CESifo Working Papers
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Community Enterprises – An Institutional Innovation

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CESIFO WORKING PAPER NO. 3428
CATEGORY 4: LABOUR MARKETS
APRIL 2011

CESifo *Working Paper No. 3428*

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Abstract

Management research has long focused on the theory of the firm, studying for-profit organizations that produce privately owned resources based on central authority and within well-defined boundaries. In recent times, a new kind of enterprise has emerged that we call Community Enterprises. They are barrier free and extend beyond the reach of strong, personal relationships and are characterized by the production of appropriation-free resources and the absence of boundaries. Wikipedia is the most successful example of such a Community Enterprise. Assumptions and principles underneath related fields such as organizational theory, innovation economics, and industrial organization should therefore be critically examined.

JEL-Code: D210, D230, J000.

Keywords: theory of the firm, organization theory, for-profit firms, community enterprise, Wikipedia.

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4.4.2011
The authors thank Emil Inauen for helpful discussions and comments.

1. WIKIPEDIA AS A NEW FORM OF ENTERPRISE

If you search the Internet for information, you will likely be pointed to Wikipedia. Whether you are interested in the "Iraq war," the "financial crisis," "transaction costs," or "lysergic acid diethylamide," the probability is high that Wikipedia articles appear prominently in the results of the most commonly used Internet search engines. Market researchers have ranked the Internet encyclopedia among the top ten most popular websites; among news and information sites, it is the undisputed leader. As a freely accessible Internet encyclopedia, a public platform for the integration of knowledge, and a central information hub for current events and controversial topics, it provides benefits that did not previously exist. Because its size and scope has expanded beyond any other encyclopedia, Wikipedia has had a marked effect on the market for encyclopedias. Wikipedia is the most prominent example of a new form of enterprise whose contributors and users have been increasing dramatically. This innovation goes beyond Wikipedia and involves projects such as Linux, Apache, Eclipse, OpenStreetMap, and RepRap. We call this new form a "Community Enterprise" (CE).

The general characteristic of CEs is that they are private organizations that produce public goods entailing a new production process in a barrier free social community. This community is organized in a polycentric, overlapping way with self-defined rules and is designed to prevent anyone, including the community itself, from gaining control over the resources it develops.

CEs are different from any other organization or institution that we know. They are not firms, markets, or networks (Demil and Lecoq, 2006). They are also not organizations like self-organized commons (Ostrom, 1990) or open innovation projects like InnoCentive (Jeppesen and Lakhani, 2010), NineSigma, or InnovationXchange. These open innovation enterprises draw from large crowds of loosely affiliated researchers, but, in stark contrast to CEs, they offer rewards in return for exclusive control over the results. The nonexclusive sharing of produced resources is the main distinguishing property of CEs, which is further elaborated on in Section 0.

To our knowledge, until now CEs have not been studied as part of a theory of enterprises that goes beyond the traditional theory of the firm. This theory usually is characterized by the questions: (a) how the boundaries of the firm are defined (e.g., Holmström and Roberts, 1998) and (b) how firms can gain a sustainable competitive advantage by the control of resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). CEs also challenge common wisdom in economics. According to orthodox

economics, CEs should not even exist as they produce public goods without central planning and control, and no private property rights are assigned. CEs show that some resources are most productive exactly when no property rights are attached to them. Moreover, their value is not captured by standard economic performance indicators.

Open innovation projects and CEs have been the subjects of published research in the past decade, for example, in computer science (e.g., Müller and Gurevych, 2009), law (e.g., Benkler, 2002), history (e.g., Rosenzweig, 2006), information systems (e.g., Hansen *et al.*, 2009), management and innovation research (e.g., Osterloh and Rota, 2007), and economics (e.g., Lerner and Tirole, 2002). However, most of the literature, in particular, economics, management, and innovation research, analyzes such projects not in their own right but from the perspective of profit-seeking firms. In *economics*, the contributions of CEs to public goods are not considered or at least underestimated because these contributions are hard to measure. In *management and innovation research*, CEs are mainly studied based on a conventional theory of the firm focusing on the competitive advantage of firms (e.g., von Krogh and von Hippel, 2006; Gächter *et al.*, 2010). Therefore, the benefits of CEs to society beyond the perspective of firms are overlooked. Research mainly concentrates on benefits or challenges for firms only. They deal, for instance, with the question under which conditions it makes sense for firms to cooperate with CEs (Henkel, 2006; Dahlander and Magnusson, 2008), what firms can learn from CEs (Baldwin and von Hippel, 2009) and how firms deal with conflicts between firms and CEs (Lee and Mendelson, 2008).

Conflicts arise because, on the one hand, CEs such as Wikipedia are competitors to established firms. On the other hand and more importantly, CEs represent an opposing view of innovation policy than that which is found in for-profit firms. These opposing views are most prominent with regard to the exclusiveness of resources. In *firms*, according to the resource-based view, competitive advantages are gained through ownership or exclusive control of resources that are valuable, rare, inimitable, and non-substitutable. Consequently, firms try to protect their resources by “isolating mechanisms” (Rumelt, 1984) or “resource position barriers” (Wernerfelt, 1984). Such mechanisms and barriers have been created and strengthened through the expansion of intellectual property rights in the past decades. Alert companies learned to construct business models incorporating strong and weak appropriability regimes to their own advantage (Chesbrough, 2006). If they share their knowledge with customers or the public, it is always instrumental with respect to strengthening the value of the resources that remain exclusively controlled by the firm. In contrast to firms, *Community Enterprises* purposefully create resources that are and will

remain public goods. That is, as we will discuss later, CEs deliberately prevent the type of control over resources that firms strive to establish.

In dealing with those conflicts, CEs get little support from the economics and management research fields. Although firms, consumers, and academia benefit greatly from CEs, the value of their contributions is not measurable by firms' profits, GDP, or employment rates. Unlike public goods provided by the government, public goods produced by CEs cannot even be measured by input factors like costs. They are produced either by volunteers or by companies that contribute to CEs, which do not publish the relevant numbers. Unfortunately, "in the social sciences often that is treated as important which happens to be accessible to measurement." (von Hayek, 1975, p. 434). Also, in management research, it is common that only those variables are studied that can easily be measured, producing the paradox that novel phenomena are more concealed than illuminated (Bennis and O'Toole, 2005; Corley and Gioia, 2011). This becomes a major handicap for CEs as a research topic as well as a subject in the political process because economic models and measures underlie much of public policy.

In this paper, we contribute to a theory of enterprises that exceeds the limits of the traditional theory of the firm and of standard economics. We do so by analyzing the key characteristics of CEs (Section 2) and by showing how they differ from traditional enterprises (Section 3). We then discuss how important actors, such as firms, consumers, and academia, benefit from CEs and to what extent they support them in return. We find that many actors voluntarily donate to CEs that benefit them directly, but few appreciate or support the principles underlying CEs (Section 4). Finally, we discuss possible approaches to close the gap between the benefits and potential of CEs and the very limited support they receive in the public policy arena (Section 5). Our main contribution is to analyze CEs in their own right, rather than within the limitations of the traditional theory of the firm and standard economics.

2. CHARACTERISTICS OF COMMUNITY ENTERPRISES

CEs differ from firms as studied in the traditional theory of the firm with respect to a combination of *why*, *how*, and *what* resources are created.

Why do individuals contribute to Community Enterprises?

The distinguishing characteristic of CEs is *why* these organizations are created. In contrast to for-profit enterprises, their goal is to provide freely available resources; it is not to control and appropriate the utility of the resources they create and develop. With CEs, institutions and processes are designed to prevent anyone, including the creators themselves, from gaining

authority over the use and further development of the resource. This eliminates control as a particularly strong incentive for creating a resource. Instead, in CEs, there exists a diverse mix of motivations to participate in a collaborative activity. According to Osterloh and Frey (2000), Lindenberg (2001) and Lindenberg and Foss (forthcoming), this mix consists of three types of motivation that do not exclude each other but consist of different frames that can be activated by individuals to a different degree. The three types of motivational frames are described as extrinsic motivation, enjoyment-based intrinsic motivation, and obligation-based intrinsic motivation.

Extrinsic motivation refers to an activity that is done in order to obtain a separable outcome, such as money and material rewards (Deci and Ryan, 2000). *Intrinsic motivation*, on the other hand, is based on the satisfaction an individual derives from involvement in an activity without external rewards. *Enjoyment-based intrinsic motivation* refers to a satisfying flow of activity. Examples are playing a game or solving an interesting puzzle. It is often reported that people feel this kind of motivation, for example, in research (Amabile, 1996) or during innovative software programming (Torvalds and Diamond, 2001). In each case, pleasure is derived from the activity itself, which provides a "flow experience" during which individuals often lose track of time (Csikszentmihalyi, 1975). *Obligation-based intrinsic motivation* refers to an activity with the goal to act appropriately. When obligation-based intrinsic motivation drives individuals, they follow norms for their own sake. In particular, they take the well-being of others into account without expecting a reward. The welfare of the community enters into the preferences of the individuals. Although the standard economic model of human behavior—the *homo economicus*—is based on the assumption of self-interested, extrinsically motivated individuals, a growing body of empirical evidence indicates that many people are prepared to contribute voluntarily to the community of which they feel a part (e.g., Frey and Jegen, 2001; Frey and Meier, 2004; Fehr and Fischbacher, 2002; Frost *et al.*, 2010).

All three types of motivations are found in CEs. Many CE contributions are due to *extrinsic* rewards such as remuneration, reputation, or education. For instance, the majority of Linux kernel development is carried out by paid developers these days. Shah (2006) found that improvements to existing CE software are driven by need; the creators, as it is often phrased, "scratch their own itch." *Enjoyment-based intrinsic motivation* is evident in the very title of Torvalds and Diamond's (2001) *Just for Fun: The Story of an Accidental Revolutionary*. Lakhani and Wolf (2005) found that feeling creative was the strongest driver among their respondents. *Obligation-based intrinsic motivation* is also frequently found in

CEs. Again, this is evident from the biographies of seminal figures (Williams, 2002) as well as from surveys. Many contributors adhere to internal self-concepts when sharing information (Yang and Lai, 2010); highly engaged Wikipedia contributors report little individual benefits but, for instance, an interest in sharing information or a desire to create a positive heritage for future generations (Schroer and Hertel, 2009).

Intrinsic motivation of either type is indispensable for the creation of many public goods. Their presence in CEs can drive large, collaborative productions even if neither governments nor firms are willing or able to pay for the creation of resources that are freely available. Wikipedia, Linux, OpenStreetMap and many other successful CEs had to rely on intrinsically motivated contributions for their initial growth; other motivations became prominent only as the shared resources grew large (Osterloh and Rota, 2007).

CEs strive to preserve intrinsic motivation. According to Gagne and Deci (2005), the preconditions to develop intrinsic motivation are feelings of autonomy and competence as well as social relatedness. Therefore, to sustain intrinsic motivation in CEs, it is important how resources in CEs are produced.

How are resources in Community Enterprises produced?

CEs provide a suitable environment for the creation of high quality public information goods, both in terms of *motivation and collective intelligence*. They commonly harvest every type of *motivation*. Those who are inclined to contribute to the public good for intrinsic motives find supporting conditions. That is, they can choose their work and do it autonomously, and they can feel competent when their contributions become part of the shared resource and experience relatedness through communities and communication channels that are open to everyone. Many forms of extrinsic motivation are equally welcome. Only instruments that would turn the public good into an exclusive private or club good are shunned.

CEs also meet four conditions for *collective intelligence* or the "wisdom of crowds," as outlined in Surowiecki (2004), namely diversity, independence, decentralization, and aggregation. First, the diversity of opinions and backgrounds among CE contributors is remarkably high. There are no barriers based on formal qualifications, geographic location, or corporate affiliations. Second, contributors to CEs remain independent. There is no expectation for CE contributors to work for a specific (or any) company, to live in close proximity to each other, or to keep unapproved opinions to themselves or within the group. The diversity of locations, affiliations, and development goals is thus preserved. Third, decision making in CEs is decentralized. Groups and individuals involved in a project extend the resource at their own discretion, based on their local knowledge, perspective, or interests;

coordination with others is voluntary rather than mandatory. Fourth, CEs have mechanisms in place to aggregate information and contributions from their many contributors. A prominent example is the Wiki-Software that enables many authors to edit texts collaboratively. Because very little information relating to a CE is proprietary or confidential, it can be widely distributed and reach anyone who might have a use for it.

CEs have two attributes that contribute to the operation of their collective intelligence: They are *polycentric and barrier-free*. *Polycentric* governance is characterized by many centers of decision making, which are formally independent of each other (Ostrom *et al.*, 1961). Consequently, no actor is in a position to control development by prohibiting the use, adoption, or expansion of the resource. Within CEs, some individuals and groups may exert substantial influence over a project, but they do so only as long as contributors choose to respect their decisions. Informal, benevolent dictators (e.g., Linus Torvalds for the Linux kernel) or a formally elected community council (e.g., in the umbrella organizations of Wikipedia and Apache) do not have the task of central planning and control but are more concerned with facilitating collaboration, coordination, and conflict resolution between a multitude of autonomous and independent groups. With such polycentric governance, some measure of divergent and competing developments within a single project is inevitable.

CEs can maintain polycentric governance characterized by diversity and independence because they are *barrier-free*. Open licenses give permission to anyone to use and improve the resource as they see fit. Therefore, the common method of establishing a central command and control hierarchy and excluding divergent views is not available. Because CEs do not need to secure control of the resource, they have no need for borders separating the organization or project from the rest of the world. They can provide barrier-free access to the resources as well as to the tools and processes that create them. Loose structures and informal processes become viable for collective production.

In summary, CEs replace the characteristic instruments of firms, central planning and control with polycentric, overlapping governance. CEs produce not by providing incentives towards the implementation of a central plan. Instead, they offer opportunities and tools for working on a resource to anyone who is motivated to do so. Barrier-free access and polycentric governance preserve the conditions for collective intelligence and a wide variety of motives.

What kind of resources are produced in Community Enterprises?

CEs are special for the resources and the products that they provide. They produce public goods—not only resources and products but also social communities that are free and open to

everyone.

First, CEs produce information goods that are non-rivalrous in consumption. Typically, the resources created by CEs could be excluded by law (e.g., by copyrights). However, barrier-free access is offered by principled choice and turns the resources into public goods. Standard open licenses codify this principle for a variety of purposes and concerns; best known for their use is Free and Open Source Software. The range of available open licenses also covers cultural works, databases, and hardware design. Second, CEs also generate social communities, which develop a strong identity. However, although conventional organizational theory argues that identity requires well-defined boundaries (e.g., Schreyögg and Sydow, 2010), CEs have no boundaries that would separate members from nonmembers or the system from the environment. In spite of their heterogeneity and loose structure, some form of identity is conveyed by the nature of the created resources, project histories, cultures, and the ongoing interactions between people involved in the projects. For instance, the goal of building a free encyclopedia contributes to a shared identity, as do discussions on project-related talk pages and mailing lists. In CEs, degrees of affiliation are acquired on the one side through interactions with the shared resources and on the other side through behavior considered appropriate for the CEs, not by boundaries. People and organizations usually do not become formal members; rather, they become associated with a CE by using the resource, participating in discussions, promoting the project, or contributing to its further development. In a CE, individuals become contributors, testers, developers, or even leaders simply by acting and interacting accordingly.

These two important differences to other production models have further consequences for the typical use and quality of CE created resources. First, CEs offer additional, educational experiences that were hard to come by previously. For instance, all source code produced in CEs is open for anyone to improve their programming skills by studying and extending commonly used software. Proprietary software *could* offer the same educational opportunities but rarely does so; its source code is usually not available even to paying customers willing to pay. Second, CE resources tend to be more flexible and adaptable. The previously mentioned resulting diversity of motivations and backgrounds among contributors shapes CE resources and products. They are often available in many languages, reflect a wide range of viewpoints, and work on a multitude of hardware and software platforms. Third, CEs provide potential competitors with the resources and the tools to create and distribute a different product. For instance, the Wikipedia project makes not only its encyclopedic content freely available but also the Wiki software specifically written for

Wikipedia.

In sum, the fundamental, distinguishing aspect of what CEs do is not in what they produce. Instead, what sets CEs apart from traditional competitors is that they offer barrier-free access to production processes and resources that usually remain closed for reasons of competitiveness and organizational effectiveness.

3. COMMUNITY ENTERPRISES AS A NEW PHENOMENON

This section explains why conventional theories of the firm do not cover CEs. It also explores differences between CEs and other forms of organizations and explains what makes it a unique organizational phenomenon.

A CE is not some variant of a firm, and it does not fit any common theory of the firm. This seemingly obvious fact is worth pointing out, as the firm has become the dominant field of study within organization and management theory. Numerous overlapping, competing, and complementary models carry the label "theory of the firm" and take it even beyond the many types and aspects of profit-oriented business enterprises. For instance, reform movements labeled "New Public Management" apply theories of the firm to the public sector (Kaboolian, 1998), whereas the thriving social entrepreneurship field suggests that charitable organizations can be viewed as firms with somewhat different goals. CEs, however, do not fit any of these models.

Nor do they fit the conventional theories of the firm. From a *transaction cost* perspective, it could be argued that CEs exist because the costs of negotiating and transferring numerous contributions from many sources in a market are too high. CEs, however, do not replace the market with hierarchy. There is no or very limited central planning, funding, or appropriation. It is up to individual contributors to decide where they want to extend the shared resource or what makes their investment worthwhile. Further, CEs do not care about efficiency the way transaction cost theory suggests. Although they build and use tools to facilitate collaboration, they create an environment that allows—and often encourages—competing, divergent development and commercialization efforts for each shared resource. The *property rights* position on firms does not fit CEs either. CEs are not collections of assets, physical or otherwise. Rather, they are institutions to create resources that cannot become privately owned assets. Finally, the *resource-based* view is also unable to explain the behavior of CEs, which do not aim at acquiring exclusive control of resources that are valuable, rare, inimitable, and non-substitutable.

CEs can also be distinguished from organizational forms that are generally recognized as separate from firms, such as networks (Powell, 1990) or institutions governing common

pool resources (Ostrom, 1990). *Network forms* are based on personal relations and reputations that establish an informal commitment to reciprocity. In CEs, however, trust and reputation are not nearly pervasive enough to allow them to operate. Low barriers for participants, high turnover, loose cooperation, and geographical dispersion are among the factors that prevent a comprehensive web of trust. In CEs, many interactions take place among people who know little to nothing about each other, or between direct competitors who have good reason to distrust each other. The institutions *governing the commons* resemble CEs because they manage shared resources through self-organization, but, like all other organizational forms discussed in this section, they differ from CEs by working for the benefit of a privileged group and by having boundaries. Access to the resource serves as an incentive for members of these groups to cooperate and reciprocate; free riding is not tolerated, again in contrast to CEs, which accept that only a small minority of their users contributes to the development of the resources.

The differences between CEs and other types of organization are particularly relevant for a central problem of organizations: the *agency problem*. Traditional organizations, when they become successful, acquire control over a growing collection of resources. As the value of an organization's assets rises, so does the potential pay-off for opportunistic behavior. In order to prevent the misappropriation of valuable assets, increasingly strong governance systems are introduced. In contrast, large CEs can operate with lightweight, informal governance structures. Even when they are highly successful, they have few valuable assets that could serve as an incentive for opportunistic behavior. Because incentives, plans, and execution are decentralized, there is no need for central institutions to monitor and control behavior and the use of resources. This is a crucial difference between theories of the firm and CEs. CEs are largely immune to agency problems because in this type of organization little can ever be gained from opportunistic behavior. CEs are not only organizations that can operate well without offering large incentives; they are also organizations that are not suitable for operating with large assets and incentives.

4. COMMUNITY ENTERPRISES AND THEIR ENVIRONMENT

CEs are private organizations that are specialized in the production of externalities that cannot be appropriated. Because access to the resources they produce is unrestricted, CEs face unique challenges and develop unique solutions that do not fit conventional expectations and theories of organizations. However, not all problems faced by CEs have elegant solutions. Difficult challenges arise from interactions with an economic and legal environment that is shaped by actors with different interests and perspectives. Firms, consumers, academics, and

governments have only just begun to understand and interact with CEs. In this section, we discuss the perspectives and actions of the major groups that shape and constitute the environment in which CEs operate. We analyze the interactions between CEs and key actors that create the external, environmental challenges and opportunities faced by CEs. One the one hand, firms, customers, academia, and governments benefit from CEs and give them some support. On the other hand, although CEs benefit many, the support they receive in return is limited and conditional, which makes most actors unstable allies. Particularly in the political process and in contrast to firms, CEs suffer from the fact that they are unable to quantify their contributions to society with commonly used economic indicators. Consequently, policy decisions tend to ignore or dismiss the interests of CEs, thereby limiting the scope and quality of the resources current and future CEs can produce.

Firms

Firms have played an essential role in the creation and development of CEs—both as antagonists and allies. They are among the main beneficiaries of resources produced by CEs. Startups rely on freely licensed resources to get off the ground quickly and cheaply. Former startup companies such as Yahoo, Google, and Facebook remain based on free resources long after having become household names. The allure of free and open source software (FOSS), however, is not limited to Internet service ventures. Manufacturers use FOSS to drive networking equipment and consumer electronics. Financial firms have long been known to rely on FOSS, while a more recent trend has stock exchanges switching to FOSS for high-performance transaction processing.

The corporate world has learned to appreciate freely available resources. Most companies find some CE projects beneficial, and some support select projects financially or otherwise. Corporate sponsors fund the development of many CE projects of which the Linux kernel may be the most prominent example. Among those sponsors are the largest producers of software, semiconductors, consumer electronics, and Internet services. Through its annual Summer of Code program, Google has paid stipends to thousands of students working on hundreds of FOSS projects. Even the parent organization of Wikipedia, which must take great care to prevent any semblance of favoritism or partiality, has corporate benefactors.[1]

However, firms tend to be unstable allies for CEs. They support selected CEs in the same way they support competition or government interventions: when it serves their goals. They normally oppose the *principles* underlying CEs because they often conflict with their own principles. A general move towards fewer exclusive rights on useful resources would be in stark contrast to the goals of business. Firms are vehicles for appropriating value by

directing collective action through planning and control. By rejecting the notion of exclusive rights over the resource created, CEs reject the instruments that are commonly used to establish leadership, collective action, *and* the appropriation of value. Firms usually appreciate the effect of free resources and lower barriers to market entry only if it increases the value of the resources they do control (cf. Henkel and Baldwin, 2009). Therefore, many conflicts may arise between CEs and firms. They fall into three categories: competition, appropriation, and regulation.

To many firms, CE projects are formidable *competitors*. Addressing such a competitive threat can be particularly challenging because CEs do not behave like firms. For instance, a competing firm may operate at lower costs than the incumbent firm, but it will still share the incumbent's interest in profit maximizing margins. Even if it offered low prices in an attempt to gain market share, it would not usually give away resources that allowed anyone to follow in its footsteps. In addition, a competing firm and its assets can be bought out. CEs violate such standard assumptions in many respects. Some firms try to compete with CEs by focusing on product quality. Traditional encyclopedias, for instance, cannot beat the price, scope, or size of Wikipedia, but they can score, for instance, with a more consistent quality, better writing, or commercially licensed images that cannot be included in Wikipedia. Particularly in the early stages of a CE, a firm may also reduce the competitive threat through lowering prices (Athey and Ellison, 2010). A strong incumbent, however, can also make it easier for CEs to find contributors; frustrated customers looking for alternatives and competitors interested in weakening the incumbent's position, for instance, may be valuable allies.[2] These conflicts are sometimes accompanied by heated rhetoric, but they are essentially regular market dynamics that play out quite similarly between firms.

In trying to *appropriate* value from freely available resources, some firms go further than the respective CEs find acceptable. Rather than just using the resource for commercial gain, they try to get control over the resource or the CE itself. Firms trying to use some leverage over a free resource to their own advantage often meet resistance that ultimately results in measures to prevent such events in the future. An early instance was the attempt of AT&T to increase Unix licensing revenue after the company's breakup in 1984. In response, the community rewrote the parts of Unix that were owned by AT&T, creating a free Unix for which no royalties at all were due. Such conflicts tend to have wider implications because they often indicate license issues that are relevant to many other CEs. The copyleft clause, for instance, was a reaction to firms using free resources but selling improvements as proprietary software. So far, CEs have been quite successful at adapting to challenges in the first two

categories, competition and appropriation.

The most significant battlefield between firms and CEs is *regulation*. It is most significant because (a) regulation affects all projects and firms and (b) because, in this area, the division between CEs and firms is most pronounced. For instance, CE projects are united in their rejection of software patents, while industry lobbyists argue in favor of such patents. Among the proponents of software patents are many of the major corporate sponsors of FOSS projects; in fact, firms appear to be more likely to contribute to FOSS if they are holding large stocks of software patents (Fosfuri *et al.*, 2008). Patents allow them to keep some control and ownership of the software even if the copyrights are freely licensed. Closely related is the ongoing debate over the definition of open standards. CEs argue that the use of standards should require neither permission nor royalty payments, a position not held by many firms. This disagreement over standards has become a major issue in recent years as governments around the world take steps to favor open standards in their procurement guidelines. Industry lobbyists argue that the promotion of openly licensed products or royalty free standards is an inappropriate government interference; instead, governments should "let the market decide" and have different models succeed "on their own merit" (cf. Spinello, 2003); that is, governments recognizing the contributions of CEs are urged to behave like firms and ignore benefits to the public good.

For these reasons, there is little industrywide support for CEs, even though many firms support specific CEs projects that benefit their own competitive position.

Consumers

The vast majority of benefits accruing to consumers from CEs are indirect and therefore unlikely to produce much support, even though CEs are better aligned with the interest of consumers than with those of firms. For example, the competitive threat of free resources induces incumbent firms to make concessions in favor of their customers (cf. Athey and Ellison, 2010; Lee and Mendelson, 2008). Consumers also benefit from the innovation made possible by the availability of free resources. However, consumers are unlikely to support CE projects for their past, present, or future impact on competition and innovation because only a few get involved to the point where they stand up for the principles that underlie CEs.

Academia

Academia and CEs pursue similar goals with similar means. Many parallels between academia and CEs have been documented (e.g., Bezroukov, 1999; Stallman, 2005). CE projects can be interpreted as applying the principles of academic collaboration outside

academia. The idea of building on previous work without having to ask permission is common to both. Like CEs, academia is well-known for making results available for others to build upon. CEs resemble basic research because their main benefits are diffuse externalities that cannot be internalized, such as resources that foster competition and innovation and educational experiences that are open to anyone.

However, academia and CEs differ in their priorities. A CE cannot let its output become exclusive property and still remain a CE—not only by definition but also because its processes and tools depend on it. If sufficient funding to reach a development goal is only available if the results are made proprietary, the goal is not within the reach of the CE. Although academia shares the purpose of creating public knowledge, the idea of granting access to everyone is not as natural to the academic world as one might think. Academics are used to resources, such as scientific publications, that are *not* freely available to anyone or for any purpose. Scientists have also long enjoyed a special status in some laws and licenses that allow free use for educational or research purposes. Academic researchers and institutions routinely allow or impose access restrictions on their output to fund their operations. Subscription fees must be paid for access to most scientific publications, and, as researchers are increasingly urged to acquire funding from the private sector, they are more likely to sell exclusive rights to a private sector partner.

A general move towards freely available resources might complicate sponsoring deals between firms and academia and weaken the industry support of publicly funded scientific research. Therefore, many scientists will think twice before supporting CEs beyond the level that firms tend to find agreeable. For instance, they may hesitate to denounce university patenting or to call for the government to make publicly funded information resources freely available.

Governments

Just as firms, consumers, and academia do, governments make use of free resources produced in CEs, most notably software. Their interest in CEs, however, is distinct because it extends beyond the direct benefits that they obtain from the resource. Although firms tend to favor competition and innovation only if it serves their appropriation function, governments are supposed to consider the interests of the whole economy.

However, governments are more than mere integrators of differing economic interests. As creators, promoters, and enforcers of control, governments also have substantial differences with CEs. Governments around the globe would prefer an Internet that is easier to control and regulate than it is now.[3] They are developing legal and technical instruments to

prevent illegal communications and to facilitate the prosecution of offenders. However, a comprehensive enforcement of national laws could undermine the freedoms that allow global CEs to communicate, organize themselves, produce resources, and compete in markets without needing a license or permission. Increased legal risks and overhead costs for CEs and their contributors would be likely consequences even in countries where their current activities are legal and widely appreciated.

In summary, governments tend to appreciate not only the resources produced by CEs but also some of the positive externalities that come with these public goods. However, governments are not supportive of organizational principles that allow only for limited control and accountability.

Selective support is insufficient to sway public policy

The major groups discussed in the previous sections—firms, consumers, academia, and governments—constitute much of the environment in which CEs exist. They all benefit from the creation of free resources and processes that are open to anyone. Members of every group tend to support CEs if, and as long as, they are seen as aligned with their own goals or interests. However, there is no widespread support for the *principles* underlying CEs. In particular, the lack of support in public policy for these principles poses the biggest challenge to CEs. Projects can carry a high share of free riders, but they are easily damaged when regulation affects those who are willing to contribute to these public goods. For instance, the expansion of intellectual property rights increases the opportunity costs for potential contributors because it increases the attractiveness of proprietary business models. The extension of copyright terms and the proprietary licensing of publicly funded information reduce the inflow into the public domain pool. Where patents are introduced, CEs have more difficulties keeping their resources free of veto rights. If current Internet regulations were changed to make CEs liable for the action of loosely connected volunteers, these projects would suddenly find themselves in precarious legal position.[4] These types of regulations typically have a unique, strong impact on CEs, but their perspective is hardly represented when public policy is made. In addition, unfavorable policies tend to be self-reinforcing. That is, an analysis of the political economy of intellectual property rights shows that, as firms and industries adapt to the existence of new IPR, even skeptical firms turn into ardent supporters of these instruments that are now incorporated into their strategies, processes, and structures: building IPR portfolios, encouraging patent submissions, and referring to the advice of IP lawyers becomes their way of doing business (cf. Menell, 2011). Consequently, the trend in regulation continues to shrink the space where participation in an information society does not

require a permit, a license, or a fee.

5. THEORETICAL IMPLICATIONS

In this section, we discuss the theoretical implications of these developments for standard economics. We look at that part of the theoretical background that is increasingly at odds with the insights gained by studying CEs.

There are three assumptions that are inconsistent with an analysis of CEs that really grasps its potential as a source of institutional innovation. Usually, *externalities* are considered a problem. The internalization of external effects has become the remedy in standard economics. Intellectual property rights are one prominent example. By making a formerly public good excludable, they enable investors to appropriate utility that would otherwise be a positive externality of their work. However, the existence of CEs show that, in some cases, internalizing external effects is less desirable than leaving the public good non-excludable. This insight is supported by spillover theory (Frischmann and Lemley, 2007; Frischman, 2009), which currently is not considered part of standard economics.

A second assumption favors strong *property rights* and extends this view to intellectual property rights. In contrast, CEs deliberately produce resources that are not owned by anyone. Efficiency is not their primary goal or target. However, the existence of CEs largely funded by firms suggests that, in some notable cases, the absence of property rights may be more efficient even from an investor's perspective.[5]

A third assumption that makes CEs fit badly into the economic discourse is the nature of *innovation*. Going back to Joseph Schumpeter, producer firms have been viewed as the primary source of innovation (Baldwin and von Hippel, 2009). These assumptions do not hold when CEs are concerned. The Internet, for instance, which was built on nonproprietary technology to be controlled by no one, became a hotbed for commercial and noncommercial innovation by allowing anyone to enter the competition for attention and purchasing power. As an innovative force, however, it remains hard to capture within the constraints of a standard economic understanding of innovation.

These inappropriate assumptions *first* establish an additional burden of proof for research of this new phenomenon. This matters in particular because of the notoriously inconclusive empirical evidence on whether intellectual property rights are beneficial or not (e.g., Landes and Posner, 2003; Bessen and Meurer, 2008). The international harmonization of innovation laws makes empirical research even more difficult; the decreasing diversity of legal regimes destroys opportunities to study their different effects (cf. Reichmann and Dreyfuss, 2007). *Second*, if current theories fail for CEs, this will go unnoticed by

conventional studies because CEs are usually not part of the samples. Moreover, measures of success rarely include positive externalities. *Third*, regulatory efforts are underway to close the window of opportunity for organizations based on a different set of assumptions and make them conform to standard economic assumptions. A self-fulfilling prophecy sets in (Ferraro *et al.*, 2005).

As a consequence, research methods and measures need to be checked for such biases and should be improved. Indicators that focus on firms like profit, the number of employees, R&D expenditures, and patenting activity that have long been fair proxies for many types of economic activity miss the activities and the impact of CEs almost entirely. Several streams of the literature suggest alternative target variables that may be more adequate where CEs are considered. Examples include happiness (Frey and Stutzer, 2002; Layard, 2005; Frey, 2008) and capabilities (Nussbaum and Sen, 1993).

In summary, CEs would benefit from research that reaches beyond the perspective of firms on innovation, growth, public goods, and competition. Such a shift is unlikely to occur without complementary developments in public policy.

6. IMPLICATIONS FOR PUBLIC POLICY

In this section, we discuss public awareness and industry lobbying as important factors that have an impact on CE-friendly or CE-unfriendly regulations as well as on scholarly activity.

Public awareness

If consumers and voters remain passive because they are not aware of the indirect benefits afforded to them by CEs, then one approach to improve the standing of CEs in the public policy arena would be to inform the public and raise awareness. As Wu (2010, p. 316) notes, a "generally elevated awareness of the imminent perils of a closed system" is a worthwhile goal in its own right; a popular ethic on acceptable forms, levels, and uses of control can complement, inspire, or, if necessary, override legislation.

Boyle (1997) and Bollier (2007) have pointed out parallels between recent intellectual property issues and environmental concerns. In both cases, the goal is to establish a new concept as a subject of public concern. Environmentalism succeeded in assembling seemingly unlikely allies such as birdwatchers and hunters who, in spite of their differences, could agree that nature needed protection from a variety of threats. A term similarly unifying as "the environment" has not yet emerged to describe the public policy issues of CEs and related concepts. Candidates include "intellectual property," "the Internet," "generativity" (Zittrain, 2008), "openness" (e.g. Boyle, 2008), "knowledge commons" (e.g. Hess and Ostrom, 2007),

"separations principle" (Wu, 2010), and "free culture" (Lessig, 2004). The movement, if there is ever going to be one, is at a very early stage, largely driven by individual efforts and ad-hoc campaigns.

CEs themselves are built to develop resources, not for raising awareness. However, their existence and their success provide a crucial element to the public debate: They demonstrate that alternative models can work. In addition, some CEs have branched out not only to train new contributors but also to educate and inform potential contributors, policy makers, and the general public. Wikipedia's umbrella organization, Wikimedia, the Free Software Foundation, and other institutions closely associated with CEs have expanded to include such activism into their mission. Their concern with civil liberties and intellectual property expansions overlaps to a large extent with those of organizations such as the Electronic Frontier Foundation and the Chaos Computer Club, which have decades of experience advocating individual liberties and publicizing threats that technological and legal control instruments pose to citizens, consumers, and innovators.

Lobbying and corruption

If spending money on lobbying works, CEs are particularly vulnerable when their interests collide with those of dominant firms or an industry. CEs have very limited means compared to firms of comparable importance, and they do not have the revenue, the profit, or the employee numbers to give their arguments weight or to become a significant subject of consideration. At stake is the control over information and the Internet. In the past two decades, digital technology and the rise of the Internet eroded the control of dominant firms over the creation and distribution of information goods such as software and cultural works. Benkler (2006, p. 23) calls for social and political action to fend off "the incumbents' assaults." So far, the incumbents have successfully pushed for changes in law and technology that give, for instance, "content holders a kind of control over our culture that they have never had before" (Lessig, 2004, p. 181). An impressive demonstration of industry lobbying in this field is the retroactive extension of copyright terms. With the U.S. Copyright Term Extension Act of 1998, industry interests prevailed despite a vocal protest by economists including George Akerlof, Kenneth Arrow, James Buchanan, Ronald Coase, Milton Friedman, and Hal Varian; in a rare display of consensus, these economists predicted that this Act would lead to decreased efficiency and a large transfer of resources from consumers to copyright holders.[6] The inability of the political system to overcome moneyed special interests even for simple, obvious choices such as retroactive copyright extensions can certainly undermine trust in the political process. Eminent legal scholar Lawrence Lessig, who is well known for his writing

on copyright, CEs, and related issues, named this appearance of corruption in politics as reason for his decision to change his research focus from copyright to institutional corruption.

One particular aspect of IPR regulation seems worth noting: Most recent developments have taken place outside national parliaments, whose role has been reduced to signing off on IPR expansions mandated by new international, multinational, or bilateral treaties. The international harmonization of these laws had two unintended consequences. First, it resulted in policy developments that favor those who own IPR at the expense of consumers, CEs, and other users. International treaties have universally served the interests of rights holders and limited the freedom of national parliaments to enact laws that put more emphasis on consumer or antitrust issues.

Lobbying and corruption issues are, of course, neither limited to nor most urgent with regards to regulation relevant to CEs. However, the case of CEs underscores the importance of limiting industry influence on regulation issues that are usually considered the realm of firms.

7. CONCLUSIONS

Management research has long focused on the theory of the firm, studying for-profit organizations that produce privately owned resources based on central authority and within well-defined boundaries. However, other kinds of enterprises have risen to prominence in the past decade. The literature on network forms and commons has shown that collectively owned resources can be successfully managed by self-organized, polycentric governance (Powell, 1990; Ostrom, 1990, 2010). However, these enterprises are still exclusive clubs, based on strong personal relationships or well-defined boundaries, respectively. They control physical, relational, or other resources solely for the benefit of their members.

In recent times, a new kind of enterprise has emerged that we call Community Enterprises. These are similar to network forms of organizations, but they are barrier free and extend way beyond the reach of strong, personal relationships. They are also similar to the commons studied by Ostrom (1990), but they are characterized by the production of appropriation-free resources and the absence of boundaries. Wikipedia is the most successful example of such a Community Enterprise. However, Community Enterprises have no strong lobby in the political arena, even though firms, consumers, and academia benefit greatly from Community Enterprises. They produce valuable public goods but enjoy limited public support.

For academic research, we propose two major directions for research. First, assumptions and principles underneath related fields such as organizational theory, innovation

economics, and industrial organization should be critically examined and adjusted when necessary. Second, research is needed into measures that can provide complementary information where commonly used measures give distorted results. Studies of the impact and benefits of CEs contribute to a better understanding of the importance of this radical institutional innovation. Academic research should reflect that Community Enterprises make important contributions to the economy and society by benefitting competition, diversity, and education.

(7858 words)

NOTES

[1] http://wikimediafoundation.org/w/index.php?title=Benefactors&oldid=58505

[2] Google's smartphone operating system, Android, was quickly embraced by many mobile phone network operators because this open source system gave them back control that they were losing to Apple who kept a tight grip on its highly popular iPhone.

[3] Governments differ in how they plan to make use of control over the Internet, but the desire for better control appears to be universal, whether it is to keep the population from organizing protests, to prevent the leaking of confidential documents, to protect the youth from harmful material, or to enforce intellectual property rights better.

[4] Legislation originally meant to prevent Internet hosting providers from liability for the content published by their customers is currently interpreted also to shield CEs even if they are unable to identify the person who is responsible (cf. Myers 2006).

[5] This should not be entirely surprising, as some authors have made a strong case that the well documented benefits of private property in material goods do not extend to immaterial goods. These authors argue that intellectual property does not and cannot function like physical property, not even for firms (e.g., Menell 2007; Bessen and Meurer, 2008).

[6] Amici Curiae brief of George A. Akerlof et al. as Amici Curiae in *Eldred v. Ashcroft*, May 20, 2002.

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