How Department Context Affects Academic Entrepreneurship: Evidence from Chinese universities

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This study aims to bridge the gap in the literature by empirically analyzing how department context influences academic scientists' intention to engage in knowledge commercialization. Using the theory of planned behavior (TPB) as a framework and a survey of 272 scientists from Chinese universities, this study shows that although entrepreneurial intention is positively influenced by the department's scientific reputation and the presence of role models, no such effect is found for department entrepreneurial support. In the absence of department context, our findings also suggest that scientists' motivational factors, such as commercialization attitude and perceived behavioral control, still significantly influence their intentions to engage in commercialization activities.

Introduction

Fueled by growing recognition that knowledge commercialization is critical for regional innovation and economic development (Abreu & Grinevich, 2013; Guerrero & Urbano, 2012), the literature highlights the importance of factors that lead academic scientists to participate in entrepreneurial activities (Davey et al., 2016; Nelson, 2014). Probably the most important gap in the knowledge commercialization literature concerns the lack of published work on how the institutional context, especially at the department level, affects academic scientists' intention to engage in commercialization activities. Studies considering department context are

relatively scarce, as many focus on the high-level institutional context, such as universities (Fini et al., 2011), regional characteristics, (Dohse & Walter, 2012; Fini et al., 2011), and government policies (Engle et al., 2011). Within this research stream, some studies have attempted to understand the impact of regulation and legislation (Grimaldi et al., 2011; Rizzo, 2015), and organizational structure and culture (Kenney & Patton, 2009; Rasmussen & Borch, 2010; Soetanto & Jack, 2015) on academic entrepreneurship. While there is a growing body of research highlighting the importance of context in academic entrepreneurship, several scholars (for example, Bercovitz & Feldman, 2008; Rasmussen et al., 2014; Stuart & Ding, 2006) remark on the dearth of studies examining the role of department context and the existence of "entrepreneurial-minded" colleagues as a trigger of academic entrepreneurship.

Given the above limitations and continuous calls to investigate academic entrepreneurship (for example, Clarysse et al., 2011; Di Gregorio & Shane, 2003; Huyghe & Knockaert, 2015; Kristel Miller et al., 2017), this study aims to bridge the gap in the literature by empirically analyzing how department context influences academic scientists' intention to engage in knowledge commercialization activities, such as spin-off creation, patents and licenses, joint ventures, contract research, and consultancy (Miller et al., 2018). To capture the role of context in academic entrepreneurship, our study extends current understanding by exploring department characteristics in terms of scientific reputation, the availability of entrepreneurial support, and the presence of role models. Using the theory of planned behavior (TPB) as a framework (Ajzen, 1991), we examine the interaction between department context and entrepreneurial motivation. We also argue that entrepreneurial motivation, such as

commercialization attitude and perceived behavioral control, has a more significant impact on academic scientists' entrepreneurial intention when the department context is less favorable for academic entrepreneurship. Nevertheless, departments that provide fertile ground for academic entrepreneurship arguably have a direct effect on strengthening academic scientists' intention to engage in knowledge commercialization.

Analyzing a sample of 272 academic scientists from Chinese universities, this study contributes to the development of current academic and policy discussions. First, by exploring the role of context, the study provides clarity on the knowledge commercialization process at the department level. Advancing a deeper understanding of how context influences academic scientists' motivation and entrepreneurship intention, we propose some practical recommendations on developing policies to support academic entrepreneurship. Second, the study focuses on the important but overlooked role of the interplay between department context and the formation of academic scientists' entrepreneurial intentions. The findings of this study open a new discussion on the process of academic scientists becoming academic entrepreneurs, and contributes to the empirical investigation of the implementation of TPB as an instrument enabling understanding entrepreneurship in the academic setting (for example, Goethner et al., 2012; Obschonka et al., 2015; Shane, 2004). Last, this study contributes to knowledge on academic entrepreneurship in the context of China. Although the Chinese government has implemented several policies to stimulate knowledge commercialization, the extent to which university knowledge is absorbed by industry is still lower than expected (Chen et al., 2016;

Wu, 2010; Wu & Zhou, 2012). This study therefore analyses the department context as one of the supporting factors for academic entrepreneurship in Chinese universities.

Academic Entrepreneurship and the importance of department context

An increased significance of commercialization activities performed by academic scientists has triggered a large body of research to use entrepreneurship framework and literature to study academic entrepreneurship. Literature shows that numerous factors potentially affect academics' decision to engage in the activities. Demographic characteristics such as age, gender, background and experience are considered a strong predictor for academic entrepreneurship (Bergmann et al., 2016; Criaco et al., 2014). Psychosocial characteristics such as behavioral intention and identity have been reported in many studies on academic entrepreneurship (Bozeman et al., 2013; Clarysse et al., 2011; Goethner et al., 2012; Jain et al., 2009). Moreover, studies have emerged focusing on entrepreneurial motivation, passion and orientation that enforce the desire of academic scientists to explore commercial opportunities in an academic setting (Diánez-González & Camelo-Ordaz, 2016; Huyghe et al., 2016; Kalar & Antoncic, 2015; Oehler et al., 2015; Toole & Czarnitzki, 2009).

Apart from the effort to understand academic entrepreneurship, scholars have also debated the form of academic entrepreneurship. Literature shows that academic entrepreneurship has been narrowly and broadly defined (Davey et al., 2016). In a narrow definition, academic entrepreneurship refers to a strictly formal mechanism of knowledge transfer such as patent, license and academic spin-offs. The broader definition of academic entrepreneurship covers

any academic engagement in entrepreneurial activities in addition to their normal academic duties, which include joint projects, consultancies and contract research with the industry. Similarly, Miller et al. (2017) proposed that there are two types of roles in academic entrepreneurship: academic entrepreneurs and entrepreneurial academics. Academic entrepreneurs are those who engage in formal knowledge commercialization activities, such as spin-offs, patents and licenses, joint ventures, contract research, and consultancy (Abreu & Grinevich, 2013; Kristel Miller et al., 2017). Instead, entrepreneurial academics engage in wider knowledge transfer activities through personal interaction with industry (Alexander et al., 2015). Entrepreneurial academics are involved in activities such as collaborative research, executive education, student placement, joint supervision and publication, and secondment (Kristel Miller et al., 2017; Perkmann et al., 2013).

In terms of academic scientists' attitude toward knowledge commercialization, recent studies on academic entrepreneurship (for example, Urban & Chantson, 2017) show that motivation, such as commercialization attitude and perceived behavioral control, is able to predict academic scientists' entrepreneurial intention. As widely acknowledged in the literature (for example, Bird, 1988; Huyghe & Knockaert, 2015; Krueger Jr et al., 2000; Krueger & Carsrud, 1993; Schlaegel & Koenig, 2014; Urban & Chantson, 2017) entrepreneurial behavior is inherently intentional because acting entrepreneurially is something that academic scientists choose or plan to do. According to TPB (Ajzen & Fishbein, 2010; Katz & Gartner, 1988), intention is defined as the search for information that can help fulfil the goal of certain entrepreneurial activities. It refers to a state of mind that directs academic scientists' attention

toward a specific goal or path in order to act entrepreneurially (Zhao et al., 2020). In other words, knowledge commercialization activities are essentially entrepreneurial (Abreu & Grinevich, 2013; Jain et al., 2009), because to engage in such activities, academic scientists need to be innovative, take risks, and act entrepreneurially to acquire resources and recognize opportunities (Abreu & Grinevich, 2013; Sieger & Monsen, 2015).

This study focuses on the role of academic department at Chinese universities in supporting the participation of academic entrepreneurs in formal or narrowly defined knowledge commercialization activities. Even though Chinese universities are highly centralised (Zhao et al., 2020), the head of department (dean) still plays an important role in guiding and managing the behaviour of the academic scientists. Moreover, the government's strategy to drive innovation requires departments to implement a new approach for knowledge commercialization (Chen et al., 2016). This recent reformation of the Chinese education system has allowed more autotomy and flexibility at the department level. As a result, they have been tasked to enact guidelines and regulations to facilitate commercialization activities. One of the examples is incorporating knowledge transfer activities such as patenting, contract research and consultancy into department's key performance index (KPI).

Using individual attitude and perceived control as a measurement for individual motivations, this study explores the role of department context in influencing academic scientists' intention to get involved in entrepreneurial activities. The first set of hypotheses (H1–H3) were constructed to examine the direct impact of department context in defining entrepreneurial intention while the second set of hypotheses (H4–H6) aimed to test the

moderating effect of department context on the relationship between entrepreneurial motivation and intention. Figure 1 summarizes the research framework of this study and the construction of the hypotheses.

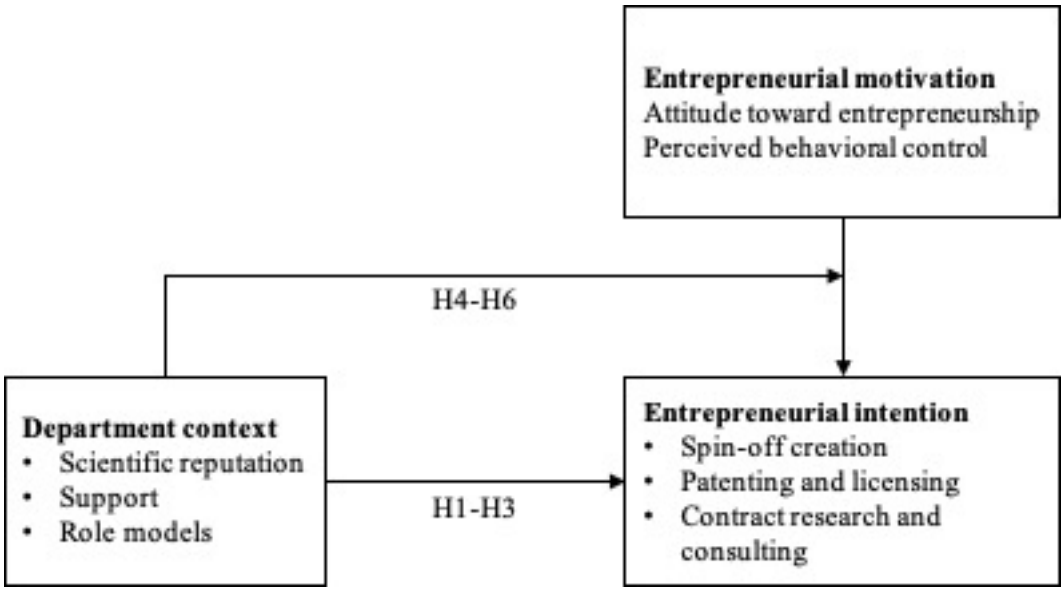

Figure 1. Research framework

Department Scientific Reputation and Academic Entrepreneurial Intention

The literature on academic entrepreneurship (for example, Perkmann et al., 2013; Shibayama, 2015; Wright, 2007; Wright et al., 2008; Zucker et al., 1998) shows that scientific reputation provides strong support to knowledge commercialization activities. However, previous studies have mainly considered the reputation of individual star scientists or the status of the university's research power while overlooking departments and their role in academic entrepreneurship (Crane, 1965; Di Gregorio & Shane, 2003; Jensen et al., 2003). As universities have become complex and multi-level organizations with a number of sub-organizations, departments are often independently managed and have more freedom in

conducting routines and activities. As a result, we may witness departments with strong scientific reputation which are located at smaller universities. Compared to university top management teams, head of department/dean is in a better position to observe any potential commercialization, especially from research activities conducted at the department level. Research centers that produce leading-edge or applied research needed by industry are often hosted by departments. For this reason, we examine the role of departments rather than universities, and argue that academic scientists affiliated with departments with a strong scientific reputation will develop a stronger intention to engage in knowledge commercialization (Stuart & Ding, 2006).

Most departments are formed by academic disciplines with their own traditions, attributes, and norms, which may influence department routines in promoting academic entrepreneurship (Perkmann et al., 2013). Departments with a strong scientific reputation are likely to attract outstanding researchers with talented skills and research commercialization potential (Di Gregorio & Shane, 2003; Powers & McDougall, 2005). They enable academic scientists pursuing an entrepreneurial career to benefit from access to funding, research facilities, and networking (Bozeman & Gaughan, 2007; Lam, 2011; Rasmussen & Wright, 2015). It is also easier for academic scientists to gain external legitimacy, since inventors and prospective buyers usually evaluate potential commercialization ideas through their perception of the intellectual and scientific quality of the department (Di Gregorio & Shane, 2003). Industrial partners would rather collaborate with academic scientists from departments with a strong scientific reputation (Perkmann et al., 2013). Academic scientists are also able to access

research activities, quality research assistants, and student projects as a result of their entrepreneurial activities (Lam, 2011). Based on the above arguments, we propose the following hypothesis:

H1. *Academic scientists in departments with a strong scientific reputation are more likely to have strong entrepreneurial intention.*

The Availability of Department Entrepreneurial Support and Academic Entrepreneurial Intention

The next factor that may influence academic scientists' entrepreneurial intention is the availability of support in the department. While studies (for example, Bercovitz & Feldman, 2008; Fini & Toschi, 2016) have advocated the need for incubation support to help start-ups, the limited resources of departments prevent the full provision of such support. Compared to support from the university, support from departments is more easily accessible and less bureaucratic. Supports such as access to flexible office space, meeting rooms, laboratories, workshop facilities, and student projects are critical for academic entrepreneurship (Rasmussen & Wright, 2015). At the department level, the role of the head of department/dean in promoting an entrepreneurial atmosphere and encouraging individual academic scientists to engage in academic entrepreneurship is pivotal (Bercovitz & Feldman, 2008). In some cases, department may encourage academic scientists to acquire the necessary entrepreneurial skills and knowledge that will increase the likelihood of successful commercialization activities (Djokovic & Souitaris, 2008; Soetanto & Jack, 2015; Urban, 2014). In addition, departments may offer incentives and rewards for academic scientists to pursue knowledge

commercialization. For instance, academic scientists undertaking commercialization activities receive recognition, financial rewards, or flexible workloads from department. This is in line with previous studies confirming the significant role of incentives and reward systems in enhancing academic entrepreneurial intention (Huyghe & Knockaert, 2015; Kerr, 1975; Rasmussen & Wright, 2015). Based on the above arguments, we posit the following hypothesis:

H2. *Academic scientists in departments with strong entrepreneurial support are more likely to have strong entrepreneurial intention.*

The Presence of Role Models in the Department and Academic Entrepreneurial Intention

Prior studies have highlighted that role models are positively related to academic entrepreneurship (Huyghe & Knockaert, 2015; Prodan & Drnovsek, 2010; Urban & Chantson, 2017). According to social cognitive theory (Bandura, 1987; Gibson, 2004), role models are defined as a cognitive concept where individuals take actions by observing the behavior of relevant others with the same social roles and will later start modelling and imitating them. Role models usually act as an important driver for academic entrepreneurship due to the peer effect that instils confidence and support for academic scientists who intend to commercialize their research (Etzkowitz, 1998; Feldman et al., 2001). Having colleague(s) with a strong entrepreneurial mindset, and recognized or rewarded financially through commercializing knowledge, academic scientists will be more likely to consider academic entrepreneurship (Bercovitz & Feldman, 2008; Stuart & Ding, 2006). The presence of role models allows

academic scientists to learn about entrepreneurial activities. Besides providing inspiration, role models influence academic scientists to compare and reflect on their own behavior (Tartari et al., 2014). As academic scientists in the same department are usually competitive, they may consider entrepreneurship as a way to catch up and match the performance of other colleagues in commercializing knowledge. Thus, we propose the following hypothesis:

H3. *Academic scientists in departments with strong role models are more likely to have strong entrepreneurial intention.*

Interactions between the Department Context and Individual Entrepreneurial Motivations

The following hypotheses examine whether the impact of individual motivation on academic entrepreneurship intention is stronger in some department contexts but weaker in others. Put differently, we argue that the role of the department context moderates the relationship between academic scientists' motivation and intention to engage in knowledge commercialization. This finding would not only verify the legitimacy and credibility of the department context, but also prompt policy makers to rethink strategies to promote academic entrepreneurship in more targeted ways.

As the literature has highlighted, individual motivation is a key catalyst for academic entrepreneurial activities (Clarysse et al., 2011; Rasmussen & Wright, 2015). We argue that the intention of academic scientists to engage in formal knowledge commercialization activities derives from their intrinsic motivation, such as commercialization attitude and perceived behavioral control. According to the theory of planned behavior (TPB), individual motivation,

such as attitude toward certain behaviors, refers to how individuals evaluate the extent to which they agree with the given behavior, while perceived behavioral control indicates how individuals perceive the ease or difficulty of successfully performing the target behavior (Ajzen, 1991, 2002; Ajzen & Fishbein, 2010). As other studies show (for example, Goethner et al., 2011; Urban & Chantson, 2017), commercialization attitude and perceived behavioral control are a proxy to determine academic scientists' entrepreneurial intention.

We argue that the effect of commercialization attitude and perceived behavioral control is more significant in departments with a weak scientific reputation than in departments with a strong scientific reputation. Given that academic scientists with a strong commercialization attitude and perceived behavioral control usually have high expectations or beliefs in academic entrepreneurship (Goethner et al., 2011; Krueger, 2009), they would seem to be more proactive in accumulating resources, skills, and knowledge. As a result, they strive to commercialize knowledge even when the department has a weak scientific reputation (Fernández-Pérez et al., 2015; Mosey & Wright, 2007). In other words, the role of motivation on entrepreneurial intention is more prominent in departments with a weak scientific reputation.

In contrast, the role of motivation is less significant in departments with a strong scientific reputation. It is believed that the department's scientific reputation helps academic scientists with either strong or weak entrepreneurial motivation to pursue their entrepreneurial intention (Perkmann et al., 2013). For academic scientists with a weak commercialization attitude and perceived behavioral control, departments with strong scientific reputation enhance their confidence and provide access to information on potential markets

that may trigger entrepreneurial intention (Urban & Chantson, 2017). For academic scientists with a strong entrepreneurship attitude, the effect of the department's scientific reputation will also strengthen their motivation to pursue an entrepreneurial journey (Di Gregorio & Shane, 2003; Urban & Chantson, 2017). Based on this discussion, we posit:

H4a. *Department scientific reputation and commercialization attitude interact in such a way that the impact of commercialization attitude on entrepreneurial intention is more significant in departments with a weak scientific reputation than in departments with a strong scientific reputation.*

H4b. *Department scientific reputation and perceived behavioral control interact in such a way that the impact of perceived behavioral control on entrepreneurial intention is more significant in departments with a weak scientific reputation than in departments with a strong scientific reputation.*

As with the previous hypotheses, this section argues that the effect of commercialization attitude and perceived behavioral control on entrepreneurship intention is critical in the context of departments with weak entrepreneurial support. Since there is no or limited support from the department, the probability of engaging in commercialization activities only materializes for academic scientists who develop strong entrepreneurship motivation. Having a strong commercialization attitude and perceived behavioral control will help academic scientists overcome difficulties while acting entrepreneurially to gather resources without support from the department.

On the contrary, departments with abundant entrepreneurial support, such as flexible workloads, office space, funding, workshops, training, incentives, and rewards for conducting entrepreneurial activities, will encourage academic scientists even with a weak commercialization attitude and perceived behavioral control to engage in academic entrepreneurship (Guerrero & Urbano, 2014). For academic scientists with strong entrepreneurship motivation, department support will help them develop confidence and competencies that later strengthen their entrepreneurial intention (Bae et al., 2014). Based on these arguments, we propose:

H5a. *Department support and commercialization attitude interact in such a way that the impact of attitude toward commercialization on academic entrepreneurial intention is more significant in departments with weak support than in departments with strong support.*

H5b. *Department support and perceived behavioral control interact in such a way that the impact of perceived behavioral control on academic entrepreneurial intention is more significant in departments with weak support than in departments with strong support.*

The final hypothesis deals with the effect of role models in moderating the relationship between entrepreneurial motivation and intention to engage in knowledge commercialization. When located in departments without any role models, academic scientists scarcely benefit from support, encouragement, and the opportunity to learn from colleagues who have been through an entrepreneurial journey. Consequently, academic scientists rely on other factors, such as individual skills, emotions, social networks as well as their motivation to drive

knowledge commercialization activities (Fernández-Pérez et al., 2015; Sapp et al., 2015). With a strong commercialization attitude and perceived behavioral control, academic scientists do not need to rely on internal role models in the department, having developed their own intrinsic motivation to engage in knowledge commercialization.

In contrast, departments with role models will initiate academic scientists' engagement in academic entrepreneurship regardless of their motivation. This is because the presence of role models will increase their sense of security, boost confidence, and provide legitimacy to ideas (Huyghe & Knockaert, 2015). Inspired by the entrepreneurial activities of their colleagues, academic scientists will develop strong academic entrepreneurship intention (Bercovitz & Feldman, 2008). Based on this discussion, we posit:

H6a. *The presence of role models and commercialization attitude interact in such a way that the impact of commercialization attitude on academic entrepreneurial intention is more significant in departments with role models than in departments without role models.*

H6b. *The presence of role models and perceived behavioral control interact in such a way that the impact of perceived behavioral control on academic entrepreneurial intention is more significant in departments with role models than in departments without role models.*

Research Method

Data Collection and Measurements

We collected the data through an online survey from March to June 2018 from the list of approved universities published by the Chinese Ministry of Education in 2017. In total, academic scientists from 14 universities in different regions were invited to participate in this

survey. Before collecting the data, we conducted a pilot study using 78 researchers acquainted with research commercialization in the Northwestern Polytechnic University in Xi'an. We revised the questionnaire based on the feedback received from the pilot study. We employed the MATLAB data-crawling technology to gather the email addresses of academic scientists from the universities' official websites. To guarantee the representativeness of the sample, 20 respondents from each department were invited to participate. A reminder was sent if there was no response after 10 days. The process was repeated until at least five responses from one department had been received (Philip M Podsakoff & Organ, 1986; Zhao et al., 2020). In total, we sent 2384 invitations and received 364 responses for a sample of 272 valid responses. We conducted several statistical tests on the sample (see Tables 2A and 3A in the appendix). Overall, there was no significant difference (p>0.5) between early and late respondents, or between valid and invalid respondents of different gender, age, seniority, and discipline (J. Hair et al., 2006).

Table 1
Respondents' Descriptive Statistics

Category		Frequency	Proportion	Category		Frequency	Proportion
Gender	Male	192	70.6%	Discipline/subject	Basic sciences (physics, chemistry, etc.)	26	9.6%
	Female	80	29.4%		Life sciences including biology and agriculture	25	9.6%
Age	Under 30	16	5.9%		Engineering and applied sciences	135	49.6%
	30-39	128	47.1%		Humanities and social sciences	86	31.6%
	40-49	79	29%	Previous commercialization experience	Spin-off	25	9.2%
	50 and over	49	18%		Patenting and licensing	145	53.3%
Seniority	Assistant Professor or Lecturer	70	25.7%		Contract research, consulting consulting	198	72.8%
	Associate Professor or Professor	202	74.6%		Other	13	4.8%

Table 1 provides a description of the sample, which consist of 70.6 percent males and 29.4 percent females covering a wide range of academic scientists from different age groups with the majority (47.1 percent) between 30–39 years old; 74.6 percent of respondents hold the status of professor or associated professor with the majority having an engineering (49.6 percent) and humanity/social sciences background (31.6 percent). In terms of previous commercialization experience, 9.2 percent had spin-off experience, while 72.8 percent had informal commercialization experience, such as contract research and consulting. The variables, survey questions, and measurements are described in Table 1A in the appendix.

Common Method Bias and Data Quality

This section explains the results of several statistical analyses aimed at confirming the validity of the survey (Conway & Lance, 2010; P. M. Podsakoff et al., 2003). First, we used Harman's one-factor test to check whether common method bias (CMB) interfered with the results. The results show that the largest component represents only 35.485 percent of all the items, indicating there is no single factor covariance accounting for the majority of all items. Thus, the risk of interference from CMB is relatively low (Jakobsen & Jensen, 2015; Philip M. Podsakoff et al., 2012). Second, the reliability analysis in Table 2 shows that Cronbach's alpha of all scales is over 0.8 and the item-total correlations also show good reliability (Bland & Altman, 1997; Lindgren et al., 2010). We used a confirmatory factor analysis (CFA) to confirm the convergent validity and discriminant validity of each scale. The results show that the square

root of single variables' average variance extracted (AVE) is higher than the correlations of the variables, indicating acceptable discriminant validity (Farrell, 2009). The results also show good convergent validity, as the standardized regression weights of all items are above 0.5 while the composite reliability (CR) of all variables is above 0.5 and 0.7 (Fornell & Larcker, 1981). Last, the correlation matrix in Table 3 shows no multicollinearity issues among the variables (Farrar & Glauber, 1967).

Table 2
Reliability and Validity Analysis of Variables

Variables	Variables Items	Reliability		Validity				
		Cronbach's alpha	Item-total Correlations	KMO	Bartlett test	Standardized Regression Weights	AVE	CR
SOI	S1	0.941	0.811	0.732	χ^2 836.957 ***	0.826	0.8482	0.9435
	S2		0.909			0.962		
	S3		0.914			0.968		
PLI	P1	0.903	0.823	0.753	χ^2 517.720 ***	0.893	0.7578	0.9037
	P2		0.809			0.870		
	P3		0.794			0.848		
CCI	C1	0.917	0.835	0.763	χ^2 599.929 ***	0.886	0.7957	0.9212
	C2		0.841			0.896		
	C3		0.841			0.894		
DRM	D1	0.834	0.653	0.710	χ^2 320.444 ***	0.725	0.6313	0.8362
	D2		0.745			0.878		
	D3		0.686			0.773		
ATC	A1	0.944	0.718	0.904	χ^2 1326.829 ***	0.730	0.7748	0.9447
	A2		0.882			0.910		
	A3		0.870			0.897		

	A4		0.900			0.943			
	A5		0.866			0.905			
	PB1		0.728			0.758			
	PB2		0.743		χ^2	0.757			
PBC	PB3	0.891	0.777	0.831	795.362	0.867		0.6206	0.8903
	PB4		0.766		***	0.857			
	PB5		0.656			0.685			

N=272; *p<0.05, **p<0.01, ***p<0.001.

Note: SOI: Spin-Off Intention; PLI: Patenting and Licensing Intention; CCI: Contract Research and Consulting Intention; DRM: Department Role Models; ATC: Attitude Toward Commercialization; PBC: Perceived Behavioral Control.

Table 3
Descriptive Statistics and Correlations

Variables	N	Mean	Standard deviation	Correlation matrix											
				GN	SN	AO	AD	PE	AEII	AEIS	DSR	DES	DRM	ICA	PBC
GN	272	0.706	0.457	-											
SN	272	0.750	0.434	0.224***	-										
AO	272	83.74	168.065	0.096	0.199***	-									
AD	272	0.592	0.492	0.219***	0.194***	0.228***	-								
PE	272	0.740	0.438	0.081	0.185**	-0.164**	0.350***	-							
AEII	272	345.401	102.189	0.105	0.152*	-	0.325***	0.476***	-						
AEIS	272	3.005	0.951	0.110	0.144*	-0.196**	0.316***	0.450***	0.984***	-					
DSR	272	0.951	0.824	0.034	0.118*	-0.019	0.349***	0.281***	0.275***	0.271***	-				
DES	272	0.518	0.664	0.018	0.060	-0.085	0.024	0.140*	0.123*	0.127*	0.280***	-			
DRM	272	2.811	0.785	-0.032	0.061	-0.180**	0.282***	0.328***	0.462***	0.457***	0.306***	0.128**	0795		
ATC	272	3.091	0.968	-0.024	-0.089	-0.102*	0.064	0.245***	0.610***	0.621***	0.059	0.153*	0.324***	0.880	
PBC	272	2.068	0.731	0.075	0.021	-0.037	0.068	0.338***	0.553***	0.575***	0.092	0.192***	0.271***	0.595***	0.944

Pearson correlation coefficients (2-tailed); N=272; *p<0.05, **p<0.01,***p<0.001.
Note: GN: Gender; SN: Seniority; AO: Academic Output; AD: Applied Discipline; PE: Previous Commercialization Experience; AEII: Academic Entrepreneurial Intention Index; AEIS: Academic Entrepreneurial Intention Score (another measure of academic entrepreneurial intention for robustness check); DSR: Department Scientific Reputation; DES: Department Entrepreneurial Support; DRM: Department Role Model; ATC: Attitude Toward Commercialization; PBC: Perceived Behavioral Control.

Findings

Table 4 shows the results of the regression analysis. Model 1 is the baseline model containing the control variables. In Model 2, department contextual variables were added to test the direct effect of department context on entrepreneurial intention. The hypothesis of the interaction between the department context variables and the entrepreneurship attitude variable are examined in Models 3 to 5, while Models 6 to 8 examine the hypothesis of the perceived behavioral control variable. We computed the variance inflation factors (VIFs) for each model, and the results show that all VIFs are below 5 and that multicollinearity is not an issue (J. F. Hair et al., 2010).

With regard to Model 1, the coefficients of the gender, academic output, and previous commercialization experience variables are significant and positive. The results also show that academic scientists in applied disciplines, such as engineering, life sciences and so forth, are more likely to develop strong academic entrepreneurship intention. Furthermore, the coefficient of the seniority variable is not significant, indicating that the gap between entrepreneurial intention of senior and junior academics is relatively small.

Moreover, we introduced the department context variable in Model 2, which shows a significantly increase in the adjusted R2 score (from 0.547 to 0.578) and good explanatory power. The model shows that the coefficients of the department scientific reputation (c=12.574, p<0.05) and department role models (c=21.808, p<0.01) are positive and significant, implying both factors are strongly associated with academic scientists' entrepreneurial intention. Thus, H1 and H3 are supported. Unfortunately, the coefficient of department entrepreneurial support (c=-10.743, p>0.1) is not significant, indicating there is no relationship between department entrepreneurial support and entrepreneurial intention. Thus, H2 is rejected. The next model explores the effect of department context in moderating the relationship between the motivation and entrepreneurial intention variables. With regard to department scientific reputation, the

coefficients of the interaction variable are negative and significant in Model 3 (c=-11.936, p<0.1) where the commercialization attitude variable is used. In Model 6, the interaction variable between department scientific reputation and perceived behavioral control is also negative and significant (c=-15.566, p<0.05). Moreover, the adjusted R2 scores increased in both models (from 0.578 to 0.585 in Model 3, and from 0.578 to 0.858 in Model 6). Thus, the findings support H4a and H4b.

The next hypothesis deals with the role of department support. Unfortunately, the study rejects H5a and H5b, as the analysis based on Models 4 and 7 shows that the coefficients of the interaction variables are insignificant c=-4.425, p>0.1 in model 4 and c=-6.334, p<0.1 in model 7). Regarding the last hypothesis, the results show that the coefficients of the interaction variables are negative and significant in Model 5 (c=-8.437, p<0.1) when the commercialization attitude variable is used. In addition, the interaction variable between department role model and perceived behavioral control is negative and significant (c=-8.755, p<0.1), as shown in Model 8. The adjusted R2 score increased in both models (from 0.578 to 0.581 in Model 5, and from 0.578 to 0.58 in Model 8). Accordingly, the H6a and H6b are supported.

Table 4
OLS Regression Results – Academic Entrepreneurial Intention Index

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
GN	7.724**	13.089**	13.309**	12.969**	13.918**	12.978**	12.763**	13.347**
	(3.344)	(6.060)	(5.455)	(5.426)	(5.590)	(5.408)	(5.408)	(5.593)
SN	-1.198	-4.552	-3.362	-4.582	-3.953	-5.269	-5.230	-4.942
	(10.252)	(9.961)	(9.897)	(9.971)	(9.931)	(9.892)	(10.005)	(9.944)
AO	0.066**	0.067***	0.072***	0.068***	0.067***	0.070***	0.068***	0.067***
	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
AD	36.387***	22.418**	19.087*	22.423**	22.107**	20.157**	22.363**	23.053**
	(9.448)	(9.656)	(9.693)	(9.665)	(9.623)	(9.638)	(9.663)	(9.647)
PE	51.199***	41.880***	42.037***	41.398***	40.336***	41.137***	41.733***	39.552***
	(10.977)	(10.826)	(10.742)	(10.858)	(10.826)	(9.476)	(10.835)	(10.927)
ICA	45.795***	42.349***	53.315***	44.271***	64.785***	42.285***	42.215***	42.028***
	(5.476)	(5.405)	(7.233)	(6.064)	(14.334)	(5.365)	(5.411)	(5.399)
PBC	28.567 ***	27.795***	27.140***	28.143***	27.963***	41.650***	33.153***	52.528***
	(7.392)	(7.179)	(7.129)	(7.204)	(7.155)	(9.476)	(8.348)	(18.790)
DSR		12.574**	49.763***	12.554**	12.986**	45.348***	12.404**	12.775**
		(5.636)	(17.382)	(5.642)	(5.622)	(15.799)	(5.644)	(5.627)
DES		-10.743	-10.643	2.960	-9.107	-10.465	3..180	-9.387
		(6.482)	(6.433)	(20.581)	(6.532)	(6.435)	(18.779)	(6.539)
DRM		21.808***	22.546***	22.363***	46.513***	22.074***	22.266***	38.512***
		(5.935)	(5.898)	(5.994)	(15.777)	(5.892)	(5.968)	(13.142)
DSR*ATC			-11.936*					
			(5.282)					
DES* ATC				-4.425				
				(6.308)				
DRM* ATC					-8.437*			
					(4.994)			
DSR*PBC						-15.566**		
						(7.018)		
DES*PBC							-6.334	
							(8.017)	
DRM*PBC								-8.755*
								(4.810)
Constant	75.153***	33.535*	26.601**	26.134*	31.141*	36.797**	26.858*	30.758**
	(17.551)	(19.726)	(0.298)	(14.765)	(18.105)	(2.955)	(13.773)	(4.698)
R^2	0.559	0.594	0.602	0.594	0.598	0.601	0.595	0.597
Adjusted R^2	0.547	0.578	0.585	0.577	0.581	0.585	0.578	0.580
F Statistic	47.82***	38.15***	35.69***	34.66***	35.19***	35.65***	33.69***	35.01***

N=272; *p<0.1, **p<0.05, ***p<0.01. Note: GN: Gender; SN: Seniority; AO: Academic Output; AD: Applied Discipline; PE: Previous Commercialization Experience; DSR: Department Scientific Reputation; DES: Department Entrepreneurial Support; DRM: Department Role Model; ATC: Attitude Toward Commercialization; PBC: Perceived Behavioral Control.

Robustness Check

We carried out another statistical analysis to test the robustness of the results by recalculating the entrepreneurial intention variable score using the average score of each intention's weighted average (see Table 4A in the appendix). The analysis shows the same findings as presented in Table 5. Moreover, as previous studies highlight that curvilinearity may affect the results of the moderation test (Edwards, 2009), we introduced the quadratic items of commercialization attitude and perceived behavioral control into the models. Again, the analysis shows similar findings where the interaction terms of all models (c=-11.985, p<0.05 in Model 3; c=-10.104, p<0.1 in Model 5; c=-15.605, p<0.05 in Model 6; c=-10.578, p<0.1) are negative and significant.

Discussion

Our results are generally supportive of the demographic characteristics, which have been identified by the previous literature. In particular, the findings support previous studies in showing female academics are less likely to be involved in entrepreneurial activities than their male colleagues. This result is consistent with the studies that shows the difference in risk aversion and other factors that may hinder female academic scientists' engagement in academic entrepreneurship (for example, Abreu & Grinevich, 2016; Ding et al., 2006; Murray & Graham, 2007). The factors such as academic output and previous commercialization experience are also important as a catalyst for academic entrepreneurship, as confirmed in previous studies (for example, Abreu & Grinevich, 2016; Clarysse et al., 2011; Perkmann et al., 2013).

In keeping with the previous study (for example, Abreu & Grinevich, 2016; Calderini et al., 2007; Prodan & Drnovsek, 2010), we also found support that academic scientists in applied disciplines, such as engineering, life sciences and so forth, are more likely to develop strong academic entrepreneurship intention. However, the study failed to support the widely accepted argument that senior academics are more likely than junior academics to be involved in academic entrepreneurship. The previous literature (for example, Abreu & Grinevich, 2016; Fini et al., 2010; Link et al., 2007) has argued that seniority provides access to networks, experience and visibility, which allow academic scientists to try different routes of academic entrepreneurship. As the finding indicates that the gap between entrepreneurial intention of senior and junior academics is relatively small, we argue that senior academics are still under the influence of teaching and research focused objectives (Eesley et al., 2016). At the same time, there is an emerging pressure, especially for junior academic scientists, to include knowledge commercialization activities in their academic promotion criteria (Chen et al., 2016; Thursby & Thursby, 2004).

In describing the department context, this study focuses on department scientific reputation, the availability of entrepreneurial support, and the presence of role models. Some studies (for example, Abreu & Grinevich, 2016; D'Este & Patel, 2007) have found that institutional factors are less important than individual factors in explaining academic entrepreneurship. Interestingly, we found mixed results with regard to the role of department context on academic entrepreneurship. The results of the analysis suggest that entrepreneurial intention is positively affected by department scientific reputation, as found empirically in previous studies (Bozeman

& Gaughan, 2007; Zucker et al., 1998). The findings also reveal that the presence of role models has a significant impact on increasing academic scientists' intention to participate in academic entrepreneurship, which may be shaped by peer effects and social comparisons (Huyghe & Knockaert, 2015; Prodan & Drnovsek, 2010; Sapp et al., 2015; Tartari et al., 2014). However, we found no evidence of a positive relationship between department entrepreneurial support and entrepreneurial intention. While many studies have argued the importance of entrepreneurial support (for example, Clarysse et al., 2011; Soetanto & Jack, 2015; Urban & Chantson, 2017), our study shows the peculiarities in the role of entrepreneurial support at department level in the context of Chinese academic entrepreneurship. It may be that providing entrepreneurial support is not the main priority in the department level where the department focus is mainly on teaching and scientific research (Renault, 2006). As a result, the quality of entrepreneurial support may not be enough to create a significant impact on academic entrepreneurship.

With regard to the interaction between department context and academic scientists' motivation in influencing entrepreneurial intention, this study contributes to the current debate in the literature. On one hand, studies (Davey et al., 2016; Urbano & Guerrero, 2013) argue that institutional factors play a significant role while on the other hand, studies (Abreu & Grinevich, 2016; D'Este & Patel, 2007) found that institutional factors have less of an effect in influencing academic entrepreneurship. Interestingly, this study reveals that the relationship between department context and entrepreneurial behavior is more complex than initially thought. The findings reveal that except for department entrepreneurial support, academic

scientists' motivation negatively interacts with both department scientific reputation and role models in supporting entrepreneurial intention. This indicates that motivational factors, such as commercialization attitude and perceived behavioral control have a significant role in influencing entrepreneurial intention when the department context is not supportive of entrepreneurial activities. For instance, academic scientists in departments with weak scientific reputation and no role models will probably still engage in academic entrepreneurship if they have already developed a strong intrinsic entrepreneurial motivation. Another interpretation might be that departments with strong scientific reputation and the presence of role models encourage academic scientists to participate in academic entrepreneurship. Such encouragement might be the case for academic scientists with weak entrepreneurial motivation where the department context helps them nurture their interest and intention to engage in academic entrepreneurship.

Overall, the findings contribute to current literature on academic entrepreneurship, particularly in terms of how the department context in Chinese universities plays a role in inspiring academic entrepreneurship. While there is no shortage of literature on this topic, we extend the existing literature in several ways. First, the contribution of the present study lies in revealing the effect of department context on motivating academic entrepreneurs and moderating their entrepreneurial intention. This focus provides a fresh view on academic entrepreneurship literature as the current focus is primarily on the demographic characteristics of academic scientists (Hayter, 2015; Jain et al., 2009) and organizational factors, both at the university and regional level (Fini et al., 2011; Rasmussen et al., 2014), whereas the role of

department context in academic entrepreneurship is usually overlooked. Second, this study challenges mainstream literature that focuses on the direct relationship between entrepreneurial motivation and intention but neglects how the context moderates the relationship. As the study used data from a country which is relatively new in academic entrepreneurship, this study may offer a unique perspective in studying the moderating role of institutional context which is remarkably different from that in developed countries (Liu, 2012; Wu, 2010). Lastly, by bringing together different types of academic entrepreneurship under common analytical framework, we are able to study the impact of department context in supporting knowledge commercialization activities such as spin-offs creation, patent, contract research and consultation. This is in line with other studies (D'Este & Perkmann, 2011) that argue that contract research and consultancy are among the ways for academic scientists to use knowledge commercialization activities to support their research activities.

Conclusion

Based on a survey of a sample of 272 respondents from Chinese universities, this study has aimed to identify the role of department context in determining entrepreneurial intention and exploring whether the context strengthens or weakens the influence of individual motivation on entrepreneurial intention. The study suggests that entrepreneurial intention is influenced by department scientific reputation and the presence of role models at the department. Interestingly, the finding also shows that the interactions between department context and motivations is negative influence academic entrepreneurship engagement,

Interestingly, the analysis on the interactions between department context and academic scientists' entrepreneurial motivations shows that the influence of motivations is still significant in initiating academic entrepreneurship even when the department context is less supportive. This study extends TPB modeling by highlighting the importance of contextual factors in influencing academic scientists' entrepreneurial intention.

This study also provides several practical contributions. First, our findings show a positive effect of department scientific reputation on promoting entrepreneurial intention. In this context, both scientific research and knowledge commercialization should be regarded as integrated practices in the department (Pickernell et al., 2019). More policies might be directed at supporting the research infrastructure at the department level but with potential for commercialization. For instance, scientific dissemination and research seminars together with industrial partners could be organized regularly, and promotion criteria might be designed to enhance department scientific and entrepreneurial reputation. Moreover, departments should develop strong networking capabilities, especially to reach industrial partners and businesses.

Second, given that department role models are positively related to motivation and entrepreneurial intention, heads of department/deans should develop more academic entrepreneurship engagement activities while at the same time encouraging the emergence of role models at the department level (Prodan & Drnovsek, 2010). In this case, more effort is needed to capture and showcase stories of successfully academic entrepreneurs. Moreover, considering the lesser impact of department entrepreneurial support, heads of department/deans should pay more attention to introducing better entrepreneurial support mechanisms while also

creating an entrepreneurial culture at the department level. As the results of this study have shown, the department's impact on academic scientists with weak entrepreneurial motivation is significant when entrepreneurial activities are supported. For example, although some departments add patent and license application, contract research or consultancy to measure the performance of academic scientists, little attention has been given to encourage academic scientists to commercialize knowledge through creating spin-off. In this case, more support policies at the department level, such as providing facilities and incentive/reward system, should be implemented.

While the present study has aimed to contribute to developing knowledge on academic entrepreneurship, some limitations remain. First, the results show that department scientific reputation is positively related to entrepreneurial intention, partly confirming that scientific research and commercialization engagement are symbiotic. However, this study does not discuss how scientific research and academic entrepreneurship could reinforce each other, and how to manage the contradictions between academic culture and industrial practice. Future research could focus on how entrepreneurial motivation to commercialize knowledge is strengthen or weakened by academic norms, such as producing research for publication. Second, our results indicate that department entrepreneurial support has less influence on academic entrepreneurship, but we do not confirm whether the effect of entrepreneurial support from departments is weaker than from universities or whether department policies are more inclined toward teaching or scientific research than commercialization activities. Moreover, knowledge commercialization activities cover various activities from spin-off creation, patent,

to contract research and consultancy. Arguably, we can expect that contextual factors may have different impact on each type of the activities. Hence, more studies are needed to address these issues. Third, this study has investigated the impact of scientific reputation, entrepreneurial support, and role models at the department level on academic entrepreneurship engagement. However, more contextual factors should not be ignored. For example, the role of head of department/dean should be investigated in more detail. In addition, the current research also has some limitation in the research design. Although we attempted to adapt the research to the Chinese context, the scales for measuring the variables in this study have been developed from studies in western countries. Consequently, future research should investigate or develop more appropriate scales to describe entrepreneurial motivation and intention in the Chinese context.

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Appendix

Table 1A
Variables, Survey Questions, and Measurements

Variable	Survey question	Scale	Measurements
Academic Entrepreneurial Intention Index (AEI)	*How likely is it that in the foreseeable years you will engage in:* *Spin-off Intention (SOI):* (1) creating a company with my research partners; (2) creating a company based on my research findings; (3) creating a company to commercialize my research. *Patenting and Licensing Intention (PLI):* (1) applying for patents on my scientific research findings; (2) licensing my scientific research by assigning technology or becoming a shareholder in a company; (3) being awarded intellectual property rights, patents, copyrights, and trademarks. *Contract Research and Consulting Intention (CCI):* (1) carrying out collaborative research with industry; (2) carrying out contract research with industry; (3) carrying out technology or management consulting. The questions were adapted from Johnson, Monsen, and Mackenzie (2017) and Huyghe and Knockaert (2015).	5-point Likert scale	The variable was calculated using the following equation. $AEI_n = \sum_{j=1}^{3} C_j \times Q_j$ Where Q_j is the weighted average score of each intention; C_j is the concentration degree calculated using the Herfindahl-Hirschman method (Marzocchi, Kitagawa, and Sánchez-Barrioluengo 2017). $C_j = \sum_{i=1}^{N} \left(\frac{a_{ij}}{\sum_{j=1}^{3} a_{ij}} \right)^2$ Where j=1,2,3 indicates the type of entrepreneurial intention; a_{ij} represents the selected score of the j^{th} type of entrepreneurial intention for i^{th} respondent; N is the total sample.
Department	*To what extent is this statement relevant to you:*	Dichotomous	The variable was calculated using the following

Scientific Reputation (DSR)	My department has: (1) first-class disciplines for the Chinese Double-First Class Project[1]; (2) State Key Laboratory (Engineering Centre) or Key Laboratory (Engineering Centre) of the Ministry of Education (MOE); (3) participating in the Project 985 platform; (4) other national innovation projects. These items were developed based on the latest criteria of the National Natural Science Foundation of China (NSFC) and the Chinese Scholarship Council (CSC) of MOE in determining the status and reputation of academic departments.	variable	equation. $$DE_n = \sum_{j=1}^{4} D_j \times b_j$$ Where b_j refers to department affiliation ("0 = no" and "1=yes"); D_j is the difficulty degree. D_j represents the proportion of respondents not affiliated with the given department (Zhao et al. 2020). $$D_j = 1 - \frac{\sum_{n=1}^{N} b_{ij}}{N}$$ Where j=1,2,3,4, represent the four department attributes; b_{ij} indicates whether the i^{th} respondent is affiliated with the j^{th} department, coded as "0 = no" and "1=yes"; N is the total sample.
Department Entrepreneurial Support (DES)	*To what extent is this statement relevant to you:* My department offers: (1) entrepreneurial support, such as access to funding, office space, workshops, research facilities, and connection to industrial partners; (2) opportunities to acquire entrepreneurial knowledge and skills through training, workshops, and education; (3) incentives and reward system, such as flexible working conditions and workload, recognition for entrepreneurial activities, or financial reward for conducting entrepreneurial	Dichotomous variable	The variable was calculated using the following equations: $A_j = \frac{\sum_{n=1}^{N} c_{ij}}{N}$ $DS_n = \sum_{j=1}^{4} A_j \times c_j$ Where j=1,2,3 refers to the three types of department entrepreneurial support; c_{ij} represents whether the i^{th} respondent is affiliated with the j^{th} department, coded as "0 = no" and

[1] The list of candidate universities and colleges participating in the Double-First Class Project was released by the Chinese authorities on 21September 2017. The aim of the project is to create more world-class universities and disciplines by the end of the mid-21st century.

	activities.		"1=yes"; c_j is department affiliation ("0 = no" and "1=yes"); N is total sample.
Department Role Models (DRM)	*To what extent is this statement relevant to you:* I have colleague(s) who have experience in: (1) founding companies with the scientific research findings; (2) patenting or licensing of research findings; (3) carrying out contract research or providing technical/management consulting. The questions were adapted from Huyghe and Knockaert (2015).	5-point Likert scale	The variable was calculated from the average of the factor loadings ensuing from the exploratory factor analysis.
Attitude Towards Commercialization (ATC)	*To what extent do you agree with these statements:* (1) personally, involvement in academic entrepreneurship has more benefits than drawbacks; (2) Academic entrepreneurship activities attract me a great deal; (3) with more resources and opportunities, I would like to engage in academic entrepreneurship; (4) involvement in academic entrepreneurship will provide me with great satisfaction; (5) among the variety of choices, I prefer to engage in academic entrepreneurship. The questions were adapted from Krueger et al. (2000) and Liñán and Chen (2009).	5-point Likert scale	The variable was calculated as an average score.
Perceived Behavioral Control (PBC)	*To what extent do you agree with these statements:* (1) engaging in academic entrepreneurship might be easier for me; (2) I can control all the procedures if I'm involved in academic	5-point Likert Scale	The variable was calculated as an average score

	entrepreneurship; (3) I know the necessary details when I engage in academic entrepreneurship; (4) I know how to commercialize scientific research clearly; (5) if I engage in academic entrepreneurship, I will largely be successful. The questions were adapted from Krueger et al. (2000) and Liñán and Chen (2009).		
Gender (GN)	"0=female" and "1=male" Adapted from Ding, Murray, and Stuart (2013), Goel, Göktepe-Hultén, and Ram (2015).	Dichotomous variable	
Seniority (SN)	*Describe your current academic position* "0=Assistant Professor or Lecturer" and "1= Associate Professor or Professor". Adapted from Clarysse et al. (2011)	Dichotomous variable	
Academic output (AO)	*Number of scientific publications in the last five years.* The question was adapted from Perkmann et al. (2013)	Continuous and categorical variable	The variable was calculated by considering the quality of each publication according to this categorization: "10=SCI/SSCI publications"; "5=EI publications"; "3=Chinese core publications"; and "1=conference or other publications"
Applied discipline (AD)	*Can your academic research and engagement be categorized as an applied discipline (e.g. life-sciences, applied sciences, engineering)?* "0=no" and "1=yes".	Dichotomous variable	

	The question was adapted from Abreu and Grinevich (2013)		
Previous commercialization experience (PE)	*Have you been involved in or experienced any research commercialization activities before?* "0=no" and "1=yes". The question was adapted from Scholten et al. (2015)	Dichotomous variable	

Table 2A
Independent Sample T-Test, Different Groups of Respondents (Early and Late)

	Levene's test for variance equality		T test for means equality						
								95% CI	
	F	Sig.	T	df	Sig. (2-tailed)	Mean difference	S.E.	Boot LCCI	Boot UCCI
Gender									
Equal variances assumed	7.869	0.055	-1.409	270	0.160	-0.078	0.055	-0.187	0.031
Equal variances not assumed			-1.408	267.715	0.160	-0.078	0.055	-0.187	0.031
Age									
Equal variances assumed	0.528	0.468	-0.771	270	0.441	-0.080	0.103	-0.283	0.124
Equal variances not assumed			-0.772	269.872	0.441	-0.080	0.103	-0.283	0.123
Seniority									
Equal variances assumed	2.337	0.128	-0.853	269	0.394	-0.049	0.057	-0.162	0.064
Equal variances not assumed			-0.863	221.165	0.389	-0.049	0.057	-0.161	0.063
Discipline									
Equal variances assumed	0.730	0.394	0.823	270	0.411	0.089	0.108	-0.124	0.301
Equal variances not assumed			0.823	269.406	0.411	0.089	0.108	-0.124	0.301

Table 3A
Results of Valid or Invalid Respondents

	Levene's test for variance equality		T test for means equality						
								95% CI	
	F	Sig.	T	df	Sig. (2-tailed)	Mean difference	S.E.	Boot LCCI	Boot UCCI
Gender									
Equal variances assumed	0.003	0.956	-0.027	270	0.978	-0.003	0.098	-0.195	0.190
Equal variances not assumed			-0.027	27.468	0.979	-0.003	0.099	-0.206	0.201
Age									
Equal variances assumed	0.138	0.771	0.030	270	0.976	0.005	0.182	-0.353	0.364
Equal variances not assumed			0.030	27.928	0.976	0.005	0.178	-0.359	0.370
Seniority									
Equal variances assumed	0.276	0.600	-0.077	270	0.939	-0.013	0.174	-0.357	0.330
Equal variances not assumed			-0.078	27.768	0.938	-0.013	0.173	-0.367	0.340
Discipline									
Equal variances assumed	0.142	0.707	-0.071	270	0.944	-0.013	0.190	-0.388	0.361
Equal variances not assumed			-0.077	28.801	0.939	-0.013	0.174	-0.370	0.343

Table 4A
OLS Regression Results—Academic Entrepreneurial Intention Score (Robustness Test)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
GN	0.083**	0.133*	0.135**	0.131**	0.138**	0.132**	0.129**	0.135**
	(0.037)	(0.069)	(0.055)	(0.054)	(0.055)	(0.053)	(0.054)	(0.054)
SN	-0.122	--0.044	-0.034	-0.045	-0.040	-0.050	-0.052	-0.047
	(0.095)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.092)	(0.087)
AO	0.001**	0.001**	0.001***	0.001**	0.001**	0.001***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AD	0.341***	0.212**	0.184**	0.212**	0.210**	0.193**	0.211**	0.216**
	(0.088)	(0.089)	(0.090)	(0.089)	(0.089)	(0.089)	(0.089)	(0.090)
PE	0.396***	0.309***	0.310***	0.303***	0.304***	0.303***	0.308***	0.294***
	(0.102)	(0.100)	(0.099)	(0.101)	(0.101)	(0.099)	(0.100)	(0.101)
ATC	0.425***	0.393***	0.484***	0.419***	0.535***	0.393***	0.392***	0.391***
	(0.051)	(0.050)	(0.067)	(0.056)	(0.133)	(0.050)	(0.050)	(0.050)
PBC	0.311 ***	0.303***	0.298***	0.308***	0.304***	0.420***	0.340***	0.467***
	(0.068)	(0.067)	(0.066)	(0.067)	(0.066)	(0.088)	(0.077)	(0.174)
DSR		0.121**	0.429***	0.121**	0.123**	0.396***	0.119**	0.122**
		(0.052)	(0.161)	(0.052)	(0.052)	(0.147)	(0.052)	(0.052)
DES		-0.095	-0.093	0.084	-0.085	-0.093	0.056	-0.086
		(0.060)	(0.059)	(0.191)	(0.061)	(0.060)	(0.174)	(0.061)
DRM		0.198***	0.204***	0.205***	0.354**	0.200***	0.203***	0.309**
		(0.055)	(0.055)	(0.055)	(0.147)	(0.055)	(0.055)	(0.122)
DSR*ATC			-0.099**					
			(0.049)					
DES*ATC				-0.058				
				(0.058)				
DRM*ATC					-0.053*			
					(0.031)			
DSR*PBC						-0.131**		
						(0.065)		
DES*PBC							-0.069	
							(0.074)	
DRM*PBC								-0.058*
								(0.032)
Constant	0.454**	0.074*	-0.209*	-0.023*	-0.335*	-0.151*	0.082*	-0.219**
	(0.163)	(0.043)	(0.109)	(0.012)	(0.182)	(0.088)	(0.045)	(0.107)
R^2	0.563	0.597	0.603	0.599	0.599	0.603	0.599	0.599
Adjusted R^2	0.552	0.582	0.587	0.582	0.582	0.587	0.582	0.582
F Statistic	48.61***	38.69***	35.96***	35.26***	35.34***	35.95***	35.24***	35.28***

N=272; *p<0.1, **p<0.05, ***p<0.01. Note: GN: Gender; SN: Seniority; AO: Academic output; AD: Applied discipline; PE: Previous commercialization experience; DSR: Department scientific reputation; DES: Department entrepreneurial support; DRM: Department role model; ATC: Attitude toward commercialization; PBC: Perceived behavioral control.