

How do different types of public initiatives
influence citizen coproduction?

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PhD Dissertation

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influence citizen coproduction?

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Mette Kjærsgaard Thomsen
Aarhus, June 2015

Chapter 1: Introduction

During the past decade public managers have paid increasing attention to involving citizens more in the provision of public services (Brandsen, Pestoff & Verschuere, 2012). There are several ways citizens may contribute to the provision of public services. When parents join the school board or help their own children with homework they are coproducing educational services together with the teachers. Similarly, when citizens look out for their neighbor's house or participate in neighborhood watch they are coproducing law enforcement together with the police. Such forms of coproduction – that is, a mixture of input from public service agents and citizens to the provision of public services – have been found to increase output, efficiency and improve service outcomes (Brudney, 1983; Jakobsen & Andersen, 2013; Percy, 1983). However, realizing that involving citizens more in coproduction may be a way forward for local governments to offer better or more efficient services also raises important questions: How can citizens be mobilized to become more involved in coproduction? And what kinds of public initiatives are required to activate citizens more?

The question of how to involve citizens more in coproduction has been debated in the coproduction literature since its development in the late 1970s and early 1980s (Brudney, 1983; Percy, 1984; Rosentraub & Sharp, 1981; Sharp, 1978 & 1980). According to coproduction scholars, citizen input to coproduction depends on, first, their ability to coproduce, that is, skills, knowledge and materials necessary to coproduce and second, their motivation to coproduce (Alford, 2002; Alford, 2009; Jakobsen 2013; Porter, 2012; van Eijk & Steen, 2014). Some scholars simply assume that informing citizens about the benefits to be gained from coproducing will encourage citizens to coproduce (Brudney, 1983; Rosentraub & Sharp, 1981). Other scholars have argued that certain types of coproduction require more extensive public initiatives that lift constraints on citizens' ability to coproduce. Such initiatives may contain advice, training or materials that provide citizens with skills or knowledge necessary to coproduce (Alford, 2009; Jakobsen, 2013; Percy, 1984; Sharp, 1980).

Although the question of what kinds of public initiatives are required to get citizens more involved in coproduction is important, there is very little empirical evidence on this issue. Moreover, examining the effect of public initiatives on citizen input to coproduction entails several endogeneity prob-

lems, including two-way causation, self-selection of citizens into public initiatives, and isolating the effects of different public initiatives. Most studies on this issue rely on case studies or cross-sectional data and are therefore likely to face problems of endogeneity. As a result we cannot rule out the possibility that the estimates in these studies may be biased. To handle endogeneity problems and identify causal effects one may employ experimental methods. Only few prior studies drawing on theoretical insights from the coproduction literature have used field experiments to examine the effect of a given public initiative (Jakobsen, 2013; Jakobsen & Andersen, 2013). These studies revealed that a public initiative lifting constraints on the ability to coproduce by providing material and knowledge necessary to coproduce may be an effective means to increase citizen input to coproduction and service outcomes. While this knowledge is an important first step, there is clearly still a lack of comprehensive empirical research of what kinds of public initiatives are required to involve citizens more in coproduction. In light of this empirical shortcoming, the dissertation examines the following research question: *How do public initiatives targeting either public service agents or citizens influence citizen input to coproduction and service outcomes?*

The dissertation tests the effect of two types of public initiatives that have not yet been tested in the coproduction literature. Although the main purpose of the two initiatives differs considerably, both are argued to influence citizen input to coproduction. The first initiative is targeted at increasing input from citizens. Following coproduction scholars (Brudney, 1983; Rosentraub & Sharp, 1981), it is argued that a simple coproduction initiative that provides information material containing encouragement and advice on how to coproduce to citizens may be a means to increase citizen input to coproduction. The second initiative is targeted at increasing input from public service agents. Applying a two-input production function (Ostrom, 1996; Parks et al., 1981), it is argued that an increase in public input may influence citizen input to coproduction. In order to predict how citizens respond to an increase in public input it is crucial whether they perceive the increased public input as complementary to their own input or as a substitute. If citizens perceive it as complementary to their own input, they are likely to respond by increasing their own input to coproduction. The effect of the two types of initiatives is tested in the area of primary education. Specifically, the dissertation focuses on parents' involvement in primary education in the form of coproduction activities such as helping their children with homework and reading to them. To handle endogeneity problems and identify causal effects, the dissertation mainly employs data from two field experiments.

The rest of this summary includes four chapters. Chapter 2 outlines the definition of coproduction used across articles in the dissertation and the theoretical framework for the two types of public initiatives that are tested in the dissertation. Chapter 3 presents methodological considerations that are relevant across the articles in the dissertation. Chapter 4 outlines the main results from the dissertation. Chapter 5 concludes, answers the research question, and discusses the generalizability of the results, policy implications and the contribution of the dissertation. In addition to this summary, the dissertation consists of four co-authored articles and two single-authored articles, which are listed in Table 1.1.

Table 1.1. Overview of articles in the dissertation

Articles	Short title ^a
A. Andersen, Simon C., Helena S. Nielsen & Mette K. Thomsen (forthcoming). Brugernes reaktion når det offentlige øger serviceniveauet. Resultater fra et lodtrækningsforsøg på skoleområdet, <i>Politica</i> 47 (2)	'Service User Response to an Increase in Public Input'
B. Andersen, Simon C., Louise V. Beuchert, Helena S. Nielsen & Mette K. Thomsen (2015). The Effect of Teacher Aides in the Classroom: Evidence from a Randomized Trial [unpublished manuscript]	'The Effect of Teacher Aides in the Classroom'
C. Jakobsen, Morten & Mette K. Thomsen (forthcoming). Samproduktion, offentlige tiltag og servicebrugernes motivation til at deltage, <i>Politica</i> 47 (2)	'Citizen Coproduction and Motivation'
D. Thomsen, Mette K. & Morten Jakobsen (forthcoming). Influencing Citizen Coproduction by Sending Encouragement and Advice: A Field Experiment, <i>International Public Management Journal</i>	'Influencing Citizen Coproduction by Sending Encouragement and Advice'
E. Thomsen, Mette K. (2015). Citizen Coproduction: The Influence of Knowledge and Self-efficacy [unpublished manuscript]	'Citizen Coproduction, Knowledge and Self-efficacy'
F. Thomsen, Mette K. (forthcoming). Parental Time Investments in Children: Evidence from Denmark, <i>Acta Sociologica</i>	'Parental Time Investments in Children'

a. The short titles are used throughout the rest of this summary.

Chapter 2: Theoretical Framework

The purpose of this chapter is twofold: It outlines the definition of coproduction employed across articles in the dissertation, and it presents the theoretical framework for the two types of public initiatives that are tested in the dissertation.

2.1 Coproduction: Definition

The concept of coproduction was originally developed in the late 1970s and one of the first definitions of coproduction was outlined by Parks et al. (1981), who defined it as a mixing of the productive efforts, or input, of public service agents and citizens to the provision of public services (Parks et al., 1981). Central to this definition was that citizen contribution is based on a voluntary effort and may be provided by an individual citizen or a group of citizens (Brandsen et al., 2012). The mixing of input may occur through coordinated efforts in the same production process or independent, but yet related efforts (Parks et al., 1981). Other scholars have proposed other definitions of coproduction. Joshi & Moore (2004) narrowed the definition of coproduction to include instances in which the service is produced through long-term relationships between public service agents and citizens. Bovaird (2007) expanded the definition of coproduction to include volunteers and community groups as coproducers.

The dissertation draws on the above-mentioned definition of coproduction outlined by Parks et al. (1981). As mentioned, this definition of coproduction refers to a mixture of input from both public service agents and citizens. However, citizens may contribute to and benefit from coproduction in different ways. This can be illustrated by a typology developed by Bovaird and colleagues (2015), who use two criteria to categorize individual and collective types of coproduction (see Table 2.1). The first criterion concerns whether input to coproduction by individuals outside the government agency is individually or collectively provided. The second criterion relates to whether the benefit from coproduction in terms of the service received is enjoyed by the individual directly involved or a larger group of individuals.

Table 2.1. Collective and individual coproduction

		Benefits from coproduction	
		Individually enjoyed	Collectively enjoyed
Inputs to coproduction	Individually provided	A Private individual coproduction	C Philanthropic individual coproduction
	Collectively provided	B Private collective coproduction	D Philanthropic collective coproduction

Note: Table adapted from Bovaird et al. (2015).

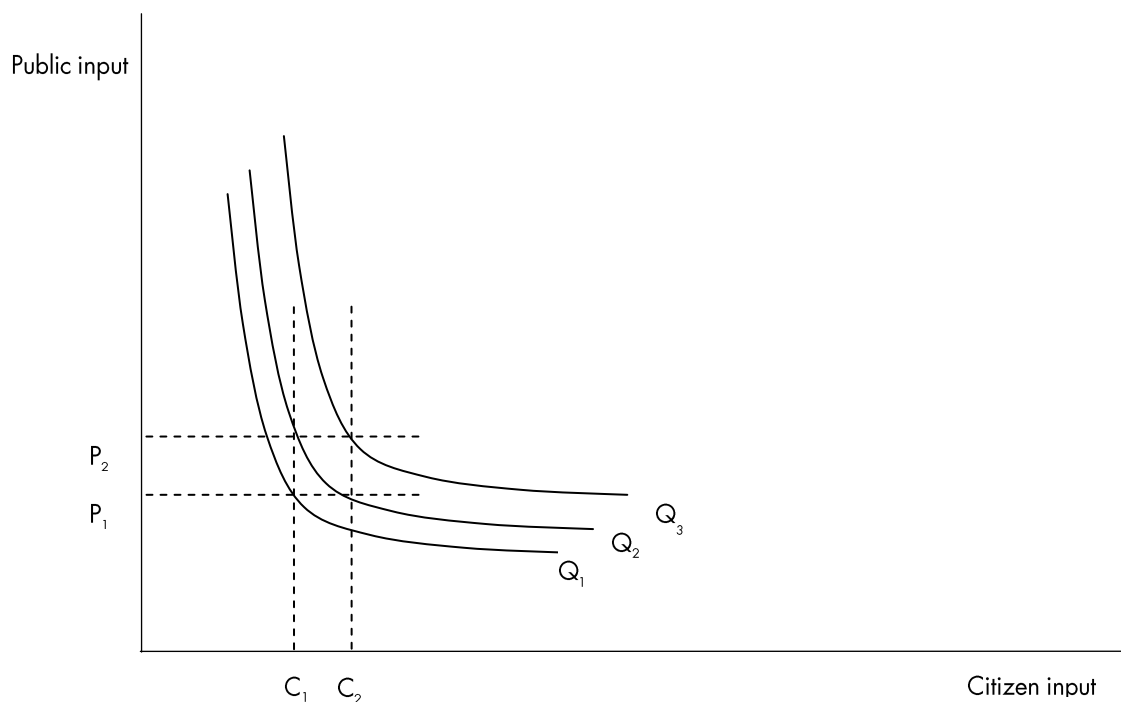
The dissertation focuses on the type of coproduction outlined in Box A in Table 2.1. On this basis, coproduction refers to the mixture of input from both public service agents and individual citizens to the provision of a public service that primarily benefits the individual citizen involved or its relatives. Examples of such type of citizen coproduction include patients doing physical training and eating the recommended food after surgery, parents helping their children with homework or reading to them, or relatives helping an elderly living in a nursing home (Jakobsen, 2013; Pestoff, 2012). Thus, the dissertation does not focus on such types of coproduction in which input by individuals outside the government agency is collectively provided by a group of citizens (Box B & D) or input to the provision of collectively beneficial services (Box C & D). Moreover, the dissertation does not focus on volunteers or community groups as coproducers. In practice many public services are coproduced by inputs from both public service agents and citizens, but some citizens may only provide a minimum of input, whereas others involve themselves wholeheartedly in coproduction. As demonstrated by the examples of citizen coproduction, coproducers are not limited to the main beneficiary of a given service, but may also encompass relatives when the main beneficiary is a minor or incapacitated. As different causes, mechanisms and effects are related to different types of coproduction, it is important to emphasize that the theoretical arguments presented in the rest of the chapter are only valid for the type of coproduction in focus in the dissertation (i.e. private individual coproduction). The implication of focusing on one type of coproduction for the generalizability of results is discussed in Chapter 5.

2.2 Benefits of Citizen Coproduction

While it is disputed how to define coproduction, most theories of coproduction agree that inputs from public service agents and citizens can be com-

plementary, which means that output¹ is best produced by a combination of both inputs (Ostrom, 1996). For instance, students do not learn exclusively because a teacher provides input to their education. Students also need to provide input that complements input from the teacher (Alford, 2009; Parks et al., 1981). However, the degree of interdependence in inputs may vary for different types of services (Parks et al., 1981). On the other hand, if the two inputs are perfectly substitutable, it is possible to produce output using only one type of input (Parks et al., 1981). When inputs are complementary, the mixing of inputs from public service agents and citizens can be illustrated by a two-input production function adapted from Ostrom (1996), which shows curved isoquant lines (see Figure 2.1). As shown in Figure 2.1 a combination of both inputs is required rather than only one type of input (Ostrom, 1996; Parks et al., 1981).

Figure 2.1. Mix of input from public service agents and citizens



Source: Figure adapted from Ostrom, 1996.

There are two ways to increase the output from Q_1 to Q_2 . One strategy is to increase public input from P_1 to P_2 . Another strategy is to increase citizen input from C_1 to C_2 . When inputs are complementary, the marginal product of a one unit increase in citizen input or public input will depend on how much

¹ Output refers to the quantity and quality of services provided to citizens (Alford, 2009; Brudney, 1984)

of the other input is supplied (Parks et al., 1981). This is seen in Figure 2.1 by the change from Q_2 to Q_3 being larger than the change from Q_1 to Q_2 . This is not the case if the two inputs are perfect substitutes. I will return to this in Section 2.5. In addition to higher output, involving citizens more in coproduction may also lead to secondary benefits such as greater efficiency in provision of services and higher outcomes² (Jakobsen & Andersen, 2013). As argued by Alford (2009), the rationale behind producing a given output is to contribute to a desired outcome. In the area of education, it may be higher educational achievement among students, and in the area of health care it may be minimizing the time patients spend on rehabilitation. The next section outlines theoretical considerations concerning factors that may influence citizen input to coproduction.

2.3 Determinants of Citizen Coproduction

Several coproduction scholars have argued that two factors are particularly important for citizen input to coproduction (Alford, 2002; Alford, 2009; Jakobsen, 2013; Porter, 2012; van Eijk & Steen, 2014). First, citizens are less likely to coproduce and provide input of high quality if they do not have the ability to coproduce. This may include knowledge of how to coproduce, specific skills and sometimes also materials. According to coproduction scholars, lifting constraints on the ability to coproduce through coproduction initiatives – providing citizens with skills, knowledge of how to coproduce or materials necessary to coproduce – may enhance citizen input to coproduction. Such initiatives may include advice, training or materials to citizens (Alford, 2009; Brudney, 1983; Percy, 1984; Sharp, 1980). Second, citizens are less likely to coproduce if they are not motivated to coproduce. According to coproduction scholars, there are different ways to encourage citizens to become more involved. One solution is to offer citizens material incentives such as money or solidary incentives such as membership of a group (Sharp, 1978). Another solution is to inform citizens about the benefits to be gained from coproducing (Brudney, 1983; Rosentraub & Sharp, 1981). However, examining the effect of coproduction initiatives targeted at increasing citizen input to coproduction entails several endogeneity problems, which may be difficult to handle by using case studies or cross-sectional data. Only few prior studies drawing on theoretical insight from the coproduction literature have used experimental methods to examine the effect of a coproduction initiative (Jakobsen, 2013; Jakobsen & Andersen, 2013). These studies revealed that a

² Outcome refers to the impact of the service on citizens (Alford, 2009).

coproduction initiative lifting constraints on the ability to coproduce by providing knowledge and material necessary to coproduce may be an effective means to increase citizen input to coproduction and improve service outcomes. The rest of this chapter outlines theoretical arguments concerning the effect of two types of public initiatives on citizen input to coproduction. The first initiative is targeted at increasing input from citizens, the second at increasing public input.

2.4 Public Initiative I: Targeting Citizen Input

As mentioned, one strategy to increase output is to increase input from citizens. Some coproduction scholars simply assume that if citizens are informed about the benefits to be gained from coproduction they will be encouraged to coproduce (Brudney, 1983; Rosentraub & Sharp, 1981). An initiative that informs citizens about the personal benefits of increased coproduction is expected to be particularly effective in encouraging citizen input to the type of coproduction in focus in the dissertation. This is because this type of coproduction primarily benefits the citizen involved or relatives as opposed to collectively beneficial types of coproduction where benefits often are scattered (Percy, 1984). In 'Influencing Citizen Coproduction by Sending Encouragement and Advice' we argue that providing information material such as leaflets and booklets to citizens may be a means to enhance citizen input to coproduction. Specifically, we argue that information material may increase citizens' ability to coproduce by providing them with knowledge of how to coproduce. If citizens do not know how to coproduce, they are less likely to do so, and their input is likely to be of a lower quality than if they possessed relevant knowledge of how to contribute in the best way possible. Moreover, we argue that information material may encourage citizens to coproduce more by providing them with knowledge of how their input matters. From a rational point of view, if citizens are not aware that and how their input will benefit the outcome of the provided service, they are less motivated to coproduce, and therefore less likely to coproduce. In the article we also underline that information material may not be sufficient in all situations. For example, coproduction may call for certain skills that cannot be improved via information material.

Based on the arguments above we would expect that an initiative that helps citizens identify the benefits of their input will increase their motivation to coproduce. However, the theoretical arguments concerning the mechanisms behind coproduction initiatives that encourage citizens to become more involved are scarce in the coproduction literature. In 'Citizen Copro-

duction and Motivation' we develop new and so far untested theoretical arguments concerning the effect of such coproduction initiatives on citizens' motivation to coproduce. In developing these arguments, we draw on insights from self-determination theory (Ryan & Deci, 2000) and motivation crowding theory (Frey, 1997). In line with the motivation literature we differentiate between intrinsic motivation (i.e. doing something because it is inherently interesting or enjoyable) and extrinsic motivation (i.e. doing something because it leads to a separable consequence such as a reward). In the latter case, satisfaction does not come from the activity itself, but from the consequences of doing the activity (Gagne & Deci, 2005).³ Given that the purpose of the coproduction initiative is to encourage citizens to become more involved, we argue for a positive effect on the extrinsic motivation. In relation to the effect on intrinsic motivation, we argue that depending on whether the initiative is perceived as supportive (controlling) in the sense of increasing (reducing) citizens' sense of self-determination or feeling of competence, it may crowd in (out) citizens' intrinsic motivation (Frey, 1997). The total effect on the motivation to coproduce will thus depend on the effect on the two types of motivation (Weibel, Rost & Osterloh, 2010). If the negative effect on the intrinsic motivation exceeds the positive effect on the extrinsic motivation, the initiative may have detrimental effects on citizen input to coproduction. The next section presents the theoretical arguments behind the second initiative targeted at increasing public input.

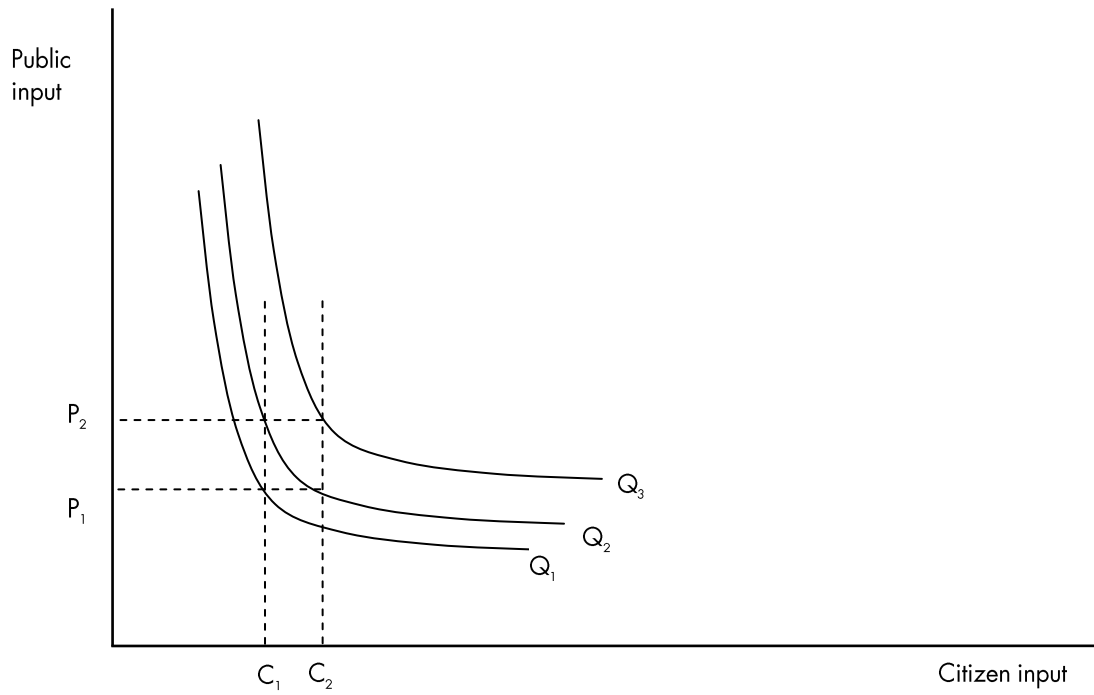
2.5 Public Initiative II: Targeting Public Input

Another strategy to increase output is to increase public input. The coproduction literature offers no empirical research on whether changes in public input affect citizen input to coproduction. In 'Service User Response to an Increase in Public Input' we apply an adapted version of Ostrom's two-input production function (1996) to show how an increase in public input will affect the marginal product of citizen input when the two inputs are perceived as either complementary or perfect substitutes.

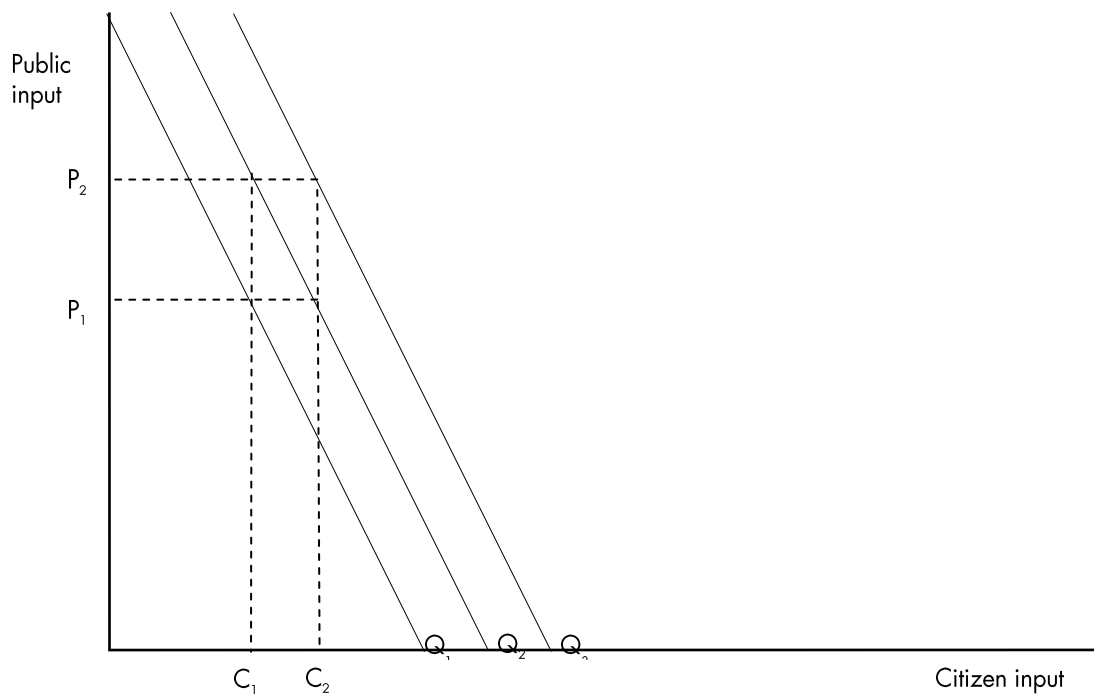
³ For example, when parents read with their child out of interest they are intrinsically motivated, while when parents read with their child because it will improve the child's grades they are extrinsically motivated.

Figure 2.2. Marginal product of citizen input if inputs are complementary or substitutes

(a)



(b)



Source: Figure adapted from Ostrom, 1996.

If the two inputs are complementary, the isoquant lines will be curved, as illustrated in Figure 2.2 (a). In this case the increase in output resulting from employing one unit more of citizen input is larger if public input is first increased (the change in output from Q_2 to Q_3 is larger than the change from Q_1 to Q_2). If the two inputs are perfect substitutes, the isoquant lines will be straight, as illustrated in Figure 2.2 (b). In this case the increase in output obtained from employing one unit more of citizen input is the same whether or not the public input is first increased (the change in output from Q_2 to Q_3 is similar to the change from Q_1 to Q_2). In order to predict how citizens respond to an increase in public input, we argue that it is crucial whether citizens perceive the increase in public input as complementary to their own input or as a substitute. The same approach has been initiated in educational research to understand how parents may respond to an increase in school input (Das et al., 2013; Pop-Eleches & Urquiola, 2013). In the case that citizens perceive the increased public input as complementary to their own input, they are likely to respond by increasing their input to coproduction. For example, if school efforts to involve parents in their child's education are increased by assigning more homework and prioritizing collaboration with parents, parents may experience a greater return from helping their child with homework. If parents respond to the increased effort by the school by increasing their own input, it suggests that parents perceive the two inputs as complementary.

In the case that citizens perceive the increased public input as a substitute, they are likely to respond by decreasing their input to coproduction. For instance, if a child is enrolled in a high-quality school, parents may experience limited return from helping their child with homework. If parents respond to high quality schooling by lowering their own input, it suggests that parents perceive the two inputs as substitutes. In a recent study, Das et al. (2013) showed that an increase in school funding decreased household spending on education. This suggests that these parents perceive the two inputs as substitutes. Similarly to the coproduction initiative, one would expect an increase in public input to influence particularly citizen input to the type of coproduction in focus in the dissertation. This is because this type of coproduction primarily benefits the citizen involved or relatives. In summary, this chapter has outlined the theoretical arguments behind the two types of public initiatives tested in the dissertation. The first initiative is targeted at increasing citizen input, whereas the second is targeted at increasing public input. Although the two public initiatives outlined in this chapter differ considerably in terms of their main purpose, both were argued to encourage (discourage) citizens to become more involved in coproduction. As illustrated by applying

two-input production functions developed by Ostrom (1996), citizen input to the provision of services may not only be influenced by public initiatives targeting citizen input. Public initiatives targeting public input may also lead to behavioral responses by citizens that may strengthen or weaken the effect of this type of public initiative.

Chapter 3: Methodological Considerations

This chapter presents methodological considerations in relation to the research design, choice of case and measurements of central variables employed in the dissertation. The chapter mainly presents considerations that are relevant across the articles in the dissertation.

3.1 Research Design and Case

As mentioned, examining the effect of public initiatives on citizen input to coproduction entails endogeneity problems, which can arise in several ways. Citizens with certain types of characteristics may self-select into public initiatives. Or a public initiative may target specific groups of citizens with either low or high level of participation. This constitutes a problem of two-way causation. Finally, it is difficult to isolate the effect of one public initiative from others as they are often part of a larger program. Most studies on this issue rely on case studies or cross-sectional data (few exceptions are Jakobsen, 2013; Jakobsen & Andersen, 2013; John et al., 2011). Therefore we cannot rule out the possibility that the estimates in most prior studies may be biased. To address problems of endogeneity two different strategies are applied in the dissertation. First, the dissertation employs two field experiments in which subjects are randomly assigned to a treatment group, which was exposed to an intervention, or to a control group, which was not exposed to an intervention. The random assignment ensures that, in advance of the study, there are no systematic differences between the experimental groups on observed and unobserved variables. For instance, citizens in the treatment group are not more likely to coproduce than citizens in the control group. If systematic differences in citizen input to coproduction between the experimental groups can be identified after the intervention, it is caused by the public initiative, and the results can be interpreted as a causal effect. Second, the dissertation employs cross-sectional surveys combined with rich control variables, which may partly mitigate endogeneity problems. However, this strategy may not be sufficient to eliminate bias in the estimate, and the results from these studies can therefore not be interpreted as a causal effect.

Due to scarce empirical knowledge about the effect of public initiatives on citizen input to coproduction, it is crucial to employ a case that creates favorable conditions for the two types of public initiatives to be effective. Par-

ents' involvement in primary education in the form of coproduction activities such as helping their children with homework and reading to them is used as case. This case has three favorable characteristics. First, primary education is an enduring service, which parents and children are locked into for long periods, and they often cannot rely on exit (Pestoff, 2012). Consequently, involvement in these coproduction activities gives parents influence on the services their children consume. Second, since parents want to ensure the best possible educational outcomes for their children, we would expect public initiatives that make parents aware that their children benefit from their input will encourage parents to become more involved. Third, helping children in primary schooling with homework and reading with them are coproduction activities that for most parents do not require an upgrading of their skills in reading or math, but simply motivation and knowing how to read effectively with their children.

3.2 Data

To examine the effect of a coproduction initiative providing information material to citizens we designed a field experiment in cooperation with Aarhus Municipality, Denmark (see 'Influencing Citizen Coproduction by Sending Encouragement and Advice' and 'Citizen Coproduction and Motivation'). The intervention consisted of randomly assigning school classes with parents of children enrolled in grades 1 through 3 to a treatment group, which was exposed to a booklet, or a control group, which was not exposed to the intervention. The booklet was sent to parents by letter. There were two reasons for choosing a booklet. First, providing booklets is a common strategy used by local governments to enhance citizen input to coproduction. Second, although a booklet is a simple initiative it may provide information that helps citizens identify the benefits of their input. In line with arguments in Chapter 2, the booklet focused on encouraging parents to read more frequently with their children by making them aware of the value of shared book reading in developing children's reading skills, and increasing their ability to read effectively with their children by providing specific advice on how to facilitate the development of children's reading skills. Post-treatment survey measures were collected after the intervention period to examine the effect of the intervention.

To examine the effect of an increase in public input we employ a large field experiment conducted in cooperation with 18 municipalities in Denmark and the Ministry of Education (see 'Service User Response to an Increase in Public Input' and 'The Effect of Teacher Aides in the Classroom').

The intervention consisted of randomly assigning schools with students to one of three types of teacher aide interventions or a control group, which was not exposed to the intervention. The intervention was in place for 85% of a school year and was undertaken among children enrolled in 6th grade. The teacher aides vary in terms of time intensity and qualifications. One treatment used less expensive teaching assistants without a teaching degree, who spent 14.5 lessons per week per class; one used more expensive co-teachers with a teaching degree, who spent 10.5 lessons per week per class; and the third used more experienced teachers as a supervisor 2.5 hours per week per class. The main purpose of the intervention was to improve children's educational performance and well-being. However, the teacher aide intervention is considered relevant to test the effect of an increase in public input on citizen input to coproduction, since the different teacher aides to varying degrees increased the school's effort to involve parents in their child's education (see Chapter 4). In order to examine the effect of the intervention, we employ pre- and post-treatment survey measures and register data from Statistics Denmark.

As mentioned, the dissertation also employs two cross-sectional surveys. 'Parental Time Investment in Children' uses data from the Danish Time-Use Survey 2001. The survey includes time use diaries about parental time investment in children and a questionnaire about family characteristics. The diaries were collected for one weekday and one weekend day per person, and register activity performed and with whom for every 10-minute interval of a given day (Bonke, 2002). The diary measures were combined with register data from Statistics Denmark on children's educational performance at the final exams in lower secondary school. 'Citizen Coproduction, Knowledge and Self-efficacy' uses survey data on citizen input to coproduction among parents of children enrolled in 2nd and 3rd grades in primary schools. Survey measures were collected in Aarhus Municipality, Denmark and combined with register data from Statistics Denmark on family characteristics.

3.3 Measurement of Central Variables

Several outcome measures are employed in the dissertation. This section discusses the operationalization of two central variables that are used across the articles in the dissertation. The first variable is citizen input to coproduction, measured in most of the studies in the dissertation by survey questions. In 'Citizen Coproduction, Knowledge and Self-efficacy' and 'Influencing Citizen Coproduction by Sending Encouragement and Advice' it is measured by

an almost similar question asking parents how frequently they read with their child. This type of measure has been used in previous studies of parental involvement and citizen coproduction (Jakobsen, 2013; Sénéchal, 2006). In 'Service User Response to an Increase in Public Input' it is measured by asking children how frequently their parents help them with homework. This measure is inspired by similar measures sampled among 12 year-olds in the Danish Longitudinal Survey of Children. In 'Parental Time Investment in Children' time use diaries are employed to measure how many minutes per day parents spend on developmental care with school-aged children – that is, talking, reading, teaching and playing with them. Although survey questions are widely used to capture how frequently parents help their children with homework or read with them, the response may be biased due to two factors (see Felfe & Hsin, 2012; Hofferth, 2006).

First, survey questions of this type are subject to social desirability bias – that is, people tend to report more time spent on desirable activities and less time on undesirable activities. For instance, parents may tend to overstate time spent on reading with their children (Hofferth, 2006), whereas children may tend to understate time spent on reading and doing homework if these activities are not considered fun or cool (Felfe & Hsin, 2012). One solution may be to employ time use diaries as in 'Parental Time Investment in Children'. Diaries provide more reliable and valid measures of parental time investment in children and are less subjectable to social desirability than survey questions (Juster, 1985; Robinson, 1985). This is because the respondents are asked to register for every 10-minute interval of a given day the activity performed and with whom the activity took place. The downside of diaries is that they are much more expensive to collect, and they are poor at capturing activities that only occur occasionally (Felfe & Hsin, 2012; Hofferth, 2006). In families with children enrolled in 1st through 3rd grades, reading to children may not be regular enough to be captured in diaries that register time use on one week day and one weekend day. If this is correct, many respondents may report zero time. As far as the consequences of the response being biased due to social desirability, it is important to underline that estimates will only be biased if social desirability is simultaneously correlated with both the independent and the dependent variable (Jakobsen & Jensen, 2014). In the two studies employing field experiments ('Influencing Citizen Coproduction by Sending Encouragement and Advice' and 'Service User Response to an Increase in Public Input'), we have no reason to believe that social desirability is a confounding variable that is correlated with both the experimental groups and citizen input to coproduction. In 'Citizen Coproduction, Knowledge and Self-efficacy', which employs cross-sectional data, so-

cial desirability may be a confounding variable. This is discussed more in detail in the article's conclusion.

Second, survey questions on citizen input to coproduction may also be biased if the survey question is unclear or the response categories are vague (Hofferth, 2006). Response categories such as "often" and "regularly" are open for different interpretations. To avoid this problem, the dissertation mainly employs measures of citizen input to coproduction that have been used in prior studies, and where the response categories are not open for interpretation. Moreover, the measures of citizen input to coproduction employed in 'Citizen Coproduction, Knowledge and Self-efficacy', 'Influencing Citizen Coproduction by Sending Encouragement and Advice' and 'Service User Response to an Increase in Public Input' were all pilot tested. Based on the pilot test, the response categories for input to coproduction were in a few cases specified in order to prevent leeway in the interpretation of the response categories. Moreover, descriptive statistics of the coproduction variables in the former studies do not show significantly skewed distributions, which may be an indication of a vague question.

Table 3.1. Overview of research design and measurements of central variables in the dissertation

Short title	Research design	Measurement of central variables
'Influencing Citizen Coproduction by Sending Encouragement and Advice'	Field experiment on information material provision	Citizen input to coproduction: How often do you or your partner read aloud to your child?
'Citizen Coproduction and Motivation'	Field experiment on information material provision	Focuses on the effect on the motivation to coproduce
'Service User Response to an Increase in Public Input'	Field experiment on teacher aide	Citizen input to coproduction: How often do your parents help you with homework?
'The Effect of Teacher Aides in the Classroom'	Field experiment on teacher aide	Service outcomes: National test scores in reading and math in 6th grade
'Citizen Coproduction, Knowledge and Self-efficacy'	Cross-sectional data	Citizen input to coproduction: How often do you or your partner read with your child?
'Parental Time Investment in Children'	Cross-sectional data	Citizen input to coproduction: Time use diaries Service outcomes: Final exams grades in lower secondary education in 9th grade

Another central variable used in two articles is service outcomes. In 'Parental Time Investment in Children' this is measured by children's average final examination grades in written Danish and mathematics in 9th grade in lower secondary school assessed when the child was around age 16. The written examinations are standardized tests in the sense that they are issued by the Ministry of Education, used at all public schools, and central external examiners are appointed. In 'The Effect of Teacher Aides in the Classroom' it is measured by national tests in reading and mathematics in 6th grade. A common feature of both types of measures is that they are standardized methods to test children's educational performance and hence more reliable and valid measures than oral exams or tests.

Chapter 4: Main Results

This chapter presents the main results from the dissertation and is structured according to the two types of public initiatives outlined in Chapter 2.

4.1 Effect of Public Initiative I: Targeting Citizen Input

In Chapter 2 it was argued that coproduction initiatives providing information material to citizens may be a means to increase citizen input to coproduction. In 'Influencing Citizen Coproduction by Sending Encouragement and Advice' we test the effect of randomly assigning a booklet to parents of children enrolled in grades 1 through 3 that encouraged parents to read frequently with their children and provided specific advice on how to facilitate the development of children's reading skills. The empirical results do not lend support to the notion that providing information materials containing encouragement and advice is an effective means to increase citizen input to coproduction. In the article, we also argue that information material provision is likely to have a larger effect among disadvantaged citizens, since they are more likely to be constrained by lack of knowledge of how their input matters. The results do not find empirical support for this claim.

In order to improve our understanding of why providing information material is not sufficient to increase citizen input to coproduction, we examine in 'Citizen Coproduction and Motivation' the effect of the same initiative on the motivation to coproduce. Recall that it was argued in Chapter 2 that a coproduction initiative that encourages citizens to coproduce is likely to strengthen the extrinsic motivation to coproduce, but may have a negative effect on the intrinsic motivation. The empirical results confirm this notion, since we identify a negative effect on the intrinsic motivation and a positive effect on the extrinsic motivation. An additional analysis revealed that only intrinsic motivation to coproduce is significantly associated with citizen input to coproduction. In Chapter 2 it was also argued that a coproduction initiative is likely to crowd out citizens' intrinsic motivation if it is perceived as controlling. Our results revealed that the treatment group was more likely than the control group to perceive initiatives with information material provision as controlling. Moreover, we test whether the treatment effects are stronger for disadvantaged citizens. The results showed that the effect on the intrinsic

motivation and perception of information material is mainly driven by less educated parents. In light of the negative effect on the intrinsic motivation and the fact that only intrinsic motivation is significantly associated with citizen input to coproduction, it is puzzling that we did not find a negative effect on citizen input to coproduction in the former study. An additional article (Jakobsen & Serritzlew, forthcoming) from the same project sheds light on this question. The initiative was found to have a positive effect on knowledge of how to coproduce, which is significantly associated with citizen input to coproduction. This suggests that the lack of effect on citizen input to coproduction should be explained by the fact that the positive effect on knowledge of how to coproduce is cancelled out by a negative effect on the intrinsic motivation to coproduce.

Related to the question of developing targeted coproduction initiatives, 'Citizen Coproduction, Knowledge and Self-efficacy' sheds light on a potential determinant of citizen input to coproduction that should be addressed in future coproduction initiatives. Drawing on social psychology theory (Bandura, 1986; 1993) the study argues that it is not only the ability to coproduce, that is, skills and knowledge of how to coproduce that drives citizen input to coproduction. Another important factor may be citizens' perceived self-efficacy to coproduce, that is, their own judgment of their competences to coproduce, which has almost been ignored in the coproduction literature. Using a sample of parents very similar to the one in the two former studies, the study lends support to the notion that self-efficacy perception is positively associated with citizen input to coproduction. Moreover, the study lends empirical support to the claim that knowledge of how to coproduce is stronger related to citizen input to coproduction among less efficacious citizens than among highly efficacious citizens.

In 'Parental Time Investment in Children' the aim is to shed light on the potential effect of citizen input to coproduction on service outcomes. Specifically, the study examines the association between parental time investment devoted to children during compulsory education and children's educational performance using time use diaries. Drawing on the time use literature it is argued that parental time spent with children on developmental care such as talking, reading, teaching and playing is stronger related to children's educational performance than time spent on non-developmental care devoted to fulfilling more basic needs (Felfe & Hsin, 2012). The results lend support to this notion, since only developmental care is significantly associated with children's educational performance. Moreover, it is argued that two important specifications, which have been overlooked in most prior studies, must be examined in order to reach precise conclusions about the relation-

ship between parental time investment and children's educational performance. The first is whether the relationship differs across family socioeconomic status (Guryan, Hurst & Kearney, 2008), and the second is whether the relationship is non-linear. The analyses also lend support to these claims, since the overall significant association between developmental care and children's educational performance was mainly driven by low-SES children who receive more than 20 minutes of developmental care daily.

Taken together, the empirical results in section 4.1 suggest that coproduction activities such as parental time spent with children on developmental care are likely to influence service outcomes, namely children's educational performance. However, the results also suggest that it is not possible by simple means such as information material provision to increase parental involvement in these types of coproduction activities. A likely explanation is that the initiative was found to have a negative effect on the intrinsic motivation to coproduce, which may cancel out a positive effect on the knowledge of how to coproduce. The generalizability and the implications of these results are discussed in Chapter 5.

4.2 Effect of Public Initiative II: Targeting Public Input

In Chapter 2 it was argued that a public initiative to increase public input may influence citizen input to coproduction. Specifically, it was proposed that in order to predict how citizens respond to an increase in public input it is crucial whether they perceive it as complementary to their own input or as a substitute. If citizens perceive the increased public input as complementary to their own input, they are likely to increase their input to coproduction. In 'Service User Response to an Increase in Public Input' we test the effect of three types of teacher aides that in different ways contributed to an increased effort by the schools to involve parents in the development of their children's cognitive skills. Specifically, the intervention with a teaching assistant and a supervisor was found to increase efforts by the school to involve parents of the academically weakest students by assigning them significantly more homework. Since the teaching assistant, compared to the supervisor, focused more directly on improving children's educational performance and had the most lessons in the class, we expect this intervention to be most likely to increase parental input to their child's education. Our empirical results support this expectation, since the teaching assistant intervention was found to have a positive effect on how frequently the academically weakest chil-

dren experienced that their parents helped them with homework. This indicates that these parents may perceive the increased public input as complementary to their own input and therefore react by increasing their input.

In 'The Effect of Teacher Aides in the Classroom' we move a step forward in the causal chain and examine the effect of the same initiative on service outcomes in the form of children's educational performance. Drawing on the literature on class size we argue that the initiative is likely to increase children's educational performance, and be particularly beneficial for children from disadvantaged backgrounds. Our empirical analysis lends support to the first notion, since the co-teacher and the teaching assistant interventions, which focused more directly on improving children's educational performance and had the most lessons in the class, were found to improve children's test scores in reading. We also find partial support for the notion that the initiative is particularly beneficial for children from disadvantaged backgrounds, since the effect of the teaching assistant intervention was mainly driven by children of less educated parents. Although the results for the teacher aide intervention on parental input and children's educational performance are not linked in the two articles, there seems to be some coincidence between the results. In both studies especially the teaching assistant intervention was found to have an effect on parental input and children's educational performance. However, whether the effect of the intervention partially operates via parents' behavioral responses remains to be examined in future studies. Taken together, the empirical results in section 4.2 suggest that increasing school input may have a positive spill-over effect on parental input. Moreover, the results show that increasing school input may have a positive effect on service outcomes in the form of children's educational performance. Having outlined the main results from the dissertation, the last chapter draws a conclusion in order to answer the research question of the dissertation and discusses the generalizability and implications of the results.

Chapter 5: Concluding Discussion

This chapter outlines the most important results and discusses the generalizability of the results, the policy implications and the contribution of the dissertation.

5.1 Answering the Research Question

The research question that has guided the dissertation is: How do public initiatives targeting either public service agents or citizens influence citizen input to coproduction and service outcomes?

Investigating this research question involves endogeneity problems in the form of two-way causation, self-selection of citizens into public initiatives, and isolating the effects of different public initiatives. To handle these endogeneity problems and identify causal effects, the dissertation employed two field experiments to test the effect of two types of public initiatives in the area of primary education. The first initiative was targeted at increasing input from citizens. Following coproduction scholars (Brudney, 1983; Rosentraub & Sharp, 1981), it was argued that a simple coproduction initiative that provides information material containing encouragement and advice on how to coproduce to citizens may be a means to increase citizen input to coproduction. Using a sample of parents of children enrolled in 1st through 3rd grades, who were randomly exposed to a booklet, the empirical analysis did not lend support to the notion that information material provision is an effective means to increase citizen input to coproduction. To improve our understanding of why information material provision is insufficient, an additional analysis examined the effect of the same initiative on the motivation to coproduce. This analysis revealed that the lack of effect is likely to be explained by a negative effect on the intrinsic motivation to coproduce. This negative effect on the intrinsic motivation was found mainly to be driven by less educated parents. With regard to the effect on service outcomes, the empirical analysis did not directly test this question. However, an additional study showed a significant association between parental time spent on developmental care with children and children's educational performance.

The second initiative was targeted at increasing input from public service agents. Applying a two-input production function (Ostrom, 1996; Parks et al., 1981), it was argued that depending on whether citizens perceive the in-

crease in public input as complementary to their own input or as a substitute, they are likely to respond by increasing or decreasing their own input to coproduction. Schools with children enrolled in 6th grade were randomly assigned to either a treatment group being exposed to one of three types of teacher aides or to a control group, which did not receive an intervention. The different types of teacher aides increased to varying degree the school's effort to involve parents in developing their children's cognitive skills. The empirical analysis lends support to the notion that citizens may respond to an increase in public input by increasing their own input to coproduction. With regard to the effect on service outcomes, the co-teacher and the teaching assistant interventions, which focused more directly on improving children's educational performance and had the most lessons in the class, were found to improve children's test score in reading. Taken together, the findings in these studies suggest that it is not possible to increase citizen input to coproduction by simple means such as information material. However, increasing public input may have a positive spill-over effect on citizen input to coproduction. The following sections discuss the generalizability of the empirical results, policy implications and the main contributions of the dissertation.

5.2 The Generalizability of the Results

While the dissertation has focused on ensuring high internal validity by using field experiments, it has only employed one case to test the different theoretical arguments outlined in the articles. This may have some implications for the generalizability of the results, which is discussed in the rest of this section. The discussion centers on whether the overall conclusions from the field experiments can be generalized to other subjects, other service areas and other types of coproduction. I start by discussing the generalizability of the overall conclusion on the field experiment about information material provision to other subjects. Recall that this experiment was conducted in the area of primary education and included a sample of parents of children enrolled in 1st through 3rd grades from ten public schools in Aarhus Municipality. While the specific estimates of the study cannot be generalized outside the study population, we have no reason to believe that the overall conclusion does not apply to all Danish parents of children enrolled in 1st through 3rd grades in public school. Our sample of parents was not restricted to parents with certain characteristics, for example, advantaged or disadvantaged parents. Moreover, public school parents in Aarhus Municipality are not likely to differ considerably from public school parents in Denmark in general. Nor is there any reason to believe that the overall conclusion would be different if the

same type of information material was provided to parents in private schools or in a similar school system in other countries.

The second issue is whether the overall conclusion that information material provision is insufficient can be applied to other service areas. As argued in Section 3.1, the dissertation uses a favorable case. This means that if information material such as booklets that stresses benefits to citizens or their relatives is insufficient in our study, then it is also likely to be insufficient when applying a less favorable case. Recall that one of the arguments for choosing the case was that participation in this type of coproduction does not require an upgrading of existing skills. This implies that we should expect this type of information material provision to be insufficient if applied in service areas in which citizens are highly constrained by lack of skills to coproduce. An example is long-term unemployment where citizens lack job seeking skills, which cannot be addressed by providing information material (Alford, 2009). A further question concerning the generalizability to other service areas is whether we should expect the overall conclusion to be the same if applying another favorable case with similar characteristics. In relation to the theoretical arguments on the effect of information material provision it is important to underline that these are not restricted to parents of children enrolled in primary education. Although the arguments can be applied to other service areas with similar characteristics, it cannot be ruled out that the mechanisms underlying the effect on citizen input to coproduction may differ. For instance, in health services in which citizens often consult the public sector for advice, information material that stresses the benefits to patients may to a lesser extent reduce the sense of self-determination and thereby be less likely to crowd out the intrinsic motivation to coproduce. The third issue is whether the overall conclusion that information material provision is insufficient also applies to other types of coproduction among parents of children enrolled in primary education (e.g., joining the school board, assisting a teacher). Given that the benefits of collective types of coproduction are often scattered (Percy, 1984) or may be used without participation (Sharp, 1978), it is most likely that the overall conclusion would be the same if the same type of information strategy was used to encourage parents of children in primary education to become more involved in collectively beneficial types of coproduction.

I now turn to the generalizability of the overall conclusions from the field experiment targeted at increasing public input. Again I start by discussing the generalizability of the overall conclusion to other subjects. Recall that this experiment included children enrolled in public schools from 18 municipalities selected based on geographical diversity, size of municipality and school

size among 68 municipalities that signed up for participation. Not only does the sample vary in terms of municipality characteristics, the schools included also vary in terms of composition of family and school characteristics which provide a robust case for generalizing the overall conclusions to all children enrolled in 6th grade and their parents. So to what extent can the overall conclusion be generalized to the whole population of Danish parents and children in public schools? In relation to the effect on parental input in terms of how frequently the children experienced that their parents helped them with homework, we would expect the overall conclusion to be the same, but the effect size may be larger if the children had been younger. The reason is that Danish parents spend less time on developmental activities such as helping with homework as their child becomes older (Bonke, 2009). Similarly, we would expect the overall conclusion in relation to the effect on children's test scores in reading to be the same, but again the effect size may be larger if it was tested among younger children. Prior research in a Danish context has shown that class-size reductions are more effective at early than at later grade levels (Nandrup, 2015). Moreover, it is most likely that the overall conclusion would be the same if a teacher aide intervention was employed in a similar school system in other countries.

A second issue in relation to the effect on parental input is whether the overall conclusion can be generalized to other types of coproduction among parents of children enrolled in primary education. Because the benefits of other types of coproduction often are more scattered (Percy, 1984) and may be used without participation (Sharp, 1978) it is most likely that it is not possible to identify an effect of an increase in public input on parental input to collectively beneficial types of coproduction. Finally, it is more difficult to determine whether the overall conclusion on parental input to an increase in public input can be generalized to other services areas. Recall that the study revealed that only one out of three variations of teacher aides resulted in increased coproduction efforts by parents. Therefore the extent to which, for example, patients respond positively to an increase in public input in the health system is likely to depend on the strength and the characteristics of the increased health input.

5.3 Implications of the Results

The results of the dissertation have several policy implications. First, for public managers interested in increasing coproduction efforts by parents of children in primary school, the results on information material provision suggest that simply sending information material containing encouragement and advice

of how to coproduce to parents is not sufficient. This knowledge is important as disseminating information material to parents is one of the most common methods used by local governments to encourage parents to coproduce more. The results therefore also cast doubt on the notion that if citizens are informed about the benefits to be gained from coproduction via information provision they will be encouraged to coproduce more (Brudney, 1983; Rosentraub & Sharp, 1981). In order for information provision to be effective it may have to be delivered personally by public employees, delivered several times or be part of a larger public initiative that also includes training or materials (see also 'Influencing Citizen Coproduction by Sending Encouragement and Advice').

Second, the negative effect of information material provision on the intrinsic motivation to coproduce underlines the importance of local governments paying attention to how information material delivered to parents is framed. Our results suggest that parents in the treatment group were more likely than parents in the control group to perceive initiatives with information material provision as controlling. It is important to underline that the information material provision initiative was implemented as it would be under non-research circumstances; the booklet was developed in cooperation with a local government in Aarhus Municipality and sent by letter by the municipality and schools. The negative effect on intrinsic motivation can therefore not be explained by the booklet being framed differently than under non-research circumstances. It is possible that the effect on the intrinsic motivation had been less negative if the booklet had been framed differently, the information delivered personally, or information material provision had been part of a larger public initiative (see also 'Citizen Coproduction and Motivation'). The fact that the negative effect on the intrinsic motivation was mainly driven by less educated parents also suggests that different groups of parents may respond differently to different types of information strategies. It would therefore be interesting in future studies to examine whether other types of information strategies may succeed in crowding in intrinsic motivation among less educated parents.

Third, the fact that the negative effect on the intrinsic motivation was mainly driven by less educated parents and that it was fairly large in terms of effect size raises concern about equity in service delivery and outcomes. A small part of the coproduction literature has questioned whether a movement toward more coproduction of public services will increase inequalities in service outcomes because disadvantaged citizens are often less likely to coproduce (Brudney, 1983; Warren, Rosentraub & Harlow, 1984). If coproduction initiatives that disseminate information material to parents in general

are more likely to crowd out intrinsic motivation among less educated parents than among highly educated parents, it may lead to increased inequalities in service delivery and outcomes.

Fourth, the results on the association between parental time investment in children and children's educational performance suggest that efforts by local governments to strengthen parenting practices should be targeted at increasing parental time spent on developmental activities with their children such as reading, talking and helping with homework, and not just increasing time investments in general. Fifth, the results on the effect of increasing school input on parental input suggest that public initiatives targeted at increasing school input may be designed in such a way that the effect of increasing school input is strengthened rather than weakened. Specifically, the study revealed that efforts by the school to involve parents of the academically weakest students more in developing their children's cognitive skills by assigning them significantly more homework may be a means to increase coproduction among these parents.

5.4 Contribution and Future Research

This final section outlines in what ways the theoretical arguments and empirical analyses presented in the dissertation contribute to the coproduction literature. In relation to the theoretical contribution there are two notable contributions. The first theoretical contribution is that the dissertation advances our theoretical understanding of the mechanisms behind coproduction initiatives that encourage citizens to become more involved in coproduction. Specifically, drawing on motivation theory, the dissertation develops new theoretical arguments about the effect of this type of coproduction initiative on the extrinsic and intrinsic motivation to coproduce. These theoretical arguments have not been developed specifically with parents of primary school children in mind, and should therefore be applicable to other service areas. Moreover, the arguments have not been developed specifically for the provision of information material, but should also be applicable to other types of coproduction initiatives that encourage citizens to become more involved in coproduction. A second theoretical contribution is that the dissertation advances our theoretical understanding of how an increase in public input may influence citizen input to coproduction. As mentioned, this question has not been addressed in the existing coproduction literature. Since these theoretical arguments are based on Ostrom's two-input production function (1996) and have not been developed specifically with parents of primary

school children in mind, the arguments are not restricted to this specific service area.

In relation to the empirical contributions there are particularly two notable contributions. The first empirical contribution is that the dissertation applies field experiments to test the effect of two types of public initiatives on citizen input to coproduction that have not yet been tested in the coproduction literature. As mentioned, most existing empirical studies in the field are likely to suffer from endogeneity problems. In this sense the dissertation advances our empirical knowledge that simply providing information material containing encouragement and advice to citizens may not necessarily be an effective means to increase citizen input to coproduction. This finding contradicts some parts of the coproduction literature, which simply assume that informing citizens about the benefits to be gained from coproduction will encourage them to coproduce more (Brudney, 1983; Rosentraub & Sharp, 1981). Moreover, the dissertation advances our empirical knowledge that an initiative to increase public input may have a positive spill-over effect on citizen input to coproduction. A second empirical contribution is that the dissertation is the first in the coproduction literature to apply experimental method to test the effect of a coproduction initiative on the motivation to coproduce. The fact that the study reveals that a very simple initiative in the form of information material provision may crowd out the intrinsic motivation suggests that future studies of the effect of coproduction initiatives should also examine the mechanisms behind such initiatives in order to improve our understanding of why only some initiatives work as intended.

The dissertation also raises issues for future research. First, future research on coproduction initiatives should replicate the study on information material provision in other service areas to improve the generalizability of the results. Related to this is the need to test the effect of other types of coproduction initiatives in order to ascertain what determinants of citizen input to coproduction are particularly important to address. Second, it is recommended that future studies test the outlined theoretical arguments concerning the effect of coproduction initiatives on citizens' motivation to coproduce. This may help explain why an initiative is found to be effective or ineffective. As argued these theoretical arguments should be applicable to various types of coproduction initiatives that encourage citizens to become more involved. Third, future research should examine the effect of coproduction initiatives on other types of coproduction. To date there are no experimental studies of the effect of coproduction initiatives on citizen input to collectively beneficial types of coproduction. Fourth, it is recommended that future studies consider whether it is possible to handle endogeneity problem by using other experi-

mental methods than field experiments. The reason is that field experiments are very resource demanding in terms of time and money. Finally, in order to improve our theoretical understanding of potential determinants of citizen input to coproduction, future research should seek inspiration in other literatures, for example, motivation theory, social psychology theory or the voting literature, which some of the articles in this dissertation draw on.

English Summary

During the past decade public managers have paid increasing attention to involving citizens more in the provision of public services. There are several ways citizens may contribute to the provision of public services. When parents join the school board or help their own children with homework they are coproducing education services together with the teachers. Similarly, when citizens look out for their neighbor's house or participate in neighborhood watch they are coproducing law enforcement together with the police. Such forms of coproduction – that is, a mixture of input from public service agents and citizens to the provision of public services – have been found to increase output, efficiency and improve service outcomes. Despite this increased focus on coproduction there is little empirical research on what kinds of public initiatives that are required to activate citizens more. Moreover, most existing studies on this issue suffer from endogeneity problems caused by two-way causation, self-selection of citizens into public initiatives, and difficulties with isolating the effects of different public initiatives.

This dissertation seeks to improve our knowledge of the effect of different types of public initiatives by examining how public initiatives targeting either public service agents or citizens influence citizen input to coproduction and service outcomes. The dissertation examines the effect of two types of public initiatives. The first initiative is targeted at increasing input from citizens. Building on insight from the coproduction literature it is argued that simply providing citizens with information material containing encouragement and advice may be a means to increase citizen input to coproduction. The second initiative is targeted at increasing input from public service agents. Applying a two-input production function it is argued that an increase in public input may influence citizen input to coproduction. In order to predict how citizens respond to an increase in public input it is crucial whether they perceive an increase in public input as complementary to their own input or as a substitute. The effect of the two types of public initiatives is tested in the area of primary education. To handle problems of endogeneity and interpret the results as causal effects, the dissertation mainly employs data from two field experiments.

The main results from the dissertation is, first, that it is not possible to increase citizen input to coproduction by simple means such as information material provision, and second, that increasing public input may have a positive spill-over effect on citizen input to coproduction. Concerning the theoretical contributions there are two notable contributions. First, the dissertation

develops new theory about how coproduction initiatives that encourage citizens to coproduce may influence citizens' motivation to coproduce. Second, the dissertation advances our theoretical understanding of how an increase in public input may influence citizen input to coproduction. Concerning the empirical contribution there are two notable contributions. First, the dissertation advances our empirical knowledge of the effect of two types of public initiatives on citizen input to coproduction that have not earlier been tested in the coproduction literature. Second, the dissertation improves our empirical knowledge of how a coproduction initiative may influence citizen's motivation to coproduce.

Dansk resumé

I løbet af det sidste årti har vi oplevet en stigende tendens til, at offentlige myndigheder forsøger at involvere borgere i produktionen af offentlige serviceydelser. Borgerne kan bidrage til produktion af offentlige serviceydelser. Når fx en forælder deltager i skolebestyrelsen på barnets skole eller hjælper barnet med lektier, så bidrager vedkommende til produktionen af offentlige serviceydelser. Det samme gælder, når en borger ser efter naboens hus eller deltager i det lokale naboværn i nabolaget. Dette er blot få eksempler på såkaldt samproduktion, hvor både det offentlige og borgerne bidrager med input til den offentlige serviceproduktion. På trods af offentlige myndigheders øgede fokus på samproduktion er der meget lidt empirisk forskning om, hvilke typer offentlige initiativer er påkrævet for at involvere borgerne mere. Ydermere lider størstedelen af de eksisterende studier på området af endogenitetsproblemer forårsaget af selvselektion, omvendt kausalitet og problemer med at adskille effekten af forskellige offentlige initiativer.

Denne afhandling har forsøgt at forbedre vores viden om effekten af forskellige typer offentlige tiltag ved at undersøge, hvordan offentlige initiativer, rettet mod enten borgerne eller det offentlige, påvirker borgernes bidrag til samproduktion og service outcome. Afhandlingen undersøger effekten af to offentlige initiativer. Det første initiativ har til formål at øge bidraget fra borgerne. Med afsæt i samproduktionslitteraturen argumenteres der for, at et simpelt initiativ, som består i at give informationsmateriale til borgerne med opmuntringer til at deltage samt konkrete råd, kan være et middel til at øge borgernes bidrag til samproduktion. Det andet initiativ har til formål at øge bidraget fra det offentlige. Ved brug af en produktionsfunktion argumenteres der for, at en stigning i investeringerne fra det offentlige kan have en spillover effekt på borgernes bidrag til samproduktion. I forhold til at forudsige hvordan borgerne reagerer på en øget investering fra det offentlige, er det afgørende, om borgerne opfatter det øgede offentlige bidrag som substitut eller komplementær i forhold til deres eget bidrag. Effekten af de to typer offentlige initiativer testes på folkeskoleområdet, og der fokuseres på forældres involvering i deres børns skolegang i form af lektielæsning og fælleslæsning i hjemmet.

Hovedresultaterne fra afhandlingen er for det første, at det ikke er muligt at øge borgernes bidrag til samproduktion ved hjælp af informationsmateriale, og for det andet at en øget investering fra det offentlige derimod kan have positive effekter på borgernes bidrag til samproduktion. Afhandlingen bidrager på det teoretiske plan til at udvikle ny teori om, hvordan sampro-

duktionsinitiativer, som opmuntrer borgerne til at samproducere, kan påvirke borgernes motivation til at deltage i samproduktion. Derudover udvikler afhandlingen også vores teoretiske forståelse for, hvordan et øget bidrag fra det offentlige kan påvirke borgernes bidrag til samproduktion. Hvad angår det empiriske bidrag, så øger afhandlingen vores empiriske viden om effekten af to typer offentlige initiativer på borgernes bidrag til samproduktion.

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