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The Formation of Fairness Perceptions in the Cooperation between Entrepreneurs and Universities

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The Formation of Fairness Perceptions in the Cooperation between Entrepreneurs and Universities

Biographical Sketches

Dr. Elco van Burg is an assistant professor of strategy and entrepreneurship at VU University in Amsterdam. His research focuses on collaborative processes in entrepreneurship and innovation trajectories.

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The Formation of Fairness Perceptions in the Cooperation between Entrepreneurs and Universities

Abstract

For entrepreneurs who intend to exploit university-owned technologies, a cooperative relationship with the university is critical. This study aims to better understand this entrepreneur-university cooperation. A key factor influencing the quality of this cooperation is the fairness perception of the entrepreneur. However, little is known about how these fairness perceptions are formed in this context. Therefore, to increase insight in entrepreneur-university cooperation, this study explores the formation of fairness perceptions by entrepreneurs who cooperate with universities (in so-called university spin-offs). This study assesses how the rules these entrepreneurs employ to form fairness perceptions differ from fairness rules that have been established in previous studies on organizational justice. The results show that, in addition to established fairness rules, there are also fairness rules that are more specific to this entrepreneurial setting. These specific rules complement the established fairness rules to provide a more comprehensive understanding of the formation of fairness perceptions by entrepreneurs cooperating with a university. Moreover, this study explores to what extent different entrepreneurs form fairness perceptions differently and finds that both experience and relational capital of the entrepreneurs within the university are two key sources of heterogeneity. Overall, this study contributes to the literature by conceptualizing how entrepreneurs form fairness perceptions in cooperating with universities and how this extends established wisdom in organizational justice theory. Moreover, the rules identified in this study provide clues for entrepreneurs who wish to improve their collaboration with universities, and may also apply to the relationships between entrepreneurs and large corporations and between entrepreneurs and venture capitalists.

Keywords: entrepreneurship, university spin-offs, cooperation, experience, fairness, technology commercialization.

Introduction

Universities provide new knowledge that can be exploited by entrepreneurs (Sherwood and Covin 2008; Un, Cuervo-Cazurra and Asakawa 2010). Through cooperation with a university, these entrepreneurs can commercialize university technology, which often also makes an important contribution to regional economic development (Breznitz, O'Shea and Allen 2008; Clarysse et al. 2005). Although such university-industry relationships have been studied extensively (Ahrweiler, Pyka and Gilbert 2011; Rothaermel, Agung and Jiang 2007), the precise factors that make such cooperation successful have received limited attention (Ambos et al. 2008). It has been suggested that one of the key factors affecting the degree and continuation of successful cooperation with the university is the degree in which an entrepreneur assesses the relationship with the university as fair (Jensen and Thursby 2001; Rappert, Webster and Charles 1999). However, it is unclear how these fairness perceptions are exactly formed in the entrepreneur-university cooperation.

Previous studies have demonstrated that fairness perceptions have a significant effect on cooperation, where fairness perceptions refer to individual, subjective assessments of what is just in a relationship (Colquitt et al. 2001). Within new product development teams, perceptions of fair interactions foster dedication, increase learning, and reduce development time (Akgün, Keskin and Byrne 2010). In cooperation between organizations, perceptions of fairness enhance mutual learning and trust-building, leading to higher performance (Bstieler 2006; Busenitz, Fiet and Moesel 2004), while perceived unfairness is associated with uncooperative behavior and ceased cooperation, even if this is detrimental to the venture's development (Ariño and Ring 2010; Busenitz et al. 1997).

These insightful findings on the role of fairness notwithstanding, previous studies of the cooperation of entrepreneurs with other parties have assumed that established fairness (organizational justice) theory accurately describes the formation of fairness by entrepreneurs (e.g., Busenitz, Moesel, Fiet and Barney 1997; Daellenbach and Davenport 2004; Sapienza and Korsgaard 1996). However, organizational justice theory describes the fairness rules guiding the formation of fairness perceptions in employer-employee relationships. These fairness rules may not necessarily be valid for entrepreneur-university relationships, for two reasons. First, this type of entrepreneurial cooperation is characterized by unforeseeable uncertainty (Loch, Solt and Bailey 2008), which differs fundamentally

from uncertainty due to information asymmetry as in employer-employee relationships (van den Bos, Lind and Wilke 2001). Because of unforeseeable uncertainty, entrepreneurs and universities may disagree about the way of estimating the value they are creating as well as about the appropriation of this future value. As entrepreneurs bear the majority of the unforeseeable uncertainty in commercializing the invention, they may believe to be entitled to appropriate most of the value, and feel unfairly treated if the university acts otherwise (see Kirzner 1989). Second, entrepreneurs engage in new venturing activities because they want autonomy and freedom (Shane 2003; Taylor 1996). As entrepreneurs also tend to believe they own the opportunity (Kirzner 1989; 2002), they want control over the pursuit of their opportunity and may feel treated unfairly if the university wants a say in the venture as well (Rappert, Webster and Charles 1999). Both the role of unforeseeable uncertainty and these venture control aspects are not covered in the fairness rules established in workplace settings, which suggests that the formation of fairness perceptions by entrepreneurs may be guided by different rules than those employed in the relationship between employers and employees.

To address these issues, this article aims to understand the formation of fairness as a key factor that impacts entrepreneur-university cooperation, thus giving insights in what ways this cooperation can be enhanced. To accomplish this, this study explores how the formation of fairness perceptions in collaborative processes between entrepreneurs and universities differs from established wisdom in organizational justice theory. In-depth analysis of interviews with the founders of 26 ventures serves to identify the fairness rules these entrepreneurs employ. This study assesses whether these rules are already covered in the established rules regarding distributive, procedural, interpersonal and informational fairness (see Colquitt 2001) or rather complement these rules. In addition, this study explores whether different entrepreneurs employ these rules in different ways, by considering two entrepreneur characteristics: experience and relational capital.

Theoretical Background

The theoretical background of this exploratory study introduces key aspects of the formation of fairness perceptions in the cooperation between entrepreneurs and universities, drawing on research regarding entrepreneur-university relationships and fairness. First, the role of entrepreneurs' fairness

perceptions in their cooperation with universities is discussed and subsequently how the formation of these fairness perceptions is driven by characteristics of the entrepreneur-university cooperation.

Fairness Perceptions and Entrepreneur–University Cooperation

For entrepreneurs who intend to exploit university-owned technologies, a cooperative relationship with the university is critical (George, Zahra and Wood 2002; Van Burg et al. 2008; Vohora, Wright and Lockett 2004). In the conception phase of their venture, cooperation is important to receive support to start the venture (Djokovic and Souitaris 2008), to acquire and develop the technology (Shane 2004), and to obtain access to facilities and equipment (Fini, Grimaldi and Sobrero 2009). In later phases of the new venture, cooperation with the university remains critical to facilitate the exchange of tacit knowledge in order to further develop the technology into additional new products and services (Jensen and Thursby 2001; Shane 2002).

To establish and maintain this cooperative relationship, entrepreneurs need to negotiate with the university, as the owner of the new technology (Stevens and Bagby 2001), about the acquisition of intellectual property rights, the design of revenue splitting schemes and the control over the venture (Steffensen, Rogers and Speakman 2000). In these negotiations, the technology transfer office (TTO) of the university usually represents the university and the research group where the invention was created (Siegel, Veugelers and Wright 2007). The literature on university-industry relationships shows that the quality of entrepreneur-university cooperation depends on the perception of fairness in this bargaining process (Daellenbach and Davenport 2004; Nicolaou and Birley 2003; Rappert, Webster and Charles 1999; Siegel et al. 2004). When entrepreneurs feel treated unfairly by the university, establishing and maintaining effective cooperation becomes difficult.

Perceptions of fairness are particularly affecting cooperative behavior in such negotiation settings (Molm, Takahashi and Peterson 2003), and are even more influential if one of the partners is more powerful than the other (Husted and Folger 2004). The cooperation between an individual entrepreneur and a large, established university is a relationship with asymmetric power distribution (Feldman et al. 2002). Technology transfer officers negotiating with entrepreneurs can be at risk of abusing their powerful position. Entrepreneurs may become frustrated if they feel unfairly treated

because of such power abuse, for example in the case of unclear or corrupt procedures (Daellenbach and Davenport 2004; Lind and Tyler 1988), or if they feel that the university is primarily interested in revenue generation rather than in a fair exploitation of the intellectual property (Colyvas 2007). As a consequence, some entrepreneurs become 'cynical' with regard to the relation with the university (Welsh et al. 2008: 1862). The rules that guide the distribution of appropriation and control rights are often unclear or even absent, leading to negotiations that take much longer and are perceived as unfair (De Cleyn and Braet 2008; Lockett, Wright and Franklin 2003). In such cases, the fairness perceptions may influence the entrepreneurs' negotiation behavior, often resulting in suboptimal negotiation results for the entrepreneurs themselves (Blount and Larrick 2000). If they are sufficiently upset by the negotiations, they might terminate the cooperation and pursue litigation (Feldman, Feller, Bercovitz and Burton 2002).

Although studies have reported the importance of fairness in entrepreneurial cooperation, none of them has considered how fairness perceptions are actually formed in such an entrepreneurship context. According to established organizational justice theory, fairness is formed along four dimensions (Colquitt 2001). These dimensions of fairness have been established by means of laboratory experiments and field studies which investigated fairness formation in the context of employer-employee relationships. Distributive justice refers to the perceived fairness of the allocation of outcomes in an exchange; it is enhanced when implicit norms of equity are met. Procedural justice refers to the perceived fairness of the process and is, for example, fostered by applying procedures consistently during the decision making process. Interpersonal justice refers to polite and respectful execution of procedures and determination of outcomes. Informational justice refers to the explanations and information regarding the procedures and outcomes. Entrepreneurship researchers who used these organizational justice concepts found that in particular the degree of procedural justice has a positive effect on the cooperation between entrepreneurs and their partners, with important implications for cooperation continuation and venture performance (Ariño and Ring 2010; Busenitz, Moesel, Fiet and Barney 1997; Busenitz, Fiet and Moesel 2004; Kim and Mauborgne 1998; Sapienza and Korsgaard 1996). However, these studies implicitly assumed that established fairness rules, observed in employer-employee relationships, are applicable to cooperation by entrepreneurs as well.

They have not assessed whether these fairness dimensions need to be complemented with fairness rules specific to the entrepreneurship setting. Understanding how these entrepreneurs form fairness perceptions gives insight in a key factor of entrepreneur-university cooperation, and thus may help to enhance this cooperation.

Specific Characteristics of Entrepreneur-University Cooperation Influencing Fairness Formation

The established fairness rules may not necessarily be valid for entrepreneur-university cooperation as this setting differs in at least two important ways from employer-employee relationships. Cooperation between universities and entrepreneurs is impacted by high levels of unforeseeable uncertainty as well as by the importance of venture control for the entrepreneur (Brockhaus and Horowitz 1986; Loch, Solt and Bailey 2008). Unforeseeable uncertainty refers to unawareness of unforeseen problems, so-called ‘unknown unknowns’ that emerge during the venturing process and can significantly influence the results (Loch, Solt and Bailey 2008; Sommer and Loch 2004). Established fairness rules only apply under conditions of uncertainty caused by a lack of information; to enhance fairness, employers have to give timely, accurate and unbiased information (Colquitt 2001; van den Bos, Lind and Wilke 2001).

Unforeseeable uncertainty can impact fairness perceptions regarding how the future value being created in the entrepreneur-university cooperation is estimated and later on appropriated (Feldman, Feller, Bercovitz and Burton 2002). Often, the entrepreneur has a double role as university researcher and as entrepreneur, and (s)he is inclined to estimate that most of the – uncertain – value was created in private entrepreneurial activities, while the university may assess that most of the value was created at the university side (see Welsh, Glenna, Lacy and Biscotti 2008). Moreover, although the university has invested in the research, the commercialization of that research is very uncertain because of the difficulty in identifying and protecting a suitable business opportunity (Dechenaux et al. 2008). The entrepreneur bears the main consequences of the unforeseeable uncertainty in the commercialization trajectory, and thus may feel to have the right to appropriate most of it as well. As the university acts otherwise, (s)he may feel treated unfairly (see Kirzner 1989). Under conditions of unforeseeable uncertainty, entrepreneurs may assess fairness in terms of how future value is estimated, assessing the

respective contributions of the university and the entrepreneur to the creation of commercial value, and in terms of how the eventual appropriation rights are distributed (see Alvarez and Parker 2009; Alvarez and Barney 2005). Although unforeseeable uncertainty seems to impact the formation of fairness (Shepherd and Zacharakis 2001), existing studies neglected this effect as it is not represented in established fairness rules.

Venture control is important for entrepreneurs because one of the main reasons to become self-employed and to engage in venturing activities is that they want autonomy and freedom (Shane 2003; Taylor 1996). Entrepreneurs also perceive that they own the opportunity exploited in their venture (Kirzner 1989; 2002). As a result, they want to control the direction of the commercialization trajectory and may feel treated unfairly if the university wants control rights as well, for instance by claiming venture equity (Rappert, Webster and Charles 1999). Whereas established fairness rules refer to hierarchical relationships between employees and employers, cooperative relationships between universities and entrepreneurs do not imply hierarchy and therefore control has to be negotiated. Although the university may be more powerful, the entrepreneur usually aspires to have most of the control rights. Therefore, giving part of the control to the university could directly induce perceived unfairness, even more so as entrepreneurs tend to believe they personally own the entrepreneurial opportunity related to the technology, even though intellectual property laws may say otherwise (Rappert, Webster and Charles 1999). This endowment effect frames fairness evaluations, as people tend to assess negotiation outcomes as unfair if they expected to get much more (Ordonez, Connolly and Coughlan 2000; Thaler 1980).

Moreover, individual characteristics of the entrepreneur can influence the formation of fairness perceptions. Earlier studies have identified two characteristics: 1) entrepreneurial experience and 2) the relational capital of the entrepreneur within the university organization. Experience is personal capital accumulated by previous business or startup experiences (Greeno and Simon 1988). This characteristic is individual in nature and unrelated to the university. Previous experiences provide a cognitive stock of transactions which constitute the frame of reference against which the cooperation and contract are evaluated (Kahneman 1992; Lehner 2000; Ordonez, Connolly and Coughlan 2000). Busenitz et al. (1997) found that an entrepreneur's prior firm and industry experience positively

influences perceived fairness. Thus, fairness perceptions may become increasingly channeled by past experience (Burmeister and Schade 2007; Dew et al. 2009).

Furthermore, the relational capital of the entrepreneurs within the incumbent university organization is indicated by their formal position in the organization. Their relational capital expresses the amount and quality of relations and resources within the organization. Individuals with a higher formal position (e.g., tenured professors) in the organization tend to have more internal relationships and also possess more resources. As a result, they tend to conform to existing practices (Bercovitz and Feldman 2008), as those practices sustain and reinforce the positions of these more central players, not the least because they may have contributed to shaping these practices. Moreover, people who strongly identify with a group or organization are prone to judge these group processes as fair (Tyler and Blader 2003). In contrast, more peripheral people (e.g., PhD or (under)graduate students and external entrepreneurs) are less connected to the central norms and existing practices, and may be disadvantaged by prevailing institutions (Greenwood and Hinings 1996). These individuals may not identify themselves strongly with this organization, and may therefore be less prone to judge processes as fair *ex ante*. As a result, the relational capital of the entrepreneur is likely to influence his/her fairness judgments and thus also may have an impact on whether and how an effective cooperation with the university can be established and maintained.

Methods

Research Setting and Sample Selection

This study explores the formation of fairness perceptions of 26 entrepreneurs cooperating with a university to exploit university inventions. The focus is on finding the rules these ‘academic entrepreneurs’ draw on when assessing the fairness of the transaction with the university, while adopting the research approach employed in studies that identified specific fairness rules in workplace settings (Bies and Moag 1986; Hollensbe, Khazanchi and Masterson 2008).

The majority of entrepreneurs in this study (19) cooperated with Eindhoven University of Technology (TU/e). In addition, six entrepreneurs cooperating with Wageningen University and Research Center (WUR) were selected serve to analyze the context-dependency of the results.

Technology developed within the university provided the basis for the product or service that the new ventures (intended to) bring to market. Typically, the invention was far-from-commercialization and substantial development work was still required, making continued cooperation necessary.

Both universities actively supported venturing activities to commercialize inventions with support professionals, office space and lab facilities. Both universities claimed a share in the company's equity, royalty payments, or a fixed fee in return for the university's technology that the entrepreneur wanted to license. At WUR, this was accompanied by investments in these new ventures by the university's TTO. The exact details of the agreement with the entrepreneurs depended on the technology (how far it was developed), the entrepreneurs (to what extent did they wish to use university facilities, etc.), and the negotiation process itself. Faculty members were allowed to engage in venturing activities and take equity in such ventures. According to the managing director of the technology transfer unit of TU/e, the rules around technology transfer and cooperation with new ventures were intended to create fairness in revenue distribution: "This means: fair for the entrepreneur, fair for the faculty, fair for the university, and fair for society."

The following criteria were applied to compose a set of new ventures with sufficient variance. The selection includes entrepreneurs with sufficient variety regarding entrepreneurial experience arising from prior new venturing efforts, and regarding the relational capital within the university organization. To reduce sampling biases, new ventures were selected with sufficient variance regarding the survival of the company (ceased ventures are included to avoid success bias, Davidsson 2004), the development stage of the company (ranging from early stage to mature companies, Vohora, Wright and Lockett 2004), the industry and technology (e.g., information technology, biotech and automotive, Shane 2001; Shane 2003), and the outcome of negotiations with the university (i.e., the percentage of shares owned by the university and the royalty percentage). In addition to these entrepreneurial, contextual and venture characteristics, variety was obtained with regard to the dependent variable (i.e., 'fair' and 'unfair' perceptions).

To select those new ventures, a list of all intellectual property-based companies from both universities was used. In consultation with technology transfer officers from each university ventures were assessed based on the sampling criteria and an initial selection was composed with substantial

variation. The final selection – including 26 different ventures, 19 from TU/e and 7 from WUR – was composed iteratively during the data collection process. Table 1 presents the selected new ventures.

----- Insert Table 1 about here -----

Data Collection

The main data were 36 open-ended interviews with entrepreneurs representing the 26 ventures (see Table 1). The interviews were semi-structured, drawing on a topically structured interview protocol. The interview protocol started with generic questions about the development of the venturing process (e.g., “Can you tell us about your background and how you decided to start a company?”; “What has changed since the start of the company? What was the start situation and what is the current situation?”). Next, the interview protocol focused on a number of relevant topics, identified from existing work on entrepreneur-university cooperation (e.g., Djokovic and Souitaris 2008; Rothaermel, Agung and Jiang 2007; Shane 2004): facilities, financing, advice and coaching, intellectual property and negotiations, networks, and the university context in general. These questions included open questions regarding experiences and perceptions, but also ensured that all relevant dimensions of existing fairness theory were covered (i.e., distributive, procedural, interpersonal and informational fairness). All interviews were recorded and fully transcribed. The first interviews with the entrepreneurs served to streamline the protocol and reword some of the questions. In four cases, follow-up interviews were conducted to clarify issues that remained ambiguous in the analysis. In three other cases, follow-up interviews were conducted after the negotiations with the university were completed, which was not the case at the time of the first interview. These three cases were instrumental in exploring whether the use of fairness rules changed during the negotiations. In addition, these follow-up interviews, combined with our frequent interactions with entrepreneurs and university representatives, mitigated biases arising from retrospection by combining retrospective data with current data (Leonard-Barton 1990).

In addition to the interviews with entrepreneurs, other people within the university were interviewed to triangulate the stories of the entrepreneurs (Jick 1979). Using a similar protocol as for the entrepreneurs, we interviewed 11 people in 15 interviews at TU/e and 5 people in 6 interviews at WUR. These interviews included the director and several other officers at the TTOs (including the

officers who represented the university in the negotiations with the entrepreneurs in our study) as well as entrepreneurship trainers and advisors. By means of these interviews, data were collected regarding general policies and practices dealing with advice, facilities, financing, networking, intellectual property policies, negotiations about intellectual property and costs of the facilities, and the procedures and regulations. Moreover, these respondents were questioned about the negotiations and their thoughts about the fairness perceptions of the entrepreneurs in the sample. As a next step in the triangulation procedure, archival data were consulted. These included business plans and other documents such as subsidy proposals written by the entrepreneurs, newspaper articles, brochures and website information. At the university level, archival data included documentation describing formal policies and protocols.

Data Analysis and Coding Procedures

Detailed analysis of fairness formation was performed by following coding procedures similar to those used by Hollensbe et al. (2008) and Butterfield et al. (1996). The transcribed interviews with entrepreneurs were first coded to identify fairness-related expressions. Entrepreneurs assessed in those expressions the fairness of the relationship with the university. Fairness assessments were primarily related to the support by the university in starting the venture, to the negotiations with the university, and to the procedures that the university uses to deal with new ventures. Typically, fairness perceptions most clearly surface in negotiations and renegotiations with the university's technology transfer officers (see Alvarez and Parker 2009; Reuer and Ariño 2002). QSR NVivo software served to build a code database. The fairness related expressions were coded using a dictionary containing pre-defined as well as new codes. The pre-defined codes included the rules underlying the established four fairness dimensions as reported by Colquitt (2001). Table 3 illustrates this coding process. For example, procedural fairness was coded strictly in terms of the seven rules used by Colquitt (2001) (e.g., quotes reflecting consistently applied procedures or the unbiased application of procedures). If a fairness quote did not reflect any of the established rules underlying the four existing dimensions, it got a new code and was assigned to the category of specific fairness rules that did not fit the predefined rules. This open coding process for specific rules became saturated at the 15th transcript,

when no more new codes were added. After coding all the transcripts, similar coding categories were clustered. To ensure the robustness of the findings, specific rules reported by three or less respondents were excluded (see Hollensbe, Khazanchi and Masterson 2008). This assessment resulted in nine final codes for specific fairness rules. Table 2 defines these final codes and displays representative coding examples. In addition, each transcript was coded in terms of fair or unfair perceptions.

To check the reliability of the coding, the secondary coding procedures advocated by Butterfield et al. (1996) and Hollensbe et al. (2008) were applied. Two independent coders unfamiliar with the study (two graduate students) applied the nine final codes for the identified specific fairness rules. These coders received the final codes and their definitions, together with a selection of expressions from the transcripts of all interviewees. First, the coders were instructed to make a yes/no judgment whether a passage reflected a fairness evaluation. Subsequently, they were asked whether this passage reflected a specific fairness rule or an established fairness rule, and if so, which one. The overall coding agreement was .83, which suggests that the final codes sufficiently fit the data. Moreover, the same procedure was used to check the accuracy of coding fair versus unfair perceptions, which resulted in 100% agreement.

To explore the use of the established fairness rules and the specific fairness rules, the effect of entrepreneurial experience and relational capital (indicated by the formal position) was explored (see Table 1). The coding of the transcripts for entrepreneurial experience and relational capital was also informed by information such as business plans and interviews with university officials.

Entrepreneurial experience is operationalized as follows: the experienced group involves entrepreneurs who had been involved in new venturing activities before; the inexperienced group involves entrepreneurs who were graduate students when starting a company, or faculty without any business experience. In ventures with multiple team members, experience can vary among team members. This effect is taken into account by qualitatively evaluating experience characteristics; for example, if most of the entrepreneurs in the team are experienced, the case is coded as experienced.

The entrepreneurs can be allocated to three groups with regard to their relational capital in the university organization. First, a number of entrepreneurs has high relational capital. This group includes tenured faculty members with a position in the university as full or associate professor.

Notably, these people have an important role in their department, also in terms of relationships with industry and funding performance. If these scholars start to exploit a technology (they invented themselves) in a new venture, they must negotiate a deal with the university about the transfer of this technology; this is an implication of the formal employment conditions. Here, national and university policies play a role – in particular, national law implying that intellectual property created during an employment contract is the employer’s property. The second group of entrepreneurs, entrepreneurs with medium relational capital and a ‘middle’ formal position, involves especially PhD students. PhD students are formally employed by the university, but only for four years and with the single goal of delivering a doctoral dissertation. These entrepreneurs started a new venture based on an invention which was part of their doctoral research. As such, they are part of the faculty, but without managerial tasks and only for a restricted period of time. Third, external entrepreneurs or MSc students exploiting a technology developed by someone else at the university are categorized as entrepreneurs with low relational capital and a ‘low’ formal position.

Boolean searches in NVivo were used to check for co-occurrence of certain fairness rules and particular entrepreneur characteristics (i.e., entrepreneurial experience and relational capital) within one interview transcript – in line with Miles and Huberman’s (1994) procedures regarding the use of tabular representations. This resulted in identifying patterns of how established fairness rules and identified specific fairness rules are used.

Results

This section describes the rules underlying the fairness perceptions of the entrepreneurs and examines to what extent these entrepreneurs draw on established fairness rules. In addition, individual characteristics (experience and relational capital) associated with the use of these rules are explored.

----- Insert Table 2 and Table 3 about here -----

Specific Fairness Rules versus Established Rules

Table 2 lists the specific fairness rules reported by the entrepreneurs. These rules are ‘specific’ to the entrepreneurship setting and are not reflected in the established rules underlying the four fairness dimensions identified in previous studies. Table 2 also provides a definition of each rule and gives

examples of quotes. In this section, these rules are mentioned using a shorthand description. For example, the rule ‘Draw on practices at other universities to assess the fairness of the transaction with the university’ is abbreviated as ‘other universities’. The following nine specific rules are identified.

‘Other universities’ and ‘market norms’ are rules in which the entrepreneurs use a different situation or scenario to compare their transaction with. The similarities or differences highlighted by this comparison serve to evaluate the fairness of the transaction. Sometimes, these market norms or practices at other universities are inferred from previous experiences, but in other cases market norms are based on public information or information received from others. For example, the founder of Sigma reported:

At university X they say: ‘If there is a patent and you can reach a good agreement between the spin-off and the university, for instance royalties as a percentage of the revenue generated by the patent, that’s okay. Then, we don’t need to have a share in the spin-off.’ But here they want both a royalty-agreement, in which they claim a part of the turnover, and they also want to have a share in the company. For me, that’s out of the question, it’s too much.

Other specific rules refer more to the negotiations and their content: ‘performance of the entrepreneur in the negotiations’, ‘easiness and length of the negotiation’, ‘venture control’, and ‘future value of the venture’. Especially ‘easiness and length of negotiation’ surfaces as a rule that is used by more than half of the entrepreneurs. The easiness and length of the negotiations are important because long negotiations can delay other venture-related activities; moreover, long and difficult negotiations tend to bring about many frustrations along the way. For example, the founder of Gimel reported:

Actually, I thought we had an agreement in June. We also had a letter of intent from a venture capitalist. The TTO wanted to invest as well. We also had an agreement over the patents. But, subsequently it still took half a year before the deal was actually finalized with the TTO. In the meantime, I already started with Gimel, on my own expenses. So, we were almost down and out when I finally could sign the contract. So, that was thrilling. (...) It finally turned out to be fine, but it was really not a nice experience. I certainly blame the TTO officer for this.

Furthermore, ‘negotiator support’, ‘cooperation and support by university’, and ‘entitlement of the university’ refer to the entity with whom the entrepreneurs negotiate. ‘Negotiator support’ refers to the support by the negotiator(s) to the entrepreneur, while the rule about ‘cooperation and support by the university’ refers to the cooperation with faculty, technology transfer officers and university employees in general. Especially cooperation and support by the university are important in forming fairness perceptions. Both rules are influenced by the entrepreneurs’ expectations. The founder of Rho reported:

In the back of your mind you know it is a negotiation. (...) But I didn’t expect it to be so hard. The TTO director is very commercial. That is good for the TTO. But on the other hand, I think he is too commercially oriented (...) to deal extensively with startups. (...) Especially with boffins, they raise their hackles in this case.

In addition to the specific rules identified, Table 3 shows examples of the use of established rules. In particular, the rules underlying the procedural justice dimension are frequently reported, whereas the distributive and interpersonal fairness dimensions are also observed regularly. Procedural fairness here particularly refers to the consistency in applying procedures over time and across cases and the degree to which these procedures and negotiations are free of bias. Entrepreneurs evaluated procedural fairness positively when they experienced that university representatives acted according to the procedures and that the university did not exploit its powerful position to enforce an outcome favorable for them; in other words, negotiators acted free of bias. The founder of Omega argued:

You easily get screwed [because] the university has the most powerful position. (...) It was a good thing they did not try to maximize their side of the deal, but considered the question: can we justify this deal to all stakeholders?

Entrepreneurs evaluating procedural fairness negatively perceived procedures to be unclear or not consistently applied. Technology transfer officers are responsible for both the support and the contractual agreements. In some cases, entrepreneurs experienced this as problematic because they felt the support decisions were not free of bias, as the officers appeared to create a better deal for the university.

Distributive fairness refers in these cases to assessing fairness based on what the entrepreneurs receive from the university in relation to what they pay for it. These payments are made in the form of venture equity, patent royalties or direct payments. In turn, the entrepreneurs receive support and are able to use university equipment, lab facilities and office space. Most importantly, they acquire the right to exploit intellectual property that is typically protected by a university-owned patent. Entrepreneurs who reported the distribution as fair evaluated the deal as acceptable because they got large returns on their ‘payment’. Entrepreneurs that perceived the distribution as unfair reported they could not find sufficient justification for the particular equity position or royalty payments.

Interpersonal fairness is especially evident in case of mistrust of university officials’ behavior in the negotiations, given their dual role with regard to support and agreements. For some entrepreneurs, this was the reason they mistrusted their counterpart in the negotiations. The founder of Epsilon reported:

They do not step into the shoes of the entrepreneur. They just try to get a good deal for the university. I doubt their honesty in the negotiations. (...) That’s a hard judgment, indeed.

Informational fairness rules were less frequently reported. Informational fairness referred mainly to timely and tailored communication (see Table 3).

A comparison of Table 2 and Table 3 indicates that established procedural and distributive rules are used more frequently than specific rules. Table 4 indicates that this is probably an artifact of the ‘scattered’ image created by the specific rules: each of these rules is in fact a single item construct, while the established four dimensions are multiple item constructs consisting of multiple rules (see Table 3). When all the rules are clustered as in Table 4, specific rules are slightly more frequently reported than established rules. Table 4 also demonstrates that most entrepreneurs use both specific and established rules, while the usage of specific and established rules hardly depends on a specific university context, given the similar patterns in the TU/e and WUR data.

----- Insert Table 4 about here -----

Specific Rules versus Established Rules Associated with Fair and Unfair Perceptions

Table 5 reports the use of specific rules and established rules associated with ‘fair’ or ‘unfair’ perceptions of the transaction with the university. This analysis suggests that entrepreneurs draw on

specific rules as well as established rules to form both fair and unfair perceptions. Table 5 again shows that specific rules show a more ‘scattered’ pattern. The results show small differences in rule usage between respondents who perceived the negotiations as fair and those perceiving the negotiations as unfair. The most important differences with regard to specific rules are as follows: ‘other universities’, ‘venture control’ and ‘entitlement university’ are more frequently associated with unfair perceptions, whereas ‘performance of entrepreneur in negotiations’, ‘negotiator support’ and ‘cooperation and support by the university’ tend to be related with fair perceptions. With regard to established rules, Table 5 suggests that distributive rules are more frequently associated with perceived unfairness. In general, all rules are used to form both fair and unfair perceptions, showing consistency in rule usage in this study.

----- Insert Table 5 about here -----

To check the robustness of the findings, the influence of equity and royalty percentages in the contract between university and entrepreneur on perceived fairness was explored. Table 1 shows that high royalty percentages, and especially high university equity stakes, tend to be unrelated to perceptions of unfairness (e.g., Beta, Gamma, Delta, Zeta). Even the founder of Epsilon, who ended up with an agreement in which the university did not have any equity, perceived the university as unfair. Calculations of the average percentages for the group with fair perceptions and the one with unfair perceptions imply that ventures in both groups have comparable quantities of equity shares owned by the university (fair: 21% on average; unfair: 17% on average). So, actual equity and royalty percentages are not an efficient predictor of fairness perceptions. Rather, the *perceived* control is likely to be a more important predictor as the rule regarding venture control does have an effect on fairness perceptions (see Table 5).

Fairness Rule Usage over Time

To explore consistency in using specific and established fairness rules, Table 6 reports the rule usage for those cases in which at least two interviews over time were conducted. The first interview took place during the negotiations and the second interview after the negotiations were finished. The time

between both interviews was approximately 12 months. Table 6 points out that the usage of the fairness rules is consistent over time.

----- Insert Table 6 and Table 7 about here -----

Fairness Rules Associated with Entrepreneur Characteristics

Table 7 reports the frequency with which particular groups of respondents employed specific rules and established rules. These results point at important differences between entrepreneurs in terms of experience and relational capital, suggesting that these characteristics are associated with the use of certain fairness rules.

With regard to specific rules, inexperienced entrepreneurs tended to refer more frequently to their own performance in the negotiations as well as to the easiness and length of the negotiation.

Interestingly, the use of market norms is quite similar among experienced and inexperienced entrepreneurs. However, the precise content of the interview data coded into this category suggests that experienced entrepreneurs draw more on market norms from previous transactions they were involved in, whereas inexperienced entrepreneurs are more likely to use market norms based on social or public information.

Moreover, inexperienced entrepreneurs draw on the rule ‘cooperation and support by university’ almost as frequently as their experienced counterparts. However, in-depth examination points out that experienced entrepreneurs use this rule more frequently to form a fair evaluation, whereas inexperienced entrepreneurs connect this rule more frequently to unfairness. Experienced entrepreneurs were prone to evaluate the university’s wish for a certain equity position in terms of aligning different interests. For them, it also expressed commitment from the university. For example, the founder of Lambda argued:

It is also an important means to continue the cooperation with TU/e. If it turns out that we have something that generates a lot of profit, the university will also get a piece of the pie. That’s very fair. Besides that, it’s a lot more transparent this way. We also show that we are closely cooperating with the university.

In contrast, the inexperienced entrepreneurs in our sample often complained that the university was not cooperative and not committed to their venture.

With regard to established rules, the results show that inexperienced entrepreneurs referred more frequently to established rules of distributive, procedural and informational justice. Within the items coded for procedural fairness, the data suggest that inexperienced entrepreneurs referred more frequently to other (i.e., consistency among) cases than experienced entrepreneurs.

Also differences in relational capital (formal position) are associated with differences in rule usage. The most important differences are observed between entrepreneurs with high relational capital on the one hand and entrepreneurs with medium and low relational capital on the other hand. Entrepreneurs with high relational capital used ‘market norms’, ‘easiness and length of negotiation’ and ‘cooperation and support by university’ less frequently, whereas they more frequently drew on rules regarding ‘negotiator support’ and ‘venture control’. The founder of Theta reflected as follows on the negotiations:

I would never accept the university as a majority equity-owner again. (...) They could, maybe, have like 40% of the shares but would never be majority owner again.

Discussion

This study aims to provide a more in-depth understanding of fairness as a key factor affecting entrepreneur-university cooperation. To understand how those entrepreneurs form fairness perceptions, this study explored the fairness rules that they employ, and assessed how the use of entrepreneurship-specific fairness rules complements the use of established fairness rules described in the literature. This section discusses the main findings and their implications.

Complementary Rules

Our empirical findings suggest that established fairness rules are applicable to the formation of fairness perceptions by entrepreneurs cooperating with a university. Especially the procedural fairness rules are frequently employed, which confirms that focusing on procedural fairness is a good proxy for measuring overall fairness perceptions (Akgün, Keskin and Byrne 2010; Busenitz, Moesel, Fiet and Barney 1997; Busenitz, Fiet and Moesel 2004; Sapienza and Korsgaard 1996). However, our results also demonstrate that established fairness rules do not cover all aspects of the formation of

fairness perceptions by entrepreneurs regarding their cooperation with a university (see Ariño and Ring 2010). Some rules specific to this entrepreneurship setting appear to be missing in current operationalizations of fairness, and thus extend and complement the four fairness dimensions previously established in the literature.

Two specific rules can possibly be included in the distributive fairness dimension, namely ‘negotiator support’ and ‘cooperation and support by university’, if support is viewed as a resource provided in the exchange relationship (see Colquitt 2001). Our results show that these rules are associated with differences in fairness evaluations. Thus, these specific rules are important measures of resources provided by the university in the exchange relationship, which could be used to measure distributive fairness in the context of relationships between entrepreneurs and universities. Note that these specific rules, and also the ‘entitlement university’ rule, consider the university as the ‘larger entity’ entrepreneurs are dealing with. This confirms earlier findings that rules regarding the entity are important (Hollensbe, Khazanchi and Masterson 2008) and that new venturing processes are influenced by the university’s actions to enhance clarity in procedures (Ambos, Mäkelä, Birkinshaw and D’Este 2008; Vohora, Wright and Lockett 2004). ‘Entitlement university’, however, is difficult to connect with any of the established fairness dimensions. There is no category dealing with expectations or entitlement, while the distributive fairness construct only evaluates the ratio of outputs versus inputs. Further investigation is needed to determine whether and how this rule can be considered as part of one of the established dimensions.

The specific fairness rules ‘other universities’ and ‘market norms’ can be considered as complementary to the distributive and procedural fairness dimensions. These specific rules show that the entrepreneurs in our study not only use the rule of distributive fairness to evaluate contributions and benefits and the rule of consistency across similar cases (which belongs to the dimension of procedural fairness), but also compare with more distant reference transactions – which is not included in Colquitt’s (2001) conceptualization. As such, these two specific rules surface as complementary context-specific procedural fairness rules by which the entrepreneurs evaluate their case by a social comparison process. This implies that future research assessing fairness perceptions

of entrepreneurs should include consider the perceived consistency with market transactions or with other reference transactions to enhance established measurements of procedural fairness.

The specific rule of ‘easiness and length of negotiation’ is another process-related rule is not reflected in the Colquitt (2001) conceptualization of procedural fairness. The frequent usage of this rule and its association with both fair and unfair perceptions suggest, however, that duration effects are important. This is in line with earlier research on entrepreneurs (Steffensen, Rogers and Speakman 2000). Such a duration effect of the negotiation process uncovers a new aspect of fairness evaluations. Existing studies have observed effects of negotiation duration, such as the effect of deadlines on the number of offers (Lim and Murnighan 1994), but effects on fairness perceptions have not been previously observed. This finding suggests that, in addition to consistency in procedures, the duration of these procedures matters. This rule can also enhance understanding and measuring the formation of fairness perceptions of negotiations. As such, this rule constitutes an important complement to other rules in the procedural justice dimension.

Unique Rules for Entrepreneur-University Cooperation

The results also show a number of rules which are difficult to connect to the established fairness dimensions and may be unique to the university-entrepreneurship setting. The first unique rule is the ‘performance of the entrepreneur in negotiations’. In particular inexperienced entrepreneurs tend to use their own performance as a reference point. This fairness rule is not covered by any of the established dimensions. It could be related to overconfidence and the control focus of entrepreneurs (Busenitz and Barney 1997; Mueller and Thomas 2001) and thus may be specific to entrepreneurship.

Unforeseeable uncertainty and the importance of venture control are specific characteristics of the entrepreneurship setting (Loch, Solt and Bailey 2008; Shane 2003). These characteristics also surface in specific fairness rules which are difficult to connect to the established organizational justice dimensions. Unforeseeable uncertainty is reflected in the fairness rule ‘future value’, as the amount of future value that still has to be created is unknown and is contingent on unknown future events. The

frequent usage of this rule indicates that many entrepreneurs are concerned about the estimation of future value and the distribution of appropriation rights.

The fairness rule ‘venture control’ is often associated with unfair perceptions, implying that perceived venture control indeed does influence fairness assessments (see Alvarez and Parker 2009; Jensen and Thursby 2001). Here, our study contributes to the fairness literature by showing that *perceived* rather than actual control is associated with fairness perceptions.

Individual Entrepreneur Characteristics

An important individual characteristic influencing rule usage is the experience of the entrepreneur.

This finding extends earlier findings regarding the effect of entrepreneurial experience and the resulting cooperative behavior (see Busenitz, Moesel, Fiet and Barney 1997; Dew, Read, Sarasvathy and Wiltbank 2009; Lee and Tsang 2001) by specifying how these fairness perceptions are constructed differently by experienced and inexperienced entrepreneurs. Studies on university-related entrepreneurship concluded that the experience of founders is an important predictor of performance in this context (Franklin, Wright and Lockett 2001; Grandi and Grimaldi 2005; Van Burg, Romme, Gilsing and Reymen 2008). Our study explains on the micro-level how experience may influence performance through the formation of perceptions of fairness. Inexperienced entrepreneurs refer more often to their own performance than experienced entrepreneurs (see Table 7), resulting more frequently in unfair perceptions by inexperienced entrepreneurs (see Table 5). Although the reference to own performance during the negotiations is a self-efficacy effect, consistent with attribution theory (Gilliland 1993; Ployhart and Ryan 1997), this effect is not systematically included in previous fairness studies. Our results suggest that this attribution effect is especially important for inexperienced entrepreneurs, possibly because their perceptions are more easily influenced by new experiences. Moreover, inexperienced entrepreneurs seem to search for more information to gain control over the situation, especially reflected in informational fairness (see Table 7), and the perceived lack of (timely) information is associated with unfair perceptions (see Table 5).

Another important individual characteristic is the relational capital of the entrepreneur in the university. The results extend earlier findings that entrepreneurs with high relational capital (indicated

by higher formal positions) in universities, such as professors, are more inclined to accept the procedures of the incumbent organization (Bercovitz and Feldman 2008; George et al. 2006). Our results show how relational capital and formal positions precisely impact the formation of fairness perceptions by entrepreneurs. Entrepreneurs with high relational capital do not refer to other universities or market transactions, nor use interpersonal and information fairness rules as frequent as entrepreneurs with lower levels of relational capital such as PhD or graduate students (see Table 7). However, given that these entrepreneurs have an established relationship with the university, they are also likely to have high expectations regarding the TTO's support as expressed in the 'negotiator support' rule, which is associated with fair evaluations (see Table 5 and 7). Moreover, our results suggest that entrepreneurs with high formal positions expect that they will get a substantial say in the venture, in particular in terms of control and ownership (see 'venture control' in Table 7). This extends earlier studies on governance of new ventures (Alvarez and Parker 2009; Alvarez and Barney 2005), by identifying differences in the amount of relational capital of entrepreneurs. An endowment effect (see Thaler 1980) appears to be at work here: the research efforts they have engaged in over a longer period of time may lead to a rise of their expectations of ownership of the invention.

In contrast, entrepreneurs with lower levels of relational capital in the university tend to search for external reference points to assess the fairness of the university, such as practices at other universities and market norms. They also employ more additional fairness rules, implying they are trying to underpin their assessment of the transaction with the university in great detail. Especially perceived cooperation with the university appears to be critical in this case. Some of these additional fairness rules are more associated with fair perceptions, such as 'cooperation and support by university', while others are associated with unfair evaluations, such as distributive and informational fairness rules (see Table 5). This exploration suggests that relational capital impacts the formation of fairness perceptions, thus adding an important new insight to the existing knowledge regarding entrepreneur-university cooperation, as most studies do not take relational capital effects into account.

Generalizability, Limitations and Future Research

The results of this study evidently apply to the context of the cooperation between entrepreneurs and a university to commercialize university-owned technology. A very similar setting is the cooperation between large corporations and their spin-offs. In these contexts, cooperation is important and the relationship is characterized by unequal power distribution. Our findings may also apply to other settings with these characteristics, such as relationships between entrepreneurs and investors such as venture capitalists, and between biotech entrepreneurs and large pharmaceutical firms. However, the relational capital effect may operate differently in those contexts, because the incumbent entrepreneurs are not initially embedded in the host organization.

This study comes with a number of limitations. First, the inductive nature of our research design limits its external validity. Strictly speaking, the findings only carry validity for fairness perceptions of entrepreneurs with regard to their host university. Moreover, fairness perceptions can be different in other cultures. Therefore, it is important to explore whether the fairness conceptualizations identified in this article also hold in different cultural settings. Future work needs to test the use of the complementary and unique fairness rules in other settings and on a larger scale. Second, we were not able to analyze in much detail the dynamics of fairness rules and fairness perceptions over a longer period. Third, some specific rules need further refinement. For instance, the ‘venture control’ rule may be studied in more detail by distinguishing between degree of ownership, control rights, shareholders’ interests and dilution provisions.

Conclusions

Studies of entrepreneur–university cooperation have demonstrated that (un)fairness perceptions by entrepreneurs impact the degree of cooperation and learning in this relationship. Current understandings of the formation of these fairness perceptions and their effect on cooperation draw on established organizational justice theory developed in the employer–employee setting. This study was set up to develop a better understanding of entrepreneur–university cooperation and explored which rules guide the formation of fairness perceptions in the cooperation between entrepreneurs and universities. This constitutes an important void in the literature because this context differs from regular organizational settings in view of unforeseeable uncertainty and the importance of venture

control. Nine entrepreneurship-specific fairness rules were identified that are used to form fairness perceptions, in addition and complementary to established rules. Furthermore, fairness formation appears to be influenced by entrepreneurial experience and the entrepreneur's relational capital within the university. As such, this study provides a better understanding of how entrepreneurs with varying positions and levels of experience construct fairness perceptions in cooperating with a university. In fact, fairness perceptions may explain why entrepreneurs' cooperative behavior may differ from what is expected from a 'rational economic' point of view, for instance by explaining why entrepreneurs unexpectedly show uncooperative behavior (Kim and Mauborgne 1998; Pillutla and Murnighan 1996). In this way, our study uncovers one of the key mechanisms leading to (un)cooperative behavior of entrepreneurs. The rules identified in this study provide clues for entrepreneurs who wish to effectively cooperate with universities as well as with other organizations, and vice versa.

This research has practical implications for technology commercialization processes at universities. The identified fairness rules can guide the design of procedures and practices that increase and maintain fairness perceived by entrepreneurs and thus build effective cooperative relationships. Special attention should be paid to the easiness and length of the negotiations, several aspects of cooperation and support, and the appreciation of the future value of the company. Technology transfer officers should be aware of differences between entrepreneurs, in particular regarding the level of experience and relational capital. Overall, this study suggests that a sustained effort to enhance perceptions of fairness will pay off. Positive fairness perceptions facilitate an open exchange between entrepreneurs and universities, which in turn is instrumental in effectively commercializing university technology.

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Table 1
Cases, Data Collection and Fairness Perceptions

Name	Interviews	Relational Capital	Experience	University Equity Shares and Royalties	Fairness Evaluation
<i>TU/e</i>					
Alpha	1	Low	High	<10% + royalties	Fair
Beta	2	Low	High	20%-30%	Fair
Gamma	1	High	High	50-60%	Fair
Delta	1	Low	High	30%-40% + royalties	Fair
Epsilon	2	Low	High	None	Unfair
Zeta	2	Low	Low	90-100%	Fair
Eta	1	Low	High	10-20%	Unfair
Theta	1	High	High	90-100%	Unfair
Kappa	1	High	High	None	Fair
Lambda	1	Middle	High	<10%	Fair
Mu	1	Low	Low	<10%	Fair
Xi	1	Middle	Low	<10%	Fair
Rho	2	Middle	Low	<10%	Unfair
Sigma	3	Middle	Low	<10% + royalties	Unfair
Tau	3	Middle	Low	<10% + royalties	Fair
Upsilon	1	Middle	High	None	Fair
Phi	1	Middle	Low	None	Unfair
Psi	1	Middle	Low	50%-60%	Fair
Omega	3	Low	Low	10%-20%	Fair
<i>WUR</i>					
Aleph	1	High	High	None	Unfair
Beth	1	High	High	None	Fair
Gimel	1	High	Low	40%-50%	Unfair
Daleth	1	Middle	Low	None	Fair
Vau	1	Middle	High	None	Fair
Yod	1	Low	Low	None	Unfair
Lamed	1	Low	Low	None	Unfair

Table 2
Specific Rules Used by Academic Entrepreneurs to Form Fairness Perceptions

Specific Rule (Abbreviated)	Number (Percentage) of Respondents Reporting Rule	Description	Sample Quotes
Other universities	9(38)	Draw on practices at other universities to assess the fairness of the transaction with the university.	I have talked with other entrepreneurs, who negotiated with other universities. What I learned is that it's really unfair and impossible at other universities. I'm very happy I have started from this university. (...) And I think this university is constructive, more than other universities. (Alpha, translated)
Market norms	12(50)	Use a transaction in the market to assess the fairness of the transaction with the university.	They [the TTO] ask some serious offers. Especially when you experience what your idea is worth in the venture capital market, you start to think: you are just a son of a bitch that you ask so much. (Epsilon, translated)
Performance of entrepreneur in negotiations	4(17)	Use my performance during the negotiations to assess the fairness of the transaction with the university.	We got a really good deal. It was good that TU/e got the impression that they shouldn't push us too hard, as they expected we otherwise would withdraw. [laughing] In that respect, we played it very well. (Omega, translated)
Negotiator support	7(33)	Use the level of support by the (TTO) negotiator during negotiations to assess the fairness of the transaction with the university.	I expected that a TTO would provide support to start a new venture. But they didn't do that at all. They only positioned themselves as a negotiator on behalf of the university. (Gimel, translated)
Easiness and length of negotiation	13(54)	Use the length and easiness of negotiations to assess the fairness of the transaction with the university.	This 10% equity participation was settled quickly. We can negotiate very long to make it 9 or 11 percent, but that does not matter eventually. (...) We actually did not mess around too much about one or two percent. I think that that was good, because both parties now feel very good and this also influences [the cooperation]. (Xi, translated)
Cooperation and support by university	17(71)	Use the degree of support of and cooperation with the university in general to assess the fairness of the transaction with the university.	You better have a good basis, that TU/e is supporting you, and that the researchers cooperate. This maybe results in a different distribution, in which there is less left for yourself. But it gives a broader base to continue [with the venture]. (Omega, translated)
Venture control	10(38)	Use the degree of venture control by the university to assess the fairness of the transaction with the university.	Even if TU/e has a minority participation, they can make it immensely hard if they want, with the entire bunch of lawyers they have. I just don't want this within my company. (Phi, translated)
Future value	11(46)	Use potential future value or revenues of the venture to assess the fairness of the transaction with the university.	We pay something like 5% of royalties over the profit, with a maximum of 200K Euro. But if we start paying this, we talk about such huge amounts of money [that we are gaining]... At that moment, I couldn't care less. They may get their 200K. Very easy. (...) At the moment that we make these large profits, it is fair to bring something back in this way. At the moment that [it] does not happen [making profits], it is a pity for both parties. (Delta, translated)
Entitlement university	6(25)	Use my normative position regarding university commercialization practices to assess the fairness of the transaction with the university.	I think it is stupid that I had to negotiate with the university. I think that the principle is wrong. (...) The university should have said: 'You know what? We will just give you the technology for a symbolic fee.' The university does not need to make profit, do they? (Epsilon, translated)

Table 3
Established Rules Used by Academic Entrepreneurs to Form Fairness Perceptions

Established Fairness Dimension	Number (Percentage) of Respondents Reporting Rules of this Dimension	Established Rules Underlying the Fairness Dimension (Adapted from Colquitt, 2001)	Sample Quotes
Distributive	17(71)	Determine the balance between my (venture's) contributions and benefits (in terms of effort, equity, royalties, access to facilities, direct payments, etc) to assess the fairness of the transaction with the university.	Then I started to make an inventory of what it all would cost [that I was using from the university]. We attached a sum to that. When Phi starts to really run, I will pay it back. At this moment, it is a subordinated loan. I can live with that, that's fair: I use something, so I pay this back. (Phi, translated)
Procedural	19(79)	The following rules refer to the procedures used to arrive at the contract. Evaluate the extent to which: <ul style="list-style-type: none"> - I have been able to express views and feelings during the procedures; - I had influence over the contract arrived at by the procedures; - the procedures have been applied consistently; - the procedures have been free of bias; - the procedures have been based on accurate information; - I have been able to appeal the contract arrived at by the procedures; - the procedures upheld ethical and moral standards; to assess the fairness of the transaction with the university.	<p><i>Free of bias:</i> I feel it is double, I don't want to ask TU/e for advice, because they give the kind of advice and support that is gives them a better [negotiation] result. I don't think that's a good thing. (Sigma, translated)</p> <p><i>Consistent application of procedures:</i> Other entrepreneurs, who add less value themselves, get better deals. Very honestly speaking. (Tau, translated)</p>
Interpersonal	12(50)	The following rules refer to the university representative responsible for the negotiations. Evaluate the extent to which: <ul style="list-style-type: none"> - he/she has treated one in a polite manner; - he/she has treated one with dignity; - he/she has treated one with respect; - he/she has refrained from improper remarks or comments; to assess the fairness of the transaction with the university.	<p><i>Respect:</i> Finally, it was hard bargaining. When I would have known that from the start, I would have started negotiating differently. (...) And I would like to question if the university really needs to negotiate that hard with her start-ups. (...) The way they did it could have been more respectful. (Rho, translated)</p>
Informational	7(29)	The following rules refer to the to the university representative responsible for the negotiations. Evaluate the extent to which: <ul style="list-style-type: none"> - he/she has been candid in his/her communications; - he/she explained the procedures thoroughly; - his/her explanations regarding the procedures were reasonable; - he/she communicated details in a timely manner; - he/she seemed to tailor his/her communications to individuals' specific needs; to assess the fairness of the transaction with the university.	<p><i>Timely communication:</i> It is very unclear, I don't see a standardized process, I should say. Everything should come from our side. We now started to negotiate with TU/e about the license. And we also got the feeling that we should start negotiating about an equity participation. But again, they don't inform us: let's start talking about that. We should apparently initiate that ourselves. (Rho, translated)</p>

Table 4
Specific Fairness Rules versus Established Fairness Rules

Fairness Rule	Number (Percentage) of Respondents Reporting Rule at BBU	Number (Percentage) of Respondents Reporting Rule at ARU
Specific rules	19 (100)	7 (100)
Established rules	18 (95)	5 (71)

Table 5
Rule Usage Associated with Fair and Unfair Perceptions

Fairness Rule	Number (Percentage) of Respondents Reporting Rule	
	Fair	Unfair
<i>Specific rules</i>	14 (100)	12 (100)
Other universities	4 (29)	4 (33)
Market norms	7 (50)	6 (50)
Performance of entrepreneur in negotiations	3 (21)	1 (8)
Negotiator support	5 (36)	3 (25)
Easiness and length of negotiation	7 (50)	6 (50)
Cooperation and support by university	11 (79)	7 (58)
Venture control	4 (29)	7 (58)
Future value	6 (43)	5 (42)
Entitlement university	2 (14)	4 (33)
<i>Established rules</i>	10 (71)	11 (92)
Distributive	7 (50)	9 (75)
Procedural	11 (79)	9 (75)
Interpersonal	7 (50)	5 (42)
Informational	3 (21)	4 (30)

Table 6
Rule Usage Over Time (In 3 Cases)

Fairness Rule	Time 1	Time 2
<i>Specific rules</i>	4	4
Other universities	1	1
Market norms	3	3
Performance of entrepreneur in negotiations	1	2
Negotiator support	0	0
Easiness and length of negotiation	1	3
Cooperation and support by university	2	3
Venture control	1	1
Future value	3	2
Entitlement university	2	0
<i>Established rules</i>	4	3
Distributive	2	3
Procedural	4	3
Interpersonal	2	2
Informational	3	1

Table 7
Rule Usage Associated with Entrepreneur Characteristics

Fairness Rule	Number (Percentage) of Respondents Reporting Rule				
	Experience		Relational Capital		
	High	Low	High	Medium	Low
<i>Specific rules</i>					
Other universities	4 (33)	4 (29)	2 (29)	4 (50)	2 (18)
Market norms	6 (50)	6 (43)	1 (14)	4 (50)	7 (64)
Performance of entrepreneur in negotiations	1 (8)	3 (21)	0 (0)	1 (13)	3 (27)
Negotiator support	4 (33)	4 (29)	4 (57)	1 (13)	3 (27)
Easiness and length of negotiation	4 (33)	9 (64)	2 (29)	5 (63)	6 (55)
Cooperation and support by university	8 (67)	9 (64)	2 (29)	5 (63)	11 (100)
Venture control	5 (42)	5 (36)	4 (57)	3 (38)	3 (27)
Future value	5 (42)	6 (43)	1 (14)	5 (63)	5 (45)
Entitlement university	3 (25)	3 (21)	1 (14)	3 (38)	2 (18)
<i>Established rules</i>					
Distributive	7 (58)	10 (71)	4 (57)	7 (88)	6 (55)
Procedural	7 (58)	11 (79)	4 (57)	6 (75)	9 (82)
Interpersonal	5 (42)	7 (50)	2 (29)	5 (63)	5 (45)
Informational	0 (0)	7 (50)	1 (14)	3 (38)	3 (27)