

**Ownership of Cocreation Assets:
Driving B2B Value Propositions in the Service Economy**

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Abstract

The benefits of specialization have been driving the rise of the service economy and pushing capability frontiers and economic growth. In service economies, almost any activity, asset, and skill can be bought on competitive markets, making it harder to build competitive advantage on any of those inputs. Against that background, the question emerges what constitutes sustainable value propositions of service providers. Drawing on an emerging stream of research on nonownership value of services, we argue that service providers create value by taking on ownership of service assets and thereby transform uncertainty of value creation into economic opportunities. In our view, service providers offer the essential value proposition of transforming their clients' uncertainty downsides into opportunities related to assets such as vehicles, real-estate, equipment and computing platforms. Clients benefit by delegating ownership of assets to the domain of a service provider. In turn, clients can focus their investment on their most promising assets. Service providers create sustainable competitive advantage by assuming ownership and excelling at the management of (1) unique physical assets, (2) unique intangible assets, and (3) maintaining an appropriate architecture of social capital through customer relationships and business eco-systems.

Keywords: Value Creation, Value Propositions, B2B, Service Economy, Nonownership, Capturing Value, Value Appropriation.

The Rise of B2B Services in Modern Service Economies

One of the most striking economic phenomena is that the services sector becomes dominant as an economy develops (Buera & Kaboski 2012). This has been persistent for developed OECD countries and has become apparent for emerging economies such as China and Brazil (OECD 2007; Wirtz, Tuzovic & Ehret 2015). There are many potential reasons for this rise, most prominently the growth of productivity in agriculture and manufacturing, unleashing resources for the supply of services offerings as well as shifts in demand towards services offerings.

One pertinent question related to the rise of services is if and how services add economic value. Confronted with the rise of the service economy, pioneering researchers associated services with limited opportunities for raising productivity constituting “Baumol’s disease”. These arguments partly build on the assumption that services indicate a rise of leisure activities enabled by productivity gains that enabled the rise of affluent societies and unlocked time for consumption activities. However, a growing stream of empirical research shows rationale and evidence that business services entail opportunities for productivity gains and enable economic re-organization unlocking value and increasing productivity.

Debates of the service economy have ignored for a long time that re-organization and innovation of business firms work as one of the main drivers of service economies (Ehret & Wirtz 2010; OECD 2007; Triplett & Bosworth 2003; Woelfl 2005). One reason relies on available data. Traditionally, economic accounts report on the outputs of economic activity related to industries structured along the broad categories primary resources, manufacturing, and services. However, for many questions, the demand side of the economy offers further insights, and a growing number of researchers shows rational and evidence for a particular contribution of business services to economic growth. In particular, economic researchers have seen growing evidence for the growing share of services as inputs for economic activity

when economies progress and grow (OECD 2007; Triplett & Bosworth 2003; Woelfl 2005).

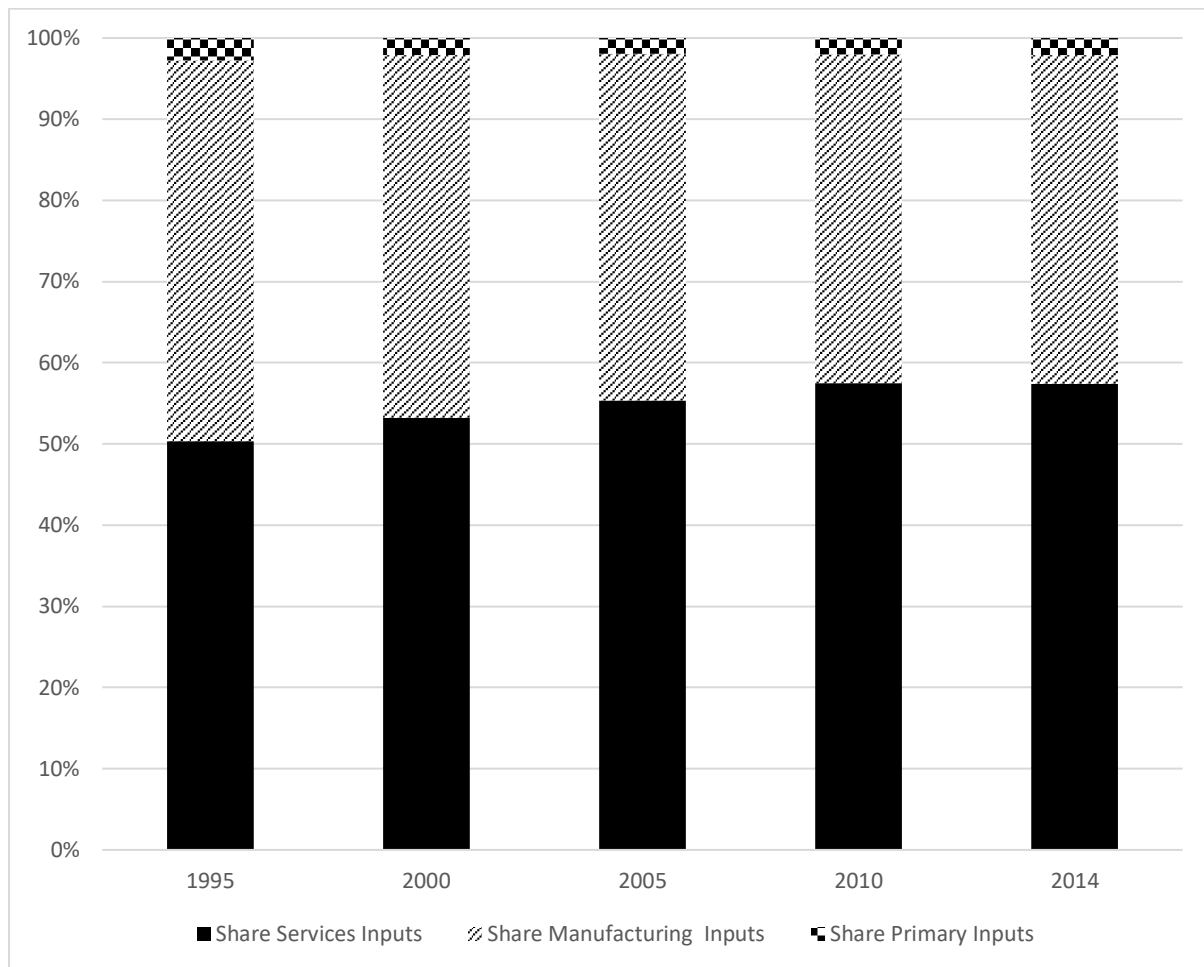
Recently, economics statisticians have developed measures for the demand for economic inputs offered by industry types. In particular, the European KLEMS³ database has developed a detailed account for economic inputs (Koszerek et al. 2007). Our analysis of the recent issue of the European Service data shows that from 1995, the starting data of consistent reporting for the Europe-12 countries⁴, services have grown their share from barely 50% of economic inputs towards almost 60% in 2014, while the share of manufacturing inputs shrank from ca. 47% to 40% and primary inputs from around 3% to 2% (see Figure 1).

A closer look at different service categories reveals professional and business services, and information and communication services as those service categories that take a growing share of service inputs used by the economy (see Figure 2).

³ "KLEMS" refers to the decomposition of output growth into contributing factor inputs — capital (K) and labour (L) — and intermediate inputs — energy (E), materials (M), and service inputs (S) (van Ark & Jäger, 2017).

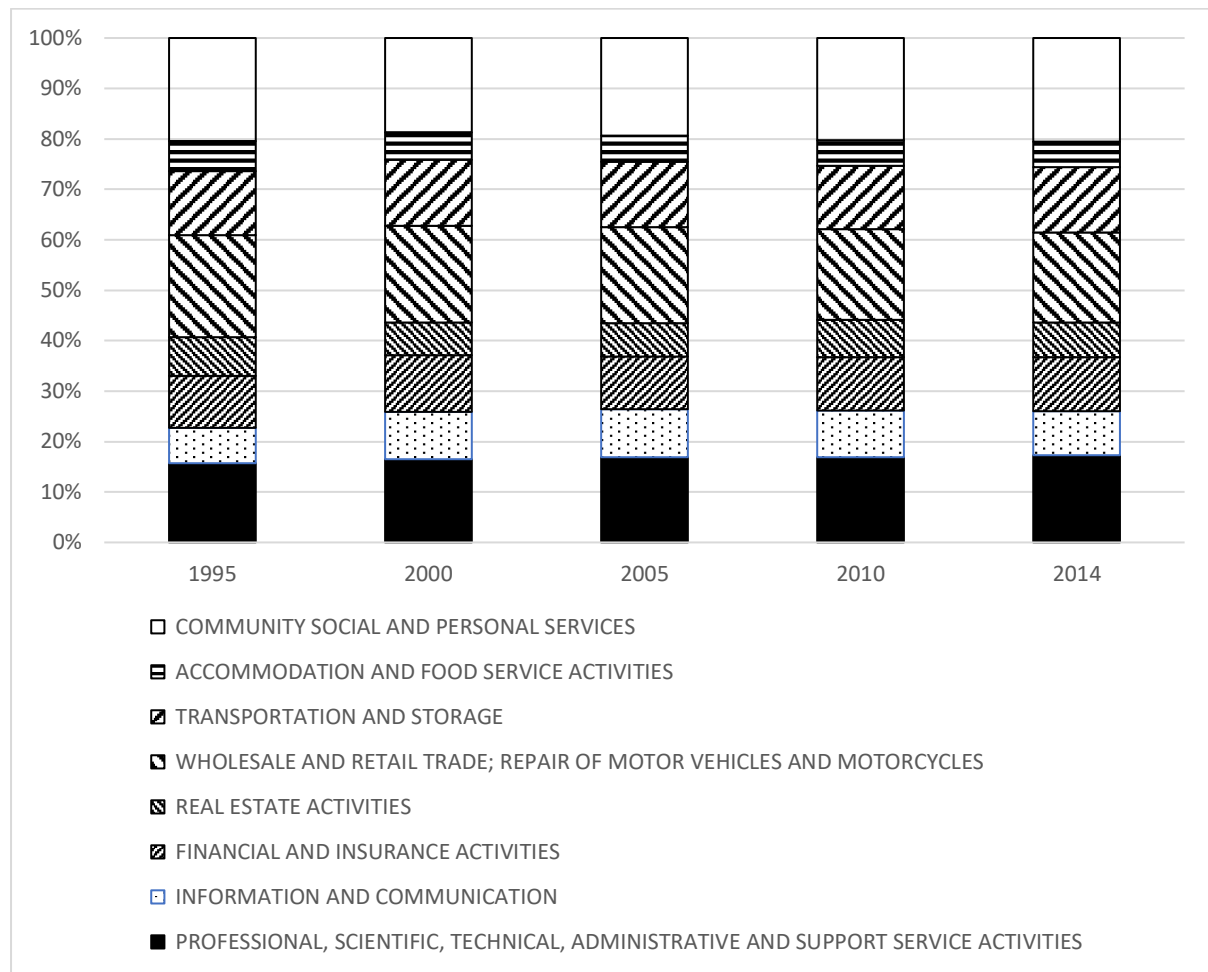
⁴ EU-12 represents the EU member states for which growth accounting could be performed from 2001 onwards, namely: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Netherlands, Spain, Sweden and the United Kingdom. AT, BE, CZ, DK, FI, FR, DE, IT, NL, ES, SE, and UK, see <http://www.euklems.net>, accessed on January 23rd 2018.

Figure 1: Economic inputs of economic sectors in the Euro-12 area



Notes: Own calculations based on EU-KLEMS database, <http://www.euklems.net> accessed on 17.01.2018. See Appendix Table 1 for the full dataset.

Figure 2: Shares of sectors of service inputs into value added activities



Own calculations based on EU-KLEMS database, <http://www.euklems.net> accessed on 17.01.2018. See Appendix Table 2 for the full dataset.

What motivates businesses to increase the use of services as inputs for their value creation activities? In the following section we discuss the role of ownership and its contribution of unique value propositions offered by services.

The Role of Asset Ownership in B2B Service Cocreation

A growing stream of research suggests that one key value proposition of services is the exchange of benefits without the transfer of ownership (Lovelock & Gummesson, 2004; Wittkowski, Moeller, & Wirtz, 2013). Especially business firms might benefit by replacing costly and risky assets like buildings, machines or vehicles by a network of efficient, capable and responsive service providers offering facility management, contract manufacturing or

supply-chain services (Quinn, 1992). Some authors conclude that the rise of the sharing economy and growing servitization indicate the decline of ownership-based capitalism (Haskel & Westlake, 2017; Rifkin, 2014).

While we agree with the potential productivity gains unleashed by nonownership offerings, we challenge the conclusion of the death of ownership. A look at the financial reports of key platform providers that offer nonownership services reveals that these have been building-up assets over time, including physical assets needed for information infrastructures. From a theoretical perspective, many of the nonownership arguments look at the cost dimension of ownership and neglect potential opportunities for asset ownership. One of the key benefits of ownership is its legal capacity to empower entrepreneurs with the authority to re-combine resources and capitalize profits resulting from such business ventures (Foss et al. 2007; Mises 2007). Reflecting the entrepreneurial dimension underlying any viable business organization, we claim that the value of nonownership services does not indicate the demise of asset ownership. To the contrary, we argue that nonownership services offer value by increasing the productivity of the asset base, enabling business firms to focus on assets that show the strongest contribution to their firm-specific business opportunities while delegating all complementing activities to specialized world-class service providers.

While such nonownership value partly rests on the substitution of assets by services, we suggest that the value offered by services unfolds as a complement to the asset base of the economy. In short, nonownership and related service offerings offer value by increasing the flexibility of asset ownership and enhance the capability of firms to direct assets to their highest valued uses. In fact, nonownership provides the legal backbone of the emergent network economy, where vertically integration of business functions by the industrial firm is gradually replaced by a network of specialized service providers, capable of driving assets to their highest valued uses and offer almost any business operation as a service for hire. In

short, we advance that nonownership services work as complements to asset ownership and rather help to increase the productivity of the asset base.

The neglect of asset ownership relates to a gap pertinent in service research. Arguably the key contribution of service research is to elucidate the active role of the downstream actors, most notably users, clients or consumers as active contributors to the value creation process as claimed by the Service-Dominant Logic (SDL; Vargo & Lusch 2004). We argue that this progress has come with the trade-off related to our understanding of the supply-side of value creation as organized by firms. In goods-dominant industrial paradigms, the firm constitutes the domain of production-driven value creation, assuming that firms produce value that is consumed by their customers. Service-dominant perspectives imply that both, customers and firms contribute value by acting as resource integrators. As a result of value-in-use perspective established by SDL, the role of the supplier-firm has become more ambiguous (Grönroos & Voima, 2013). We suggest that asset ownership offers a meaningful approach for defining the role of the firm in service contexts where clients and their service providers cocreate value. We argue that the role of the firm is to take-on ownership and responsibility for cocreation assets, while clients obtain outputs and remain responsible to direct service outputs to higher valued uses. We advance that the key driver of nonownership value offered by services is the management of economic uncertainty attached to asset ownership. In the following section, we take a closer look at the value propositions offered by asset ownership. We follow with a typology of service assets based on their contribution to value cocreation. We conclude the article with a discussion of implications for research, management, and limitations.

Value Propositions Offered by Nonownership

Nonownership constitutes a widely-accepted criterion distinguishing services from goods (Lovelock & Gummesson 2004; Wirtz & Lovelock 2016, p. 21). In a goods business,

the supplier transfers the ownership title and all related benefits to its customer, for example, a car, a building or an airplane-engine. Service businesses rely on the contractual definition of services unlocked from assets, for example, a taxi ride, a property-rental agreement or a power-by-the hour contract entitling the airline to use the performance of the engine. Thus, a key characteristic of service business is that it provides services unlocked from their resources.

What drives the value of nonownership? In order to gain a better understanding, let us start with a look at the peculiar characteristic of ownership in contrast to contract and its implication for value creation.

Ownership entitles holders as the highest legal authority over an asset within a given legal order. Thus, owners do not need to specify benefits they want to obtain from their assets in contrast to service clients who need to specify their benefits expected from a service-agreement. For example, as the owner of a house you do not need to anticipate if you want to inhabit it, use it for business or professional activities, rent-it out, sell-it or establish it as the center of an arts community. As the tenant of a house, you will need to negotiate these benefits with the landlord, and therefore need to anticipate our expected benefits when you enter negotiations.

Because ownership titles relieve economic actors from the need to specify benefits or services, they become valuable under conditions of economic uncertainty. Coase (1960) raised awareness for the benefits and costs associated with ownership, claiming that asset ownership lowers the costs of contracting. In economic valuation, users aim to value the services they obtain from a resource rather than some sort of intrinsic value of the resource itself. In the absence of uncertainty, users can specify the value of the services offered by the resource and negotiate contracts that reflect their preferences and needs. With uncertainty, however, valuation of services becomes costly if not impossible (Barzel 1987; 1992; Coase

1960; Grossman & Hart, 1986). However, ownership facilitates contracting and reduces its costs, as owners take on responsibility for the uncertain elements of asset value not specified in contracts. Once the owner takes care for uncertainty, parties can focus negotiations on service specifications enabling them to reach an agreement at lower transaction costs.

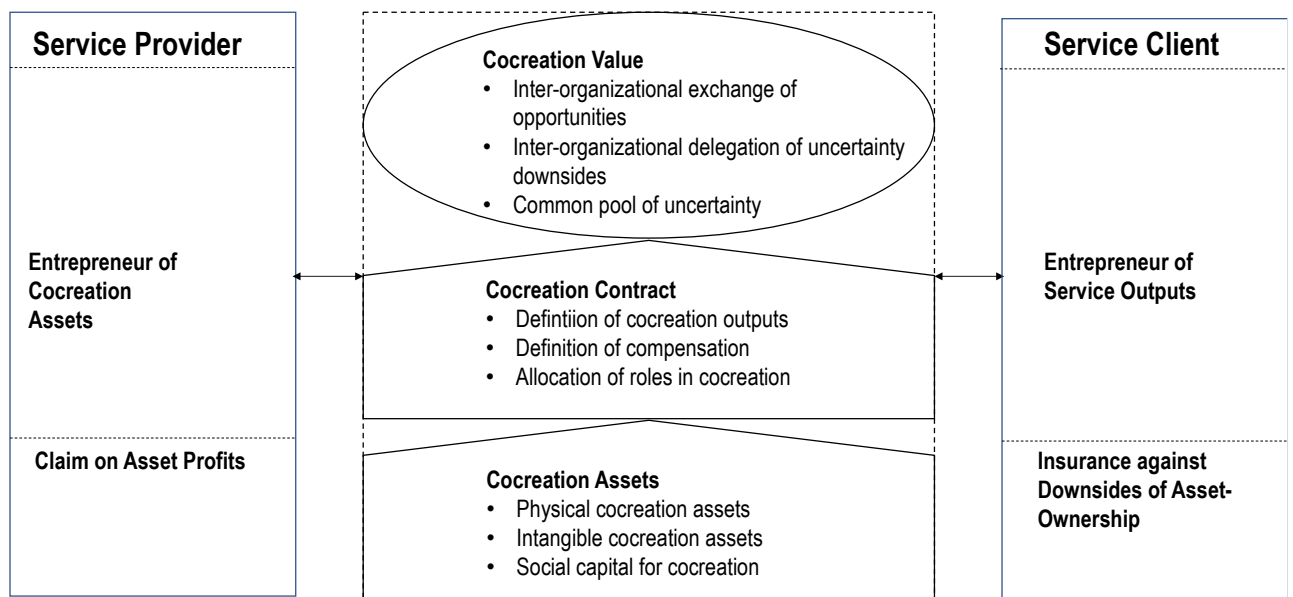
Uncertainty is also at the core of another approach, the entrepreneurial theory of the firm of the Austrian school of economics (Foss et al. 2007; Mises 2007). From the Austrian perspective, ownership empowers entrepreneurs to recombine resources to higher valued services, offer these on services markets and claim the residual income that turns into profit in the fortunate case. In the Austrian perspective, asset ownership offers the key to enterprising activities aiming to explore and exploit business opportunities. Because uncertainty has a genuinely unpredictable dimension (Feduzi & Runde, 2014), ownership proves as a double-edged sword, opening up doors towards business opportunities, but at the same time exposing owners to potential downsides and losses.

We argue that these peculiar value propositions of ownership, reducing contracting costs and empowering entrepreneurs, offer the pillars for cocreation value. We hold that services offer a unique value proposition enabled by their cocreation character: By unlocking service benefits from service assets, services enable clients and providers to share uncertainties of a service (see fig. 3). As owners of service assets, providers have the right to claim profits but need to accept their exposure to loss. The prospect of profit offers an incentive for owners to take-on uncertainties related to asset ownership and take-on the role of the entrepreneur of service assets. Asset-entrepreneurs thrive by driving assets to their highest valued uses. This includes attracting customers with the highest benefits, ensure compliance with service agreements, increase efficiency, reliability and productivity of assets. Specialized service providers seek to exploit such opportunities by targeting investments into asset-productivity that are frequently not feasible for vertically integrated

companies. While almost any business has become heavy user of IT-hard and software, most businesses aim to benefit by delegating investments to specialized IT equipment manufacturers or cloud . In the case of catering, specialized service providers offer better quality at lower cost by supplying a large customer base that justifies investment into equipment, processes and training for providing food. Service clients benefit when they delegate asset-ownership in order to reduce exposure to potential losses. Thus, service contracts enable customers to calibrate investments into those assets that are most critical for their unique business opportunities, and delegate non-critical assets to specialized service providers. For example, by substituting corporate IT centres with outsourced service providers, banks can focus on customer relationship management and optimizing investment strategies. Airlines gain time and resources for branding, customer relationship management and service quality by delegating ownership of assets like airplanes or airplane engines to service providers. As a consequence, service clients become entrepreneurs of cocreation outputs. Looking at the uncertainty-dimension of cocreation in business services (see Figure 3) we identify three key components. First, *cocreation assets* that constitute the platform for sharing uncertainty. We differentiate between physical cocreation assets, such as plants, engines, equipment of real-estate, intangible cocreation assets, such as legally protected technologies or software, and not least social capital underlying the cocreation network. The *cocreation contract* defines the terms of uncertainty sharing, by specifying cocreation benefits and the terms including service fees. We propose three key types of *cocreation value*. First, *inter-organizational exchange of opportunities* enables companies to share business opportunities across organizational boundaries as in the case of markets for technologies or open innovation, where specialized technology companies share opportunities with companies who focus their business on the downstream exploitation of technology for example in the form of consumer products or services. Second, by *inter-*

organizational delegation of uncertainty downsides clients can calibrate their investments on their most promising opportunities, while offering opportunities for specialized service providers. Not least, cocreation can build on a *common pool of uncertainty*, for example in the case of platform companies who focus on providing the infrastructure that facilitates the configuration of services for both, providers and clients. For example, platform companies like Amazon Web Services focus primarily on connecting upstream companies with downstream channels towards consumers. Through developing and dominating common pools of resources for cocreation, platforms have become the meta-owners of service-infrastructures and come under enhanced scrutiny because of their economic power.

Figure 3: Asset-Driven Cocreation Value



Most fundamentally, cocreation contracts allocate responsibility of cocreation assets to the provider, while delegating responsibility for the use of defined outputs to the domain of the client. Thus, cocreation contracts offer clients benefits unlocked from costs and

uncertainty related to asset ownership. However, clients remain responsible to use the contractual outputs as complements of their own ventures and value creation activities. Thus, taxi-clients remain responsible to make the most of their meetings at their destination, office space renters remain responsible for their business operated on the rented premises, and airlines rely on marketing and operating transportation services enabled by the Power-by-the-Hours service offered by the engine operators.

Especially under competitive pressure, clients benefit when they can delegate some share of uncertainty to a service provider, while focus their own entrepreneurial activities on those domains where they expect the most promising opportunities. Downstream companies might benefit from freeing-up resources and capital to focus on consumers and distribution channels while benefiting from enterprising resource providers who offer them enhanced economic capabilities. Thus, service providers willing to take on uncertainties related to asset ownership open a gateway to unique business opportunities. First, service contracts offer an opportunity to capitalize services into revenue streams. Ownership empowers providers to invest in productivity, cost effectiveness, and service quality potentially driving profitability, competitiveness and market growth for their service offerings, their clients, and the economy at large.

To effectively unlock these benefits requires a clear understanding of the roles of assets in cocreation. We discuss these in the following section.

Service Assets as Sources of Value Propositions

A crucial starting point is to ask what constitutes the critical assets that enable a competitive advantage in the context of value co-creation. Such questions are at the heart of the resource-based view which is concerned with sources of economic value. The resource-based theory names four key criteria for an asset to be considered a resource (for an elaboration see Peteraf, 1993; Srivastava, Shervani, & Fahey, 1998):

- ***It is convertible:*** The firm can use the asset to exploit an opportunity or neutralize a threat and thereby enhance value.
- ***It is rare:*** To the extent that the firm enjoys control of a rare resource it gets to hold on a differentiation advantage.
- ***It is imperfectly imitable:*** If competitors find it difficult or even impossible to duplicate the resource, the owning firms enjoy a unique value proposition.
- ***It does not have perfect substitutes:*** If companies find not substituting assets the firm maintains its unique position.

While several authors accentuate the supply-driven aspect of the resource base, its pioneers see resources as crucial links between firms and entrepreneurial opportunities on external markets (Lewin 1999; Penrose 1959). This view finds its echo in the work of researchers who have established the resource-based view as one of the major conceptual foundations of the marketing domain (Morgan & Hunt 1994; Wernerfelt 1984). Thus, service companies need to own and control assets that connect resource potential with client needs. We can identify three basic types that constitute the backbone of sustainable value propositions (see also Wirtz & Ehret, 2017 for an elaboration):

- a) ***Physical service assets:*** In many markets, providers find a convenient entry gate to service business models by taking on ownership of physical assets, like machines, equipment, real-estate or transportation vehicles (Ehret & Wirtz, 2017). But taking-on ownership rarely is sufficient for competitive advantage. As owners, providers have skin in the game and are exposed to all downsides related to service provision, such as missing agreed service-levels eventually cutting into revenues, cost overruns from operational challenges, or inefficiency in service delivery. Thus, providers need to develop and maintain unique capabilities for managing service assets. Specialization opens a path for developing unique capabilities, especially if providers manage to

progress on the learning, curve, drive economies of scale and advance routines (c.f., Wirtz & Zeithaml 2018). Service providers can also consolidate assets into a novel stage of a value chain, unlocking efficiency gains (Ehret & Wirtz, 2010). For example, IT outsourcing or cloud computing consolidate computing power previously owned and operated by user firms under the roof of specialized IT companies, unlocking potential for industry- if not economy-wide efficiency gains. Not least, physical interfaces and computing platforms enable service providers to increase efficiencies as well as add intelligence to their services. For example, Rolls-Royce Power-by-the-Hour airplane engine service resides on smart IT-infrastructure creating real-time information for its global control-centers (Ehret & Wirtz, 2017; Smith, 2014). The Internet-of-things provides the physical backbone for implementing smart services (Ehret & Wirtz, 2017).

b) ***Intellectual service assets:*** To the extent that ideas can be legally protected, companies can reside on intellectual property (IP), such as patents, trademarks, brands, and copyrights. In the context of open business models, such companies can use IP as vehicle for revenue generation through licensing (Arora, Fosfuri, & Gambardella, 2004; Arora, Fosfuri & Rønde, 2013; Pisano, 2006). Unlocking ideas from physical products was crucial in the development of the modularized IT industry where upstream technology companies relieve downstream product and service providers from some share of their R&D activities, unlocking resources and management attention for downstream marketing, distribution channels, and service quality. In general, markets for technology enable a growing range of R&D-driven start-up firms to advance capabilities and extend the knowledge space, relieving downstream companies for focusing on the implementation of new technologies for their customers' benefits.

c) ***Social capital:*** In contrast to asset classes discussed so far, social capital cannot be legally owned. But exactly that makes social capital so important. Only the contributions of customers, partners and employees drive agency into the service system and push resources to higher valued uses. Customer equity is the key condition for any service firm to engage in a service transaction as all services are evaluated by their value-in-use in the domain of clients (Vargo & Lusch, 2004; Macdonald, Kleinaltenkamp, & Wilson, 2016). Partners and complementors in eco-system drive capabilities and attractiveness of a service eco-system. Thus, platforms are becoming almost paradigms for value-creation in services as they enable companies to augment their core competencies with services of specialized complementors (Chesbrough, 2011; Parker, 2016). Not least, employees and the climate and culture of the service firm energize the service firm, and enable it to connect to its customers, understand their need through empathy and show creative solutions for challenges in service transactions (Wirtz & Ehret, 2017)

Physical, intellectual and social capital constitute the pillars of service capital that empowers providers to offer unique value propositions by relieving their clients from burdens of asset ownership. Providers gain by selectively owning strategic assets, differentiate them and excel in their operation. Such assets might be predominantly physical. However, intellectual assets enable differentiation by unique knowledge or capabilities and might even provide the backbone for specialization on technology businesses. While social capital cannot be owned in the legal sense, it provides the decisive conduit enabling a firm to commercialize its assets. Customer equity is the key to the customer base and the build-up of service revenues. Eco-systems, value networks, and employees empower a firm to direct its capital towards valuable uses and develop competitive advantages.

Implications for Theory, Management, and Research

The perspective of nonownership value and delegation of uncertainty in asset-based services offer a number of interesting implications which we discuss in the following sections.

Unveiling the Supply-Side of Cocreation

Service research and most prominently SDL has been on a mission to elucidate the user and downstream dimension of value creation that had been forgotten in goods-dominant approaches (Balantyne & Varey, 2006; Hibbert, Winklhofer, & Temerak, 2012; Vargo & Lusch, 2004). SDL and related service approaches contributed to our understanding of value cocreation and the decisive role of the user context in economic value creation. Cocreation value approaches reached their contribution with a trade-off. While cocreation improved our understanding of the role of users, clients or consumer in value creation, the role of the supply side firms has become more ambiguous if not opaque.

In cocreation, both, clients and providers integrate resources, aim to engage for service outcomes and may control physical, intellectual or social resources (Peters, 2016; Peters et al., 2014). It is tempting to conclude that there is no particular role of a supplier. Depending on the context, this may indeed be an appropriate conclusion. For example, industrial goods dominant approaches allocated the active role of value creation to the firm while taking the consumer as economically passive, simply adding their preferences into the equation. However, when we look at cocreation contracts, asset ownership offers a criterion that clearly defines the upstream role of asset owning service providers and downstream roles of asset nonowning clients who obtain service benefits. Thus, asset ownership helps us to unveil a meaningful and valid criterion to identify the role of the supplier in the context of value cocreation, without falling back into stereotypes cultivated by goods-dominant approaches.

Asset Management as Driver of Productivity in Service Economies

The role of providers and asset management in cocreation opens up a pathway to address key challenges we face in economic and management research, most prominently the question of service productivity. While decision makers and academia have high hopes in the benefits of servitization, to date we find at best mixed evidence for performance improvements driven by servitization. One part of the explanation is that managers and researchers are just about starting to understand the trade-offs and downsides of servitization. Asset ownership and its relation to economic uncertainty constitute one building block for concepts that help us to gain the full picture of service productivity. A simple but important starting point is to capture the downsides related to the uncertainty of asset ownership. For example, industrial companies engaging in servitization programs frequently find themselves locked into cost-traps (Eggert, Hogueve, Ulaga, & Muenkhoff 2014; Ploetner, 2016). In many cases, they might have a clearer picture of the opportunities related to service revenues than the downsides driven by responsibilities for all positive and negative uncertainties related to assets.

Looking at the opportunities, the rise of platform providers who have gained dominant position in networked economies and eventually have been occupying the top spots of equity valuation, as in the case of Apple, Microsoft, Amazon and Facebook (Chadarvarty, Kumar, & Grewal, 2014; McAfee & Brynjolfsson, 2017; Parker, Van Alstyne, & Choudhary, 2016; Parker, Van Alstyne, & Jiang, 2017). Contrary to beliefs in an asset-light economy (e.g. Haskel & Westfield, 2017; Rifkin, 2014), these companies are actively increasing their asset base. Their radical expansion is leading platforms partly into uncharted territories, creating a world-wide network of large scale server-farms, taking-on ownership of sea-cables which are traditional domain of telecommunication companies, and not least invest into growing networks of satellite communication. Thus, service economies seem not to spell the death of asset ownership. Rather, service economies might call for particular types of assets

enabling clients and providers to unlock services from the resource base.

Because of the dual implication of uncertainty for asset ownership, offering opportunities as well as downsides, companies need to pursue selective approaches, aiming to own assets they can turn into opportunities, and avoiding assets exposing them to potential losses. One of the hidden benefits of services might be that service contracts facilitate the development of such focused specialization strategies. Future research might unveil if and how such service-driven specialization drives up productivity, the performance of firms as well as client-perceived value, and eventually, economy-wide benefits.

Uncertainty and the Dynamics of Value Propositions

Service researchers elaborate on a proposition established by Bastiat that economic actors value resources for their services rather than their intrinsic value (Bastiat, 1964; Vargo & Lusch, 2004). Service research reflects this by proposing value-in-use as the key driver of value propositions (Ballantyne & Varey, 2006; MacDonald, Kleinaltenkamp, & Wilson, 2016; Vargo & Lusch, 2004).

Researchers on business markets find regularly rationale and evidence that the performance of B2B suppliers impacts the value chains of their client companies (Anderson, 2009; Anderson, Narus, & van Rossum, 2006; MacDonald, Kleinaltenkamp, & Wilson 2016; Ulaga & Eggert, 2006). Similarly, researchers on technology and innovation management have identified customer perceived value propositions as the key driver affecting the value of technologies (Chesbrough, 2011; Teece, 2010; Wirtz, Pistoia, Ullrich, & Göttel, 2016). As one implication, innovation researchers have been investigating, proposing and testing business models and their capacity to unlock economic value from technological potential (Chesbrough, 2011; Osterwalder & Pigneur, 2005; Wirtz, Pistoia, Ullrich, & Göttel, 2016; Zott & Amit, 2008).

With our cocreation ownership framework (see fig.3) we aim to expose key

components that enable providers and clients to share uncertainty, calibrate investments and thereby create otherwise absent business opportunities.

Uncertainty and the Potential of Real-Options for Service Pricing

At first sight, uncertainty may appear as an elusive phenomenon because it refers to the presence of genuine unpredictability apparent in life in general and business in particular (Decquech, 2011; Feduzi & Runde, 2014; Knight, 1921, Mises, 2007). However, a substantial share of business practices is concerned with the transformation of uncertainty. Most notably, entrepreneurs profit from uncertain situations, and use their judgement to spot profit opportunities where buyers and sellers lack information for rational pricing decision, offering room for judgment of entrepreneurs. By acting on their judgment and their claim to exploit ambiguous situations, entrepreneurs stimulate learning processes of buyers and sellers and thereby transform uncertainty on markets. (Foss, Foss, & Klein, 2007; Mises, 2007). Such learning processes have been transforming hitherto privileged luxury services like long-haul flights, mobile-high-speed data transmission or augmented reality almost to no-frill commodities.

In addition, looking at the function of services for sharing uncertainties opens-up an exciting avenue for service-pricing. Looking at their contribution for transforming uncertainty, services share some trades with financial options. Financial markets have responded with the invention of financial options that enables investors to share uncertainties with speculators who offer hedges via options. By using service providers, clients obtain the right to obtain a benefit without the obligation to own the underlying asset (Adams, 2004; McGrath, Ferrier, & Mendelow, 2004; Miller & Huggins, 2010; Shi, 2016). The driver of this option value of a service relates to uncertainty related to the underlying asset. Real options theory aims to mobilize insights from financial option research for the valuation of management decisions under uncertainty (Haenlein, Kaplan, Schroder, 2006). That is, the valuation of a service

decisively depends on its option value, related to the value of the right to obtain a service without the obligation to own the asset.

Service researchers have started to analyse the potential of options theory to inform pricing of particular service offerings. Looking at the role of uncertainty in the configuration of service contracts opens up the role of a more general and systematic theory and analysis of service pricing. Thus, our uncertainty perspective complements current knowledge on service pricing. For example, Indounas and Avlonitis (2009) identify pertinent pricing objectives of service firms, most prominently, stability in the market, customer objectives, financial objectives, market-share and capacity related objectives and, not least, competition-related objectives. Uncertainty affects all these aspects in fundamental ways, most apparent in the customer perspective on opportunities and downsides of ownership, but also the valuation of the capacity in the face of uncertainty, for example for meeting service-level agreements.

Not least, real options offer a theoretical foundation for informing pricing of service offerings that impact customer perceived uncertainty. Thus, uncertainty and its impact on contracting and pricing offer an avenue for deepening our understanding of service pricing and at the same time offer practical and meaningful tools for improving managerial pricing decisions.

Summary and Conclusions

The service sector is growing and has reached or even exceeds 80% of employment and GDP in developed economies (OECD 2007; Wirtz, Tuzovic and Ehret 2015). Business services are the major drivers of the rise of the services sector and constitute a growing input into economic activity (see Fig. 1, Ehret and Wirtz 2010; OECD 2007; Triplett and Bosworth 2003; Woelfl 2005). Service researchers reflect on this development and hold that in service economies value is increasingly co-created by clients in interaction with service providers

(Vargo and Lusch, 2004). Producer-consumer relationships of goods-dominant logics are increasingly replaced by provider-client relationships in the context of SDL.

We hold that in service transactions, the provider offers the value proposition of taking on the uncertainty of value co-creation by taking on ownership for service assets, specifying service performance levels and managing service operations to meet service-level agreements in co-creation with clients. B2B service providers offer value by transforming uncertainty into economic opportunity. Thus, service businesses come always with potential downsides, like losses or cost-traps caused by service assets and providers' liability for meeting contractual agreed service-levels. In this article, we have discussed the key uncertainty implications including their downsides, the dynamic and strategic factors of value propositions by configuring service offerings and business eco-systems based on cocreative ownership, the types of assets needed to make cocreation work, and key issues related to valuation and pricing.

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Appendix

Table 1: Share of Inputs into economic activity by economic sector

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Share of Primary Inputs	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Share of Manufacturing Inputs	0.47	0.46	0.46	0.45	0.44	0.45	0.44	0.43	0.42	0.42	0.43	0.43	0.43	0.44	0.39	0.41	0.42	0.42	0.41	0.40
Share of Services Inputs	0.50	0.51	0.51	0.52	0.54	0.53	0.54	0.55	0.56	0.56	0.55	0.55	0.55	0.54	0.59	0.57	0.56	0.56	0.57	0.57

Table 2: Share of Service Sectors in Service Inputs to Economic Activity for EU-12

Countries, KLEMS

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18
Transportation and Storage	0.13	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.13	0.13	0.13	0.13	0.13
Accommodation and Food Service Activities	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Information and Communication	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.09	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Financial and Insurance Activities	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Real Estate Activities	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Professional, Scientific, Technical, Administrative and Support Service Activities	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Community, Social and Personal Services	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.21	0.20	0.20	0.20	0.21	0.21