

The concept of coopetition economics essay

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Abstract

In this article, we investigate how a company's coopetition (collaboration with competitors), cooperation and competition strategies influence its usage of formal and informal intellectual property (IP) appropriation mechanisms. In addition to firm characteristics and sector variables as predictors for appropriation methods in previous studies, we disentangle coopetition, cooperation and competition as further determinants for a firm's use of these instruments. Until now, research has not investigated the effects a company's cooperation with its competitors has on the tendency to use formal (legally protected IP rights e. g., patents, trademarks, etc.) or informal (e. g., secrecy, lead time) appropriation mechanisms. Using Bayesian Model Averaging (BMA), we analyze survey data concerning the coopetition orientation of 1, 879 German companies. We find that coopetition, cooperation breadth, and price and technology competition associate with informal appropriation strategies, while in contrast, cooperation depth and a competitive strategy relying on design associate with the use of formal appropriation mechanisms. Thus, we contribute to existing research by providing first exploratory results of coopetition, cooperation and corporate strategies as determinants for a firm's use of specific appropriation mechanisms. Our findings have implications for management and research. We find that companies should strive for IP appropriation strategies that are well aligned with their choice of cooperation and competition strategies as this facilitates value capturing from innovation. Keywords: Bayesian Model Averaging; Coopetition; Cooperation; Competition; Intellectual Property Rights

Introduction

Traditionally competition and cooperation are conceived as being at opposite ends of a single continuum {Quintana-García 2004 #3}. Recently the combination of cooperation and competition, vividly captured with the term ‘coopetition’, has received increasing awareness in academic literature (for a recent review see {Dunbar 2012 #144}) and in business practice alike {Dowling 1996 #62}{Hippel 1987 #142}{Chen 2011 #63}. More and more companies are organizing their resources and processes along the frontier of cooperating and competing with other companies. Thus, amongst competition and cooperation, coopetition has become another distinct strategic alternative as new and fast changing business environments require companies to become ambidextrous and pursue both competitive and cooperative strategies simultaneously {Lado 1997 #21}{Jorde 1989 #23}{Bengtsson 2000 #1}. Former and current competitors ever more team up or join forces, combine resources and cooperate on certain research projects, new product developments, or commercialization to exploit the partner firms’ resources, capabilities and know-how. These relationships, in which firms can assume the role of partners, competitors, suppliers and customers for each other, create potential conflicts and tensions due to the risk of knowledge spillovers and appropriation of rents from joint R&D {Teece 1986 #158}{Pisano 2006 #474}. In this increasingly dynamic business environment, the ownership of the critical pieces of intellectual property (IP) is an important strategic source of a competitive advantage {Granstrand 2000 #18}. Thus, consistent with {Neuhäusler #145/persononly/nopar} {Neuhäusler #145/yearonly}, we define formal appropriation instruments as legally protected IP rights (e. g., patents, <https://assignbuster.com/the-concept-of-coopetition-economics-essay/>

trademarks, etc.,) and informal appropriation instruments as methods to prevent involuntary spillovers (e. g., secrecy, lead time). Moreover, prior literature has analyzed the relationship between the benefits and pitfalls of coopetition and innovation, but it remains unclear how coopetition explicitly influences a firm's use of appropriation mechanisms. Research has identified several ways in which protecting IP caters to the corporate development of competitive advantage e. g., as an isolating mechanism to prevent imitation {Rumelt 1984 #50}{Mahoney 1992 #26}{Somaya 2012 #56}. Due to the importance of IP appropriation strategies for companies (e. g., {Blind 2006 #15}), it is an important and necessary challenge for research to put IP appropriation strategies in the context of coopetition, cooperation and competition, and to identify drivers for certain components of appropriation strategies {Rivette 2000 #39}. The impact of coopetition, cooperation and competition on companies' use of various knowledge and IP appropriation strategies – we differentiate between a formal component and an informal component of appropriation – has previously not been analyzed in ' what is currently a somewhat disparate and fractured field of study within management' {Somaya 2012 #56: p. 1084}. For the empirical analysis this entails that we do not only have to estimate the effects of coopetition, cooperation and competition on the implementation of the appropriation strategies, it also means that the structure of the regression model is essentially uncertain, as at the outset it is unclear which variables should be included in the regression model. This phenomenon offers an interesting application for Bayesian Model Averaging (BMA). Therefore, we empirically estimate the model structure and the parameters by means of Bayesian Model Averaging to account for this uncertainty (e. g., {Raftery 1995 #92}

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{Hoeting 1999 #107}). The remainder of the paper is structured as follows. Chapter 2 provides an overview of the current literature on coopetition and factors influencing IP appropriation strategies. Next, we describe the methodology and the data set before we give a descriptive overview on the use of appropriation measures. Chapter 4 focuses on the factors explaining the use of property rights and appropriation mechanisms. In the final chapter 5, we give a comparative summary of the results and address and discuss potential challenges for management and research.

Conceptual Background

Coopetition

The concept of coopetition typically refers to the relationship between firms that simultaneously involves both competition and cooperation (e. g., {Brandenburger 1996 #59}). Thus, the concept of coopetition comprises a complex combination of two opposite logics of interaction: the competitive paradigm, assuming that companies interact based on conflicting interests, and the collaborative paradigm, asserting that companies interact based on common interests in a certain area {Dowling 1996 #62}{Bengtsson 2000 #1}{Cassiman 2009 #147}. Despite many risks and conflicts, cooperation with competitors is usually driven internally by the need to share R&D or production risks and costs, by the goal to pool resources, develop and expand markets, address major technological challenges, reduce costs and risks and realize synergistic effects {Das 2000 #67}{Tether 2002 #11}{Huang 2009 #68}, or externally by the requirement to comply with new regulations {Nakamura 2003 #71} or develop industry standards. Here, we use coopetition in the vein of {Bengtsson 2000

{Bengtsson 2000 #1/yearonly}. According to these scholars, a firm is involved in coopetition if it carries out cooperative activities with other actors the focal firm itself classifies as competing, regardless of whether or not the competition is in the same product area or in the same industry. Although coopetitive activities can occur at multiple levels, such as at the firm level, at the industry level, at the level of strategic business units, the department level, or between teams {Luo 2006 #7} {Gnyawali 2011 #42} {Tsai 2002 #9}, we restrict our focus on coopetitive innovation activities at the firm level. Different theories have been used to assess the value of coopetitive activities. Transaction cost theory focuses on the competitive dimension and therefore, pitfalls of this strategy. Reasoning based on a transaction cost rationale renders coopetition as a risky strategy because of the knowledge paradox[1]{MADHOK 1997 #136}{Nickerson 2004 #151} on the one hand and the involuntary leakage of tacit knowledge to the collaborating, yet competing, partners, on the other hand {Cassiman 2002 #122}. Incentives for opportunistic behavior originating from the competitive dimension of this strategy theoretically undermine the benefits of the cooperative dimension {Quintana-García 2004 #3}. Arguments originating from the resource-based view {Barney 2001 #486}{Barney 1991 #485}{Teece 1997 #487} focus more on the cooperative dimension and thus, the benefits of coopetitive behavior. Firms gain a competitive advantage by absorption, assimilation and transformation of knowledge from different areas {Kessler 2000 #60}{Kogut 1996 #61}. The results of these activities accumulate as knowledge assets specific to the individual firm {DeSarbo 2007 #66}{Wang 2009 #65}. Competitors are valuable sources of complementary knowledge and resources, which can be accessed through <https://assignbuster.com/the-concept-of-coopetition-economics-essay/>

cooperation {Grant 1995 #138}. The resource-based view, hence renders coopetitive activities as an important way to increase the innovation capabilities of firms. In a first step, coopetition can be interpreted as a collective effort in the form of cooperation leading to value creation, i. e., by creating new or improving current products or services as well as by establishing new or enlarging current markets. In contrast to the first step, the second rather focuses on individual firm aspects as it comprises a company's competitive effort to appropriate value. How firms protect their intellectual assets and how they appropriate their returns, hence is largely contingent on firm specific cooperative and competitive strategies {Ritala 2009 #22}. In sum, different theories can explain advantages and disadvantages of a coopetition strategy. Even though coopetition is challenging for the involved firms, it creates certain advantages such as a positive effect on new product development and innovation as it enhances the involved firms' capacity to innovate {Ritala 2009 #22}{Gnyawali 2011 #42}. These effects exceed those generated by competitive relationships because partnering companies can control their competitors more effectively {Quintana-García 2004 #3}{Chen 2011 #63}. Despite the positive effects of coopetition on value creation, companies use this strategy as a means to imitate rather than to generate radical innovations due to opportunistic behavior and knowledge spillover {Mention 2011 #10}{Monjon 2003 #64}. In sum, although earlier literature on coopetition has identified the related motives, unique potential and benefits (e. g., innovation activities), some studies on coopetition emphasize that it also comprises some major risks and drawbacks (e. g., {Hamel 1991 #467}{Park 1996 #470}{Oxley 2004 #468}{Ritala 2008 #472}) and thus, may not be desirable in certain cases.

Appropriation Strategies

In a review, {Somaya 2012 #56/persononly/nopar} {Somaya 2012 #56/yearonly} provides an overview of theoretical drivers of companies' appropriation strategies. Using the special case of patent protection, he emphasizes the importance of integrating appropriation strategies into the company-level strategy. Although a protection use is often referred to as an isolating mechanism, i. e., to prevent imitation of the firm's technological assets {Rumelt 1984 #50}{Mahoney 1992 #26}, there are other appropriation strategies that also support firm-level competitive advantage {Mansfield 1986 #55}. Among these strategies are blocking, building fences and thickets, earning licensing income, avoiding litigation by others, using IP in negotiation and exchange, motivating and rewarding R&D personnel, measuring performance, attracting investors, and forming image and reputation {Blind 2009 #14}{Cohen 2000 #57}. In general, appropriation strategies can be divided into two groups of measures (e. g., Cohen 2000 #57){Neuhäusler #145}): Formal appropriation instruments, such as patents, trademarks, utility patents or copyright, are state guaranteed legal instruments, which grant inventors and innovators an exclusive right to exclude others from the utilization of the protected subject matter. Informal appropriation instruments encompass various measures on the part of companies to prevent spillovers of own innovation efforts and thus to safeguard the appropriation of one's own innovation returns. Typical forms are secrecy, lead time, complex design of new products or services, which make imitation more difficult, or an extremely rapid implementation of innovation projects to generate a lead time advantage. Notwithstanding this terminology, formal appropriation mechanisms can also be used strategically

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as a quality signal to potential investors as well as to potential R&D, alliance or licensing partners {Gans 2008 #87}{Gick 2008 #88}{Somaya 2012 #56}. Firms may use patents and other formal IP to exhibit strategic commitment to a technological or research trajectory in order to drive competitors into exiting R&D competition, patent races or terminating their R&D efforts {Gill 2008 #89}{Somaya 2012 #56}, or to prevent patenting by others and guarantee freedom of operation for the filing company {Guellec 2011 #90}. Firms may also strategically employ formal appropriation measures to discourage competitors from further investments in the same technology domain {Somaya 2012 #56}{Agrawal 2007 #72}{Baker 2005 #85}. Formal IP can disclose information about a firm's technologies and technical trajectory and competitors may use this information for future innovation competitions. Therefore, firms may strategically patent 'poor' inventions to misguide competitors {Langinier 2005 #28}. {Brouwer 1999 #146/persononly/nopar} {Brouwer 1999 #146/yearonly} (also: {Levin 1987 #475}{Arora 1997 #129}) highlight that patenting is not the most important instrument for appropriation of innovation benefits. Companies rather find informal means crucial to capture value from invention. However, only the combination of formal and informal measures of appropriation constitutes a proper IP protection strategy {Hertzfeld 2006 #31}, allows for flexibility to adjust to different internal or external strategic requirements {Anton 2004 #76}, and hence determines the effectiveness of a firm's IP strategy {Reitzig 2004 #131}{Reitzig 2009 #128}{Somaya 2012 #56}{Somaya 2010 #86}{Leiponen 2009 #132}. Research reveals that firms prevent imitation not only by using patents or secrecy, but by building on a full portfolio of appropriation mechanisms available to them and thus

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securing or developing competitive advantages {Somaya 2012 #56}. The interrelationship between patenting and secrecy follows a long research tradition describing patent rights and secrecy as natural substitutes (e. g., {Machlup 1962 #52}{Horstmann 1985 #53}{Kultti 2007 #32}{Arundel 2001 #81}) or strategic complements Anton 2004 #76}{Arundel 1998 #33}. Although {Schmoch 2003 #127/persononly/nopar} {Schmoch 2003 #127/yearonly} examines the relationship between trademarks and patents, empirical evidence on the association between copyright and patenting is still needed. In a recent study, {Neuhäusler #145/persononly/nopar} {Neuhäusler #145/yearonly} (also: {Cohen 2000 #57}) examines and finds firm characteristics (e. g., R&D personnel, sales, size) and sectors that affect the decision for or against a specific appropriation method. In sum, the simultaneous use of formal and informal measures of a as part of a coherent protection strategy as well as their prevalence is – except for some contributions {Graham 2003 #75}{Cohen 2000 #57}{Neuhäusler #145}{Somaya 2011 #286} – still somewhat emerging in research {Somaya 2012 #56}.

Coopetition, Cooperation, Competition and Appropriation Strategies

A relatively new literature stream has begun to address the impacts of patents and patent strategy on firms' value creation through innovation {David 2006 #80}. Particularly, strong IP portfolios and aggressive IP appropriation strategies serve two purposes when allying or licensing with other firms: as a deterrent of opportunistic behavior and as an enabler of value appropriation through commercializing inventions and R&D results

{Oxley 1999 #77}{Arora 1995 #78}{Somaya 2012 #56}. This highlights that strategies to protect intellectual property eventually affect the competitive as well as cooperative structures (e. g., {Peeters 2006 #84}{Blind 2004 #30}{Hertzfeld 2006 #31}). However, in a micro-perspective, the implementation of IP appropriation strategies also depends on the firm's cooperative and competitive strategic options and the competitive environment it operates in. Only few studies deal with the relationship of coopetition and innovation (e. g., {Mention 2011 #10}{Ritala 2012 #149}{Belderbos 2004 #20}{Tether 2002 #11}), but in general these studies find coopetition to be beneficial for firms' innovation activities or outcome. Moreover, prior literature has analyzed the relationship between coopetition and value capture (e. g., appropriation and imitation), but it remains unclear how coopetition explicitly influences a firm's use of appropriation mechanisms. With respect to the effects of competition on the appropriation strategies of companies, the evidence generally points towards a positive relationship. The more intense the competitive environment, the more intense the use of formal appropriation mechanisms becomes {Blind 2006 #15}{Peeters 2006 #84}{Hall 2001 #134}{Ziedonis 2004 #135}. Regarding the strategic orientation of the firm, {Blind 2004 #30/persononly/nopar} {Blind 2004 #30/yearonly} find that protection activities are driven by technology protection motives and by the strategic rationale reflected in a defensive strategy. A firm specific strategic orientation strongly determines the composition and the value of the IP portfolio (e. g., {Blind 2009 #14}; also: {Anton 2004 #76}). {Peeters 2006 #84/persononly/nopar} {Peeters 2006 #84/yearonly} show that firms' engagement in formal IP protection is more intense when innovation

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strategies are aligned with research intensive product innovation.

Additionally, they find that broad collaboration activities, i. e., cooperative innovation activities with science and industry, increase the intensity of formal IP protection. Generally IP protection is an issue relevant for all partners involved in collaborative innovation activities {Hertzfeld 2006 #31}. {Blind 2006 #15/persononly/nopar} {Blind 2006 #15/yearonly} seem to contrast this finding, as they cannot identify cooperative innovation as a determinant of appropriation activities. However, these scholars find a strong effect of intensive technologically motivated collaboration captured by their co-patenting variable. The conceptual framework for this study is summarized in Figure 1.

Insert Figure 1 about here.

Research Questions

Despite a considerable body of literature investigating the use of appropriation mechanisms, {Somaya 2012 #56/persononly/nopar} {Somaya 2012 #56/yearonly} argues on a general account that strategic and competitive determinants of appropriation strategies are still not fully explored. Previous research has analyzed IP as a facilitator or driver of coopetitive and cooperative relationships {Carayannis 1999 #148} {West 2006 #465}, but to our knowledge, no study has, as yet, explicitly analyzed the effect of coopetition on companies' usage of IP appropriation instruments. This gives rise to the first research question targeted at filling

this gap. Yet, at the outset it is unclear, on which model the estimation of these effects should be based. This means that the analysis faces model uncertainty: which variables should be included in the estimation of these effects? This leaves us with two research questions: Which variables contribute to our understanding of the implementation of different types of appropriation strategies and hence should be included in the estimation? How strong is the effect of coopetition, cooperation, competition strategies, and of the competitive environment on the implementation of the types of an appropriation strategy?

Data

Our analysis is based on the Mannheim Innovation Panel (MIP), ZEW, Mannheim, which includes the core Eurostat Community Innovation Survey (CIS) and additional topics for firms from Germany. The CIS, jointly launched by Eurostat and the Innovation and Small and Medium-sized Enterprise Program in 1991, aims at improving the empirical basis of innovation theory and innovation policy on the European level by surveying innovation activities on the company level in the member states' economies. The CIS surveys generate cross-sectional data on firm-level innovation activities across member states by means of largely harmonized questionnaires. The CIS closely reflects the definitions of the Oslo Manual {OECD 2005 #270} and hence provides a good coverage of the indicators for innovation input, innovation output, innovation strategy, and the use and appreciation of IP appropriation strategies employed by innovating companies. Initially, the CIS has been used to inform national and EU-level statistical analyses. In the past decade, the data have increasingly been used for scientific research on

the micro-level in management (e. g., {Cassiman 2006 #121}{Belderbos 2004 #20}{Leiponen 2010 #113}{Ebersberger 2011 #119}{Grimpe 2010 #118}{Laursen 2006 #116} and in economics (e. g., {Cassiman 2002 #122}{Czarnitzki 2007 #98}{Ebersberger 2012 #120}). We use the German edition of the fourth (CIS4) covering the years 2002–2004. The dataset contains 1, 879 companies which actively employ appropriation measures. These are the basis of the analysis below.

Dependent variables.

Appropriation strategies: The innovation survey inquires innovating companies about their usage of a set of measures to protect their IP: patents, utility model, trademarks, copyright, secrecy, complexity of design, and lead time advantage. The survey also investigates the appreciation of the used appropriation measures on a three-level Likert scale (high – medium – low). We use a factor analysis (principal component factors, varimax-rotated) to identify latent strategies in the responses (see Table 3 Panel –A– in the Appendix). We only extract the two factors with an eigenvalue larger than unity. The first factor bundles secrecy, complexity and lead time advantage. In accordance with the literature, we interpret this as an informal appropriation strategy (PROT_INF). The second factor bundles patent, utility models, design patents, trademarks, and copyrights. We interpret this factor as a formal appropriation strategy (PROT_FORM).

Independent variables.

Coopetitive strategy: A coopetitive strategy is approximated by a dichotomous variable that indicates that the firm collaborates in its innovation activities with a competing firm (COOPET). **Competitive strategy:**

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To capture the competitive strategy of the firm, the survey asked the responding firms to assess the following factors and rank those according to their relevance for the firm's competitiveness in its main market: price, quality, technological advantage, service and flexibility, variety of products, and design of the product and the marketing campaign. We capture the firm's competitive strategy in six dichotomous variables. Each variable indicates that the respective factor has been ranked first or second by the firm. Some firms rank more than one factor first. These ties have not been resolved. The dummy variable `STRT_PRCE` hence captures a competitive strategy relying on price advantages, `STRT_QUAL` indicates a competitive strategy relying on quality advantages, `STRT_TECH` is a competitive strategy relying on technological advantage, `STRT_SERV` relates to a competitive strategy relying on service and flexibility, `STRT_VARI` reports a competitive strategy relying on variety of products, and finally `STRT_DSGN` designates a competitive strategy relying on design of the product and the marketing campaign.

Collaboration network: Analogous to the literature on innovation search {Laursen 2006 #116}, we capture innovation networks by their breadth (`COOP_BR`) and by their depth (`COOP_DE`). The former identifies the number of different collaboration partners, whereas the latter reports the fraction of collaboration partners with a high intensity of collaboration approximated by collaboration with this specific partner in more than one world region (Germany, Europe, US, other). For these indicators, we only consider the non-competitive collaborations.

Competitive environment: In a set of questions, the survey examines the competitive environment of the firms. We use the six items scaled with a four level Likert scale of agreement to construct latent dimensions of the competitive environment by means of a

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factor analysis. We only extract factors with an eigenvalue above unity and yield two factors (see Table 3 Panel -B- in the Appendix). In particular, we distinguish between environments where competition is driven by product and technology characteristics (COMP_PD) and environments where competition is driven by the behavior of competitors and markets (COMP_CO).

Controls.

The analysis also contains a number of control variables. Firm characteristics are controlled for by the size measured by the log of the number of employees (LEMP), by the research intensity measured as the sales share spent on R&D (RDINT), by the firm's involvement in international trade measured by the sales share generated by exports (EXSHR) and by the firm's location in Eastern Germany (EAST). Usually the nature of the knowledge a firm's innovation activities builds on affects the way and intensity of protection {Norman 2002 #123}. To characterize the knowledge the firms rely on in their innovation activities, we build a dichotomous variable (ANALYT) indicating whether the firm's innovation activities rely on an analytical knowledge base rather than a synthetic one ({Laestadius 2000 #154}{Asheim 2005 #155}{Asheim 2012 #157}). An additional dummy variable (CUM) indicates whether the innovation activities rely on a strong cumulativeness of the knowledge bases {Breschi 2000 #152}, which might be closely related to product sequencing {Helfat 2000 #153} and to related protection challenges. Issues hampering the firm's innovation activities are bundled by a factor analysis (see Table 3 Panel -B- in the Appendix) and, in line with the findings in {Peeters 2006 #84/persononly/nopar} {Peeters

2006 #84/yearonly}, give rise to two factors: economic and financial constraints (HAMP_ECO) and internal or knowledge constraints (HAMP_INTERN). We use two sector controls, one capturing the overall sectoral affinity for employing formal or informal means of appropriation by the mean of the dependent variable broken down on NACE 3 digit sectors. In addition, we control for different propensities to employ appropriation mechanisms at all by the share of firms with a protection strategy in a NACE 2 digit sector and the respective size class. Table 1 summarizes the variables in the analysis. We standardize all variables for the analysis and report the descriptive statistics and the correlation table in Table 5 of the Appendix.

Discussion and Conclusions

Consistent with {Arora 2006 #79 /persononly/nopar} {Arora 2006 #79/yearonly} and {Arora 1997 #129/persononly/nopar} {Arora 1997 #129/yearonly}, this study examines the interplay between different formal and informal IP instruments available to firms in their quest to appropriate rents from innovation. From a theoretical perspective, this paper sheds some light on the strategic and competitive determinants of appropriation strategies that have not been fully explored, as yet. Moreover, prior literature shows ambiguous results regarding companies' prevalence for informal versus formal IP instruments. Research has remained largely focused on firm characteristics as drivers of companies' use of various knowledge and IP appropriation strategies while the impact of coopetition, cooperation and competition on remains underexplored {Somaya 2012 #56: p. 1084}. Therefore, the structure of the regression model is essentially uncertain, as at the outset it is unclear which variables should be included in

the regression model. This phenomenon offers an interesting application for Bayesian Model Averaging as this method empirically estimates the model structure and the parameters to account for this uncertainty. In this paper, we use BMA analysis to disentangle determinants of companies' use of specific appropriation strategies. Interestingly, the competitive environment does not have a robust effect on the implementation of formal or informal measures of appropriation. Only firm level strategies can be identified as robust determinants of appropriation strategies. Either the appropriation strategies are simultaneously developed with corporate strategies (cooperation or competitive strategies) or they are the result of these. Following a coopetitive strategy is not a robust predictor for formal appropriation methods, but for the use of informal appropriation instruments. This is a rather surprising result as one would assume enforceable IP rights as well as informal appropriation mechanisms to be associated with a coopetition strategy. Due to the nature of the phenomenon coopetition, informal appropriation instruments should go hand in hand with formal appropriation instruments in order to mitigate the risk of involuntary knowledge spillover and imitation. Moreover, the depth of cooperation relations is a very robust parameter explaining formal appropriation instruments. Obviously, intensive cooperation requires the use of formal rights in order to manage and control critical knowledge assets. In contrast, the breadth of cooperation requires the use of informal appropriation measures due to the heterogeneity of their features, e. g., using either lead time advantage, secrecy, or other instruments. A company sharing knowledge with many different partners in a broad open innovation setting creates more potential imitators. Thus, strengthening imitators and new

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competitors can be mitigated by employing informal appropriation methods. Prior research also has revealed that companies rely more heavily on informal appropriation instruments when protecting critical knowledge and capabilities {Cohen 2000 #57}{Levin 1987 #475}{Neuhäusler #145}. Furthermore, companies using both price and technology in their competition strategy prefer implementing informal than formal appropriation instruments. Pricing obviously reflects setting rather low prices, which contradicts the focus of premium price segments characterized by valuable patents and trademarks. In contrast, achieving lead time advantage may require sophisticated pricing strategies to either enter the market or to exploit pioneering market positions. Following a technology-based competition strategy may increase the likelihood of a lead time strategy on the one hand and hence render secrecy much more effective than trying to enter long patent application processes on the other hand. Furthermore, a complex technology often is an effective appropriation instrument in itself. Finally, companies, which rely on and derive a competitive advantage from a unique product design as part of their competitive strategy, are also more inclined to use formal appropriation instruments. For example, Apple regularly defends and litigates its iconic product design against its rival Samsung. As product design is widely visible, and hence informal appropriation is difficult to enforce, it is more connected to formal appropriation methods (e. g., registered design, design patents). We find that among other firm level characteristics, size stands out as a robust determinant of formal appropriation strategies. The use of formal appropriation instruments is connected with rather high fix costs (e. g., setting up an IPR department). For informal appropriation measures, we do <https://assignbuster.com/the-concept-of-coopetition-economics-essay/>

not find this relationship as all these instruments usually comprise less fix costs (e. g., secrecy might be more difficult to implement in large companies). Additionally, we find that sectoral conditions determine both appropriation strategies robustly, which has been confirmed in previous studies {Cohen 2000 #57}. Informal instruments are less intensively used in a competitive environment, where product and technology characteristics play an important role because here formal instruments (e. g., patents and trademarks) may be more effective. In general, the OLS regression confirms the variables of the BMA except for cooperation depth. In addition, the use of formal instruments is positively explained by competitive strategies focusing on product variety (e. g., leveraging brands), but negatively by competitive strategies focusing on quality (less importance of signaling) and services (difficult to use formal instruments). In addition, the interaction between coopetition and cooperation depth is negatively related to formal instruments, which is difficult to explain. Finally, R&D intensity is a robust predictor of firms' use of formal instruments. In contrast to the variables identified by BMA, the additional explaining factors by the OLS regression reveal, with a few exceptions (e. g., R&D intensity), rather puzzling results especially regarding informal appropriation instruments. However, these puzzles, including the large number of insignificant factors, can be the starting point for future research. We encourage continuing the research on the general influence of the competitive environment on the use of formal and informal appropriation instruments. For example, the competition in the information and communication technology (ICT) markets is dominated by patents. However, insights into further industries and sectors, with the exception of the patent dominated pharmaceutical industry, are missing.

Furthermore, the various dimensions of competition deserve in-depth research as the current approach does only reveal few robust determinants. Finally, the relevance of company size for the use of informal instruments promises further interesting research questions, especially since non-linear relationships might play an important role. Prior research suggests that management of the new strategic option of coopetition remains unclear. In this paper, we contribute to resolve this issue by linking a firm's coopetition, cooperation and competition strategies to its usage of IP appropriation instruments. By doing so, we hope managers will gain a better understanding of the impact of exercising these different strategies. Thus, we expect managers to develop better knowledge and expertise of when and how the use of either a coopetition, cooperation or competition strategy is an appropriate measure to capture value from an innovation. Our analysis provides two main insights. First, innovating companies must assess the benefits and drawbacks of the different organizational strategies early on, and then decide for the most effective appropriation strategy for the given context. Second, the innovating company must decide on appropriation strategies that are well aligned with its choice of cooperation and corporate competition strategies and goals as companies can only capture value if they understand the importance of IP when commercializing an innovation. In sum, appropriation strategies should provide enough incentives to perform R&D and innovation activities in the first place. Thus, innovators should be able to appropriate sufficient rents from the innovation in compensation for their initial investments {Somaya 2011 #286}. Consistent with {Somaya 2011 #286/persononly/nopar} {Somaya 2011 #286/yearonly}, we emphasize the importance of an IP appropriation strategy as an essential

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part of the firm's business strategy and not just as an 'afterthought'.

Moreover, the results have implications for using patents and other formal appropriation instruments to measure innovative activities. As firms in the sample seem to rely on both formal and informal appropriation methods, we argue consistent with {Neuhäusler #145/persononly/nopar} {Neuhäusler #145/yearonly} that relying on formal appropriation instruments exclusively could lead to a truncated picture when measuring the innovation activities and outcomes of companies. Particularly, formal appropriation mechanisms may only reflect and report an incomplete, and hence underestimated picture of these activities. Our contribution has some limitations. The number of robust variables identified by the BMA explaining the factor scores related to the use of formal appropriation instruments is quite limited. Furthermore, we certainly face an endogeneity problem because appropriation strategies, especially large patent portfolios, might influence the competitive environment, as we currently see in the markets for smart phones. In this context, the life cycle of industries and products have to be taken into account, i. e., this might also change the use and relevance of appropriation strategies over time, e. g., first starting with patents and then using more informal instruments or the other way round. The limited significance of the competitive environment raises questions about the survey approach, which is based on subjective assessments of innovation managers about their competitive environment. In addition to the sector dummies, concentration indices might be used for further robustness checks. Finally, the company as a unit of observation might also be challenged because both the competitive environment and also the use and relevance of formal and informal appropriation instruments may differ from product to product, i. e., a

company enjoying a monopoly position supported by strong patent portfolios in one market can generate significant profits, whereas in another market segment its products are challenged by numerous competitors, which might make patenting rather ineffective and superfluous.