Coproduction and cost efficiency: a structured literature review

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Abstract

Purpose – Coproduction is both a recurrent way of organizing public services and a maturing academic field. The academic debate has analyzed several facets, but one deserves further analysis: its impact on the cost efficiency of public services. The purpose of this paper is to aim at systematizing the findings on the relationship between coproduction and cost efficiency and at developing insights for future research.

Design/methodology/approach – This paper is based on a structured literature review (SLR), following the approach proposed by Massaro, Dumay and Guthrie. The SLR approach differs from traditional narrative reviews since, like other meta-analysis methods, it adopts a replicable and transparent process. At the same time, when compared to most common meta-analysis or systematic review logics, it is better suited to incorporate evidence from case studies and etnographies. This makes the method especially suited to public administration and management studies.

Findings – Results shed light on the nature of the academic literature relating coproduction to cost efficiency, on what type of costs are affected and how and on the meaningfulness of productivity measures when public services are co-produced.

Originality/value – In times of fiscal distress for many governments, the paper contributes to research and practice in systematically re-assessing the effects of coproduction on public budgets.

Keywords Public services, Coproduction, Structured literature review, Cost efficiency

Paper type Literature review

1. Introduction and research question

Coproduction is nowadays both a recurrent way of organizing public services and a maturing academic field since the topic gained relevance in the academic agendas in the early 1980s (Parks *et al.*, 1981). The debate on coproduction partly waned in the 1990s and regained popularity only in the 2000s; the literature on the topic, however, is paramount and has analyzed several facets.

A significant number of contributions have attempted at sharpening the paradigm of coproduction, providing taxonomies and conceptual maps of the different kinds of coproduction (Brudney and England, 1983; Bovaird, 2007; Brandsen and Honingh, 2016; Nabatchi *et al.*, 2017). Scholars have stressed that, since coproduction is a complex phenomenon, a finer-grain definition of its many facets is a prerequisite for further analysis. Still, few consistently used definition of coproduction appears in public administration literature (Ewert and Evers, 2014). This contributes to explain why the empirical evidence base is still based on exploratory case studies and, generally speaking, still presents some lacunas or inconsistencies (Brandsen and Honingh, 2016; Loeffler and Bovaird, 2016).

Another stream has focused on conceptualizing the theoretical background of the notion itself. Coproduction has, in fact, attracted scholarly attention in different fields beyond public administration, among them political science, economics and marketing. Moreover, the concept has been widely used in the private sector (Agarwal, 2013). However, since cross fertilization has been somehow limited, some authors (Osborne and Strokosch, 2013) advocated to bring together public management and administration concepts and service

The paper is the outcome of the authors' joint work. However, in the final version Andrea Garlatti wrote the paragraph "Introduction and research question", Paolo Fedele wrote the paragraphs "Insights, critiques, future research" and "Conclusions", Silvia Iacuzzi wrote the paragraph "Analysis of selected contributions" and Grazia Garlatti Costa wrote the paragraph "Structured literature review: major methodological choices".

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management frameworks (Gronroos, 2011; Johnston and Clark, 2008; Normann, 2001) to sharpen the theory and practice of coproducing public services.

Finally, some contributions have focused on the effects of coproduction in public services across different policy areas. This is a non-trivial task since coproducing might affect a large range of both organizational and societal outcomes. Most of this empirical work rely on case studies, yet a few publications have occasionally used experiments (Jakobsen and Andersen, 2013), surveys (van Eijk and Steen, 2014) and longitudinal designs (Cepiku and Giordano, 2014). As concerns the evidence, several contributions found coproduction to generate public value (Osborne *et al.*, 2016), as it first of all improves overall service quality (Jakobsen and Andersen, 2013) allowing customization to different user needs (Bovaird and Downe, 2008), while making users more satisfied and empowered. This can lead to a better relationship between citizens and public agencies, resulting ultimately in improving the quality of democratic governance (Dunston *et al.*, 2009; Vanleene *et al.*, 2017). Furthermore, the adoption of coproduction arrangements helps organizations in pursuing process and service innovation (Osborne *et al.*, 2013). Other studies, however, have focused on the obstacles coproduction can encounter in practice. One main issue is the resistance from professional groups in charge of service provision (Zambrano-Gutiérrez *et al.*, 2017), eventually making it hard to deliver up to the expectations (Vennik *et al.*, 2016). Also unintended effects (Merton, 1936) can occur: coproduction, for example, can harm public value instead of generating it as intended (Williams *et al.*, 2016).

In the more recent streams of coproduction research, however, one cluster of effects has been partly overlooked, at least comparatively: its economic effects and, specifically, its impact on the costs of public services. This is partly surprising since the effects of coproduction on public spending were at the core of some early contributions in the field (Brudney and Duncombe, 1992) that showed how the inclusion of citizen inputs could decrease production costs keeping output level constant, increase output within a given budget or make output increase more than proportionally compared to inputs (Brudney, 1993).

In times of financial crisis (Kickert, 2012), or at least of reducing fiscal space for many advanced economies (Marcel, 2014), it might be meaningful for research and policy to systematically re-assess the effects of coproduction in this domain. Therefore, the present contribution aims at addressing the following question:

RQ1. How does coproduction affect the cost efficiency of public services?

In the attempt to answer the research question, the paper develops a structured literature review (SLR), following the methodology proposed by Massaro *et al.* (2016), including in the analysis coproduction at individual, group and collective level (Brudney and England, 1983; Nabatchi *et al.*, 2017). Results can be useful for academic research, since they systematize knowledge in a relevant field, in which the variety of working definitions and approaches still hinders knowledge accumulation. On the other side, they can be relevant for practice, since they provide decision makers with structured insights on the effects of involving citizen and users in service arrangements. This paper does not take a normative stand, i.e. does not imply that coproduction must generate cost efficiency in public services; it simply considers cost efficiency as a relevant subset of effects which is worth to analyze.

2. Structured literature review: major methodological choices

The analysis presented here, as remarked above, is based on a SLR, following the approach proposed by Massaro *et al.* (2016). SLR approach differs from traditional narrative reviews since, like other meta-analysis methods, it adopts a replicable and transparent process. At the same time, when compared to most common meta-analysis or systematic review logics, it is better suited to incorporate findings from contributions that are based on

non-experimental protocols or on a limited number of in-depth studies. This makes the method especially suited for public administration and management where significant contributions are often made through case studies or ethnography.

The SLR methodology (Massaro *et al.*, 2016) follows a number of steps:

(1) defining the research questions;

(2) writing a research protocol for the review;

(3) determining the articles to include and carrying out a comprehensive literature search;

(4) developing a coding framework;

(5) coding the articles and ensuring reliability; and

(6) critically analyzing and discussing the results.

The way each phase has been carried out in the present paper is described in detail in the following section.

Defining the research questions

As mentioned in the introduction, the research question addressed here is:

RQ1. How does coproduction affect the cost efficiency of public services?

Writing a research protocol for the review

A literature review protocol has been defined in order to ensure reliability. According to Petticrew and Roberts (2008) "it is essential to write a protocol stating the review question, the methods to be used, the study types and designs which the reviewer intends to locate, and by what means, and how these studies will be appraised and synthesized."

Determining the articles to include and carrying out a comprehensive literature search

The literature review focuses on academic studies available online in full text and published in English from 1981, when the seminal article by Parks *et al.* was published, up to and including 2018. To identify articles relevant to the SLR a twofold method was used: at first, a keyword search was carried out through a comprehensive database and then its results were complemented by a citation classics approach (Massaro *et al.*, 2016). A database search has been preferred over a relevant journal search, given the cross-disciplinary nature of coproduction which is potentially relevant to several fields. However, the time of the query becomes a key factor since the results will include only contributions present at that time in a database. The query for this paper was run on January 31, 2019 on Scopus, which has been preferred to other collections as it is the "largest abstract and citation database of peer-reviewed literature in the fields of science, technology, medicine, social sciences, arts and humanities" (Palumbo, 2016). Other sources were not queried due to either their poorer coverage or their more specific focus. For example, Web of Knowledge, which is the other broad publication database, considers publications only from 1985, after the seminal paper by Parks *et al.* (1981), and other databases such as EBSCO include only specific collections such as Business Source Complete, EconLit, etc. Moreover, Scopus allows a more manageable and meaningful selection of relevant contributions through a keyword search by "title, abstract and keyword" while, for example, Web of Knowledge allows selecting articles only by title or full content.

In order to draw out a broad range of relevant studies, the keyword search was carried out using the following string: (co-production OR coproduction) AND public AND (cost OR saving OR efficiency OR economic OR value).

Articles where any of the above combinations appeared in the title, abstract or keywords were selected. Through this first step 266 abstracts were retrieved. They were read by the researchers and classified as follows:

- First cluster: specific reference to public services, coproduction and cost or efficiency;
- Second cluster: reference to public services, coproduction and its outputs in general economic terms;
- Third cluster: reference to public services, coproduction and its outputs; and
- Fourth cluster: no reference to public services, coproduction and its outputs; abstract rejected.

After this classification, the articles included in the first three clusters amounted to 93. They were read entirely and narrowed down to those that describe a specific mechanism of how coproduction affects cost efficiency and/or present empirical findings in the same area. On the contrary, when cost efficiency was just mentioned in passing as one of the benefits of coproduction, but not analyzed in any way, the article was discarded. Only those articles on which all researchers agreed were included so to ensure reliability; this is equivalent to a Krippendorff's α of 1 (Krippendorff, 2013). This step narrowed down the number of relevant articles to 18.

At this point, to limit the risk of over-looking relevant contributions, researchers checked whether the 93 articles read in full cited contributions which could fulfill the two selection criteria described above, but had not been retrieved because their abstracts, titles and keywords did not meet the keyword search criteria. 20 articles appeared to potentially satisfy the selection criteria and were read in full. Authors agreed that five of them fulfilled the selection criteria and were included in the analysis.

Therefore, a total of 23 articles were deemed relevant and included in the analysis out of the 286 articles retrieved initially through keyword search (266 articles) and citation classics (20 articles).

Developing a coding framework

After selecting the articles, an *ad hoc* framework to classify them was developed. The model classified articles along these dimensions:

- Article baseline information: authors, title, journal, year of publication, number of citations;
- Paper type: theoretical/conceptual, empirical or review;
- Research method in case of empirical papers: quantitative methods, single case study, multiple case study, field experiment, ethnography, other qualitative, mixed methods;
- Geographic location (countries);
- Research question (full description);
- Jurisdiction: supranational, national, intermediate, local government;
- Policy sector: healthcare, social care, environment, law enforcement, development, education, etc.;
- Findings with respect to cost efficiency (full description);
- Effects on cost efficiency: holding the cost of service inputs constant and increasing service outputs/outcomes; reducing inputs and holding constant or increasing outputs/outcomes, increasing inputs but increasing outputs/outcomes at a greater rate (Brudney, 1984);
- Affected cost category: labor, capital equipment and facilities, supplies, utilities, support services (Brudney and Duncombe, 1992);

- Focus on cost and cost efficiency: major focus, one of many topics, marginal topic;
- Level of coproduction: individual, group, collective (Brudney and England, 1983; Nabatchi *et al.*, 2017); and
- Phase of the service cycle: co-commissioning, co-design, co-delivery, co-assessment (Nabatchi *et al.*, 2017).

It is important to notice that as concerns "Jurisdiction," "Policy sector," "Affected cost category," "Effects on cost efficiency," "Level of coproduction" and "Phase of the service cycle," the same article can be attributed to multiple categories. For example, the coproduction phenomenon described in an article can affect more than one cost category (labor, capital equipment, etc.) or a contribution can deal with more than one level of coproduction, that is, it deals with an example of coproduction which is at the same time individual and group, or group and collective, and so on. Hence, more than one category could be assigned to these dimensions resulting in overlapping coding.

Coding the articles and ensuring reliability

Researchers read the selected contributions and coded them. Coding was cross checked by all the researchers as the team needed to unanimously agree with the coding to ensure a degree of inter-reader reliability equivalent to a Krippendorff's α of 1 (Krippendorff, 2013).

Critically analyzing and discussing the results

The findings were critically analyzed so to generate insights, critiques and suggestions for future research on the effects of involving citizen and users.

3. Analysis of selected contributions

As only 23 articles were finally selected as fully relevant, in order to offer a broader perspective to the analysis, this paragraph will refer comparatively also to the papers initially retrieved (286) and to the ones selected in the second round (113) as per Figure 1.

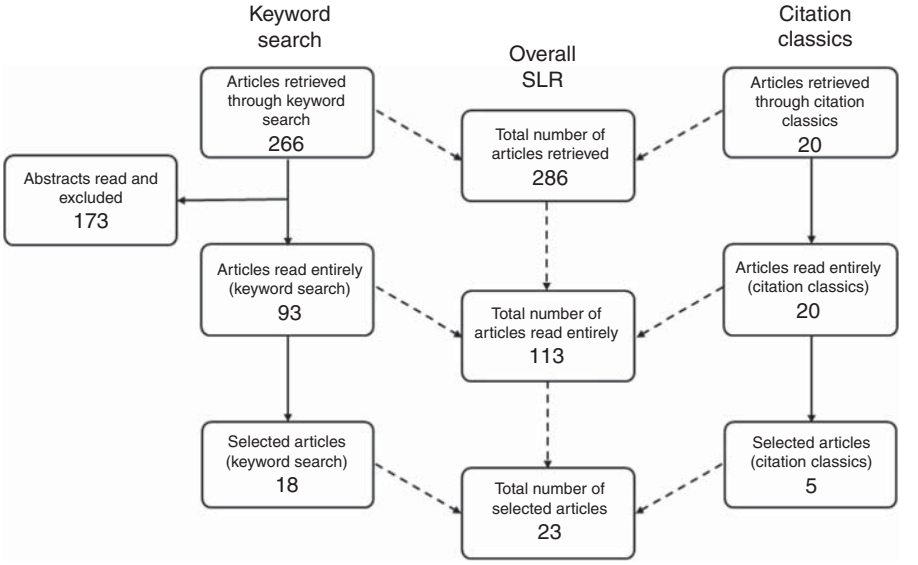


Figure 1.
Article selection process

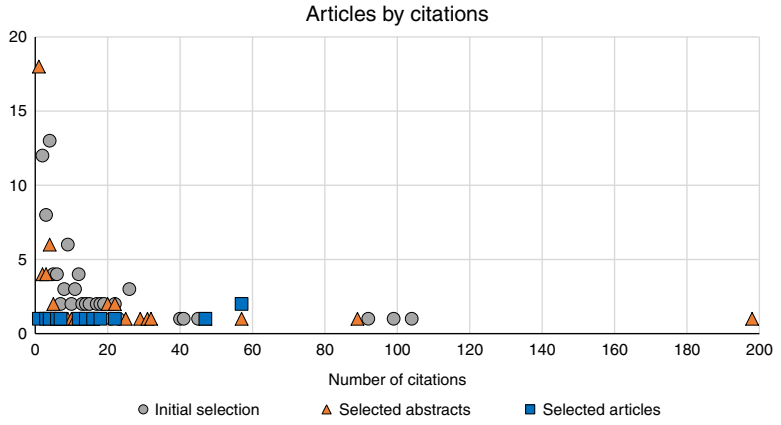
Comparing simple arithmetic means, on average the 286 contributions have been cited 17 times, whereas the 113 articles have been cited 29 times and the 23 articles have been cited 20 times (Table I). This indicates that on average the articles read in full for this literature review have been cited more often than those initially discarded, yet those selected are not more cited on average than those excluded after reading them. Even the oldest selected articles have collected at most 57 citations (Percy, 1984), whereas seven of those excluded in the first or second round have been cited more often (Parks *et al.*, 1981; Ostrom, 1996; Cavalett *et al.*, 2006; Bovaird, 2007; Wynne, 2010; Hegger *et al.*, 2012; Osborne and Strokosch, 2013) and some were published much more recently. This is a first sign that underlines that cost efficiency, even though crucial, has not been debated in detail as much as other issues related to coproduction (Figure 2).

Most articles in the initial selection by keywords or by citation classics as well as most of the selected abstracts were published in the last decade (Table II). However, 3/4 of the few articles selected in the first step and published in the 1980s were then deemed worth to be read in full and more than half of them actually dealt with coproduction and cost efficiency which hence appears to have been a salient relationship at the time. On the contrary, most of the articles published in the twenty-first century, even if they mentioned coproduction and efficiency, did not develop this issue. They rather focused on other aspects, such as the reasons why citizens would coproduce and what the benefits of coproduction are in qualitative terms, such as increased public value.

No. of citations	Initial selection	Selected abstracts	Selected articles
None	101	43	10
1 to 5	103	37	3
6 to 10	23	6	2
11 to 20	31	11	4
21 to 50	18	9	2
Over 50	10	7	2
Total	286	113	23
Mean	17	29	20

Source: Authors

Table I. Articles by number of citations



Source: Authors

Figure 2. Articles by number of citations

The increasing number of publications since 2015 (26 articles retrieved initially) and particularly in 2018 (68 articles retrieved initially) seems to highlight an increasing interest for coproduction in the public sector (Figure 3).

Looking more in detail at the 23 articles selected for this SLR, one-third of them were published in the 1980s and two-thirds after 2010. The 23 selected articles deal with coproduction mostly at local (13) or national (9) level in various sectors from healthcare to crime prevention, from education to urban planning, from social care to environmental policies (Table III).

However, the focus of the 23 selected articles and the cost issues they explore are rather different. The eight articles published in the 1980s are both empirical and theoretical/conceptual and focus on the USA. If they are empirical, they deal specifically with cost reduction and cost efficiency and conceive coproduction as the involvement of voluntary helpers in service delivery (Table IV). In coproduction volunteers often substitute public officers in tasks that do not require specialized training or skills in service implementation and delivery. Public sector labor costs are thus reduced as public officers can be employed elsewhere. Yet, on the one hand, savings for public budgets are constrained by the actual degree of substitution that can effectively be undertaken, since citizens often lack the training and experience of service agents and public employees (Brudney, 1984). On the other hand, overall cost reductions depend on whether voluntary efforts are more efficient then paid ones: substituting paid personnel does not eliminate costs, but simply shifts them to the coproducers (Pestoff, 2006).

The 15 articles which deal with coproduction and cost or efficiency issues and were published since 2010 are all empirical contributions except one and use a variety of methodologies to analyze evidence from the UK, the USA, Belgium, Denmark, Italy and Malawi. Hence, over time coproduction has become a more globally applied concept.

Table II. Articles by year of publication

Year of publication	Initial selection	Selected abstracts	Selected articles
1981–1990	14	11	8
1991–2000	2	1	0
2001–2010	36	10	0
2011–2018	234	91	15
Total	286	113	23

Source: Authors

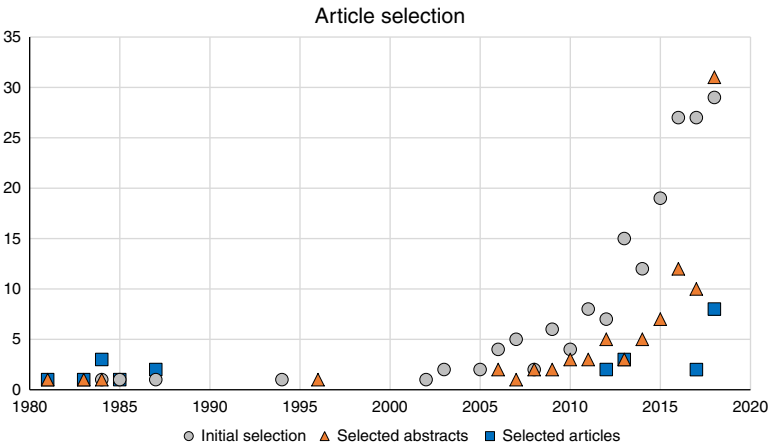


Figure 3. Articles by year of publication

Source: Authors

Authors	Year of pub.	Paper type	Geographic location	Jurisdiction (tier of govern.)	Policy sector
Rich	1981	Theoretical/ conceptual	None	Local	Municipal services
Percy	1983	Empirical	USA	National	Cross sector
Brudney	1984	Empirical	USA	Intermediate/Local	Fire protection and law enforcement
Ferris	1984	Empirical	USA	National	Cross sector
Percy	1984	Theoretical/ conceptual	USA	Local/national	Cross sector
Clary	1985	Theoretical	USA	National	Cross sector
Anderson and Clary	1987	Empirical	USA	Local	Public safety: emergency services
Brudney	1987	Theoretical/ conceptual	USA	Not applicable	Cross sector
Bovaird and Loeffler	2012a, b	Empirical	UK	National	Healthcare, local development, urban planning
Evans *et al.*	2012	Empirical	UK	National	Social care
Clark *et al.*	2013	Empirical	USA	Local	Crime prevention
De Witte and Geys	2013	Empirical	Belgium	Local	Libraries
Jakobsen and Andersen	2013	Empirical	Denmark	Local	Education
Mees *et al.*	2017	Empirical	UK	National	Environment
Wilderspin	2017	Empirical	UK	National	Healthcare
Adams and Boateng	2018	Empirical	Malawi	Local	Environment
Bourne *et al.*	2018	Empirical	UK	Local	Healthcare
Burgess and Durrant	2019	Empirical	UK	Local	Cross sector
Cordella and Paletti	2018	Theoretical/ conceptual	UK, USA	Local	Cross sector
Kay and Edgley	2018	Empirical	UK	Local	Healthcare
Musso *et al.*	2018	Empirical	USA	Intermediate	Crime prevention and firefighting
Palumbo *et al.*	2018	Empirical	Italy	Local	Education
Walsh *et al.*	2018	Empirical	UK, USA	Intermediate	Healthcare

Source: Authors

Table III. Features of the selected articles

Moreover, in 12 of these 15 articles coproduction influences efficiency by affecting all types of costs related to public services, that is not only labor but also capital equipment, facilities, supplies, utilities and support services (Brudney and Duncombe, 1992).

Overall, all 23 selected articles report or point to lower labor costs for public employees and service agents (Table V), whereas 14 articles report a decrease in all cost categories, including labor.

However, cost efficiency is a major focus for only 12 papers: the other 11 deal with it but tend to emphasize more other aspects and effects of coproduction.

It is important to notice that only 6 papers out of 23 (Bovaird and Loeffler, 2012b; Clark *et al.*, 2013; De Witte and Geys, 2013; Kay and Edgley, 2018; Palumbo *et al.*, 2018; Walsh *et al.*, 2018) take a quantitative approach to illustrate cost efficiency and support their arguments with numerical evidence and calculations of actual savings.

Further insights can be gained by classifying the effect of coproduction on costs according to the definition used by Brudney (1984) adapted to consider also outcome and not only output. Hence increased efficiency can be related to:

(1) holding the cost of service inputs constant and increasing service outputs/outcomes;

Table IV. Cost efficiency in the selected articles

Authors	Year of publication	Research focus/topic/question	Findings with respect to costs, efficiency, saving, value
Rich	1981	Relationship between the operations of political institutions and voluntary efforts in municipal services delivery. It is possible to understand how new ways of involving citizens in municipal service delivery systems can increase effectiveness and efficiency of public services delivery	Co-productive activities on public services level are represented by individual and collective voluntary efforts in relation to public services delivery. Voluntary action affects public services and depends on the effectiveness of the incentive system. Volunteered labor can markedly affect the costs of municipal services increasing the quality of services
Percy	1983	Review of the definitions of coproduction, examination of empirical evidence about the extent of these efforts, and considerations about the prospects of coproduction in improving the delivery of urban services	Productive actions by citizens may reduce some agency expenditures; these actions should not be considered as costless or inexpensive resources by public administrators. Co-productive actions represent real costs to citizens in the form of time, money, and opportunity costs
Brudney	1984	Implications of local coproduction of services for improving municipal productivity	Coproduction programs may affect municipal productivity by alternating the cost of service inputs and/or the amount or quality of outputs; Substitution of citizen inputs for those of paid service agents in the service delivery process, cost of citizens' involvement (time and resources of PA for informing, recruiting and training/certifying citizens); if citizen labor is utilized effectively, the benefits are likely to outweigh the costs
Ferris	1984	Development of a framework for examining the efficiency and equity effects of the voluntary behavior of citizens through time and money donations in the delivery of public service	The key issue is not how to involve citizens in the production of collective goods and services, but rather how citizens will voluntarily help to provide such services either through time and/or money donations. Thus, the emphasis should be on coprovision which has the potential to improve efficiency and equity in public service delivery
Percy	1984	Tracing the development of coproduction (definitions, costs/benefits, incentives/disincentives)	Citizens' coproduction is positively associated with higher level of urban services and with lower budgetary costs for provisions of current service levels
Clary	1985	Three aspects of the change brought about by coproduction in the relationship between a bureaucracy and its community environment are discussed: how collective coproduction can improve the response of the bureaucracy to a turbulent environment; what internal, organizational problems may result from this change in the composition of the labor force; and what incentives are necessary to motivate citizens to coproduce	For coproduction to be an effective delivery mechanism, it must be assessed in terms of costs as well as benefits. Officials, especially elected ones, tend to see only the economic gains from the use of citizens in place of paid staff. This view is a narrow one and ignores the difficult organizational questions of collective coproduction

(*continued*)

Table IV.

Authors	Year of publication	Research focus/topic/question	Findings with respect to costs, efficiency, saving, value
Anderson and Clary	1987	Demonstrating whether the benefits of a coproduction system outweigh the costs involved in designing, implementing and administrating it	Community benefits exceed the costs incurred; minimal public resources have been used to finance a system which has brought the area within the state standard of ten minutes for response to medical emergencies
Brudney	1987	Growing privatization of services and its relationship to and implications for a co-productive approach	True privatization and private sector initiatives attempt to reduce the cost of government by transferring service responsibilities to private institutions; citizens augment the resources and productive capacity available to the service bureaucracy
Bovaird and Loeffler	2012a, b	Exploring the ways in which coproduction can be conceptualized as a shift from "public services for the public" towards "public services by the public"	While user and community coproduction can achieve major improvements in outcomes and service quality and can produce major cost savings, it is not resource free. Initiating such approaches can involve substantial setup costs and supporting them effectively will usually involve a flow of public sector resources. Coproduction may be "value for money," but it usually cannot produce value without money
Evans *et al.*	2012	Highlight some examples of good practice in sustainable development in social care: main drivers for and barriers to the development of sustainable systems of social care with decreasing budgets	To have any chance of making services sustainable in the long term, social care must adopt innovative and new ways of thinking about commissioning and delivering services, based on the meaningful inclusion of local communities and incorporating approaches such as prevention, localism and self-managed care
Clark *et al.*	2013	Investigating possible disparities by race, education, and income in making service requests because communications advances affect citizens' ability to participate in the coproduction of government services	Citizens can and do play a complementary role in identifying and reporting needs for services in combination with the local government by reducing the monetary and human capital costs required to determine where government services are needed
De Witte and Geys	2013	How citizen coproduction influences the measurement of public service providers' productive efficiency	Taking account of the "co-productive" activities of citizens is crucial for appropriately defining inputs and outputs in the analysis of productive efficiency (and for the accuracy of the results from such analyses). Indeed, as final outcomes are influenced by citizens' active participation in the public service production process, they are inappropriate to evaluate the pure productive efficiency of public service provision, and their use will lead to biased inferences

(*continued*)

Table IV.

Authors	Year of publication	Research focus/topic/question	Findings with respect to costs, efficiency, saving, value
Jakobsen and Andersen	2013	Does coproduction potentially increase the gap in service outcomes between advantaged and disadvantaged citizens? Or could coproduction programs be designed in ways that support the most disadvantaged users in increasing their productive efforts and service outcomes?	Coproduction (helping parents to be part of their kids' education by distributing some learner-kits) decreases disparities and avoids having to set up special classes for disadvantaged children from less educated background. Less children sent to special classes, i.e. less output from this public service needed to achieve the outcome of education
Mees *et al.*	2017	Opportunities, limitations and barriers to coproduction in flood risk governance in terms of resilience, efficiency and legitimacy	Replacing governmental actions by citizen coproduction decreases public spending and thus strengthens a policy's efficiency. In order to be resilient, however, coproduction should be complementary to public investment, which can make it less efficient, e.g. investments that benefit the largest amount of people and assets while communities in less populated areas are expected to co- or self-fund the prevention of and response to flooding
Wilderspin	2017	Shifting the balance of care from institutional care (hospitals) to community settings and self-management/help to improve quality and reduce costs with decreasing NHS budgets	Reducing costs requires greater level of integration between primary care, community health and social care and the voluntary sector
Adams and Boateng	2018	Assessing the impact of coproduction on household water access and service delivery in the informal settlements of Lilongwe, Malawi	Coproduction through community–public partnerships in Malawi has been largely successful at improving water service delivery. Not having to supervise and pay for employee (vendor) salaries has reduced the cost of water
Bourne *et al.*	2018	Evaluating outcomes for Sussex Recovery College students who use mental health services	Attending co-produced Recovery College courses is associated with reduced mental health service use which equates to non-cashable cost-savings for each attending student
Burgess and Durrant	2019	Locating coproduction within the narrative of austerity and the ethos of time credits in the academic debate about the reciprocal economy; understanding the disconnect between the rhetoric and reality of coproduction	Whilst adding more volunteers to time credit can extend the capacity, the work of volunteers and time credit themselves cannot replace professional skills or make up for their lack when service funding is reduced or withdrawn
Cordella and Paletti	2018	Critically comparing different ICT mediated model of production of public services highlighting the risk and benefits associated with each mode of production	The adoption of coproduction arrangement based on crowdsourcing and opensourcing can enlarge the range of services offered to citizens keeping inputs constant
Kay and Edgley	2018	Evaluating cost efficiencies and health outcomes in a recovery college	Coproduction activities in a recovery college have a significant impact on health outcomes with possible financial efficiencies in secondary

(*continued*)

Table IV.

Authors	Year of publication	Research focus/topic/question	Findings with respect to costs, efficiency, saving, value
			care mental health pathways because students require less practitioner hours
Musso *et al.*	2018	Verifying whether managing and motivating volunteers in the interdependent production of public goods that are to a high degree non-rival and non-excludable is more likely in fiscally strained cities with institutional and political features that ease management, such as ideological alignment and city scale associated with managerial capacity	Reliance on volunteers varies: for policing there appears to be little relationship between fiscal factors and presence or reliance on volunteers, although counter to expectations cities with higher per capita sales tax revenues are more likely to have volunteer policing programmes. There is more evidence that volunteerism in fire services is associated with fiscal stress. It is possible that it appears less risky, both in real and political terms, to substitute volunteers for employees in firefighting than in policing
Palumbo *et al.*	2018	Exploring coproduction primary school meal service and in particular how different stakeholders are engaged in co-designing and co-delivering, whether coproduction leads to better service quality and increased outcomes and how coproduction is supported to encourage value co-creation	The enhancement of group coproduction paved the way for significant cost savings because of the cut of logistic expenditures and the reduction of waste with a reduction in the total number of meals provided to students
Walsh *et al.*	2018	Assessing why community led approaches successfully implemented in Alaska failed in Scotland	Coproduction allowed to cut hospital A&E visits by 42%, hospital in-patient days by 36%, speciality care by 58%, and routine doctor visits by 30%, all of which have reduced costs because resources are better used

Source: Authors

(2) reducing inputs and holding constant or increasing outputs/outcomes; and

(3) increasing inputs but increasing outputs/outcomes at a greater rate.

Most selected articles (20 out of 23) show how coproduction can help reducing inputs while holding outputs and/or outcomes stable or increasing them (Table VI).

Most articles deal with coproduction at the collective level (17) but also at group level (16) (Table VII). In actual facts, eight selected articles deal with all three levels of coproduction identified by Brudney and England (1983) and used later by Nabatchi *et al.* (2017), that is individual, group and collective coproduction, and another four deal with a combination of two of them. Less than half (11) describe only a single level of coproduction. This means that lay actors, i.e. "people other than regular producers (i.e. government professionals)" (Nabatchi *et al.*, 2017, p. 768), often engage in coproduction simultaneously as individual, member of a social group and member of the community as a whole.

Moreover, all selected articles appreciate coproduction as co-delivery (Table VIII) and only few understand it also as other phases of the service cycle (Nabatchi *et al.*, 2017).

Table V. Cost categories affected by coproduction

Affected cost category	No. of articles
Labor	23
Capital equipment and facilities	14
Supplies	14
Utilities	14
Support services	15

Source: Authors

Table VI. Operationalization of the effects of coproduction on costs and efficiency

Cost reduction and/or increased efficiency through	No. of articles
(1) holding the cost of service inputs constant and increasing service outputs/outcomes	8
(2) reducing inputs and holding constant or increasing outputs/outcomes	20
(3) increasing inputs but increasing outputs/outcomes at a greater rate	6

Source: Authors

Table VII. Level of coproduction dealt with

Level of coproduction	No. of articles
Individual	10
Group	16
Collective	17

Source: Authors

Table VIII. Coproduction in the service cycle

Phase of the service cycle	No. of articles
Co-commissioning	2
Co-design	9
Co-delivery	23
Co-assessment	3

Source: Authors

Hence, in the 23 selected articles coproduction means first of all co-delivery, while other phases of the service cycle appear marginal when considering the implications for cost reductions and increased efficiency provided for by coproduction.

4. Insights, critiques and future research

This SLR allows a further discussion with respect to the relationship between coproduction and cost efficiency.

Coproduction and cost efficiency: a meaningful research topic?

The first insight is that although many articles agree on the relevance of cost efficiency as an effect of coproduction, fewer articles describe a specific mechanism of how coproduction affects cost efficiency or present empirical findings. To be more specific, the topic was present in the early 1980s, then it disappeared to come back since 2010. This can be interpreted in a number of ways. One is to assume, bluntly, that the public administration scholarly community considers other facets more relevant, both in theoretical and practical terms. However, while the topic is seldom the specific research focus, a large number of articles refers, at least incidentally, to cost reduction or increased efficiency as a possible effect of coproduction. Therefore, more complex explanations can be proposed. The first has to do with the evolution of the knowledge on coproduction. The phenomenon itself has still blurry boundaries and scholars are still attempting to sharpen definitions and typologies. Without clear working definitions, it is hard to dig into its economic or budgetary effects.

Second, the relevance of the relationship between coproduction and cost efficiency has been influenced by the evolution of the mainstream academic debates and research agendas. After the first works on coproduction in the 1970s and 1980s, there was an initial surge of interest in the topic, which faded in the 1990s partly because it was out of tune with market-inspired reforms, in which citizens were cast as customers and not coproducers. More recently, interactive governance has gained prominence leading to a "revival of engaging citizens" (Brandsen *et al.*, 2018) with more recognition that citizens need to be involved in the design and implementation of policies.

However, given the fiscal imbalance that many countries live through, the effects on budgets of public service arrangements is crucial to decision makers. Since the public administration academic community is debating how to gain relevance also among decision makers (Newman *et al.*, 2016), it might therefore be meaningful to systematically investigate the impact of the effects of coproduction on cost efficiency and hence on public budgets.

Coproduction and cost efficiency: who coproduces?

Selected contributions found evidence of coproduction effects on cost efficiency for each level of engagement classified by Nabatchi *et al.* (2017) and previously by Brudney and England (1983), i.e. individual, group and collective. However, there seems to be a distinction between the earlier contributions dating back to the eighties and the more recent stream of publications on the topic. The older stream conceived coproduction often merely as "volunteers' engagement," i.e. people who are not the direct beneficiary of the policy or service, for example volunteer firemen working for the fire department. The newer stream instead mostly conceptualizes coproduction as beneficiaries' groups involvement in policies or services that affect them, for example children parents' involvement in schooling or patients and their family participating in service delivery.

Hence, it might be insightful to analyze how the choices over who to engage can influence the cost efficiency of public services. This element can be of interest for practice since it concerns the design of organizational arrangements for coproduction. Organizational design,

in fact, is central in shaping decisions and behaviors (Egeberg, 2003) and many contributions on stakeholder engagement have looked at organizational arrangements (in this case the "width" of participation) as the antecedents of its effects (Edelenbos and Klijn, 2005; Fung, 2006; Fedele *et al.*, 2016).

Coproduction and cost efficiency: does cost efficiency concern mainly co-delivery?

Most selected articles focus on coproduction at one stage of the service cycle, i.e. co-delivery, while other phases, i.e. co-commissioning and co-assessment, are basically neglected. This finding needs to be analyzed more in details in order to assess the meaningfulness of current research. One straightforward conclusion could be that co-delivery is the main focus because coproduction mainly happens in this form. A more complex explanation could rest on the way coproduction has been framed in public administration studies. In other terms, engagement in the upward phase, i.e. in the design phase of a program or policy has been labeled as "participation," "cocreation" or similar labels, while the downward phase of the policy cycle, focused on implementation, has been regarded as coproduction. Otherwise, the bias could be due to the focus on cost efficiency, since this angle relates more strictly to operations, rather than policy design. In order to develop novel evidence and make it relevant for theory and policy, future research could empirically analyze the cost-efficiency effects of coproduction across the different phases of the service cycle (Brudney and England, 1983; Nabatchi *et al.*, 2017), rather than focusing on each of them separately as done for example by Bovaird (2007) for co-commissioning, Bovaird and Loeffler (2012a, b) for co-design and Sicilia *et al.* (2016) for co-assessment. For example, citizens could generate innovative ideas in the co-design phase that lead to cost efficiency in the co-delivery phase, as well as co-assessment could facilitate lessons learning so to co-design more efficiently the next production cycle.

Coproduction and cost efficiency: what type of costs are reduced? And how?

The contributions analyzed here (empirical and theoretical) stress that coproduction can reduce mainly labor costs. The mechanism is evident: the remuneration and fringe benefits that would have to be paid to employees for their labor can be avoided since their input is replaced by citizens' input (Brudney and Duncombe, 1992). Fewer studies, on the other side, contend that coproduction can reduce also capital equipment, facilities, supplies, utilities and support service costs. The mechanism, however, is the same: coproducers' inputs replace government's inputs. Therefore, inputs are reduced holding constant outputs. However, these apparently obvious findings might underestimate constraints met on the field; in particular, they overlook how certain polity specific pre-existing institutional and administrative arrangements (Pollitt and Bouckaert, 2011) affect or even set barriers to expected savings. For example, rigid labor contracts normally prevent lay-off or even limit re-assignment to new tasks; in this case, tenured staff can just be complemented, but not replaced by users' inputs. Moreover, the rules and routines constraining the way financial, human, material and informational resources can be acquired and used by public managers (Barzelay, 2001) can have an impact. For example, dismissing or using differently a facility no longer necessary can prove very hard to do or the long-term contract in place with an external provider might hinder the introduction of collaborative arrangements.

Therefore, future research on the topic could take an historical-institutionalist stand and could analyze how pre-existing institutional and administrative arrangements affect the capacity of coproduction arrangements to achieve cost efficiency and service-delivery enhancement. The implication for practitioner, in case they aim also for cost efficiency, would be to carefully consider *ex ante* the factors that can hinder the effect of coproduction in cost-efficiency terms before implementing collaborative initiatives.

Coproduction and cost efficiency: a free lunch?

Most contributions found coproduction to enhance cost efficiency mostly by reducing inputs while holding constant or even increasing the output. However, some contributions remind that adopting collaborative arrangements also bears significant sunk costs. In other terms, coproduction may be "value for money," but it usually cannot produce value without money (Bovaird and Loeffler, 2012b). The first type of cost generated by coproduction arrangements is set-up costs. For example, users and citizens must be recruited, trained or even certified (Brudney and Duncombe, 1992) so to engage with the required level of professionalism in service delivery. Second, organizational structures, processes, procedures and logistics need to be redesigned so to incorporate users' output (Brudney, 1984). Beside set-up costs, adopting co-productive strategies can generate recurrent costs, for example, those related to keeping the information and decision flows with coproducers constant and to evaluate and supervise their inputs (Brudney, 1984). Moreover, citizens themselves may incur costs while coproducing (Clary, 1985; Percy, 1983; Pestoff, 2006). Furthermore, some contributions (for example Burgess and Durrant, 2019) suggest that coproduction can increase capacity, but only if the governmental money and inputs do not go under a critical threshold due to sever budget cuts.

Therefore, on the practical side, further research could investigate the direct and indirect costs of coproduction and develop methodology to systematically assess and compare costs and benefits of coproduction. For example, inputs contributed by citizens such as labor, professional advice, the use of personal equipment and infrastructure could be accounted for since in financial statements those would be costs. Among other models, Bovaird and Loeffler (2012a, b) proposed the development of a "policy simulator" for coproduction including the cost of inputs from public sector or citizens. On the academic side, research could investigate how the overall assessment of costs and benefits influence officials' decision to enact coproduction.

Coproduction and cost efficiency: what type of efficiency metrics?

The existence of users' inputs as suggested by De Witte and Geys (2013) leads to re-discuss the meaningfulness of efficiency measures in public services. Under a coproduction arrangement, citizens' inputs replace part of governments' input in generating outputs, for example fire-prevention vigilance by citizens. Moreover, part of the production process might happen outside government's organizational boundaries, as for example dementia patients' families providing care or parents and voluntary associations setting up community schools. Traditionally, efficiency measures relate government inputs and government-produced outputs, Yet, they might be misleading when coproduction arrangements are in place. First of all, they might underestimate the overall output produced because they disregard what is not directly delivered by government. Therefore, productivity measures might show that the agency is being inefficient since output level has been reduced, while at societal level it has not changed or has grown larger. Second, they might not consider citizens' inputs. The agency could be considered efficient since it reduced inputs, ignoring the costs that have been shifted onto citizens. If agencies are financed, or at least evaluated, on the basis of performance measure, this could lead to wrong conclusions and encourage strategic behaviors that play the system (Bevan and Hood, 2006) or simply avoid blame (Garlatti *et al.*, 2018). Even worst, if the indirect costs bore by citizens are ignored or not computed, coproduction would posit severe concerns in term of equity, which has been a consideration and a concern in the literature on coproduction since the beginning (Warren *et al.*, 1984). In order to pursue cost-efficiency services could be shut down to rely on users' self-mobilization, which would harm the more troubled groups which might have lower capacity or efficacy. In other words, some citizens are less able to bear the cost shifting through coproduction than others leading to issues of equity.

The solution could be to design measures that do not focus only on the agency, but rather on the overall public service's inputs and outputs within a co-productive arrangement. Further research could analyze the meaningfulness of efficiency measures (and performance measures in general) to assess coproduction arrangements and the range of incentive and unintended effects they could generate.

Enhancing transparency and accountability regarding coproduction choices?
Building incrementally on the previous insights, it appears that another relevant facet is the issue of transparency and accountability concerning the adoption of coproduction arrangements. Obviously, this aspect includes the cost-efficiency debate, but it is not limited to the latter. Coproduction brings along benefits and generate costs both at the single organization's level and at the broader societal level; it becomes then relevant to discuss how these costs and benefits should be disclosed and reported to the community in order to justify the public value coproduction generates or, conversely, to explain why collaborative arrangements are not carried out. If coproduction is meant to increase the service quality and thus improve overall democratic governance (Dunston *et al.*, 2009), future research could investigate also how decisions in the field should be taken and disclosed since they can contribute to increase or destroy value and need to answer quests for transparency and accountability.

5. Conclusions

This SLR has shed light on specific facet of coproduction: its effects on cost efficiency. In the last 40 years some 20 papers have dealt in a meaningful way with this issue. Therefore, it might be worthwhile to investigate the effects of coproduction on costs and on public budgets more in-depth and across jurisdictions and polities.

This paper has highlighted how future research could analyze how institutional and administrative arrangements affect the capacity of coproduction to achieve cost efficiency and service-delivery enhancement, could identify the direct and indirect costs of coproduction, could develop methodology to systematically assess and compare costs and benefits of coproduction, could investigate how the overall assessment of costs and benefits influence the decisions to support coproduction and could analyze the meaningfulness of performance measures to assess coproduction arrangements and the range of incentive and unintended effects they could generate. Further research is particularly advisable if coproduction leads to improved democratic governance (Vanleene *et al.*, 2017) and to the generation of public value (Osborne *et al.*, 2016). In this context it is important to better appreciate the relationship between coproduction and cost efficiency, which, on the evidence available to date, is relevant to policy and practice. As concerns research protocols, a possible way to develop such insights, given their nature, is to carry out in depth case studies, aiming at understanding the multiple causal mechanisms through which coproduction arrangements (the explanatory factor) influence the cost efficiency of public services (the explananda). The key conceptual resource to be used could be that of "social mechanism." Social mechanisms can be defined (Hedström, 2005) as unobserved analytical constructs that provide links between observable events. In other words, mechanisms are sequences of causally linked events that occur repeatedly in reality if certain conditions are given (Mayntz, 2004). Therefore, investigating social mechanisms means to open up the black box that leads from an event to another, unwrapping and dividing into smaller steps the cause-effect link that connects independent variable and outcome. The concept of social mechanism has gained popularity in public administration and policy: a number of research programs (such as the process dynamics of public management policy making, Barzelay, 2003) and research methodology paradigms (such as process tracing, Beach and Pedersen, 2013) heavily rely on the idea of discovering or testing social mechanisms. In this somewhat renewed light, in-depth case studies, can be a powerful tool to

either generate hypotheses about the existence of a social mechanism or testing its functioning, moving beyond local explanations. One of the insights, specifically the comprehensive model to compare costs and benefits of coproduction, could instead follow a partially different approach. In this case the proposed methodology is to adopt the "design" approach logic proposed by Barzelay and Thompson (2010), i.e. to generate, through case studies, not solely explanations, but also prescriptions that are both field tested and theory grounded.

It is also necessary to point at some limitations of the present paper that could be addressed in future works. First of all, the review was performed on one major database, but could be performed on other relevant databases, such as Web of Knowledge, even though often they are more restrictive with respects to the journals and time period covered. Second, it could follow different search strategies, for example journal-based search so to better compare the difference across disciplines in analyzing coproduction. Thirdly, the selection criteria and the analytical framework were subjectively determined by the authors, even though rooted in theory. Other researchers might choose different standards. Lastly, further research could look also at contributions looking at stakeholder engagement, if such participation in the upward phase of the production process of public services can actually be appreciated as coproduction.

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