

Essays on Faculty Development

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Dipl.-Kffr. Julia Christiane Muschallik
aus München

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Dekan: Professor Dr. rer. soc. Josef Schmid

1. Gutachter: Professor Dr. Kerstin Pull

2. Gutachter: Professor Dr. Jörg Baten

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1

Introduction

Upcoming researchers¹ have to face an increasingly competitive labor market (FIEDLER/WELPE 2008; MCCORMICK/BARNES 2007); therefore, more systematic faculty development is needed to support them in their career (MCLEAN et al. 2008; AUSTIN 2002). NELSON (1983) defines faculty development as any activity that is “[...] designed to improve faculty performance in all aspects of their professional lives [...]” (p. 70). BLAND/SCHMITZ (1986) characterize a ‘productive researcher’ as a person who is highly socialized in the profession itself and in its environment, has built up a professional network early in his or her career, and has received support from advisers or mentors. The authors name the supportive environment as one of the most important characteristics for a productive researcher, and thus connect skill development with the researchers’ integration into the professional context. STEINERT (2000) points out that faculty development should be addressed more systematically to the development of upcoming researchers’ professional skills. Understanding values and expectations in the academic system, knowing about the management of an academic career, and establishing professional networks are of high relevance for one to succeed in the academic career system (STEINERT 2000).

In the literature about academic career success, the integration into the scientific community and a researchers’ publication productivity are mentioned among the most important determinants (for the integration see, e.g., SLARAN 2010; COMBES et al. 2008; KYVIK/TEIGEN 1996; PRPIC 1996; FOX 1991; for productivity see, e.g., COMBES et al. 2008; FIEDLER/WELPE 2008; GRABER et al. 2008; SCHULZE et al. 2008; COUPÉ et al. 2005).

¹ In the following doctoral thesis, an ‘upcoming researcher’ is defined as a researcher aiming for a career in academia who has not yet earned tenure.

In what follows, this doctoral thesis focuses on academic mentoring relationships to understand whether and how they can serve as a faculty development strategy. In addition, to widen the view on faculty development strategies, upcoming researchers' academic career mobility is analyzed.

The literature on mentoring relationships provides empirical evidence on their positive effects on mentees' career development (ORTIZ-WALTERS 2009; HILMER/HILMER 2007; CAWYER et al. 2002; BOYLE/BOICE 1998; HEINRICH 1995). However, given these findings, and although universities are increasingly establishing mentoring programs to support and promote upcoming researchers (e.g., WASBURN/LALOPE 2003; TENENBAUM et al. 2001; JACOBI 1991), relatively little is known about academic mentoring regarding how mentoring relationships might work, what support mentees receive, and how these relationships might affect upcoming researchers' career success. In addition, looking at upcoming researchers' curricula vitae, a trend toward more academic mobility is given (see BORGHANS/CÖRVERS 2009; RÖBKEN 2009). Hence, it is important to understand the extent to which academic mobility might affect upcoming researchers' career success, and thus detect its potential as a faculty development strategy along with academic mentoring.

To analyze these questions about faculty development strategies, this doctoral thesis is structured into the following chapters. Starting in Chapter 2, empirical evidence on the need and relevance of faculty development strategies in academia is analyzed. Qualitative and quantitative insights into academic mentoring relationships are given in the next three chapters. To widen the view on faculty development strategies, Chapter 6 investigates the effects of early academic career mobility on upcoming researchers' career success. Further details on the particular chapters are provided below.

To illustrate the need and relevance for more systematic faculty development strategies in academia, *Chapter 2* analyzes economic history, a small but international field of research. A total of 242 scholars from 59 countries participated in this survey by answering an e-mail questionnaire. The quantitative findings show which countries and regions need more systematic development, and participants were asked to suggest development strategies to promote the field and its researchers. According to the findings, enhancing upcoming researchers' skill development and

fostering their integration into the scientific community should be the core issues of these strategies. Therefore, faculty development strategies to enhance upcoming researchers' career advancement are needed.

Given the need for faculty development strategies, the next three chapters analyze academic mentoring relationships in the context of faculty development strategies. Because the success of mentoring relationships is connected to the support that mentees perceive to get from their mentors (see, e.g., TILLMAN 2001), *Chapter 3* analyzes what support upcoming researchers perceive in the case of an international e-mentoring program in the field of economic history. Investigating similarities and differences in respect to findings of the traditional mentoring literature, this chapter tries to detect the potentials e-mentoring relationships might have regarding upcoming researchers' career development. Providing qualitative insights by analyzing mentoring item scales and conversation protocols from 11 mentees, results show that mentees perceive career and psychosocial support in different areas of academic life. By providing support, mentors are acting in different roles that might influence different aspects of academic career development and therefore of upcoming researchers' career success. Hence, the question arises as to whether this provided support might help increase mentees' career success.

Chapter 4 looks at a sample of 80 German-speaking researchers from the field of economics and business administration who had or still have a mentor while they were a PhD student or postdoc, and it analyzes whether the perceived support affects mentees' academic career success. It is argued that because mentors are acting as teachers, sponsors, and collaborators, mentees improve their human and social capital endowment, and thus increase their career success – that is, the likelihood of receiving tenure. Cox proportional hazard regressions (COX 1972) show that mentors' different roles change the effects on upcoming researchers' likelihood of receiving tenure. Especially, mentors acting as sponsors and gatekeepers who introduce their mentees to job-relevant contacts increase such a likelihood.

The literature on academic career success stresses the importance of research productivity (see, e.g., GRABER et al. 2008; SCHULZE et al. 2008). Thus, *Chapter 5* looks into whether academic mentoring relationships enhance mentees' publication productivity. For faculty development strategies, the institutionalization of formal mentoring programs by organizations and institutions is of high relevance. This

chapter categorizes the effects of mentoring as those that result from formal and informal mentoring relationships. The analyses are based on the data set introduced in Chapter 4 but with a sample of 390 German-speaking researchers, including researchers with a formal or informal mentor or even no mentor. As in Chapter 4, it is argued that mentoring relationships (formal and informal) increase mentees' human and social capital endowment, which positively affects mentees' career success. Even after controlling for a possible selection bias via matching methods, results of traditional Ordinary least squares regressions show the positive effects of formal mentoring programs on upcoming researchers' publication productivity. No effects can be found for informal mentoring relationships.

Although the main focus of this doctoral thesis is on academic mentoring relationships, *Chapter 6* widens the view on faculty development strategies by analyzing upcoming researchers' academic career mobility as it pertains to enhancing career success. A total of 249 researchers are included in these analyses, which use the data set described in Chapter 4. Because Chapters 4 and 5 provide empirical evidence for the positive effects of mentoring relationships on academic career success, Chapter 6 considers mentoring relationships as a further control variable in the analyses. In Chapter 6 it is argued that national and international career mobility can serve as a signal for appointment committees, and thus affects upcoming researchers' career success. Cox proportional hazard regressions (COX 1972) were used for analyzing the likelihood of upcoming researchers receiving tenure, and Logit regressions were used for analyzing the reputation of the tenure-granting institution. The results show different effects for national and international career mobility and therefore different potentials for such mobility to be used as a faculty development strategy.

In light of the need for more systematic career development, this doctoral thesis provides insights into academic mentoring relationships (Chapters 3 to 5) and academic career mobility (Chapter 6). By analyzing different aspects and effects of mentoring and mobility on academic career success, the relevance of these measures to increase upcoming researchers' career advancement is unveiled. *Chapter 7* provides a conclusion of the main results and a brief discussion of the findings.

2

The need for faculty development: The case of economic history

In order to support and advance upcoming researchers in their academic careers, faculty development should be a core issue for institutions and research associations (STEINERT 2000). In analyzing the status and future of the field of economic history, a lack of academic activities and a resulting lack of faculty development are revealed in academia. Asking researchers about their suggestions to promote their research field, it becomes clear that strategies to improve researchers' academic contacts and skills are required. Although this chapter focuses on the case of economic history, it shows the need for more systematic faculty development in the academic world and the activities that institutions and organizations could implement.²

2.1 Introduction

Economic history has developed into a truly global discipline over the past two decades. For example, the world congresses of the International Economic History Association were held increasingly outside of Europe and North America - such as in Argentina in 1998 - and Latin America has hosted a regular continent-wide congress during the last decade. The 2012 World Economic History Congress will be held in Stellenbosch, South Africa, followed by the 2015 Congress in Kyoto,

² Chapter 2 is a slightly modified version of the paper "The Global Status of Economic History" by JOERG BATEN and JULIA MUSCHALLIK (2012). This paper has been published in *Economic History of Developing Regions*, 27(2012)1: 93-113.

Japan. In addition, the topics of economic history sessions have become globally comparative.

Despite this rapid globalization, however, surprisingly little is known about the scholars who represent economic history. Knowing our status and who we are is important for the future of our discipline. A number of questions relating to this issue are tackled in this study: In which countries or regions are economic historians concentrated? In which parts of the world are they under-represented and why? Is this due to a lack of academic activities in general or is economic history a neglected discipline in an otherwise developed university system? Which determinants encourage or limit the propensity to publish in international economic history journals?

Before it is possible to estimate the number of economic historians it is necessary to engage with the issue of defining the discipline. For example, should people working in museums who develop economic history exhibitions be included or only those who work full-time at universities? Should retired colleagues be included in the estimates? Moreover, economic history combines methods and rhetorical styles from economics, history and sometimes other scholarly disciplines. This position between academic fields offers great potential for interdisciplinary work, but it also generates a certain amount of ambiguity. Our strategy for coping with these issues consists of asking a substantial number of people to give an estimate of the number of economic historians in a broad sense (including doctoral students); the average of many different definitions might yield a common-sense estimate. Especially in large countries, the average of different estimates helps to improve accuracy.

Our special interest focus is to shed light on the situation in developing regions. The potential for fruitfully combining development studies and economic history makes it important to strengthen our field in those regions where development is the core issue.

Our sample is based on a list of participants of the last world economic history congresses and the leadership personnel of the 44 economic history societies existing in the world. Since these world congresses are organized by the International Economic History Association (IEHA), which unites economic historians from all over the world, our database can be considered fairly comprehensive: For North

America (plus Australia and New Zealand) and Western Europe, we obtained evidence on all countries. In addition, the region of East Asia shows a very high coverage, and five other world regions are well represented. Only the sub-Saharan Africa region was not comprehensively covered by the survey.

After a short review of the current literature on economic history as a discipline, we analyze the number of economic historians by country. To verify the accuracy of these numbers, we check them against data on conference participation, membership in national organizations and the number of publications in economic history journals. We also give a short overview of the status of post-graduate and doctoral students in the field. The paper ends with a brief conclusion. In Appendix A, we report on which topics researchers are focusing on today.

2.2 Literature review

While a number of studies have analyzed economic history as a discipline, a comprehensive quantitative study of the number of economic historians has not yet been undertaken.

Studies of individual countries do exist. For example, Canada's Economic History Group was recently surveyed, with a special focus on courses taught in the various universities and colleges. One of the questions raised in this article was how retired colleagues should be counted when a quantitative survey is performed. Clearly, retired colleagues are often active in research, and some continue to teach while others turn to alternative pursuits. Including them in the total number yielded, in the Canadian case, a slightly higher number of economic historians than our figures suggested.

Recently, PAUL (2008) performed a survey for the Economic History Society which is mainly active in the UK. The major aim was to identify persons who were interested in economic history, and might be motivated to contribute to the field and the society. This author also decided to include retired scholars.

In a presentation at the European Historical Economics Conference in Geneva, 2009, REIS (2009) provided an overview of economic historians' publication

patterns. The author provided his data to us, and we have therefore included it in our analysis.³

WHAPLES (2002) undertook an assessment of trends in the *Journal of Economic History*. He analyzed patterns relating to contents, methodology, and temporal coverage. He also provided data on which authors and universities contributed to the *Journal* between the 1960s and 2000. WHAPLES (2002) found an increased interest in topics like business cycles and depressions, standards of living and health, and labor markets and migration since the 1970s. He also pointed towards a substantial internationalization of contributors. In particular, the number of published pages produced by European authors has grown substantially in recent years (WHAPLES 2002).

The editors of the *Journal of Economic History* regularly present quantitative data, not on the number of economic historians but on the topics of journal submissions by world region. In the latest issue, March 2011, FISHBACK (2011) showed that Non-North American topics had increased, bringing down the US and Canada share to “only” 32 percent in 2009-10. By contrast, Africa increased as a region of study from only one submission per year in both 2006/7 and 2007/8 to four submissions in 2008/9 and eight in 2009/10. While this result still only accounts for five percent of total submissions, the increase is substantial. Western Europe, including the UK, accounts for 43 percent, and most of the other world regions account for 4-5 percent. Regional submissions have come from Asia and Pacific (5), Eastern Europe (4), Latin America, including the Caribbean (6), and the Middle East (4) (FISHBACK 2011). Clearly, the geography of topics is not identical to the geography of economic historians, but Tables such as this one can be used for comparisons with our estimates presented below.

2.3 Sample and questionnaire

Our evidence was collected on the basis of an e-mail questionnaire. The questionnaire included eight questions and was divided into three parts. In the first section, we asked about the status of economic history in the respective country of

³ See also DI VAIO/WEISDORF (2010) who analyzed citation behaviour, although their main interest is in evaluating different journals.

each respondent. In the following section, we interviewed the respondents about the most relevant topics in the field of economic history. The last part of the questionnaire focused on respondents' background information.

We sent the e-mail questionnaire to scholars across the world, building on the list of participants of the last world economic history congresses and on the leadership personnel of the major economic history societies. A snowball system allowed us to extend this network to previously undocumented countries such as Kyrgyzstan and Syria. The survey concluded with 59 countries being documented, often with more than one estimate.⁴ To give an overview of the share of countries covered by responses, we divided the countries into nine main world regions and weighted them by population (Table 1). North America (plus Australia and New Zealand), East Asia and Western Europe reach coverage values of 98-100 percent. Eastern Europe, Latin America, South and Southeast Asia also have quite good levels of documentation. Sub-Saharan Africa has a modest coverage of 0.17, which is not negligible. The under-representation of the sub-Saharan region at past world congresses might also be a sign of the lack of governmental support and a thinner research infrastructure.⁵ South Africa, as the most productive country in social sciences in the sub-Saharan region, was an exception in the past.⁶ Overall, 59 countries could be included in this overview, including countries such as Vietnam, Ghana and Haiti.

All survey questions entailed open-ended responses. The average age of the respondents was around 46 years, and the ages varied from 24 to 80. We also asked whether the respondents would characterize themselves more as an economist, more as a historian, or whether they saw themselves somewhere between the two professions. Overall, 82 individuals saw themselves as historians, and 82 respondents saw themselves as between the core disciplines. Fifty individuals chose a clear

⁴ Questionnaires were sent to some 1,100 persons of whom 242 responded. If the information would refer to individual opinion, this would be a 'response rate' of around 22 percent, which is quite remarkable compared to similar questionnaire activities. Because the unit of the observation is the country, however one person's estimate would be appropriate enough.

⁵ Research in this region is quite under-funded, and the few existing science institutions in some African countries were sometimes even destroyed by domestic policies and events during the past decades (UNESCO 2010:65).

⁶ South Africa was actively measured by the UNESCO by its output of ISI papers over the past twenty years. This measurement showed that South Africa produces about half of all output in the social sciences and more than three times more than Nigeria, the second most productive country (UNESCO 2010:64).

economist designation. Twenty-seven participants abstained from responding to this question.

Table 1. Coverage of world regions

World Region	Coverage in percentage
East Asia	98
East Europe/Central Asia	62
Latin America/Caribbean	73
Middle East/North Africa	51
North America/Australia/New Zealand	100
South Asia	77
Southeast Asia	54
Subsaharan Africa	13
Western Europe	100

Notes: Oceania is not included, because we focused only on countries with a population of 500,000 and more in 2010 (Philippians are included in South East Asia).

Source: Own compilation.

2.4 Number of economic historians

In the first section of the questionnaire, we asked respondents for an estimate of the number of economic historians in their country.

As economic history is characterized by heterogeneity, and as there is no clear-cut, universal definition of ‘the economic historian’ we asked respondents to include historians, economists and other social scientists with a strong interest in economic history. We asked them to include doctoral students, professors, and other scholarly staff (permanent and temporary).⁷ The results are reported in Table 2.

In first place, there is Japan with an absolute number of 1,340 economic historians, followed by China (800), the United Kingdom (770) and the United States (675). Astonishingly high numbers were also reached for Vietnam, Mexico and Turkey.

⁷ Because a countrywide estimation might have been sometimes too difficult, we also asked for an estimated number of economic historians within their own universities, if that were more feasible.

Why does Japan have the most economic historians? One reason could be the strong interest of the Japanese public in the history of the country. Another plausible explanation could be a Japanese preoccupation with business history.⁸

On the other side of the spectrum, there are some countries with few economic historians. We consider economic historians in those countries to be pioneers who promote the discipline even without a strong group around them. We have to admit that sometimes our estimates are based on slightly less precise statements for these countries.⁹ Please note also that only 59 countries are listed. Most of the other countries typically have small communities.

Table 2. Ranking of economic historians by country

Country	Number of economic historians	Population (in mio)	Respondents
Japan	1340	128	5
China	800	1346	1
United States	770	312	5
United Kingdom	675	63	4
Russian Federation	488	143	2
Mexico	350	115	2
India	350	1241	1
Spain	346	46	11
Italy	342	61	13
France	336	63	7
Argentina	300	41	1
Germany	210	82	9
Viet Nam	200	88	1
Turkey	200	74	1
Sweden	183	9	6
Brazil	160	197	2
Netherlands	138	17	2
Portugal	114	11	5

⁸ As a caveat, we should also mention that some countries with high degree of specialization, such as the US, might not count the majority of business historians as economic historians.

⁹ For example, if the number of economic historians was only given for one of the two universities, we multiplied by two after making sure the universities were similar in size and character.

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Taiwan	113	23	3
Colombia	100	47	1
Korea (South)	100	49	1
Peru	100	29	1
Greece	80	11	4
Hungary	70	10	1
Bulgaria	65	8	3
Belgium	60	11	1
Austria	60	8	1
Norway	53	5	4
Switzerland	52	8	4
Canada	44	35	3
Denmark	43	6	4
Finland	43	5	5
Senegal	41	13	1
Cuba	40	11	1
Uruguay	40	3	1
Australia	35	23	2
Chile	33	17	3
Poland	30	38	1
Indonesia	30	238	1
South Africa	28	51	3
Egypt	20	83	1
Israel	18	8	3
Serbia	15	7	1
Slovenia	15	2	1
New Zealan (Aotearoa)	15	4	1
Ireland	11	5	2
Romania	10	21	1
Total	8666	4816	137

Notes: We excluded very few outliers (5), especially if respondents added notes saying: "I really do not know, but maybe around...". Line "Total" contains 10+ economic historians. 1-10 economic historians in the following countries: Morocco, Bolivia, Estonia, Algeria, Syria, Ghana, Cameroon, Mauritania, Kyrgyzstan, Haiti. Population data from 2010.

Source: Own compilation.

Although many developing countries have very few economic historians, others have very substantial communities, such as Vietnam, Brazil and Senegal. Many of these scholars have not, however, been very integrated into the world economic history community.

One reason for the high absolute number of economic historians, especially in China, Japan and the US, might be the large population of these countries relative to others. To take this into consideration, we document in the next step the number of economic historians relative to the population (Table 3). Sweden occupies the first rank with 20 economic historians per million inhabitants, followed by Uruguay (13.3), Norway (13.1) and Portugal (11.4). The United Kingdom with 11.3 and Japan with 10.6 are in positions five and six, respectively. As expected, China and the US rank lower in per capita terms. Some might suggest that these estimates might be too small. Given its dominance in the field, it is possible that the US estimates are too low. But we only measured the number, not the productivity, of scholars. Differences in productivity might influence the perceived real number of economic historians in a particular country such as the US.

Table 3. Economic historians relative to population by country

Country	Economic historian / Population	GDP (per capita)	Respondents
Sweden	20.4	20442	6
Uruguay	13.3	7708	1
United Kingdom	10.7	19972	4
Japan	10.5	20876	5
Norway	10.5	24471	4
Portugal	10.4	14126	5
Finland	8.5	20290	5
Bulgaria	8.1	5505	3
Netherlands	8.1	21656	2
Slovenia	7.5	13650	1
Austria	7.5	20161	1
Spain	7.5	15464	11
Argentina	7.3	8340	1

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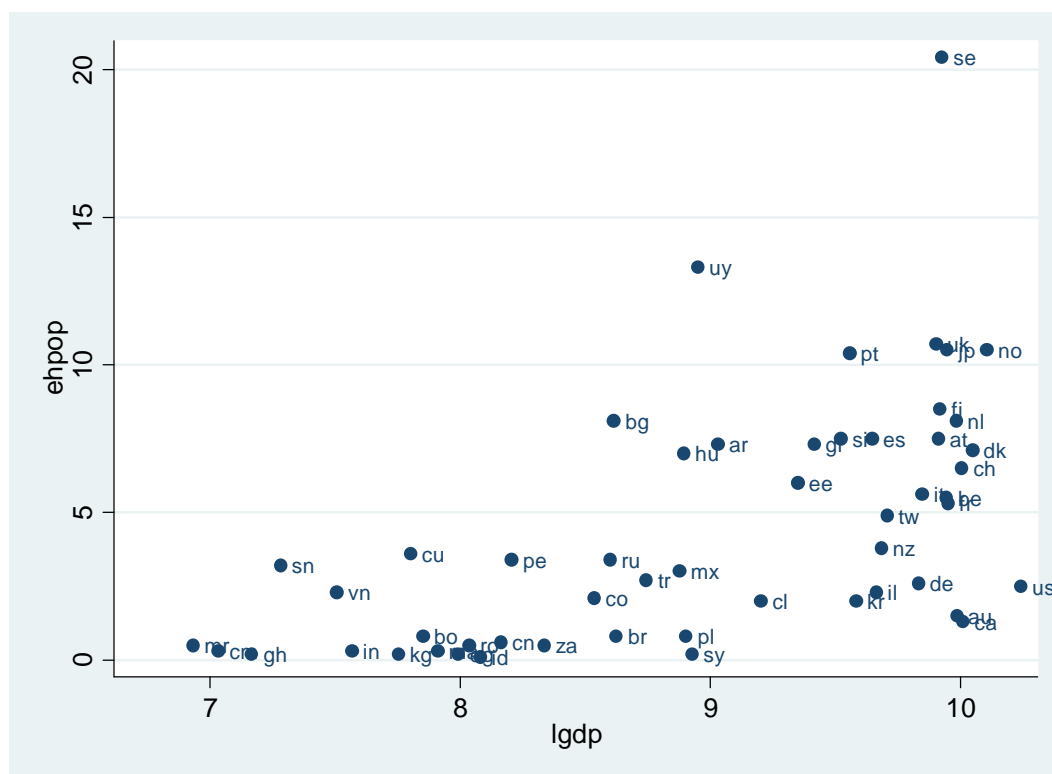
Greece	7.3	12277	4
Denmark	7.1	23086	4
Hungary	7	7286	1
Switzerland	6.5	22144	4
Estonia	6	11495	3
Italy	5.6	18890	13
Belgium	5.5	20833	1
France	5.3	20950	7
Taiwan	4.9	16428	3
New Zealand (Aotearoa)	3.8	16064	1
Cuba	3.6	2445	1
Russian Federation	3.4	5428	2
Peru	3.4	3658	1
Senegal	3.2	1454	1
Mexico	3	7154	2
Turkey	2.7	6274	1
Germany	2.6	18636	9
United States	2.5	28039	5
Israel	2.3	15733	3
Viet Nam	2.3	1820	1
Ireland	2.2	22015	2
Serbia	2.1	2354	1
Colombia	2.1	5091	1
Chile	2	9921	3
Korea (South)	2	14508	1
Australia	1.5	21712	2
Canada	1.3	22250	3

Notes: 1-10 economic historians in the following countries (0.1-0.8 economic historians per million inhabitants): Bolivia, Brazil, Poland, China, Romania, South Africa, Mauritania, India, Cameroon, Morocco, Kyrgyzstan, Ghana, Egypt, Syria, Indonesia, Algeria. GDP data from 2000.

Source: Own compilation.

We also investigated whether there is a linkage between the income of the corresponding country and the number of economic historians per capita. Are economic historians perhaps a 'luxury item'? Is economic history consumed in

greater quantities if incomes are high? To analyze this question, we compare our results with the GDP per capita of each country (Figure 1). The results suggest that there is a linkage between the number of economic historians in a country and its GDP. Sweden, with the highest rate of economic historians, has a very high per capita GDP. Rich countries, such as the United Kingdom, Norway and Portugal, also feature many economic historians per capita, whereas Haiti, Mauritania and Ghana have relatively small numbers. However, there are also some countries that are rich, but do not have as many ‘economic historians’ per capita such as Germany, which experienced a boom period in the hey-day of the “Historical School” during the 19th and early 20th centuries. When this school was replaced by other approaches in the post-war period, sufficient economic history chairs were not created to make up for the move away from historical approaches amongst economists. On the whole, however, the general correlation between GDP and the number of economic historians is positive for the developing world. For example, economic history in Brazil will surely grow over the next decade, given its rapid GDP per capita growth in the recent past.

Figure 1. Are economic historians a luxury product?

Notes: Lgdp is GDP per capita.

Source: Own compilation.

2.4.1 Conference participation

In order to test our findings, we now compare them to (1) conference participation statistics, (2) memberships in national organizations, and (3) publications in economic history journals. Apart from strengthening our findings on the numbers of scholars, this comparison process also provides insights into the determinants of conference participation and publication patterns.

To test our findings we employed a gravity model that explains conference participation in relation to distance, number of economic historians in the source country, home market effects of the country in which a world congress occurs, and other variables. The data was collected from world congress participation statistics for the past decade. We collected participation statistics from the world congresses held in Buenos Aires in 2002, Helsinki in 2006 and Utrecht in 2009 (Table 4). Unfortunately, the data did not always provide participants' country of origin. For most participants information on country of origin could be gleaned, but for some we

could only get their regional base, such as “Scandinavia” or “other Asia” (see the notes to the Table for further information). Because we will assess a home market effect below, we decided to separate Finland and “other Scandinavia” in the case of the Helsinki congress.

Table 4. Participation in world congresses 2002-9 and forecast for 2012

Country (group)	Buenos Aires	Helsinki	Utrecht	Stellenbosch*
	2002	2006	2009	2012
South Africa	8	6	9	84
Africa others	1	3	2	0
China	n.a.	4	23	53
India	12	9	10	9
Japan	19	55	78	54
Asia others	14	31	13	37
Russia	12	30	17	39
Eastern Europe others	n.a.	48	50	16
Austria / Switzerland	10	37	36	37
Belgium	14	40	26	32
Finland	n.a.	157	n.a.	n.a.
France	25	71	88	55
Germany	25	71	52	42
Greece / Turkey / Israel	n.a.	18	24	42
Italy	40	60	63	55
Scandinavia	38	n.a.	108	54
Scandinavia others	n.a.	121	n.a.	n.a.
Spain / Portugal	35	108	119	57
The Netherlands	20	44	94	39
UK / Ireland	42	136	145	82
Argentina	113	18	14	37
Brazil	24	13	12	18
Mexico	31	24	9	31
Latin America others	0	11	26	14
Canada	26	27	25	29
USA	109	131	124	93
Australia / New Zealand	19	19	13	28

2 The need for faculty development

Unknown	75	0	31	35
Total	712	1292	1211	1064

Notes: *Stellenbosch 2012 is the average of the previous 3 unknown figures. The fact that there were 8 South Africans was constructed from the academic program. The high participation rate of Finland in 2006 includes not only economic historians, but also all historians and economists who participated. A forecast based on our model, see text. Sources: Buenos Aires: Internet PowerPoint-Presentation, congress website Helsinki: Excel sheet sent by Riitta Hjerpe, thanks for that Utrecht: Excel sheet sent by Jessica Dijkman, thanks for that. All figures exclude accompanying persons. The country groups were different in the cases of the Buenos Aires and the Utrecht congress, the previously mentioned “other Europe”, and the latter distinguished between East and West Europe. The former also had an “other countries in the world category”, which is why the “unknown” category in Table 4 is a bit larger. Also the arrangement “Greece/Turkey/Israel” was given by the world congress statistics, country specific numbers were not available. The predicted value for “Africa others” in 2012 is actually -11, but we report a 0, because participation cannot be negative. Asia others in 2002 includes China, Scandinavia in 2002 is only Finland and Sweden. Unknown 2012 is the average of the previous 3 unknown figures. The fact that there were 8 South Africans in Buenos Aires was constructed from the academic program.

Source: Own compilation.

What do the figures show about participation trends? In general, the participation from African countries was relatively modest (Table 4, columns 1-3).¹⁰ Chinese and Japanese participation has grown substantially (in the Chinese case, we can observe this only for 2006-2009 because from 2002 it was included in ‘other Asia’). Russia was represented better in Helsinki than elsewhere, which might be caused by the geographic proximity of Finland to the northwestern parts of Russia. Geographic proximity clearly also played a role in the case of European countries which had sent fewer delegates to Buenos Aires than to the other two congresses (and the macroeconomic crisis in Argentina was probably also important here). The largest participation figure in all congresses was the one of the Finnish in Helsinki, with 157 participants.¹¹ However, the British, US, Spanish and ‘other Scandinavia’ communities were also quite well represented. These countries sometimes reach values of more than 100 participants.¹²

¹⁰ We will discuss the “Forecast 2012 column” below.

¹¹ Please note that the number of Finnish participants exceeded the number of economic historians of the country. Also other historians and economists participated at the congress.

¹² It is a bit astonishing that, according to the Buenos Aires statistics, there were no participants from “other Latin America” (apart from Argentina, Mexico and Brazil). This might be a small data mistake

To compare the number of economic historians from our initial estimates with conference participation, we need to ask what the most important control variables are that could potentially distort the comparison. An obvious distortion could be the language issue. Because English functions often as a global language in the scientific world, non-native speakers are, in a way, disadvantaged because they have to make great effort to learn the language; otherwise, they would be less successful at international conferences and get fewer publication opportunities (UNESCO 2010: 154-155). In other words, the success of a scholar, nowadays, might be partly related to his or her English language skills (UNESCO 2010: 156). According to UNESCO, English is the most widely used language in social science journals (85.3 percent of the referred journals are in the English language), followed by French (5.9 percent), German (5.4 percent), Spanish (4.0 percent) and Portuguese (1.7 percent). The most common non-European language is Chinese (1.5 percent), followed by Japanese (1.0 percent).¹³ Therefore, we created an ‘English’ dummy variable, which is coded as 1 for the US, Canada, the UK, Ireland, New Zealand, Australia and South Africa.¹⁴ To further distinguish the cultural proximity of participants to the English language, we collected the TOEFL (Test of English as a Foreign Language) test score by country from the respective Internet page.¹⁵ We defined a group with weak TOEFL values below 70 points (the main example here is Japan, which is quite astonishing) and the group with modest TOEFL values between 70 and 84. Country groups that are not mainly English speaking but have fairly good TOEFL scores represent the constant.

In our regressions, we find that the number of economic historians and the distance from the congress are significant determinants of world congress attendance (see Table 5). Less distance and more economic historians mean higher congress participation in the respective country. As expected, GDP and the English-language variable also matter. Researchers from countries with high GDP can more easily afford the travel expense, while those from countries with low GDP face greater obstacles. English language skills affect participation positively. The home market

because nearby Uruguay and other countries might also have sent delegates. Otherwise, the participation statistics seem relatively reliable.

¹³ Results based on the Ulrich database. For further information, see UNESCO (2010: 149).

¹⁴ Although there are obviously language minorities in some of those countries, there are also some English-speaking countries in other country groups.

¹⁵ The TOEFL test is the most accepted international test to score English language skills. It consists of reading, listening, writing and speaking sections. The maximum total score is 120 points.

effect is always positive and has a large coefficient but is not statistically significant. We also tested whether visa requirements played a role, but found no significant effect. In addition, a time trend ('year') was insignificant. Finally, including country fixed effects in a least square dummy variable model (column 5) did not make a difference.

Table 5. Panel regressions: Determinants of world congress participation

	(1)	(2)	(3)	(4)	(5)
Number of ec.hist.	5.97*** (0.002)	8.27*** (0.000)	6.11*** (0.003)	6.05*** (0.010)	8.80*** (0.000)
Distance (logs)	-17.77*** (0.000)	-12.81*** (0.001)	-14.16*** (0.001)	-10.27** (0.017)	-13.20*** (0.009)
Home market	24.93 (0.258)	33.39 (0.129)	25.89 (0.289)	32.89 (0.214)	33.57 (0.233)
GDP/capita (logs)		15.35*** (0.001)	9.98* (0.054)	10.33* (0.076)	19.58*** (0.000)
TOEFL (low)		-68.74*** (0.006)			
TOEFL (medium)		1.97 (0.850)			
English	32.60*** (0.010)	19.33*** (0.005)	23.09** (0.042)		
TOEFL			0.57 (0.369)	0.76 (0.277)	
Visa requirements				-9.37 (0.200)	
Year				0.86 (0.328)	
Countries fixed effects	No	No	No	No	Yes
Constant	161.31*** (0.000)	-24.78 (0.650)	-9.70 (0.889)	-1,788.54 (0.325)	-30.26 (0.686)
Observations	71	71	71	71	73
R-squared	0.58	0.70	0.64	0.60	0.89

Notes: Number of economic historians was divided by 100 for expository purposes.

Source: Own compilation.

In Table 6, we list the residuals of congress participation. After controlling for distance, language barriers, income and size of the economic history community, the three regions with the highest residual participation propensity are Iberia, Scandinavia and, surprisingly, Eastern Europe (excluding Russia). Africa and some Latin American countries also have positive residuals.

Table 6. Residuals of congress participation based on Table 5 (Specification 2)

Country	Residual
Spain / Portugal	34.3
Scandinavia	22.7
Eastern Europe others	22.2
Africa others	20.8
USA	19.2
Argentina	6.5
Brazil	6.4
India	5.3
France	3.6
UK / Ireland	3.5
Italy	3.0
Latin America others	1.7
Japan	0.0
South Africa	-0.6
Germany	-1.0
Mexico	-2.7
The Netherlands	-8.5
Asia others	-9.6
Austria / Switzerland	-9.6
Australia / New Zealand	-9.9
Canada	-12.2
Belgium	-12.6
Greece / Turkey / Israel	-21.6
Russia	-25.4
China	-41.6

Source: Own compilation.

Based on these regression results, we attempt a forecast of participation at the World Congress 2012. In Column 4 of Table 4, we estimate the participation at the next World Economic History Congress that will occur in Stellenbosch. The most astonishing fact is the non-participation of Africans (outside South Africa). It should be noted that this is a *ceteris paribus* forecast that does not take into account special stipends and other interventions that would encourage African participation. The forecast in Table 4 is based only on the variables in Table 5: the number of economic historians, which is small in most African countries, the distance, which is quite large (the northern part of the continent is closer to Europe than to South Africa), low GDP and similar variables. Looking at the sessions already accepted for 2012, we are sure that the actual participation from this region will add up to at least 40 to 50 participants.

Because of a potential home market effect, participation by South Africans will be the highest ever. We also forecast that South African historians and economists who have not previously engaged with economic history will attend, as these groups did in Helsinki. The largest participation is estimated for the US, with more than 90 delegates. The British will also be quite well represented. China's participation at recent congresses was relatively modest but is growing substantially because of the large group of economic historians at home and the growing integration and income of the country. Compared with the showing at Utrecht in 2009, participation will climb from 23 to a forecasted 54 delegates at the congress in Stellenbosch. Furthermore, Japan's participation is estimated to be 54 delegates. In our estimation, the European countries will send fewer delegates to Stellenbosch 2012 than to the last congresses in Helsinki and Utrecht, but they will send more than they did in 2002 (to Buenos Aires). From the Latin American group, Argentina and Mexico will be represented by 37 and 31 delegates, respectively. Altogether, we predict a participation number of 1064 delegates (excluding accompanying persons). That number is slightly less than that for the last two World Economic History Congresses in Utrecht (1211 delegates) and Helsinki (1292 delegates), but more than for the congress in Buenos Aires in 2002 (712 delegates). 1064 delegates is a number that will facilitate a very successful world congress. Moreover, this number is an estimate based only on travel costs and similar variables. The unusual location of South Africa and the fact that this event will be the first world congress in Africa will

probably attract an even higher number, as the number of session proposals at the time of writing indicates.

2.4.2 Memberships in national organizations

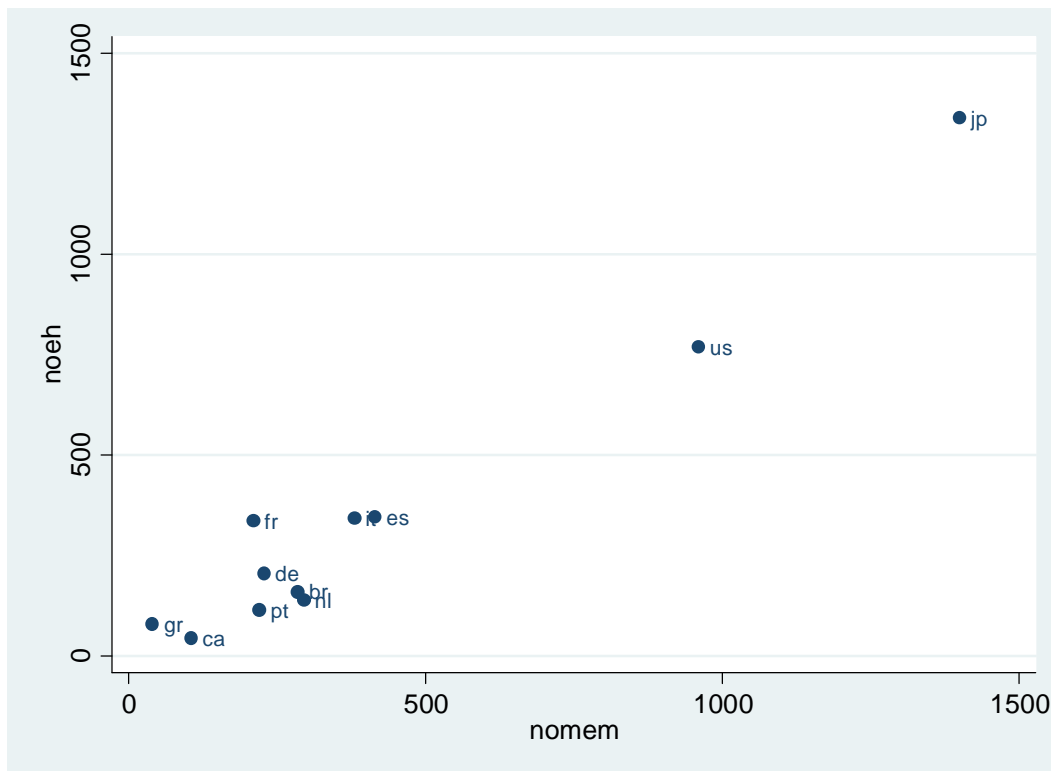
In this section we compare our estimated number of economic historians with memberships of national economic history organizations. Do our estimated economic historian numbers match the number of memberships in national organizations in the respective country? We interviewed representatives of several national organizations via e-mail about their current membership numbers. Some of these organizations include foreign scholars, such as the Economic History Society, which is mainly located in the UK but includes people from outside Britain. Nevertheless, these organizations are the exception rather than the rule.

A strong link exists between our estimates and the memberships in national organizations data (Figure 2). Japan and the US, countries with large numbers of economic historians, also have many members of national economic history organizations. In addition, for the other countries, we observe a close numerical correlation. Economic historians in the documented countries seem to be highly organized and represented by their associations. However, this correlation might mean that economic historians were more visible for our initial respondents precisely because they are well represented in those national organizations.

Of course, the ability to correctly estimate the number of economic historians by the respondents might also depend on the size of the particular nation. For example, correspondents from the US could probably estimate the number of economic historians for their own state much more accurately than the number for the entire US. In the figure, both large and small countries lie close to an imagined regression line.

Therefore, respondents appeared to have based their estimates on the number of members in their national association. Nevertheless, in general, our estimates are confirmed.

Figure 2. Comparison: Number of economic historians and memberships in national organizations



Notes: noeh = number of economic historians; nomem = number of members in national organizations; Organizations: Associação Brasileira de Pesquisadores em História Econômica (Brazil), The Japan National Committee for Economic History (Japan), Association Française d'Histoire Économique (France), Portuguese Association of Economic and Social History (Portugal), Asociación Española de Historia Económica (Spain), Canadian Network for Economic History (Canada), Società italiana degli storici dell'economia (Italy), Gesellschaft für Sozial- und Wirtschaftsgeschichte (Germany), Economic History Association (United States), N.W. Posthumus Instituut (Netherlands), Greek Economic History Association (Greece).

Source: Own compilation.

2.4.3 Journal publications

In another plausibility check, we regress journal publications by country (or region) against our new estimates of the number of economic historians, adding additional control variables. We collected a data set from nine economic history journals that are contained in the EconLit database 2005-2010. The criterion was whether the title included 'economic history' (or a translation thereof) and whether the journal was considered established and international enough to be included in this

database. A list of journals is given below in Table 7. We have to acknowledge that the latter criterion generates a certain bias towards economics-oriented publications in our field because the more history-orientated colleagues do not publish as much in journals as in books and edited volumes. There is also a bias in favor of English language journals because those are more often included in EconLit. However, our main purpose here is to assess the plausibility of the new estimates of the number of economic historians.¹⁶ The number of journal publications per country should correlate with the number of economic historians, after controlling for intervening variables (such as language).

We obtained a data set of 825 publications appearing between 2005 and 2010 and consisting of 1218 authorships sorted by affiliation. One author might have several authorships. Again, we included control variables to counter potential distortions. The language variables were also included. In addition, we included a dummy variable representing the fact that the journal is situated in a given country. For example, Australians will publish more often in the *Australian Economic History Review*, and Indians will do so in the *Indian Economic and Social History Review*. Those considerations are confirmed by the regression results: language and location of journals matter. But even more important for our study, the variable ‘Number of economic historians’ is significant again, even though the number of cases was only 25 countries and regions. This regression confirms the plausibility of our new results. REIS provided a data set for comparative purposes, which he collected for a presentation at the 2009 European Historical Economics Society Congress in Geneva. Compared to our data set of 2005-2010, the one that REIS used had a larger time frame, sampling the years 1996, 1998 and 2008, covering four journals. When we compared the two, the results we obtained for our new publication database were fairly robust (Table 7, Column 4).

¹⁶ For studies about the variety of measures of scientific productivity see, e.g., DI VAIO/WEISDORF (2010); KALAITZIDAKIS et al. (2003).

Table 7. Regressions: Determinants of publication number by countries

	(1)	(2)	(3)
Sample	New	New	Reis
Years	2005-10	2005-10	1996/1998/2008
Number of economic historians	16.62** (0.038)	12.90* (0.058)	4.94* (0.057)
TOEFL	3.47* (0.075)	2.24 (0.211)	0.86 (0.168)
English	121.06** (0.025)	97.82** (0.040)	38.37** (0.021)
Journal home		67.61** (0.038)	
Constant	-337.39* (0.071)	-231.32 (0.172)	-89.70 (0.140)
Observations	25	25	25
R-squared	0.57	0.66	0.58

Notes: Number of economic historians was divided by 100 for expository purposes; Journals: Australian Economic History Review, Economic History Review, European Review of Economic History, Explorations in Economic History, Indian Economic and Social History Review, Journal of Economic History, Revista de Historia Economica, Rivista di Storia Economica, Scandinavian Economic History Review.

Source: Own compilation.

Next, we estimated the overall number of economic historians in the world by interpolating values for all countries with a population of 500,000 inhabitants or more that had missing values due to non-reported data. We interpolate the values of missing countries by utilizing our estimated number of economic historians relative to the population in the same geographical region. For example, the value for Ivory Coast was an estimate based on the per capita value for Ghana and the population of the Ivory Coast. We find that the overall number of economic historians in the world is probably around 10,400 scholars, almost 8,700 of which are in the 59 surveyed countries and 1,700 in the countries without data.

2.5 Number of doctoral students

The participants in our survey were also asked to estimate how many economic historians were doctoral students. In Table 8, we report the number of doctoral students by region. Again, there is a lot of variation, but the measure might be within acceptable bounds for most of the regions. It displays the expected differences, which we based on qualitative information about doctoral schooling. For example, the share of doctoral students among all economic historians is high in Western Europe, where not all of those students aim at starting an academic career. In the North American system, the pervasive goal of doctoral students is to start an academic career.

Table 8. Number of doctoral students by world region

World Region	Number of economic historians	Number of doctoral students	Doctoral students per economic historian
East Asia	2108	245	0.12
East.Eur./Cntr. Asia	591	94	0.16
Latin America/ Car.	1094	n.a.	n.a.
Mid.East/N. Afr.	249	n.a.	n.a.
North America/Au/Nz	769	95	0.12
South Asia	275	75	0.27
South East Asia	225	n.a.	n.a.
Subsaharan Africa	76	n.a.	n.a.
Western Eur.	2033	711	0.35

Notes: Column 1 excludes doctoral students.

Source: Own compilation.

2.5.1 Promotion of economic history

To promote economic history and to attract more students of outstanding ability to this field, we asked the participants whether they possibly had suggestions for the International Economic History Association. What should the organization do to promote economic history in their country? Can they do anything to improve international contacts and cooperation?

In Table 9, we give an overview of the most frequently mentioned answers.

Table 9. Promotion strategies

Promotion topics	Respondents
travel stipends to world congress	12
regional meetings	9
summer school (doctoral students)	9
travel stipends for several months	6
guest speakers in countries with small economic history groups	5
advertise eh in media	4
host a world congress	3
international coop in doctoral education	2
joint doctoral education	2
new IEHA journal	2
travel stipends for last developed countries, competitive	1
IEHA newsletter (monthly)	1
weekly IEHA newsletter	1
1-week economics crash courses for historians	1
annual doctoral WEHC	1
travel cost stipends to sources	1
eh journals on IEHA webpage	1
databases in internet	1
disseminate research written in Asian languages	1
doctoral exchanges	1
encourage famous scholars to participate in WEHC (as before)	1
annual WEHC	1

Notes: Abbreviation: WEHC = World Economic History Congress.

Source: Own compilation.

Travel stipends to participate in world congresses are the most relevant issue mentioned by the respondents to promote economic history in the different countries. These respondents suggested the organization of regional meetings and summer schools for doctoral students by the International Economic History Association. Moreover, to be a successful researcher, it is necessary to have not only the skills and

talent to search for the right themes but also the social capital consisting of knowing others with whom to collaborate and exchange ideas.¹⁷ In an international-oriented scholarly community, to exchange with other researchers at conferences is essential for being successful.¹⁸ In particular, young talented researchers without financial support and developed international reputations should be supported by travel stipends and summer schools to promote their abilities and international prominence.

2.6 Conclusion

In this study, we focused on a number of questions. How many economic historians are there in the world? In which countries or world regions are they concentrated and where are they lacking, perhaps in spite of an otherwise developed university system? Can we explain differences in the number of economic historians who are participating at world congresses, and which determinants encourage or limit publication propensity?

We found that the overall number of economic historians in the world might be around 10,400. Breaking the number of economic historians down by country, Japan obtained a high value with an estimated 1,340 economic historians, followed by China (800), the United Kingdom (770) and the United States (675). Astonishingly, high numbers were also reached for Vietnam, Mexico and Turkey. In per capita terms, Sweden occupies the first rank with 20 economic historians per million inhabitants, followed by Uruguay (13.3), and Norway (13.1). Portugal with 11.4, the United Kingdom with 11.3 and Japan with 10.6 occupy positions four to six.

Clearly, this estimation procedure does not reveal the impact each nation had on overall knowledge creation, nor on the neighboring fields of economics and history. For example, US economic historians had a large impact on the development of the discipline due to high productivity or original ideas.¹⁹ But establishing

¹⁷ Social capital defined here following BOURDIEU (1983), “Ökonomisches Kapital”, who considers it to be a capital asset consisting of useful relationships and contacts, whereas PUTNAM’s (1995), “Bowling Alone”, definition of social capital is probably more often used in economics today.

¹⁸ For example, see LIBERMAN/WOLF (1997), “Flow of knowledge”; FOX (1991), “Productivity in Science”; SALARAN (2010), “Research Productivity”.

¹⁹ To cite another example: WALDENSTRÖM (2005a) criticized the Swedish economic history mainstream for focusing mostly on national or regional economic history, whereas the share of

estimates for the number of economic historians is a necessary first step to understand the dynamics of the discipline.

To countercheck our new data on economic historians, we implemented three plausibility checks. First, we fitted a gravity model that explains conference participation in relation to distance, the number of economic historians in the source country, home market effects of the country in which a world congress occurs, and other variables. The data originated from world congress participation statistics. As expected, distance and the number of economic historians were statistically significant across all regressions. In addition, GDP and English language skills had a significant impact on economic historian numbers.

In another plausibility check, we compared our new estimates with the memberships in national economic history associations. The results of this approach supported our estimated number of economic historians. Economic historians seem to be highly organized.

Additionally, we implemented a third plausibility check by regressing journal publications by country (or region) on the estimates of the number of economic historians and using additional control variables such as the English language or the journals' home country. We collected this data set from nine economic history journals that were contained in the EconLit database. The results showed that language and location of journals matter. However, even more important for our study was the result that the variable 'Number of economic historians' was again significant, even if we restricted the number of cases to 25 countries and regions.

These comparisons of different measures allow us, to some extent, to overcome the problem of defining economic historians precisely. Moreover, by comparing the participation at international congresses with the number of economic historians, a clearer understanding of the scholarly knowledge generation process of congress participation is possible. The intriguing question about limiting factors of participation (language, travel costs, visa, etc.) is quantified here for the first time. A similar model is created for publications in international journals. For example, this allows us to specify how many publications can be expected by, say, a junior economic historian with a TOEFL value 70. This knowledge can be important in

international comparative work published in international journals was quite limited in his view. See also WALDENSTRÖM (2005b).

research evaluation which becomes a part of everyday university life and which is not always performed appropriately.

To forecast the participation at the next World Economic History Congress in Stellenbosch (South Africa) in 2012, we analyzed participation statistics on the three world congresses of the last decade, namely those in Buenos Aires 2002, Helsinki 2006 and Utrecht 2009. Our estimated participation number at the congress in Stellenbosch suggests that the participation of East Asia will increase. The total number will be around 1064 delegates. In addition, although not confirmed by our estimates, the expected success of attracting Africans to the congress will help to strengthen the discipline on the African continent.

Some developing countries with substantial economic history communities, such as Vietnam, Brazil and Senegal, have not been extensively integrated into the global economic history community. Strengthening the extent of this integration in the future will substantially bolster the future of economic history as a discipline.

Participants of the survey suggested different strategies to promote their research field. Results unveil the need for more systematic faculty development activities including the integration of researchers into the scientific community and their skill development. In the following three chapters (3 to 5) mentoring relationships are analyzed to find out whether mentoring could be an appropriate activity in order to promote upcoming researchers and improve their performance in the academic context.

3

Mentoring and mentees' perceptions: The case of an academic e-mentoring program

This chapter focuses on academic mentoring relationships for upcoming researchers. It is analyzed in what areas mentees perceive support from their mentors to provide empirical evidence on how mentoring relationships might work. By analyzing the case of an international e-mentoring program for upcoming researchers in the field of economic history, findings are compared to findings of the traditional mentoring literature to unveil the potentials e-mentoring relationships might have in the context of upcoming researchers' career development.

3.1 Introduction

In the past decades universities have increasingly implemented formal mentoring programs to support and promote upcoming researchers in their career advancement (WASBURN/LALOPA 2003; TENENBAUM et al. 2001; JOHNSTON/MCCORMACK 1997). In a traditional mentoring relationship a more experienced senior researcher (mentor) is matched to a less established upcoming researcher (mentee) to improve the mentees' career advancement (JACOBI 1991; KRAM 1983). By communicating mainly face to face, the mentor provides career and psychosocial support to the mentee and enhances the mentee's professional and personal identities (WANBERG et al. 2003; SINGLE/MULLER 2001; KRAM 1983). WANBERG et al. (2003) and TILLMAN (2001) point out that it is the support mentees perceive from their mentors that is crucial for mentees' career development. Regarding the traditional mentoring literature, studies show that mentees feel more self-confident (JOHNSTON/MCCORMACK 1997), are better integrated into the

scientific community (ANGELIQUE et al. 2002; CAWYER et al. 2003; SCHRODT et al. 2002), and are more productive (see, e.g., LONG/MCGINNIS 1985 or results of Chapter 5) than those who do not participate in mentoring relationships.

Due to the changing nature of technology and the increasing importance of computer-mediated communication in the academic context (HIGGINS/KRAM 2001; LIBERMAN/WOLF 1997), e-mentoring programs might help to open up new possibilities for supporting upcoming researchers' career development in this changing environment. Combining traditional mentoring with computer-mediated communication as a primary channel of communication instead of face-to-face interaction, e-mentoring can help to overcome geographical constraints, and thus increase the pool of available and suitable mentors for mentees (ROWLAND 2011; BIERMA/HILL 2005).

Although the traditional mentoring literature points out the importance of mentees' perceived support (WANBERG et al. 2003; TILLMAN 2001), relatively little is known about e-mentoring programs and the support mentees perceive in the academic context. Most studies analyze the impact of e-mentoring in educational settings (e.g., SMITH-JENTSCH et al. 2008; FRIEDMAN et al. 2004; BUCKMAN/LESSENE 1999) or between students and working professionals (MURPHY 2011; JANASZ et al. 2008; HEADLAM-WELLS et al. 2006). Because the systematic development of upcoming researchers' professional skills is crucial for their successful career advancement (STEINERT 2000), studies analyzing e-mentoring relationships focusing on the academic context are necessary to understand how e-mentoring relationships might foster upcoming researchers' career success. Thus, this study analyzes what support mentees perceive in the case of an academic e-mentoring program. Providing qualitative insights into mentoring relationships the perceived support, its development over time and different areas of support are presented. By comparing the findings to findings in the traditional academic mentoring literature, the differences and similarities are discussed to unveil the potentials e-mentoring relationships might have in the context of upcoming researchers' career development.

3.2 E-mentoring and mentor's support

The traditional mentoring literature identifies two broad categories of support as the primary functions of mentoring relationships that mentees receive from their mentors: career support and psychosocial support (KRAM 1983). While career support includes those aspects of the relationship that help the mentees in their career advancement and facilitate mentees' effective performance (SCANDURA/RAGINS 1993; KRAM/ISABELLA 1985), psychosocial support is addressed to interpersonal aspects between mentee and mentor and helps mentees to develop their own professional identity (ALLEN et al. 2004; WANBERG et al. 2003).

In the context of e-mentoring, while HAMILTON/SCANDURA (2003) and SINGLE/SINGLE (2005) point out that e-mentoring relationships might offer the same broad functions as traditional mentoring does, BIERMA/MERRIAM (2002) argue that the support may differ qualitatively. On the one hand, in comparison to traditional mentoring, e-mentoring facilitates inter-organizational exchange between different institutions and countries, provides more flexibility in time scheduling, and offers an increased availability of mentors (SMITH-JENTSCH et al. 2008; BIERMA/MERRIAM 2002). On the other hand, the use of technology and the absence of nonverbal communication and social presence can lead to impersonality and discomfort between mentee and mentor, and thus reduce the support mentees perceive (ROWLAND 2011; BIERMA/HILL 2005).

To provide empirical evidence on what support upcoming researchers perceive during an academic e-mentoring program and to determine the potentials e-mentoring might have in the context of upcoming researchers' career development, the study is organized as follows: Before analyzing mentees' perceived support in respect to career and psychosocial support in Chapter 3.4, in Chapter 3.3 the academic e-mentoring program, the data sources, and the empirical strategy are introduced. In Chapter 3.5 the results are briefly described and the implications are given.

3.3 The academic e-mentoring program

The program described in this study was offered for upcoming researchers in the field of economic history. As Chapter 2 revealed the need for more faculty development strategies in the context of economic history, the program was established to promote upcoming researchers' from the field economic history in their career development and their integration into the scientific community in a more international context. Within this one-year program – starting in October 2011 and ending in October 2012 – the mentees were guided by a mentor, who was a more experienced researcher from the same field of research but from another institution and country, and not the respective mentee's academic advisor. Because of the geographical distance between mentee and mentor, the main channel of communication was via phone and Skype, rather than face to face.

Participation in the program was voluntary. Via online research and screening of conference participation lists, 128 upcoming researchers and 71 senior researchers in the field of economic history were identified and invited to join the e-mentoring program. Initially, 11 percent of the invited upcoming researchers joined the program as mentees, and 15 percent of the senior researchers accepted becoming a mentor. Because mentees and mentors came from different countries like Canada, Spain, Sweden, and South Africa, to reduce language barriers, the participants were matched based on pre-determined language skills. After matching mentee and mentor, both received an email from the program coordinator with additional information on the mentoring program and the procedure in general. While 3 mentoring pairs left the program at various points in time due to, for example, time constraints, 11 mentoring pairs completed the program. The mentees' average age at the beginning of the program was 30 years, and the gender composition was 8 males and 3 females. Regarding the gender composition of the mentoring pairs, two were mixed gender (female mentees and male mentors), and nine were same gender, including one female pair. While nine mentees were PhD students, two of them were in a postdoctoral position, and none of them had experience with mentoring programs (neither traditional nor electronic) at this point of time.

3.3.1 Data sources

To investigate the career and psychosocial support upcoming researchers perceive, two different sets of data were collected during the e-mentoring program: mentoring item scales and conversation protocols.

Mentoring item scales. So-called mentoring item scales established in the traditional mentoring literature were used to analyze different aspects of the career and psychosocial support mentees perceived (for details on mentoring item scales see SCANDURA/VIATOR 1994; DREHER/ASH 1990; NOE 1988). Table 10 presents the items used for the following analyses. Accordingly to the traditional mentoring literature, these items can be assigned to different functions of mentoring. While the functions *confidence*, *questions*, *role model*, and *problems* are aspects included in psychosocial support, the functions *advice*, *goals*, *tasks*, *career*, *contacts*, *skills*, *strategy*, and *feedback* are aspects of career support. To measure not only the extent of career and psychosocial support in general, but to analyze the development of the different functions over time, mentees had to complete the mentoring item scale at three different time points during the e-mentoring program: the first in January 2012 (T1), three months after the program began; the second in June (T2); and the third in November (T3) 2012, after the program had finished. On a Likert scale ranging from 1 (not at all) to 5 (to a very large extent), mentees had to rate each mentoring item to indicate the extent to which they perceived support from their mentors since the last evaluation.

Table 10. Mentoring item scale

The mentor...
<ul style="list-style-type: none"> • ...gives you advice on your work? (<i>advice</i>) • ...helps you coordinate professional goals? (<i>goals</i>) • ...helps you finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete? (<i>tasks</i>) • ...advises you about career opportunities? (<i>career</i>) • ...introduces you to other people in the field? (<i>contacts</i>) • ...helps you to learn new skills? (<i>skills</i>) • ...suggests specific strategies for achieving your career goals? (<i>strategy</i>) • ...provides you with support and feedback regarding your performance? (<i>feedback</i>) • ...supports you by having confidence in your abilities? (<i>confidence</i>) • ...discusses your questions or concerns regarding work? (<i>questions</i>) • You consider him/her as a role model? (<i>role model</i>) • You can share personal problems with him/her? (<i>problems</i>)

Notes: Functions' abbreviations are in parentheses.

Source: Own compilation.

Conversation protocols. In addition to the mentoring item scale, at the beginning of the program the mentees received conversation protocol templates from the program coordinator. Those templates were meant to provide the mentee with assistance in reflecting on each conversation via phone or Skype with the mentor. The template contained questions on what topics the mentee and mentor discussed, the results of their conversation, the mentor's advice, and what the mentee perceived as positive or negative during the conversation. By studying the conversation protocols additional to the mentoring item scales, deeper insights into different areas of support were provided. The completed conversation protocols were sent back to the program coordinator.

3.3.2 Empirical strategy

First, based on the mentoring item scale an overview of the extent and the development over time of the perceived mentoring support will be given.

In the second part of the analysis, mentees' conversation protocols are analyzed, and the content and topics of mentors' support are presented and compared to findings in the traditional mentoring literature. In accordance to the standards of qualitative content analysis (HSIEH/SHANNON 2005; MILES/HUBERMAN 1994), the conversation protocols were analyzed in several steps: in the first step, two individuals read the conversation protocols independently and summarized phrases and statements into a list of key topics. Because most protocols were written in notes and only sometimes in full sentences, the unit of analysis for coding included a word, phrase or whole sentence(s). In a second step, the readers' lists with the identified topics and the summarized statements were compared. Because one reader identified one more key topic than the other reader did, after discussion the additional topic was included, and thus the discrepancies were resolved. To ensure that the statements confirmed the identified topics, the process of reading and summarizing was conducted several times. In the next section, the topics and aspects were clustered under the two broad mentoring support categories (career and psychosocial support) identified in the traditional mentoring literature. Through continued reading of the original conversation protocols, the author ensured that all relevant statements were included in the analysis. To maintain anonymity the findings presented in Chapter 3.3.2 are paraphrased and direct quotes are avoided.

3.4 Findings

3.4.1 Mentoring item scales

Because the literature on traditional mentoring in respect to the development of mentees' perceived support over time is scarce (see WANBERG et al. 2003) and – to the author's knowledge – there is no study in the traditional mentoring literature that analyzes academic mentoring programs in this context, comparing findings of the mentoring item scale presented in this section to findings in the traditional mentoring literature is not achievable. Thus, in what follows, the findings of the

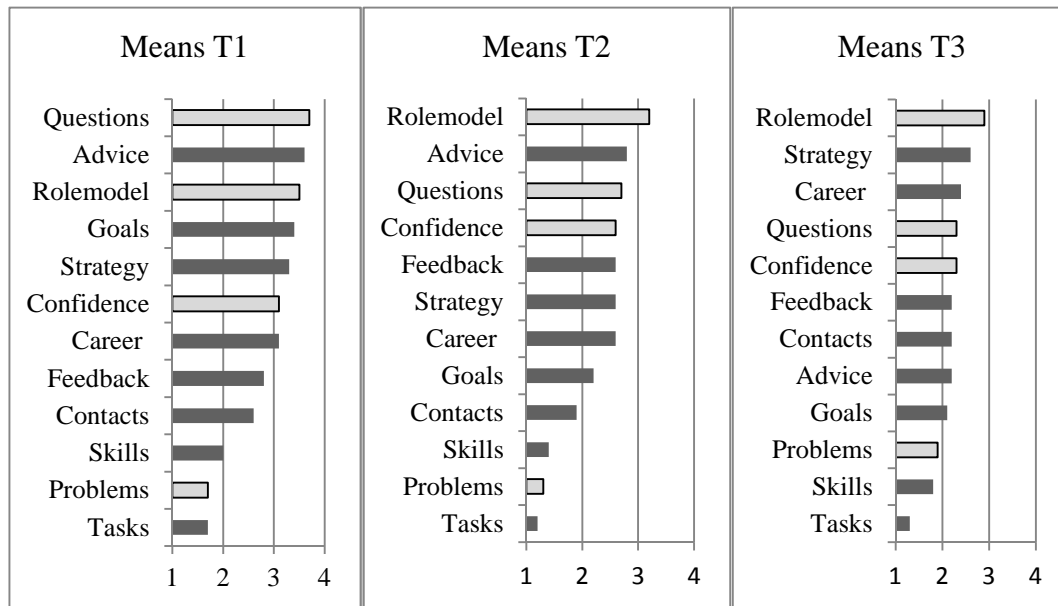
mentoring item scale are presented as an overview of the different functions and their development in this e-mentoring case.

Figure 3 presents the mean values of the different mentoring functions as measured by the items presented in Table 10, ranked in descending order, at the time points T1 (January), T2 (June), and T3 (November). For reasons of simplicity, in what follows only the three best- and worst-ranked mentoring functions are presented in detail.

Results of the mentoring item scale show that while the extent of the perceived support declines over time, in relation to the other functions presented in Figure 3 the role model function seems to be of highest relevance for the mentees during the whole e-mentoring program. In all three evaluations, the mean values are among the top three, and thus mentees seem to consider their mentors as role models. While in T1 it is ranked at third place, in the middle of the program (T2) and after finishing the program (T3) it reached the highest mean value. Besides providing a role model, giving advice on mentees' work and discussing questions and concerns regarding work are the most important functions mentees perceived at the beginning (T1) and middle (T2) of the program. In the end, the picture has slightly changed: instead of receiving advice and discussing questions and concerns, suggesting specific strategies for achieving mentee's career goals and advising the mentee about career opportunities are the most important functions mentees perceived in T3. It seems that at the beginning of the program mentees wanted to discuss their questions and concerns regarding work and receive advice, while at the end of the program, when mentee and mentor were more familiar with each other, discussing career strategies and opportunities were of more relevance.

Regarding the functions mentees perceived as least fulfilled, helping the mentee to finish assignments or tasks and meeting deadlines were measured with the lowest mean value during the whole program. Also, helping the mentee to learn new skills or sharing personal problems with the mentor were perceived as not having much relevance during the e-mentoring program.

Figure 3. Mentoring functions ranked by mean values over time



Notes: Grey = functions of psychosocial support; black = functions of career-related support.

Source: Own compilation.

Table 11 presents the mean values of the two broad mentoring support categories divided by the number of functions at T1, T2, and T3 (for items included see Table 10). The results show that while the mean of perceived support in both categories decreases over time, the psychosocial support including the functions *role model*, *questions*, *confidence*, and *problems* are at every point of time more than twice as high as the career support. Thus, comparing the relevance of career and psychosocial support, mentees perceived relatively more support in the area of psychosocial functions.

Table 11. Mean values per support and time

	mean values		
	T1	T2	T3
Career support	0.35	0.27	0.26
Psychosocial support	0.75	0.61	0.59

Source: Own compilation.

3.4.2 Conversation protocols

While Chapter 3.4.1 presents an overview of mentees' perceived support and their development according to standardized mentoring item scales, in Chapter 3.4.2, on the basis of mentees' conversation protocols, the contents and topics of the mentoring pairs' conversations are analyzed with respect to the career and psychosocial support mentees perceived. In the first step qualitative findings of traditional face-to-face mentoring programs in the academic context are presented. In the second step, the findings of the e-mentoring program are described and compared to the presented traditional mentoring literature.

Career support. As defined in Chapter 3.2, career support includes those aspects of the mentoring relationship that encourage mentees' career advancement (KRAM 1983). By analyzing the topics mentees and mentors discuss during the mentoring program, empirical evidence can be provided that mentees receive career support from their mentors. Regarding the traditional mentoring literature, BOYLE/BOICE (1998) evaluated a formal mentoring program with 25 new faculty members as mentees. By counting the frequencies of the most common conversation topics, the authors analyzed what topics were of special interest for the mentoring pairs and in what areas the mentees received career support. Their findings showed that topics such as research, publishing, and scholarship were the most frequently mentioned topics, followed by teaching in second place, retention and tenure in third, and collegial relations and politics in fourth. A study by WILSON et al. (2002) about upcoming researchers' perceptions of mentoring found similar results: using the time mentees and mentors spent on each topic during their mentoring relationship as a proxy for the importance of the topic, the findings of the study showed that mentees reported receiving career support mainly in the areas of publishing, research, and scholarship. Issues on teaching, networking, and socialization in the professional community were also discussed. JOHNSTON/MCCORMACK (1997) evaluated perceptions of a formal mentoring program involving 15 upcoming researchers as mentees. The authors point out that skill development and, even more importantly, networking were gained benefits from the mentoring program (for similar results see TENENBAUM et al. 2001).

Comparing these findings of the traditional face-to-face mentoring literature to the findings provided by the analyzed e-mentoring program, the following can be stated: similar to the results of BOYLE/BOICE (1998) and WILSON et al. (2002), the qualitative content analysis shows that *research* topics were the most common topics mentioned in the conversation protocols. All 11 mentees repeatedly stated they had received advice on research aspects. Some of them sent their research drafts or abstracts to the mentor and received direct advice. For example, one of the mentees noted that after discussing aspects of the research with their mentor, the mentee even rewrote parts of a paper. Other mentees discussed the research process in general, like time management, how to schedule tasks, and how to frame research in a comparative context. Thus, like mentees rated in their mentoring item scales (see Chapter 3.4.1), discussing questions and concerns regarding work and therefore receiving advice from their mentors was of high relevance during the e-mentoring program. Findings of the qualitative content analysis show research topics as the most common area mentees received advice on, and thus perceived career-related support. Regardless of whether the program is based on electronic or face-to-face communication, discussing research topics seems to be a key issue of academic mentoring programs.

Different to the studies of the traditional mentoring literature (see BOYLE/BOICE 1998 or WILSON et al. 2002), only 4 out of 11 mentees explicitly reported support related to the publication process. For example, two mentoring pairs discussed what parts of the mentee's PhD thesis could be published in English language journals and how to proceed. Another mentee stated they had received general information on the publication process and how to identify the 'right' journal. Despite the importance of publishing in high-quality journals in order to succeed in the academic career system (see GRABER et al. 2008 or SCHULZE et al. 2008), a relatively small number of mentees explicitly stated they had discussed publishing strategies with their mentors. Different to the findings of the traditional mentoring literature presented above, publishing strategies seemed to play a minor role in the context of this e-mentoring program.

Instead, 8 out of 11 mentees reported discussing topics regarding *networking* with their mentors, and thus perceived career support in this area. According to JOHNSTON/MCCORMACK (1997) or TENENBAUM et al. (2001), networking with other

researchers is one of the most important benefits mentees perceived during their traditional mentoring relationship, and also in the e-mentoring program mentees wrote that they had repeatedly received advice and information on networking strategies. Information included the relevance of a professional network in the academic context in general, but also the importance of conferences and workshops for developing a professional network. For example, one mentee stated that (s)he was encouraged by the mentor to attend conferences, build up a network, and share research. Further, two mentees benefited from their mentors' expertise in their research field by receiving information on potential authors who could be helpful to the mentee's research. Regarding the findings of the mentoring item scale, mentees rated mentors' function as someone who introduces the mentee to other people in the field as only a minor function in respect to the other mentoring functions listed in Chapter 3.3.1. In comparison to the traditional mentoring literature, where mentee and mentor mainly meet face to face and the mentee often has direct access to the mentor's professional network, the findings of the e-mentoring program show that there is a general discussion about the importance of networking strategies rather than actual integration into the mentor's network and introduction to other people in the field. This could explain the different findings for the mentoring item scale and the conversation protocols.

Besides conversations on research, networking, and publishing, seven mentees reported to have benefited by discussing different *career opportunities*. For example, one mentee commented that they talked about their plans after finishing their PhD thesis and what opportunities might exist for starting an academic career. Another mentoring pair discussed the increasing uncertainty in academic life and what options the mentee has – inside and outside the academic career system. Similar to the findings presented in Chapter 3.4.1, where mentees stated in the final evaluation (T3) that they had discussed strategies for achieving career goals and that their mentor advised them about career opportunities, in the conversation protocols evidence on career topics is also found. Upcoming researchers perceive career support from their mentors by discussing topics on career opportunities. In contrast to the literature, topics on career opportunities were not explicitly mentioned, and thus seem to be an additional area in which mentees perceived support in this e-mentoring program.

Further and similar to the results of JOHNSTON/MCCORMACK (1997), two mentoring pairs discussed topics on *funding* strategies including information on different funding sources and on writing applications. Another mentoring pair discussed topics on *teaching* including information on different learning forms, education courses, dealing with nervousness during presentations, and development as a teacher in general. While in the study by BOYLE/BOICE (1998) teaching was one of the most important topics discussed in the academic mentoring program, similar to the findings of WILSON et al. (2002) receiving advice in teaching was not of much relevance for the mentees in this e-mentoring case.

To sum up, Table 12 provides an overview of the topics and areas the mentoring pairs discussed in the e-mentoring program in respect to aspects of career support. The results show that despite some differences, mentees perceived career support in quite similar areas as mentees in traditional mentoring relationships. In the next section, findings regarding the different areas of psychosocial support are presented.

Table 12. Topics of career support

Topics	Content	Mentoring Pairs
Research	Advice on writing skills; scheduling tasks; time management; research context, etc.	11
Networking	Relevance of professional networks; importance of conferences and workshops; contacts that might be helpful, etc.	8
Career	Plans after PhD; options inside and outside academia, etc.	7
Publishing	Publishing in English language journals; identifying target journals, etc.	4
Funding	Different funding sources; writing applications, etc.	2
Teaching	Different learning forms; courses on education; development as teacher, etc.	1

Source: Own compilation.

Psychosocial support. As mentioned in Chapter 3.2, psychosocial functions are those aspects of the mentoring relationship addressed to interpersonal aspects between mentee and mentor (KRAM 1983). An atmosphere of mutual trust is created where mentee and mentor share their experiences and concerns, and thus mentee's sense of competence and professional identity is increased (FOWLER/O'GOREMAN 2005; WANBERG et al. 2003).

In the traditional mentoring literature there are several studies that qualitatively analyze aspects of psychosocial support in the context of academic mentoring relationships. For example, ERDEM/AYTEMUR (2008) point out that mentors' abilities to communicate and show interest in the mentee are crucial to establish mutual trust between mentee and mentor in academic mentoring, and thus are crucial for the psychosocial support provided by the mentor. Evaluating an academic mentoring program for teachers, BALLANTYNE et al. (1995) found that personal and emotional support is one of the most important benefits mentees receive. GIBSON (2004) evaluated academic mentoring relationships and psychosocial support by identifying key themes mentees described: having someone who cares, not being alone, a feeling of connection, and the affirmation of their own worth were all mentioned by mentees. In a similar vein, JOHNSTON/MCCORMACK (1997) found that, because of the existence of a mentor who cares about mentees' concerns, shows empathy, and shares experience, mentees feel more self-confident and perceive their mentors as role models. Legitimizing asking for help and advice helps to establish interpersonal comfort between mentee and mentor, and thus the mentor can provide psychosocial support (see JOHNSTON/MCCORMACK 1997).

Analyzing the conversation protocols in the e-mentoring program, similar to the findings presented in the traditional mentoring literature, aspects of psychosocial support can be found. For example, 10 out of 11 mentees in the e-mentoring case stated that they enjoyed the friendly and positive atmosphere during their conversations with their mentors. One mentee stated that because of the friendly atmosphere it was easy to feel comfortable and discuss problems and concerns. Thus, the positive environment during the conversations established trust between mentee and mentor and increased mentees' confidence. Regarding the findings from the mentoring item scale presented in Figure 3 (see Chapter 3.4.1), discussing questions and concerns regarding work as an aspect of psychosocial support was perceived as

one of the strongest mentoring functions in T1 and T2 and might be an indicator for the friendly and trusting atmosphere mentees described in the conversation protocols. Like ERDEM/AYTEMUR (2008) show for traditional academic mentoring relationships, establishing mutual trust through a friendly conversational atmosphere facilitates the transfer of psychosocial support.

Besides establishing an atmosphere of trust, the conversation protocols unveil further important aspects for the transfer of psychosocial support and mentees' personal development: knowing that there is someone who cares is another aspect in the context of mentoring and psychosocial support. For 7 out of 11 mentees, mentors' willingness to help, mentors' availability, and having an 'open door' for future conversations, were perceived as a further important function during the e-mentoring program. Similar to JOHNSTON/MCCORMACK (1997) and their study in the traditional academic mentoring context, the feeling that there is someone who cares was of great importance for mentees in the e-mentoring case and provides evidence for the psychosocial support from the mentors.

In addition, the presence of a mentor who cares about the mentee gives the mentee the feeling of not being alone with their own concerns and problems, which is a further important aspect in providing psychosocial support (for the traditional mentoring case see GIBSON 2004). In the e-mentoring case, for example, one mentee spoke with the mentor about uncertainty in the academic system. The mentee stated that it was helpful to see, that this is a common feeling. While the mentor shares personal experiences with the mentee, the mentee receives insights into the mentor's life and realizes (s)he is not alone with the concerns and problems.

In a study by JOHNSTON/MCCORMACK (1997), the authors point out that because mentor and mentee establish mutual trust and share experiences, the mentees feel more self-confident and perceive their mentors as role models. In the e-mentoring program 2 out of 11 mentees explicitly stated they perceived their mentors as role models and admired their reputations in the scientific community. Despite only two mentees explicitly stating they considered their mentors as role models, combining these findings with the results presented in Chapter 3.4.1, the mentoring function of *role model* seems to be of high relevance for the mentees, indicating that psychosocial support is provided.

Table 13 summarizes the different topics and aspects regarding the psychosocial support mentees perceived.

Table 13. Topics of psychosocial support

Topics	Content	Mentoring Pairs
Atmosphere/Trust	Very nice and friendly atmosphere; very easy to feel comfortable speaking, etc.	10
Someone who cares	Willingness to help; has an 'open door'; complete availability, etc.	7
Not being alone	Helpful to share experiences and feelings; helped to voice concerns, etc.	3
Role model	High academic reputation; serves as a role model	2

Source: Own compilation.

3.5 Discussion and implications

In the present study the first empirical evidence was provided on the career and psychosocial support upcoming researchers perceived in an academic e-mentoring program. By analyzing mentoring item scales and conversation protocols and comparing findings to the traditional mentoring literature, insights into the mentoring 'black box' are given and the potential e-mentoring relationships might have in the context of upcoming researchers' professional development is unveiled.

The results show that mentees perceive the same broad mentoring functions as mentees do in the traditional mentoring context: by discussing career-relevant topics and establishing an atmosphere of trust, mentees were provided with career and psychosocial support. Similar to findings of the traditional mentoring literature, the importance of research topics and networking is still present in the e-mentoring context.

While the support in the functions is changing over time, the category of psychosocial support – including the functions *role model*, *confidence*, *questions*, and *problems* – is perceived as the strongest support provided by the mentors during the whole program. For the transfer of psychosocial support, mutual trust and respect have to be established. Thus, it might be interesting that mentees under the

considerations of an e-mentoring program, where trust has to be established through computer-mediated communication and regular face-to-face meetings are not possible, perceive psychosocial support as the strongest factor. In the traditional mentoring literature studies show that while mentors provide career and psychosocial support to their mentees, they act in different roles. For example, LONG/MCGINNIS (1985) argue that the mentor acts as teacher, gatekeeper, and collaborator in providing support to the mentee. In the presented e-mentoring program, findings of the mentoring item scale and the conversation protocols give a hint that upcoming researchers perceive their mentors more as counselors and role models than teachers, gatekeepers, or collaborators. According to the mentoring item scale presented in Chapter 3.4.1, it is less the transfer of job-relevant skills, direct feedback, or active integration in the scientific community and more the discussion of questions and concerns that mentees valued during the e-mentoring program. A likely explanation of these results may be that mentees might prefer to receive technical skills and feedback from their regular advisors, while the e-mentoring program is perceived as an additional support. Because the mentor is not situated at the mentee's institution it might be easier for the mentee to discuss personal topics. The mentee perceive the mentor more as a role model and counselor than a teacher and collaborator, and thus more psychosocial support is provided.

Because the traditional mentoring literature shows that the success of mentoring is related to the support mentees perceive during their mentoring relationship, mentors' behavior and support – regardless of whether they are in an e-mentoring or traditional mentoring relationship – are crucial for the success of the mentoring relationship and the mentees' career development. Thus, on the basis of this e-mentoring program and in accordance with the findings of the traditional mentoring literature, some recommendations for mentors can be made:

- The literature on academic career success points out the importance of research and its publication in high-quality journals (see, e.g., GRABER et al. 2008 or SCHULZE et al. 2008). Studies show that formal mentoring programs in the academic context can enhance mentees' research productivity (see BLAU et al. 2010 or results Chapter 5). For that reason, not only discussion of research topics but also discussion of publishing strategies should be a key topic during the e-mentoring relationship. As only 4 out of 11 mentoring pairs

explicitly stated they had discussed topics about publishing, mentors should focus more on research in combination with publishing strategies and share their own experiences in order to support mentees' academic career development.

- Besides research productivity, the integration into the scientific community is of high relevance for a researchers' career success (see, e.g., SALARAN 2010; FOX 1991 or results of Chapter 4). Thus, mentors in e-mentoring programs should also try to promote and actively integrate their mentees into the scientific community. In the case of the e-mentoring program presented in this study, mentoring pairs often discussed the importance of networking in general, but possibly because of the geographical distance between mentee and mentor, the findings of the mentoring item scale showed that the mentors did not introduce their mentees to their professional contacts. Using the mentoring relationship as a platform for exchanging information about different networking opportunities like workshops, conferences, or summer schools might be a first step to push mentees' professional integration.
- The discussion of different career strategies and opportunities in the context of this e-mentoring program points to the uncertainty that upcoming researchers have to face in the academic career system. Mentors should be conscious of their roles as role models and counselors in order to help mentees increase their confidence and overcome feelings of uncertainty.

Of course, this study has some limitations and thus the recommendations have to be carefully interpreted. For example, the findings are based on a small sample of 11 mentoring pairs in the field of economic history, and other fields of research might have their own 'cultures'. Therefore, the generalizability of the results is limited. Further, the results from the mentoring item scale show only small effect sizes and the perceived overall support might be relatively small. In addition, by analyzing the perceived psychosocial support it might be more difficult to reveal the psychosocial aspects in the conversation protocols than in the mentoring item scale, where mentees can clearly rate the given items and functions on a Likert scale.

But despite these limitations, this is the first study that provides qualitative insights into the mentoring 'black box' by giving empirical evidence on the support mentees perceive during an academic e-mentoring program. While it is this support

that is crucial for mentees' career development (see, e.g., WANBERG et al. 2003 or TILLMAN 2001), by analyzing career and psychosocial support this study unveils the potential e-mentoring relationships might have in the context of enhancing upcoming researchers' career success. In addition, the results of the e-mentoring program point out the importance of the functions mentors provide and the presence of different roles in which mentors can act and therefore influence the mentoring relationship's development.

For program initiators the results show that e-mentoring programs provide, quite similar to traditional mentoring programs, career and psychosocial support, and thus have the potential to promote mentees' career development. In addition, considering that e-mentoring programs, for example, increase the pool of available mentors and reduce the cost of implementation (see, e.g., ROWLAND 2011 or PHILIPPART/GLUESING 2012), e-mentoring programs can offer great advantages for institutions and their initiators in the context of upcoming researchers' career development.

4

Mentoring and career success: Effects on time to tenure

The aim of faculty development activities is to improve upcoming researchers' performance (NELSON 1983). Thus, by analyzing mentoring relationships as a faculty development strategy, there is a need to understand *how* mentoring works and *whether* mentoring helps to enhance upcoming researchers' career success. While Chapter 3 provided a look inside the mentoring 'black box' and the areas in which mentees perceive support, Chapter 4 analyzes whether mentees' perceived support affects upcoming researchers' career success. From the investigation of mentoring relationships in terms of whether mentees' career success is enhanced, the results illustrate the importance of disentangling mentors' different roles to analyze their effects on career success.²⁰

4.1 Introduction

Because upcoming researchers have to face a highly competitive labor market (FIEDLER/WELPE 2008; MCCORMICK/BARNES 2007), the question arises: How can they be supported to advance more successfully in the academic career system and what determinants might increase the likelihood of getting tenure? Regarding the literature on tenure decision determinants, SCHULZE et al. (2008) found publication output to be the most important factor (for similar results see also GRABER et al. 2008 or PARK/GORDON 1996). COMBES et al. (2008) show that besides publication output, job-related networks, i.e., the integration into the scientific community, positively affects the tenure decision as well. But what opportunities do upcoming researchers

²⁰ Chapter 4 is a slightly modified version of the working paper "Mentoring in the creation of human and social capital: Effects on time to tenure" by JULIA MUSCHALLIK.

have to develop those skills and networks and therefore advance more successfully in the academic career system?

To promote upcoming researchers in their academic careers, mentoring relationships have become a popular measure (WASBURN/LALOPA 2003; TENENBAUM et al. 2001; JOHNSTON/MCCORMACK 1997). Although we find empirical evidence for mentoring relationships increasing mentees' publication output (see, e.g., PAGLIS et al. 2005; LONG/MCGINNIS 1985 or results of Chapter 5) and fostering their integration into the scientific community (see CAWYER et al. 2002; BOYLE/BOICE 1998; HEINRICH 1995), and, therefore, possibly affecting the likelihood of being awarded tenure, there is no study in the mentoring literature dealing with academic mentoring and its effects on the likelihood of receiving tenure. The main idea of academic mentoring is to provide support to the less experienced upcoming researcher, the mentee, in his or her professional development from a more experienced researcher, the mentor (see OLIAN et al. 1988; KRAM 1983). This relationship aims at developing and refining the mentee's skills, abilities and understanding. Thus a mentor does not only act as a teacher and collaborator and, therefore, provide the mentee with human capital; the mentor also acts as a sponsor to facilitate the mentee's integration into the scientific community and therefore increases his or her social capital (LONG/MCGINNIS 1985; KRAM 1983).

The purpose of this paper is to disentangle mentor's different roles in enhancing the mentee's career success and to provide empirical evidence for whether the mentor might encourage mentee's human and social capital creation.

4.2 Mentor's roles and the creation of human and social capital

In the study by LONG/MCGINNIS (1985) the authors define three different roles of an academic mentor: Firstly, the mentor acts as a teacher, providing the mentee with skills and knowledge that matter for scientific work and for working in the scientific community. Thus, the mentor shares technical knowledge about, for example, the scientific writing and publishing process, and also tacit knowledge about the norms and principles of the scientific community (LONG/MCGINNIS 1985). CAWYER et al. (2002) and SCHRODT et al. (2003) found empirical evidence for the transfer of technical and tacit knowledge by the mentor. Also LANKAU/SCANDURA

(2002) noted that the mentor is an important learning resource for the mentee. Due to the fact that human capital can be understood as an investment in individual skills and knowledge (see BECKER 1993), acting as a teacher, the mentor encourages mentee's human capital creation. By enhancing mentee's professional skills and abilities, the mentee, for example, increases his or her (publication) productivity (see PAGLIS et al. 2005 or results of Chapter 5). Because publication productivity is a crucial determinant for the tenure decision process, the mentor enhances the likelihood of the mentee receiving tenure. That means, the more career-related human capital is created, the more 'attractive' upcoming researchers will be for the appointment committee increasing the likelihood of being awarded tenure. On the other hand, upcoming researchers that create less career-relevant human capital during the mentoring relationship advance less successfully in their academic careers and therefore decrease their likelihood of receiving tenure.

Secondly, the mentor acts as a sponsor (LONG/MCGINNIS 1985). That is, the mentor serves as a 'broker' between the mentee and the scientific community to facilitate the mentee's integration and to enhance mentee's social capital. Defining social capital as the social ties and networks the individual has access to (see COLEMAN 1990), SMITH (2007) or JOHNSTON/MCCORMACK (1997), for example, show how the mentee receives social capital during the mentoring process. By sponsoring mentees into the scientific network, mentors expand mentees' social network and support their integration into the scientific community by making the mentees visible to the community. Thus, mentees obtain access to the mentors' pool of social resources that might support mentees' career advancement in the future. Therefore, the more social capital is created during the mentoring process, the more 'attractive' upcoming researchers will be for the appointment committee and therefore, increasing their likelihood of receiving tenure. However, for upcoming researchers who create less job-related social capital during the mentoring relationship, the likelihood of receiving tenure decreases.

Thirdly, the mentor acts as a collaborator, who integrates the mentee in research projects and involves the mentee actively. Thus, the upcoming researcher is learning 'on the job' and can benefit from working together on joint projects with the more experienced mentor (LONG/MCGINNIS 1985). ORTIZ-WALTERS (2009) points out that mentors who worked together on joint projects with their mentees increase

mentees' publication output, and thus provides evidence for the transfer of job-related skills during the collaboration process. Additionally, LONG/MCGINNIS (1985) note that collaboration might be an outcome of mentors' roles as teacher and sponsor. By working on joint projects with the mentor, the mentee not only increases his or her knowledge and skills (human capital creation), but also his or her social capital by working together with the mentor and, possibly, working together with other colleagues in this project (social capital creation). Regarding the literature on the creation of human and social capital and career success, BOZEMAN/CORLEY (2004) argue that it is the *combination* of human *and* social capital that is crucial for researchers' career success (see also LIBERMAN/WOLF 1997). COLEMAN (1988) notes, that human capital is usually transferred by social relationships. The author states, because of the existence of social capital, human capital can be created. At the same time MULLEN (1998) or OLIAN et al. (1993) find out that mentees with more skills and abilities (human capital) are more attractive for their mentors, and, therefore, mentors are more willing to open their social networks to their mentees. Thus, the existing literature shows that the creation of human and social capital complements each other. While the mentor acts as a collaborator, the mentee creates human and social capital that leads to success in the academic labor market and increases mentee's likelihood of receiving tenure. However, upcoming researchers that create less job-related human and social capital by collaborating with their mentors advance less successfully in their academic careers and therefore decrease their likelihood of receiving tenure.

In sum, mentors' different roles and an increase in mentees' human and social capital endowment during the mentoring relationship might be an important factor for mentees' successful integration and professional development in the academic context. Therefore, I predict a positive effect of mentors' roles as teachers, sponsors and collaborators on mentees' likelihood of receiving tenure by increasing mentees' human and social capital.

4.3 Method

4.3.1 Data source

The study is based on a data set of 80 researchers in business and economics from Austria, Germany and the German-speaking part of Switzerland that had or still have an academic mentor besides their academic advisor. In addition to information on researchers' demographics such as age and gender, the data set contains information on researchers' field of research (business administration or economics), changes of affiliation during the academic career until the end of 2010, the year and affiliation of obtaining the PhD degree and, if available, the year and affiliation of the first appointment. While the data on demographics is collected on a regular basis via an online research monitoring portal initialized by the German Economic Association ('Verein für Sozialpolitik'), the information on mentoring was gathered via an additionally conducted survey of the researchers in the data set in 2010. In a first step the researchers were asked whether they ever have or still do participate in a formal mentoring program or, if not, whether they had or still have an informal mentor besides their academic advisor. This additional data set contains information on mentoring and whether mentors provided their mentees with human and social capital during the mentoring relationship. Furthermore, information on family situations and on stays abroad was collected.

4.3.2 Regression method

Analyzing the likelihood of receiving tenure, the *Cox proportional hazard model* is used (COX 1972). This method is a common approach in the field of dynamic survival models. Because the underlying data set contains information on researchers that experience the event 'receiving tenure', but also postdocs who did not experience the event so far (right-censored data), simple Logit or Probit regression models are not appropriate (see SCHULZE et al. 2008 or HEINING et al. 2007). The Cox proportional hazard model allows incorporating this right-censored data. Using this regression method I estimate the impact of covariates on the hazard rate, which is the likelihood of receiving tenure in the next given time period, given

that the researcher already has ‘survived’ in the academic labor market so far (see, e.g., LUNN/MCNEIL 1995 or LANE et al. 1986).

4.3.3 Measures

Time to tenure. The likelihood of receiving tenure is measured for each researcher by counting the years between obtaining the PhD degree and gaining a tenured position. Because the Cox proportional hazard model incorporates censored data in the regression analysis, for the right-censored individuals (postdocs), I measure the years between obtaining the PhD degree and 2010.

Human capital and social capital. The central explanatory variables are mentees’ creation of human and social capital during the mentoring relationship. Using established items of so-called ‘mentoring scales’ (see, e.g., mentoring scales by DREHER/ASH 1990 or NOE 1988) I measure the extent of the human and social capital development during the mentoring process regarding mentors’ roles as teachers, sponsors or collaborators. These scales provide a set of items for the measurement of mentors’ roles, and thus appear to be suitable for measuring the extent of mentees’ human and social capital creation. Based on three different items, the mentees could state on a Likert scale ranging from 1 to 7 (with 1= “strongly disagree” and 7= “strongly agree”), to what extent they have perceived human and social capital created by their mentor: (1) My mentor helps me to learn job-related skills (*teacher*); (2) My mentor introduces me to other people in the field (*sponsor*); and (3) My mentor worked with me on joint projects (*collaborator*). While item (1) can be understood as a proxy for the human capital creation, and item (2) as a proxy for the social capital creation, item (3) might represent a proxy for the combination of human and social capital. Although LONG/MCGINNIS (1985) argue that collaboration might be an outcome of mentors’ roles as teacher and sponsor, and thus a combination of human and social capital, this is not necessarily the case. Hence, I additionally create the interaction term *teacher x sponsor*, which is the product of item (1) and item (2), to obtain a more clear cut proxy for the combination of human and social capital. Before creating the interaction term, the mentoring item variables were normalized such that their mean was equal to zero and their variance equal to one.

Formal mentoring programs. Because MUSCHALLIK/PULL (see results Chapter 5) find that researchers that took part in a formal mentoring program are more successful than researchers with informal mentors regarding publication output, I control for formal mentoring programs with the dummy variable *formal mentoring*, which takes the value ‘1’ if the respective researcher took part in a formal mentoring program and ‘0’ if he or she had an informal mentor before being awarded tenure or latest in 2010.

Gender. The studies by BAILYN (2003) and PARK/GORDON (1996) note that female researchers advance more slowly in their academic careers than men. To control for a possible effect of gender on the likelihood of receiving tenure, I create the dummy variable *male*, which takes the value ‘1’ if the scientist is a man and ‘0’ for a woman.

Children. As the gender differences can be attributed to possible family obligations (see JOECKS et al. 2013; LONG et al. 1993), I further control for having children before the first appointment (or the censoring occurs) and therefore create the dummy variable *children* with the value ‘1’ if children were already present and ‘0’ if not.

Field of research. Additionally, I include the field of research (business administration vs. economics) into the empirical analysis. SCHULZE et al. (2008) show that researchers from the field of business administration are faster in getting a tenured position than their colleagues from the field of economics. Therefore, I create the dummy variable *business* which takes the value ‘1’ if the respective researcher belongs to the field of business administration and ‘0’ if the researcher belongs to the field of economics.

Year of birth. Because the academic labor market has changed in recent decades (see HEINING et al. 2007) and ‘generation effects’ might influence the likelihood of receiving tenure, I include the *year of birth* in my analysis.

Academic mobility. Several studies show that national and international mobility might positively influence the researchers’ academic career success (see, e.g., BÄKER 2013; RÖBKEN 2009 or SCHULZE et al. 2008); I create the dummy variables *international mobility* and *national mobility*. Regarding *international mobility*, the variable is coded as ‘1’ if the respective researcher stays abroad at least four months for research purposes before receiving tenure (or the censoring occurs),

and '0' if not. The variable *national mobility* is given the value '1' if the respective researcher changed his or her affiliation within the same country at least once over the whole academic career path and is given the value '0' if not.

Duration of PhD. As a proxy for researchers' ability, I incorporate the variable *duration PhD*. This variable is measured as the time span between the year the individual obtained his or her diploma or master degree and the year of obtaining the PhD degree. Despite some exceptions, for example individuals who first started to work in a company for several years before starting their PhD, I expected researchers with a shorter time span to earn their PhD to be more able to succeed in the academic career system than others.

Reputation of PhD granting institution. WILLIAMSON/CABLE (2003) show that the reputation of a faculty might positively influence researchers' career success (see also BACKES-GELLNER/SCHLINGHOFF 2010). Thus, I consider the reputation of the institution where the researcher obtained his or her PhD degree. The dummy variable *reputation PhD* is coded as '1' if the institution is among the top ten institutions within Germany, Austria or German-speaking Switzerland according to the *Handelsblatt* ranking²¹, and '0' otherwise.

4.4 Results

4.4.1 Descriptive statistics

Table 14 gives an overview of the mean values of the variables used in the analysis - column one and two are separated by researchers that received tenure by 2010 (professors) and researchers, who are not yet awarded tenure (postdocs). On average, professors needed approximately eight years after obtaining their PhD to receive a tenured position. Postdocs are, on average, since five years in a postdoc position and not been tenured by 2010.

Concerning the central explanatory variables, the mentoring items for the creation of human and social capital, *teacher* that is learning job-related skills by the mentor is perceived as the strongest item for both groups (mean value = 5.55). Looking at the other two mentoring items, both, *sponsor* and *collaborator*, reached,

²¹ The *Handelsblatt* ranking from 2011 for economists and 2009 for business administration is used.

on average, the same values for the whole sample (mean value = 5.03). Although postdocs seem to perceive more human and social capital in all three items by their mentor than tenured researchers, I find no statistically significant differences.

Table 14. Descriptive statistics

	Tenured	Not tenured	Both
Time to tenure	8.02	5.27	6.99
Teacher	5.42	5.77	5.55
Sponsor	4.80	5.40	5.03
Collaborator	4.74	5.50	5.03
Formal mentoring	0.16	0.17	0.16
Male	0.86	0.60	0.76
Children	0.60	0.40	0.53
Business	0.66	0.40	0.56
Year of birth	1966	1975	1970
International mobility	0.42	0.53	0.46
National mobility	0.68	0.67	0.68
Duration PhD	4.60	5.03	4.76
Reputation PhD	0.30	0.27	0.29
Observations	50	30	80

Source: Own compilation.

The outcomes of the pairwise correlation analysis of the variables used are presented in Table 15. Regarding the dependent variable *time to tenure* and the central explanatory variables, there is a negative and statistically significant correlation with the variable *sponsor* ($r = -.27^*$). This might be a first hint that mentees' creation of social capital by the mentor before the first appointment decreases the overall time to tenure and therefore might increase mentees' likelihood of receiving tenure. Interestingly, the variable *teacher* and also the variable *collaborator* are not statistically significant related to researchers' time to tenure.

Additionally, I find statistically significant and positive correlations between the dependent variable *time to tenure* and upcoming researchers' gender and the

control variable *children*. Thus, being male or having children seems to increase the overall time to tenure. For the variable *year of birth* a statistically significant but negative correlation is measured: Researchers from the older generation seem to spent more time before getting tenured than their younger colleagues.

4 Mentoring and career success: Effects on time to tenure

Table 15. Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Time to tenure	1.00											
(2) Teacher	-0.10	1.00										
(3) Sponsor	-0.27*	0.20*	1.00									
(4) Collaborator	-0.07	0.42*	0.35*	1.00								
(5) Formal mentoring	-0.15	0.02	0.05	-0.04	1.00							
(6) Male	0.27*	-0.04	0.02	-0.01	-0.23*	1.00						
(7) Children	0.22*	-0.07	-0.14	-0.07	-0.06	0.18	1.00					
(8) Business	-0.08	-0.07	-0.12	-0.13	-0.02	0.04	0.17	1.00				
(9) Year of birth	-0.62*	0.31*	0.23*	0.40*	0.13	-0.22*	-0.22*	-0.04	1.00			
(10) International mobility	0.05	0.20*	-0.06	0.14	-0.00	0.05	0.03	-0.24*	0.17	1.00		
(11) National mobility	0.15	0.05	-0.08	0.08	-0.42*	0.05	-0.07	-0.18	0.05	-0.05	1.00	
(12) Duration PhD	0.05	0.15	0.19*	0.19*	-0.08	-0.23*	-0.05	-0.27*	-0.00	0.04	-0.02	1.00
(13) Reputation PhD	0.17	0.01	0.09	0.01	0.02	0.03	-0.00	-0.11	-0.07	-0.15	0.15	0.08

Notes: n = 80; tenured and right-censored data are included; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

4.4.2 Cox proportional hazard regression

The results of the Cox proportional hazard regressions are reported in Table 16. In model (1) I included all the mentoring variables and the control variables *male*, *children*, *business administration*, and *year of birth*. For robustness purposes, I additionally control for the two mobility measures, *international* and *national mobility* in model (2), while in model (3) the duration of the PhD and the reputation of PhD granting institution are also included. For all three models, I predict a positive and significant effect of the mentoring variables *teacher*, *sponsor*, and *collaborator* on the likelihood of receiving tenure.

Table 16. Results of Cox proportional hazard regression

	<i>Time to Tenure</i>		
	<i>Model (1)</i>	<i>Model (2)</i>	<i>Model (3)</i>
Teacher	1.049 (0.54)	1.064 (0.67)	1.089 (0.88)
Sponsor	1.160* (1.88)	1.149* (1.67)	1.169* (1.91)
Collaborator	0.777*** (-3.29)	0.777*** (-3.20)	0.773*** (-3.15)
Teacher x sponsor	1.114** (2.56)	1.114** (2.48)	1.116*** (2.65)
Formal mentoring	1.189 (0.51)	1.201 (0.47)	1.041 (0.10)
Male	1.096 (0.26)	1.039 (0.11)	0.958 (-0.12)
Children	0.717 (-1.12)	0.747 (-0.92)	0.803 (-0.62)
Business	2.160** (2.35)	1.947* (1.79)	2.009* (1.81)
Year of birth	1.076*** (3.06)	1.080*** (3.23)	1.074*** (3.04)
International mobility		0.802 (-0.70)	0.760 (-0.83)
National mobility		0.980 (-0.05)	0.970 (-0.07)
Duration PhD			0.896 (-1.21)
Reputation PhD			0.670 (-1.20)
BIC	336.868	345.270	351.795
Observations	80	80	80

Notes: Hazard ratios estimated; z-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

The results show no statistically significant effect of the mentoring variable *teacher* on the likelihood of receiving tenure for all of the three models. Surprisingly, mentors in the role as teacher have no effect on mentees' likelihood of getting tenure. The extent of perceiving job-related skills by the mentor, who is not the mentee's academic advisor, do not matter for the likelihood of receiving tenure in the next given time period. Regarding the variable *sponsor*, the results of all three models show a statistically significant and positive effect of this item on the likelihood of getting tenure. Mentees who stated that their mentors expanded their social networks increased their likelihood of receiving tenure in the next given time period by 16 percent in model (1), 15 percent in model (2) and 17 percent in model (3). Thus, the mentor in the role of a sponsor affects the mentee's likelihood of getting tenure. While I found no significant effects of *teacher* but statistically significant and positive results for *sponsor*, the interaction term *teacher x sponsor* also remained statistically significant and positive. That is an increase in the likelihood of receiving tenure by 11 percent in model (1) and (2) and 12 percent in model (3) when additionally controlling for the duration of the PhD and the reputation of the PhD granting institution. Thus, mentors as teachers seem to be of relevance for mentees' likelihood of getting tenure only then, when at the same time acting as sponsors for their mentees. Regarding the mentoring variable *collaborator*, I find a statistically significant but negative correlation between the variable and the likelihood of receiving tenure in the next given time period. Working together with the mentor, who is not the mentee's academic advisor, seems to extend the time to tenure, that is, to decrease the likelihood of getting tenure in the next given time period.

Concerning the controls, I find the following: There is a statistically significant and positive relationship between the dummy variable *business* and the likelihood of receiving tenure. Thus, researchers from the field of business administration are more likely to receive tenure in the next given time period than their colleagues from the field of economics. Furthermore, a positive and statistically significant effect of the researcher's year of birth and the likelihood of receiving tenure is observed. Hence, every additional year of age decreases the likelihood of receiving tenure in the next given time period by approximately 8 percent.²²

²² For further robustness checks instead of *year of birth* time dummies were used for ten-year periods starting in the 1970s and taking the value '1' if the respective researcher was awarded tenure in the

4.5 Conclusion and implications

The present study disentangled mentors' different roles in enhancing upcoming researchers' career success and provided empirical evidence for whether mentors encourage mentees' human and social capital. Results show that mentors acting as teachers, sponsors, and collaborators affect mentees' career success that is the likelihood of receiving tenure.

Similar to COMBES et al. (2008), I find that social capital, and thus the integration into the scientific community, might be one of the most important factors for increasing mentees' likelihood of receiving tenure. Mentees whose mentors act as sponsors and integrate them into the social network and the scientific community are more likely to get tenure in the next given time period. Networking in the professional context is crucial for mentees' future career advancement.

Regarding a mentor's role as teacher and therefore transferring job-related skills and knowledge to the mentee has no significant impact on mentees' likelihood of getting tenure in the next given time period. Interestingly, only when the mentor acts as a teacher and at the same time as a sponsor, I find statistically significant and positive effects. That is, first of all the mentor has to be a gatekeeper, providing the mentee with professional contacts, only then, the mentor's role as a teacher affects mentee's likelihood of receiving tenure.

While working with the mentor on joint projects might be an outcome of the teacher and sponsor roles, and therefore create human and social capital, surprisingly, I find a statistically significant but negative effect on mentees' likelihood of getting tenure. The more mentee and mentor are working on joint projects, the less likely mentees receiving tenure in the next given time period. A likely explanation of these results may be that on the one hand mentees might benefit from working together on joint projects for example by learning job relevant skills (see ORTIZ-WALTERS 2009), but on the other hand additional projects mean additional work load and time effort. Thus, working together on joint projects might extend mentees' time span between the year obtaining the PhD degree and receiving

respective period. The reference group is "researcher who were awarded tenure after 2000 and until 2010" or censoring occurs. The results remain robust.

tenure and therefore might decrease the likelihood of getting tenure in the next given time period.

The results of this study show that academic mentoring can be an appropriate means and activity to promote upcoming researchers' career advancement. Disentangling mentors' different roles in enhancing mentees' human and social capital endowment the potentials academic mentoring relationships have to improve mentees' career success are unveiled. Similar to the results of the studies by SLARAN (2010) and COMBES et al. (2008), it is the mentor's transfer of social capital to the mentee that plays a crucial role for upcoming researchers to succeed in the academic career system. Regarding the transfer of human capital, results point out that first, the mentor has to be a gatekeeper before acting as a teacher to increase mentees' likelihood of receiving tenure. Therefore, this study contributes to the academic mentoring literature by providing empirical evidence for the importance of social capital in academic mentoring relationships and the positive effects of combining human and social capital to improve upcoming researchers' career advancement.

5

Mentoring and career success: Effects on publication productivity

The literature on academic career success demonstrates that researchers' publication productivity is a crucial success factor in the academic career system (see, e.g., GRABER et al. 2008 or SCHULZE et al. 2008). Thus, Chapter 5 analyzes the effects of academic mentoring on such productivity among upcoming researchers'. In the context of faculty development strategies, the systematic institutionalization of mentoring relationships is of high relevance for institutions and organizations; hence, the effects of mentoring programs are of special interest. In what follows, the effects of mentoring are divided into effects of formal mentoring programs and informal mentoring relationships.²³

5.1 Introduction

Upcoming researchers face a high publication pressure on their way to tenure (see, e.g., KIM et al. 2011; COMBES et al. 2008). In our paper, we analyze whether mentoring (formal or informal) can help researchers to meet this challenge. Unlike most of the preceding literature on academic mentoring, we analyze the effect of a mentor who is not the academic advisor, and we do not confine ourselves to the analysis of formal mentoring programs, but also include informal mentoring relationships. By including mentees with an informal mentor, we do not only provide first empirical evidence on the effects of informal mentoring in academia, but we also dispose of a potentially interesting comparison group for participants in a formal

²³ Chapter 5 is a slightly modified version of the working paper "Formal and informal mentoring in higher education: Do they enhance mentees' research productivity?" by JULIA MUSCHALLIK and KERSTIN PULL.

mentoring program. Since, by definition, the effects of informal mentoring cannot be assessed via a randomized experiment, we account for self-selection via coarsened exact matching (CEM) as introduced by IACUS et al. (2012).

Although the definition of ‘mentoring’ differs between different fields (see JACOBI 1991), mentoring relationships always share the same basic idea: a more experienced mentor acts as a guide and teacher for a less experienced mentee by providing him or her career relevant support and advice. While mentoring relationships often emerge informally and evolve over time (‘informal mentoring’), in ‘formal mentoring’ programs, mentor and mentee are brought together by a third party (see, e.g., WANBERG et al. 2003) and often supported by an accompanying workshop program.

Even though formal mentoring programs are widespread in academia, only little is known about their effects – especially, when it comes to the question whether the programs succeed in enhancing mentees’ research productivity as an increasingly important outcome variable (see, e.g., OSTROVE et al. 2011 or GRABER et al. 2008). Rather, the literature on academic mentoring often focuses on ‘intermediate’ outcome variables such as relationship satisfaction (see, e.g., POTEAT et al. 2009) or mentoring maintenance (see, e.g., TEPPER 1995). Further, it concentrates on the role of the academic advisor (e.g., HILMER/HILMER 2007; PAGLIS et al. 2005; LONG/MCGINNIS 1985). While it is beyond doubt that the academic advisor is of particular importance for an upcoming researcher, the literature on academic mentoring has almost neglected the role other mentors might play – in spite of the fact that formal mentoring programs regularly assign a mentor beyond the academic advisor (see, e.g., BELL/TRELEAVEN 2010; WASBURN/LALOPA 2003) and that multiple mentoring is increasingly important in academia (see, e.g., JANASZ/SULLIVAN 2004).

Two notable exceptions in the literature that both focus on mentors besides the academic advisor and that both include publication output as dependent variable are the studies by BLAU et al. (2010) and GARDINER et al. (2007). GARDINER et al. (2007) find female junior researchers in a formal mentoring program at Australian universities to be more productive than their colleagues who do not participate in the program – however they do not account for a potential (self)selection bias. BLAU et al. (2010), to the contrary, derive their results from a randomized experiment and are

hence able to detect causal effects. Similar to GARDINER et al. (2007), they find junior female economists who took part in a two-day workshop aiming to help them prepare for the tenure hurdle to have published more in the following five years than the control group that did not participate in the workshop.

However, both, the studies by BLAU et al. (2010) and GARDINER et al. (2007), are limited by the fact that there is no information on whether the non-participants in the programs instead disposed of an informal mentor. As the literature on mentoring in business contexts has indicated that informal mentoring relationships might even be superior to formal mentoring programs (see, e.g., RAABE/BEEHR 2003; RAGINS/COTTON 1999; CHAO et al. 1992), controlling for and comparatively assessing informal mentoring relationships appears crucial.

Our paper is organized as follows: In Chapter 5.2, we give a brief review of the literature and derive our baseline hypothesis. In Chapter 5.3, we describe the data set, the variables and the method of analysis before presenting our results in Chapter 5.4. Our paper concludes with a discussion in Chapter 5.5.

5.2 Literature and theoretical expectation

Our conceptual framework builds on two bodies of research: the literature on mentoring and the literature on research productivity. While the former hints at mentoring fostering and enhancing human and social capital on the part of the mentees, the latter establishes a positive link between researchers' human and social capital on the one hand and research productivity on the other.

Mentoring. LONG/MCGINNIS (1985) characterize a mentor as being a teacher, a sponsor, and a collaborator. As a teacher, the mentor provides technical and tacit knowledge to the mentee and hence initializes a transfer of human capital, with human capital being broadly defined as the set of productivity relevant skills and knowledge a researcher disposes of (see BECKER 1993). With respect to academic mentoring, the knowledge transfer might refer to theories and research methodologies ('technical knowledge'), but it may also include 'tacit knowledge' about the scientific community and publication processes. CAWYER et al. (2002) and SCHRODT et al. (2003) find mentees in academic mentoring programs to perceive that they are provided by their mentor with both, technical and tacit knowledge. Acting as

a sponsor and collaborator, the mentor further takes the role of a ‘gatekeeper’ for the mentee providing access to the scientific community and its networks, i.e. mentors endow their mentees with what might be called social capital with social capital being defined as the social ties and networks a researcher has access to (see COLEMAN 1990). For the mentees, the gate-keeping function opens up opportunities for new collaborations and interaction with others (see FOX 1991). SMITH (2007) and JOHNSTON/MCCORMACK (1997) show how social capital is created in academic mentoring. Concluding, we expect effective academic mentoring to lead to a transfer of human capital from mentor to mentee and to enhance the social capital of the mentee.

While the above arguments should in principle hold for formal and informal mentoring alike, there still might be differences between the two: while mentees in formal mentoring programs might additionally profit from accompanying courses in the program (supporting the creation of human capital) and from the regular meetings with other mentees (enlarging their social capital), the fact that mentee and mentor in informal mentoring relationships often share more than just a professional relationship might facilitate the transfer of human and social capital from mentor to mentee and hence lead to more human and social capital being transferred from the mentor (RAGINS/COTTON 1999).

Research Productivity. The literature has identified a set of variables that influence researchers’ publication output: demographics (BELLAS/TOUTKOUSHIAN 1999; VASIL 1996) as well as multiple institutional and/or financial variables (KIM/KARAU 2009; FAIRWEATHER 2002). Concerning human capital, the existing empirical literature typically supports the view that more human capital is associated with higher research productivity (KIM et al. 2011; MARANTO/STREULY 1994; RODGERS/MARANTO 1989). With respect to social capital, FOX (1991), finds that working together on joint projects and communicating and interacting with other researchers positively affects research productivity (see also PRPIC 1996; SALARAN 2010). Hence, we can safely conclude that – among others – researchers’ endowment with human and social capital has the potential to enhance their research productivity.

Combining the two bodies of research, mentoring and research productivity, we hence expect (formal and informal) mentoring to positively affect mentees' research productivity.

5.3 Data and method

5.3.1 Sample

Our study is based on a unique and self-collected data set of researchers in business and economics from Austria, Germany and the German-speaking part of Switzerland. It contains information on researchers' journal publication output, researchers' age, gender and field (business administration vs. economics). The data on publication output and demographics are collected on a regular basis via an online research monitoring portal initialized by the German Economic Association ('Verein für Socialpolitik') and quality-approved by the Thurgau Institute of Economics. The information on mentoring was gathered via an encompassing self-conducted additional survey of the researchers in 2010. As a result, we have data on 390 researchers.

5.3.2 Measures

Dependent variable. As dependent variable we use researchers' annualized coauthor and quality-assessed lifetime publication output in refereed journals as an indicator of research productivity (*productivity*).²⁴ To account for a potentially differing quality of journal publications, we use the 'Handelsblatt' Journal ranking (see KRAPF 2011 for the details) and assign publication points to each journal publication.²⁵ Next, we divide these points by the number of co-authors and also by a researcher's 'career age', i.e. by the number of years since the researcher obtained the doctoral degree (for a similar approach see, e.g., FABEL et al. 2008;

²⁴ Of course, publications in referred journals cover only part of a researcher's output. Concentrating on this single output measure (for the field under consideration see also, COMBES et al. 2008; GRABER et al. 2008; SCHULZE et al. 2008) is not meant to imply that other outputs (e.g., monographs, edited books, teaching or services to the scientific community) are less important. However, as mentoring aims at actively supporting and promoting upcoming researchers in their scientific careers, we are confident to have chosen a highly relevant and increasingly important output variable.

²⁵ We decided not to use citations as an alternative quality measure – among others because these are not informative for articles that appeared only very recently.

RAUBER/URSPRUNG 2008) in order to assess research productivity and not just research output.²⁶

As measures taken to enhance publication productivity will possibly only become effective over time (see BLAU et al. 2010; PAGLIS et al. 2005 or LONG/MCGINNIS 1985), we further calculate the annualized quality- and coauthor-adjusted journal publication output starting with a time lag of three years after the beginning of the mentoring relationship as an additional dependent variable (*productivity T3*). By definition, this measure is only available for those individuals in the data set who participated or still participate in a mentoring relationship and whose mentoring relationship started in 2007 or earlier.

Explanatory variable. Our central explanatory variable concerns the question whether or not a researcher participated or still participates in a formal mentoring program and whether or not the researcher disposed of or still disposes of an informal mentor. In the online survey, we proceeded as follows: In a first step we asked whether the researcher participated or still participates in a formal academic mentoring program while being a PhD or Postdoc. If not, in a next step we asked whether the researcher instead had or still has an informal academic mentor (besides the academic advisor).²⁷ Of the 390 participants in the online survey, 125 researchers (32 percent) stated that they had or still have a mentor: 22 researchers of these participated or still participate in a formal mentoring program, 103 said they had or still have an informal mentor.

Control variables. To control for potential cohort effects, we include the researchers' *age* at the time of the survey (2010). Acknowledging the literature on gender differences in publication patterns (see, e.g., KIM et al. 2011; VASIL 1996), we further control for gender. Further, we control for the field of research (business administration vs. economics), as publication output has been shown to vary between different fields (see, e.g., GRABER et al. 2008; PRPIC 1996). Lastly, we assess researchers' *pre-mentoring productivity* in an attempt to proxy mentees' skills and abilities before the start of the mentoring relationship. By definition, this last control

²⁶ As a robustness check, we alternatively calculated *productivity* as a researcher's quality- and coauthor-adjusted journal publication output divided by the number of years since the researcher published the first article. Our results remain robust to this alteration.

²⁷ As the mentoring literature does not provide a concise definition of what an informal mentor actually is (for an overview see GIBB/MEGGINSON 1993 or JACOBI 1991), we decided not to further specify the construct on informal mentoring and to thus explicitly allow for different conceptions.

variable is only available for those researchers in the data set that participated or still participate in a mentoring relationship.²⁸

5.3.3 Methods

We start off with a few descriptive statistics, and then conduct traditional OLS regression analyses with our two dependent variables productivity and productivity T3, respectively, and with mentoring (formal or informal) as the main explanatory variable. As participants do not randomly select into the programs and do not randomly look for and ‘attract’ an informal mentor, we next conduct coarsened exact matching (CEM) as introduced by IACUS et al. (2012) in order to address a potential (self)selection bias. Typically, the treatment effect (TE) for an individual i is unobserved:

$$TE_i = Y_i(1) - Y_i(0),$$

where $Y_i(0)$ is the outcome for individual i if i receives no treatment and $Y_i(1)$ is the outcome for the same individual i if i receives the treatment (see IACUS et al. 2012). Matching techniques help to create the counterfactual and unobserved outcome for the treated, and thus analyze the treatment effect. CEM is a matching technique that improves the covariate balance between treatment and control group by eliminating observations that do not have an appropriate counterpart (with respect to the predefined matching variables).²⁹ After running CEM and identifying our balanced data set, we again run OLS regressions and assess the average treatment effect on the treated (ATT).

²⁸ As some researchers started their mentoring relationship before obtaining their PhD, we divided researchers’ pre-mentoring publication points by the number of years since they published their first article (and not since they obtained their PhD).

²⁹ Specifically, each covariate is coarsened by recoding its values into groups (‘strata’) and by assigning the groups to the same numerical values. After that, an ‘exact matching’ algorithm is applied to the coarsened data to determine the matches. Only matches with both, a treated and a control unit within the coarsened stratum are included in the further analysis. Thus, the required region of common empirical support is complied. After matching treated and controls and deleting unmatched units, the original, uncoarsened values are retained and further analyses are possible (see IACUS et al. 2012).

5.4 Results

5.4.1 Descriptive statistics

Table 17 displays the descriptive statistics and correlations of all of our variables. As expected, the two dependent variables, *productivity* and *productivity T3*, respectively, are highly correlated with one another ($r = .89^*$). As some of our explanatory and control variables are correlated (e.g. *formal mentoring* and *gender*, with many programs targeting female researchers as mentees), we checked for potential problems of multi-collinearity. However, as all VIF values were below the critical value of 10, the data need no further investigation.

Table 17. Descriptive statistics and correlations

	Obs	Mean	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Productivity	387	0.16	0	1.03	1.00							
(2) Productivity T3 (only available for mentees)	90	0.15	0	0.56	0.89*	1.00						
(3) Formal mentoring (dummy: 1=yes)	390	0.06	0	1	0.07	0.18*	1.00					
(4) Informal mentoring (dummy: 1=yes)	390	0.26	0	1	0.02	-0.18*	-0.15*	1.00				
(5) Age	371	43	29	70	-0.17*	-0.19*	-0.12*	-0.10*	1.00			
(6) Male (dummy: 1=yes)	390	0.81	0	1	0.16*	0.14	-0.22*	0.01	0.25*	1.00		
(7) Business Administration (dummy: 1=yes)	390	0.59	0	1	0.05	0.18	0.04	0.02	-0.07	-0.03	1.00	
(8) Pre-mentoring Productivity (only available for mentees)	95	0.03	0	0.3	0.10	-0.06	0.14	-0.14	-0.09	-0.10	0.23*	1.00

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

5.4.2 OLS regression analysis

In a first step of our analysis, we undertake a series of OLS regressions (Table 18).

In models (1) and (2), we investigate the relationship between mentoring and (lifetime) productivity for all the researchers in the data set. In model (1) we compare researchers that took part or still take part in a formal mentoring program with those that neither have a formal nor an informal mentor. In model (2) we compare researchers that do have a mentor, but not a formal one (informal mentoring) with those that do not have a mentor, neither a formal nor an informal one. In neither of the two models, we find a statistically significant relationship between mentoring (formal or informal) and research productivity.

In models (3) and (4) we then focus on productivity T3, i.e. on research productivity starting three years later from mentoring begin. Hence, we can only compare researchers that took part or still take part in a formal mentoring program with researchers that have an informal mentor instead because it is only for these two groups that we can calculate research productivity three years from mentoring begin. In model (4), we additionally control for pre-mentoring productivity—a variable which is also only available for the subset of researchers that have a mentoring relationship and can hence not be used in models (1) and (2). In both models, (3) and (4), we find researchers with formal mentoring to have a higher research productivity (productivity T3) than those that instead have an informal mentor. In light of the fact that average annualized productivity T3 in the data set is .15, the effect size is comparatively large.³⁰

³⁰ Within a series of further robustness checks, we also included a) whether the mentoring-pair is of the same gender or not (which is a heavily discussed topic in the mentoring literature, see, e.g., WANBERG et al. 2003) and b) whether the researchers have children or not (see, e.g., JOECKS et al. 2013). Our results are robust to the inclusion of these additional controls, and the same gender-dummy and the children-dummy themselves are not significant.

Table 18. OLS regressions before CEM

	(1)	(2)	(3)	(4)
	<i>Productivity</i>	<i>Productivity</i>	<i>Productivity T3</i>	<i>Productivity T3</i>
	<i>(all researchers)</i>		<i>(researchers with mentoring)</i>	
Formal mentoring	0.0606 (0.0402)		0.0824* (0.0465)	0.101** (0.0458)
Informal mentoring		-0.00386 (0.0160)		
Age	-0.00280** (0.00113)	-0.00340*** (0.000925)	-0.00333** (0.00140)	-0.00387*** (0.00142)
Male	0.0734*** (0.0206)	0.0809*** (0.0166)	0.0658* (0.0345)	0.0786** (0.0341)
Business administration	0.00963 (0.0171)	0.0127 (0.0142)	0.0519* (0.0280)	0.0417 (0.0282)
Pre-mentoring productivity				-0.0511 (0.352)
Constant	0.212*** (0.0482)	0.230*** (0.0385)	0.203*** (0.0641)	0.225*** (0.0645)
Observations	270	349	88	86
R ²	0.059	0.072	0.142	0.172

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

5.4.3 Matching

To account for a potential (self-)selection bias into mentoring, we next apply coarsened exact matching (CEM) (IACUS et al. 2012) to identify a more balanced data set of researchers in the treatment and the control group—before estimating the average treatment effect on the treated (ATT) by again running the OLS regression models (1)-(4). For each of the four OLS-regressions, we run a corresponding CEM-model. Since the mentoring literature is not clear about who becomes to be a mentee (for a review see WANBERG et al. 2003), we use a set of available pre-treatment variables that might influence the process: age, gender and field of research. In model (4), we additionally include *pre-mentoring productivity* as a matching variable.

Table 19 presents the multivariate L_1 distance statistics measuring the overall imbalance before and after CEM. It provides relative information on the differences between treated and control group based on the distributions of the data. The L_1 distance measure is standardized between 1 and 0, with ‘0’ if the two distributions exactly overlap and ‘1’ if they are completely separated (see BLACKWELL et al. 2008 or IACUS et al. 2012). For all models, the multivariate imbalance statistic L_1 is improved. For example, in model (1), before CEM, 52 percent of the densities of the two distributions overlapped, after CEM, 76 percent overlap. The largest improvement concerns model (4) where we use pre-mentoring productivity as an additional identifier.

Table 19. Multivariate imbalance before and after CEM

	(1) <i>Productivity</i>	(2) <i>Productivity</i>	(3) <i>Productivity T3</i>	(4) <i>Productivity T3</i>
	<i>(all researchers)</i>		<i>(researchers with mentoring)</i>	
Pre-matching	0.48	0.22	0.40	0.51
Post-matching	0.24	0.09	0.28	0.15

Source: Own compilation.

In a next step, we estimate the average treatment effect on the treated (ATT) based on the CEM-matched data, i.e. with more balanced treatment and control groups. Table 20 shows the results of the OLS regressions after CEM. While the results in models (2)-(4) prove to be robust after CEM, in model (1) we now find researchers that participate(d) in a formal mentoring program to be more productive than those that neither dispose of a formal nor an informal mentor. Hence, we find evidence for formal mentoring to enhance researchers’ research productivity (as compared to having an informal mentor or no mentor) and informal mentoring not to enhance research productivity.

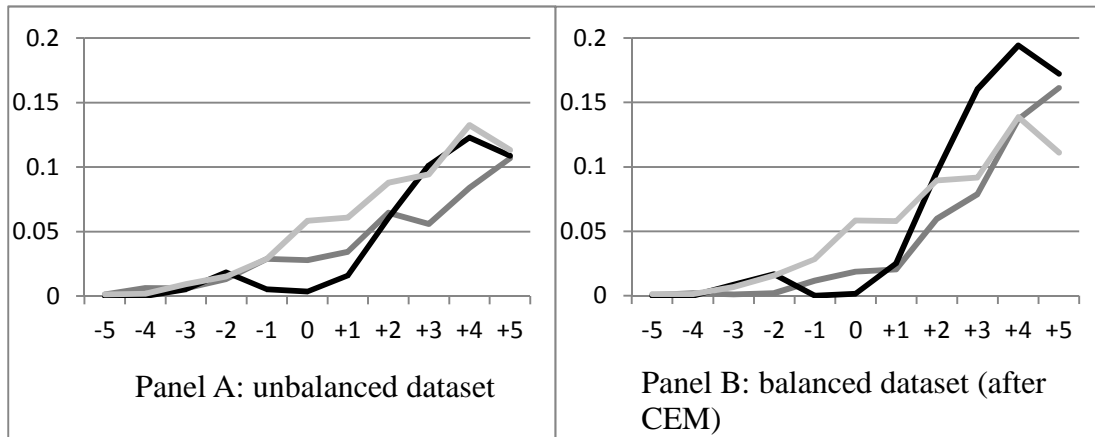
Table 20. OLS regressions after CEM

	(1)	(2)	(3)	(4)
	<i>Productivity</i>	<i>Productivity</i>	<i>Productivity T3</i>	<i>Productivity T3</i>
	<i>(all researchers)</i>		<i>(researchers with mentoring)</i>	
Formal mentoring	0.0754*		0.0951*	0.0896*
	(0.0408)		(0.0483)	(0.0478)
Informal mentoring		-0.00847		
		(0.0193)		
Age	-0.00391*	-0.00105	-0.00187	-0.0101**
	(0.00228)	(0.00241)	(0.00267)	(0.00496)
Male	0.0858***	0.103***	0.0584*	0.0509
	(0.0223)	(0.0195)	(0.0319)	(0.0385)
Business administration	0.00195	-0.000332	0.0715**	0.124***
	(0.0250)	(0.0203)	(0.0287)	(0.0417)
Pre-mentoring productivity				-0.0192
				(0.591)
Constant	0.239**	0.127	0.128	0.450**
	(0.0900)	(0.0806)	(0.113)	(0.190)
Observations	164	318	65	48
R ²	0.132	0.061	0.224	0.279

Notes: Data are matched by coarsened exact matching; robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

Figure 4 displays mentees' publication profile in the five years before the beginning of the mentoring relationship, the year when mentoring began (year 0) and the five years thereafter. As a point of reference, we also include researchers without a mentor, defining mentees' average age at mentoring begin (=29 years) as the counterfactual year 0. Panel A contains the unbalanced data set including all observations, Panel B only contains data on those researchers that are part of the balanced data set after CEM (including *pre-mentoring productivity* as a matching variable). While mentees in a formal program seem to outperform mentees with an informal mentor before CEM (Panel A), they only stick out as compared to non-mentees when accounting for a potential self-selection bias.

Figure 4. Publication profiles five years before and after mentoring begin

Notes: black: formal mentoring, dark grey: informal mentoring, light grey: no mentoring.

Source: Own compilation.

5.5 Conclusion

In our paper, we present first empirical evidence on the comparative effectiveness of formal as opposed to informal mentoring in academia. Using a self-collected original data set and accounting for self-selection with the help of coarsened exact matching, we find evidence for mentees in formal mentoring programs to be more productive than researchers without a mentor and researchers with an informal mentor. Researchers that only have an informal mentor, to the contrary, are not more productive than those that do not have a mentor.

One explanation for the latter might be that the concept of an ‘informal mentor’ is not as clear-cut and well-understood as a researcher’s participation in a formal mentoring program and that we left to the interpretation of the survey respondents to judge whether they disposed of or still dispose of an informal mentor.

Future studies might want to further investigate the effects of informal mentoring and ask for participants’ underlying conceptions. Concerning the use of matching techniques to account for self-selection, one should bear in mind that matching can only capture differences in observables. Randomized experiments – the gold standard of causal analysis (RUBIN 2008) – are, however, not an option when it comes to the assessment of informal mentoring. Despite these potential limitations, our results should nevertheless be regarded as informative in that they provide first tentative evidence on the comparative effectiveness of formal mentoring programs as

opposed to informal mentoring relationships in academia accounting for self-selection.

6

Mobility and faculty development: Effects on time to tenure and reputation

Chapters 3 to 5 provided insights into mentoring relationships and their significance as a faculty development strategy. To widen the view on faculty development as any activity that “[...] improve[s] faculty performance in all aspects of professional live [...]” (NELSON 1983: 70) in Chapter 6, early academic career mobility is analyzed as a further activity to improve upcoming researchers’ career success. Controlling for mentoring relationships, the results of Chapter 4 and 5 are considered.³¹

6.1 Introduction

Recruitment processes are characterized by asymmetric information as recruiting institutions and hiring firms are far from being perfectly informed about the characteristics of their new hires (see BEHRENZ 2001). To reduce these informational asymmetries, firms rely on diagnostics and might additionally look for ‘signals’ in an applicant’s CV that hint at certain (otherwise hidden) characteristics.

In our article, we analyze the academic labor market in Germany, Austria, and the German-speaking part of Switzerland and ask whether a researcher’s previous mobility (national or international) could serve as a signal (positive or negative) in the appointment process, i.e., in the process of getting tenured (for the role of job mobility as a signal in the business context, see, e.g., ZHANG 2007). We do so by theoretically elaborating on the potential signal associated with an

³¹ Chapter 6 is a slightly modified version of the working paper “Time to go? (Inter)National mobility as a signal in the recruitment process of academics” by AGNES BÄKER, SUSANNE BREUNINGER, JULIA MUSCHALLIK, KERSTIN PULL and USCHI BACKES-GELLNER.

academic's previous national and/or international mobility and by empirically studying potential signaling effects with the help of an original data set of about 250 academic researchers.

While the empirical literature on appointment processes in academia has identified researchers' publication records to be the most important determinant of appointment success (e.g., COMBES et al. 2008; GRABER et al. 2008; COUPÉ et al. 2005), SCHULZE et al. (2008) find *international mobility* to have a positive effect on the appointment decision – even when controlling for researchers' publication output. Thus, there is first empirical evidence that international mobility has a positive effect on the appointment decision beyond the additional positive effect it might have via a potentially enhanced publication record (see FRANZONI et al. 2012 for the link between international mobility and publications). For *national mobility*, there is no corresponding evidence. While the link between national academic mobility and researchers' publication output has been studied (see, e.g., BÄKER 2013; BOLLI/SCHLÄPFER 2013; FERNÁNDEZ-ZUBIETA et al. 2013), there is no study as yet which analyzes a potentially additional direct link between national mobility and a researcher's appointment success.

Our contribution to the literature is twofold. From the perspective of theory, we are the first to theoretically elaborate on a potential direct relation between (inter)national academic mobility and appointment success. As we will argue, this direct effect is the result of a signaling effect where international academic mobility represents a positive signal and national academic mobility represents a negative one. Empirically, we contribute to the literature by not only concentrating on international academic mobility, but also simultaneously analyzing national mobility and its potential direct effect on a researcher's appointment success. Furthermore, we check whether the effects of international mobility as measured by SCHULZE et al. (2008) are robust with respect to the time span a researcher spends abroad.

Even though going abroad is typically associated with a loss of time, we find *international mobility* of a year or more to *reduce* the time it takes to get tenure and – if the time spent abroad reaches four months or more – to *increase* the likelihood of getting tenure at a top-ranked institution. To the contrary, we find early career *national mobility* to be associated with a *longer* time to achieve tenure and a potentially *lower* likelihood of receiving tenure at a top-ranked institution. Our

results are well in line with a signaling explanation where going abroad serves as a strong and positive signal for career orientation (and is valued as such by appointment committees) and where early career national academic mobility might represent a negative signal, indicating that a young researcher might not have been offered a new contract at his or her home institution.

Our findings have general implications that go beyond our particular field of application. First, signals are important in recruitment processes characterized by information asymmetries. Second, signals ought to be carefully interpreted by those responsible for recruitment decisions. And third, applicants should also be well aware of the fact that their activities will be interpreted as signals and might hence influence their career prospects. However, whether a certain activity will be interpreted as a positive or negative signal will depend on the specific circumstances. For instance, in a country where worker mobility is very high (e.g., in the U.S.), mobility will not be a signal, but in a country where worker mobility is typically low (e.g., in Japan), switching jobs might be interpreted as a negative signal and could adversely affect career success.

6.2 Academic mobility as a signal in the appointment process

In a recent survey of senior faculty's appointment preferences, 'international experience' was named among the most important appointment criteria (FIEDLER/WELPE 2008). But why should appointment committees care about an applicant's international experience? One possibility might be that international experience is seen as an investment in an individual's human and social capital because it broadens the individual's knowledge base and generates new contacts with different people. In the business context we find empirical evidence that both personal and professional (skill) development and the development of a network are important motives for employees to go abroad (see DICKMANN et al. 2008; DICKMANN/HARRIS 2005; STAHL/CERDIN 2004; LÄHTEENMÄKI/PAALUMÄKI 1993). Furthermore, employers associate employee's international experience with high quality (see, e.g., SPREITZER et al. 1997). Regarding the academic context, an increase in human and/or social capital resulting from international experience will at least be partly reflected in an enhanced publication record (see FRANZONI et al. 2012

for the corresponding evidence), but there might be additional effects, e.g., in the form of networks that might prove useful in the future when applying for third-party funding. A second reason why an appointment committee would care about a researcher's international experience might be that a researcher's decision to go abroad is interpreted as a 'signal' (BENSON/PATIE 2008; BERNHARDT/SKOONES 1993; SPENCE 1973) for otherwise unobservable traits, e.g., a researcher's flexibility, open-mindedness, and career-orientation – traits that can be expected to positively affect a researcher's visibility in the future and might hence benefit the appointing institution.

But what about national academic mobility? Here we argue that within academia in German-speaking countries, national mobility serves as a negative signal. To understand why a researcher's previous change of university affiliation on a national level might serve as a negative signal, it is important to know a little more about the institutional context. In Germany, which is where most of the researchers in our sample are located, changing affiliation between obtaining one's PhD and the so-called *Habilitation*³² was rather untypical (at least during the time period that our data comes from). Given that changing institutions after the PhD but before the Habilitation was rather untypical, a change of affiliation might serve as a 'negative signal' by appointment committees, i.e., the change might be perceived as involuntary in the sense that the researcher potentially *had* to change institutions because (s)he was not offered a new contract.

Therefore, while both international and national academic mobility have the potential to enhance a researcher's human and social capital and positively affect a researcher's publication output, and thus his or her chances of being appointed as full professor (indirect effect), the direct effects of international and national academic mobility might differ as a result of the potentially different 'signals' involved. Whereas international academic mobility might represent a positive signal (e.g., for the researcher's career orientation), it is expected that national academic mobility will represent a negative signal. Accordingly, we expect international academic

³² The Habilitation is similar to a second, advanced PhD, and grants the researcher the right to teach independently. Since 2002, the Habilitation is no longer required by law, and upcoming researchers might also take an alternative road to tenure via so-called junior professorships. Unlike before, junior professors – if on a tenure-track – need to change affiliations after their PhD and before they get tenure. We omitted all junior professors from our analysis.

mobility and national academic mobility to differ in their effects on researchers' appointment success.

6.3 Data, measures and empirical strategy

6.3.1 Sample and data collection

Our empirical analysis is based on a sample of 249 researchers in business and economics from Austria, Germany, and the German-speaking part of Switzerland. In 2010, an online survey was sent out to the members of an online portal initialized by the German Economic Association to collect information on stays abroad and a set of controls. For the respondents, we further hand collected data on national changes of affiliation from researchers' CVs. The data set constructed via the online portal initialized by the German Economic Association already contains information on researchers' journal publication output, adjusted by quality weights for the different journals. For our analysis, journal publications are counted starting from a researcher's first year of journal publication until the year 2010. In addition, the data set includes information regarding the year and the institution where the researcher obtained his or her PhD and the year and institution where they received tenure; demographic information, such as gender and year of birth, is included as well. Because the data set is the basis for constructing the *Handelsblatt* ranking³³, which is one of the most visible rankings in German-speaking countries, the data in the data set is collected and quality approved on a regular basis and is therefore of high reliability.

6.3.2 Measures

The following two measures are used to proxy our dependent variable 'appointment success': (1) the time span between obtaining one's PhD and getting tenure (*time to tenure*) and (2) whether the tenure-granting institution is among the highest-ranked institutions in Austria, Germany, or German-speaking Switzerland (*reputation*). As individual ranks might vary from year to year, we did not use the

³³ The *Handelsblatt* research ranking ranks journals and based on quality-weighted journal publications it ranks university departments (see KRAPF 2011 for details).

exact rank of an institution, but instead created a dummy variable taking the value ‘1’ if the institution is among the top 10 institutions within Austria, Germany, or German-speaking Switzerland according to the *Handelsblatt* ranking, and ‘0’ otherwise.

Our main *explanatory variables* are national and international academic mobility. The dummy variable *national mobility* is coded as ‘1’ if a researcher changed affiliation on a national scale at least once after obtaining his or her PhD besides the obligatory change immediately before getting tenure (not counting stays abroad), and ‘0’ otherwise. Analogously, the dummy variable *international mobility* is coded as ‘1’ if a researcher stayed abroad for research purposes before getting tenure, and ‘0’ otherwise. To analyze whether the duration of the stay abroad is of relevance, we chose four different operationalizations of our dummy variable *international mobility*, defining stays abroad as lasting at least one month, four months, six months, or one year.

To concentrate on the direct effect of (inter)national mobility on appointment success, we control for *publication productivity* measured by a researcher’s journal publications per year since the researcher published his/her first article (adjusting for co-authors and applying quality weights according to the *Handelsblatt* journal ranking, see KRAPF 2011 for details). Since some articles might have been accepted by a journal but not yet published at the time of application for a full professorship, we include all journal publications until the year after obtaining tenure. Acknowledging the literature on gender differences (e.g., BILLYN 2003; KAHN 1992), we further control for gender (*male*). Furthermore, and analogous to JOECKS et al. (2013), we include a dummy variable for whether a researcher has *children* or not. Additionally, we control for the field of research as follows (e.g., SCHULZE et al. 2008; HEINING et al. 2007): *business* vs. economics. The variable *year of birth* is meant to control for cohort effects, e.g., with respect to different job market situations. The dummy variable *reputation PhD* is coded as ‘1’ if the PhD granting institution is among the top 10 institutions within Austria, Germany, or the German-speaking part of Switzerland according to the *Handelsblatt* ranking, and ‘0’ otherwise. Lastly, we control for whether the researchers had taken part in a formal or informal *mentoring* relationship before obtaining tenure (see LONG/MCGINNIS 1985 or results of Chapter 5).

6.3.3 Empirical strategy

To test for the effect of national and international academic mobility on appointment success, we need to apply different empirical methods. For our first dependent variable, *time to tenure*, we run Cox proportional hazard models (COX 1972). Given that our data set contains both researchers who already received tenure and researchers who did not (yet) get tenure but might still get tenure in the future, Logit regressions models for predicting the likelihood of getting tenure are not appropriate. Cox proportional hazard models estimate the hazard rate for the likelihood of getting tenure in the next marginal time period, given that the individual has ‘survived’ in a non-tenured state thus far. Similar to multiple regression models, effects of covariates can be analyzed (see, e.g., LUNN/MCNEILL 1995; LANE et al. 1986 and also Chapter 4.3.2 for further details). For our second dependent variable, the dummy-variable *reputation*, we run Logit regressions.

6.3.4 Descriptives

Table 21 shows the means of all variables used in our regressions. The Cox proportional hazard models analyzing the determinants of the time it takes a researcher to get tenure are based on the full sample, i.e., the tenured and the not yet tenured. Per definition, the Logit regressions analyzing the determinants of whether the tenure-granting institution is highly ranked or not can only rely on the data of those that already got tenure. The bivariate correlations of the variables can be found in Tables B-1 and B-2 in the Appendix B.

Table 21. Mean values of all variables

	Full sample (Cox regressions)	Tenured (Logit regressions)
Time to tenure	6.98	7.34
Reputation (n=164)	0.16	0.16
International mobility (1 month)	0.49	0.42
International mobility (4 months)	0.36	0.36
International mobility (6 months)	0.30	0.30
International mobility (1 year)	0.20	0.22
National mobility	0.62	0.59
Publication productivity	0.12	0.11
Male	0.84	0.90
Children	0.53	0.59
Business	0.59	0.66
Year of birth	1966	1963
Reputation PhD	0.27	0.26
Mentoring	0.25	0.22
Observations	249	176

Source: Own compilation.

6.4 Results

6.4.1 Time to tenure

Table 22 presents the results of the Cox regression analysis. *International mobility* is statistically significantly related to time to tenure, but only when researchers stay at least one year abroad. Shorter stays abroad do not affect the time it takes a researcher to get tenure. When a researcher spends one year or more abroad, his or her likelihood of receiving tenure increases by 47%. Concerning *national mobility*, we find it to be statistically significant and negatively related to the likelihood of the researcher getting tenure. Depending on the model specification, a national change of affiliation decreases the likelihood of getting tenure by 18-20%. While the size of the effect is considerably smaller than the effect of international mobility, it is still non-negligible and also robust with respect to the different model specifications. Since we controlled for publication productivity, the coefficients for (inter)national mobility capture an additional signaling effect associated with

(inter)national mobility and are not related to a researcher's (observable) research strength.

Table 22. Determinants of *time to tenure* in the Cox regression

	<i>Time to Tenure</i>			
	<i>Model (1)</i>	<i>Model (2)</i>	<i>Model (3)</i>	<i>Model (4)</i>
International mobility (1 month)	1.037 (0.22)			
International mobility (4 months)		1.233 (1.28)		
International mobility (6 months)			1.274 (1.39)	
International mobility (1 year)				1.467* (1.93)
National mobility	0.804** (-2.40)	0.811** (-2.33)	0.814** (-2.27)	0.823** (-2.15)
Publication productivity	4.973* (2.24)	5.029* (2.24)	5.138* (2.27)	4.744** (2.16)
Male	1.191 (0.66)	1.175 (0.61)	1.161 (0.56)	1.119 (0.42)
Children	0.857 (-0.98)	0.844 (-1.08)	0.841 (-1.10)	0.822 (-1.23)
Business	2.196*** (4.46)	2.277*** (4.72)	2.306*** (4.74)	2.376*** (4.88)
Year of birth	1.036*** (3.46)	1.035*** (3.34)	1.036*** (3.43)	1.035*** (3.39)
Reputation PhD	0.922 (-0.46)	0.923 (-0.45)	0.916 (-0.49)	0.948 (-0.30)
Mentoring	1.146 (0.70)	1.139 (0.68)	1.119 (0.59)	1.107 (0.53)
BIC	1569.87	1568.32	1568.044	1566.386
Observations	249	249	249	249

Notes: Hazard ratios estimated; z-values in parentheses; after testing for the proportionality assumption national mobility is included as time-varying covariate; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

6.4.2 Reputation of the tenure-granting institution

Table 23 presents the results of the Logit regression analysis with respect to our dependent variable *reputation*. Provided that a stay abroad lasts at least four months, international mobility positively and significantly increases the likelihood of being granted tenure at a top 10 institution. Again, the effect size is considerable with research stays of at least four months increasing the likelihood of receiving tenure at a highly ranked institution by about twelve percentage points, and longer stays further increasing the likelihood of being appointed to a top 10 institution. To the contrary, for national mobility we find a statistically significant negative effect on *reputation* in two of the four model specifications. Specifically, a national change of affiliation before getting tenure is associated with a decrease of about eight to ten percentage points in the likelihood of getting tenure at an affiliation that is ranked among the top 10 in models (1) and (2). Again, both effects (that of national and that of international mobility) measure the direct effect of mobility as a signal and not the effect of (observable) differences in research strength.

Table 23. Determinants of *reputation* in the Logit regression

	<i>Reputation</i>			
	<i>Model (1)</i>	<i>Model (2)</i>	<i>Model (3)</i>	<i>Model (4)</i>
International mobility (1 month)	0.0670 (0.0553)			
International mobility (4 months)		0.122** (0.0507)		
International mobility (6 months)			0.136*** (0.0497)	
International mobility (1 year)				0.138*** (0.0514)
National mobility	-0.0976* (0.0530)	-0.0843* (0.0484)	-0.0749 (0.0469)	-0.0707 (0.0481)
Publication productivity	0.513** (0.254)	0.533** (0.247)	0.537** (0.245)	0.479** (0.243)
Male	-0.0221 (0.105)	-0.0382 (0.107)	-0.0354 (0.106)	-0.0379 (0.109)
Children	-0.0281 (0.0564)	-0.0397 (0.0565)	-0.0439 (0.0563)	-0.0384 (0.0543)
Business	-0.0896 (0.0552)	-0.0903* (0.0545)	-0.0906* (0.0542)	-0.0790 (0.0555)
Year of birth	0.00707* (0.00417)	0.00676 (0.00414)	0.00648 (0.00401)	0.00605 (0.00391)
Reputation PhD	0.115* (0.0625)	0.120* (0.0615)	0.121** (0.0615)	0.126** (0.0623)
Mentoring	-0.0698 (0.0705)	-0.0582 (0.0696)	-0.0679 (0.0694)	-0.0677 (0.0684)
Observation	164	164	164	164

Notes: Marginal effects estimated; standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: Own compilation.

6.5 Discussion and conclusions

This article analyzed whether pre-tenure academic mobility might serve as a signal for appointment committees and influence a researcher's appointment success – over and above a potential indirect effect via a mobility-related change in publication productivity. Theoretically, such a direct effect might result from appointment committees interpreting academic mobility as a positive or negative signal. While we argue the potential signal associated with *international* academic mobility to be positive, the signal associated with *national* academic mobility might

in fact be negative. Empirically, we find *national* academic mobility to reduce a researcher's likelihood to get tenure, i.e., to increase the time span until (s)he gets tenure, and – depending on the model specification – to lower the probability that (s)he is appointed to a highly ranked institution. *International* mobility, however, increases the probability that researchers are appointed to a highly ranked institution – if and when the research stay lasts at least four months. Furthermore, international mobility increases the likelihood of receiving tenure, but this is only the case for researchers that stay abroad for at least one year.

In conclusion, researchers who go abroad enhance their chances in the job market even when controlling for a potentially increased publication output. The reason is that appointment committees – and especially those at high-ranked institutions – apparently value international experience on its own. Even though going abroad will typically take considerable planning and adjustment time, the resulting time loss is apparently (over-)compensated by appointment committees valuing international mobility such that time to tenure is reduced. Furthermore, such time abroad also increases the likelihood of getting tenure at a highly ranked institution. Researchers who consider changing their affiliation within national borders should think twice and only do so if they expect their publication record to be positively affected by the change in affiliation, e.g., by getting a more supportive supervisor who is able to open up new avenues of research and who gives access to new and broader networks. In a country where national academic mobility is rather low, only those 'focused' changes of affiliation might increase the likelihood of being appointed to a full professorship in a shorter period of time and at better ranked institutions (via enhancing researchers' publication productivity). Other less focused changes will not increase one's chances in this regard because appointment committees might interpret them as negative signals.

Similar effects can be assumed to exist also in a business context. Analogous to what we observe in academia, we can expect large internationally based companies – just as highly ranked institutions in academia – to interpret international mobility (e.g., going abroad as an exchange student or in the course of an internship) as a positive signal when making their hiring decision, whereas regionally or locally oriented small- and medium-sized companies might not ascribe a positive value to international mobility because the international experience of their new recruits is of

no direct value for them (for local companies, e.g., study grades may be the dominant criterion that matters). Furthermore, in a business context where mobility (national or international) is rather unusual (e.g., in the former Japanese system of lifetime employment), being mobile and switching jobs might even hint at something having gone wrong and hence could represent a negative signal to outside employers.

As this last example shows, signals might have different values in different countries and at different times. For example, the more the Japanese system of lifetime employment – under the pressure of increased globalization – develops toward a more flexible and Anglo-Saxon employment system, the more the signaling value of mobility might change into a positive one. The same is true for our study context. With the introduction of junior professorships, national academic mobility has the chance to become the norm in the German-speaking system and lose its stigma. Thus, changing one's national affiliation after obtaining one's PhD and before entering the academic job market may no longer represent a negative signal in the future.

7

Conclusion

Faculty development strategies are important when it comes to improving upcoming researchers' career success in the academic career system (MCLEAN et al. 2008; AUSTIN 2002; STEINERT 2000; NELSON 1983). In the context of the need for more systematic faculty development, the focus of this doctoral thesis was on academic mentoring relationships; moreover, in the last chapter, academic mobility was analyzed in order to widen the view on different faculty development strategies.

While Chapter 2 unveiled the need for and the relevance of faculty development strategies in relation to economic history, Chapters 3 to 5 focused on academic mentoring relationships. In Chapter 3, which investigated the case of an international e-mentoring program for upcoming researchers from the field of economic history, the results showed that mentees perceive career and psychosocial support from their mentors by discussing different topics of academic life. In particular, psychosocial support seems to be the most relevant support in the program. Thus, mentees seem to mainly appreciate their mentors as role models and counselors in the context of this e-mentoring program. In Chapter 4, mentees' perceived support was connected to their career success. Analyzing mentors' different roles in enhancing mentees' likelihood of receiving tenure, empirical evidence on mentees' human and social capital creation was provided. The results showed that the transfer of social capital is of high relevance for mentees' career success. Chapter 5 detected differences between formal and informal mentoring in terms of mentees' publication productivity. It was shown that formal mentoring programs can increase mentees' publication productivity, while informal mentoring relationships have not such effect. After analyzing academic mentoring in the context of the need for faculty development strategies, Chapter 6 investigated early academic career mobility as a further faculty development strategy. Including mentoring

relationships as a control variable, the results suggested that, depending on the length of stay, international mobility positively affects upcoming researchers' likelihood of receiving tenure and the reputation of the tenure-granting institution, while for national mobility, only negative effects can be found.

In sum, the results of this doctoral thesis contribute to the literature for several reasons: Combining qualitative and quantitative insights, a deeper understanding of academic mentoring relationships is provided. Since the academic mentoring literature mainly concentrates on the role of the academic advisor on mentees' career success (e.g., HILMER/HILMER 2007; PAGLIS et al. 2005), analyzing mentoring relationships where the mentor is not the mentee's academic advisor provides further evidence on mentoring as an additional support for the upcoming researcher's career development. Further, investigating different outcome measures and using different empirical strategies across the chapters, the positive effects of mentoring and mobility on upcoming researchers' career success unveil the potentials of both as faculty development strategies. In addition, the chapters' findings are based on samples within one academic research field (business administration and economics), and thus provide further comparability of the results across the chapters.

In what follows, the findings of this doctoral thesis are summarized and discussed in respect to different aspects:

Mentoring in the context of developmental networks. Since in traditional mentoring relationships, the mentee and mentor mainly communicate face to face, the pool of appropriate mentors is limited due to geographical constraints. E-mentoring relationships can cross this limitation, and thus widen the pool of available mentors (see, e.g., SINGLE/MULLER 2001). In Chapter 3, an e-mentoring program was introduced where mentees and mentors from different institutions and even countries were linked together. Studies in the context of developmental networks (see, e.g., HIGGINS/KRAM 2001; HIGGINS/THOMAS 2001) have pointed out the positive effects of a network with multiple sources that provide support for individual career success. Combining different mentoring designs to widen the pool of available mentors might increase mentees' developmental network, and thus help to increase mentees' career success. In the context of the developmental network

literature, further research should analyze the effects of combined mentoring designs on mentees' academic career success.

Mentoring in the context of an institutionalization. In the context of faculty development strategies, the institutionalization of mentoring relationships is of special interest, and thus the effects formal mentoring programs might have on upcoming researchers' career success. Therefore, in Chapter 5, the effects of academic mentoring on career success were divided into the effects of formal and informal mentoring relationships. While chapter 3 qualitatively analyzed the support mentees perceive and Chapter 4 quantitatively connected mentees' perceived support with their career success, Chapter 5 focused on the effectiveness of formal mentoring relationships as a faculty development strategy. The findings showed that formal mentoring programs increase mentees' publication productivity, even after controlling for a selection bias, and in comparison to researchers without mentoring or with an informal mentor. For informal mentoring relationships, no significant effects can be found. Most studies about the comparative advantages of formal and informal mentoring relationships have revealed that informal mentoring relationships are more beneficial than formal ones (see, e.g., RAABE/BEEHR 2003; RAGINS/COTTON 1999). In contrast, the findings of Chapter 5 contribute to the academic mentoring literature by providing evidence for the comparative advantage of formal mentoring programs and the potential of institutionalized mentoring relationships as a faculty development strategy.

Mentoring in the context of human and social capital. Studies in the context of human and social capital have pointed out the positive effects of the researchers' human and social capital endowment on academic career success (e.g., KIM et al. 2011 or SALARAN 2010). Chapter 3 provided insights into how e-mentoring relationships work and what support mentees perceive. In the context of human and social capital, discussing different topics on academic life and sharing experiences and knowledge, the first hints were given that mentees' human and social capital endowment is increased. In Chapters 4 and 5, it was argued that mentees perceive professional support from their mentors that enhances mentees' human and social capital endowment, thereby increasing their career success. To provide empirical evidence on the creation of human and social capital, in Chapter 4, mentors' different roles in providing support were disentangled, and thus mentors' roles and the

perceived support were connected with mentees' human and social capital creation. Interestingly, the results showed that there are differences in between the different roles in terms of the effects on career success. In particular, the creation of social capital during the mentoring relationship is of high relevance for mentees' career success. The mentor in the role as a sponsor who introduces the mentee to the scientific field positively affects the mentee's likelihood of receiving tenure.

As the literature on academic career success points out the importance of researchers' integration into the scientific community (e.g., SALARAN 2010; COMBES et al. 2008; KYVIK/TEIGEN 1996), this chapter provided further evidence in the context of academic mentoring relationships: While enhancing mentees' social capital via sponsoring the mentee in the scientific community, mentoring relationships increase mentees' career success. In contrast, the mentor's role as a teacher who provides the mentee with job relevant skills and knowledge, and thus increases the mentee's human capital endowment has no effects on the likelihood of receiving tenure. Only when mentors combine their roles as sponsors and teachers, and thus increase mentees' human *and* social capital endowment can positive effects be found. Hence, similar to BOZEMAN/CORLEY (2004) or LIBERMAN/WOLF (1997), where the authors argued that it is the combination of human and social capital that is crucial for a researchers' career success, the results of Chapter 4 provided further evidence for the positive effects of combined human and social capital on career success in the context of academic mentoring relationships.

Regarding the results of Chapters 3 and 4, mentors seem to be an important source for career and psychosocial support, increasing mentees' human and social capital endowment, and thus mentees' career success. However, the findings of Chapter 4 showed that different roles and different aspects of human and social capital can lead to different effects on mentees' career success. Hence, while mentors provide a variety of different support functions to their mentees and act in different roles, research on mentoring should provide further evidence on the different effects of mentors' roles on upcoming researchers' academic career success.

Mentoring and mobility in the context of faculty development. The results of Chapter 4 and 5 unveiled the positive effects of academic mentoring on mentees' likelihood of receiving tenure and publication productivity. Via the enhancement of upcoming researchers' human and social capital endowment, academic mentoring

indirectly affects upcoming researchers' career success. In Chapter 6, the direct effect of academic mobility was analyzed. The results showed that international mobility positively affects upcoming researchers' likelihood of receiving tenure and the reputation of tenure-granting institution. Since the literature on faculty development points out the importance of researchers' systematic skill development to improve their career advancement (see, e.g., STEINERT 2000) findings of this doctoral thesis unveiled the potentials of academic mentoring and mobility as faculty development strategies. Although the results illustrated that mentoring and mobility do not always positively affect upcoming researchers' career advancement, and further research should investigate this issue further, academic mentoring and mobility can offer great advantages when it comes to the question of how upcoming researchers can be supported more systematically in their career development by academic institutions and organizations. For upcoming researchers, the results show that the participation in mentoring programs and international mobility can foster their career success, and should therefore be used as strategic tools in their academic career development.

Appendix

Appendix A to Chapter 2

We asked which topics should be on the agenda of the next world congress in Stellenbosch 2012. We classified the topics mentioned using the EH.net Classification. The results are presented in Table A-1.

A-1. Topics that should be on the WEHC 2012, as mentioned by respondents

Topics	Respondents
Economic Development, Growth, and Aggregate Productivity	53
Macroeconomics and Fluctuations	43
Financial Markets, Financial Institution, and Monetary History	38
Business History	32
International and domestic Trade and Relations	30
Income and Wealth	29
Social and Cultural History, including Race, Ethnicity and Gender	26
Markets and Institutions	17
Development of the Economic History Discipline: Historiography	15
Education and Human Resource Development	13
Government, Law and Regulation, Public Finance	11
History Demography, including Migration	10
Economic Planning and Policy	9
History of Economic Thought, Methodology	8
History of Technology, including Technological Change	8
Labour and Employment History	8
Agriculture, Natural Resources, and Extractive Industries	7
Living Standards, Anthropometric History, Economic Anthropology	7
Household, Family and Consumer History	7
Industry: Manufacturing and Construction	6
Historical Geography	6
Military and War	5
Economywide Country Studies and Comparative History	5
Transport and Distribution, Energy and Other Services	3
Servitude and Slavery	2
Urban and Regional History	2

Source: Own compilation.

The most frequently mentioned topics fall into the category of ‘Economic Development, Growth, and Aggregate Productivity’. A number of respondents noted that, given the location of the next world congress in Africa, development processes should be particularly high on the agenda. In addition, ‘Macroeconomics and Fluctuations’ and ‘Financial Markets, Financial Institutions, and Monetary History’ are very popular and critical fields. Themes about economic crises and the financial sector concern economic historians and the general public all over the world. These themes will be approached with an economic history methodology so as to clarify the undercurrents of current economic issues, which escaped economists and other social scientists who limited themselves to theoretical and current considerations.

We were curious as to whether the preferences for the topics varied by age. One could imagine, for example, that more recent topics might be demanded by younger colleagues, whereas topics that were very popular, say, in the 1970s or 1980s, might be suggested by slightly more senior colleagues. Therefore, we examined the topics as a function of age (Table A-2).

A-2. Topics as a function of age

Topic	Age
Household, Family and Consumer History	41
Economywide Country Studies and Comparative History	43
Education and Human Resource Development	43
Economic Planning and Policy	44
Income and Wealth	45
Social and Cultural History, including Race, Ethnicity and Gender	45
Business History	46
Macroeconomics and Fluctuations	46
Markets and Institutions	46
History of Technology, including Technological Change	47
Economic Development, Growth, and Aggregate Productivity	47
Financial Markets, Financial Institution, and Monetary History	47
History of Economic Thought, Methodology	47
History Demography, including Migration	48
Servitude and Slavery	48
International and domestic Trade and Relations	48
Industry: Manufacturing and Construction	49
Government, Law and Regulation, Public Finance	49
Development of the Economic History Discipline: Historiography	49
Historical Geography	49
Urban and Regional History	50
Living Standards, Anthropometric History, Economic Anthropology	52
Agriculture, Natural Resources, and Extractive Industries	52
Military and War	52
Transport and Distribution, Energy and Other Services	52
Labour and Employment History	55

Source: Own compilation.

The age structure of respondents indicated that topics such as ‘Household, Family and Consumer History’ and ‘Education and Human Resource Development’ are quite popular among younger respondents.³⁴ Topics like ‘Labor and Employment

³⁴ “Economy-wide Country Studies and Comparative History” seems like a relatively broad category into which topics fit that do not fit elsewhere.

History' have a long tradition in our discipline and are also popular among the slightly more senior colleagues. In addition, the study of agriculture, natural resources and mining (which also includes some fields of environmental history), and anthropometric history, which are sometimes perceived as 'young' fields, now have a certain history within our discipline.

Appendix B to Chapter 6

B-1. Correlation matrix: Time to tenure

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Time to tenure	1.00											
(2) Intl. Mobility (1 month)	-0.03	1.00										
(3) Intl. Mobility (4 months)	-0.01	0.66*	1.00									
(4) Intl. Mobility (6 months)	0.01	0.59*	0.87*	1.00								
(5) Intl. Mobility (one year)	-0.01	0.43*	0.67*	0.76*	1.00							
(6) National Mobility	0.13*	0.10	-0.01	0.01	-0.04	1.00						
(7) Publication productivity	-0.24*	0.05	0.06	0.06	0.11*	0.01	1.00					
(8) Male	0.17*	0.02	0.06	0.06	0.14*	0.05	0.07	1.00				
(9) Children	0.17*	-0.07	-0.00	0.03	0.07	-0.05	-0.01	0.04	1.00			
(10) Business	-0.23*	-0.21*	-0.09	-0.10	-0.14*	0.11*	-0.05	-0.01	-0.00	1.00		
(11) Year of birth	-0.55*	0.23*	0.12*	0.06	0.01	0.09	0.13*	-0.25*	0.25*	0.03	1.00	
(12) Reputation PhD	0.01	-0.03	-0.02	-0.00	-0.10	0.07	0.05	0.07	0.02	-0.11*	-0.02	1.00
(13) Mentoring	-0.13*	0.17*	0.02	0.08	0.10	0.04	0.03	-0.09	-0.01	-0.05	0.10	0.06

Notes: n = 249; *** p<0.01, ** p<0.05, * p<0.10.

Source: Own compilation.

B-2. Correlation matrix: Reputation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Reputation												
(2) Intl. Mobility (1month)	0.13											
(3) Intl. Mobility (4 months)	0.20*	0.79*										
(4) Intl. Mobility (6 months)	0.21*	0.71*	0.90*									
(5) Intl. Mobility (1 year)	0.23*	0.59*	0.74*	0.82*								
(6) National Mobility	-0.11	0.04	-0.08	-0.11	-0.12							
(7) Publication productivity	0.15*	0.04	0.03	0.01	0.08	-0.06						
(8) Male	0.04	0.05	0.06	0.03	0.08	0.04	0.14*					
(9) Children	-0.08	0.01	0.08	0.08	0.06	-0.00	0.05	-0.04				
(10) Business	-0.12	-0.24*	-0.14*	-0.13*	-0.21*	-0.07	-0.03	-0.20*	-0.02			
(11) Year of birth	0.13	0.14*	0.10	0.08	0.09	0.17*	0.06	-0.20*	-0.17*	0.12		
(12) Reputation PhD	0.13	-0.01	-0.05	-0.05	-0.09	0.10	-0.04	0.20*	-0.02	-0.06	-0.07	
(13) Mentoring	-0.06	0.15*	-0.01	0.04	0.06	0.05	0.02	0.03	0.05	-0.04	-0.05	0.04

Notes: n = 164; *** p<0.01, **p<0.05, * p<0.10.

Source: Own compilation.

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