final prices and terms of service. This final decision may or may not incorporate the insights from customer engagement. To ensure that firms engage with their customers, the regulator may provide incentives or direct rewards for such efforts.¹⁴ This contrasts with pure Negotiation, where the regulator plays a more passive role unless no agreement could be reached (Doucet and Littlechild, 2006; Pollitt, 2008). The goal of the regulator in this case may be to encourage and facilitate Negotiation, and to create an environment conducive to fruitful negotiations.

We review two cases of CE in Table 1 to make clear to the reader key components in both regulatory processes. With Negotiation, the regulator may define the customer representative or representatives, and require that the regulated firm negotiate a business plan directly with the customer representative. If both parties agree to the business plan, which would include prices and terms of service, the plan is implemented. If there is no agreement, the regulator steps in and performs a traditional price review. Note that this model shifts many responsibilities from the regulator to firms and customers in an attempt to promote a solution that could make customers and firms better off. The regulator’s role is primarily auditing the negotiation process (Pollitt, 2008). The main rationale is that firms and customers are better equipped at directly bargaining over mutually beneficial outcomes (Littlechild, 2012; 2014b). Another motivation may be to reduce the impact of the regulator on economic outcomes. Successful Negotiation implies that prices and terms of services are determined without direct influence from the regulator. This may itself be a desirable goal. The development of this view of customer engagement is part of a broader literature on regulatory negotiation, an increasingly important field based on the idea of negotiation between private and public parties (Harter, 1982; Coglianese, 1997; Irvin and Stansbury, 2004).¹⁵

With Customer-centric Regulation, the regulator develops a framework that requires firms to engage with their customers, but remains directly involved in the price review process. The rationale is that better information on customer preferences may lead to better outcomes for all parties involved. Regulated firms routinely interact with customers on a daily basis through their service offerings and are likely to be in a better position to engage with them than the regulator. The engagement process also creates a large amount of information that may improve regulatory decision making and foster learning by the firm. The firm develops a business plan based on insights obtained from the customer engagement process. This process could include discussions with customer representatives as well as more formal analysis of customer preferences and

¹⁴ Many aspects of the regulatory process are influenced by politics. See, for example, the seminal work of Stigler (1971) and Peltzman (1976).

¹⁵ There is a related research area that focuses on citizen engagement. This concept generally refers to the participation of citizens in governance, such as city and regional planning (e.g., Goetz and Jenkins, 2001; Delli Carpini et al., 2004). One question that directly relates to customer engagement in the utility space is how to encourage ordinary households to participate in the regulatory process and how to ensure that they have the necessary knowledge to make informed decisions (Whittington, 2017b).

their willingness to pay for different services and public goods. Before, during, and after the development of the proposal, firms are encouraged to incorporate customer preferences in their business plans through CE. The regulator would review the proposed plan in light of the firm's CE. It may then provide financial and non-financial rewards to the firm based on the quality of its overall plan.¹⁶ An example of one of these incentives is an early determination decision for firms judged to have a high-quality business plan. This allows them to complete the costly review process earlier (Ofgem, 2013; Ofwat, 2013). We discuss below how regulators typically assess business plan quality and the role of customer engagement in this assessment. Ultimately, the regulator determines the final outcomes of the price review, and implements the "price control" for a given period (Ofgem, 2013; Ofwat, 2013).¹⁷

Customer engagement in practice

These models are stylised. In practice, regulators select from a broad menu of options that involve customer engagement. Table 2 introduces eight examples of regulators using some form of customer engagement. We restrict the sample to regulators that *explicitly* apply Customer-centric Regulation in their regulatory approach or encourage Negotiation. As can be seen in column 4, the use of Customer-centric Regulation is a relatively recent development and generally based on the British experience. Negotiation is a much older element of regulation that is generally applied in the U.S.¹⁸ For example, the Florida Public Service Commission is a widely-studied example of retail regulation in the U.S.¹⁹ We loosely group regulators according to the stylised models that best describe their approach.

The nature of customer engagement is not the only difference across these examples. The regulatory landscape may also differ in terms of the size of the sector, the number of firms and customers, the legal environment, and the information available to the regulator. Within a regulated sector, firms may differ substantially along important dimensions such as their cost structure, the types of customers they serve, and economies of scale. Another major difference is the structure of the periodic price reviews by the regulator. Regulators in the U.K. typically set prices for all firms simultaneously, while U.S. regulators process reviews on a case-by-case basis.

Regulated sectors also differ in terms of the relationship between firms and their customers. For example, water utilities in the U.K. deliver services directly to end

¹⁶ As an analogy, rewarding companies based on cost and quality leads to superior outcomes than just rewarding on cost (see, e.g., Decarolis et al., 2016).

¹⁷ Throughout the paper, we interpret price control as the overall outcome of a price review by a regulator following regulatory terminology in Great Britain. This should not be confused with traditional price controls in the microeconomic sense, i.e. price ceilings and price floors.

¹⁸ In the U.S., Negotiation is generally referred to as "negotiated settlements" or "negotiated stipulations" (Doucet and Littlechild, 2006).

¹⁹ Negotiation is also used by larger regulatory bodies. For example, the Federal Energy Regulatory Commission in the U.S. has been using a settlement process for regulating federal transmission utilities for decades (Wang, 2004; Littlechild, 2011). Similarly, the Canadian National Energy Board has used settlements for inter-provincial and international power lines (Doucet and Littlechild, 2006).

customers (households). In airport regulation, the customer is the airline rather than the passenger. In the latter case, both the airport and the airline are likely better informed and have stronger private incentives to negotiate a mutually beneficial result than the utility and the household in the former case. Similarly, the market structures for water and energy in the U.K. (and elsewhere) differ significantly. Water services are still mostly a traditional natural monopoly, while the retail and wholesale markets for energy have been opened for competition.²⁰ In the case of gas and electricity, Ofgem only regulates the transmission and distribution networks directly.²¹ This difference in market structure also affects how far removed end customers are from services provided by the regulated firm. Markets where end users are not directly served by the regulated firm may pose additional challenges for customer engagement. For example, customers may be better informed about their water consumption than about the impacts of energy distribution and transmission networks on the quality of their gas and electricity service.

Regulators may also differ in terms of their goals and they may also have multiple objectives. There may be goals of regulation beyond welfare, including process concerns (Joskow and Rose, 1989). For example, if direct negotiation between firms and customers is successful, the regulator does not have to play an active role in the regulatory process. In this case, CE offers the promise of reducing or completely removing the influence of the regulator (Heims and Lodge, 2016b). Customer-centric Regulation, on the other hand, introduces new elements into the regulatory process. These elements may increase the regulatory burden and the influence of the regulator. At the same time, regulators and firms may value engagement. Because customers are directly involved in the development of regulatory outcomes, these outcomes might be seen as more legitimate (Ofwat, 2013; Heims and Lodge, 2016b). Furthermore, the regulator may be concerned about distributional effects of regulation. Recent regulatory proceedings reflect such concerns. For example, both Ofgem and Ofwat explicitly require engagement with vulnerable (e.g., low-income) consumers to elicit their needs (Ofgem, 2013a; Ofwat, 2013). It is not clear how these alternative goals affect economic efficiency or how they should be weighted by the policy maker.

Based on these examples, we offer four observations about the use of customer engagement. First, regulators are involved in the CE process to varying degrees. The Florida Public Service Commission uses the most traditional form of Negotiation in which the regulator strongly encourages settlements between firms and customers without actively participating in the process. In recent years, negotiated settlements have generally replaced standard litigation in Florida (Littlechild, 2012). In the U.K., the Civil Aviation Authority and the Water Industry Commission for Scotland adopt similar approaches. In both cases, the regulators are the final decision maker, but signal publicly that agreements between firms and customer representatives will likely be accepted with few changes. In contrast, regulators using the Customer-centric Regulation model tend to remain more hands-on. Even if customer representatives fully

²⁰ In the case of England and Wales, the retail water market for business customers will be opened for competition in April of 2017. The residential retail market will remain fully regulated.

²¹ Ofgem also lightly regulates the competitive wholesale and retail markets for gas and electricity to ensure that they work efficiently.

agree with the proposed business plan, the regulator may implement substantial changes based on its own assessment of the case.

Second, different regulators define different roles for customer representatives. For example, Ofwat asks regulated firms to set up independent customer challenge groups (CCGs) that have particular roles (Ofwat, 2013). The main role is to provide a critical customer voice in the development of the business plan and challenge the firm to improve the quality of its engagement with customers (Ofwat, 2013). Similarly, the Water Industry Commission for Scotland established a Customer Forum in cooperation with its sole regulated firm and Scotland's national consumer council (WICS, 2013). The role of this Forum differed from a CCG and included direct negotiations with Scottish Water. In contrast, Ofgem did not prescribe company-level consumer panels. Rather, the regulator created a sector-wide consumer panel that mainly acted in an advisory role during the review of business plans (Ofgem, 2013a).

Third, it appears that regulators may evaluate the success of customer engagement differently. Regulators following the Negotiation approach generally define success as an agreement between the parties engaged with each other. For Customer-centric Regulation, there is not typically a clear definition of success. Furthermore, assessments of effectiveness vary. In our sample, assessment mechanisms range from a letter grade system (Ofwat) to elaborate scorecards (Ontario Energy Board) to a traffic light scale (Ofgem). In addition to different ways to assign grades to a firm's CE activities, the mechanisms also differ in terms of the assessment criteria used. For example, Ofgem only uses one criterion, which assesses the overall impact of customer engagement on the proposed content of the business plan. In contrast, Ofwat defines three criteria with broader questions aimed at different elements of the CE process (see Table 3 below).

Finally, there are important differences in the incentives provided by regulators for effective CE. The clearest contrast is between the Negotiation model (which does not require formal CE) and the Customer-centric Regulation model. In the former, the main incentive for successful negotiation is the possibility of almost entirely circumventing the price review process (Pollitt, 2008). In the latter, regulators provide incentives for the *overall* business plan proposal – of which CE is one element – based on their respective assessment mechanism.

In recent years, there has been an important development towards the increased use of some elements of customer engagement. These elements are not always part of a formal price review, and they may be carried out independently of regulatory proceedings. Many utilities in the U.S. engage with customers on a variety of issues. Popular examples include energy-efficiency programmes, such as subsidies for take-up of energy-efficient technology, and the provision of detailed feedback to help customers make more informed energy or water demand choices (Geller et al., 2006). Another widely-used policy lever is the introduction of new pricing schemes, such as time-of-use or fully dynamic pricing (Faruqui and Sergici, 2010). Many of these programmes are designed to meet new challenges in the sector. In some cases, regulators require

utilities to implement new programmes. For example, multiple states mandate Energy Efficiency Resource Standards that introduce quantitative long-term energy savings targets for utilities.²² In other cases, utilities may implement programmes to provide credible evidence used during price reviews or due to other private incentives, such as customer satisfaction.²³

Academic assessments of customer engagement

The literature that assesses the effectiveness of customer engagement as a regulatory tool is relatively recent. There are two general problems with the literature. First, effectiveness is not always defined clearly. Second, even when effectiveness is defined clearly, it is often difficult to know what would have happened in the absence of customer engagement. Most academic assessments to date have been based on requests by regulators and other government agencies. A review of existing work in this area provides four insights. First, academics document that regulators and stakeholders have favourable beliefs and views on the role of CE in improving outcomes after implementation. This holds true across all case studies that are summarized in Table 2. For instance, Professor Littlechild “was pleasantly surprised and impressed by the enthusiasm and innovation [...] brought to the processes” by firms under the regulation of Ofgem and Ofwat (Littlechild, 2014a; p. 157). Similarly, experiences of stakeholders during price reviews by the Civil Aviation Authority and the Water Industry Commission for Scotland are generally positive (Pollitt, 2008; Littlechild, 2012; 2014a, b; Hendry, 2016; Heims and Lodge, 2016b).

Second, not all aspects of the first generation of Customer-centric Regulation went smoothly. For example, some airports failed to reach an agreement with airlines in the Civil Aviation Authority’s most recent reviews (Pollitt, 2008; Littlechild, 2012). These reviews, however, took place at a time of complex changes in the sector. Two of the three regulated airports wanted to be deregulated. Consequently, it might not be surprising that some negotiation was unsuccessful. For the water sector, Heims and Lodge (2016b) document a lack of guidance and repeated changes to the framework by the regulator that led to frustration during Ofwat’s price review in 2014. They suggest that some companies perceived that “a lot of time and effort had been spent ‘for nothing’” (Heims and Lodge, 2016b, p.14).

Third, despite its important role in U.S. regulation, Negotiation has not been discussed widely in the economics literature. Most work focuses on “negotiated settlements” in Florida (Doucet and Littlechild, 2006; Littlechild, 2007; 2009) and on the use of

²² For a list of states with Energy Efficiency Resource Standards, see <http://database.aceee.org/state/energy-efficiency-resource-standards>

²³ Rating sites and industry-specific comparisons are increasingly used in the U.S. For instance, J.D. Power publishes an annual Residential Customer Satisfaction Study that compares U.S. utilities with each other (see <http://www.jdpower.com/resource/us-electric-utility-residential-customer-satisfaction-study>). Performing well in these rankings may provide a strong motivation to engage more actively with customers. A high rating may also affect how favourable a utility is seen by the regulator, which could impact regulatory outcomes.

Negotiation by federal regulators (Wang, 2004; Littlechild, 2011).²⁴ The consensus is that settlement has clear advantages compared to traditional litigation. For example, Littlechild (2012) finds that settlements are less time-consuming, less costly, and less uncertain than litigation from the perspective of the regulated firm. In a later paper, Littlechild (2014a) highlights the potential of settlements to fundamentally change the regulatory framework. In Florida, for example, regulation moved from standard rate-of-return approaches to a system more closely resembling price-cap regulation. In another set of studies, Littlechild (2007, 2009) provides evidence that customers receive sizable additional benefits from rate reductions that are primarily the result of negotiated settlements. More than three quarters of rate reductions are achieved by settlements rather than litigation with a mean value of reduction eight times larger than those realized by litigation. These conclusions rely on the implicit assumption that the only difference between firms' proposals is whether they were resolved by Negotiation or by traditional means of regulation; many other important factors may differ as well.

Fourth, fundamental concepts of economic efficiency enter the discussion only tangentially. Evidence is mostly based on anecdotes or a comparison of price controls under voluntary customer engagement with those achieved by traditional regulation. To the best of our knowledge, no research seeks to theoretically or empirically derive consumer surplus or economic efficiency gains associated with the introduction of customer engagement.

This lack of clean academic evidence on the efficiency implications of CE may appear to be surprising. However, we believe that the complex structure of the regulatory process paired with stark differences across regulatory environments can explain this gap in the literature. A major challenge in evaluating CE regulation is the missing counterfactual (Joskow and Rose, 1989). It is not immediately clear what the alternative regulatory approach would be, and how to construct a meaningful quantitative comparison of the benefits and costs. Unfortunately, in all cases, a small number of firms coupled with multiple changes in the regulatory framework, make it difficult to assess the impact of CE on regulated firms or their customers.

While a precise answer to the question of whether CE improves outcomes of regulation remains elusive, there is a second layer that is better suited for economic analysis. The shift toward assessing customer preferences will involve a range of preference-elicitation mechanisms and new programmes implemented by firms. Some of these may be ideally suited for standard programme evaluation techniques. Economists have access to a wide range of empirical tools developed to evaluate such interventions (Angrist and Pischke, 2009). Learning how particular programmes introduced in response to CE efforts affect overall demand, customer satisfaction, or measures of consumer surplus can inform both the firm's and the regulator's future decisions.²⁵

3. The customer engagement process: Firm incentives and responses

²⁴ Legal scholars have also considered the role of Negotiation, mainly as an alternative form of dispute resolution (Rose-Ackerman, 1994; Krieger, 1995; Coglianese, 1997).

²⁵ We address this issue more fully in Section 4.

This section shifts the focus from the perspective of the regulator to that of the regulated firm. Firms subject to Customer-centric Regulation play an active role in regulation by engaging with their customers. They do so within a particular regulatory environment. We examine the main elements of this environment for two important cases in the U.K. – Ofgem and Ofwat.²⁶

We begin by highlighting the prominent role of customer engagement in regulatory proceedings. We then compare detailed data on customer engagement efforts by regulated firms with the regulator’s evaluation of the firm’s business plans. Our analysis (discussed below) suggests there is not a direct link between the evaluation of a firm’s engagement process and the overall assessment of the business plan; customer engagement is only one of many elements used to assess a business plan. Because rewards that a firm receives depend on the overall assessment, there is only an indirect link between rewards and engagement efforts. We find that firms responded to the call for customer engagement and engaged in many different ways. Our conclusion highlights the success of early customer engagement efforts as perceived by the regulator but also discusses clear drawbacks of the current system from the standpoint of incentivising firms to engage effectively.

To develop a better understanding of how the customer engagement process works in practice, we draw from price reviews conducted by Ofgem and Ofwat.²⁷ These case studies allow us to gain detailed insights into firm responses to the call for customer engagement because we have access to business plans submitted by firms. Furthermore, the regulatory innovations by these regulators appear to have spurred similar efforts in other sectors in the U.K. and abroad. For instance, Australia’s Essential Services Commission recently redefined their regulatory approach based on insights from the U.K. (Littlechild and Mountain, 2015; Essential Services Commission, 2016; Morton and van Bueren, 2017).

We highlight the importance of customer engagement in the regulatory proceedings of Ofgem and Ofwat used for determining the price controls for 2015-2023 (RIIO-ED1) and 2015-2020 (PR14), respectively.²⁸ In the case of Ofwat, the regulator established a “three-tiered approach that will enable customers to engage with and influence all parts of their companies’ business plans.” (Ofwat, 2011, p.2). The three tiers are: (i) direct local engagement of firms with their customer body; (ii) firm-level customer challenge

²⁶ Other regulators in the U.K. use similar regulatory approaches. Water and sewerage services are regulated separately for Northern Ireland and Scotland. Both regulators use customer engagement in their regulatory approaches but only regulate one firm each. We focus on Ofgem and Ofwat because the larger number of regulated firms provides the most comprehensive data for our analysis.

²⁷ We consider regulatory proceedings from Ofgem’s RIIO-ED1 price review and Ofwat’s PR14 price review. In the case of Ofgem, business plans were evaluated for each transmission and distribution firm but results and recommendations were summarized by the six ownership groups. We report outcomes of regulation and assessments by the regulator on the ownership group level for firms regulated by Ofgem.

²⁸ Ofgem used a similar regulatory approach in their RIIO-T1 and RIIO-GD1 price reviews.

groups (CCGs) that include stakeholders from various organizations²⁹; and (iii) a sector-wide customer advisory panel. Ofgem specified a more limited role for customer engagement and called for “enhanced engagement” that “will require companies to engage more effectively with their customers [...]” (Ofgem, 2010a, p.17). Ofgem also requested that firms engage with customers during all phases of the business plan development, beginning with early drafts and extending beyond the conclusion of the price review. Both regulators also developed a reward structure for firms that is partly based on the quality of their customer engagement.

Despite requiring extensive customer engagement, neither Ofwat nor Ofgem mandate that the firms use particular analytical tools or engagement channels. The main argument for this light-handed approach is that firms are better-equipped to devise effective engagement strategies due to their knowledge of their customer body. Ofgem’s *Handbook for implementing the RIIO model* states that “companies should take decisions about how best to understand and respond to the needs of their customers; and companies may wish to explore a range of techniques [...]” (Ofgem, 2010b, p.16). At the same time, customer engagement was not to be a “box-ticking exercise”, further alluding to the flexibility provided to firms (Ofgem, 2012, p.16; Bush and Earwaker, 2015). The one exception is that Ofgem explicitly expects firms to consider “fuel-poor or vulnerable” customers and future consumers in their engagement efforts (Ofgem, 2013a).

Similarly, Ofwat “will not prescribe how they [firms] do this [engagement], but will provide high-level guidance and expect the companies to use good practice.” (Ofwat, 2011, p.2). Part of this guidance is the expectation that “each company will use a wide range of information from its customers (for example from any complaints they make) and where necessary carry out any robust new customer research needed to understand its customers’ priorities for services and views on bills.” (Ofwat, 2012, p.2). The final methodology for the price review in 2014 explicitly considers customers’ willingness to pay (WTP) as an important building block of robust research to value the goods and services from the firms (Ofwat, 2013, p.77). Ofwat also expects firms to engage with vulnerable and future consumers (Ofwat, 2013).

After engaging with customers, each regulated firm submits a business plan to the regulator. This business plan proposes outcomes that firms aim to achieve during the regulated period. Customer engagement is intended to shape these outcomes and align them with customers’ needs (Ofgem, 2013a; Ofwat, 2013). For example, Ofwat specified for the price review in 2014 that “customer engagement is an important part of our [Ofwat’s] assessment of business plan quality - and we expect plans to demonstrate they reflect customers’ views” (Ofwat, 2013, p.59). Ofgem and Ofwat formally review these plans based on an evaluation process summarized in Table 3. Row 2 presents

²⁹ CCGs consisted of members with a wide range of backgrounds. For example, they included members from the Consumer Council for Water (CCWater), private businesses, local authorities, the Environment Agency, the Drinking Water Inspectorate (DWI), and several other public and private entities. See http://webarchive.nationalarchives.gov.uk/20150624091829/http://ofwat.gov.uk/pricereview/pr14/customer/prs_201305ccg for more detail on the composition of CCGs.

details about Ofwat's review, which consists of 13 "tests" that focus on different elements of the business plan. Customer engagement is the subject of only one of these tests. Each test contains several smaller evaluation criteria formulated as questions. Ofwat assigns grades on a letter scale (A-D) to all criteria and then aggregates these grades into an overall grade for each test.³⁰

Row 3 summarizes a comparable process used by Ofgem. The basis of the assessment is a set of five core criteria. Each criterion consists of several related evaluation questions similar to Ofwat's approach. Customer engagement is only featured in one question on the "Process" criterion. Ofgem assigns each core criterion a grade on a traffic light scale based on performance on the underlying evaluation questions.

In the case of both regulators, the *overall* assessment of the business plan determines several key outcomes for the regulated firm. Firms do not receive an overall grade for their proposal. Instead, business plans may be considered "high-quality" in the case of Ofwat or "well-justified" in the case of Ofgem (Ofgem, 2013a; Ofwat, 2013).³¹ We use "high-quality" to refer to such business plans for both regulators. A firm gains access to several positive incentives if its business plan is perceived as high-quality.³² Firms with business plans that are not considered high-quality do not gain access. Because customer engagement is only one of the elements considered during the overall assessment, it does not directly affect important financial and non-financial outcomes for a firm.³³ A high grade on the criteria related to customer engagement does not guarantee firms access to incentives.

Incentives are similar across the two regulators. The first incentive relates to shortening the duration of the price review process. Firms with a high-quality business plan receive an early determination of the price review. The difference between a regular determination and an early determination is about nine months for both regulators (Ofgem 2013a; Ofwat, 2014a). A shorter review period allows the firm to allocate resources to other ventures and provides a longer planning horizon for the actual

³⁰ The aggregation rule is not clearly described in the proceedings. However, the data suggest that one "C" is sufficient to receive an overall test grade of "C" while at least 2 "As" are necessary for an overall "A". See the Dashboard files at http://webarchive.nationalarchives.gov.uk/20140429120232/http://ofwat.gov.uk/pricereview/pr14/prs_web_140404pr14rbrrcboard for the exact aggregation for each test and firm.

³¹ In the case of Ofwat, an additional pre-qualification step was added following submission of companies' business plans. This meant companies could only pre-qualify as high-quality (Ofwat, 2013). Conditional on implementation of additional requirements by Ofwat, they were reassessed. Firms with initial submissions that did not pre-qualify were excluded from this re-assessment opportunity. Both firms that pre-qualified during the price review in 2014 fulfilled the additional requirements. We consequently ignore this distinction in our exposition.

³² We use the word incentive to match the language of the regulatory proceedings.

³³ Ofgem's "ongoing consumer and stakeholder engagement incentive" is one notable exception (Frerk, 2017). It is independent from the price review itself, but was introduced to encourage ongoing engagement after and in between price reviews. Firms can apply annually for a modest financial reward. These applications are judged by a panel. Ofgem does not provide clear guidance on how the panel will judge the efforts. Successful applications are published online and may lead to reputational benefits for firms in addition to the financial reward.

implementation.³⁴ The second incentive is targeted at reputational benefits. Both regulators publicize the outcomes of their assessments and specifically highlight high-quality business plans. This practice may positively affect customer and shareholder views of a firm. We are aware of some firms actively disputing their overall assessment, which leads us to believe that the high-quality designation matters to firms.³⁵

A third type of incentive provides financial benefits to firms with high-quality business plans. These firms receive an up-front lump-sum payment and a more favourable sharing rule. With an improved sharing rule, firms can retain a larger proportion of their efficiency gains relative to the expected efficiency improvements as determined by the price review for their shareholders.^{36,37} To put these financial incentives in perspective, Ofwat provides an estimate of the combined effect of all incentives for the two firms with high-quality business plans in the 2014 price review. For these firms, “the [...] incentive package could amount to around £17 million [...] and £7 million [...]” (Ofwat, 2014a, p.10). Differences in the amounts reflect the scale of the two firms.³⁸

Interestingly, the regulatory proceedings do not provide formal incentives for members of customer groups (e.g., CCGs).³⁹ However, these groups may be motivated by reputational concerns because regulation requires repeated interaction among the regulator, the firm, and CCGs. Most members of a CCG are also affiliated with an external organization such as the Environment Agency or Citizens Advice and may be concerned about the organization’s reputation. The main role of a firm’s CCG is to challenge “the quality of their [the firm’s] customer engagement; and to challenge how well their proposed outcomes ... reflect their customer engagement, and wider consumers’ views and priorities.” (Ofwat, 2013, p.16). The CCG provides an “independent report [...] at the same time as companies submit their business plan” (Ofwat, 2013, p.16). The regulator takes these reports “as a key input” in the price

³⁴ Regulatory proceedings of both regulators include a “do not harm” clause for firms with early price review determination. The aim of this clause is to not make such firms worse off compared to firms that do not receive an early price review. For example, early determination firms may initially only be allowed to charge a low price based on a favourable capital market. If adverse changes make investments more expensive between the early and standard determination, the clause ensures that early determination firms will be allowed to charge higher prices to recover their costs.

³⁵ In fact, two firms that did not receive the high-quality business plan rating by Ofgem have appealed against that decision in front of the Competition and Markets Authority. Interestingly, both firms noted that they were in favour of the shift towards the customer-centric framework but did not agree with Ofgem’s assessment of their business plan quality (Littlechild and Mountain, 2015).

³⁶ The exact sharing rules for efficiency gains are complicated. In general, firms with high-quality business plans can retain gains at a rate that is 5 percent higher than for firms with business plans that were not rated as high-quality by the regulator (Ofwat, 2014b).

³⁷ In the case of Ofgem, firms with business plans that are not considered high-quality can theoretically still achieve very similar financial outcomes both in terms of direct rewards and the proportion of efficiency gains retained by the firm. However, high-quality business plans gain immediate access to these benefits (Ofgem, 2013a).

³⁸ The incentive package is relatively small compared to a firm’s allowed revenue. For the two firms with high-quality business plans, incentives account for about four percent and 2.8 percent of the firm’s average annual allowed revenue, respectively.

³⁹ For an excellent discussion of the CCG’s role and potential improvements to CCGs in future price reviews, see Bush and Earwaker (2015).

review process (p.17). Ofgem defines the role of its sector-wide CCG differently. Its main role is to act as a “critical-friend” and “conscience” to Ofgem and to take on an advisory role during the business plan review to ensure that customer input is taken seriously by all firms (Frerk, 2017, p. 17).⁴⁰ There are generally no formal incentives assuring that these groups take actions that will benefit customers. Another important concern is with the kinds of customer that are likely to be well-represented in this process (Olson, 1965). The regulator seems to rely on the goodwill of members and their private or organizational incentives to achieve the best possible outcome for customers.⁴¹ We will discuss this potential concern in more detail in section 4.

Both regulators provide general guidance in terms of what is expected of firms. However, the role of customer engagement in determining the overall evaluation of a firm’s business plan is not clear. In particular, it is unclear how much weight customer engagement carries in the regulator’s decision to grant particular firms access to the incentives associated with high-quality business plans.⁴² This ambiguity stands in contrast to the importance that both regulators state they place on customer engagement in the regulatory framework as noted above. Because incentives are only directly linked to the overall assessment of a business plan, returns to customer engagement are uncertain from the perspective of the firm.⁴³ This uncertainty may cause the firm to refrain from costly engagement and, instead, focus efforts on elements of the business plan that are perceived to have a bigger impact on their bottom line. Another important consideration is how firms will respond during future price reviews. It may be challenging to motivate firms and customer representatives to repeatedly engage if they feel like their input was not valued by the regulator during the first price review (Littlechild and Mountain, 2015). Nevertheless, all firms seemed to respond very actively to the call for customer engagement and employed a wide range of engagement strategies.

We collected detailed data from 24 business plans submitted to Ofwat and Ofgem.⁴⁴ The findings are summarized in Table 4. Column 2 shows the tools and data employed by a given firm. Columns 3 to 5 present indicators for three engagement elements

⁴⁰ See <https://www.ofgem.gov.uk/network-regulation-riio-model/riio-forums-seminars-and-working-groups/consumer-challenge-group>

⁴¹ Our understanding from private conversations with Ofwat is that some members of the customer group are paid by the firm while others are effectively funded by the organizations they work for (e.g., CCWater, Environment Agency, Citizens Advice).

⁴² The weights attached to different elements of business plans are not clear from the regulatory proceedings. However, after the price review in 2014, Ofwat indicated that they focused their assessment on tests for outcomes (including customer engagement), costs of delivering these outcomes, affordability of the overall plan for customers, companies’ historic performance (2010-2015), and a strong quality assurance by the Board (Ofwat, 2014a).

⁴³ There are additional potential returns to customer engagement not related to incentives for high-quality business plans. For instance, if a firm wants to claim costs for special projects outside of its regular operations, the firm must support its proposal with evidence from customer engagement suggesting that there are clear benefits for customers.

⁴⁴ We are indebted to Jonathan Ashley of Ofwat and all firms who shared their extensive documentation with us. Business plans for Ofgem are available in the public domain. This sample consists of the universe of firms regulated during Ofgem’s RIIO-ED1 price review, and Ofwat’s PR14.

singled out by the regulators to be important: willingness to pay (WTP) research based on stated preference surveys, engagement with vulnerable customers, and engagement with future consumers.⁴⁵ Finally, columns 6 and 7 present the assessment of the firm's business plan as determined by the regulator. We include both the evaluation of the customer engagement criteria and the overall high-quality status achieved by a firm.

Table 4 reveals several key insights. First, all regulated firms employ a similar and comprehensive set of tools and methods. For instance, all business plans feature surveys, focus groups, workshops, and various other strategies to engage with stakeholders. Furthermore, most firms derive measures of WTP to identify customer priorities and to assign monetary values to changes in the terms of service. In fact, many firms conduct several different WTP surveys over multiple years, topic areas, and customer subgroups. All WTP evidence is collected through stated preference surveys.⁴⁶ These surveys ask customers about their preferences and typically try to infer willingness to pay from the responses. For example, a customer might be asked if she was willing to pay more on her monthly bill to support a costly programme that reduces wastewater runoff; or she might have the choice between different levels of water quality that translate into different costs on a typical bill. In many cases, WTP measures from these studies directly inform cost calculations for proposed service changes and investments. Well-designed stated preference studies can generate useful information for both private and public goods (Johnston et al., 2017). However, there are many problems associated with stated preference approaches that may make these approaches unreliable (Arrow et al., 1993; Diamond and Hausman, 1994).⁴⁷ An alternative is the use of revealed preference approaches, which use a customer's actual choices in a market context to estimate WTP and consumer benefits. These different techniques should be seen as complements in deriving robust measures of willingness to pay.

The second finding is a weak link between the tools used by a firm and the assessment of the firm's engagement process by the regulator. Because most firms employ similar strategies, it is not clear why some business plans receive praise while others score badly. One caveat of our approach is that we simply investigate the types of tools and

⁴⁵ We constructed these indicators from a word-search in the original business plan proposal and all appendices related to customer engagement efforts. In the case of WTP, we looked for evidence related to the words "willingness" and "pay". We rate a plan as considering vulnerable customers if we could find any combination of "vulnerable", "hard to reach", "low income" and "customer" or "consumer" or the expression "social tariff"; the approach for future consumers similarly searched for "future", "prospective", "teenager", or "school" in the relevant sections of the proposal and customer engagement annexes. We do not consider engagement that was conducted after the original submission.

⁴⁶ There is one exception. A multi-firm study used purchase data for bottled water as a measure of revealed customer preferences for tap water quality in the service areas of the participating utilities (Lanz and Provins, 2016; Lanz and Provins, 2017).

⁴⁷ These include, for example, the hypothetical nature of questions, unfamiliarity with the decision environment or the good or service proposed, potential strategic behaviour to influence whether a service will be provided or not, and the impact of how a question is framed for an otherwise identical good or service (Arrow et al., 1993; Diamond and Hausman, 1994; Ariely et al., 2003).

methods used; we do not evaluate the quality or importance of each individual tool.⁴⁸ A possible explanation is that the regulator assesses engagement strategies in more detail than we can observe. Table 4 also relates the evaluation of the engagement process to the overall status of the business plan. We find that highly-rated customer engagement is neither necessary nor sufficient for a business plan to be categorized as high-quality. In the case of Ofwat, the two high-quality business plans scored an “A” and a “B” on the customer engagement test. At the same time, one business plan scored an “A” on the customer engagement test, but was not considered to be of overall high-quality by the regulator. Similarly, the only high-quality business plan in the case of Ofgem scored “Green”; four other business plans achieved this grade without being considered high-quality. However, these observations also suggest that some threshold level of customer engagement may be necessary for the high-quality rating.⁴⁹ No business plan receiving a “C” or “Yellow” was rated as high-quality.⁵⁰ Overall, there are only three high-quality business plans: two in the case of Ofwat and one in the case of Ofgem. This small number may reflect the uncertainty faced by firms in terms of what is expected of them.⁵¹ Alternatively, it could reflect that the regulator used many criteria unrelated to customer engagement to assess (and reward) the overall business plan.⁵² Regulators may have also wanted to signal high expectations for future price reviews by applying very high standards.

Despite the weak link between customer engagement and overall assessments, and the low number of high-quality business plans, regulators believe that customer engagement had a positive impact. In its most recent price review, Ofgem observed a “marked improvement over previous price control submissions” (Ofgem, 2013b, pp.2). It found that “all [firms] have engaged with stakeholders in developing their plans” (Ofgem, 2013b, pp.2) and “used engagement mechanisms that are targeted to reflect different stakeholder needs” (Ofgem, 2013c, p.12). More generally, the opportunity to receive a high-quality rating “has driven all DNOs [firms] to raise their game in terms of delivering

⁴⁸ This approach is consistent with the language of most business plans which do not specify the importance assigned to particular tools by the firm. Similarly, regulators’ determination letters generally stress the overall nature of engagement strategies in terms of their comprehensiveness and robustness rather than particular elements.

⁴⁹ Draft determination letters provide additional evidence that customer engagement played an important role in the overall assessment of business plans. Letters for all three high-quality business plans named customer engagement as one of the reasons for the high-quality rating. But Ofwat and Ofgem also provided several other reasons for the high-quality status (Ofgem 2013b,c; Ofwat, 2014). This mix of reasons given for receiving a high-quality rating make it difficult to establish a clear relationship between the incentive and the quality of customer engagement. Several companies with business plans that were not perceived as high-quality by the regulator were also required to improve customer engagement before resubmission (Ofwat, 2014a). It is not clear to us from the regulatory proceedings how Ofwat made the decision to request more engagement.

⁵⁰ In the case of Ofgem, a “Green” on the Process criterion is a necessary condition for a high-quality rating. However, because customer engagement is only one element in the assessment of the Process criterion, it is not clear how important customer engagement is in achieving the necessary “Green” evaluation.

⁵¹ Littlechild (2014a) expresses his disappointment with this low rate of high-quality business plans as determined by the regulators.

⁵² For example, the regulator may place significant weight on the total costs of regulated firms of providing the services proposed in the business plan, and how these costs compare with other firms in the sector.

more for less” (Ofgem, 2013b, p.1). Feedback from customer groups, environmental organizations, and other industry stakeholders was also very positive (Frerk, 2017).

Similarly, Ofwat noted that it experienced a “step change in the quality of customer engagement” in business plans submitted for the price review in 2014 relative to previous reviews (Ofwat, 2015, p.18). The justification for this statement includes the observation that firms “had reached and engaged with more customers than ever before” (p.19), and that stakeholders noted that “the quality of engagement was higher than at previous reviews and this translated into higher-quality business plans” (p.19).⁵³ The general consensus in the water sector is that there was a large step forward in customer engagement compared with the previous price review. This “overall positivity” (Ofwat, 2015, p.19) likely has contributed to the decision of the regulator to use CE and to use it more extensively in the next price review in 2019 (Ofwat, 2016).

These findings suggest that regulated firms are doing more customer engagement than when it was not required. It is possible that at least some firms do just enough customer engagement to try to remain in the good graces of the regulator and its customers. Another possibility is that firms see the call for customer engagement as an opportunity to improve their business model and develop as an organization.

In summary, both Ofgem and Ofwat appear satisfied with the first price reviews involving customer engagement. A careful evaluation of the impacts of engagement with customers on the firm and on customers has not been done. Furthermore, it is difficult to identify how important customer engagement was in the overall assessment of business plans. Because customer engagement is playing a more prominent role in many regulatory proceedings, a critical question is how the regulatory framework involving customer engagement might be further improved.

4. How regulators and firms can improve customer engagement

This section examines ways in which regulators could improve the customer engagement framework. We begin by discussing the goal of customer engagement. We then identify ways regulators could usefully expand the customer engagement toolkit through experimentation and other modern tools of programme evaluation. Next, we examine ways of overcoming regulatory hurdles to experimentation, and alternative evaluation methods if experimentation is infeasible. Then we discuss the critical role that direct incentives could play in improving customer engagement, and how the assessment of customer engagement plans might be improved. Finally, we identify areas where more work is needed.

Clarifying the goal

First, consider the goal of customer engagement. As pointed out above, there may be different objectives for using CE in the regulatory process. We believe that a reasonable

⁵³ Calculations based on all business plan proposals suggest that the total number of customers included in engagement efforts during the price review in 2014 exceeded 250,000.

unifying goal for customer engagement is to increase economic efficiency or consumer surplus over the longer term.⁵⁴ This is consistent with much utility regulation that requires regulators to regulate in the “public interest” or promote policies that improve economic efficiency (Kahn, 1970; 1971). For example, Stern (2014, p.162) notes that “there is a focus on consumer welfare” in modern regulatory approaches in the U.K.

In the case of utility regulation, other important challenges may affect consumer benefits in the long-run. Decisions made by the regulator based on preferences of current customers may not only affect current customers, but may also have effects on the wellbeing of future generations of consumers. For example, changes to the terms of service may affect environmental amenities, which could affect future generations. If such costs are not reflected by current customers’ preferences, long-run efficiency and wellbeing may be adversely affected. Interestingly, externalities have not received much attention in the literature on customer engagement. One notable exception is Pollitt (2008), who discusses challenges for regulation in light of climate change concerns. He argues that the economics of climate change should be a key driver in the regulation of utilities. Even if climate change should be reflected in utility regulation, however, this regulation may be better done by legislators when the public goods transcend the boundaries of the regulator, as in the case of climate change (e.g., Victor et al., 2005; Lutsey and Sperling, 2008).

Some regulatory proceedings already explicitly identify customer engagement as a means to meeting the needs of current *and* future customers (Ofgem, 2013a; Ofwat, 2013). Similarly, regulatory proceedings mention the need to consider customers particularly vulnerable to price changes, such as low-income households (Ofgem, 2013a; Ofwat, 2013). We believe that distributional objectives can be considered along with efficiency. The relative weights assigned to short- and long-term benefits of new programmes depend on the preferences of the regulator.

Expanding the regulator’s toolkit

If some measure of economic welfare is the goal of customer engagement, then the question is how to promote that goal. We think that the firms’ toolkit needs to be broadened to reflect the current best practice in programme evaluation. This approach shifts the focus from assessing particular tools of customer engagement (the input) to assessing the impacts on the business plan and subsequently the customer (the outputs). For example, if regulators and regulated firms have a clearer understanding of the demand function of customers, programmes can be designed to increase economic efficiency. Programmes can also be directly compared to each other on an experimental basis to allow regulated firms to identify the most cost-effective approach for solving problems.⁵⁵

⁵⁴ Another goal is legitimacy of the regulatory process. Ofwat (2013, p.67) states that “respondents expressed strong support for the move to an outcomes- and customer-focused approach to delivery, particularly noting that it should improve customer legitimacy [...]” (Ofwat, 2013, p. 67).

⁵⁵ Programme evaluation tools are likely best suited for situations in which the regulated firm directly interacts with end customers. In that situation, the firm can observe customer behaviour in response to

There are many tools that can be used for programme evaluation. The choice between these tools depends on the precise setting, and the question at hand. The most important addition to the toolkit would be the use of controlled experimentation in the field, where customers are randomly assigned to a control group and a treatment group to test the impact of a particular policy without their knowledge (Harrison and List, 2004).^{56,57} Such field experiments can shed light on a number of areas of interest including: estimating the demand for a particular commodity (such as water or energy), estimating the demand for environmental amenities, estimating the economic and environmental impact of subsidies and price changes, helping with bill payment, helping with the take-up of smart or efficient technology, getting customers to conserve energy in times of shortage, and in devising more complete cost-benefit calculations.

Field experiments have several advantages that could improve how well customer preferences are reflected in business plans and the outcomes of regulation. They allow the regulated firm to use small-scale pilot studies to test the effectiveness of an idea. Evidence from these pilots can inform the decision of whether to implement an idea on a larger scale. These experiments can also be used to estimate the economic benefits from changes in policy, and estimate benefits as the programme evolves. Evidence on the economic benefits of a programme could be used to help select prices and terms of service. Experiments may also provide insights on customer demand and customer responses to different types of interventions and service changes. Such insights can be integrated in the business plan development. There is another potential benefit of experimentation. If designed carefully, experiments provide an objective answer to whether a programme works within a given sample of customers. This approach contrasts with regulation that relies on untested programmes and comparisons between

different programmes. In situations where the end customer is further removed from the regulated firm, such as in Ofgem's regulation of transmission and distribution companies, it is harder to observe direct impacts. We believe that careful measurement of programme impacts is critical in both situations. In the latter case, regulators may have to broaden their scope to consider elements of energy demand that are currently not seen as part of the transmission network, such as residential energy efficiency. This could be done in partnership with other government organizations or retail utilities. Regulators may also want to directly reward trials that investigate the impact of demand-side solutions on distribution networks. Ofgem is using an annual network innovation competition to motivate firms to develop "a low carbon energy sector as well as deliver financial benefits to customers" (see <https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation>). Some of the successful proposals include project directly related to end customers, such as smart metering technology. Careful programme evaluation could be integrated in such initiatives. Another alternative could be the use of stated preference surveys in which end customers face scenarios with different levels of distribution and transmission quality, such as duration of outages, and different changes to hypothetical utility bill amounts. WTP elicited from these surveys could then be combined with other techniques and can inform the choice between different investment programmes.

⁵⁶ This type of experiment is called a natural field experiment (Harrison and List, 2004). The main characteristics of such an experiment are that the participants do not know that they are part of a study and they also do not know that they are being observed by the researcher. The main rationale is to observe customer behaviour in a natural environment.

⁵⁷ Laboratory experiments are another way to study customer behaviour (Harrison and List, 2004). Harrison (2006) and Sturm and Weimann (2006) provide excellent survey articles of laboratory experiments applied to questions relevant to the energy and water sectors.

different firms and customer groups before and after the programme was implemented.⁵⁸

We are not the first to argue for experimentation in modern regulation. For a range of regulated sectors, Greenstone (2009, p.111) finds a system that is largely based on “faith, rather than evidence” and relies on evaluation of changes “only before they are implemented – the point when we know the least about them”. The consequence is a regulatory approach that “all too frequently takes shots in the dark” and fails to recognize whether changes do or do not work well (Greenstone, 2009, p.112). This conclusion also applies to utility regulation (Vine et al., 2014).

Some utility regulators are already encouraging experimentation for different kinds of problems, particularly in the U.S. Carefully designed studies have generated important insights for both regulators and utilities.⁵⁹ For example, the first experiments in the energy sector go back to pilot studies used by the U.S. Federal Energy Administration as early as 1975 (Price, 2014). After decades of experimentation, U.S. regulators now have evidence from dozens of studies over many years and geographic regions. Based on careful evaluation of these experimental benchmarks, California, Arizona, and Ontario, Canada are in the process of implementing widespread time-of-use pricing or have done so already.⁶⁰ Another example is a decision by the California Public Utilities Commission to require programme evaluation for demand-side management programmes aimed at energy conservation.⁶¹

There are many other successful examples of field experiments that have been used to generate important information for utilities and regulators in the energy and water sectors.⁶² For instance, many experiments have been designed to evaluate the impact of price changes or changes to the pricing scheme on customer demand (Faruqui and Sergici, 2010). Related studies investigate how the roll-out of smart metering technology

⁵⁸ Field experiments are not without shortcomings. For example, it may take months or years before the effects of interest can be observed and quantified. We believe the periodic nature of price reviews provides sufficient time for useful experimentation. Another criticism is the need for a careful design and the somewhat arbitrary selection of a sample for the experiment. If an unresponsive customer group is chosen, potential effects on other types of customers cannot be determined from a given experiment. In such a situation, it may wrongfully be concluded that the programme has no impact and it would be discarded. In many cases, experience of decision makers or a clear economic theory can address such concerns. Lastly, experiments may generate results that are not generalisable to other customer groups, utilities, or years, and only provide measures of limited policy interest. The regulator may want to consider these shortcomings when designing regulation. We believe that careful experimentation paired with other empirical approaches and clear theories of customer behaviour can generate very valuable information. Deaton (2010) and Deaton and Cartwright (2016) provide detailed discussions of potential shortcomings of experimentation.

⁵⁹ To aid utilities in assessing the impacts of energy efficiency programmes, various government organizations have published extensive guides on how to conduct programme evaluation. See, for example, the U.S. Department of Energy (2010) or the State and Local Energy Efficiency Action Network (2012).

⁶⁰ See https://www.edf.org/sites/default/files/factsheet_time-of-use.pdf

⁶¹ CPUC Decision 12-11-015.

⁶² See Price (2014), Hahn and Metcalfe (2016), and List and Price (2016) for extensive overviews of the experimental literature in the energy and water sector.

and other information provision affects the price-responsiveness of customers (e.g., Kahn and Wolak, 2013; Jesoe and Rapson, 2014). Other studies evaluate the use of demand-side management programmes inspired by the behavioural sciences and their effects on the short- and long-run demand for both electricity (Allcott, 2011; Allcott and Rogers, 2014) and water (Ferraro and Price, 2013; Brent et al., 2015; Bhanot, 2016).⁶³ This is only a small sample of studies to demonstrate how useful experimentation can be in helping utilities and regulators to understand important relationships and customer behaviour and how decisions affect customer wellbeing.⁶⁴

Making greater use of experiments could complement current practice in customer engagement in important ways. Customer engagement as currently practiced largely takes the form of asking customers what they would like and how much they would be willing to pay for a change in goods and services. These stated preferences of customers – both from more formal stated preference surveys and qualitative methods like focus groups – are then integrated into the business plan and subsequently in the price regulation. As pointed out above, stated preference techniques can be valuable, but also face criticism on various grounds.⁶⁵ In contrast, the programme evaluation techniques described above do not rely on asking people their preferences or attitudes and beliefs. We believe that a combination of tools should be used to help inform all parties about how to increase economic efficiency.⁶⁶

Overcoming regulatory hurdles to experimenting and alternatives to experimentation

In some cases, regulators may face legislative requirements that make the use of experimentation difficult. For example, regulators may be required to treat all similarly situated customers in the same manner, such as charging them the same price. In this situation, pricing experiments cannot be used by firms to understand customer responses to new prices or pricing schemes. A good example of regulation creating barriers to experimentation is the Retail Market Review by Ofgem in 2010.⁶⁷ The proceedings made it difficult for energy suppliers to randomly assign offers of discounts or rewards for behavioural change to some customers but not to others. As a result, firms may be less likely to experiment and therefore have a limited understanding of what works for the customer and for the firm.⁶⁸ One way to get around these challenges

⁶³ Allcott and Rogers (2014) and Brandon et al. (2017) provide an example of how field experiments can also be used to study the mechanisms behind customer responses to demand-side management programmes.

⁶⁴ There is also a recent effort to study water efficiency programmes and the uptake of products that improve water quality in the developing world. Developing countries provide a promising testbed to evaluate incentives for programme take-up, educational interventions, effects of water quality on health, and the importance of providing enabling technology to the poor (see, e.g., Ahuja et al., 2010; Ashraf et al., 2010; Devoto et al., 2012; Luoto et al., 2011; 2012).

⁶⁵ See Johnston et al. (2017) and Diamond and Hausman (1994) for reviews in favour of and critical of the use of stated preference methods, respectively.

⁶⁶ A first step in this process could be to use qualitative approaches, such as focus groups, to determine the service elements most important to customers. Regulated firms can then use more rigorous programme evaluation methods to compare different ways to meet these customer needs effectively.

⁶⁷ See <https://www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/retail-market-review>

⁶⁸ This regulation was relaxed in the latter part of 2016, following recommendations from the Competition and Markets Authority.

is for the regulator to allow and encourage pilots that can reduce fairness or equity concerns due to their smaller scale. If positive impacts on customers can be clearly demonstrated in the pilot, then the price or service change can be implemented broadly. The goal of the regulator in this instance is to reduce barriers to experimentation.

If the regulator cannot allow random assignment of prices and other offers to customers, then there are alternatives. For example, if the experimenter can pay people enough to voluntarily participate in an experiment, she may get a sample that adequately reflects the general population.⁶⁹ Thus, results from the pilot may generalise to the population of interest under certain conditions. Even if only a particular type of customer chooses to participate, being able to identify these customers – and their responses to the change – may inform future programmes and decisions about roll-out to a larger group of customers.⁷⁰ Some ideas may not be feasibly tested in any form of experiment. So-called quasi-experimental techniques may still allow the analyst to recover important relationships in the absence of randomisation.⁷¹ These approaches generally try to exploit an element in the policy environment that leads some customers to be exposed to a new service or programme and others not as if the exposure were random. For instance, some utilities use precise eligibility rules to determine participation in programmes. In this case, households just below or above the cut-off are likely very similar and can be compared to each other. Empirical strategies like these are becoming more common in the water and energy domain.⁷² Regulators could encourage such techniques, for example, by allowing firms to implement programmes in different waves or by providing researchers access to data across service area boundaries.

The potential role for direct incentives for customer engagement

Regulators may want to consider changing the incentive structure facing firms and customer representatives. In the preceding analysis of the two case studies, we noted that firms do not appear to receive direct rewards for customer engagement. We think regulators should experiment with such rewards for regulated firms that do “good” customer engagement, and that demonstrate concrete outcomes from this engagement in their business plans. These rewards could complement incentives for achieving the outcomes proposed in the business plans based on customer engagement. They may take the form of improved financial incentives similar to the current incentive structure for high-quality business plans as determined by the regulator. Such profits could be justified on the grounds that customers were also benefiting in economic terms. An

⁶⁹ Recent studies using opt-in designs in the energy and water sectors include Fowlie et al. (2015a; b), Hahn et al. (2016), and List et al. (2017). Borenstein (2013) provides an interesting theoretical treatment of opt-in programmes for dynamic pricing and its implications for important economic variables.

⁷⁰ See Ghandi et al. (2006) for a more detailed discussion.

⁷¹ Shadish et al. (1991), Ferraro (2009), Greenstone and Gayer (2009), and Imbens and Wooldridge (2009) provide detailed discussions of such approaches to recovering policy variables in environmental economics in general, and the energy domain in particular.

⁷² See, e.g., Boomhower and Davis (2014), Castledine et al. (2014), and Ito (2015) for recent applications of quasi-experimental techniques in the energy and water sectors.

alternative to targeted incentives for customer engagement would be to establish a closer link between the overall status of a business plan and its engagement strategies.

Similar incentives could be introduced for CCGs and other customer representatives (Bush and Earwaker, 2015). As noted above, customer groups may have significant impacts on the outcomes of regulation. Currently, however, there are no direct incentives provided to representatives for acting in the interest of customers. Regulators may want to consider providing direct rewards for particularly valuable inputs by customer representatives. These rewards could also be conditioned on representing customers that are important to the regulator, such as low-income or otherwise vulnerable customers (Olson, 1965). A related idea is to introduce incentives for customer groups to remain active players in future regulatory price reviews. Provision of incentives may overcome concerns about reduced engagement in cases where effort in the first price review based on Customer-centric Regulation did not lead to outcomes satisfactory to the regulated firm or its customer groups.

The introduction of direct rewards may have other desirable effects. First, it may act as a signal to the regulated firms that customer engagement is an important element of the price review. Second, firms could be rewarded for the engagement itself irrespective of the weights assigned by the regulator to other elements of the business plan. This direct reward could help resolve some of the uncertainty of the current system around the benefits to the firm of undertaking customer engagement. Third, incentives could also be designed in a way that encourages continuous engagement, rather than a focus on engagement near the time of the price review.

Another interesting idea is to build in an incentive for “failure”. For example, Victoria’s Essential Services Commission will assess business plans on their perceived *ambition* (Morton and van Bueren, 2017). In this framework, firms are expected to challenge themselves while developing a business plan in light of customer engagement. Those firms who think they can outperform general regulatory targets will be able to retain a larger proportion of efficiency gains if the regulator agrees with the firm’s self-assessment. Experimentation is inherently risky; some tested programmes might simply not work as intended or cost more than anticipated. We believe that such “failures” provide very useful information. In a system without credible programme evaluation, it is likely that mistakes remain undetected for a long time (Greenstone, 2009). The regulator may want to condition incentives on the implementation of experiments that create useful insight on what works rather than focusing solely on the final success of particular programmes.

We acknowledge that there is a trade-off between placing detailed requirements on firms’ engagement activities and leaving it to firms to discover the most effective engagement strategies. We believe, however, that it is possible to provide direct incentives and rewards to firms for different kinds of engagement activities, without prescribing the details of these activities. Regulators may want to experiment with incentives to find out what types of incentives work better for achieving the desired results.

Figure 2 provides a schematic of our proposed refinements to the customer engagement process. It begins with the regulator specifying a reward structure that is directly and clearly related to the customer engagement used by the firm, something regulators do not appear to do now. Then firms not only assess those needs, but carefully *test* what works to satisfy customer needs. These tests could include different programme evaluation techniques to estimate actual benefits to customers. Based on these efforts, the firm proposes an *evidence-based* business plan to the regulator. If the regulator's expectations are met, the firm is rewarded. The review process can be repeated periodically to discover the most effective and beneficial programmes. This new framework relies more heavily on microeconomics, modern tools of programme evaluation, and supplying the regulated firm with direct incentives to do customer engagement.

Assessing customer engagement plans

Customer engagement has many different elements. It can involve the generation of new information, the testing of what works best in the field, and estimates of actual benefits when new policies are implemented. The regulator may want to signal the value it places on various elements by the incentives it provides. There is not a one-size-fits-all solution to this problem, and it will depend on the weights the regulator places on different elements of the process. Some weight, for example, could be placed on particularly desirable outcomes such as the evaluation of programmes targeted at low-income customers, replication of earlier findings across firms to generate a more robust body of knowledge, or providing credible estimates of what customers might pay for better environmental quality or water quality. Weight could also be placed on the methods used in particular studies, and the degree to which applications address innovative topics of interest for the regulator.

A particularly challenging problem for regulators is assessing the quality of customer engagement efforts. Not all studies are alike, and assessing their quality will require expert judgment. It may be helpful to assemble an expert panel with experience in evaluating research quality to assess various efforts.

An important challenge for both the regulated firm and the regulator is how to assess the robustness of particular approaches that is used to assess demand and the effectiveness of policy interventions. There are no “cookie-cutter” approaches to assessing robustness of findings for customer engagement. One general observation is that more studies that have similar findings can sometimes give one greater confidence in the result. For example, a well-done stated preference study that is consistent with the findings of a revealed preference study provides evidence of robust findings. Similarly, replication of field experiments may increase confidence in particular findings if results are confirmed (Brandon and List, 2015; Camerer et al., 2016).

Another characteristic of robust engagement may be the evaluation of programmes across different types of customers. For example, it is likely that the preferences and priorities of high-income customers differ substantially from those of low-income customers. The same may be true for customers across different regions of a country or

between rural and urban service areas. Several studies in the water and energy sectors suggest that such heterogeneity exists for demand-side management programmes and energy-efficiency subsidies (e.g., Allcott, 2011; Allcott et al., 2015; List et al., 2017). These studies also show the promise of targeting a programme towards the most responsive customers to increase its cost-effectiveness and impact (e.g., Allcott and Mullainathan, 2010; Allcott et al., 2015). Experiments and other programme evaluation techniques are well-suited to explore such heterogeneities. As a consequence, the regulator may want to require that particular programmes are tested across several customer types to learn about where the programmes are most effective in meeting customer needs. The regulator could also evaluate proposed business plans based on their impacts on particular customer types. For example, the regulator may want to weight programmes that provide large benefits to low-income customers differently than programmes that mainly address the needs of high-income customers.

Areas where more work is needed

There are many other ways in which work on customer engagement might be usefully extended. We offer six recommendations here:

1. **Do more case studies on customer engagement.** Many regions are experimenting with customer engagement. More case studies could be informative as the regulatory process matures.
2. **Assess the effectiveness of customer groups.** The role of customer groups in the process deserves more careful scrutiny. Is it clear, for example, that these groups help promote the regulator's objectives and represent the interests of all customers?
3. **Evaluate consumer wellbeing.** If rigorous programme evaluation is done as part of Customer-centric Regulation, it would be instructive to review the economic impacts of these evaluations on consumers. Are studies that provide better estimates of customer demands used, for example, in ways that actually increase consumer surplus? We think one promising area for research would be the redesign of subsidy programmes in ways that both help low-income customers and promote conservation.
4. **Elicit revealed preferences.** More work on the WTP of customers for both local and global externalities could be helpful. If customers are willing to pay more for environmental amenities than it costs to provide these amenities, then it could be useful to encourage firms to supply more of these amenities.
5. **Maximize returns to experimentation.** To maximize the insights gained from experimentation, regulators could encourage different firms to experiment with different types of programmes. At the same time, replication may be valuable in certain contexts to demonstrate the validity of particular policy interventions in different settings.

6. **Disseminate information and replicate.** After valuable evidence is collected, this information should be disseminated widely. Proven programmes can then be rolled out across firms to improve outcomes for more customers.⁷³

5. Conclusion

The increasing use of customer engagement in utility regulation is a relatively recent phenomenon. It appears that regulators worldwide are starting to encourage or even require different forms of customer engagement from their regulated firms. This paper surveyed the use of customer engagement by utility regulators around the world. We presented a simple taxonomy for customer engagement that included Negotiation at one extreme and Customer-centric Regulation at the other.

We then examined the effectiveness of customer engagement and were unable to find rigorous studies that document a clear relationship between customer engagement and economic variables of interest. We conjecture that this result arises because of the analytical problems in demonstrating effectiveness, particularly related to specifying a believable counterfactual in the complex world of utility regulation. Notwithstanding the absence of rigorous academic work, several academics and consultants believe that the impact of customer engagement on utility behaviour has been good for consumers. Similarly, regulators are pleased with the observed improvements in the quality of proposed business plans with the advent of customer engagement.

We next carefully examined the incentives provided to utilities to do customer engagement, studying the British regulators Ofgem and Ofwat in detail. We found that, while incentives were provided, the relationship between a utility's customer engagement activities, and its overall performance rating as measured by whether it had a high-quality business plan, was unclear. Both regulators highlighted customer engagement as an important element in their regulatory proceedings, but did not specify how much weight was assigned to it during the review process. We conjecture that utilities may view customer engagement as a necessary activity to keep regulators, shareholders, and their customers satisfied. The first generation of Customer-centric Regulation seems to have met with approval from regulators and other stakeholders in the sector. Utilities appear to have increased their engagement efforts and to have incorporated the customers' voice in their business plans.

Finally, we explored how to improve the process of customer engagement. We suggested that introducing economic efficiency explicitly as a yardstick for evaluating customer engagement could be helpful. We also suggested that more careful programme evaluation should become a central part of utility regulation. One particularly promising avenue is the use of field experiments to complement current approaches to engagement. Regulators should make changes to encourage such

⁷³ This idea is reflected in a report for the U.K. Department of Energy & Climate Change. See <http://webarchive.nationalarchives.gov.uk/20130109092117/http://decc.gov.uk/assets/decc/11/tackling-climate-change/saving-energy-co2/6921-what-works-in-changing-energyusing-behaviours-in-.pdf>

evaluations. We argued that clearer and more direct incentives for customer engagement could be helpful in motivating regulated firms and customer groups.

Formal customer engagement is in its infancy. We think this approach to regulation shows promise. To achieve its full potential, however, regulators may need to rethink the economics of customer engagement.

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Tables and Figures

Table 1: Two Stylised Models of Customer Engagement

Negotiation		Customer-centric Regulation	
(i)	Regulator facilitates or encourages negotiation	(i)	Regulator develops a framework requiring CE, and provides incentives for engagement
(ii)	Regulated firm, customer representatives and other stakeholders negotiate directly	(ii)	Regulated firm, customer representatives, and customers engage with each other
(iii)	If all parties agree to business plan, it is implemented	(iii)	Regulated firm develops business plan based on insights from CE
(iv)	If no agreement, regulator conducts standard price review	(iv)	Regulator reviews proposed plan in light of CE
		(v)	Regulator provides rewards based on evaluation of CE effort
		(vi)	Regulator sets prices

Notes: Presentation of two stylised models of customer engagement. The steps in the regulatory process are based on extreme cases in utility regulation. Real-world cases are likely to lie in-between these models.

Table 2: Overview of Regulators Using Customer Engagement

Regulator	Region	Sector	Initiation	# of Reviews	# of Firms
<i>Negotiation model</i>					
Florida Public Service Commission	Florida, U.S.	Energy, Water	-	-	>150
Civil Aviation Authority	U.K.	Airport	2005	2	3
Water Industry Commission for Scotland	Scotland	Water	2011	1	1
<i>Customer-centric Regulation model</i>					
Ofgem	U.K.	Energy	2008	3	12
Ofwat	England, Wales	Water	2011	1	18
Utility Regulator	Northern Ireland	Water	2012	1	1
Ontario Energy Board	Ontario, CAN	Energy	2014	-	79
Essential Services Commission	Victoria, AUS	Water	2016	0	19

Notes: Overview of regulators that use customer engagement as part of their regulatory process. We loosely group regulators by the stylised model that best describes their approach. Regulators within each group differ from the stylised models and from each other along important dimensions as explained in-text. The analysis is restricted to utility regulators.

Table 3: Assessment of Customer Engagement

Regulator	Grading Scale	Number of Total Categories	Assessment Category Containing CE		Assessment Criteria
Ofgem	Traffic Light System	5	Process	(i)	Has the firm engaged with stakeholders, and explained how this has influenced its business plan?
Ofwat	Letter Grade (A-D)	13	Customer Engagement and WTP Evidence	(i)	To what extent has the company demonstrated an effective CE process?
				(ii)	[...] demonstrated effective engagement with wider consumer interest, including environmental interests, generally and through their CCG?
				(iii)	[...] demonstrated a robust approach to gathering WTP information and mapping this to its outcomes, performance commitments, and outcome delivery incentives?

Notes: Assessment of a firm's customer engagement process for the two case studies. This information only considers the category directly related to customer engagement. Regulators evaluate business plans in many other categories. Column 4 provides the name of the category including customer engagement. In the case of Ofgem, the "Process" category also includes assessment criteria unrelated to customer engagement. Ofgem assigns one grade on the traffic light system (green, yellow, red) to the overall category; Ofwat assigns a letter grade (A-D) to each assessment criterion and then aggregates these individual grades to determine an overall grade for the assessment category. Sources: Ofgem (2013a), Ofwat (2013).

Table 4: Customer Engagement Efforts and Business Plan Evaluation

Regulated Business	Tools Used	WTP Study (Stated Pref.)	Vulnerable Customer	Future Consumer	Assessment of Customer Engagement Category by Regulator*	High-Quality Proposal
<i>Ofwat:</i>						
Firm 1	customer events, online survey, bill messages, campaign website, newsletter, stakeholder conference, media campaign, acceptability research	Y	Y	Y	C	N
Firm 2	complaints data, online and direct feedback, focus groups, online panels, workshops, surveys, questionnaires, drop-in events, deliberative forum, interviews, communication campaign, acceptability research	Y	Y	Y	B	Y
Firm 3	marketing campaign (social and print media, radio), engagement forum, focus groups, interviews, county shows, deliberative and education workshops, online investment and water budget simulator, complaints analysis, online conversation hub, roadshows and county shows, acceptability research	Y	Y	Y	A	N
Firm 4	focus groups, workshops, surveys, questionnaires, online research, deliberative `jury day`, feedback report, acceptability research	Y	Y	Y	C	N
Firm 5	interviews, discussion groups, focus groups, questionnaires, stimulus materials, surveys, workshops, acceptability research	Y	Y	N	B	N

Firm 6	focus groups, interviews, surveys, acceptability research	Y	Y	N	C	N
Firm 7	focus groups, surveys, affordability research, events, workshops, interviews, cost-benefit assessment, questionnaires, acceptability research	Y	Y	N	C	N
Firm 8	focus groups, customer survey, online consultation, questionnaires, interviews, workshops, acceptability research	Y	Y	Y	C	N
Firm 9	satisfaction tracker, commissioned studies, online survey, focus groups, interviews, intergenerational family interviews, acceptability research	Y	Y	Y	B	N
Firm 10	surveys, focus groups, online panels, tracker survey, complaint tracking, feedback forms, acceptability research	Y	Y	Y	B	N
Firm 11	Focus groups, surveys, interviews, online questionnaire, pen portraits of future scenarios, quantitative survey, publicity campaign (print media, TV, radio), roadshows, workshops, acceptability research	Y	Y	Y	C	N
Firm 12	focus groups, surveys, interviews, online panel, consultation, acceptability research	Y	Y	N	B	N
Firm 13	focus groups, discussions, surveys, tracker survey, PR and media campaign, roadshows, newsletter, social media campaigns, website with investment tool, online consultation, proposal delivery to all consumers, acceptability research	Y	Y	Y	A	Y

Firm 14	print media, surveys, interviews, focus groups, workshops, online panel, newsletters, local events, acceptability research	Y	Y	N	B	N
Firm 15	focus groups, interviews, surveys, deliberative events, customer panels, workshops, road shows, direct feedback, complaints data and unwanted calls, twitter feedback, satisfaction tracker, acceptability research	Y	Y	N	C	N
Firm 16	satisfaction tracker, online forum, brand tracking, group discussions, focus groups, interviews, regional stakeholder events, promotional campaigns, acceptability testing	Y	Y	N	B	N
Firm 17	consultation plan, roadshows, open evenings, dedicated website, questionnaires, focus groups, interviews, acceptability research	Y	Y	N	C	N
Firm 18	feedback cards and calls, focus groups, surveys, online panel, image tracking, interviews, group discussion, customer magazine polls and website feedback, workshops, email survey, tracking survey, acceptability research	Y	Y	Y	C	N
<u>Ofgem:</u>						
Western Power Distribution	workshops, customer panel, focus groups, interviews, roadshows, newsletters and media campaigns, conference, forum, surveys, website	Y	Y	Y	Green	Y
UK Power Networks	focus groups, workshops, regional forums, interviews, conference, engagement panels, online consultation site and written feedback	Y	Y	N	Green	N
SP Energy Networks	focus groups, stakeholder database, workshops, interviews, meetings, employee leadership event, surveys, website, roadshows, market research, newsletters	Y	Y	N	Yellow	N

Scottish and Southern Energy	surveys, consultation paper, interviews, focus groups, parliamentary events, stakeholder events, engagement paper	N	N	N	Green	N
Northern Powergrid	surveys, consultation documents, focus groups, interviews, meetings, forums, market research, online panel, customer prioritization games, online community, social media	N	Y	N	Green	N
Electricity Northwest	focus groups, media campaign (brand, mascot, social media, educational videos), interviews, surveys, roadshows, student workshops, workshops, stakeholder panels, forums	Y	Y	Y	Green	N

*: Firms receive three grades for customer engagement: one for water, one for wastewater, and one for retail. We report the grade for the “retail” assessment. There is only one firm that received different grades across the three categories.

The firms represented in the first panel of this table include Affinity Water, Anglian Water, Bournemouth Water, Bristol Water, Dee Valley Water, Northumbrian Water, Portsmouth Water, Severn Trent Water, South East Water, Southern Water, South Staffs Water, South West Water, Sutton and East Surrey Water, Thames Water, United Utilities, Welsh Water, Wessex Water, and Yorkshire Water.

Notes: Business plan submissions of each firm provide the data used in this table. We only use data from the initial submission and do not consider subsequent engagement efforts. We consider Ofgem’s RIIO-ED1 price review and Ofwat’s PR14 price review. In the case of Ofgem, 14 individual business plans were evaluated by the regulator but results and recommendations are summarized by the six ownership groups. Columns 2 to 5 summarize the customer engagement of a firm; columns 6 and 7 present the outcomes of the regulator’s assessment of the business plan. Column 2 provides an overview of tools used by a firm that are explicitly mentioned in the business plan. Column 3 indicates whether willingness to pay (WTP) research was conducted (Y) or not (N). Entries were determined by searching the customer engagement appendix for terms related to WTP. Columns 4 and 5 provide similar indicators for explicit engagement with vulnerable customers and future consumers, respectively. In this case, we applied word searches of combinations of “vulnerable”, “hard to reach”, “low-income”, and “social tariffs” with “customer” or “consumer” for the former and “future”, “prospective”, “school” or “teenager” in the latter. Column 6 presents the assessment of the evaluation category containing customer engagement as determined by the regulator during the price review. Lastly, column 7 indicates whether the business plan was considered high-quality by the regulator. Sources: Confidential business plans, Ofgem (2013a), Ofwat (2014a,b).

Figure 1
Stylized Models of Customer Engagement Compared with Traditional Regulation

		Regulator allows or encourages Negotiation	
		NO	YES
Regulator requires formal Assessment of Customer Demands or Preferences	NO	Traditional Regulation	Negotiation
	YES	Customer-centric Regulation	Negotiation Plus

Notes: See text for discussion.

Figure 2: Rethinking the Customer Engagement Model

