Chapter 12
Hirschman Mobility, Governance and Loyalty in Europe's Top Research Universities

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The emergence of Europe's knowledge economy has been slower than expected, if one takes the USA as a baseline, particularly in terms of anticipated knowledge productivity and related economic growth. But knowledge diffusion has also expanded more slowly than hoped. Many factors have been advanced as responsible, ranging from the incomplete integration of existing and new EU member economies to the ongoing reorganisation of traditional regimes of higher education throughout Europe.

This paper examines closely the factors underlying the intentions of highly skilled university academics to move from one post to another. While US universities have competed fiercely with each other for the best qualified students and faculty, many EU universities have only recently considered such actions and may in fact lack the policy flexibility to compete effectively. The focus on academic mobility is usually seen from a broader EU perspective that expresses concern for the range of intangible assets relied upon by firms, industries and regions to support their continued growth and development. This concern has grown in importance as globalisation steadily shifts the base of many economies away from production of routine, standardised goods and services to more knowledge-intensive output. Moreover, the precariously dated knowledge base that *recent* EU members now rely heavily upon is precisely the one they must swiftly replace if their transitions to modernity are to be realised. Since knowledge is seen as the prime prerequisite for upgrading of all EU member economies, universities and their faculties can be seen as principal agents in its generation and territorial diffusion. Much of the early emphasis was focused on establishing knowledge links between EU universities and the market (see Bergman 2010 for a review of recent evidence), but mobile

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007–2013) under grant agreement no. 216813.

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J.J.M. Ferreira et al. (eds.), *Cooperation, Clusters, and Knowledge Transfer*, Advances in Spatial Science, DOI 10.1007/978-3-642-33194-7_12,

academics and other scientists are now seen as equally important to the diffusion of knowledge.

In response to the growing importance of the knowledge economy in European life, the European Commission has pursued development of the European Research Area (ERA) since 2000. Launched first as part of the Lisbon process to accelerate knowledge transfers, the ERA was also intended to repatriate or help reduce further losses of Europe's academics to the USA, particularly its "star scientists" and those who may be more commercially inclined. Beyond the usual brain-loss issues, the ERA was also envisioned as a means of accelerating brain circulation of its "knowledge spillover agents"[1] within the EU and of improving its overall research capacity, consistent with knowledge economy requirements. The success of the ERA could be realised by accelerating the training of more scientists and creating an "internal market" for research that might retain potential outwardly mobile EU academics or attract expatriates home. At the same time, internal market efforts were to be further enhanced by improving coordination among national research and education systems, which account for the bulk of research undertaken in Europe. The EU also directed its attention to revision or enactment of better S&T policies concerning education, mobility and research that would enhance the prospects for an effective ERA (EC 2007, p. 17). Together, these actions are expected to stimulate greater mobility among scientists, while at the same time inducing a virtuous circle of competition for research services that would result from efforts to improve research opportunities and funding at universities and research centres throughout Europe.

A major review and relaunch of ERA began in 2007 with a comprehensive study and accompanying Green Paper. A concluding annex to the study lays out the original 2000 objectives, actions underway, and barriers encountered in bringing the ERA about. Building on the findings and further insights, the European Research Area Board issued its first report in 2009, which laid a broad basis for what it terms the "New Renaissance" for European research. Under its "United ERA" goal is the board's expectation that academic mobility will triple by 2030, essentially introducing the 5th freedom of knowledge mobility among member and affiliated states. The movement of knowledge is derived from the associated mobility of scientists (Ackers 2005), which is deemed necessary to develop and diffuse the knowledge economy throughout the ERA.

International mobility ("nomadism") has always been a feature of scientific fields, although the EU would prefer that such mobility occurs with greater frequency *within* the union's ERA to help stimulate reforms and share knowledge among member states. The factors responsible for present levels of mobility in single countries have been investigated in numerous studies during the past two decades and we have learned much recently (Crespi et al. 2005; Constant and

[1] Recent papers have explored the specific role of mobile "star scientists" concerning the spread of knowledge in Europe to firms and regions (Maier et al. 2007; Trippl and Maier 2010; Schiller and Diez 2010).

Dágosto 2008; Kahn and Ginther 2008; de Grip et al. 2009; Kim et al. 2006; Adams and Clemmons 2008), but until now there has been no comprehensive study of academics from representative disciplines that now conduct the majority of research in Europe's top universities. This chapter intends to help fill that gap.

1 Mobility of Academics and Scientists: The Framework

Although academic mobility has long been a topic of investigation in the USA, Europe's academics and scientific workers have received considerable scrutiny only recently in a series of studies, motivated heavily by concerns discussed above and thanks to the increasing availability of secondary data that permit such inquiries.

Academic mobility has typically been considered a specialised cohort within the field of migration studies, the leading studies of which rely upon the economic factors that underlay mobility, using common utility frameworks that imply an ex ante evaluation of relative costs and benefits (Borjas 1994). As de Grip et al. (2009) observe, economic self-improvement is a significant consideration in any career-related move, which leads to models that predict utility-based mobility in light of a variety of individual characteristics, particularly those related to human capital and demographic-life cycle characteristics. Economic conditions in the potential host country might also be expected to "pull" potential migrants (Harris and Todaro 1970) from their home country posts, particularly if wage growth could also be expected as future returns to mobility (Cheswick 1978).

But purely economic rationales are difficult to attribute to academics and scientists as their sole or even primary value. The love of science, inquiry or collegiality could easily trump pure economic returns in certain decisions to move. Indeed, it can be argued persuasively that academics have already demonstrated a strong *extra*-market orientation by the very fact of having pursued a more socially oriented career that is widely known to yield returns inferior to those available in private industry for equivalent levels of skill and training.

The special case of mobility of *academics within the ERA* adds a further dimension: the comparative advantage offered by potential EU host countries and universities on a wide array of salary plus other relevant scientific conditions remains quite unstable as improvements underway concerning academic freedom, research facilities, employment conditions, contract obligations (e.g., administration or teaching), university governance and the like at the home institution could alter mobility choices considerably. Indeed, potentially mobile academics may be involved in bringing such improvements about or at the very least consider themselves to have a voice in the beneficial development of their home institution. Accordingly, these possibilities also deserve attention in efforts to understand academic mobility in contemporary Europe.

We therefore propose to adopt the general framework proposed first by Hirschman (1970) in which the participant of an imperfect institution decides either to (a) remain loyal to it, (b) attempt to change it from within by exercising voice in

governance, (c) or decide to exit. This framework has been used many times to study employment and career-related issues, often prompted by labour-management disputes, but increasingly with an eye toward mobility of skilled employees (Withey and Cooper 1989; Graham and Keeley 1992; Jablin 1992; Luchak 2003; Solimano 2008; Pfister 2006; Mir et al. 2007; Hoffmann 2008). Unlike many articles that adopt this framework to explore logical consequences of Hirschman's seminal insights, we intend to model the exit mobility decision of European academics as the function of several specific human capital, demographic and institutional factors that arise within universities and specifically including other "Hirschman" variables that measure voice in governance and evidence of loyalty. We fully expect these Hirschman variables to be significant and negative, since we hypothesise both are substitutes for exit.

This paper relies upon a recent survey that collected the data necessary to introduce these Hirschman and other variables, which will be described in the following section. It will be followed by a discussion of the set of variables selected from a broader literature of academic and scientist mobility and their use in the modelling exercises. A logit model is estimated that accounts for the likelihood of prospective exit, given satisfactory conditions might be gained in the new location. Those who indicate a willingness to be mobile also specify the possible continental destinations, selecting as well the most important conditions to be met, which are summarised first descriptively and then analysed further by use of a multinomial logit model. The multinomial model estimates the relative likelihood of preferring mutually exclusive destination combinations: only European destinations (ERA loyalty), only non-European destinations (ERA exit) or indifferent to combined EU-other continent combinations (mixed choice as the reference case).[2] This paper concludes with a discussion of findings and implications for research and policy.

2 Data

The data used in this paper result from a large web survey of European academics in the first half of 2009. The survey was designed to collect information about the academic and institutional characteristics of university professors and researchers holding posts in one of the top 500 research universities located in Europe, as listed in the Shanghai Jiao Tong University (2009) rankings. This ranking was used as a familiar metric because it focuses heavily on the "hard" sciences and their role in the knowledge economy. Restricting ourselves to selecting only from the top 500 worldwide universities, our sampling frame resulted to 201 European universities.

The universities included in the survey are found in 19 countries, 201 of which are Shanghai ranked, with 14 additional, lower-ranked universities added from Austria and Switzerland to help understand possible differences between the

[2] See Appendix I.

Shanghai-ranked and unranked groups within countries. Within the overall university sampling frame, we further stratified the sample of academics by discipline, choosing 6 from each university's web page[3] that overlapped the groups studied by Goldstein (2010): Physics, Biological Sciences, Chemical Engineering, Computer Science, Economics and History. Three respondents were drawn from each disciplinary unit present in all sampled universities' web pages, where the director or chair was included when identification was possible, plus two (or three) other randomly selected respondents. This yielded a total of 9,393 invitations to participate in the survey, which were sent as an e-mailed letter of invitation that introduced the survey's purpose and supplied a unique log-in code to secure the file from uninvited or multiple respondents. Excluding all invalid e-mail addresses and respondents who replied to say that they refused to participate, our survey included a final number of 8,826 valid contacts. Respondents could choose to answer survey questions in any of the five most widely used European languages: English, French, German, Italian and Spanish. Of those valid contacts, 1,798 filled out the full questionnaire, yielding a 20 % response rate. Response rates to other surveys of mobility among European academics range as low as 12–16 %, and indeed the UK and Spanish respondents fell within that bracket, although Polish and Italian academics responded at twice these rates (30–33 %). Response rates differed little across disciplines[4] (2–3 % points around the mean).

A few respondent characteristics are offered here to give an overall impression, while further discussion of specific characteristics will be provided in later sections concerning the definition of variables. Males dominate these academic fields (82 %), as do those teaching in PhD granting departments (92 %) and those on permanent contracts (69 %). The median tenure of current posts is 9 years; 1996 is the median year ("degree vintage") in which the terminal degree was granted. Concerning traditional academic duties, 10 % had *no* peer-reviewed publications in the preceding 2 years (26 % had 10 or more); 10 % taught *no* courses in the same period, while 10 % taught 10 or more classes. The so-called Third Mission of social engagement by universities can be found in the 61 % who engaged in uncompensated forms of public service (e.g., public lectures or advice) and by the 30 % who have attempted to commercialise some academic skill, finding or discovery in the market.

[3] French universities presented a serious technical problem: their web pages do not list their academic faculty members and researchers by discipline nor do their web pages supply e-mail addresses necessary to conduct a web survey. As an alternative, we searched the ISI Web of Science to locate and then select academics at a given French university who had previously published in journals of a given discipline. Author data provided on the publications listed in the Web of Science sometimes included e-mail addresses or further information that permitted additional online search to obtain usable e-mail addresses. A subsequent survey of Finnish commercialisation efforts followed a similar procedure (Tahvanainen and Nikulainen 2011).

[4] Chemical engineering was found to be sparsely distributed in the overall sample and among respondents (4 %), while Physics (28 %) and Biological Sciences (25 %) are profusely and diversely represented in nearly all Shanghai-ranked universities, sometimes in multiple academic units at the same university. On the other hand, academic units of Computer Science (18 %), Economics (13 %) and History (12 %) are more evenly distributed across universities and among our respondents.

About 70 % of respondents had at least 6 months of career mobility following receipt of their terminal degree and before taking their current post. With respect to endogamy, about 39 % in current posts received their terminal degree from the same university. A full 75 % indicate they would be willing to accept a new post in another European or world region, assuming certain conditions were met. Why and where such mobility is likely to occur is of course the subject of this article.

3 Mobility Model and Variables[5]

Consistent with our overall analytic framework, the dependent variable for mobility is labelled *Exit*, the first of several Hirschman-inspired variables that apply to academics. It results from a yes or no answer to the following question: "Would you accept a university post in a different region, assuming improved conditions?"[6] The question requests an ex ante comparison of an unspecified but improved future opportunity for university work elsewhere to accepting the status quo ante of the present post. This formulation permits respondents to indicate a general openness to mobility, conditioned only by the prospects of general improvements at a destination. Following Hirschman, one should logically expect the probability of answering yes to be inversely related to answers that indicate loyalty to or voice in the post. A standard logit regression model will be used to model responses in light of several relevant independent variables.

A rich selection of independent variables is provided by the survey, the first of which is *Voice:* a variable directly measured by Likert-scale responses to this question:

> In determining the policies and governance of your university concerning expanded public-private partnerships (e.g., "university-industry" links), please specify the influence exerted by *university academic staff*.

Several other questions in the survey deal with issues of commercialisation and respondents had already given it considerable attention, so this question offers a familiar policy area with which to measure the voice of academics. The formulation of this question was taken from a previous study of European university governance[7] that was based on the responses of university administrators, which also

[5] The complete set of dependent and independent variables can be found in Appendix II.

[6] We focus exclusively on *prospective inter-university mobility*, not ex post mobility or mobility to other research positions (public research centres, industry R&D, etc.), non-university administrative posts or to self-employed/entrepreneurial positions. Of the 1,708 academics who responded to this question, 75.4 % indicated potential mobility to another university.

[7] In this cited study (CHEPS 2006), university administrators were the principal respondents. In addition to the influence of university academic staff, answers to the same questions were also collected concerning the relative influence of Ministries of Higher Education, University Leadership, Business and Industry Leaders and Regional Authorities. More basic questions about university governance and autonomy, which many consider of greater importance, have been raised by Aghion, Dewatripont, Hoxby, Mas-Colell and Sapir (2009).

permits its use as an external and useful benchmark (CHEPS 2006). Academics in the present survey consider themselves to have (1) no influence (9 %), (2) some influence (45 %) or (3) much influence (31 %) on this policy, while in the CHEPS survey, administrators consider *the degrees of influence* exercised by academics, respectively, as (1) 8 %, (2) 64 % and (3) 20 %.[8] The imbalance of responses shows a higher-percentage academics consider themselves to have "much" influence, about 50 % more than university leaders would agree they do. The opposite assessment is even more dramatic: while university leaders (CHEPS) consider their influence to be (1) none (1 %), (2) some (22 %) and (3) much (72 %), academics reduce their assessment of the influence of their university leaders on this matter as (1) 1 %, (2) 39 % and (3) 35 %. Academics deflate administrator claims to much influence by 50 %. There is clearly some potential tension between university leaders and academic staff concerning their respective roles in university governance, which may also be expected to spill over into decisions concerning academic mobility. We intend to capture and test for the effects of this tension by also coding the academics' view of the importance of administrators (*ProvostVoice*) in setting university commercialisation policies. All else equal, stronger administrator voice in governance matters may increase the possibilities of academic mobility.

One may inquire directly about loyalty to an institution (Finkelstein 2012), who surveys a cross section of countries and finds precipitous declines for Anglo-phone universities (particularly the UK and Australia but also the USA), modest declines in selective Latin American and Asian universities, but growth in loyalty alone among German academics. Loyalty can also be measured indirectly in several ways to minimise the potential for strategic responses by relying on questions concerning routine academic activities that signal loyalty. Since remaining at or returning to one's alma mater captures a clear dimension of loyalty, *UniEndog* measures endogamy, which is determined by whether the respondent indicates the terminal degree was (or not) earned at the same university as the present post. Another obvious dimension of loyalty is measured by whether one holds an unlimited or time-limited *Contract* in the present post. A third is measured by the length of time (*Tenure*) spent in the present post, which could reflect aspects of both inertia and previous loyalty. A final dimension is the *Vintage* of one's terminal degree (and a rough proxy of respondent age); the older the degree and its depreciable basis, the less easily one may find or even be willing to entertain other opportunities, i.e., a form of involuntary loyalty. As expected, there is some collinearity among the alternatives.

Despite recent advances, mobility is conventionally thought to be more willingly undertaken by men than women, due to an enabling mix of elements that involve domestic circumstances, career orientation, relative gains from mobility and risk averseness (Kahn and Ginther 2008; Constant and Dágosto 2008). We therefore

[8] Respondents could also select "Not Relevant or Don't Know", which were recoded as missing values in this frequency distribution, representing the remaining percentages.

assume that *gender* (0/1 male) increases the probability of exit mobility. The academic practices of respondents could also affect mobility decisions, e.g., the systematic use of research funds to produce highly visible peer-reviewed scientific publications (*SciPub*). Working in an academic department in which PhD students are studying (*PhdProg*) may also reveal strong research interests and thereby promote mobility. The reasoning is generally the same: scientific prowess and focus are the internationally signalled *and* universally recognised qualities among other potential science-oriented destinations, thereby expanding mobility possibilities. Finally, following Constant and DÀgosto (2008) and Crespi et al. (2005), we expect academics with post-degree mobility (*PostDegMob*) more likely to be mobile in the future. To repeat, we hypothesise positive and significant signs for these variables.

Academic activities may also tend to anchor respondents in their current post if activities yield valued contacts with non-academics that could be difficult to replicate in another country. In such circumstances, academics might be less likely to exit their post for another. More specifically, the academic contacts made with collaborative industry colleagues (*CollabProj*), the clients from whom funds were received to prepare client or policy reports (*PolicyPub*) or the actions with external others necessary to commercialise one's academic discoveries and talents (*Commerce*) all measure tangible connections with local businesses and industry. In addition to the potential loss of networks valued for their own sake by an exit decision, there may be adverse pecuniary consequences as well.

Productivity in conventional academic terms may also have a bearing on willingness to exit. Highly published academics are usually visible to other universities eager to enhance their scholarly profiles and might therefore become the intended object of recruitment efforts. If so, the number of peer-reviewed publications (PeerRevPubs) claimed by respondents could be expected to increase their exit possibilities. Crespi et al. (2005) show the chances for mobility of European academics are higher for those with more peer-reviewed publications (*PeerRPubs*), as do Kahn and Ginther (2008) for the USA.[9] Very different reasoning is involved with instructional productivity, as high average number of classes taught (ClassLoad) is unlikely to attract attention of other universities; however, respondents with heavy class obligations may consider exit as a means of escaping the burden of teaching pressure. Academics may feel pushed from home institutions by an obligation to teach relatively heavy course loads and thereby hope to escape some of the burden (or even lack of appreciation) by relocation to another more

[9] Likert-scaled responses to publication totals provide a rough measure of academic productivity, an exploratory ordered-logit model (not shown here) of which indicates clearly that among sample respondents, previous mobility in other institutions or countries exerts a strong and positive influence on academic productivity, which corresponds to recent findings of Kim et al. (2006). The productivity benefits sought through various EC and other European measures to stimulate mobility therefore appear to be well founded, offering further support for efforts to understand better the factors that underlay academic mobility.

favourable institution.[10] Finally, academics who become actively engaged in their communities (*PubSvs*) as part of their university's "Third Mission" obligations are often in an excellent position to develop valued relationships not easily or casually broken. Indeed, they may ". . .have enhanced human capital and developed commercial and social networks that are highly effective. . ." (Markman et al. 2008). On the other hand, these academics are far more exposed to other sectors, organisations and ideas; consequently, they may be more willing to consider new possibilities, including a new post elsewhere. Our expectation is therefore uncertain for *PubSvs*; it could positively or negatively affect exit probabilities.

Factors that characterise academics are of considerable interest in this model, including those that characterise the respondent and the respondents' structural relation to the university. One group consists of control variables for the discipline to which a respondent belongs, including those that distinguish between the so-called "pure" and "applied" sciences or between them and the "social" sciences. The disciplines *Physics*, *Biology*, *ComputerSci*, *Chemical Engineering* and *Economics* will be compared with base case of *History*. The universities themselves may differ in ways that induce greater overall mobility, perhaps indirectly. European universities that offer specialised degree programs or enjoy great prestige—the academics of which are often highly recruited elsewhere—could be expected to experience generally greater mobility. There is no a priori for disciplinary differences in mobility among academics, although the institutionally and culturally specific social sciences might be somewhat less mobile than the physical sciences. The presence of specialised technology-oriented degree programs ("general tech" *Engineering*, "red tech" *Medicine* or "green tech" *Agriculture*) or membership in LERU (Leading European Research Universities) signifies some of the most popularly recruited categories.

A second group of control variables refer to the surrounding social and economic context faced by respondents. Economic distress in the immediate vicinity of one's university post may offer family-related grounds for mobility, particularly if one's spouse or children seek but cannot find paid employment. These conditions are proxied by average (*RegUE2007*) and long-term (*LTRegUE2007*) unemployment rates of the locality. More broadly, the country in which one's university is located indicates the national university system from which an academic might (or not) be interested in exiting, perhaps due to the relative national wealth and resources devoted to university systems, the knock-on effects of which could affect academic mobility decisions. Finally, the EU macro-region in which the country is located may introduce broader cultural, historical or language influences on an academic's exit decision. These are *EU-10Reg* (recent accession countries), *MediternReg* (EU countries on Mediterranean) and *MidContinentReg* (EU continental core) that are compared to *NordicReg* (Nordic countries) as the base variable.

[10] "In research universities, teaching load is also important. It's quasi-impossible to both do cutting-edge research and be an excellent teacher when the teaching load of a professor is close to 200 h per year", from interview "Innovative universities must attract top researchers" with Professor Jean-Claude Latombe, *EurActiv*, 9 April 2009; http://www.euractiv.com/en/science/latombe-innovative-universities-attract-top-researchers/article-181199.

4 Modelling Mobility Among European Academics

The model used here will attempt to explain the willingness to leave a present post, which is a dichotomous choice, calling for a standard logistic regression model. To gain a bit of clarity, we first parse the independent variables into groups that represent important conceptual ensembles for logit modelling, before considering their entry in an aggregate model. Panel 1 (Table 12.1) examines the Hirschman variables alone, which are of greatest theoretical interest.[11] They do not disappoint in either sign or significance. Two highly significant loyalty variables, Vintage and Tenure, show that long-loyal academics are much less likely to consider future exit from their university posts in search of another. The voice variables are also compelling and reinforcing: academics that consider their own voices important in governance issues are significantly more likely to remain, but those who think administrators have powerful voices—presumably at the cost of their own—are more likely to exit. The coefficients reflect the earlier contrasting depictions of influence from this and the CHEPS administrator survey.

The next group of variables tested in panel 2 cover a range of typical academic activities and relationships that might affect mobility decisions. Somewhat surprisingly, very little of what or how much academics actually do in their present posts appears to affect their future mobility. Those who were previously mobile are somewhat likelier to continue, but the other academic practice variables remain convincingly insignificant.

The five control variable groups (panels 3–7) have varying influence: one discipline only (Economics) shows significant negative effects, two specialised technical degree offerings at respondent universities have significantly positive effects (Agriculture, Engineering), local economic distress is significantly associated with greater mobility, while several national university system controls feature significantly higher mobility,[12] although EU10Reg respondents show reduced mobility.

The full model assembles all seven variable groups' results (panel 8). Strong support continues for the importance of "Hirschman effects" in academic mobility decisions. Loyalty variables also remain highly significant, while both academic voice and administrator voice variables gain significance. One must necessarily conclude that academics with stable career histories and shorter remaining career prospects are quite likely to be *immobile* in the future. At the same time, academics who claim to exercise voice to influence local university governance issues are also less likely to consider future mobility, due perhaps to the satisfactions expected from its exercise or from its expected fruits. Academics do react to threats posed by relative loss of governance, since academic exit probabilities rise significantly with increases in administrator voice. These are precisely the results one can expect if respondents behave as Hirschman hypothesised. The perceived loss of governance participation by academic respondents stimulates mobility in significant ways.

[11] Collinearity problems eliminated some Hirschman loyalty variables.

[12] Austrian, British, Dutch, French, German, Italian, Swedish and Swiss universities show positive effects.

Table 12.1 Variable group and aggregate mobility models

Logit models	Logistic regression															
	1		2		3		4		5		6		7		8	
Panel 1																
Tenure	−0.04	**0.00**													−0.03	**0.00**
Vintage	−0.02	**0.04**													−0.04	**0.00**
Voice	−0.30	**0.02**													−0.31	**0.03**
ProvostVoice	0.25	**0.07**													0.37	**0.01**
Panel 2																
Gender			0.20	0.16											0.49	**0.00**
PostDegMob			0.22	**0.09**											0.34	**0.03**
PeerRPubs			0.02	0.64											0.09	0.19
ClassLoad			−0.03	0.54											0.01	0.84
SciPubs			−0.09	0.55											−0.08	0.64
PolPubs			−0.09	0.43											0.06	0.67
Panel 3																
Physics					−0.18	0.36									−0.24	0.33
Economics					−0.44	**0.05**									−0.43	*0.11*
ComputerSci					−0.13	0.55									−0.33	0.21
Biology					−0.20	0.33									−0.26	0.28
ChemEngr					−0.04	0.91									0.25	0.55
Panel 4																
EngineergDeg							0.26	**0.03**							0.32	**0.05**
MedicalDeg							−0.02	0.89							0.43	**0.02**
AgriDeg							−0.48	**0.00**							−0.13	0.50
LERU							−0.07	0.67							−0.24	0.27
Panel 5																
RegUE2007									0.00	**0.02**					0.00	0.96
LTRegUE2007									0.10	**0.00**					−0.05	0.31

(continued)

Table 12.1 (continued)

Logit models	Logistic regression															
	1		2		3		4		5		6		7		8	
Panel 6																
The United Kingdom											1.23	**0.00**			0.84	**0.05**
Switzerland											1.64	**0.00**			1.36	**0.00**
Sweden											1.41	**0.00**			1.16	**0.03**
Spain											−0.01	0.98			11.69	0.99
Portugal											0.25	0.69			11.72	0.99
Poland											0.20	0.72			1.80	**0.07**
The Netherlands											1.48	**0.00**			1.04	**0.02**
Italy											0.85	**0.02**			12.19	0.99
Ireland											0.79	0.14			−0.18	0.78
Hungary											−0.34	0.52			0.66	0.49
Germany											1.94	**0.00**			1.59	**0.00**
Greece											0.25	0.69			11.92	0.99
France											1.56	**0.00**			13.24	0.99
Denmark											0.42	0.29			−0.23	0.63
Belgium											0.65	0.13			0.18	0.73
Czech Rep											1.08	0.15			1.37	0.21
Austria											1.15	**0.00**			1.39	**0.00**
Panel 7																
Mediter Reg													0.25	0.23	−11.82	0.99
EU10Reg													−0.53	**0.09**	−0.97	0.28
Mid Cont Reg													0.89	**0.00**	Omitted	
Panel 8																
Const./$P > \chi^2$	32.24	**0.03**	0.95	**0.00**	1.31	**0.0**	1.10		1.01	**0.00**	−0.10	**0.00**	0.53	**0.00**	70.75	**0.00**
Pseudo R^2/*obs*	0.070	*1617*	0.003	*1698*	0.002	*1706*	0.008	*1706*	0.006	*1706*	0.063	*1706*	0.029	*1706*	0.132	*1613*

As expected, respondents who were previously mobile or who are male are shown here as significantly more likely to exit their present posts. Respondents from universities that offer Medical or Engineering degrees also appear more likely to experience overall mobility, perhaps as a consequence of their highly recruited faculties exerting strong cross-discipline influence on the respondent disciplines taken as a whole: respondent disciplines alone show little effect (Economics is barely insignificant). The national controls change somewhat in this aggregate model, and EU macro-regions lose all direct effect.

5 Mobile Academics: Conditions and Destination Selectivity

The 75 % of total respondents who indicated an interest in mobility were identified and queried further about (1) conditions sought in an alternate destination and (2) which global destinations—Australia, Asia, Europe, North America and South America—were preferred. Any combination of destinations could be selected, with the total for any respondent ranging between 1 and 5 locations. Those selecting only one destination region appear to be highly selective, they are one-third of all who are mobile, and the ERA is preferred by most of those preferring a single destination. Another quarter selected only two potential destinations. In both cases, the respondents may be open only to clear improvements in their situations and they may also have good knowledge of options and circumstances at those destinations. On the contrary, those selecting four or five destinations are relatively indiscriminate and are open to many alternatives to their present post. Figure 12.1 summarises various combinations of numbers of destinations sought with the conditions sought in all destinations.

A typical profile of conditions most highly sought is clearly evident: better research opportunities, higher salaries and promotions are most frequently mentioned conditions (respondents could select the three most important from a list of 14 condition improvements), while less publishing pressure, better social benefits and more contacts with firms and other organisations are least frequently mentioned and presumably least important conditions. The most frequently mentioned conditions are wholly logical and well documented in the literature; moreover, these are among the conditions many national systems of higher education are now considering to staunch the loss of valued academics who might seriously be considering an exit option. Other options high on the EC's list of desiderata appear in our data to be far less important than once thought, particularly health and pension benefits, and language preference.

Despite the protestations of academics concerning rising publishing pressures in the new competitive environment of rankings and faculty recruitment wars, this is the *least important* consideration to anyone considering exit. A tolerance for higher publication expectations could indicate a latent capacity for more research output from university academics, given suitable incentives and policy adjustments within universities.

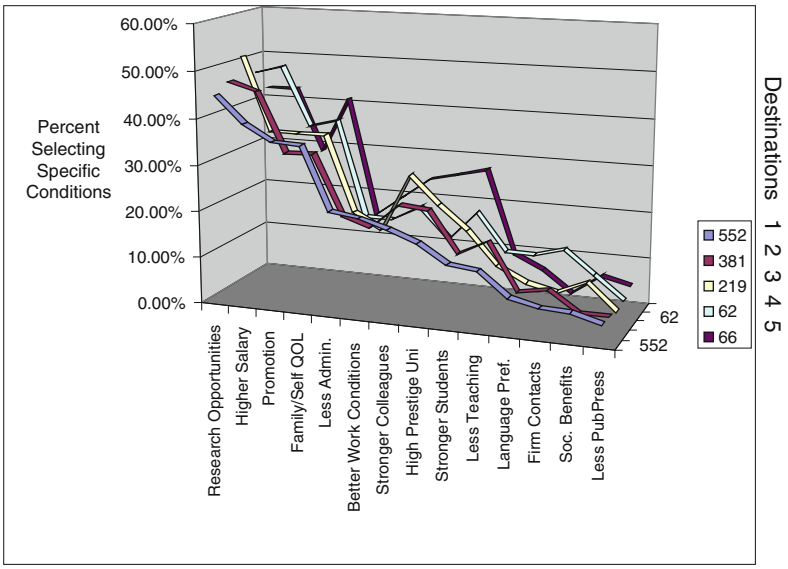


Fig. 12.1 Is the number of potential exit destinations related to destination conditions?

These preferred conditions can be subdivided into two categories that increasingly autonomous universities might act upon through resource reallocation/generation (research opportunities, higher salaries, promotion, lessened teaching load) or altered governance (reduced administration, working conditions, stronger faculty and student colleagues, higher rank/prestige university, less publication pressure), plus the purely in situ category that offers intrinsic advantages of a country or region (family/self QOL, preferred language, contact with firms, social benefits).

6 European Research Area Mobility: Stay or Go?

The descriptive summary provided in the previous section offers good insight into the overall conditions sought by mobile academics and some indication of their selectivity, i.e., one or all possible destinations. Missing is an understanding of *which* destinations are important and why. We therefore code all possible destination combinations into three mutually exclusive categories,[13] which consequently permit the use of a multinomial logit model. Respondents who selected *only* an ERA destination ($n = 512$) are considered in Hirschman terms to be loyal to the European Research Area, even if not to their present university, as they might be willing to move from their home post but to stay within Europe. Expanding this

[13] Twenty-seven unique destination combinations were selected by respondents, which were reduced to three that permit our model to focus on the ERA. For details, see Appendix I.

group is an explicit goal of ERA measures. The second much smaller comparison group consists of those respondents whose selections *excluded* any ERA destination ($n = 54$), about half of whom prefer North America only. The third group consists of respondents who included Europe among one or more other of four possible destinations ($n = 837$) and are thereby apparently indifferent to an EU destination. This last group forms the large reference case from which the ERA-only or non-ERA groups can be shown to differ in their responses to the independent variables. It also includes a substantial number of possible North American and other destinations in various mixtures that resemble the palette of choices typically considered by "nomadic" scientists and academics who circulate widely and are actively recruited. We rely on multinomial logit regression to distinguish the relative effects of our independent variables on the three mutually exclusive destination options.

The technical interpretation of multinomial models can be a bit complicated, as the coefficients indicate *relatively* greater or lesser influence of the variables on alternative destination categories (ERA only or non-ERA) rather than choosing "ERA-indifferent" destinations, which serves as the reference case in our model. To aid interpretation, the results are expressed in "relative risk ratios" (rrr), whose values indicate whether either alternative has a relatively higher (>1) or lower (<1) probability of responding to a unit change of a given variable than the reference case (mixed destinations). A ratio of equal probabilities would be 1.0 (and insignificant); a ratio >1.0 (and significant) indicates relatively how much more likely the alternative (A or B) is affected by a unit change of a variable than the reference case, and the opposite interpretation applies for significant ratios <1.0. We therefore focus our interpretation on the values of those variables with significant probabilities (as per values of column P > |z| in bold) for each alternative in Table 12.2.

The results of the model are limited to the comparison of EU-only vs. base (mixed EU/other) destinations to better understand why mobile academics might remain within the ERA. Most of the variables included in this model are repeated from the mobility-decision model, plus conditions respondents thought necessary to consider mobility (Adminst, Benefits, Conditions, Family, Firms, Ppressure, Promotion, Colleagues, Language, Ropportunity, Prestige, TeachLess, Salary, Students).

Only a few control variables showed effects: chemical engineers and physicists were 2.4–1.6 times more likely to choose destinations within the ERA, as were respondents (1.4×) from universities that offer agriculture degree programs. None of the local, national or EU region control variables proved significant.

However, we see again the importance of governance issues in determining destination, although their coefficient significance has unsurprisingly waned: respondents with voice are about 30 % *more* likely—and respondents experiencing strong administrative voices are 22 % *less* likely—to select ERA-only destinations. Governance issues continue to influence academics' choice of remaining in the ERA or looking elsewhere. None of the academic practices appear to affect the destination choices of respondents.

The conditions respondents sought by relocating were powerful and meaningful. Relocating academics who seek more challenging colleagues, better prepared

Table 12.2 Mobility destination model (EU only[a] vs. reference base)

	Multinomial logistic regression		
Variable	rrr	*z*	$P > \|z\|$
Tenure	1.00	0.37	0.71
Vintage	1.01	0.77	0.44
Voice[b]	**1.32**	**1.96**	**0.05**
ProvostVoice[b]	**0.78**	**1.69**	**0.09**
Gender	1.01	0.06	0.95
PostDegMob	0.93	0.48	0.63
PeerRPubs	1.06	0.87	0.38
ClassLoad	1.02	0.37	0.71
SciPubs[c]	0.78	1.50	0.13
PolPubs	0.82	1.45	0.15
Physics	**1.66**	**2.05**	**0.04**
Economics	1.36	1.14	0.26
ComputerSci[c]	1.00	0.00	1.00
Biology	1.03	0.14	0.89
ChemEngr[b]	**2.44**	**2.25**	**0.02**
Engineering[c]	0.88	0.85	0.40
Medical	0.91	0.53	0.60
Agriculture[b]	**1.39**	**1.72**	**0.09**
Leru	0.94	0.26	0.79
Adminst	0.91	0.45	0.66
Benefits	0.66	1.36	0.18
Conditions	1.03	0.17	0.87
Family	0.88	0.73	0.47
Firms[b]	**0.62**	**1.68**	**0.09**
Ppressure	0.86	0.43	0.67
Promotion	0.88	0.64	0.52
Colleagues[b]	**0.59**	**2.58**	**0.01**
Language	0.77	0.96	0.34
Ropportunity[b]	**0.68**	**2.22**	**0.03**
Prestige[b]	**0.57**	**2.69**	**0.01**
TeachLess	**0.69**	**1.59**	0.11
Salary[b]	**0.63**	**2.55**	**0.01**
Students[b]	**0.62**	**2.15**	**0.03**
RegUE2007	1.00	1.32	0.19
LTRegUE2007[c]	0.97	0.63	0.53
The United Kingdom[c]	0.46	1.33	0.18
Switzerland	0.60	0.88	0.38
Sweden	0.60	0.78	0.44
Spain	1.87	0.84	0.40
Portugal	1.45	0.33	0.74
Poland	5.55	1.17	0.24
The Netherlands	1.00	0.01	0.99
Italy	1.22	0.32	0.75
Ireland	0.88	0.16	0.88
Hungary	5.99	1.22	0.22

(continued)

Table 12.2 (continued)

	Multinomial logistic regression		
Variable	rrr	*z*	$P > \|z\|$
Germany	1.10	0.17	0.87
Greece	0.88	0.11	0.91
France	0.68	0.61	0.54
Denmark	0.67	0.60	0.55
Belgium	1.58	0.68	0.50
Austria	1.03	0.05	0.96
Slovenia		Omitted	
Finland		Omitted	
Czech Rep	2.54	0.62	0.54
Mediter Reg		Omitted	
EU10Reg	0.39	0.67	0.50
Mid Cont Reg		Omitted	

$N = 1210$; LR $\chi^2(106) = 172$; Prob $> \chi^2 = 0$; Log likelihood $= -910.3414$; pseudo $R^2 = 0.09$

[a]The no-EU alternative proved generally insignificant, due to its small numbers, and is excluded from discussion

[b]Variable is significant in hierarchical group and total models

[c]Variable is significant only in hierarchical group model

students, improved salaries, better research opportunities, more prestigious university or improved chances to work with local firms are 32–43 % *less likely* to select ERA-only destinations,[14] instead favouring the reference case of mixed destinations. It bears noting that most of these conditions are offered by leading world universities and are rapidly coming under the decentralised policy control of European university administrations, while opportunities to work with local firms also depend heavily upon regional development and business leaders. In short, the respondents for whom improved conditions are important in deciding to relocate are considerably less likely to settle for an ERA-only destination.

7 Principal Findings

The voice and loyalty variables most closely associated with Hirschman's view of the exit option perform as expected and are generally the most significant and noteworthy. Two of the variables that affect the chances for an ERA-only destination can be traced to Hirschman. As we saw in the mobility-decision model, a strong voice by university leadership stimulated exit from universities, while it also reduces heavily the probability that mobile respondents will select an EU-only destination. On the other hand, respondents that claimed academic voice in university governance are more likely to remain in their university *or* within the ERA if they have considered mobility. Overall, university governance schemes are shown

[14] Reduced teaching loads were barely insignificant, which warrants mention.

here to have powerful and significant—perhaps under-appreciated—effects on the decision of academics to exit their university or the ERA.

At the same time, these powerful Hirschman effects wash away possible hypothesised effects on mobility decisions from differences in economic health of respondents' present university region, in research-based university rankings, in traditional mission performance (e.g., teaching or research) or discipline of respondent or in European region. It is the relation of a scholar to his or her institution that appears decisive in decisions to become mobile. Choice of possible destination (ERA or non-ERA) for mobile respondents pivots heavily on advantages[15] available at potential future locations and on two of the disciplines, but the national university effects vanish for these opposite outcomes.

8 Conclusions

Academic mobility between universities and with respect to European circulation follows closely the core ideas about exit from organisations that were advanced a half-century earlier by Hirschman. There is much to consider here for attentive EU policymakers, national ministries of higher education and university administrators, particularly if their intent is to retain Europe's academics within the ERA and to reap the benefits of knowledge flows within Europe.

Of great importance are the several conditions that reduce EU-only destination preferences, which are rather worrying because they confirm conventional wisdom, yet they offer clear opportunities for redress. These are conditions where improvement is possible and where obstacles to ERA success are clearly visible. Salaries in many university systems are often unrelated to accomplishment or lag behind alternative opportunities, particularly for specific academics and disciplines in the greatest demand around the world. The same is true for research opportunities, although some progress has taken place and may continue if funding for universities, R&D infrastructure and innovative projects gains further importance. We note also lessened preference for EU-only destinations among respondents who seek stronger colleagues and students or a post in more prestigious universities.

This issue challenges typical policies that promote simple mass education within universities. It also focuses attention on the importance to mobile academics of excellence in the academic enterprise, which in turn raises the question of better meritocratic selection of established academics and aspiring scholars. Highly

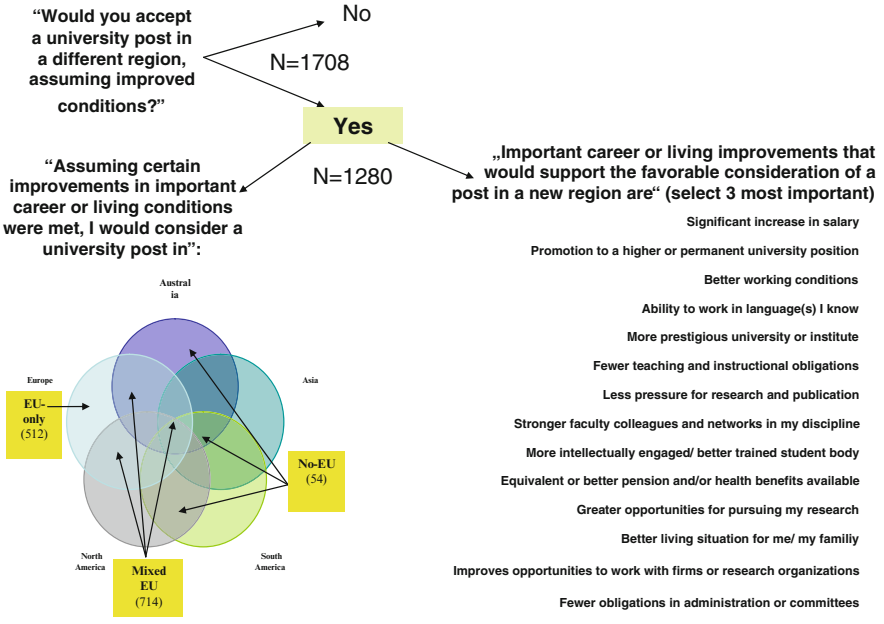
[15] We have also learned what is *relatively unimportant* in retaining academics within the ERA: (1) reduced administrative burdens, (2) better working conditions, (3) improved quality of life for family and (4) career promotion.

These are important conditions for *all* destinations, but differences among them do not appear to affect choice of destination alternatives. Destination choices are also unaffected by (1) language preferences, (2) improved social benefits and (3) less publication pressure, which are all far less important everywhere and might therefore be safely ignored while focusing policy attention on the more important conditions.

qualified scholars may come to recognise even more fully the leverage that potential mobility could have when matters of institutional governance come into play.

University administrators will want to review policies that give voice to academics, as well as those that instil loyalty, while also reconsidering opportunities for moderating or blending their own voices in the interests of retaining and attracting academic excellence. It is entirely possible that several additional policies will need to be revised somewhat to retain their best scholars, while providing an appealing destination to potentially mobile academics the same universities hope to attract. We now have a clearer sense of which conditions are most appealing to mobile academics at both the university and ERA levels and what could be done to take better advantage of intra-EU mobility.

Appendix I



25 combinations of place categories selected by respondents are generated from these codes:

1=EU

10=NA

100=AU

1000=AS

10000=SA

whose values are then reduced to the 3 EU-relative categories as per column headings and Venn diagram above.

Combinations	NO-EU	Mixed-EU	EU-ONLY	Total
1	0	0	512	512
10	26	0	0	26
11	0	312	0	312
100	6	0	0	6
101	0	35	0	35
110	7	0	0	7
111	0	165	0	165
1000	5	0	0	5
1001	0	12	0	12
1010	3	0	0	3
1011	0	25	0	25
1101	0	7	0	7
1110	2	0	0	2
1111	0	39	0	39
10000	3	0	0	3
10001	0	11	0	11
10010	1	0	0	1
10011	0	13	0	13
10101	0	5	0	5
10111	0	14	0	14
11001	0	1	0	1
11010	1	0	0	1
11011	0	7	0	7
11101	0	2	0	2
11111	0	66	0	66

Appendix II

Variable label	Definitions of dependent variables	Mean Std dev	Min. Max.	Observations
Model 1 mobile academics	Would consider accepting a post at another university	0.75 0.43	0 1	1,708
Model 2 mobility destinations	Destination *categories* of mobile academics: no EU = 1 (54), mixed EU = 2 (714), EU only (512) = 3	NA	NA	1,280

Variable label	Definitions of independent variables	Mean Std dev	Min. Max.	Observations
UniEndog	Present post at same university that granted terminal degree	0.38 0.49	0 1	1,716
Contract	Unlimited employment contract	0.69 0.46	0 1	1,716
Tenure	Number of years at present post	11.4 9.7	0 44	1,799
Vintage	Number of years since terminal degree received	35.0 10.7	0 51	1,689
Voice	Influence of academic staff on university governance	0.32 0.47	0 1	1,694
ProvostVoice	Influence of university administrators on university governance	0.74 0.44	0 1	1,692
ExternalVoice	Influence of industry leaders on university governance	0.60 0.49	0 1	1,684
ClassLoad	Class teaching load in the last 2 years[a]	2.86 1.16	1 5	1,798
Gender	Male	0.81 0.39	0 1	1,798
PeerRPubs	Output of peer-reviewed publications in the last 2 years[a]	3.44 1.27	1 5	1,798
PhdProg	Present post in academic department with PhD students	0.92 0.27	0 1	1,732
PostDegMob	At least 6 months experience elsewhere between degree and present post	0.70 0.46	0 1	1,724
PubSvs	Non-compensated service to external parties in previous 6 years	0.39 0.49	0 1	1710
SciPubs	Peer-reviewed publications generated from funded research	0.76 0.42	0 1	1,798
Commerce	Taken actions to commercialise academic findings or skills	0.30 0.46	0 1	1,730
NatEndog	Present post in same country as university granting terminal degree	0.74 0.44	0 1	1,716
Policy	Client or policy reports generated from funded research	0.34 0.47	0 1	1,798
CollabProj	Collaborative funded research with industry colleagues	0.46 0.50	0 1	1,798

(continued)

Variable label	Definitions of independent variables	Mean Std dev	Min. Max.	Observations
PeerRevKnow	Peer-reviewed publications best measure of university knowledge[b]	2.25 1.06	1 5	1,715
BasicThreat	Basic science threatened by university research commercialisation[b]	3.66 1.07	1 5	1,710
The United Kingdom	Respondent in a UK university	0.13 0.33	0 1	1,799
Switzerland	Respondent in a Swiss university	0.07 0.25	0 1	1,799
Sweden	Respondent in a Swedish university	0.03 0.16	0 1	1,799
Spain	Respondent in a Spanish university	0.03 0.18	0 1	1,799
Portugal	Respondent in a Portuguese university	0.01 0.09	0 1	1,799
Poland	Respondent in a Polish university	0.01 0.11	0 1	1,799
The Netherlands	Respondent in a Dutch university	0.09 0.29	0 1	1,799
Italy	Respondent in an Italian university	0.07 0.25	0 1	1,799
Ireland	Respondent in an Irish university	0.01 0.12	0 1	1,799
Hungary	Respondent in a Hungarian university	0.01 0.12	0 1	1,799
Greece	Respondent in a Greek university	0.01 0.09	0 1	1,799
Germany	Respondent in a German university	0.29 0.45	0 1	1,799
France	Respondent in a French university	0.08 0.26	0 1	1,799
Denmark	Respondent in a Danish university	0.04 0.19	0 1	1,799
Belgium	Respondent in a Belgian university	0.03 0.17	0 1	1,799
Austria	Respondent in an Austrian university	0.07 0.25	0 1	1,799
Colleagues	Work with stronger colleagues	0.21 0.40	0 1	1,379
Ropportunity	Better research opportunities	0.43 0.50	0 1	1,379
Students	Work with stronger students	0.14 0.35	0 1	1,379
Salary	Higher salary	0.38 0.49	0 1	1,379
PubPress	Less publishing pressure	0.03 0.18	0 1	1,379
TeachLess	Lower course load	0.12 0.33	0 1	1,379

(continued)

Variable label	Definitions of independent variables	Mean Std dev	Min. Max.	Observations
FirmOrg	Better contacts with firms, organisations	0.06 0.24	0 1	1,379
LessAdmin	Less administration/committees	0.18 0.39	0 1	1,379
Benefits	Better health/pension benefits	0.05 0.22	0 1	1,379
QOW	Quality of working conditions	0.18 0.38	O 1	1,379
FamilyQOL	Quality of life for self/family	0.33 0.47	0 1	1,379
Language	Ability to work in preferred language	0.07 0.25	0 1	1,379
Promotion	Promotion to a higher/permanent post	0.31 0.47	0 1	1,379
Prestige	More prestigious university	0.18 0.37	0 1	1,379

[a]1 = 0, 2 = 1–2, 3 = 3–5, 4 = 6–10, 5 = >10
[b]1 = totally agree; 5 = totally disagree

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