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Hirschman Mobility Among Academics of Highly Ranked EU Research Universities

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Abstract

European universities have lost—and partially regained—key research academics to North American and other attractive university systems. EU efforts to reverse the cycle revolve around the establishment of an attractive European Research Area (ERA), within which future academic mobility might be confined with improved policies and reformations.

The mobility of European university academics is analyzed by use of data that result from a large web-survey in the first half of 2009 drawn from six disciplines (Physics, Biological Sciences, Chemical Engineering, Computer Science, Economics and History) in the top 201 European research universities. Two mobility models are explored; one considers the factors that contribute to an academic's decision to relocate to another university and the second examines whether that relocation would occur within the ERA or elsewhere. Both models draw heavily upon Hirschman's seminal work that conceives career relocation as an "exit" decision, one which can be compared to the principal rationales for remaining (being "loyal" or having "voice") at the same post.

The mobility model findings strongly support Hirschman's view of academic relocation, whereby academic relocation is often motivated by the relative limitation of voice in governance or demonstrated loyalty in terms of long-term engagement at their university. The results from logit modeling of choices and options indicate clearly that academics who exercise either "loyalty" or "voice" are significantly *less likely* to be mobile. Moreover, those who are mobile refuse to restrict possible destinations to within the ERA *if* they value better material conditions or better quality of colleagues, students or university reputation. These findings have important implications for the governance and resource commitments under review by Europe's leading universities.

Introduction

The emergence of Europe's knowledge economy has been slower than expected, taking the U.S. as a baseline, particularly in terms of anticipated productivity and economic growth. But knowledge output and its diffusion have also increased 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 reorganization of traditional regimes of higher education throughout Europe.

This paper examines closely the factors underlying the mobility of highly skilled university academics from one post to another. The focus on academic mobility can be seen from a broader perspective that expresses concern for the range of intangible assets that firms, industries and regions rely upon to support their continued growth and development. This concern has grown in importance as globalization steadily shifts the base of many economies away from production of routine, standardized 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 realized. 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.

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 transfers¹, the ERA was also intended to repatriate or help reduce further losses of Europe's academics to the U.S., 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"² within the EU and of improving its overall research capacity, consistent with knowledge economy requirements. The ERA could be realized 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 (e.g. Bologna process), mobility and research that would enhance the prospects for an effective ERA³. Together, these actions should stimulate greater mobility among additional 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 re-launch 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

¹ See Bergman (2010) for a review of knowledge and innovation flows from the perspectives of European firms and universities.

² Following a suggestion by Bergman and Schubert (2005) to focus investigations of innovation diffusion on the role of knowledge spillover agents, recent papers have explored the specific role of "star scientists" in Europe concerning the spread of knowledge to firms and regions (Maier, Kurka and Trippl, 2007; Trippl and Maier, 2007; Schiller and Diez, 2008).

³ A 2000-2006 timeline & list of EC initiatives related to the ERA is available in EC 2007, p. 17.

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 academics (Akers, 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, Geuna and Nesta, 2005; Constant and D’Ágosto, 2008; Zubieta, 2008; Kahn and Ginther, 2008; de Grip, Fouarge, and Sauermann, 2009; Kim, Lee and Marschke, 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 paper intends to help fill that gap.

Mobility of Academics and Scientists: The Framework

Although academic mobility has long been a topic of investigation in the U.S., 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 specialized cohort of migration studies, leading studies that rely on tools of standard demography and increasingly on the economic factors underlying 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 and inquiry could easily trump pure economic returns in many 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 A.O. Hirschman (1970) in which the participants of imperfect institutions decide to remain loyal to them, attempt to change them from within by exercising voice in governance, 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; Pfister, 2006; Mir, Mir and Bapuji, 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, including other "Hirschman" variables that explicitly measure voice in governance and evidence of loyalty. We fully expect these Hirschman variables to be significant and negative (hypothesizing both are substitutes for exit), but the reason for their inclusion, whether significant or not, and value-added lies in accounting for these potentially important influences. The remaining effects exerted by other variables thereby gain importance and reliability.

This paper relies upon a recent survey that collected the data necessary to introduce Hirschman and other variables, which will be described in the following section. It will be followed by a discussion of the 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 future exit, given satisfactory conditions might be gained in the new location. Those who indicate a willingness to be mobile also specify the number of possible continental destinations, selecting as well the most important conditions to be met, which are summarized first descriptively and then analyzed further by use of a multi-nomial logit model. The multi-nomial model estimates the relative likelihood of preferring specific Hirschman-type alternatives—the dependent variable—that are destination combinations comprised of: 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)⁴. The paper concludes with a discussion of findings and implications for research and policy.

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 the top 500 research universities located in Europe, as ranked in the "Shanghai" index⁵. This ranking was used as a familiar metric, in part because it focuses heavily on the "hard" sciences and

⁴ The sequence of questions and responses that provide the dependent variables modelled in this paper are illustrated in Appendix I.

⁵ The index also provides a bridge between the EU universities investigated here and the U.S. universities surveyed in the Goldstein (2009) study, thereby permitting a companion investigation of comparative faculty attitudes toward commercialization in the research universities of the two continents (Bergman, Goldstein, and Maier, 2011).

their role in the knowledge economy. Using this criterion, our sampling frame consisted of 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 Shanghai-ranked and unranked groups. Within the overall university sampling-frame, we further stratified the sample of academics by discipline, choosing 6 that overlapped Goldstein's groups (2009) from each university's webpage⁶: 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 8826 valid contacts. Respondents could choose to answer survey questions in any of the 5 most widely-used European languages: English, French, German, Italian and Spanish. Of those valid contacts, 1798 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 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 disciplines⁷ (2-3 percentage points around the mean).

A few respondent characteristics will be summarized 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 departments that include PhD students (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 publications⁸ 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 70% who have attempted to commercialize some academic skill, finding or discovery in the market.

⁶ French universities presented a 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 on-line search to obtain usable e-mail addresses. A subsequent survey of Finnish commercialisation efforts followed a similar procedure (Tahvanainen and Nikulainen, 2011)

⁷ An imbalance in respondents by discipline results directly from sampling anomalies: Chemical Engineering is 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.

⁸ Taking responses to this question as a rough measure of academic productivity, an exploratory ordered-logit model (not shown here) 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, Lee and Marschke (2006). The productivity benefits sought through various EC and other European measures to stimulate mobility appear to be well-founded, offering further support for this effort to understand better the factors that underlay such mobility.

About 70% of respondents have 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 also received their 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 paper.

Mobility Model and Variables⁹

Consistent with our overall analytic framework, the dependent variable for mobility is labelled Exit, the first of several Hirschman-inspired variables that apply well 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?”¹⁰

The question implies the comparison of an unspecified but improved future opportunity for university work elsewhere to accepting the status quo ante of the present post. Following Hirschman, one should logically expect the probability of answering yes to mobility to be inversely related to answers that indicate loyalty to or voice in the post. A standard logit model will be used to model responses in light of several relevant independent variables.

A rich selection of independent variables is also available from the survey and secondary sources, the first of which is Voice: an independent variable that is directly measured by survey 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 it offers a clearly specified policy area with which to measure the voice of academics. The formulation of Voice was taken from a previous study of European university governance¹¹ based on the responses of university administrators, which 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 CHEPS administrators consider *the same degrees of influence* exercised by academics respectively as 1. 8%, 2. 64%, and 3. 20%¹². The imbalance of responses shows a higher percentage academics consider themselves to have “much” greater influence than fewer 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

⁹ The complete set of dependent and independent variables used in the two models reported here can be found in Appendix II. All but six are dichotomously measured: ClassLoad and PeerRPubs are ordinal, while Tenure and Vintage are continuously scaled measures.

¹⁰ 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 1708 academics who responded to this question, 75.4% indicated potential mobility to another university.

¹¹ In this 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).

¹² Respondents could also select “Not Relevant or Don’t Know”, which were recoded as missing values in this frequency distribution, represent the remaining percentages.

reduce their assessment of the influence of their university leaders on this matter as 1. 1%, 2. 39%, and 3. 35%. There is clearly some potential tension between university leaders and academic staff concerning their respective roles in university governance, which may 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 voices in governance matters may increase the possibilities of academic mobility.

Measuring loyalty can be done in several ways, which we do indirectly to minimize the potential for strategic responses, where the measures are based on routine academic benchmarks. The first (UniEndog) is a measure of endogamy, which is determined by whether the respondent indicates the terminal degree was (or not) earned at the same university as the present post, since staying at or returning to one's alma mater captures a clear dimension of loyalty. 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 indicates 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. There is some collinearity among these alternatives, so selection will be necessary.

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-taking (Kahn and Ginther, 2008; Constant and D'Ágosto, 2008). We therefore 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 scientific publications (SciPub) or 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 internationally signalled *and* universally recognized qualities among other potential science-oriented destinations, thereby expanding mobility possibilities. Finally, following Constant and D'Ágosto (2008) and Crespi, Geuna, and Nesta (2005), we expect academics with post-degree mobility (PostDegMob) more likely to be mobile in the future. To repeat, we hypothesize positive and significant signs for these variables.

Academic activities may also tend to anchor respondents in their current post, particularly if activities produce 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 sponsors 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, industry or government. In addition to the loss of networks valued for their own sake, there may also 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, Geuna and Nesta (2005) show the chances for mobility of European academics are higher for those with more peer-reviewed publications (PeerRPubs), as do Kahn and Gunther (2008) for U.S. 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 teaching pressures. 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 favourable institution.¹³ 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. 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 peculiar to academics are of considerable interest in this model, including those that characterise the respondent and the respondents' relation to the university. One group consists of dummy variables for each of the disciplines to which the respondent belongs, which distinguish between the so-called "pure" and "applied" sciences, and between them and the "social" sciences. Accordingly, Physics, Biology, ComputerSci, History and Economics will be compared with base-case of chemical engineering (ChemEng). There is no prior evidence of disciplinary differences in mobility among academics from which hypotheses might be drawn, although the more institutionally- and culturally-specific social science academics might be somewhat less mobile than the hard sciences. These may serve most usefully as control variables. A second group of dummies (country names) indicate the national university system of which respondents are members and from which they might (or not) be interested in exiting. Again, these may serve best as control variables, where the relative national wealth and resources devoted to university systems may provide an institutional background for academic mobility decisions.

Modelling Mobility Among European Academics

We parse the independent variables into groups that represent important conceptual ensembles for logit modelling, before considering their entry in an aggregate model. Panel A. of Table 1 examines the Hirschman variables, which are of greatest theoretical interest. They do not disappoint in either sign or significance. Two highly significant variables, Vintage and Tenure, show that long-loyal academics are much less likely to exit 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 next group of variables tested in Panel B. cover a broad range academic activities and relationships that might affect mobility decisions. Somewhat surprisingly, very little of what

¹³ "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 hours 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>.

or how much academics actually do in present posts appear to affect their future mobility, i.e. the model fit is insignificant overall.

**Table 1. Mobility Model
Panels of Variable Groups**

	A		B		C		D		E	
	Coeff	P> z	Coef	P> z	Coef	P> z	Coef	P> z	Coef	P> z
Tenure	-0.04	0.00							-0.03	0.00
Vintage	-0.02	0.03							-0.04	0.00
Voice	-0.30	0.02							-0.34	0.02
ProvostVoice	0.24	0.08							0.35	0.02
PostDegMob			0.22	0.09					0.30	0.05
ClassLoad			0.01	0.86					0.09	0.17
PeerRevPubs			0.03	0.61					0.02	0.76
Gender			0.22	0.14					0.45	0.01
CollabProj			0.09	0.51					-0.12	0.41
Commerce			0.01	0.91					0.13	0.39
PubSvs			0.06	0.62					0.21	0.14
SciPubs			-0.1	0.44					-0.13	0.45
PolPubs			0.09	0.48					0.02	0.88
Physics					0.15	0.64			-0.41	0.26
History					0.04	0.91			-0.22	0.60
Economics					0.40	0.23			-0.66	0.09
CompSci					0.08	0.80			-0.51	0.17
Biology					0.16	0.62			-0.45	0.23
UnitedKing~m							1.01	0.00	1.14	0.00
Switzerland							1.42	0.00	1.44	0.00
Sweden							1.19	0.01	1.26	0.01
Spain							-0.23	0.56	0.16	0.71
Portugal							0.04	0.95	0.24	0.73
Poland							-0.02	0.97	0.66	0.25
Netherlands							1.26	0.00	1.15	0.00
Italy							0.63	0.07	0.70	0.07
Ireland							0.58	0.27	0.35	0.54
Hungary							-0.56	0.27	-0.41	0.47
Greece							0.04	0.95	0.30	0.67
Germany							1.72	0.00	1.64	0.00
France							1.35	0.00	1.49	0.00
Denmark							0.20	0.58	0.05	0.91
Belgium							0.41	0.30	0.39	0.36
Austria							0.93	0.01	1.19	0.00
CONSTANT	32.95	0.02	1.00	0.00	1.27	0.00	0.12	0.68	71.94	0.00
# obs	1619		1670		1708		1708.00		1606.00	
LR chi2	125.8		7		4.6		117.70		226.40	
Prob > chi2	0		0.63		0.47		0.00		0.00	
Pseudo R2	0.7		0		0		0.06		0.13	

Those who were previously mobile are somewhat likelier to continue, but the other variables and the overall model remain convincingly insignificant.

Looking next at the control variables, none of the disciplines—taken as a group—show significant effects (Panel C.). Several national university system controls do, however, have significant effects (Panel D.).¹⁴

The full model results (Panel E) continue to reveal strong support for the presence of “Hirschman Effects” in academic mobility decisions. Loyalty variables remain highly significant, while both academic and administrator voice variables gain significance. One must necessarily conclude that academics with stable career histories and shorter career prospects are quite likely to remain *immobile* in the future. At the same time, academics who claim to exercise voice to influence local university governance issues are also unlikely to consider future mobility, due perhaps to the satisfactions expected from its exercise. When academic voice in governance matters is threatened by strong administrator voice, exit probabilities rise significantly. These are *precisely* the results one should expect if respondents behave as Hirschman hypothesized.

Respondents who were previously mobile or who are male are shown here as significantly more likely to exit their present posts. The national controls are unchanged in this aggregate model, although economists in this model tend to be less mobile than others, albeit only at marginal significance levels.

Mobile Academics: Conditions and Destination Selectivity

Respondents who indicated an interest in mobility were identified and queried further about 1) conditions sought in an alternate destination and 2) which 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 locations¹⁵. Those selecting only one destination region appear to be highly selective, they are fully one-third of all who are mobile, and an EU destination is preferred by most of those selecting 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 4 or 5 destinations appear quite indiscriminate and are open to many alternatives to their present post. Graphic 1 summarizes 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-sought conditions¹⁶, 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

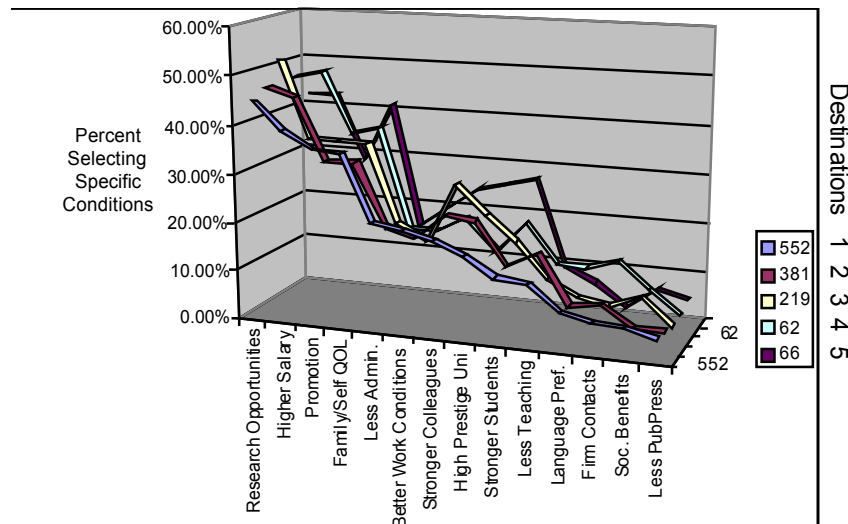
¹⁴ Austrian, British, Dutch, French, German, Swedish and Swiss universities to be more mobile, while Italian university academics alone are less likely to be mobile.

¹⁵ When willingly-mobile respondents (n=1237) are order-logit modelled by the number of destinations (1 to 5) they would consider, only Vintage and PubSvs of the original independent variables from the mobility model retain their significance and original signs (not shown here). Additional variables that affect the *number* of destinations considered by mobile academics also proved significant: French and ESL (English as second language) as their selected questionnaire language, plus the importance of social benefits and the presence of stronger students in the new location. Academics in History or Economics disciplines would tend to consider a reduced number of alternative destinations, perhaps reflecting a relative paucity of viable alternative destinations.

¹⁶ Respondents could select the three most important from a list of 14 condition improvements.

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

Graphic 1. Is the number of potential exit destinations related to destination conditions?



consider an exit option. Other options high on the EU’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 salary incentives and policy adjustments within universities.

The 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, modified working conditions, stronger faculty and student selection, higher rank/prestige university, less publication pressure), plus a purely *in situ* category that offers intrinsic advantages of a country or region (family/self QOL, preferred language, contact with firms, social benefits).

European Research Area Mobility: Stay or Leave?

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 categories¹⁷, which consequently permit the use of a multi-nomial logit model. Respondents who selected *only* an ERA destination (n=512) can be considered in Hirschman terms to be

¹⁷ 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.

loyal to the European Research Area, even if not to their present university, as they would move from their home post but stay within Europe. Expanding this group is an explicit goal of ERA measures. The second much smaller group consists of those respondents whose selections *excluded* any ERA destination (n=54), about half of whom prefer North America only. A third group consists of respondents who included Europe plus one or more other of 4 possible destinations (n=714), where North America accounts for 90% of the other possible destinations. The third group, which is apparently indifferent to an ERA destination, 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 variety of 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.

The technical interpretation of multinomial models can be a bit complicated, as the coefficients indicate *relatively* greater or lesser influence of the variables on our alternative destination categories (ERA-only or non-ERA) rather than choosing “ERA-indifferent” destinations, which serves as the reference case in our model. 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 the alternative (A or B) is affected by a unit change of a variable than the reference case, and the opposite applies for ratios <1.0. We focus our interpretation on the values of those variables with significant probabilities (shaded as per values of column P>|z|) for each alternative in Table 2.

Table 2 Mobility Destination Model

	<u>Panel A</u>		<u>Panel B</u>	
	rrr	P> z	rrr	P> z
Tenure	1.045	0.043	0.996	0.648
Vintage	0.992	0.730	1.011	0.261
Voice	0.744	0.443	1.379	0.023
ProvostVoice	0.687	0.287	0.786	0.107
PostDegMob	1.442	0.387	0.936	0.667
ClassLoad	0.924	0.631	1.070	0.314
PeerRevPubs	1.148	0.414	1.031	0.642
Gender	0.750	0.524	1.060	0.743
CollabProj	0.919	0.821	0.802	0.142
Commerce	1.104	0.779	0.979	0.887
PubSvs	0.841	0.635	0.844	0.250
SciPubs	1.992	0.235	0.826	0.259
PolPubs	0.854	0.657	0.876	0.355
Physics	1.063	0.940	0.657	0.225
History	0.754	0.766	0.375	0.013
Economics	0.671	0.674	0.568	0.137
CompSci	0.908	0.906	0.429	0.017
Biology	0.558	0.484	0.425	0.015
LessAdmin	1.353	0.512	0.870	0.509
Benefits	1.119	0.863	0.653	0.163
QOW	0.947	0.906	0.982	0.929
FamilyQOL	0.885	0.783	0.815	0.270
Firms/Orgs	0.600	0.469	0.652	0.137

PubPress	0.429	0.440	0.836	0.605
Promotion	0.513	0.204	0.849	0.427
Colleagues	0.601	0.306	0.564	0.005
Language	0.000	0.984	0.714	0.220
Ropportunity	1.208	0.645	0.647	0.015
Prestige	0.933	0.884	0.538	0.004
TeachLess	0.557	0.304	0.688	0.107
Salary	0.507	0.127	0.592	0.005
Students	0.465	0.163	0.585	0.016
UnitedKing~m	0.435	0.493	0.428	0.067
Switzerland	0.532	0.632	0.649	0.368
Sweden	0.000	0.992	0.582	0.331
Spain	0.945	0.971	1.454	0.534
Portugal	0.000	0.997	0.977	0.982
Poland	0.000	0.996	1.646	0.530
Netherlands	1.598	0.693	1.032	0.946
Italy	1.016	0.990	1.202	0.712
Ireland	0.000	0.995	0.785	0.738
Hungary	0.000	0.996	2.713	0.234
Greece	15.343	0.097	0.954	0.967
Germany	1.534	0.702	0.924	0.856
France	1.199	0.880	0.468	0.119
Denmark	0.000	0.991	0.687	0.495
Belgium	0.000	0.993	1.507	0.460
<u>Austria</u>	<u>2.645</u>	<u>0.415</u>	<u>1.103</u>	<u>0.843</u>
# obs	1204			
LR chi2	166.23			
Prob > chi2	0.000			
Pseudo R2	0.084			

The results of the model are arranged on two panels in Table 2, each of which represents one of the destination categories that is alternative to the mixed-destination reference case. Panel A presents results for the non-ERA alternative and Panel B the ERA-only destination. Three of the five significant variable groups from the mobility model are repeated here: Hirschman variables, national university systems¹⁸, and academic disciplines. In addition, all possible preferred conditions are included as the means of identifying why respondents are seeking as they choose among the three alternative destination groupings. Without exception, variables that are significant in one panel are characteristically insignificant in the other, i.e. the alternative destinations generally reflect the exclusive influence of different variables.

Starting with Panel A, there is little to distinguish Non-ERA from mixed destinations: only the significant instances of mobile academics with long tenure of service in present post who appear slightly more likely to avoid the ERA ($\text{rrr}=1.04$) or Greek academics, who massively prefer ($\text{rrr}=16.7$) non-ERA destinations.

The principal findings result from ERA-only and mixed destination comparisons in Panel B. Here, three of the disciplinary controls for History, Computer Science and Biology exert

¹⁸ A few collinear national system variables were omitted, which resulted in the reduced set of country variables.

significant effects (rrr=.495 to .843), all of which indicate disciplinary preferences for mixed—not ERA-only—destinations, as do respondents from United Kingdom universities.

As mentioned in Panel A., Tenure—one of the Hirschman variables—among mobile respondents appears to improve chances of exiting the ERA, while in the mobility model Tenure reduced the overall chances of mobility. Two other Hirschman variables—Voice and ProvostVoice—affect the chances of selecting ERA destinations¹⁹ only, each again acting in opposite directions: mobile academics who claim governance Voice are 37% more likely to remain loyal to the ERA, while the marginally significant rrr for a strong administrator voice (ProvostVoice) suggests it might compel mobile respondents to consider a much broader range of destinations beyond and including ERA (.786).

The remaining significant variables represent the effects of conditions sought through exit on the choice between ERA-only and mixed destinations. Conditions sought by respondents who essentially refuse to confine themselves to ERA-only destinations fall cleanly into one of the earlier-established policy categories: those for which the remedy requires 1. resource reallocation/generation (higher salaries, improved research opportunities and possibly reduced teaching loads) or 2. altered governance solutions (improved selection of students and colleagues, higher prestige). Mixed destinations are preferred to ERA-only (rrr=.428 to .689) by respondents for whom these conditions are important, perhaps as a consequence of competitive recruitment practices among contending universities, which may imply ERA universities should be focusing on improving some or all of these conditions to retain mobile academics.

We suggest 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 home institution or within the ERA, so as to reap the benefits of knowledge flows within Europe. Perhaps one can discount somewhat the conditions sought by comparatively few academics who seek to avoid Europe (under 5% of all mobile academics), because their share is proportionately small.

Of far greater importance are the several conditions²⁰ that reduce EU-only destination preferences, which are rather worrying, yet the findings 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 lag behind alternative opportunities outside academia, particularly for specific individuals and disciplines in the greatest demand around the world. The same is true for research opportunities, although some progress has obviously taken place. We note also the relative distaste for ERA-only destinations among respondents who seek stronger colleagues and students or a post in more prestigious universities. This issue challenges typical policies that promote unselective mass education within research universities and it focuses attention on the importance of university governance committed to excellence in the academic enterprise. This in turn raises the question of better meritocratic selection of established academics and aspiring scholars and efforts to improve the scientific and scholarly profile of universities.

¹⁹ ERA-only destinations are themselves a form of European Loyalty.

²⁰ 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 clearly 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. less publication pressure, 3. better firm and organization contacts, and 4. better social benefits, which are all far less important everywhere and might therefore be safely ignored while focusing policy attention on the more important conditions.

Conclusions

Academic mobility between universities and with respect to European circulation follows closely the core ideas about exit from organizations that were advanced 50 years earlier by Hirschman. The voice and loyalty variables most closely associated with Hirschman's view of the exit option perform as expected and are the most significant, and other variables descriptive of mobility conditions also perform well. University administrators will want to review policies that give voice to academics, as well as those that instil institutional loyalty, while reviewing the importance of moderating their own voice in the interests of retaining or attracting academic excellence.

It is entirely possible that several additional policies will need to be revised somewhat for universities to retain their best scholars, while at the same time providing an appealing destination to potentially mobile academics these same universities are trying to attract. University officials now have a better idea of which conditions are most appealing to mobile academics and what could be done to take better advantage of potential intra-ERA mobility.

At the broader level, EU officials should also pay close attention to the conditions that reveal a willingness of mobile academics to exit or remain in the ERA. Some of these may call for revised policies at EU level or improved policy coordination with member states. On the other hand, several policies being entertained or pursued are shown to be irrelevant to academic retention and may safely be abandoned.

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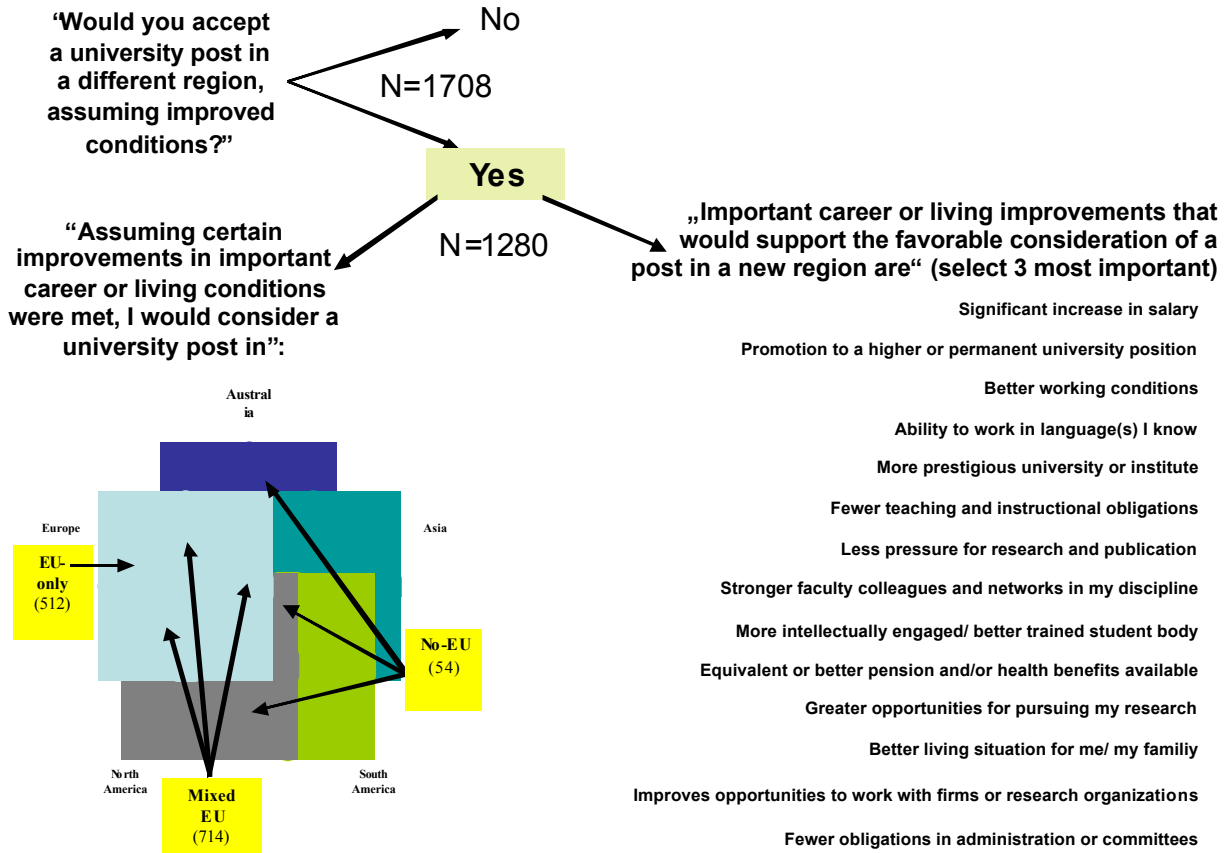
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APPENDIX I



	<u>Combinations</u>	<u>NO-EU</u>	<u>Mixed-EU</u>	<u>EU-ONLY</u>	<u>Total</u>
	1	0	0	512	512
	10	26	0	0	26
25 combinations of	11	0	312	0	312
place categories	100	6	0	0	6
selected by	101	0	35	0	35
respondents are	110	7	0	0	7
generated from	111	0	165	0	165
these codes:	1000	5	0	0	5
1=EU	1001	0	12	0	12
10=NA	1010	3	0	0	3
100=AU	1011	0	25	0	25
1000=AS	1101	0	7	0	7
10000=SA	1110	2	0	0	2
whose values are	1111	0	39	0	39
then reduced to the	10000	3	0	0	3
3 EU-relative	10001	0	11	0	11
categories as per	10010	1	0	0	1
column headings	10011	0	13	0	13
and Venn diagram	10101	0	5	0	5
above.	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 with improved conditions	0.75 0.43	0 1	1708
Model 2 Mobility Destinations	Destination <u>Categories</u> of Mobile Academics: No-EU=1 (54), Mixed EU=2 (714), EU-only (512)=3	NA	NA	1280

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	1716
Contract	Unlimited employment contract	0.69 0.46	0 1	1716
Tenure	Number of years at present post	11.4 9.7	0 44	1799
Vintage	Number of years since Terminal degree received	35.0 10.7	0 51	1689
Voice	Influence of academic staff on university governance	0.32 0.47	0 1	1694
ProvostVoice	Influence of university administrators on university governance	0.74 0.44	0 1	1692
ExternalVoice	Influence of industry leaders on university governance	0.60 0.49	0 1	1684
ClassLoad	Class teaching load in last 2 years*	2.86 1.16	1 5	1798
Gender	Male	0.81 0.39	0 1	1798
PeerRPubs	Output of peer-reviewed publications in last 2 years*	3.44 1.27	1 5	1798
PhdProg	Present post in academic department with PhD students	0.92 0.27	0 1	1732
PostDegMob	At least 6 months experience elsewhere between degree and present post	0.70 0.46	0 1	1724
PubSvs	Non-compensated service to external parties in previous 6 years	0.39 0.49	0 1	1710
PolPubs	Sponsored monographs, reports or memoranda prepared for clients	0.34 0.01	0 1	1798
SciPubs	Peer-reviewed publications generated from funded research	0.76 0.42	0 1	1798
Commerce	Taken actions to commercialise academic findings or skills	0.30 0.46	0 1	1730
NatEndog	Present post in same country as university granting terminal degree	0.74 0.44	0 1	1716
Policy	Client or policy reports generated from funded research	0.34 0.47	0 1	1798
CollabProj	Collaborative funded research with industry colleagues	0.46 0.50	0 1	1798
Physics	Respondent Discipline	0.28 0.01	0 1	1799
History	Respondent Discipline	0.12 0.01	0 1	1799

Economics	Respondent Discipline	0.13 0.01	0 1	1799
CompSci	Respondent Discipline (computer science)	0.18 0.01	0 1	1799
Biology	Respondent Discipline	0.25 0.01	1 0	1799
UNITED KINGDM	Respondent in a UK university	0.13 0.33	0 1	1799
SWITZERLAND	Respondent in a Swiss university	0.07 0.25	0 1	1799
SWEDEN	Respondent in a Swedish university	0.03 0.16	0 1	1799
SPAIN	Respondent in a Spanish university	0.03 0.18	0 1	1799
PORTUGAL	Respondent in a Portuguese university	0.01 0.09	0 1	1799
POLAND	Respondent in a Polish university	0.01 0.11	0 1	1799
NETHERLANDS	Respondent in a Dutch university	0.09 0.29	0 1	1799
ITALY	Respondent in a Italian university	0.07 0.25	0 1	1799
IRELAND	Respondent in a Irish university	0.01 0.12	0 1	1799
HUNGARY	Respondent in a Hungarian university	0.01 0.12	0 1	1799
GREECE	Respondent in a Greek university	0.01 0.09	0 1	1799
GERMANY	Respondent in a German university	0.29 0.45	0 1	1799
FRANCE	Respondent in a French university	0.08 0.26	0 1	1799
DENMARK	Respondent in a Danish university	0.04 0.19	0 1	1799
BELGIUM	Respondent in a Belgian university	0.03 0.17	0 1	1799
AUSTRIA	Respondent in a Austrian university	0.07 0.25	0 1	1799
Colleagues	Work with stronger colleagues	0.21 0.40	0 1	1379
Roportunity	Better research opportunities	0.43 0.50	0 1	1379
Students	Work with stronger students	0.14 0.35	0 1	1379
Salary	Higher salary	0.38 0.49	0 1	1379
PubPress	Less publishing pressure	0.03 0.18	0 1	1379
TeachLess	Lower course load	0.12 0.33	0 1	1379
FirmOrg	Better contacts with firms, orgs.	0.06 0.24	0 1	1379
LessAdmin	Less Administration/Committees	0.18 0.39	0 1	1379
Benefits	Better Health/Pension benefits	0.05 0.22	0 1	1379
QOW	Quality of working conditions	0.18 0.38	0 1	1379
FamilyQOL	Quality of Life for self/family	0.33 0.47	0 1	1379

Language	Ability to work in preferred language	0.07 0.25	0 1	1379
Promotion	Promotion to a higher/permanent post	0.31 0.47	0 1	1379
Prestige	More Prestigious University	0.18 0.37	0 1	1379

*(1=0, 2=1-2, 3=3-5, 4=6-10, 5=>10)

~(1=totally agree...5=totally disagree)