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# Engaging for the love of place? The role of place attachment in academics' regional engagement efforts

Kwadwo Atta-Owusu<sup>a</sup>  and Rune Dahl Fitjar<sup>b</sup> 

## ABSTRACT

The third mission of universities is often conceived as a regional one, encompassing contributions to regional development and engagement with regional actors. Yet, universities are increasingly global institutions with internationally mobile faculty. This raises the question of how the embeddedness of academics in their regions shapes engagement at the regional scale. Using survey data of 625 faculty members at seven universities, we investigate the role of place attachment and informal social networks in shaping academics' regional engagement efforts. The findings indicate that academics with a strong sense of local attachment and extensive social networks engage more with local partners.

## KEYWORDS

place attachment; informal social networks; academic engagement; native and non-native academics; regional engagement

JEL O3, R1, R2

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## INTRODUCTION

The relationship between universities and their host regions has historically at times been tense. The metaphors of town and gown and the ivory tower reflect that universities have often sought to create distance from the places in which they are located (Addie et al., 2015) to maintain independence from local control and to create a sanctuary for scholars free from worldly pursuits. However, with innovation and knowledge now considered the main drivers of regional development,<sup>1</sup> policymakers increasingly see universities as engines of growth for their regions (Goddard & Vallance, 2011; Tripl & Maier, 2011) and expect universities to take on a third mission of innovation and knowledge exchange. This is often understood as a regional mission of universities (Pinheiro et al., 2016; Sánchez-Barrioluengo & Benneworth, 2019). Universities contribute to regional development in various ways, including through teaching and research. However, regions and universities try to enhance knowledge spillovers by encouraging academics to interact and exchange knowledge with public and private actors in the region (Looy et al., 2003). While universities' external engagement occurs at multiple geographical scales

(Ponds et al., 2009), it is frequently oriented towards the local community. Collaboration with stakeholders such as firms often takes place at the local scale (Fitjar & Gjelsvik, 2018; Tripl, 2013). Significant policy efforts have been geared toward promoting academics' engagement in their regions (Charles, 2003; Chatterton & Goddard, 2000).


However, universities remain inherently global institutions that are part of international scientific communities, and which aim to develop knowledge new to the world. Zencey (1996, p. 15) described professors as 'citizens of the *cosmo polis*, ... expected to owe no allegiance to geographical territory'. Research is increasingly conducted through international collaboration (Henriksen, 2016; Wagner & Leydesdorff, 2005), and universities attract growing numbers of international faculty and students (Adnett, 2010; Altbach & Yudkevich, 2017). This raises the question of to what extent universities can balance increasing internationalization and increasing expectations for regional engagement. To assess whether these developments are in conflict, we need to know how important the local rootedness of faculty is for regional engagement.<sup>2</sup>

However, prior research has paid little attention to how academics' attitudes and dispositions, and their social


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relations in the region, shape regional engagement. Which factors lead academics to engage with regional partners despite the inherent tension between the performance of this role and other core duties? While research has examined how the regional and university contexts shape regional engagement (Bagchi-Sen & Smith, 2012; Looy et al., 2003; Qiantao et al., 2016; Sánchez-Barrioluengo & Consoli, 2016), the embeddedness of the individual academic in the region also matters. For instance, individuals' place attachment – which denotes the emotional ties people form with specific places – affects a wide range of place-related behaviours (Lewicka, 2011; Low & Altman, 1992; Stedman, 2002). It stands to reason that academics' engagement may also be shaped by their affective dispositions. However, previous research has not studied how the emotional bonds academics form with the regions in which they live and work stimulate or dampen their local engagement efforts. Examining this relationship empirically could provide valuable input to regional engagement policies.

Similarly, academics' professional and social networks tend to shape their engagement decisions. For example, academics may engage more if they interact with colleagues who are engaged (Aschhoff & Grimpe, 2014; Tartari et al., 2014). Similarly, informal network links with industry partners help academics to engage in industrial collaborations (Østergaard, 2009; Ponomariov & Boardman, 2008). Thus, embeddedness in social networks can unlock collaboration opportunities. However, not all academics are equally well placed to benefit from social ties in their locale. For instance, foreign-born academics tend to have less extensive regional networks, which hampers their ability to engage in local collaboration (Lawson et al., 2019; Libaers, 2014). Hence, social networks can facilitate as well as hinder academic engagement. However, little attention has been paid to the role of social networks for local engagement, or to how their relationship to engagement behaviour differs between native and non-native academics.

Building on place attachment and social network literatures, this paper bridges these gaps by exploring whether academics' place attachment and their informal social networks are related to engagement with local actors. Furthermore, we compare non-native and native academics in order to examine whether embeddedness works through different processes for those who migrate to a region than for those who were born there.

The paper uses data from a cross-sectional survey of 625 academics from seven universities affiliated with the European Consortium of Innovative Universities (ECIU). The findings demonstrate the relevance of place attachment and informal social networks in the regional engagement of academics. Furthermore, the effect of place attachment is consistent across the two groups, albeit with a weaker effect for non-native academics. However, the informal social networks of native academics are strongly related to regional engagement, whereas they are insignificant for non-natives to the region.

## LOCAL ROOTEDNESS AND ACADEMIC ENGAGEMENT

### The rationale for academics' local engagement

Universities are increasingly broadening their external interaction to be relevant and responsive to the needs of societal stakeholders. Academic engagement, which used to be an informal activity performed by few academics, is now recognized by most universities as an integral role (Pinheiro et al., 2012). Academic engagement is understood as academic scientists' knowledge exchange collaboration with non-academic partners or organizations (Perkmann et al., 2013). Whereas much attention has been on interaction with industry, academics equally engage with public and third sector organizations (Hughes et al., 2016; Olmos-Peñuela et al., 2014). Collaboration with external actors occurs through a variety of channels, including formal knowledge-exchange activities such as patenting, consultancy and contract research, and informal activities such as advisory roles, training of personnel and student supervision (Cohen et al., 2002; D'Este & Patel, 2007; Grimpe & Hussinger, 2013; Perkmann et al., 2013).

Many studies have examined the geographical contexts in which academics' collaboration takes place (Fromhold-Eisebith & Werker, 2013). Engagement activities happen at varied geographical (i.e., local, national and international) scales (Lawson et al., 2019; Ponds et al., 2009). However, as with other types of collaboration, academic engagement tends to happen more frequently between co-located actors (Fitjar & Gjelsvik, 2018; Ponds et al., 2007; Trippl, 2013). Local collaboration brings well-known benefits from geographical proximity. Coordination of cooperation relationships requires considerable time and effort, which grow when the parties are far apart. Collaborating with geographically close actors helps minimize coordination costs (Cummings & Kiesler, 2007). In fact, geographical proximity may be even more important for collaboration between academics and non-academic partners, since the institutional, cognitive and social distances are often larger (Alpaydın & Fitjar, 2021). Local collaboration can also reduce opportunistic behaviour. Academic engagement may involve the exchange of proprietary knowledge, and partners need to be trustworthy. Given the difficulty in assessing the trustworthiness of unknown distant actors, academics may be more inclined to interact with local partners whose credibility can be evaluated through existing networks (Ponds et al., 2007).

Academics may also collaborate locally simply because they want to make a difference in their region (Kroll et al., 2016). Many academics are committed to ensuring the economic and social impacts of their work. Considering the importance of knowledge exploitation to economic development, they may be inclined to collaborate with partners who will use their research and with whom they can interact closely in its implementation (Sánchez-Barrioluengo & Benneworth, 2019). Collaborative activities such as joint research, student placements and employee training equip beneficiaries with skills and knowledge

that enable successful collaboration also in the future (Bishop et al., 2011; Salter & Martin, 2001).

Finally, access to resources such as equipment, facilities, grants and networking opportunities are also rationales for local engagement. Decreasing internal funding for research has compelled academics to act strategically in securing additional resources (Slaughter & Leslie, 2001). Whereas they can search for these resources from varied geographical sources, the characteristics of the local context play a role in the search decision. Funding by regional actors or for regional development purposes may attract academics to regional collaborations. Academic philanthropy often also takes place at the local scale (Glückler & Ries, 2012).

### Place attachment and regional engagement

There is evidence that people attached to a place are more willing to engage in activities aimed at benefiting that place (Halpenny, 2010; Scannell & Gifford, 2010). Individuals develop affinities through experiences from their relationships with a place. In situations where action is required to protect or improve a place, people draw on place representations stored in memory or by constructing a sense of place on the spot, from contextual cues to guide behavioural response (Bugden & Stedman, 2019). Such representations may involve both physical and symbolic (e.g., cultural, institutional) aspects that make up the identity of a place (Paasi, 2001). Place attachment is related both to the place itself and to the imagined community which it represents and with which an individual may identify to a greater or lesser extent (Fitjar, 2010).

Extending this perspective, we expect academics with stronger place attachment to be more inclined to collaborate with regional actors. A strong regional consciousness or sense of belonging to the region can make academics more motivated to contribute to the development of the region. For example, an academic with a high sense of attachment may be more willing to share knowledge or expertise with local firms or agencies even if they receive no material or financial benefits in return. From studies of firms, we know that the desire to contribute to the region can be an important motivation for university–industry collaboration even when there is no immediate benefit for the firm (Fitjar & Gjelsvik, 2018). Such motivations may also be at work for academics with strong place attachment. Place attachment may also be conducive to trust in other members of the imagined community. Since mistrust or the suspicion that partners would behave opportunistically can impede knowledge exchange interactions (Bruneel et al., 2010), these attitudes can ease suspicions about other peoples' motives, thereby increasing their willingness to forge collaborative relationships with regional actors (Mesch & Manor, 1998). Accordingly, we hypothesize the following:

*Hypothesis 1: Strong place attachment will increase the level of regional engagement of academics.*

### Informal social networks and regional engagement

On top of the desire to interact, engagement also depends on opportunities to do so. To collaborate with external actors, networks and contacts with potential partners are necessary. Besides formal social networks developed, for example, in joint projects, academics can also develop relationships through socializing with family, friends, colleagues or members of recreational or voluntary organizations (Granovetter, 1985). Such interactions predominantly take place at the local scale. These amorphous and loose relationships forged in a societal context may also be important in that they are endowed with relevant relational resources that foster external engagement (Al-Tabbaa & Ankrah, 2019). In short, they represent the social capital which enables local engagement.

Informal social networks influence academics' engagement efforts through various mechanisms, providing academics with network resources (Nahapiet & Ghoshal, 1998). By engaging in frequent casual interactions and leisure activities, academics learn to trust other people and gain the trust of others. More so, obligation norms are cultivated whereby individuals feel obliged to reciprocate favours they receive (Thune, 2007). In addition, informal networks provide opportunities for collaboration (Kalar & Antoncic, 2016). Academics can acquire information for external cooperation through interactions with friends or acquaintances, reducing their search costs (Al-Tabbaa & Ankrah, 2019; Broekel & Binder, 2007). Moreover, since actors in informal networks often come from diverse professional backgrounds, they have the potential to link actors across sectors (Ponomarev & Boardman, 2008). Finally, interactions in social contexts or through voluntary work could bring awareness of the problems and needs of a region, leading to place-based research and collaborations with other researchers and local stakeholders to address these challenges (Bodorkós & Pataki, 2009).

In summary, informal social networks of academics provide diverse organizational contacts and connections to potential partners. These network resources facilitate their engagement with regional actors. Thus, we propose the following:

*Hypothesis 2a: Informal social networks will increase the level of regional engagement of academics.*

While informal social networks may be related to engagement behaviours of academics, this effect may be more pronounced for natives to the region than non-natives because of the possible differences in the composition of their networks. Native academics will have experience from participating in various local social arenas through their life. This may facilitate their interaction with diverse groups of people. This crosscutting interaction allows them to develop expansive networks, accumulate rich socio-cultural capital and access novel knowledge (Beh-toui, 2007; Burt, 2005). Drawing on this wealth of

resources enables natives to identify collaboration partners and effectively utilize local opportunities. Although non-native academics carry their networks to new places, they also need to develop new connections in the local environment if they want to engage with local actors. This means that they often must build their local networks from scratch (Trippel, 2013). Building meaningful networks takes considerable time and is quite difficult to achieve (Plöger & Kubiak, 2019). Considering that the workplace provides the most frequent opportunities for socializing, non-native academics may – at least initially – build narrower networks, with a higher share of other academics. To compensate for their lower embeddedness in local networks, non-natives may build social networks more strategically than natives, who often have social networks that predate their academic careers. This may result in social networks for non-natives that are more tailored for their academic careers (Heffernan, 2021). However, this may in many cases also imply networks with other academics, since third mission activities are often less important for career development. Since informal social networks serve as a bridge to formal engagement with external partners (Fitjar & Gjelsvik, 2018; Ponomariov & Boardman, 2008), these narrower networks can limit local engagement opportunities for non-natives. Thus:

*Hypothesis 2b: The relationship between informal social networks and regional engagement efforts will be stronger for native academics than non-native academics.*

## METHOD

### Data

This study employs data from a survey conducted in autumn 2019 to investigate the attitudes and experiences of academics regarding engagement with non-academic actors. The survey forms part of a large-scale research project on the Role of Universities in Innovation and Regional Development (RUNIN). The study population is drawn from institutions affiliated with the ECIU, a university association. This network was selected because of the regional engagement mission of member institutions and accessibility to academics for data collection. The ECIU was established in 1997 as a network of research intensive and entrepreneurial universities committed to promoting innovation and entrepreneurship and solving societal challenges in their regions. This vision is reflected in the close relations between these universities and societal actors. Presently, the consortium has 13 members and one affiliated partner. All are generalist universities with cross-cutting disciplines. The choice of selecting universities in this network is based mainly on a practical reason of getting access to academics for data collection. Due to General Data Protection Regulation (GDPR), university managers are often unwilling to provide proprietary information (e.g., the email addresses of employees) to external researchers. Thus, we had to rely on our networks in the ECIU to secure access to academics.

We relied on the ECIU leadership to invite all members of the consortium to participate in the study, of which seven agreed: the universities of Aalborg, Stavanger, Trento and Twente, the Autonomous University of Barcelona, Dublin City University, and Kaunas University of Technology. The target population was all academics, from research fellows to full professors, in teaching and/or research positions in all scientific disciplines. We contracted a private survey company (Opinion AS) to conduct the data collection. Before the survey was administered, a press release was issued on the intranet of the respective universities to sensitize respondents about the impending exercise. After this, the survey was distributed via email from local university contact persons, using university mailing lists. Employing these methods, the questionnaire was distributed to 7330 academics. In total, we collected 635 usable responses, yielding an overall response rate of 8.7%. After removing responses by ineligible respondents (e.g., doctoral candidates),<sup>3</sup> a final sample of 625 remained for analysis. Table 1 reports the characteristics and geographical locations of the universities.

The high dropout rate implies a risk of non-response bias in the sample. To check for this, we conduct a series of non-response analyses. First, we compare early and late respondents in terms of regional engagement, place attachment, informal social networks, length of residence and control variables (Armstrong & Overton, 1977). We find no significant differences between early and late respondents on any of these dimensions. Second, we compare the sample with the whole population of academics at the selected universities on background variables: institution, disciplinary field, gender, nationality and academic rank (see Table A1 in Appendix A in the supplemental data online). There are significant differences between the sample and population distribution in some of these dimensions: with respect to gender, female academics are overrepresented. Full professors are also highly overrepresented. There is also a smaller, but significant, overrepresentation of social sciences and humanities (SSH) fields. For nationality, there is no significant difference between the sample and the population. The response rate also differs across institutions. We assess whether non-response bias in these dimensions affect the results by constructing post-stratification weights to correct for differences between the sample and the population in these dimensions in a robustness test. Compared with the main unweighted estimates, the weighted results are robust, albeit with some minor differences, which do not qualitatively alter the main results (see Table A5 online).

### Variables

#### *Dependent variable*

Respondents were asked to indicate whether they had engaged in any of nine types of interaction with external actors over the past three years, and if the interactions took place within the region, within the country or internationally (for the list of activities and their distribution, see Table 2). We employ the responses from the interaction activities within the region in the main analysis.

**Table 1.** Geographical location and sampling characteristics of universities in the study.

University	Country	Region	Population <sup>a</sup>	Sample	Response rate (%)
Aalborg University	Denmark	Nordjylland	1387	137	9.9%
Autonomous University of Barcelona	Spain	Barcelona	2666	151	5.7%
Dublin City University	Ireland	Dublin	625	28	4.5%
Kaunas University of Technology	Lithuania	Kauno	680	32	4.7%
University of Stavanger	Norway	Rogaland	699	126	18.0%
University of Trento	Italy	Trentino	643	50	7.8%
University of Twente	Netherlands	Overijssel	630	111	17.6%
Total			7330	635	8.7%

Note: <sup>a</sup>Population refers to postdoctoral fellows to full professors in research and/or teaching positions.

Furthermore, we test for the specificity of these results by also estimating the model for engagement at the national and international scales.

The dependent variable, regional engagement index, follows the approach of Bozeman and Gaughan (2007). We weight each engagement activity by the inverse of its percentage, such that less common or less frequently performed activities carry stronger weight than those more common or more frequently performed. For instance, 39% of respondents report giving informal advice or invited lectures, hence we assign a weight of 61. Meanwhile, only 3% engage in commercialization with regional partner(s). Accordingly, that activity receives a weight of 97. We sum the weights of all nine types of engagement activities in which the respondents engage with regional partners. The variable ranges from 0 if a respondent does not engage in any activity to 7.29 if all activities are performed (for full list of items, see Table 2; for summary statistics, see Table A2 in Appendix A in the supplemental data online). This measure has a Cronbach's alpha of 0.74, indicating a high reliability of the measure.

### Explanatory variables

The place attachment measure assesses a respondent's attachment to the region in which the university is located. It is measured with five items adapted from the Place Attachment Scale (Lewicka, 2008): 'I miss this region when I am not here'; 'I have little influence on the affairs of this region'; 'I am rooted in this region'; 'I want to be involved in what is going on in this region'; and 'I would like to move away from this region' (for summary statistics, see Table A2 in Appendix A in the supplemental data online). Respondents rate each item on a five-point scale ranging from 'strongly disagree' to 'strongly agree'. We reverse-code the negatively worded items and replace 'don't know' or missing responses with the mean score of each item. Finally, we sum the mean scores to generate a measure for place attachment (Cronbach's alpha = 0.72).

The informal social networks measure captures the breadth as well as the density of the networks of respondents. This measure is constructed from three questions that asked respondents to indicate the amount of time they spend per month interacting socially with friends, with colleagues from their work or profession, and with people at leisure

clubs or voluntary organizations. For each item, the responses were scored on a five-point scale from 'not at all' to 'several times a week'. The measure was generated by mean scoring the three items (Cronbach's alpha = 0.65).<sup>4</sup>

### Control variables

We control for several factors that may influence regional engagement. First, we include gender (a dummy variable coded 1 for female, and 0 for male), age (a categorical variable coded into three groups: < 40, 40–49 and ≥ 50 years), and employment years to control for the demographic characteristics of respondents. Employment years measures the number of years a respondent has worked at their current university. This variable is highly skewed, so we log-transform it. Second, we control for professional experience outside academia (a dummy taking the value 1 if a respondent has worked in other sectors before joining academia, and 0 otherwise). Third, we include the research orientation of respondents, based on a self-reported classification distinguishing between basic research, user-inspired research, applied research and other. Finally, we include seven dummies to account for variations in external engagement across the universities (and, by extension, the regions in which they are located). Table A3 in Appendix A in the supplemental data online reports the descriptive statistics for the variables, while Table A4 online presents the pair-wise correlations between all the variables in the regression model. The correlation coefficients between the explanatory and control variables are mostly low. The variance inflation factors (VIFs) range from 1.10 to 2.05, with a mean of 1.51, indicating that multi-collinearity is not a problem in the analysis.

### Estimation and model specification

We estimate the model with ordinary least squares (OLS) regression using robust standard errors to address possible heteroskedasticity problems. The model specification takes the following form:

$$\begin{aligned}
 \text{Regional engagement}_i = & \alpha + \beta_1 \text{Place attachment}_i \\
 & + \beta_2 \text{Informal social networks}_i \\
 & + \beta_3 \text{Controls}_i + \varepsilon_i
 \end{aligned}
 \tag{1}$$

**Table 2.** Share of academics who participate in different engagement activities overall and at each geographical scale (%) ( $n = 625$ ).

Activities	Engagement			
	Overall	Regional	National	International
Informal advice	62%	39%	44%	24%
Joint research	59%	33%	37%	29%
Student placements and projects	36%	24%	20%	13%
Contract research	32%	15%	20%	11%
Joint supervision of students	30%	19%	16%	9%
Consultancy services	28%	14%	18%	9%
Training of employees of external organizations	27%	15%	23%	8%
Membership of advisory boards	25%	8%	14%	11%
Commercialization of research results	6%	3%	4%	2%

where *Regional engagement* refers to the dependent variable delineated above; *Place attachment* and *Informal social networks* represent the explanatory variables of interest; *Controls* is a vector of socio-demographic, research focus, and university specific control variables; and  $\varepsilon_i$  is the error term.

## EMPIRICAL FINDINGS

### Descriptive results

Table 2 reports the distribution of engagement activities across varied geographical scales between 2016 and 2019. Giving informal advice and participating in joint research projects are the most widely used activities for engagement. Around one-third of academics collaborate with external actors through student internships and projects, joint supervision of students, contract research and consultancy services. Commercialization activity is the least used channel.

When disaggregated by scale, levels of engagement tend to be higher at the national than at the regional and international scales. For instance, 44% of academics report giving informal advice to external actors at the national scale. This figure is 5 percentage points higher than at the regional

scale. Also, more academics engage in contract-based interactions at the national scale compared with the regional scale. However, student-related engagement mostly occurs at the regional scale. At the regional scale, 24% and 19% of academics interact through student internships and projects, and joint supervision of students, respectively. By contrast, interactions through these activities at the national scale are about 4 percentage points lower.

With respect to differences between native and non-native academics (Table 3), the former engage in relatively more activities than the latter at the regional scale. On average, natives to the region engage in 1.9 types of activities in the region compared with 1.5 types for non-natives. This difference is statistically significant ( $t(623) = -2.54$ ,  $p < 0.05$ ). At the national and international scales there are no significant differences between natives and non-natives in the level of engagement: Natives engage in an average of 1.8 types of activities at the national scale and 1.1 types of activities at the international scale, while non-natives engage in an average of 2.0 and 1.2 types of activities at these respective scales. Natives also report higher place attachment (3.7) than non-natives (3.0). This difference is also significant ( $t(623) = -10.1$ ,  $p < 0.001$ ). Finally, both groups report engaging in social interactions with

**Table 3.** Difference between native academics and non-native academics on key variables.

Key variables	Non-native			Native		$p$ -value
	$N$	Mean	$N$	Mean	$t$ -value	
Regional engagement	361	1.54 (0.10)	264	1.93 (0.12)	-2.54	0.011
National engagement	361	2.00 (0.11)	264	1.75 (0.12)	1.53	0.130
International engagement	361	1.23 (0.10)	264	1.09 (0.10)	0.97	0.335
Place attachment	341	3.03 (0.05)	254	3.72 (0.05)	-10.09	0.001
Informal social networks	361	3.02 (0.05)	264	3.15 (0.06)	-1.70	0.088

Note: Standard errors are shown in parentheses.

friends, work colleagues and members of recreation organizations an average of two to three times per month. Comparing the two groups reveals no significant difference between them at the 95% level ( $t(623) = -1.70, p = 0.08$ ).

### Regression results

Table 4 reports the regression results both for the full sample and separately for natives and non-natives to the region. We adopt three steps in the estimation of the regression model. First, we estimate a baseline model (model 1) with only the control variables. Next, the main model (model 2) introduces the key explanatory variables. Finally, we run separate regressions for non-native (model 3) and native academics (model 4) to compare the drivers of regional engagement across the two groups.

Starting with the controls (model 1), we find a positive and strong relationship between employment years and regional engagement. This suggests that academics who have worked for longer periods in their universities tend to engage more regionally. Female academics are less likely to engage with regional actors compared with their male counterparts, in line with the previous literature on engagement in general (Tartari & Salter, 2015). Furthermore, academics between 40 and 49 years of age tend to be more regionally engaged than those aged 50 and above. Professional experience outside academia is positive and strongly significant, indicating that academics with experience from other sectors tend to engage more, again in line with the previous literature (Gulbrandsen & Thune, 2017). Finally, those conducting user-inspired and applied research are more regionally engaged than academics who undertake basic research.

Model 2 introduces the main independent variables. Place attachment is positive and highly correlated with regional engagement ( $b = 0.30, p < 0.01$ ), confirming Hypothesis 1. As predicted, a strong sense of attachment to the region is associated with more regional engagement activities. Informal social networks are also positively associated with regional engagement ( $b = 0.17, p < 0.01$ ), supporting Hypothesis 2a. Academics who have frequent social interactions tend to engage more in knowledge transfer interactions with local actors. Overall, the results show the importance of academics' attachment to place and embeddedness in social networks for their regional engagement. However, place attachment has a stronger effect than informal social networks.

Comparing native and non-native academics (models 3 and 4), we find a significant positive relationship between place attachment and regional engagement for both groups. Non-natives' place attachment shows a slightly weaker association with regional engagement, but the difference in the coefficients is not statistically significant ( $\chi^2(1) = 2.33, p = 0.13$ ). This result is consistent with studies in other contexts (e.g., Wu et al., 2019). While there are differences between natives and non-natives in the levels of place attachment, the importance of place attachment for regional engagement is similar for both groups.

For informal social networks, we find no significant association for non-natives, but a significant positive correlation for natives. The difference in the coefficients between the two groups is statistically significant ( $\chi^2(1) = 5.60, p < 0.05$ ). Thus, Hypothesis 2b is supported. Informal social networks tend to be more relevant for natives' local engagement than for non-natives. This result chimes with findings from Plöger and Kubiak's (2019) study of high-skilled mobile professionals. Regarding controls, we find a positive and strong correlation between employment years and the regional engagement of non-natives, but an insignificant association for natives. This finding is similar to Lawson et al. (2019) who show that foreign-born academics tend to engage more locally the longer they stay in the UK. The analysis here shows that this also holds at the regional scale.

### Robustness checks and subsample analyses

To check the robustness of the results, we estimate various alternative specifications of the model. Of particular concern is whether endogeneity might be an issue, for instance, because more engaged academics can develop stronger place attachment. To account for this, we estimate the model using an instrumental variables (IV) regression. As is typically the case with survey data, there are no truly exogenous instruments available for the analysis. The best option available is residence length, which we use to instrument for place attachment, considering that length of residence will be important for forming attachment to a place. While length of residence can certainly affect regional engagement through other mechanisms than place attachment (and informal networks, which we control for), it offers at least some additional insight on whether endogeneity might be driving the results. The  $F$ -test ( $F = 49.7$ ) confirms that residence length is a strong instrument. The results of the two-stage least squares (2SLS) estimator are not qualitatively different from those of the OLS estimator (see Table A6 in Appendix A in the supplemental data online). Additionally, the Durbin–Wu–Hausman test of endogeneity is non-significant (robust score  $\chi^2 = 0.93, p = 0.33$ ; robust regression  $F = 0.94, p = 0.33$ ). This suggests that place attachment is exogenous, confirming the robustness of the main results.

We conduct several subsample analyses to explore variations across different groups (see Table A7 in Appendix A in the supplemental data online). The coefficient for place attachment is significant across all academic ranks, with no significant differences across the groups. However, informal social networks are significant only for full professors. Furthermore, since professors control more resources and engage more than their peers, their inclusion might be driving the results. So, in a further analysis we restrict the analysis to only assistant and associate professors. This does not alter the main results, with the exception that the coefficient of informal social networks is now significant at the 90% level. We also differentiate between SSH and science, technology, engineering and mathematics (STEM) disciplines. Again, place



**Table 4.** Regression analyses of academics' regional engagement efforts.

	Baseline model	Full model	Regional engagement by place of birth	
	(1)	(2)	(3)	(4)
	Regional engagement index		Non-native academics	Native academics
Place attachment		0.295*** (0.064)	0.256*** (0.088)	0.367*** (0.113)
Informal social networks		0.167*** (0.064)	0.031 (0.089)	0.319*** (0.095)
<i>Controls</i>				
Employment years (log)	0.257*** (0.068)	0.199*** (0.068)	0.234*** (0.083)	0.142 (0.127)
Female	-0.204* (0.108)	-0.210* (0.108)	-0.332** (0.137)	-0.085 (0.173)
<i>Age (reference: Age ≥ 50)</i>				
Age < 40	0.206 (0.174)	0.084 (0.174)	0.123 (0.210)	-0.042 (0.315)
Age 40–49	0.332** (0.133)	0.216 (0.133)	0.264 (0.167)	0.100 (0.214)
Professional experience	0.461*** (0.119)	0.461*** (0.119)	0.403*** (0.154)	0.468** (0.187)
<i>Research orientation (reference: Basic research)</i>				
User-inspired basic research	0.639*** (0.148)	0.601*** (0.153)	0.591*** (0.202)	0.627** (0.252)
Applied research	0.752*** (0.133)	0.710*** (0.138)	0.773*** (0.188)	0.590*** (0.207)
Other	0.580* (0.342)	0.471 (0.343)	-0.049 (0.323)	1.016* (0.581)
Constant	-0.377* (0.224)	-1.500*** (0.305)	-1.022** (0.395)	-1.942*** (0.592)
University dummies	Yes	Yes	Yes	Yes
$R^2$	0.129	0.182	0.184	0.233
Adjusted $R^2$	0.108	0.158	0.141	0.177
F-test	8.405	8.718	4.792	4.855
Observations	579	551	317	234

Note: Robust standard errors are shown in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

attachment is positive and significant across both fields. Informal social networks are positive and significant in SSH, but not in STEM disciplines.

We conduct several additional robustness tests (see Table A8 in Appendix A in the supplemental data online). Due to space constraints, we do not discuss the results in detail. One analysis excludes the most highly engaged academics (those in the top 20% or top 10% of the regional engagement index distribution). Another analysis limits the sample to those that have spent 10 years or fewer at their current university. Finally, we use the count form of the dependent variable and estimate the model with Poisson and ordered logit regression methods. In all these analyses, the results are consistent with those of

the main analysis, except that informal social networks are not significant when excluding the most engaged academics.

Finally, to check the specificity of these findings to regional engagement, rather than engagement in general, we also examine how the model performs in predicting national and international engagement (see Table A9 in Appendix A in the supplemental data online). The idea behind this is to assess whether there are any underlying confounding variables that affect both engagement in general and the independent variables in the study. According to the theory outlined above, the effects of place attachment and informal social networks should be specific to regional engagement and will not influence engagement

at other scales. Indeed, this is precisely what we find. Place attachment and informal social networks have no significant effect on national and international engagement. Hence, we conclude that the model works in predicting regional engagement specifically.

## CONCLUSIONS

This paper contributes to a better understanding of how the embeddedness of faculty in their regions shapes local engagement. Specifically, we examine whether place attachment and informal social networks influence local engagement, and if so, whether there are any differences between native and non-native academics in the effects of these factors. The findings reveal that regional embeddedness matters significantly in academics' engagement with local partners. Academics who feel strongly attached to the region tend to collaborate more with local actors. The study also shows that academics who maintain diverse social ties engage more regionally. However, informal social networks matter only for native academics' interactions and have no effect on non-natives' engagement. The findings provide evidence for the important, yet neglected, role of place attachment and social networks for the regional engagement of academics. It also has implications for policy-makers and university managers.

First, reaping the benefits of research at the regional university may be dependent on the ability of the region to embed the university and its academics in wider regional structures. Unlocking the regional development potential of a university does not just require investing in research and technology transfer. The university and its academics must also be embedded into the region in a socio-cultural sense. Hence, regional innovation policy that relies on the contribution of universities needs to adopt a dual approach of investing both in research and in embedding the university in the region. Research universities with an international profile may become cathedrals in the desert unless their academics develop an attachment to the region. The challenge for regional policymakers is to think about strategies or initiatives to stimulate academics' identification and attachment to the region and the development of their social networks.

Second, universities need to manage the tension between internationalization and research excellence, on the one hand, and the need to create impact and participate in the regional community, on the other. While there is certainly potential for regional development to benefit from universities bringing in excellent academics and taking central positions in global knowledge networks, these rewards do not happen automatically. Rather, the university must help their academics to embed in the region. The findings show that place attachment is a more important driver of regional engagement for non-native academics than informal social networks. Therefore, it is not sufficient to provide opportunities for mobile academic faculty to network locally. It is more important

to help non-native academics to integrate into their host regions and develop local roots.

Third, universities face the challenge of attracting and retaining academics for a long time in the context of increasing international academic mobility. To keep talented academics (especially non-natives), university managers need to pay particular attention to reward systems and career development. Career development policies that ensure research autonomy, attractive research-teaching balance and tenure prospects – particularly for early-stage academics – could incentivize them to stay relatively longer (Janger & Nowotny, 2016).

These findings notwithstanding, the study has limitations that must be duly acknowledged. One limitation is that we rely on self-reported data from academics both for engagement and embeddedness. Both dimensions are difficult to observe using other methods, but there are obvious measurement issues with this approach. Relatedly, the measure of informal social networks only captures the physical interaction aspect. Future studies could use a multidimensional measure that incorporates other dimensions. Another limitation is that the study is limited to a relatively small number of entrepreneurial universities. This may have introduced some sorting problems notwithstanding the measures taken to prevent this biasing the results. Hence, we do not know to what extent these results can be generalized to less entrepreneurial universities. Future studies might consider using large-scale survey design targeting different types of universities.

Moreover, we only have data from a cross-section at one point in time and have no way of assessing the evolution of engagement and embeddedness across time for individual academics. Future studies could use life and career history data of academics to unravel the dynamics of engagement and embeddedness. Additionally, future research using longitudinal research design could examine the causal mechanisms underlying the engagement, place attachment and social networks relationships. Finally, this paper has only focused on the academics' perspectives. Future research might also examine the effect of embeddedness of regional actors on their choice of engaging with local academics. For example, it will be interesting to know whether place attachment of local actors partly explains their decision to collaborate locally rather than outside the region. These limitations notwithstanding, we believe that this study – being the first on this topic – provides useful insights into an important set of drivers of academic engagement.

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## DISCLOSURE STATEMENT

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## NOTES

- Several definitions of the concept of a region exist. However, we define a region in this paper as the subnational-level administrative or political unit within a country equivalent to a Nomenclature of Territorial Units for Statistics (NUTS) 3-level classification.
- We define regional engagement as academics' collaboration with external actors in broad regionally oriented activities with the intention of exchanging knowledge and other resources for the mutual benefits of partners.
- Doctoral candidates are considered as faculty in some countries in the sample (e.g., Norway and Denmark), but as students in other countries (e.g., Italy, Spain and Lithuania). To avoid these institutional differences affecting the results, we follow earlier surveys on the topic (e.g., the Centre for Business Research University–Industry Knowledge Exchange (HEI) Survey in the UK and the Triple-I-Research Survey of Academics in Denmark 2017) and exclude doctoral students from the study population.
- By conventional standards this suggests a low reliability. However, the items measure different types of social networks, and we do not necessarily expect these to be highly correlated. A measure can be useful despite a low alpha when it has 'other desirable properties like meaningful content coverage of some domain' (Schmitt, 1996, p. 352). In this case, the items cover various dimensions of informal social networks which together provide a meaningful coverage of the concept.

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