Research partnerships between business researchers and industry.

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Abstract
We study the strategic behaviour of management researchers when establishing research partnerships with industry. To this end we developed a framework distinguishing ‘strategic planned’ and ‘opportunity-driven’ behaviour in the process of establishing and managing research partnerships. We also explore how researchers deal with influence of firms on their research. Specifically, we focus on the tension between autonomy of researchers and influence from an industry research partner in setting research directions and producing scientifically reliable and publishable knowledge.

The main conclusion from the analysis of the strategic behaviour of management researchers is that researchers in our sample have a high need for sharing resources with industry and at the same time they are autonomous when setting research directions in joint projects with industry. One of the major observations in this study is that researchers have to give up their autonomy to a certain extent when accepting the terms of collaboration with industry, but they have a high need for autonomy when deciding about research directions and execution of research. Even though they need to seek external funding, it is their choice to enter a specific relationship with industry and accept restrictions on their autonomy. We present data and an analysis of the strategic behaviour of researchers in different phases of research partnerships.

Keywords
Research partnerships, business (management) researchers, industry, strategic interdependence, organisational autonomy

1 Introduction
University-industry interactions (UII) have been evolving from informal ad hoc cooperation to strategic alliances (Perkmann and Walsh, 2007). These interactions can represent different degrees of planned engagement and involve research partnerships, contract research as well as consulting (Perkmann and Walsh, 2007). There are more and more research partnerships between university researchers and industry (Hall et al., 2001). Research partnerships between university and industry are successful if both the university and industrial partners are committed to the project, there are clearly defined objectives and trust resulted from e.g. previous connection between the partners (Mora-Valentin et al., 2004). Literature discusses factors that influence knowledge transfer such as research group characteristics (Olmos-Penuela et al., 2014), individual charac-
teristics (D’Este and Patel, 2007; Perkmann et al. 2011), experience with industry (Bercovitz and Feldman 2003), career stage (Bercovitz and Feldman 2003; Link et al., 2007), as well as grants and contracts with industry (Bozeman and Gaughan 2007). We still, however, lack knowledge on how the relationships between university and industry develop and how these relationships should be managed to deliver expected outcomes.

UII with university partners from social sciences, and business sciences in particular, have been not studied extensively so far. One of the reasons may be that the outcome of knowledge transfer in these domains is less tangible than the outcome of natural sciences and engineering (Crossick, 2009), and hence more difficult to analyse. This is a pity, as social scientist’ engagement has reached the similar level as in natural sciences and engineering (Olmos-Penuela et al., 2014), and social sciences and humanities became more aware of the need to transfer knowledge to industry (Olmos-Penuela et al., 2014). However, the nature of social scientists’ interactions differ in that is channeled mainly via consultancy and contract research and not via e.g. patents as in engineering (Olmos-Penuela et al., 2014) and the relationships between social scientists and firms differ from those in natural sciences and engineering as they are most of the time rather informal than contractual (Olmos-Penuela et al., 2013).

This paper adds to the literature on the engagement of business (management) researchers with industry and the dynamics of the research relationships between researchers and firms. We ask the question: What is the strategic behaviour of management researchers regarding research partnerships with industry? We are particularly interested how researchers deal with influence of firms on their research. We focus on the tension between autonomy of researchers and influence from an industry research partner in setting research directions and producing scientifically reliable and publishable knowledge.

We first present a theoretical framework, then discuss the method and measurement of the concepts derived from the literature. This is followed by an analysis of the interviews with management researchers at Dutch technical universities. We end the paper with the discussion and conclusions.

2 Theoretical background

The main driver for collaborations is the sharing of resources. Sharing heterogeneous resources is a necessary condition for any alliance (Kale and Singh, 2009), also a university-industry (U-I) research alliance. Researchers seek external funding (Wilts, 2000), gain access to resources such as facilities (D’Este and Patel, 2007) and knowledge (D’Este and Perkmann, 2010). Firms seek access to state-of-the-art technologies and applicable research results (Perkmann et al., 2011).

From a researcher perspective, an U-I partnership also comes with costs. Engaging in a partnership requires time and allocation of other resources as well as involves sharing decision-making and responsibilities for the research process with a firm. It is therefore
a strategic choice to engage in a relationship that eventually might help researchers to attain their goals of increased knowledge production (Bozeman and Corley, 2004). At the same time, they aim primarily at the production of knowledge and rather on transferring knowledge to their peers than to society (Merton, 1957). They may see a U-I partnership as a means, rather than as a goal in itself.

To study research alliances and understand their organisation we apply the strategic positioning theory (SPT, Kurek et al., 2007; Zalewska-Kurek et al., 2016). SPT is rooted in the literature on alliances and integration of organisations (Haspeslagh and Jemison, 1991). Here, a successful integration of organisations depends on the alignment of the need for strategic interdependence (sharing of heterogeneously distributed resources and competences) and the need for organisational autonomy (making decisions about the organization, its goals, strategy, and culture). These needs result from the goals of the merging organisations. This approach has been adapted to the level of individual researchers (Kurek et al., 2007; Zalewska-Kurek et al., 2016). In alliances, researchers try to maximise their autonomy (Merton, 1957; Fullwood et al., 2013) but might need to give up it to a certain extent depending on their goals (Kurek et al., 2007).

Model 1 – the ivory tower type of researchers have a high need for autonomy. Because of the low need for sharing resources, they do not engage with industry but are focussed on purely academic interests (see Mode 1 of Gibbons et al, 1994). Mode 2 researchers, have a high need for external resources but a low need for making decisions in their research. Hence, they will depend on their environment in developing their research. Mode 2 researchers reply on the demand of a firm rather than have a large influence on research projects (see Mode 2 of Gibbons et al., 1994). Mode 3 implies a strong position of a researcher in relationships with firms. The research entrepreneur has influence on decisions but at the same time listens to his/her research partners.

Fig. 1 Modes of researchers' behaviour
To capture the dynamics of these interactions and of exchange of power and influence between the partners we use the framework of Bingham et al. (2014) on opportunity selection and opportunity execution. A firm can operate in a focussed (strategically planned)’ or flexible (opportunity-driven) way, when selecting opportunities to enter new (foreign) markets, and when executing its strategy in these new markets. We translate the idea of opportunity selection/execution and focus/flexibility to individual researchers and to the opportunities when producing knowledge as well as to choices they make when choosing a research partner, deciding on research directions and when carrying out research. Bingham’s framework is a basis for structuring the partnership process and for understanding choices researchers make regarding the production of knowledge. The managerial modes of mode1, mode2 and mode3 are therefore nested in the framework of choosing opportunities.

Researchers are strategic or flexible when they select (i.e. generate a research idea, select research partners, set research directions) and execute (i.e. conduct research). A strategist is a researcher that plans ahead and selects projects which fit his or her strategy. An opportunist is somebody who accepts opportunities as they come. The planned and opportunity-driven behaviour is continuous and researchers might be positioned at any place in the continuum ranging from highly strategic to very flexible. Bingham states that firms are better off when focused (strategic planned) when selecting opportunities but should be flexible – experiment and iterate – in execution in dynamic environments (2014). For researchers this would mean that they should be autonomous when setting research directions and initial research goals, and be able to give up their autonomy to a certain extent and accept firm’s influence in the research process.

3 Methodology

3.1 Sample and data collection

The data for this study are being collected at Dutch universities. Up till now, we conducted 10 interviews with professors as lead scientist and PhD students as key agents in executing research. The academics were selected based on their involvement in industry-related projects. Industry is here broadly understood and includes commercial firms, associations of firms and professionals as well as large public national or European organisations that are organised like firms, excluding funding agencies. We selected the interviewees from management researchers as examples of social sciences. All of them were involved in at least one industry project at the moment of the interview. The projects differed in terms of resources exchanged and all, but one, were financially supported by industry. We asked the interviewees to answer the open-ended questions on an example of their most representative research project with a firm. All but one talked about PhD projects.
The data were gathered in semi-structured face-to-face or Skype interviews. Before the interviews we checked the activity profiles of academics to prepare questions investigating specific aspects of their research behaviour.

3.2 Measurement

The concepts measured in this study are derived from the Bingham framework on strategic choices and the strategic positioning theory. We distinguish between the opportunity selection phase of a research project (partner selection, negotiations about research process and topic) and the opportunity execution phase (execution of the research itself). We began each interview with questions on the beginning of the project to find out about the selection of the partner, who was the initiator, who had an idea for research, the reason to choose a specific partner, what was decided upon the governance of research and research directions. This indicated whether this project was ‘strategic planned’ or ‘opportunity-driven’. Strategists approach a firm to join a project that fits their research programme specifically or they accept an offer to perform joint research that is in line with their programme. Opportunity-driven behaviour is indicated by acceptance a project that fits the general research interest or lies in the competences of the researcher but might not be on the agenda. Opportunity-driven researchers do not think how an opportunity builds up their programme rather they think that it might lead to future opportunities.

We also asked about the research process and its governance as well as the potential divergence of it at later stages of the partnership (opportunity execution). This divergence is assumed to be caused by the open nature of research. In the beginning, it might be not clear what the precise outcome of a research project will be, particularly if the project goal is focused on knowledge generation only rather than on knowledge application of generated knowledge in a specific organisational context. The questions regarding decisions that are made during the process and who makes them, communication between the partners, potential changes in research directions, responsibilities of a PhD students towards a firm, embeddedness of a PhD student in the firm, resources shared, potential conflicts and disagreements, mutual contribution, nature of the research, restrictions on dissemination of research results, coordination and formality of the partnership, commitment and engagement of the firm. In this way we observed strategic planned behaviour, opportunity-driven behaviour and the needs for interdependence and for autonomy of the interviewees.

The need for strategic interdependence of the researcher is defined as the need for access to heterogeneously distributed strategic resources, assets and capabilities for performing research tasks. Resources needed for research are measured as: access to data, research facilities, expertise, funds, feedback, knowledge, skills and networks. Organisational autonomy understood as governance includes all organisational decisions in research, in the case of this research: setting research goals, acquisition of research funds and other funds, decisions on with whom to collaborate, on what resources from whom to acquire, and decisions with regard to disseminating research results. Research-
Researchers have high organisational autonomy if they have influence and power on research directions, research governance including dissemination of results. Taking the lead in the determination of the project’s purpose, governance, and deliverables during the project without a large deviation from the set direction caused by the other partner indicates high organisational autonomy. Researchers who let others deciding on the quality of work, research goals, etc. indicate a low autonomy.

Table 1 presents a code manual for the thematic analysis used in when analysing the interviews.

<table>
<thead>
<tr>
<th>Code 1</th>
<th>Strategic planned behaviour (Bingham et al., 2015; David, 2011)</th>
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<tbody>
<tr>
<td>Label</td>
<td>Strategic planned behaviour (Bingham et al., 2015; David, 2011)</td>
</tr>
<tr>
<td>Definition</td>
<td>Behaviour that focuses on the long-term planning as well as long-sighted decision making of one partner with the goal of mutually enhancing the own resource base and achieving overall success for all partners.</td>
</tr>
<tr>
<td>Description</td>
<td>The chosen and retained focus that is chosen by a partner is characterised by a long-term perspective and the objective of mutual goal attainment. Formalisation supports the strategic focus.</td>
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<tr>
<th>Code 2</th>
<th>Opportunity-driven behaviour (Bingham et al., 2014, David, 2011)</th>
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<tbody>
<tr>
<td>Label</td>
<td>Opportunity-driven behaviour (Bingham et al., 2014, David, 2011)</td>
</tr>
<tr>
<td>Definition</td>
<td>Behaviour which is more driven by the short-term capture of appearing opportunities and which focuses, besides mutual value creation, also on more direct valorisation of project deliverables for either side of the partnership.</td>
</tr>
<tr>
<td>Description</td>
<td>The opportunity potential as a driver makes a partner acting more flexible and adaptive. Less formalisation allows for maneuverability within the execution phase.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Code 3</th>
<th>Strategic interdependence (Varadarajan et al., 2001; Zalewska-Kurek et al., 2016)</th>
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<tbody>
<tr>
<td>Label</td>
<td>Strategic interdependence (Varadarajan et al., 2001; Zalewska-Kurek et al., 2016)</td>
</tr>
<tr>
<td>Definition</td>
<td>The dependency of each partner on its counterpart’s resources, assets, and capabilities with the goal of synergistic and mutually advantageous value creation.</td>
</tr>
<tr>
<td>Description</td>
<td>High degree: reciprocal relationship with mutual dependencies. Sharing many resources. Firm sponsors the research. Low degree: unilateral relationship with the highest benefit for one</td>
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partner. Researcher does not depend highly on firm’s resources to do research.

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<th>Code 4</th>
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<tr>
<td>Label</td>
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<tr>
<td>Definition</td>
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<tr>
<td>Description</td>
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</tbody>
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Table 1 Code manual

We apply a deductive-inductive approach (Fereday and Muir-Cochrane, 2006): We drew on established theories and concepts that would help us to answer the research question and created a theoretical framework and indicators for the concepts used. This framework is then tested in semi-structured interviews and revised based on the results of the interviews.

4 Results

We present preliminary results of an analysis of the strategic behaviour of researchers in the collaborative production of knowledge. The projects that were discussed during the interviews varied in terms of the observed strategic interdependence and organisational autonomy. We also observed the variety of behaviour ranging from ‘strategic-driven’ to ‘opportunity-driven’. We first present our observations from the entire sample and then illustrate the results with two most different approaches to research partnerships.

In the opportunity selection phase, researchers rarely approach firms they do not know. All of the projects of the interviewed professors came from their embeddedness in their networks – all had known their collaborators before or were approached by the firms that had known them personally or via other connections. The initiation of the project came either from the organisation, in projects that were oriented on solving practical problems and delivering applicable solution, or were mutually discussed during often a social event. It seems that the firms or organisations were most of the time the initiators of research projects. However, what differed was the nature of the project. Some firms and organisations had a clear managerial problem and wanted the researcher to solve it and deliver a science-based (but still applicable) solution. Other organisations proposed a general topic driven from a problem at their organisation that they wanted to under-
understand and learn from researchers. In yet other projects researchers proposed a science-based driven topic that had application for the approached organisation. We observed that different expectations of firms influenced the nature of the project and its governance as will be discussed later.

The acceptance of a firm’s proposal was influenced by the vision and strategy of the interviewed researchers. The interviewees told us about their general approach to collaboration with industry and the fit between the industry-sponsored projects and their research interests. Researchers that were more practice-oriented engaged often in consultancy projects or accepted consultancy projects to integrate them into their research. These researchers often had a broad perspective of what an ‘opportunity’ is and were willing to accept proposals for research that fitted their research interests rather than a specifically designed research programme. Thus, they showed the ‘opportunity-driven’ behaviour. Researchers who were clear that they do only research that is not delivering a solution but knowledge to the firm more often engaged in projects that fitted their research programmes. They showed ‘strategic planned’ behaviour.

In either case it was crucial that all partners agreed on their expectations on research and on sharing resources in the execution phase. Also, it was important that the firm understands that the researchers have a distinct method of operating or approaching the (research) problem, which also requires autonomy in steering the research in the execution phase. The reason for this is that the outcome of research cannot be predicted as well as the approaching and/or resource deployment might be adapted due to necessities based on feasibility, like the availability of data, or appropriateness, like the problem is based on confounding factors that require more comprehensive insights or further concepts.

In the opportunity execution phase researchers were rather autonomous, however, some projects were more formalised than others and therefore the researchers had to comply with the structure of the partnership. For example, some projects had a clear planning with objectives and deliverables and planned evaluation meetings, whereas other had a less planned and strict structure. The interviewees indicated that there has to be a shared understanding on the project outline, a clear focus limiting distractions and generating commitment as well as consent among partners in how the research is conducted in order to allow for high organisational autonomy. The firms in the discussed projects were usually committed and engaged in the research especially if they contributed financially to the project. Most of the projects were financed or co-financed by firms or other organisations. Whereas the firms contributed to the project in most cases financially, their further contribution was based particularly on data provision and also on the access to further contacts valuable for the researcher. The contribution of the researcher ranged from the abstract conceptual thinking to the determination of or even causal inference between organisational factors related to the firm problem. This deterministic or explanatory project outcome is for some researchers the point to terminate negotiations or even a contract as their motivation was the enlightening of an issue and a scientific publication. Other researchers extend their contribution also to the more practical implementation which can even end with consulting-like activities or services.
The interviewees indicated that firms that sponsor research projects are usually engaged and committed to them. This is indicated by the communication, evaluation meetings as well as the interest and involvement of the top management in both the selection and execution phase.

The embeddedness of PhD students in collaborative projects was also an important point as the PhD student represents a project resource – or competence rather – that is valuable for all partners within the research partnership. The strong embeddedness of a PhD student in the industrial organisation often leads to further restrictions on the project. PhDs who are partly employed by the organisation or required to be present at the organisation, often are engaged in operational tasks not always related to their research or involved in other projects. This results in less time left for research and publishing and therefore has consequences for the autonomy of researchers.

4.3 Analysis of two cases

To illustrate our analysis we present two different cases: one indicating the ‘strategic planned’ behaviour and one the ‘opportunity-driven’ behaviour. We asked the researchers to choose the most exemplary project with industry to answer our questions. Researcher ‘A’ talked about a project with a single firm financing a PhD student to perform research. Researcher ‘B’ answered the interview questions based on a PhD project within a consortium of universities that was sponsored by an association of firms. Additionally, part of this PhD project was a consultancy assignment that was developed into a publication.

In both cases the idea of the projects emerged externally to the researcher and was continuously developed until both partners, namely the firm and the researcher, were interested enough to pursue the project. The researchers and the firms had known each other and have already mutual project experience and trust in the other partner’s project contribution. For all these reasons, the initiation and first communication can be described as informal. In particular this means that there was a researchable and appealing problem first which served as a basis for further communication and project idea development and which finally resulted in a more materialised or formalised engagement and research project definition process.

There is a difference between the two cases observable in the decision making process whether to engage with an organisation on a certain project or not as well as the strategic orientation. Researcher ‘A’ showed a strategic planned and independent behaviour in choosing only research projects that fit his own area of expertise and core research. He had clear expectations on how the project in general terms is outlined and that the researcher’s contribution remains theoretical in nature without designing managerial interventions to be executed within the organisation. The interventions are then the responsibility of the organisation or a consulting business mandated by the organisation. In addition to this, researcher ‘A’ makes as a condition for the project that the research is to be published and there is no tendency for him to engage in contract research. The
last point can be connected to the researcher’s inherent principle that there is already a tendency that today’s universities and their research become increasingly influenced by firms which can have a detrimental effect on the researcher's integrity.

*Quote: There are many many research opportunities out there. So if you really like sort of going after the opportunity, you probably end up with all kinds of research projects that are not really in line of what you actually want to do. So I am always very careful in what I do, in which projects I actually accept for companies. And if they don’t fit my own research interest, my research lines, I am not going to do them. (...) You should be very careful that the industry is not dictating what you research and how you do this, because then they will also get a say or an impact on what you are actually allowed to report and not to report. You should always maintain your academic integrity in this instance.* (Researcher ‘A’: 403-408; 450-453)

Researcher ‘B’ is more opportunity-driven and intuitive in deciding which project to start with. Although the researcher describes the appeal of a project and also the other partners’ engagement as a catalyst for engagement, the researcher’s long-term planning is not defined and intentionally kept open and with a wide scope. This openness is reflected also in the research conduct in which apart from theoretical research findings also practical outcomes could be delivered by the researcher. Additionally, this researcher also sees contract research as an opportunity capture to generate further contacts for prospective research, although research which is conducted in PhD projects also have as a requirement the publishability.

*Quote 1: I decide about that in a very intuitive way. And it always builds on what you have done before. And it always builds and is related to problems that you see that are unsolved. So I don’t have a roadmap where I see am here and from here I am going to this research project and then 10 years from now I will be there. No. After 10 years I would say I am totally somewhere else than where I thought that I would be 10 years ago. So there is a high degree of coincidence and also opportunism. Sometimes I used that contract research in an opportunistic way. (...) Researcher ‘B’: 168-174

*Quote 2: I don’t know; I know we are going to do a survey which has a practitioner relevance; it is not very theory-driven, but it creates a lot of contacts.* (Researcher ‘B’: 89-91)

According to both researchers, the formalisation emphasizes the general project outline, feasibility or practical issues. According to researcher ‘A’, however, strict formalisation could harm the project success as it can require and absorb working capacities and can limit freedom if deviations occur. Additionally, there cannot be a formalised research outcome, but instead there should be consent on the research subject and how the research is conducted so that data sources can be identified. In this respect, the organisational position of a project partner is crucial as it fosters data collection by means of easier approval and less organisational employees who act only on an opportunistic
quid-pro-quo basis. Researcher ‘B’ also stated that discussions are rather subjected to questions on necessities and the organisation’s wish to accelerate the project proceeding. In addition to this, it is arguably difficult for organisational partner’s to offer criticism concerning new subjects which also exhibit a high degree of abstraction and complexity. As a result of this and applicable to both cases, regular feedback meetings were hold to ensure an enhanced coordination. However, much more frequent was the informal talk between the researcher and the organisational representative which also serves as a mechanism for both networking (socializing) within the organisation and project coordination. This coordination is necessary for the effective contribution of complementary resources. Whereas for the researcher the contribution can differ, particularly in the offering of more practitioner-oriented consultancy services, the organisation’s contribution are in both cases described as the same.

Both researchers stated that the organisation’s most important contribution is primarily the provision of data, followed by further contacts, which might also result in further data collection. As the last organisational contribution but not of high decisive influence, funding was mentioned. Nonetheless, researcher ‘A’ stressed that the quality and availability of data is of greater significance than the funding. Taking into consideration now both the researcher’s and the organisation’s project contribution, one can conclude with the following degree of strategic interdependence. Researcher ‘A’ was provided with valuable data access (as highly complementary resource) whereas the researcher’s provision was primarily based on theoretical in-depth insights (as moderate complementary resource) which have to be further processed by the organisation in order to monetarise the findings. Researcher ‘B’ was also provided with valuable data access (as highly complementary resource) whereas the researcher’s provision was based on theoretical as well as practical insights (as highly complementary resource), like holding seminars or publishing a booklet with practitioner-oriented content which are more likely to be monetarised by the organisation. For researcher’s ‘A’ collaboration one can therefore speak of a moderate-high degree of strategic interdependence whereas for the researcher’s ‘B’ collaboration the rating is a high degree of strategic interdependence.

Organisational autonomy is high for both researchers with a small exception for a part of a project of researcher ‘B’. In the selection phase researcher ‘A’ showed a high need for autonomy. Researcher ‘B’ had a high autonomy in setting the overall research goals in association with the major project sponsor, whereas lower need for autonomy in setting goals in a consultancy project (being a small part of the entire PhD research). Reason for the high autonomy is that the organisations hold a certain problem at hand which is either appealing to the researcher or not. For this appeal, the subject has to be complex and abstract enough to justify the engagement with a researcher. Both researchers enjoyed high autonomy in the execution phase. This is a consequence of the choices and agreements made in the selection phase as well as a sufficient degree of trust in the competencies of the researcher. If there is appeal and a mutual interest, the project idea will develop and at a certain point agreement among partners is achieved, even on practical issues. This means that the organisations, after agreeing on the project outline, and
sometimes being unable to discuss the research direction due to its high level of abstraction and complexity, offer the researchers a high degree of organisational autonomy.

### 4.4 Revised framework of researchers’ strategic behaviour

As we used the deduction-induction method, we were open to indicators and observations. After analysing the interviews it became clear that the ‘strategic planned’ and ‘opportunity-driven’ behaviour is mainly observed in the opportunity selection phase. We made thus a distinction between the “goals” and “governance” as presented in table 2. ‘Goals’ refer to setting research directions and objectives in the research process. ‘Research governance’ is here defined as decision-making processes related to conducting research, research management regarding strategic positioning of researchers and groups, with an aim to solving problems or creating opportunities.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Flexibility</th>
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<tbody>
<tr>
<td>Strategic planned or Opportunity-driven</td>
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<table>
<thead>
<tr>
<th>Governance</th>
<th>Focus</th>
<th>Flexibility</th>
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<tbody>
<tr>
<td>Strategic interdependence (high / low)</td>
<td>Strategic interdependence (high / low)</td>
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<tr>
<td>Organisational autonomy (high / low)</td>
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Table 2 Revised theoretical framework

### 5 Conclusions and recommendations

The main conclusion from the analysis of the strategic behaviour of management researchers is that researchers in our sample behave mostly in mode3 – the research entrepreneur. This means that they have a high need for sharing resources and at the same
time they are autonomous when setting research directions in joint projects with industry. One of the major observations in this study is that researchers have to give up their autonomy to a certain extent when accepting the terms of collaboration with industry, but they have a high need for autonomy when deciding about research directions and execution of research. Even though they need to seek external funding, it is their choice to enter a specific relationship with industry and accept restrictions on their autonomy. We also observed that the vision and strategy of researchers influence whether they accept or not a collaborative project with industry. Next to that, strategy and goals of researchers influence their willingness to accept more influence from industry and behave in mode 2. Researchers who see as their task translating scientific knowledge to practice and using it to solve practical problems and delivering solutions, are engaging in consulting activities.

The need for autonomy increases with the scientific position and the position in organisational hierarchy. PhD students have a lower autonomy: they are bounded to a specific project and often need to deal with the expectations from the industry and academia and this might create tensions. They are also more restricted if they are highly embedded in the industry organisation funding research. The higher the rank, the more freedom in deciding about research directions and research execution.

In this study we developed a framework for analysing the strategic behaviour of researchers in U-I partnerships and its dynamics. The initial framework of Bingham (2014) and the strategic positioning theory, on which our framework is based, predict performance (Zalewska-Kurek et al., 2010; 2016). Here, we capture the dynamics of UIC and as some projects are still in the execution phase, we could not relate it to the final performance of U-I partnerships. However, we get some insight in perceived performance of the relationship with industry even though from researchers’ perspective only. Most of the projects were rated as performing well according to the interviewees. Thus, we can carefully conclude that researchers should behave in mode 3 and ‘strategic planned’ way to gain as much as possible from industry-sponsored projects. We do not, however, have data to corroborate these results with the perception of firms. To develop the framework of researcher’s strategic behaviour, we can apply the measure of the alliance performance that is the degree of attaining goals (Bamford et al, 2004; Kale and Singh, 2009). Further research is then necessary to test whether the modes of behaviour as well as the behaviour in the opportunity selection and execution phase affect the performance of U-I partnerships. Based on such results we will be able to draw practical recommendations regarding research management and policy.
References


