ERASMUS MUNDUS MASTER'S IN PUBLIC POLICY (MAPP)

CENTRAL EUROPEAN UNIVERSITY (CEU)
INSTITUT BARCELONA D'ESTUDIS INTERNACIONALS (IBEI)

Breaking the Glass Ceiling

Labour Market Policies for Generation Praktikum

Dissertation submitted by Nicholas Wallace
In partial fulfillment of the requirements for the degree of
Master's in Public Policy

Supervisors:
Dr. Nikolai Sitter (CEU)
Dr. Yannis Karagiannis (IBEI)

Submitted 1st July 2014

I hereby certify that this dissertation contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I hereby grant to CEU and IBEI the non-exclusive license to archive and make accessible my dissertation in whole or in part in all forms of media, now or hereafter known. I retain all ownership rights to the copyright of the dissertation. I also retain the right to use in future works (such as articles or books) all or part of this dissertation.

Name: Nicholas Richard Wallace

Signature: [Submitted electronically]

Barcelona, 1st July 2014

Breaking the Glass Ceiling: Labour Market Policies for Generation Praktikum

Nick Wallace

Erasmus Mundus Master's in Public Policy (MAPP) Programme

Central European University – Institut Barcelona d'Estudis Internacionals

Abstract

This thesis investigates whether internships help labour markets adjust to skill shortages. Chapter one identifies the social costs of *Generation Prakikum* and highlights evidence that casts doubt on its alleged benefits, and argues that the positive contribution of internships must be proven in order to justify their role. Chapter two discusses changes in developed labour markets since the 1970s and contemporary issues of skill-mismatching. Two theories of internships are introduced: one where internships play a role in helping labour markets to adjust to these structural changes, and one where the signal sent by the fact a candidate has completed an internship is independent of any skills the candidate may or may not have acquired. Chapter three examines Germany's labour market, comparing data on skill shortages and surpluses with the prevalence of internships in different sectors. After controlling for sector size, internships are found to be at least as prevalent in skill-surplus sectors as in skill-shortage sectors, casting doubt over the assumption that internships help markets adjust to skill shortages. Chapter four discusses these findings in the context of current trends in policy, and argues that effectively implemented minimum wage legislation would not only reduce the opportunity cost of internships, but manipulate employer incentives so as to create a smaller, fairer and more productive internship market.

Table of Contents

Introduction

Internships are a thorny topic in the German-speaking countries, where since 2005 there has been widespread debate over rising competitive pressure forcing large numbers of highly-educated young people – *Generation Praktikum* - into unprofitable work, in some cases without any real experiential value (Stolz, 2005; Scholz, 2008; Briedis & Minks, 2007; Schopf & Ringler, 2007; Nordhoff, 2010; SRF, 2013; Tages-Anzeiger, 2011). The issue has also received some attention in the UK (Malik and Sayal, 2011), where there have been calls for regulation from trade unions and employers' associations (EurActiv, 2012), from politicians of all major parties (Malik, 2012), and from think tanks (Lawton and Potter, 2013), and the issue has sparked a boycott of the advertising of unpaid internships by several leading British universities (Selman 2013). The UK debate has even led to an investigation by HM Revenue and Customs of 100 companies for alleged breaches of minimum wage laws (Walker, 2013). In the USA, the growing competitive pressure on young people to undertake unpaid work as a form of professional training has prompted Curiale (2010) to describe internships as "America's New Glass Ceiling", as it is an opportunity cost many cannot afford but struggle to progress without.

Empirical research into internships is somewhat limited, particularly in Europe. Authors such as Schopf & Ringler (2007), Schmidt & Hecht (2011) and Klein & Weiss (2011) have published valuable in-country studies that shed some light on the structural characteristics of *Generation Praktikum*. Similarly, studies in the United States by authors such as Moghaddam (2011) have investigated the effect of internships on interns' future job prospects. However, while journalistic and academic discussion has focused on fair access to internships, little attention has been paid to their role in labour markets. It has yet to be

shown that internships contribute to the market's skill supply. Given the costs of internships, it is therefore imperative to fill this gap in the literature and investigate whether or not this is the case. This thesis seeks to contribute towards the formulation of new policies that can address the "skills gap" affecting developed countries, that improve the efficiency of job-matching mechanisms in the labour market, and which go some way to addressing the social justice concerns about internships raised by commentators such as Stolz (2005) and Lawton & Potter (2013).

The first chapter reviews the literature and data concerning internships in order to demonstrate why it is the case that in order for policies that encourage internships to be justified, it must be proven that internships play a positive role in responding to the demand for specialised skills. Chapter two explores the economic context in which internships emerged and constructs two theories to explain their role, one based on market adjustment and one based on competitive signalling. Chapter three uses skill supply and demand data from Germany in order to investigate which of these interpretations is more accurate. Chapter four discusses these findings in the context of current policy trends in order to draw conclusions about what policy measures would address the issues surrounding *Generation Praktikum.*

Chapter 1 - The Glass Ceiling:

A review of the literature and evidence on Generation Praktikum

Generation Praktikum (Generation Internship) is a term used in the German-speaking countries to describe the importance of internships for students and recent graduates in modern labour markets, who accept – and even compete for – frequently-unpaid internship placements, incurring considerable opportunity costs in the hope getting a foothold on the career ladder (Schopf & Ringler, 2007; Briedis & Minks, 2007). The term was coined by author Matthias Stolz in a March 2005 article entitled "Generation Praktikum" in the German weekly newspaper, *Die Zeit.* Stolz's article and the buzz-phrase it created provided the necessary language for a heated public debate throughout Germany, Austria and Switzerland (Stolz, 2005; Briedis & Minks, 2007; Schopf & Ringler, 2007; Nordhoff, 2010; SRF, 2013; Tages-Anzeiger, 2011). *Generation Praktikum* refers to trend for young graduates to spend lengthy periods of time trapped in "internship careers", moving from one unprofitable internship placement to another and struggling to establish a foothold in the labour market (Briedis & Minks, 2007:1). The debate is also concerned with employers who use internships as a way of filling-in for staff shortages (Briedis & Minks 2007:1) or who create full-time internship posts that are continually filled by one successive intern after another as a means of cutting costs and increasing flexibility (Scholz, 2008:43).

The principal justification for internships is that they provide individuals with "a vehicle for developing both tacit and job-related skills" (Burke & Carlton, 2013) and provide employers

with an opportunity to screen candidates for their potential value (Klein & Weiss, 2011:969). If internships are conducive to job-matching, then the primary policy concern is managing associated costs for the sake of protecting social mobility. For example, Lawton and Potter (2013:7-8) argue that unpaid internships provide those of greater financial means a competitive advantage over others, as they are better able to support themselves through lengthy periods without income. This threatens to create a crowding-out effect, where employers know they can find interns willing to work for free, excluding those who can't afford the opportunity cost and making it harder for them to develop their skills. However, the argument that internships should be made more accessible rests on the assumption that internships play a valuable role in skill development. If this cannot be proven to be true, then the very practice of promoting internships at all comes into question.

Internships are a significant phenomenon and their labour market effects are worthy of consideration in public policy. As of 2014, interns are believed to make up 1.5% of Germany's workforce (Wagstyl, 2014). In a 2006 study, 55% of German students were found to have undertaken an internship during the twelve months prior to being surveyed. Mandatory internships as part of higher education programmes accounted for 60% of all internships and 74% of those undertaken by interns that were enrolled in higher education institutions at the time of the internship (Krawietz et al, 2006; cited in Schopf & Ringler, 2007:8). In 2003, 41% of German graduates surveyed claimed to have completed an internship since leaving higher education, compared to 25% in 2000 (Grühn & Hecht, 2006:13; cited in Schopf & Ringler, 2007:9).

In a survey of Austrian graduates by Schopf & Ringler (2007), more than two-thirds of interns had completed more than one internship, almost half had completed more than two

and just over a quarter had completed more than three. The proportion of an individual's internship placements that were unpaid was higher for those who undertook greater numbers of internships. This could suggest that some would-be interns chose to "hold-out" for a paid internship, or, more alarmingly, it could suggest that multiple internship placements may be associated with decreasing marginal returns, consistent with the "internship careers" issue referred to by Briedis & Minks (2007:1) and the argument made by Scholz (2008:43) that some internships can diminish interns' perceived value in the labour market, acting as a "career-killer". About a third of interns were unpaid; around half received no more than €300 per month and less than one quarter received €700 or more per month[1]. Of those interns who were unpaid, 80% relied on financial support from their parents. Interns' motives were varied, with graduates showing greater concern for finding a job, while those still studying tended to give primacy to personal interest and educational value. For a significant proportion of enrolled students, particularly those in *Fachhochschulen*[2], internships were mandatory.

Schmidt & Hecht (2011) made similar findings to Schopf and Ringler (2007). They surveyed 674 graduates from four German universities[3], of whom 417 reported having completed internships. The authors then distinguished those who had completed internships as part of their studies or as traineeships, job shadowing placements or volunteering from those who had completed what the authors call "real" or "genuine" internships after leaving university, who were the focus of the study. This second group consisted of 230 graduates that had

[1] Austria has no statutory minimum wage against which these figures can be compared. The average monthly income in Austria was €2,342 in 2006, the year prior to Schopf and Ringler's study being published (Eurostat, 2013: *earn_ses06_19*). In 2007, Austria's collective bargaining partners signed an agreement "in principle" to establish a wage floor of €1000 per month (Adam, 2007).

[2] The common term for *Hochschulen für angewandte Wissenschaften*, or Universities of Applied Science, which tend to focus on teaching specific vocational skill sets.

[3] The University of Hamburg, the University of Rostock, The Free University of Berlin and the University of Cologne

undertaken internships without any kind of formal academic or professional obligation and after the completion of their academic requirements.

Of those respondents who had completed internships before, during or after their studies, the average intern completed four or five internships, slightly more than respondents to the Schopf & Ringler (2007) study, although mandatory internships accounted for the majority of these. Like Schopf & Ringler, (2007), Schmidt & Hecht (2011) also found rates of pay to be extremely low: 40% of recorded internships were unpaid placements and the average wage for paid internships was €3.77 per hour[4]. Again, interns were found to be heavily dependent on financial support from their families.

Beyond financial considerations, Lawton & Potter (2013:6-8) raise an additional concern when they cite reports of internships that involve only "the most basic and generic office tasks" such as photocopying, tea-making and booking appointments; offering little opportunity to "learn by doing". Such internships fail to equip graduates with the competitive skills they seek and exacerbate the opportunity cost. This carries the additional risk of not only crowding-out those who cannot afford to become interns, but also of crowding-out low-skilled workers that would normally find employment carrying out such tasks, resulting in both higher unemployment among low-skilled workers and brain waste or underemployment among high-skilled workers.

[4] Like Austria, Germany also does not have a statutory national minimum wage. Sectoral minimum wages are negotiated by the collective bargaining partners, with certain key sectors being negotiated at federal level and others at state level. As of 2012, the lowest wage schedule in the *Mindestarbeitsbedingungengesetz* (Minimum Working Conditions Act), a federal law which determines legally-binding minimum wages for specific sectors, was for temporary workers: €7.89 per hour in western states and approximately one euro per hour less in the states of the former German Democratic Republic (Göbbels, 2012:2). Of the universities included in the Schmidt & Hecht (2011) study, two are in western states (Hamburg and Cologne), one is in the former DDR (Rostock) and the Free University of Berlin is in the former enclave of West Berlin. At the time when Schmidt & Hecht's data was collected in late 2010, the average hourly income in Germany was €16.95 per hour (Eurostat, 2014: *earn_ses10_12*).

These concerns are reflected in the findings of Schmidt & Hecht (2011), who organised "real" post-education internships into six categories according to their perceived value to the intern. Types I-III were deemed "good". Type I required that interns were "adequately" paid and that their activities were properly structured to ensure they gained experience and skills relevant to their chosen career paths. Type II required a similar degree of structure and emphasis on learning, but did not require the intern to be paid. Type III internships lacked the structure and guidance of Types I and II, but nevertheless provided students with adequate opportunities to develop relevant skills through worthwhile tasks and through interactions with employees. Type IV was deemed "mediocre", consisting of internships where the focus was on the intern providing a service to the employer without a significant degree of formal or informal guidance, where interns were not necessarily able to develop specific new skills, but where some considerations of the interns' long-term interests were made and interns were able to learn more about the profession in question. Types V and VI were deemed "bad". Type V consisted of internships that did not offer explicit learning opportunities and where interns' interests were taken into account only conditionally, but interns in type V internships were nevertheless able to report some vaguely positive experiences, such as "I met nice people". Type VI internships consisted of the most blatantly exploitative placements, where interns were carrying out full-time jobs unpaid, without any experiential value, and where interns were not able to report any positive aspects other than the ability to avoid gaps in their employment histories on their résumés. Using these criteria, Schmidt & Hecht (2011) found that 55% of reported internship placements could be considered "good", 24% could be considered "mediocre" and 21% could be considered "bad".

Schopf & Ringler (2007) found internships to be most prevalent in industries where "atypical" employment was common, such as the media, arts, and non-profit organisations. Internships in these industries were also more likely to be unpaid than in other sectors. The contractual terms and conditions of internships were frequently found to be vague and unclear; only a quarter of interns were formally employed as part of their last internship. Those whose internships had involved formal contracts were more likely to be gainfully employed and more likely to be satisfied with their jobs at the time of the survey than the greater number whose internships lacked legal contracts. Graduates in particular felt their work performance was "fully valuable" to the employer, and graduates were the group that complained the most of feeling exploited (Schopf & Ringler, 2007:4-5, 17, 19, 23).

Internships appear to be associated with a high degree of precariousness and contractual ambiguity, and the high proportion of poor quality internships identified by Schmidt & Hecht (2011) and graduate frustration identified by Schopf & Ringler (2007) is alarming. The better labour market outcomes for those whose internships involved contracts also suggest that contractual ambiguity and precariousness may be related to lower experiential value. After all, rational actors would presumably be unlikely to agree to incur the opportunity cost of an unpaid or low-paid internship if their contract told them in advance that they would be merely making tea and coffee and photocopying documents.

Klein & Weiss (2011) are sceptical about the claim that internships improve individuals' labour market outcomes, arguing that voluntary internships may exaggerate their effectiveness because the kinds of individuals who undertake them may already have the kinds of qualities and personality traits that employers seek in the ideal job candidate. In an attempt to control for this, they conduct a study of mandatory internships. The authors find

no correlation between the completion of mandatory internships and better outcomes for individuals in the labour market. The authors suggest that their data may differ from studies of voluntary internships because students may lack motivation when compelled to undertake internships, and as a result will not perform well and consequently will learn fewer occupation-specific skills. They also suggest that internships may serve to develop the skills of only particular types of students, and therefore mandatory internships for all may undermine the aggregate success rate. Similarly, even if internships never confer particular skills, voluntary internships may help candidates to "signal" their initiative to employers in a way that mandatory internships do not (the question of signalling will be dealt with in Chapter 3). These findings, like the methodological approach of Schmidt & Hecht (2011), draw an important distinction between mandatory and voluntary internships. The apparent ineffectiveness of mandatory internships (which would fall outside of Schmidt & Hecht's definition of "real" internships), and the possibility that positive outcomes from voluntary internships may be the result of signalling and selection bias, when combined with the findings of Schmidt & Hecht about the large proportion of voluntary internships that do not confer any genuine skills, pose a serious challenge to the claim that internships, whether mandatory or voluntary, play a useful role in bringing graduates into a tier of the labour market appropriate to their level of education.

Moghaddam (2011:294-299) conducted a study of students individual personality traits in relation to their perceptions of internships before and after having completed them. Perceptions were found to be generally positive, but these perceptions were far stronger among those who were intending to undertake internships than those who already had. Students deemed to be "high achieving" and "open to experience" generally had the most

optimistic view of internships prior to taking them, while "risk-takers" were generally much more pessimistic about internships. However, there were no significant correlations between any particular personality traits and positive or negative responses among those who had undertaken internships. When the findings of Klein & Weiss (2011) are contrasted with those of Moghaddam (2011) we see that while individual characteristics appear to play a role in how interns approach their placements, such characteristics are unlikely to play a significant role in determining whether or not the placement will add value to an intern's career portfolio. Internships may be correlated with positive subsequent labour market outcomes for individuals, but the causal link between these two elements is tenuous.

The data presented in this chapter suggests that internships certainly have the potential to act as a market-based model of professional training and to confer valuable experience and high-demand, occupation-specific skills to students and graduates, and to lubricate the efficient allocation of candidates to jobs in the market. However, the data also shows that there is a wide degree of variation in the extent to which internships' potential to facilitate skill acquisition is realised and a disturbing number of unobserved variables that determine whether any given internship is valuable or exploitative. This leaves unanswered the question as to whether or not internships, on aggregate, help or hinder job-matching in the labour market.

Furthermore, the competitive pressure created by a growing number of graduates willing to undertake unpaid internships has important implications for both market efficiency and social justice: the "employment" of highly-qualified unpaid interns in low-skilled placements threatens to displace adequately qualified low-skilled workers from their segment of the labour market, which simultaneously creates problems of unemployment and brain waste,

both of which undermine the efficiency of markets and the competitiveness of economies. More generally, inters' presence in the market threatens to crowd-out graduates from low-income families. These issues are what make the job-matching question matter: without them, internships would, at the very worst, be a harmless form of signalling. However, with them, internships – both voluntary and mandatory - carry significant individual and social costs, meaning proof of internships' beneficence is necessary in order to justify policies that allow or encourage them. The following chapter develops two theoretical explanations of the role of internships in markets.

Chapter 2 - Between interns and cyclists: The skills mismatch and labour market context of Gernation Praktikum

The Skills Gap

During the first few years of this century scholars and policy-makers were already expressing concern over rising unemployment and underemployment among university graduates (Nabi, 2003:371). Tomlinson (2012) argues that the growing problem of job mismatching among graduates is the result of a somewhat toxic cocktail of supply and demand: a demand shift in the labour market away from generic disciplines and towards more specialised disciplines, coinciding with an increase in the number of graduates from generic disciplines. Tomlinson (2012:409-11) argues that: "HE [higher education] has been traditionally viewed as providing a positive platform from which graduates could integrate successfully into economic life" and that often, graduates "have undertaken employment pathways that are only tangential to what they have studied". However, the expansion of higher education, the move towards more flexible labour markets, the contraction of management forms of employment where graduates traditionally found jobs, and intensified global competition, have led to a decline of the "established graduate career trajectory", disrupting "the traditional link between HE, graduate credentials and occupational rewards". In other words, demand for graduates from "tangential" academic disciplines has declined, while the supply of such graduates has increased. Tomlinson (2012:421) argues that many graduates respond to this heightened competitive pressure by "turning to voluntary work, internship schemes and international travel in order to enhance their employability narratives and potentially convert them into labour market advantage".

The problem is severe enough to have attracted the attention of the European Commission, which has commented on the contribution of skills mismatching to unemployment and the underemployment of higher-educated people in jobs that are "not commensurate with their skills and competences" (European Commission, 2013:3). The Commission, like Tomlinson, also identifies declining demand for graduates from broad, generic disciplines and increasing demand for "occupation-specific" skills, with those graduating from a "generally oriented programme" being less likely to find a good match for their first job than those graduating from Vocational Education and Training (VET) schemes. On the other hand, the Commission points out that "generic" degrees can provide graduates with the "transferrable skills" that serve as "stepping stones" towards better-matched and higher-skilled jobs in the long term, in comparison to their VET-peers (European Commission, 2013:55).

Job-mismatching may be a significant problem among graduates, but it would be a mistake to infer from this that higher education in any way exacerbates mismatching. On the contrary, an ad-hoc study of the issue by the Labour Force Survey in 2000 found that levels of job mismatching, though alarmingly high across the board, were lower for those with higher education than for those without. Furthermore, the most prevalent form of mismatching was not by level of attainment, but by discipline – as high as 68% in Italy (Eurostat, 2013 [2]:edat_lfso_00t5).

More recently, a 2013 Eurostat document summarising mismatching data for the EU27 estimates that in 2010, the most prevalent form of job-mismatching was skill-mismatching, affecting 44% of employees. Education-mismatching was lower at 37%, while 17% of employees exhibited both skill- and education-mismatching. Over-skilled employees (31%) greatly outnumbered under-skilled employees (13%). This was true despite the Beveridge

Curve for the EU27 showing that from around 2010 onwards, the Labour Shortage Index (LSI) and the unemployment rate rose *at the same time*. Meanwhile, over-qualified workers (20%) were found to be only slightly more prevalent than under-qualified workers (17%), and in the averaged data for 2001-2011, under-qualification (21%) was found to be more prevalent than over-qualification (15%), which reflects the LFS findings from 2000 (Eurostat, 2013 [3]:1, 9, 10).

This data provides the necessary evidence to illustrate the arguments of Tomlinson and the Commission in detail: rising unemployment and under-employment following the crisis can only be adequately explained by the post-2008 demand slump until around 2010. From then on, the rising labour shortage index and unemployment rate illustrate growth in demand, but for particular types of specialised skill-sets that the market is not able to supply and which are not replaceable with the more generalised skill-sets or "transferrable" skills that are prevalent. In short, job-mismatching in Europe is more about an inefficient allocation of particular types of skills than it is about "too much" or "too little" education.

The effects of the 2008 crisis have served to bring into focus the structural changes in developed economies that began several decades ago in the 1970s, which are the source of this shift in demand towards more specialised forms of labour. Faced with unemployment resulting from the destruction of many forms of low-skilled work by technological progress and haunted by the spectre of the predicted rise of cheap manufacturing in developing countries that were setting out on the path towards industrialisation, developed countries opted to shift their economies towards forms of economic output based on highly-skilled and often highly-educated labour in order to remain competitive and to keep their populations productively employed (Crouch, 1997; 2008). Crouch (1997) demonstrates that

this shift carries with it a range of opportunities and pitfalls. In principle, this is a policy that promised to allow developed economies to continue growing without the risk of their economic mainstays being made redundant by machines or undercut by cheap factory labour abroad. It offered developed countries a glimmer of hope of returning to a state of full employment after the dramatic shifts in the world economy during the early-latter half of the twentieth century. The price of this approach, however, is that those who are not able to acquire the level of specialisation that the market demands of them are frozen out of the labour market. This creates pressure on governments to address long-term unemployment, which Crouch argues has resulted in the widespread flexibilisation of European and North American labour markets to reduce hiring and firing costs, in turn resulting in less secure forms of employment. This reduces the incentives for employers to make long-term investments in inexperienced employees, limiting the scope for individuals to develop specialised skills in the diversity of the free market and making the policy-driven education sector the primary arena for honing occupation-specific skills. This reduces the efficiency of the job-matching process, as the shift toward high-skilled specialised labour greatly diversifies the demand for different types of skills with a level of nuance that the education sector will struggle to respond to, as – unlike on-the-job skill acquisition within the labour market – it is dependent on the foresight of policy makers (Crouch, 1997).

What's left is a large group of young and highly educated individuals who can't acquire the skills they need to break out of low-skilled work, either through education or through employment, and employers struggling to find candidates with the particular skills they want. In a situation where the labour market lacks the necessary economic incentives to encourage on-the-job skill acquisition and in an education sector that can never achieve the level of flexibility required to meet demand efficiently, internships offer a potential platform

of professional training that blurs the lines between education and work and offers the possibility for diverse in-market skill acquisition by offering employers a powerful incentive to provide the environment for this to take place: a low-cost mechanism for developing the tailor-made candidates they want, or, at the very least, free labour.

The remainder of this chapter will be dedicated to constructing two alternative theoretical models to explain the role internships may play in this market of mismatches. The "matching" theory rests on the assumptions highlighted in Chapter 1 about the positive contribution of internships, and outlines a role where internships help adjust for the deficiencies in the matching process explained above. The "signalling" theory applies Spence's (1976) theory of signalling in job markets of asymmetric information to the present discussion of internships. It argues that internships are a form of signalling used by job-seekers in a highly competitive market, and that although internships are likely the result of the competitive pressure created by the skills gap and the breakdown in traditional matching processes, they have very little to do with market adjustment with *per se*.

The Matching Theory

For their part, would-be interns must weigh up the opportunity cost of working unpaid in the hope of acquiring marketable skills for better outcomes later against the option of working for a wage (low though it may be) in a job that won't confer any particular marketable skills in the hope that making repeated roles of the dice in applying for better jobs may one day lead to a lucky break – in either case, the intern's level of self-determination is limited. If the internship is undertaken as part of an academic programme, then a large part of the opportunity cost can be considered "sunk" due to the fact that the intern has already chosen to accept the opportunity cost associated with a degree

programme, of which the internship may have been advertised as a mandatory component in the first place – although an internship may limit the scope for gainful part-time work to subsidise the student's living costs and may require some degree of travel and other associated costs. Fundamentally, one explanation as to why individuals accept this opportunity cost is the hope they will acquire particular skills in order to improve their employability, thus providing a return on their investment later down the line.

As for the employer's incentives, internships provide an opportunity either for low-cost training or, at the very least, free labour. We can of course imagine reasons why some employers may not want either: their demand for particular skills may be satisfied, and the prospect of free labour may not be deemed worth having an inexperienced graduate skulking around the office. Employers that do take on interns can choose from a range of possibilities for the format of the internship based on their needs and their analysis of the potential costs and benefits, but these formats ultimately fall within a spectrum between two poles: training and exploitation. The first carries the opportunity cost of having otherwise-productive staff guiding the intern through a process of skill acquisition in the uncertain hope that the intern will either add sufficient value to make up for this cost during the course of their internship, or will finish the internship as a model prospective employee that could subsequently add greater value. In this approach, the internship represents an opportunity for relatively low-cost training of a prospective employee. The opposite approach is to have the intern carry out basic tasks such as photocopying and coffee making in order to free up time for staff who can be put to more productive use doing other tasks, or even to avoid the cost of hiring support staff to carry out these activities. The first approach requires the employer to make an investment with an element of risk attached,

albeit a lower investment than hiring a trainee. The second more or less eliminates investment risk and represents an easier option, although the potential benefits to the employer are also reduced. Which approach the employer prefers is likely to be influenced by the level of availability of candidates with the level of skill that the employer requires: the greater the skill shortage, the greater the incentive to take a risk by investing in training – or even paying – interns.

In a diverse and fragmented labour market, not *all* employers can be assumed to be facing skill shortages. If it is generally accepted that legitimate placements exist, then in a market with an asymmetric distribution of information, any employer can create an exploitative internship placement and the possibility that would-be interns could distinguish between legitimate and exploitative placements prior to accepting is small. Consequently, the employers' incentives are what matter. We would expect employers facing skill-shortages to be more likely to create genuine internship placements that confer marketable skills and employers enjoying skill-surpluses to be more likely to create exploitative placements that don't.

However, all else being equal, the incentives for the employer facing the skill-shortage are far more powerful compared to those for the other: the need to fill a skills shortfall in order to keep the business productive is far more imperative than the comparatively trivial option of cutting corners. Therefore, we would expect internships to be more prevalent in skill-shortage sectors, with those in skill-surplus sectors – a higher proportion of which would expect to be exploitative – being the inevitable side effects of such a system in a market of asymmetric information. In short, the matching theory predicts that internships help markets to adjust for skill shortages.

The Signalling Theory

The theory of internships as an adjustment mechanism for skills shortages rests on the assumption that, in a highly mismatched market, in order to avoid unemployment or underemployment, market entrants need to acquire particular sets of specialised skills in order to convince employers recruiting for high-skilled jobs to hire them. This is a rational assumption to make, but that does not make it correct: we cannot assume that employers' estimates of job candidates' skill levels are likely to be accurate, nor can we even assume that employers will be completely unwilling to knowingly hire under-skilled workers. If we reject these assumptions, then we can also reject the necessity for internships to constitute a genuine platform for skill development and professional training: whether or not any given internship actually confers any particular skills may be irrelevant if a job candidate who went through an exploitative internship can signal to a future employer that their internship was worthwhile. This means would-be interns have a far greater degree of self-determination than is assumed above, which radically alters the predictions about how internships function. In order to better understand the role that internships could play if the assumptions made above do not hold, we can turn to Michael Spence's theory of signalling.

Michael Spence's (1973 & 1976) labour market signalling theory is built on the idea that in a labour market where employers' knowledge of candidates' true levels of skill and experience is limited, candidates compete by using "signals" – such as education – to convey to the employer that they have the skills and experience the employer is looking for. The employer interprets these signals in light of their experiences with previous employees in order to predict the candidate's likely level of productivity, and offers (or refuses) a position with a given salary and benefits package based on this estimate of potential productivity, as well as

the employer's estimate of the competitive characteristics of the market (the supply of and demand for candidates of this type). This, in turn, affects the signalling decisions of candidates – for example, the decision as to whether or not to invest in a costly university degree – which in turn alters the competitive pressures in the market, the correlations between signals and candidate characteristics, and the estimates and offers made by employers.

In a one-round signalling game, the candidate has nothing to lose from sending a signal that does not honestly correlate to their actual productivity. In subsequent rounds involving the same employer, whether or not the signal was consistent with productivity is likely to influence the employer's future interpretations of other candidates using that signal. In subsequent rounds involving the same candidate, the information provided by former employers about that candidate is a factor, but a limited one, meaning the importance for a given candidate that his or her signals are consistent with their true productivity is somewhat proportional to the frequency with which the candidate enters the labour market (applies for a new job), which is usually fairly low. This means there is very little incentive for jobseekers in the labour market to invest[5] in "signalling reputations" in the way that a more frequent entrant to a different kind of market might (such as a well-known business selling products or services) (Spence, 1973 & 1976). This in turn means that while it is true that if multiple actors in a market use a signal that does not consistently correlate to any added value then the value of that signal will be diminished, the conditions particular to the labour market mean that there is a strong probability that signals will be used in precisely this way. Using education as an example, Spence (1973:366-367) demonstrates that the logical

[5]For example, one investment cost of a good "signalling reputation" would be the opportunity cost of using signals associated with levels of skill and productivity that the candidate does not actually have in order to secure more lucrative employment.

conclusion of this is that in a market of rational, utility-maximising actors who respond to incentives, after multiple rounds of the signalling game, a state of equilibrium will be reached where the initial value of a signal arising from its correlation with heightened productivity will diminish as less-productive actors are motivated to invest in it by increasing competitive pressure, meaning a signal will not reliably convey any information whatsoever about a candidate's level of productivity.

However, Spence (1973) also argues that we must assume that signalling costs (principally time, effort and money) must be negatively correlated to potential capability, otherwise all actors would invest in the signal equally and it could not be used to distinguish between them. This means that more capable candidates are more likely to invest in a particular signal than less capable candidates and employers can take this into account when interpreting that signal. For example, more capable candidates are presumed to be able to acquire a particular level of education with less time and effort than less capable candidates. Furthermore, the tendency for scholarships (which are signals in their own right) to be awarded to high-achievers and for financial support for low-income students to often be conditional on attainment means that more capable individuals may even face lower financial costs. The result of this is that although employers know that education is an unreliable indicator of productivity in itself because they know that with the right amount of time, effort and money, almost anybody can invest in education and that there is an incentive for them to do this, they also know that more capable candidates are more likely to invest in that signal because it comes at a lower cost to them, meaning there is a higher probability that a job candidate with a certain level of education will be of satisfactory capability than one who cannot offer that signal.

If we accept Spence's arguments and apply his theory to internships, we come to some very interesting conclusions. In the first round of the signalling game, the employer cannot assume that a given internship placement taught the candidate relevant skills because the only information he or she has is based on what the candidate tells them, which cannot be relied upon because the candidate is always incentivised to portray the experience as a good one. Unlike with education, the employer has very few sources of information about the experiential value of the internship other than the candidate's unreliable testimony, as internships are not subject to the level of regulation, scrutiny and oversight that the education usually system is. An internship placement with a single intern in a particular workplace does not provide the employer with the same opportunities for comparison as a particular degree programme in a particular university attended by multiple students, some of whom the employer may have previous experience with. Also unlike education, the time and money costs of an internship are likely to be the same independently of capability, and whether or not less effort is required of more capable interns depends on the extent to which the intern engages in challenging tasks. We must assume that if the tasks are as basic as photocopying and making coffee, then the advantage of higher capability will be limited by the problem of decreasing marginal returns, as even the least capable interns are likely to be able to carry out these tasks reasonably efficiently – and the potential employer has no way of knowing whether or not this was the case, as a candidate who endured such an internship would never admit these were the only tasks involved.

Consequently, if we assume that at least *some* (or even a generous proportion) of internships involve genuine skill acquisition arising from genuinely challenging tasks, employers may be able to calculate that a candidate's having completed an internship increases the probability of their being desirably productive, but to a far lesser extent than

other signals such as education or several years' worth of employment experience. Through subsequent rounds, a sufficient supply of highly-productive former interns may increase employers' estimations of internships' value as a signal. However, Spence's model predicts that the competitive pressure this would create would ultimately lead to a state of equilibrium that would diminish the corollary between productivity and internship experience through further rounds in the game.

If the signalling model of internships' role in the market is accurate, specialised skill acquisition is not necessary for an internship to provide a competitive advantage in the labour market. The logical conclusion of signalling theory is that graduates use internships as signals to compete for the relatively scare jobs that they are already matched for, rather than a vehicle for accessing jobs for which they do not currently have (or cannot claim to have) the required skill levels. In other words, rather than being a platform for acquiring in-demand specialised skills, internships may be little more than a form of "life experience" that makes an applicant slightly more interesting in the eyes of a potential employer, but not necessarily more productive. In this sense, doing an internship isn't much different from spending six months or so riding a bicycle around Vietnam – both may marginally increase a person's job prospects, but both are costly and make little contribution to job-matching.

If this is true, then internships are highly unlikely to play any role in helping the market to adjust to skill shortages. Therefore, we would not expect to find internships to be any more prevalent in sectors with skill shortages than in those with skill surpluses. In fact, we would expect to find internships to be more prevalent in sectors with skill surpluses, due to the heightened competitive pressure on jobseekers in markets with surplus labour. Although signalling theory does not negate the possibility that internships could contribute to the

development of necessary skills in some cases, the above findings would suggest that this does not occur to a sufficient extent to justify the social costs of what is, on aggregate, just a very expensive form of signalling. Such an outcome would lead us to conclude that any policies based on the redistribution of the social costs of internships would be wasteful, and that a more sensible approach would be to eliminate the social costs altogether by subjecting internships to minimum wage laws, assuming such laws are already present for other forms of work. If not, then an even more drastic reconsideration of labour market policy may be necessary.

To summarise very briefly: matching theory assumes internships are the result of skills shortages; signalling theory assumes they are the result of skill surpluses. The following chapter compares the available data on internship prevalence in different sectors of the German labour market and compares this to those sectors' skill supply relative to demand.

Chapter 3 – Too Many Cooks?

The distribution of skills and internships in the German labour market

Methodology

Although Schmidt & Hecht (2011) provide more detailed information regarding the quality and fairness of different internship placements, Briedis & Minks (2007) provide a far more detailed breakdown of the sectors of economic activity in which internships were found, albeit without the same level of in-depth analysis of the characteristics of the internships themselves. Briedis & Minks group their findings into 30 sectors of economic activity, while Schmidt & Hecht identify 8 broadly-defined sectors. Therefore, while the Briedis & Minks (2007) study does not help us to understand the costs and benefits of internships to the same extent as that of Schmidt & Hecht (2011), it is more useful in exploring how internships are distributed across sectors of economic activity. Ideally, the data from both surveys would be incorporated using standardised NACE sectors. However, it is the view of this author that the sectors identified by Schmidt & Hecht are too broad to avoid the risk of selection bias when standardising the data, because the data for multiple sectors is likely to be conflated into one, exaggerating its significance. Therefore, only the data from Briedis & Minks (2007) has been used. Additionally, Briedis & Minks' data distinguishes between interns from *Fachhochschulen* - which generally teach vocational skills and usually compel their students to undertake internships - and those from universities, where students are more likely to undertake more "tangential" disciplines and internships are more likely to be voluntary. This distinction allows for useful contrasts to be made in the analysis of the final results.

In order for sector size to be controlled for and to facilitate harmonisation with occupation data, the sectors defined by Briedis & Minks (2007) have been translated into English and then reorganised into standardised NACE sectors. Admittedly, the processes of translation and grouping are each subject to a degree of subjective interpretation. In order to avoid distorting the results by poor grouping, 7[6] of the 30 sectors named by Briedis and Minks (2007) (accounting for 17.5% of recorded internship cases) have been excluded from the set entirely because they could not be confidently or accurately matched or grouped using the 21 NACE classifications identified in Eurostat's data on numbers of employees by economic activity. The remaining 23 fields identified by Briedis & Minks have been sorted into 13 NACE sectors[7]. The groupings used can be found in the appendix.

Measuring (or even defining) skill shortages and surpluses is an extremely difficult and inexact task. Nevertheless, a particularly useful source of indicative information for our purposes is the Migrant Service Centres (2011) network, a project set up by the International Organisation for Migration with the purpose of providing information and support to migrants from the former Yugoslavia and Albania. The network has calculated an estimated distribution of skill shortages and surpluses in Germany's labour market at the end of 2010 by using data from the *Bundesagentur für Arbeit* (Federal Employment Agency), comparing the number of unemployed people with particular types of experience with the number of vacancies available for particular job types (in other words, estimated skill supply divided by estimated skill demand), coded using the German federal government's (now redundant) KldB-1988 national occupation classification system. The resulting list is

[6] Publishing; trade unions and political parties; research; chemical industry; church and faith services; legal, economic and HR; energy and water sciences, mining.

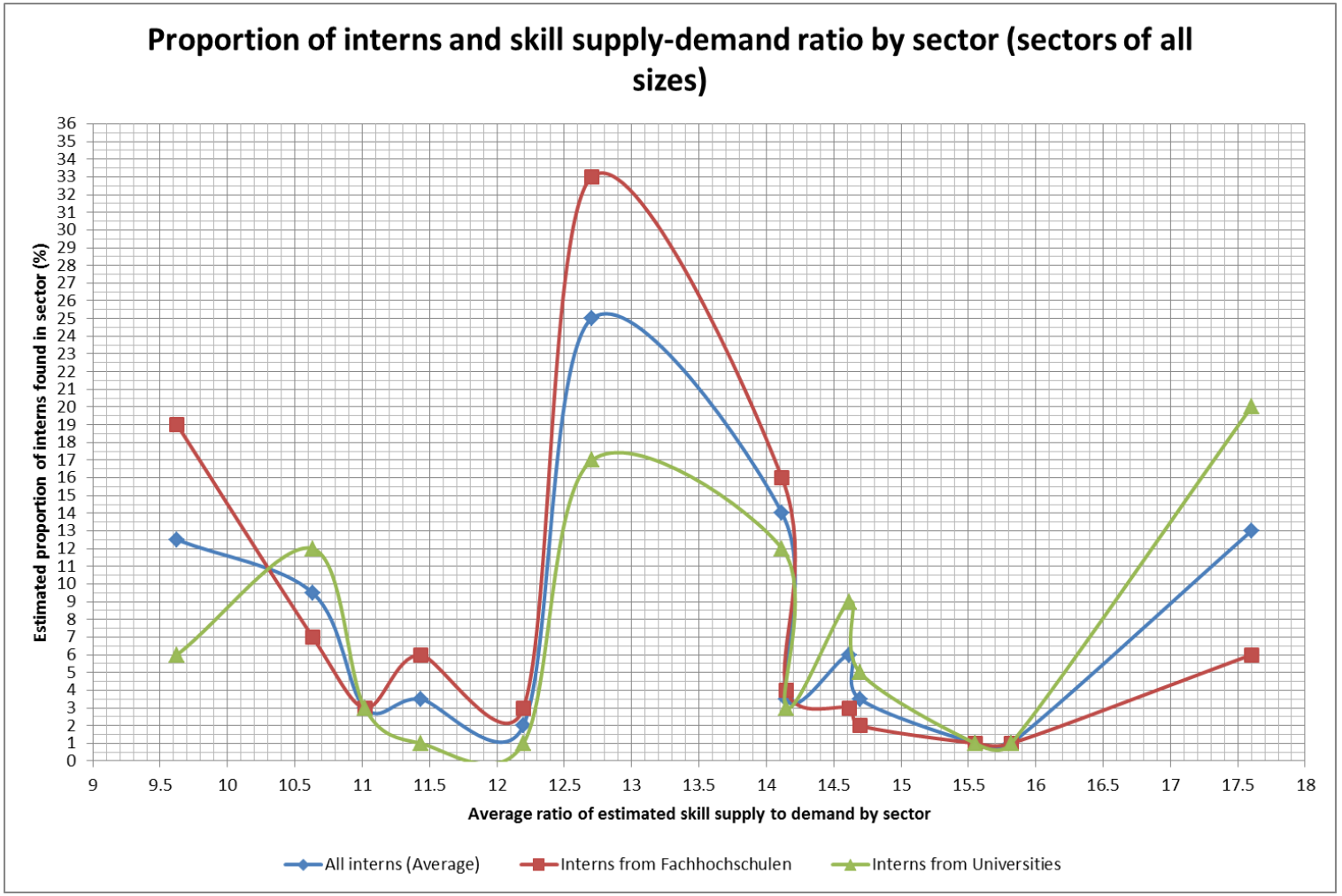
[7] Agriculture, forestry and fishing; arts, education and recreation; construction; education; financial and insurance services; health and social work activities; information and communication; manufacturing; other service activities; professional, scientific and technical activities; public administration and defence; transportation and storage; wholesale and retail trade, repair of motor vehicles and motorcycles.

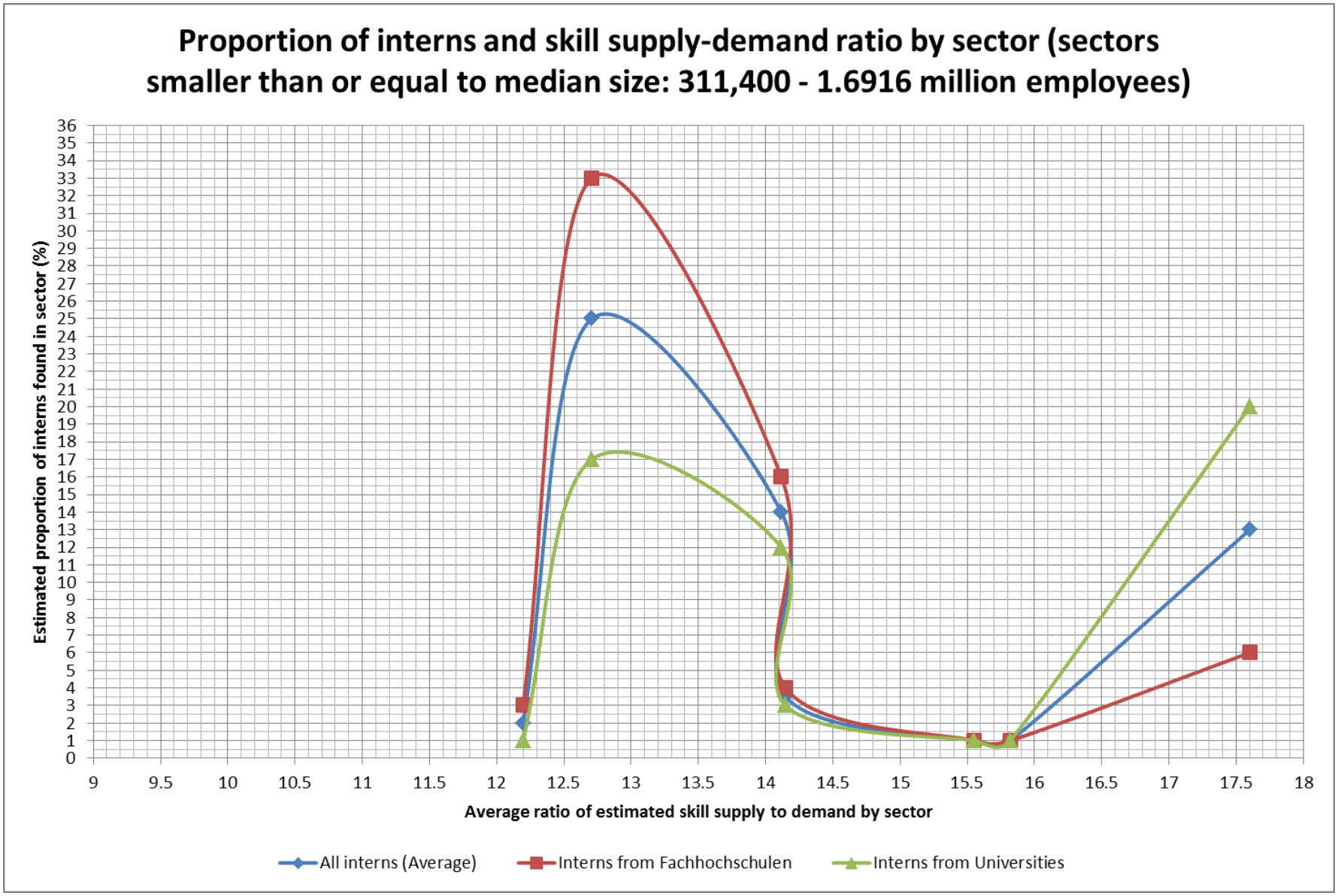
comprised of 1006 job-types when classified using 4-digit coding or 300 job types when classified when using 3-digit coding. I have translated the 300 3-digit job types into English and grouped them into NACE sectors. As with the internship data, the translation and grouping process for the supply-demand data is often a matter of interpretation. The translations and groupings used can be found in the appendix. 25 job-types already had translations offered by Migrant Service Centres; these have been included along with my own interpretations (which are identical in most cases). English job titles have been used where possible, elsewhere interpretive titles have been used to explain the job function. Only one job title -"Straßenwarte" (literally street-watch) - could not be satisfactorily interpreted, even after consultation with native speakers of German (who were not sure what the job entailed), and has been excluded. Six job-types (miners; oil and natural gas extractors; mineral processors and burners; restaurateurs, hoteliers and restaurant merchants; waiters and stewards; other hospitality staff) fell into the eight NACE sectors that were not matched to internships and have also been excluded. Some job types (such as executive administrators, security staff or caretakers) were likely to be found in several or even all of the sectors used, and have been factored into the data for all relevant sectors in order to avoid exaggerating outcomes for particular sectors.

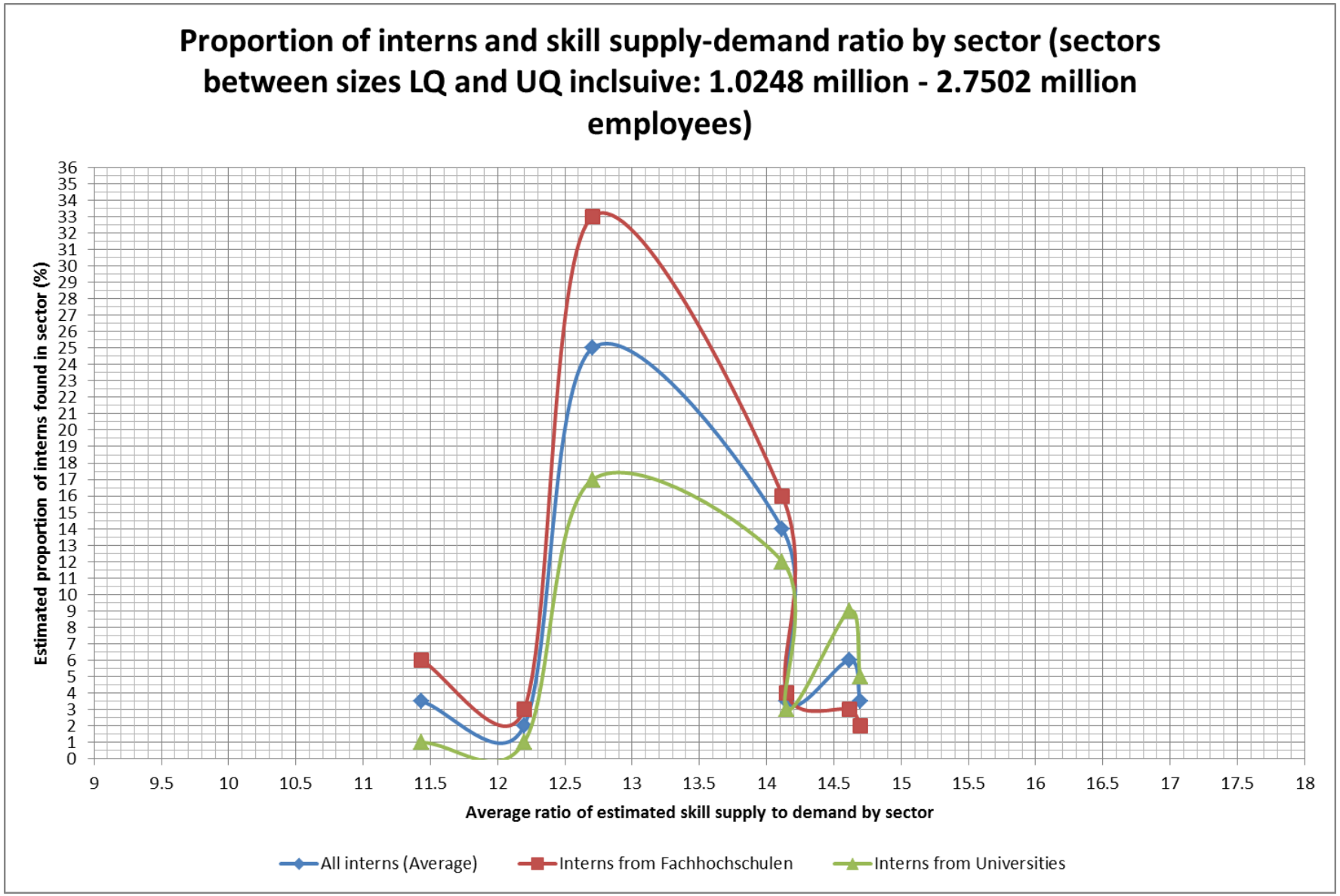
The outcome of this exercise is our independent variable (estimated average ratio of skill supply to skill demand by sector) and our dependent variable (estimated proportion of internships by sector). The dependent variable has been represented in three forms: the averaged proportions for all interns, interns from *Fachhochschulen* and interns from universities. The graphic and tabulated representations of the processed data follow on the following six pages. Raw data can be found in the appendix.

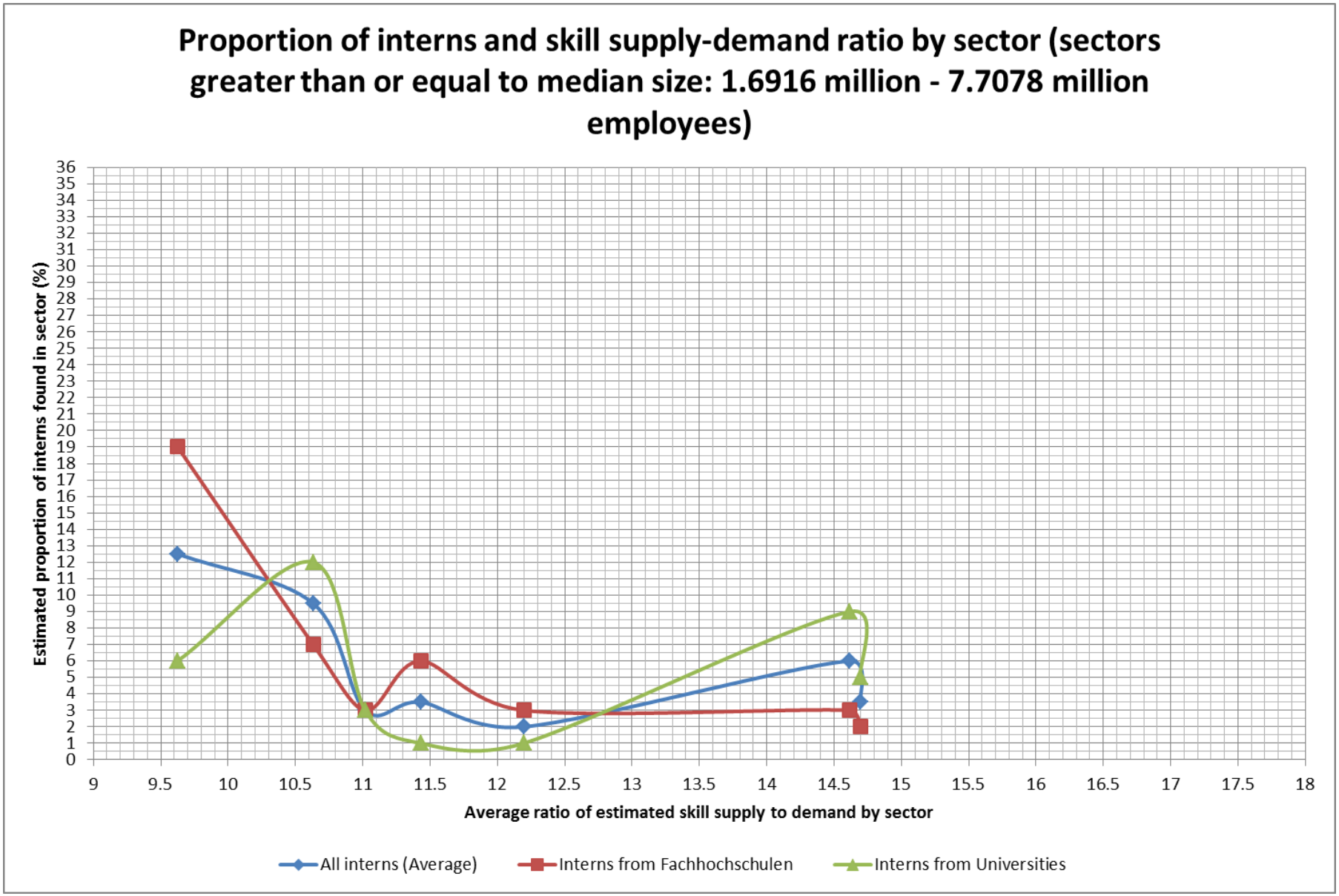
Results

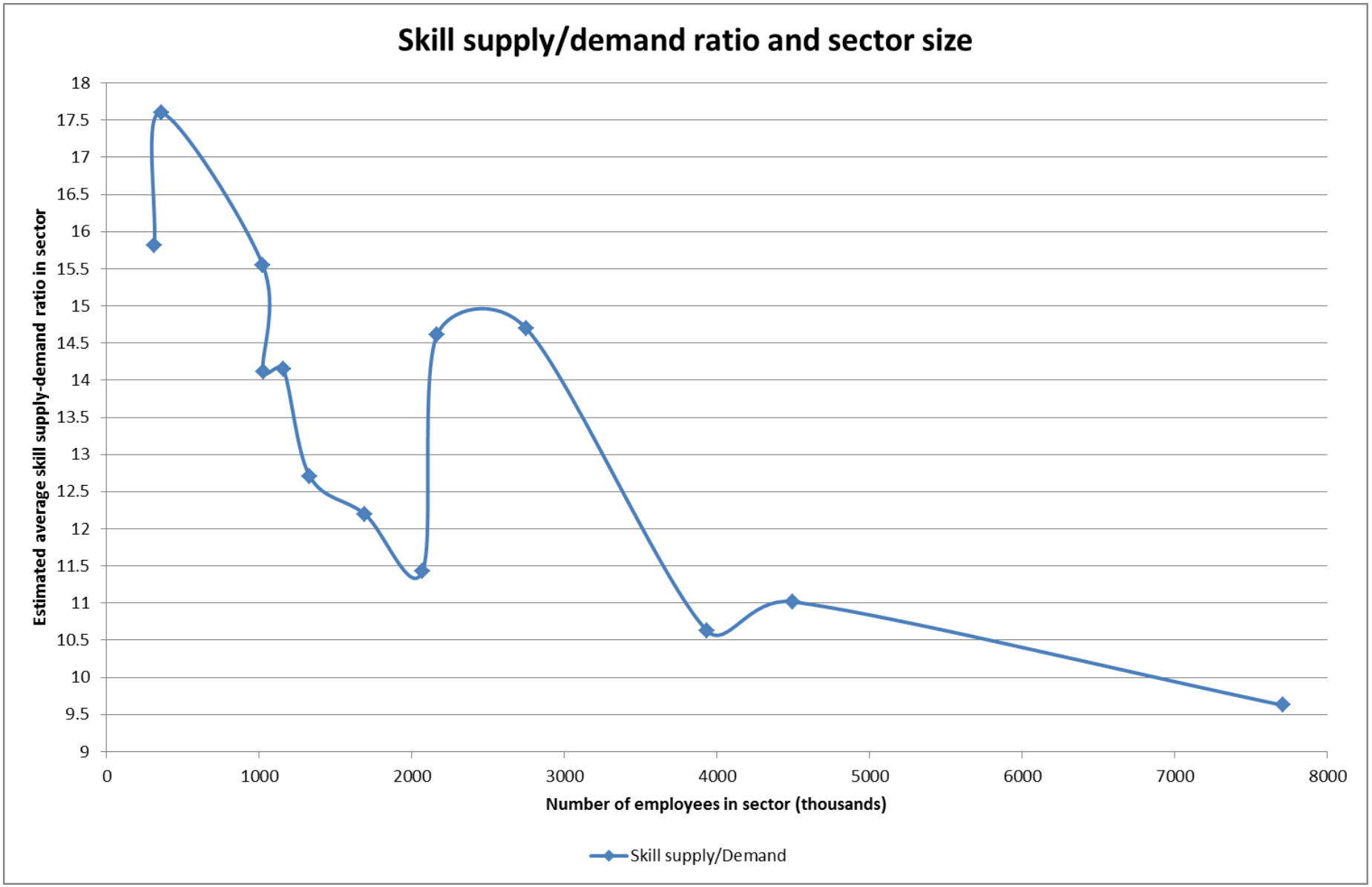
Graphic data




Proportion of interns and skill supply-demand ratio by sector (sectors smaller than or equal to median size: 311,400 - 1.6916 million employees)
Estimated proportion of interns found in sector (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
9
9.5
10
10.5
11
11.5
12
12.5
13
13.5
14
14.5
15
15.5
16
16.5
17
17.5
18
Average ratio of estimated skill supply to demand by sector
All interns (Average)
Interns from Fachhochschulen
Interns from Universities


Proportion of interns and skill supply-demand ratio by sector (sectors between sizes LQ and UQ inclsuive: 1.0248 million - 2.7502 million employees)
Estimated proportion of interns found in sector (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
9
9.5
10
10.5
11
11.5
12
12.5
13
13.5
14
14.5
15
15.5
16
16.5
17
17.5
18
Average ratio of estimated skill supply to demand by sector
All interns (Average)
Interns from Fachhochschulen
Interns from Universities


Proportion of interns and skill supply-demand ratio by sector (sectors greater than or equal to median size: 1.6916 million - 7.7078 million employees)
Estimated proportion of interns found in sector (%)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
9 9.5 10 10.5 11 11.5 12 12.5 13 13.5 14 14.5 15 15.5 16 16.5 17 17.5 18
Average ratio of estimated skill supply to demand by sector
All interns (Average)
Interns from Fachhochschulen
Interns from Universities


Skill supply/demand ratio and sector size
Estimated average skill supply-demand ratio in sector
18
17.5
17
16.5
16
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
0
1000
2000
3000
4000
5000
6000
7000
8000
Number of employees in sector (thousands)
Skill supply/Demand

Tabulated data

NACE Sectors	#Employees in sector	Labour supply/ demand ratio	% of interns in sector: All interns (Average FH and University)	% of interns in sector: Interns from Fachhochschulen	% of interns in sector: Interns from Universities	**Quartiles by size**	**Quartiles by size**
Manufacturing	7,707.80	9.625341558	12.5	19	6	**MEDIAN**	**1,691.60**
Human health and social work activities	3,932.10	10.63161162	9.5	7	12	**LQ**	**1024.8**
Wholesale and retail trade; repair of motor vehicles and motorcycles	4,494.80	11.0179233	3	3	3	**UQ**	**2,750.20**
Construction	2,069.10	11.43183689	3.5	6	1		
Transportation and storage	1,691.60	12.19582589	2	3	1		
Professional, scientific and technical activities	1,330.00	12.70621214	25	33	17		
Other service activities	1,024.80	14.11646354	14	16	12		
Financial and insurance activities	1,156.00	14.14933185	3.5	4	3		
Education	2,164.30	14.61547443	6	3	9		
Public administration and defence; compulsory social security	2,750.20	14.69423825	3.5	2	5		
Information and communication	1,021.60	15.55171596	1	1	1		
Agriculture, forestry and fishing	311.4	15.81771632	1	1	1		
Arts, entertainment and recreation	356.4	17.6003655	13	6	20		

Analysis of results before controlling for sector size

The scatter plot representing the averaged data for all interns shows a huge concentration of internships in the median skill supply range, a result of the large numbers of interns found in the "professional scientific and technical activities" (singularly accounting for 25% of internships)[8] sector and the "other service activities" sector. The data either side of this peak shows a double-U-shaped curve, with the highest concentration of internships occurring around the median and at the extreme ends of the scale.

The data for interns from *Fachhochschulen* shows a generally higher incidence of internships at the skill-shortage and mid-supply end of the spectrum than at the skill surplus end, where the curve flattens. The final "tail" on the skill-surplus end of the curve (showing the relatively high number of internships in the arts sector) is significantly lower for *Fachhochschüler* than for University students. Interns from *Fachhochschulen* were found in large numbers in the manufacturing sector, accounting for the other "tail" on the skill-shortage end, while university students' skill-shortage end "tail" is largely accounted for by the healthcare sector. Across the rest of the skill-shortage end of the X axis, we see that in all sectors other than healthcare (10.63 unemployed per vacancy), internships among university students were less prevalent than among *Fachhochschüler*. At the skill-surplus end, meanwhile, we see a generally higher prevalence of internships among interns from Universities than among those from *Fachhochschulen.* In particular, university students were far more likely to pursue internships in the arts sector. The mid-range peak is far more dramatic among *Fachhochschüler* than among university students.

[8] Great care was taken to ensure this extraordinary concentration was not the result of careless grouping. Only obviously-related sectors were included, sectors from the Briedis and Minks list that showed ambiguity were excluded. This grouping is shown in the Appendix, page 59.

The greater importance of internships at the skill-shortage end for *Fachhochschüler* and at the skill-surplus end for university students is an interesting indicator of the role internships play for different types of interns in the labour market. Before conclusions can be drawn about this, however, it is worth considering how the results are affected by controlling for sector size.

Analysis of results after controlling for sector size

As the number of sectors is relatively small, the most efficient way of controlling for size is to work with overlapping dual-quartile samples. The median sector size was 1.691 million employees, the lower quartile was 1.0248 million employees, the upper quartile was 2.7502 million employees, and the total range of sector sizes was from 311,400 employees to 7.7078 million employees. Therefore, the two data ranges lying below the median and between the lower and upper quartiles both show significantly less variation in sector size (1.3796 million and 1.7252 million respectively) than the data range above the median (6.0168 million). There was also a generally negative correlation between sector size and the ratio of skill supply to demand: larger sectors were more likely to face skill shortages.

If we select a sample of sectors smaller than or equal to the median value we see that the "tail" on the skill-shortage end seen in the complete data disappears, and the small peaks in the upper-mid range of the supply-demand ratio are "flattened". The low number of internships at the extreme skill-shortage end is accounted for solely by the "transportation and storage" sector. For all other sectors in the sample, we see a fairly uniform U-shaped curve in the averaged data, showing a concentration of internships at the skill shortage and surplus ends and a low number of internships in the mid-range. *Fachhochschüler* are more likely to undertake internships at the skill-shortage end of the spectrum than university

students and are more likely to undertake internships in skill-shortage sectors than in skill-surplus sectors. University students are more likely to undertake internships in sectors with skill surpluses than students from *Fachhochschulen* and about as likely to undertake internships in sectors will skill surpluses as in sectors with skill shortages. In the mid-range, the results are similarly low for both cohorts.

If we select sectors falling between the lower and upper quartiles for size, we see some degree of "cropping" on both of the tails seen in the complete data. Here, the high-internship "professional, scientific and technical activities" sector accounts for the lower-mid range of the supply-demand ratio and the "other service activities" sector the upper-mid range, essentially forming the reverse-U shape seen in the mid-range of the complete data, without the same dramatic tail-end peaks. This leaves the other sectors to form the "tails" around this reverse-U shape. On the skill-shortage end, internships by *Fachhochschüler* show an upward turn while those by university students remain comparatively low. On the skill-surplus end, internships by university students show an upward turn while those by *Fachhochschüler* continue to decline from the mid-range peak. Once again, we observe that *Fachhochschüler* are more likely to undertake internships in skill-shortage sectors than university students and university students are more likely to undertake internships in skill-surplus sectors.

The graphic data for sectors greater than or equal to the median size looks very different to the other two samples because the "professional, scientific and technical activities" and "other service activities" sectors, where internships were extremely prevalent, are excluded. In common with the other samples, we also see here that *Fachhochschüler* are more likely to undertake internships in skill-shortage sectors than university students and university

students are more likely to undertake internships in skill-surplus sectors than FH students. However, in contrast to the other sectors, instead of seeing a U or reverse-U shaped curve for interns from *Fachhochschulen*, we see a negative correlation between the ratio of skill supply to demand and the number of internships, with a curve whose decline levels-off and flattens-out for higher skill supply-demand ratios. In the case of university students, we see a U-shaped curve: a higher prevalence of internships at the shortage and surplus ends than in the mid-range.

Discussion of results

All of these samples show that *Fachhochschüler* are more likely to undertake internships in skill-shortage sectors and lower-mid-range sectors than in skill-surplus sectors, suggesting that internships may play an important role in aiding the job-matching process for the disciplines taught in *Fachhochschulen* (such as those relevant to manufacturing and construction). However, this is likely to be a reflection of the relatively high demand in Germany for the vocational skills taught in *Fachhochschulen*, combined with the prevalence of mandatory internships in such institutions. In other words, the results for interns from *Fachhochschulen* alone are not sufficient to reject the null hypothesis that internships don't help markets adjust because they suffer from a degree of selection bias.

This is why the contrast with the results for university students is important. In the results for internships by university students, we do not find sufficient evidence to support matching theory. University students are generally at least as likely to undertake internships in skill-surplus sectors as they are to undertake then in skill-shortage sectors. Furthermore, in the sample of sectors larger than the median size, in the LQ-UQ sample, and in the complete data set, the key skill-shortage end peak of internships by university students was

accounted for by the healthcare sector, where – as in *Fachhochschuhlen* – internships tend to be a compulsory part of educational programmes (such as medicine).

This evidence does not prove that internships help markets adjust to skill shortages. Rather, it suggests that whatever degree of "adjustment" may occur with each internship in skill shortage sectors is counterbalanced by the inefficiency of a greater number of internships being used as competitive signals in skill surplus sectors. The following final chapter explores the current policy environment in which internships operate and revisits the debate over policies to address social justice concerns, arguing that the findings of this chapter render all such policies and arguments suspect, as they cast considerable doubt over the assumption that internships – whether fair or unfair – are desirable for labour markets and societies.

Chapter 4 – Breaking The Glass Ceiling:

Labour Market Policies for Generation Praktikum

In light of these findings, it is frustrating to see the persistence with which many European governments try to encourage internships in the belief doing so will help to improve the efficiency of their labour markets. Estonia, for example, provides up subsidies of up to €2500 per contract for internship programmes in order to encourage would-be interns by socialising the opportunity cost of the internship (OECD, 2012; cited in Galindo, 2013:13). Croatia has also strongly encouraged internships since the onset of the post-2008 economic crisis, and has put forward a similar policy of employment co-financing for young people without work experience (Corbanese, 2011:52; Bejaković and Željko, 2011; both cited in Wallace, 2013:19 & 17). We already know from the information in previous chapters that internships are particularly common in Germany, and the prevalence of mandatory internships in *Fachhochschulen* indicates that public policy is driving this to at least some extent. Meanwhile, in the UK, the government-chartered Panel on Fair Access to the Professions (2009:108-112) argues that the government should incorporate internships into the country's existing student loans system (which allows all students to take out a loan and begin paying it back once their income passes a certain threshold), should offer means-tested micro-loans for poorer students, and should encourage banks to provide internship support loans. The Panel also argues that the government, employers, trade unions, and the third sector should agree on a common code of best practice for internships and to award an "Internship Quality Kitemark" to organisations offering the best placements. All of the above approaches rest on the assumption that internships are good for labour markets.

The case of the UK is particularly interesting on the policy front because, unlike Germany, the UK has relatively strict statutory minimum wage laws. Despite this, internships are frequently advertised as unpaid or offer rates of remuneration that are below the National Minimum Wage. The minimum wage applies to any activity that is deemed to be "work". Importantly, employers do not have the right to define what is or isn't work: in theory, creating a position and calling it an internship does not automatically exclude it from the National Minimum Wage Act. However, there is no legal definition of an internship, meaning there is no systemic way of legally determining *en masse* whether internships constitute work (Lawton and Potter, 2010:8; GOV.UK, 2013).

This means that in practice, unpaid internships that do involve real "work" can evade minimum wage laws until they are investigated by HM Revenue & Customs on a case-by-case basis. In short, it is possible that the vast majority of unpaid internships in the UK are illegal, but until investigations become more common place or until the legislation becomes more explicit, they are likely to remain prevalent. At the end of last year, HMRC promised to target a sample of 200 employers advertising internship placements and to conduct investigations in order to establish whether or not they are operating within the law – and, crucially, paying the minimum wage (Mendelson, 2013). This suggests that regulators are trying to get the message across to both employers and interns that unpaid internships are likely to be illegal if work is involved. That said, there have been attempts at further legislation. Most recently, the "Prohibition of Unpaid Internships" bill, sponsored by Conservative MP Alec Shelbrooke, passed its first reading in Parliament on 13th May 2014. However, as a Private Member's Bill submitted under the "Ten Minute Rule", the time allocated for debate was extremely limited. Like most Private Member's Bills, the bill never

had any serious chance of actually being passed, and failed to complete its passage through Parliament (Parliament.uk, 2014). Nevertheless, if the increase in scrutiny at the regulatory and legislative levels continues, the resultant pressure on employers may yet be enough to create a market for interns in the UK based on financial remuneration and very different to that seen in other countries. However, Mr Shelbrooke's bill again rests on the belief that – were it not for unscrupulous practices by employers – internships would still be desirable. In his speech commending the bill to the House, Mr Shelbrooke argued that while unpaid internships harmed social mobility, internships themselves helped graduates into work, citing data to show that an estimated 30% of hired graduates in 2012 had completed internships (Hansard, 2014). This ignores the question of competitive signalling and the possibility that the assumptions made about internships create new competitive requirements without necessarily making interns themselves more productive workers.

That said, properly enforced minimum wage legislation may deal with more than just the opportunity costs of internships. If a given employer is required to pay interns a statutory minimum wage, then the likelihood of that employer being willing to continue hiring interns is drastically reduced. If the evidence does not suggest that internships help markets to adjust for skill imbalances, there is no reason why this outcome should be feared – it may even be desirable. Employers would still need to choose from the candidates available to them and would not be in a position to insist upon internship experience if they want to fill the position.

Furthermore, If it costs the same to hire an intern as an office assistant and other clerical staff, then the most exploitative internship placements that involve only very basic tasks, like photocopying and coffee-making, are likely to be the first to be axed. Those placements

that confer real specialised skills that employers need are more likely to persist as employers are more likely to make the assessment that the benefits justify the costs. This means that the "signalling" role of internships would be rendered harmless and the "matching" role could become more prevalent.

Depending on the law of the country in question, this policy approach may not even require new legislation: in the case of the UK, existing minimum wage laws are already fully compatible with such a policy. However, in countries where minimum wage laws do not necessarily apply to all people carrying out "work" – for example, those tied to a particular type of employment status – some change in legislation may be required, and this change may not come easily. Even more drastic change may be required in countries without a statutory minimum wage. Statutory minimum wage laws are the dominant model of wage regulation in the EU, but a significant number of European countries, including Germany, Austria, Italy and the Nordic countries, regulate wages through an array of sector-level collective bargaining agreements (Funk and Lesch, 2006:78-82). In the case of Germany, such agreements are reflected in the *Mindestarbeitsbedingungengesetz* (Minimum Working Conditions Act), which dictates minimum wages for certain industry sectors, with different rates for "Western" states (those part of the Federal Republic prior to 1990) and "Eastern" states (those formerly part of the German Democratic Republic), due to the persistent differences in costs of living. The extent of minimum wage agreements varies from state to state: arguably the most comprehensive minimum wage agreement in Germany is to be found in the tiny city-state of Bremen, the *Bremer Landesmindestlohngesetz* (Bremen State Minimum Wage Act), which was introduced in September 2012 and covers employees in all organisations in receipt of public funds. However, unlike the UK's National Minimum Wage

Act, the *Bremer Landesmindestlohngesetz* explicitly *excludes* interns from its auspices (Göbbels, 2012). As interns are not a part of the collective bargaining process, breaking the "glass ceiling" of internships in countries like Germany and others that base minimum wage laws on collective bargaining agreements is a far more complex challenge than it is in countries like the UK.

The two most obvious approaches for such countries would be the introduction of a wage floor for workers (including interns) not covered by collective bargaining agreements, or the introduction of the internship issue into the collective bargaining process itself. The first approach appears the more feasible, as it is not clear precisely which of the collective bargaining partners would have an interest in negotiating on behalf of interns. The German government recently adopted a bill to introduce a statutory wage floor in 2015. Ironically, one of the key complaints about the bill is the possibility that it may apply to internships. As the bill has not yet been passed by the Bundestag, it is possible that further amendments may exclude internships in a similar way to the *Bremer Landesmindestlohngesetz* (Thomas, 2014; Wagstyl, 2014).

In Germany and in all other countries without pre-existing minimum wage laws that cover internships, there is a tremendous political challenge to be met in order to produce labour market policies appropriate to *Generation Praktikum.* This thesis demonstrates that the assumptions about the positive role of internships in markets are suspect. Unfortunately, however, casting reasonable doubt is not likely to be enough acquit markets of their alleged need for internships in the eyes of policy makers. In other words, the assumption that internships are socially beneficial methods of market adjustment needs to be investigated further before it can be debunked in a public way. The primary recommendation of this

thesis is that scholars turn their attention to the empirical study of internship markets in order to further explore the troubling findings laid out here. For policies to change for the better, existing assumptions need to be rigorously scrutinised.

Conclusion

While it is true that this thesis paints a fairly bleak picture of internships, it should be noted that these findings do not diminish their *potential* for skill development, only the assumption that they are currently making a valuable contribution to labour markets' skill supplies. A subtle but noticeable thread running throughout this thesis is the difficulty of separating the question of skill acquisition from the question of pay. It appears that the fact internships are treated as being *in* the labour market but not *of* the labour market (albeit without the spiritual connotations), and therefore not subject to the normal conventions of wage-labour, may be the root of the problem.

Introducing free labour to a market where labour prices are determined by supply and demand distorts incentives and gives rise to inefficient and unproductive practices that diminish the potential contribution internships could make to the market. As long as interns are available for free, it would be astonishing if there weren't employers ready to put them to work as photocopiers, coffee-makers and lunch-couriers. Similarly, it would be very surprising if there weren't employers using internships to replace the low-profit "on the job" acquisition period for low demand, high supply skills that follows the hiring of a low-cost inexperienced young candidate, or even an apprentice.

In other words, the internship market is a clear example of a market failure requiring intervention. It is interesting that critics of the proposed federal minimum wage law in Germany cite internships as a reason the bill shouldn't pass. Introducing a minimum wage for interns offers a way of altering the perverse incentives that distort outcomes and make internships less effective. If interns come at a minimum price, there is little incentive for an employer seeking a tea-maker to dishonestly advertise for an intern when they can honestly

advertise for an tea-maker. On the other hand, employers who are interested in using internships as a way of acquiring staff with particular skills can conduct a cost benefit analysis of hiring an intern. If the set of skills they need are particularly hard to come by, investing in an intern is a viable option as a relatively low-cost way of developing a candidate with the desired skills.

The final question that needs to be asked is whether or not this reduction in the size of the internship market will make it easier or more difficult for graduates competing for jobs in skill-surplus sectors to enter the labour market. If graduates pursuing jobs in skill-shortage sectors can pursue paid internships, what of the rest? While this question itself is interesting and complex enough to justify a whole additional thesis, such a thesis would have to begin by considering the possibility that the reduction in the size of the internship market would in turn reduce the competitive pressure to undertake one.

As it seems unlikely that an intern's experiential signal will be valued higher than somebody already working in that sector, the advantage conferred by an internship exists in relation to *other* inexperienced graduates. In the light of the findings of this thesis, and given the fact employers eventually have to recruit inexperienced candidates as the existing workforce ages, it seems reasonable to assume that internships do not make access to skill-surplus sectors easier on aggregate.

However, this question leads us to an additional strength of the arguments laid out in this thesis: market adjustment. If university graduates find themselves in a market where they are struggling to compete, rather than pursue the false promise of an internship in a skill-surplus sector, they are likely to be drawn to internships in skill-shortage sectors. This is precisely the role for internships that has been sought after.

In conclusion, the assumption that internships help markets adjust for skill shortages cannot be assumed to be true, and given the opportunity cost of internships and the social costs of competitive pressure on graduates to undertake internships; policies geared towards promoting internships are unjustified and reckless and contribute to a glass ceiling in the labour market. However, the proper application of minimum wage legislation to internships will diminish these costs and alter incentives in order to make internships not only fairer, but also a more effective market-level adjustment tool. In countries such as Germany, there are political barriers to achieving this, but if these obstacles can be overcome, paid internships could be made to function as a means for filtering candidates into skill-shortage sectors without fear of perpetuating *Generation Praktikum.*

Bibliography

Adam, Georg (2007) "Social partners agree to minimum wage increase" *European Industrial Relations Observatory On-line* – EIRO/Eurofound. Available at http://www.eurofound.europa.eu/eiro/2007/07/articles/at0707019i.htm Accessed 4th August 2013

Bejaković, Predgrag and Mrnjavac, Željko (2011) "Need for integration of labour market policy and social policy in Croatia" University of Split, Faculty of Economics: *The Ninth International Conference: "Challenges of Europe: Growth and Competitiveness – Reversing the Trends"* http://bib.irb.hr/datoteka/567423.BejakovicMrnjavac.pdf Accessed 27th June 2014

Briedis, Kolja and Minks, Karl-Heinz (2007) *Generation Praktikum – Mythos oder Massenphänomen?* Projektbericht, April 2007, Hannover: Hochschul Informations System GmbH

Burke, Debra D. and Carlton, Robert (2013) "The Pedagogical, Legal, and Ethical Implications of Unpaid Internships" *Journal of Legal Studies Education* Vol. 30, No. 1, pp. 99-130

Corbanese, Valli (2011) *Supporting Strategies to Recover from the Crisis in CROATIA, the former Yugoslav Republic of MACEDONIA and SERBIA: Cross-country report* International Labour Organisation , Working Paper, Decent Work Technical Support Team and Country Office for Central and Eastern Europe

Crouch, Colin (1997) "Skills-based Full Employment: the Latest Philosopher's Stone" *British Journal of Industrial Relations* Vol. 35, No. 3, pp. 367-391

Crouch, Colin (2008) "Changes in European Societies since the 1970s" *Western European Politics* Vol. 31, Nos. 1-2, pp. 14-39

Cruiale, Jessica (2010) "America's New Glass Ceiling: Unpaid Internships, the Fair Labor Standards Act, and the Urgent Need for Change" *Hastings Law Journal*, 61 Hastings LJ 1531

EurActiv (2012) "Petition against unpaid internships gains momentum" *EurActiv* http://www.euractiv.com/future-eu/petition-unpaid-internships-gain-news-505594 Accessed 27th April 2014

European Commission (2013) "Chapter 6: The Skills Mismatch Challenge in Europe" *Commission Staff Working Document: Employment and Social Developments in Europe 2012* Brussels, 17th January 2013. Available at: http://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/swd/2013/0002/COM_SWD(2013)0002(PAR10)_EN.pdf Accessed 5th May 2014.

Eurostat (2013) [1] *Mean monthly earnings by economic activity, collective pay agreements, sex (earn_ses06_19)* Data last updated 6th April 2009. Table Structure last updated 6th February 2013.

Eurostat (2013) [2] *Job mismatches and their labour market effects among school levers in Europe (edat_lfso_00t5)* Data last updated 26th March 2009. Table structure last updated 28th May 2013.

Eurostat (2013) [3] "Skill gaps and labour mobility" *Europe 2020 – Key Areas: Comparing Member States' performances* Available at: http://ec.europa.eu/europe2020/pdf/themes/27_skills_gaps_and_labour_mobility.pdf Accessed 5th May 2014

Eurostat (2014) *Mean hourly earnings by sex, economic activity, collective pay agreements (earn_ses10_12)* Last updated 2nd August 2013.

Fisher, Mark (1991) *The Millionaire's Book of Quotations* London: Thorsons

Funk, Lothar (2006) "Minimum Wage Regulations in Selected European Countries" *Internomics* Vol. 42, Nol. 1, March/April 2006, pp. 78-92

Galindo, Jorge (2013) *The Crisis and Policy Responses in the Labour Market in Central and Eastern Europe, Country Report: Estonia* Report for Central European Labour Studies Institute, Bratislava. Available at: https://cps.ceu.hu/sites/default/files/field_attachment/page/node-37493/country-paper-estonia-updated2013.pdf Accessed 27th June 2014

Göbbels, Friederieke (2012) "Minimum Wages in Germany" *German Labour and Employment News* Jones Day Publications, Third Quarter 2012, Jones Day: Munich

Grühn, Dieter and Hecht, Heidemarie (2006) *„Generation Praktikum? Prekäre Beschäftigungsformen von Hochschulabsolventinnen und -absolventen. Eine Studie des Arbeitsbereichs Absolventenforschung der FU Berlin im Auftrag der DGB-Jugend und der Hans Böckler-Stiftung"* Berlin: DGB

GOV.UK (2014) *Employment Status: Worker* Available at: https://www.gov.uk/employment-status/worker Last updated 25th June 2014. Accessed 27th June 2014.

Hansard (2014) *Prohibition of Unpaid Internships Bill: First Reading Debate, 13th May 2014*. Availalbe at: http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140513/debtext/140513-0002.htm#14051365000002 Accessed 27th June 2014.

Klein, Markus and Weiss, Felix (2011) "Is forcing them worth the effort? Benefits of mandatory internships for graduates from diverse family backgrounds at labour market entry" *Studies in Higher Education* Vol. 36, No. 8

Krawietz, Marian; Müßig-Trapp, Peter and Willige, Janka (2006) *Praktikum im Studium,* HISBUS Blitzbefragung, Kurzbericht No. 13

Lawton, Kayte and Potter, Dom (2013) *Why Interns Need a Fair Wage,* London: Institute for Public Policy Research, Available at http://www.ippr.org/assets/media/images/media/files/publication/2011/05/Why%20interns%20need%20a%20fair%20wage_1788.pdf Accessed 27th April 2014

Malik, Shiv and Syal, Rajeev (2011) "Internships: the scandal of Britain's unpaid army" The Guardian Friday 4th November 2011, 21:02 Greenwich Mean Time. Available at http://www.guardian.co.uk/money/2011/nov/04/internships-scandal-britain-unpaid-army Accessed 27th April 2014

Mendelson, Tom (2013) "HMRC will investigate firms advertising for interns – to ensure they pay minimum wage" *The Independent* 11th November 2013. Available at: http://www.independent.co.uk/student/news/hmrc-will-investigate-firms-advertising-for-interns--to-ensure-they-pay-minimum-wage-8932062.html Accessed 27th June 2014.

Migrant Service Centres (2011) *Project: Migration for Development in the Western Balkans* .xlsx workbook available from http://www.migrantservicecentres.org/occstat/xls/DE_en.xlsx Accessed 16th June 2014.

Moghaddam, J. M. (2011) "Perceived Effectiveness of Business Internships: Student Expectations, Experiences and Personality Traits" *International Journal of Management* Vol. 28, No. 4, Part 2, December 2011, pp. 287-303

Nabi, Ghulan R. (2003) "Graduate employment and underemployment: opportunity for skill use and career experiences amongst recent business graduates" *Education + Training* Vol. 45, No. 7, pp. 371-382

Nordhoff, Dirk (2010) "Fünf Jahre 'Generation Praktikum': Happy Birthday, liebes Uni-Prekariat" *Der Spiegel* 8th April 2010. Available at: http://www.spiegel.de/unispiegel/jobundberuf/fuenf-jahre-generation-praktikum-happy-birthday-liebes-uni-prekariat-a-687078.html Accessed 26th April 2014

OECD (2012) *Economic Surveys Estonia 2012* Paris: OECD Publishing

Parliament.uk (2014) *Prohibition of Unpaid Internships Bill 2013-2014* Available at: http://services.parliament.uk/bills/2013-14/prohibitionofunpaidinternships.html Accessed 27th June 2014.

Selman, Mary (2013) "Top British Universities lead the charge against unpaid internship culture" *The Independent* Friday, 3rd May 2013, http://www.independent.co.uk/student/news/top-british-universities-lead-the-charge-against-unpaid-internship-culture-8603119.html Accessed 27th April 2014

Schmidt, Boris and Hecht, Heidemarie (2011) *Generation Praktikum 2011 - Praktika nach Studienabschluss: Zwischen Fairness und Ausbeutung* Düsseldorf: Hans-Böckler-Stiftung Available at: http://www.boeckler.de/pdf/pm_2011_05_04_praktikumreport_lang.pdf Accessed 27th April 2014

Schopf, Anna and Ringler, Paul (2007) *Arbiet ohne Wert? Strukturmerkmale der PraktikantInnen-Beschäftigung im Hochshulkontext in Österreich*, Vienna: Platform Generation Praktikum

Scholz, Christian (2008) „Generation Praktikum – Wie ist Missbrauch zu vehindern?“ *Orientierungen zur Wirtschafts- und Gesellschaftspolitik* Vol. 116, No. 2, pp. 42-45

Spence, Michael (1973) “Job Market Signalling“ *Quarterly Journal of Economics* Vol. 87, No. 3, pp. 355-374

Spence, Michael (1976) “Competition in Salaries, Credentials, and Signaling Prerequisites for Jobs” *Quarterly Journal of Economics* Vol. 90, No. 1, pp. 51-74

SRF (Schweizer Radio und Fehrnsehen) (2013) „Generation Parktika - <<Erfahrung im Beruf ist alles>>“ *Echo aus dem Hörsaal* 8th October 2013. Available at: http://www.srf.ch/news/schweiz/echo-aus-dem-hoersaal/universitaet/generation-praktika-erfahrung-im-beruf-ist-alles Accessed 26th April 2014

Stolz, Matthias (2005) „Generation Praktikum“ *Die Zeit* No. 14/2005, 31st March 2005. Available at: http://www.zeit.de/2005/14/Titel_2fPraktikant_14 Accessed 26th April 2014

Tages-Anzeiger (2011) „Generation Praktikum“ *Tages-Anzeiger* 28th April 2011. Available at: http://www.tagesanzeiger.ch/schweiz/standard/Generation-Praktikum/story/14240941 Accessed 26th April 2014.

Thomas, Andrea (2014) "Germany's Cabinet Adopts Minimum Wage Bill" *The Wall Street Journal* 2nd April 2014. Available at: http://online.wsj.com/news/articles/SB10001424052702303532704579476751085074342 Accessed 29th June 2014.

Tomlinson, Michael (2012) "Graduate Employability: A Review of Conceptual and Empirical Themes" *Higher Education Policy* Vol. 25, No. 4, pp. 407-431

Wagstyl, Stefan (2014) "Germany's minimum wage threatens to shake up 'generation intern'" *Financial Times* 18th June 2014. Available at: http://www.ft.com/cms/s/0/889d047c-f240-11e3-9015-00144feabdc0.html#axzz361NnX73p Accessed 29th June 2014

Walker, Peter (2013) "Unpaid interns: 100 firms being investigated by HMRC" *The Guardian* Friday, 12th April 2013, 13:20 British Summer Time. Available at http://www.guardian.co.uk/uk/2013/apr/12/unpaid-interns-100-firms-investigated Accessed 27th April 2014.

Wallace, Nicholas (2013) *The Crisis and Policy Responses in the Labour Market in Central and Eastern Europe, Country Report: Croatia* Report for Central European Labour Studies Institute, Bratislava. Available at: https://cps.ceu.hu/sites/default/files/field_attachment/page/node-37493/country-paper-croatia-updated2013.pdf Accessed 27th June 2014

Appendix

Raw data

Briedis & Minks Internship sectors (30)	Internships % (FH)	Internships% (UNI)	INTERNSHIPS % (AVG)	NACE Match
Agriculture, Forestry & Fisheries	1	1	1	Agriculture, forestry and fishing
Press, broadcasting and TV	3	11	7	Arts, entertainment and recreation
Art and Culture	3	9	6	Arts, entertainment and recreation
Contractors (construction industry)	6	1	3.5	Construction
Schools	1	4	2.5	Education
Higher education	1	3	2	Education
Private and further edcuation	1	2	1.5	Education
Banks and credit services	3	3	3	Financial and insurance activities
insurance	1	0	0.5	Financial and insurance activities
Social services	5	4	4.5	Human health and social work activities
Healthcare	2	8	5	Human health and social work activities
Telecomms	1	1	1	Information and communication
Machinery & Transport Equipment	12	4	8	Manufacturing
Other manufacturing	6	2	4	Manufacturing
Metal Production/Processing	1	0	0.5	Manufacturing
Other services	16	12	14	Other service activities
Engineering (including architecture)	9	3	6	Professional, scientific and technical activities
Software development	4	1	2.5	Professional, scientific and technical activities
Computer services	2	1	1.5	Professional, scientific and technical activities
Electrical engineering, electronics and computer products	2	0	1	Professional, scientific and technical activities
General public management	2	5	3.5	Public administration and defence; compulsory social security
Transport (passenger, freight, storage)	3	1	2	Transportation and storage
Trade	3	3	3	Wholesale and retail trade; repair of motor vehicles and motorcycles
Publishing	2	5	3.5	
Trade unions and political parties	2	5	3.5	
Research	1	3	2	
Chemical industry	2	1	1.5	
Church and faith services	0	1	0.5	
Legal, economic & HR	4	6	5	
Energy and water sciences, mining	2	1	1.5	Mining and quarrying
				Electricity, gas, steam and air conditioning supply
				Water supply; sewerage, waste management and remediation activities

English interpretation	Supply/Demand Ratio	Manufacturing	Wholesale and retail trade; repair of motor vehicles and motorcycles	Human health and social work activities	Public administration and defence; compulsory social security	Education	Construction	Transportation and storage	Professional, scientific and technical activities	Financial and insurance activities	Other servic	Information and communication	Arts, entertainment and recreation	Agriculture, f
Farmer	20.6													20.6
Wine grower	10.0													10.0
Animal breeder	18.8													18.8
Managers (Agriculture and animal husbandry	18.9													18.9
Agriculture/ Farming consultant	16.6													16.6
Land-labour	26.4													26.4
Milker	10.5													10.5
Vet and associated occupations	22.6								22.6		22.6			22.6
Gardners and Garden workers	43.2										43.2			43.2
Landschape architects, garden management	20.7										20.7			20.7
Florists	9.6										9.6			
Forest managers, foresters, hunters	9.4													9.4
Forest workers	14.1													14.1
Miners	4.8													
Oil and natural gas extractors	5.1													
Mineral processer/burner	70.3													
Stone cutters	13.8	13.8												
brick and concrete manufacturer	9.2	9.2												
Ceramics manufacturer,	13.0	13.0												
Glass melt producers	0.7	0.7												
Hollow glass makers	11.6	11.6												
Flat glass makers	2.5	2.5												
Glassblowers	6.8	6.8												
Glass processors, glass refiners	1.8	1.8												
Chemical plant workers	3.1	3.1												
Chemical laboratory workers	24.5	24.5												
Rubber manufacturing and processing	15.5	15.5												
Vulcanisers	0.9	0.9												
Plastics processors	2.9	2.9												
Paper and cellulose producers,	10.2	10.2												
packaging makers	4.6	4.6												
bookbinders	6.7	6.7									5.9			
other paper processors	5.9	5.9												
typesetters	19.5										19.5			
print stock manufacturers	52.0	52.0												
Bookprinters (relief printing)	4.1	4.1												
Planographic and intaglio printing	8.2	8.2												
Special printer, screen printer	3.9	3.9									7.0			
Copiers	7.0	7.0												
Printing assistants	11.7	11.7												
Wood processors	15.2	15.2												
Producers of wood products	52.3	52.3												
iron and metal ore smelters	3.7	3.7												
Roller (mettalurgy)	2.7	2.7												
metal extractor	7.2													
Casting, core-making	2.3	2.3												
Casters	1.0	1.0					4.3							
Cleaner of pre-fabricated components, othe	4.3	4.3												
sheet metal presser	9.3	9.3												
wire shapers	5.5	5.5												
other metal shapers	3.4	3.4	3.4											
lathe operators	1.5	1.5												
Chamferers	1.1	1.1												
Drillers	4.8	4.8												
Metal grinders	3.4	3.4												
Other machining occupations	2.1	2.1												
Metal polisher	3.0	3.0												
Engravers	3.0	3.0									3.0			
annealer	9.5	9.5												
galvanisers, metal-colourers/dyers	2.6	2.6												
Enamellers, galvanisers and other refiners	2.1	2.1												
Welders, gas cutters	2.1						2.1							
Solderers	1.1	1.1												
Steel forgers	3.8	3.8												
Tank builders, coppersmiths	2.3	2.3												
sheet-metal smith	2.2	2.2												
pipe fitters	1.0						1.0							
pipe network builders, pipe fitters	1.9						1.9							
metalworker / locksmith	4.7						4.7							
building fitter	4.4						4.4							
sheet metal and plastics processing	4.0	4.0												
Machinist	3.9	3.9												
matinenance and repair	2.2	2.2					2.2				2.2			
steel and iron construction workers,	2.4						2.4							

motor vehicle repairers	2.4		2.4											
agricultural machinery repairs	1.6		1.6											1.6
aircraft mechanic	2.0	2.0	2.0											
precision mechanic	2.9	2.9	2.9											
other mechanics	4.6	4.6	4.6											
watchmaker	4.2	4.2	4.2											
toolmakers	2.1	2.1												
precision metal workers	19.5	19.5												
precious metal smith/forger	5.6	5.6												
dental technician	2.5			2.5										
optometrists and opticians	1.4			1.4										
musical instrument maker/ luthier	6.2	6.2	6.2											
doll makers, model makers, taxidermists	19.4	19.4												
electricians and plubmers	1.0	1.0	1.0					1.0						
telecommunications technicians and artisans	2.6	2.6												2.6
assemblers of electric moters and transforme	1.2	1.2												
electrical devices constructor	1.9	1.9												
radio, audo devices mechanics	1.4	1.4												
electrical appliances, electrical components	5.4	5.4												
other assemblers	11.1	11.1												
metal worker	12.0	12.0						12.0						
spinner	9.3	9.3												
bobbin winder	34.0	34.0												
weaver	13.1	13.1												
knitwear preparer	18.2	18.2												
felt-makers, hat makers	2.5	2.5												
cutters	22.1	22.1												
outerwear tailor	23.9	23.9												
clothing and fabrigs cutter/tailor	25.5	25.5												
embroider	8.0	8.0												
sewing worker	3.8	3.8												
other textile workers	18.0	18.0												
textile supplier	25.3	25.3												
leather manufacturer, maker of gut-strings	10.7	10.7												
shoemaker	4.1	4.1												
footwear manufacturer	11.4	11.4												
coarse leather goods manufacturer	2.9	2.9												
leather clothing manufacturers, leather worl	4.0	4.0												
fur processors	25.0	25.0												
bakery products maker	6.3		6.3											
confectioners	4.2		4.2											
butchers	5.5		5.5											
meat and sausage makers	3.9	3.9	3.9											
fish processors	14.1	14.1	14.1											
cooks	13.0	13.0	13.0											
cellearmen (wine)	10.8	10.8	10.8											
brewers, maltsers	11.8	11.8												
other beverage makers	7.2	7.2												
tobacco products makers	7.2	7.2												
milk and fat processors	5.7	5.7												
flour and nutriments producers	1.8	1.8												
sugar, confectionary and ice cream manufact	54.2	54.2												
stone masons	18.0	18.0						18.0						
concrete workers	11.1							11.1						
carpenters	6.8	6.8						6.8						
roofers	6.9							6.9						
scaffloders	5.6							5.6						
pavers	18.7							18.7						
road builders	14.1							14.1						
track builders	9.2							9.2						
domilitions experts (except mine blasting)	20.6							20.6						
culture(?) and water building construction w	17.4							17.4						
other civil engineering	22.7							22.7						
digging/excavation workers	12.6							12.6						
various constricution workers, construction a	48.2							48.2						
plasterers	8.0							8.0						
insulators and sealers	6.7							6.7						
tilers	4.4							4.4						
oven-fitters, airheating engineers	2.5							2.5						
glazers	2.5							2.5						
floor and terrace layers	6.1							6.1						
interior decorators	3.6											3.6		
upholsters, mattress manufacturers	3.5	3.5												
joiners	4.3							4.3						
model carpenters, form carpenters	3.2							3.2						

other wood and sporting appliance workers	2.8						2.8							
painters and laquerers	12.5						12.5							
goods painters and laquerers	2.1						2.1							
wood surface finishers and veneerers	4.2						4.2							
ceramics and glass painters	21.7						21.7							
goods autitors and sorters	14.4						14.4							
merchendice and shipment preparers	10.0						10.0							
labourers without specified activity	18.5						18.5							
energy machinists	10.6						10.6							
other mahcine operators	6.7						6.7							
crane operators	5.3						5.3							
drivers of mechanical diggers	9.3						9.3							
construction machine drivers	15.9						15.9							
machine operators	6.5	6.5												
machine-setters	0.6	0.6												
machine and vehicle constructino engineers	1.3	1.3												
electrical engineers	1.4						1.4							
architects, civil engineers	3.6						3.6							
surveyors	4.8						4.8							
mining, metallurgical, foundry engineers	3.7	3.7												
other manufacturing engineers	3.5	3.5												
other engineers	3.3	3.3												
chemists, chemical engineers,	8.5	8.5												
physicists, physics engineers, mathematiciar	6.4	6.4												
mechanical engineers	2.5	2.5												
technicians of electro-disciplines	2.7	2.7												
building surveyors	4.6						4.6							
surveyors	7.7						7.7							
mining, metallurgical and foundary technicia	4.2													
chemical technicians	3.6	3.6												
other production engineers	5.3	5.3							5.3					
technicians of electro-disciplines	3.8	3.8							3.8					
foremen	4.8	4.8							4.8					
biological-technical specialists	6.4								6.4					
physical and mathematical-technicians, spec	2.2								2.2					
chemical lab technician	3.2								3.2					
photo lab technicians	20.2								20.2					
technical craftsmen	4.9								4.9					
wholesale and retail merchants and buyers	6.9		6.9											
sellers	18.8		18.8											
publishing merchants, booksellers	20.8		20.8											
chemists	1.4		1.4											
pharmacy assistants	20.5		20.5											
Petrol station attendant	6.1		6.1											
sales reps, travelers	3.8		3.8											
banking professionals	3.8									3.8				
Home savings and loans association professi	0.6									0.6				
Statutory health insurance professionals (no	11.4									11.4				
Insurance professionals	1.8									1.8				
forwarding agents	2.3							2.2793995						
tourism professionals	6.1										6.1			
advertising experts	2.4										2.4			
brokers and estate anagers	9.2										9.2			
lessors, agents and auctioneers	4.0										4.0			
cashiers and ticket sellers	13.5										13.5			
rail oeprators	1.5							1.5						
railway operation controllers	1.9							1.9						
other traffic controllers	4.7							4.7						
motor vehicle drivers	8.7							8.7						
	1.9													
Navigators	11.7							11.7						
Technical ship's officers, ship mechanics	1.9							1.9						
Deckhans (sea)	5.6							5.6						
boatmen	7.8							7.8						
other water transportation ocupations	9.7							9.7						
aviation jobs	1.9							1.9						
mail-sorter	6.2											6.2		
telephone operators	6.6											6.6		
stock keeper, stockroom/warehouse worker	8.8	8.8						8.8				8.8		
transportation equipment operators	6.6	6.6						6.6				6.6		
stevedore, mover	10.3	10.3						10.3				10.3		
storage and transportation workers	18.8	18.8						18.8				18.8		
entreprenours, managers,	10.9	10.9	10.9				10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
management consultant	5.5								5.5					
autitors, tax consultants	1.9									1.9				

executive administrators	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
association directors and officials	6.6	6.6	6.6	6.6	6.6		6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
calculators/estimators	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
accountants	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
cashiers and ticket sellers	13.0		13.0					13.0		13.0				
data processing professionals	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
office professionals	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2		
stenographers, typists	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3		
data typists	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
office assistants	71.4	71.4	71.4	71.4	71.4	71.4	71.4	71.4	71.4	71.4	71.4	71.4		
site security, detectives	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	
supervisors	8.4	8.4	8.4	8.4	8.4		8.4	8.4	8.4	8.4	8.4	8.4		
porters and caretakers	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0
domestic and commercial servants	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	
soldiers, border guards and police officers	0.9				0.9									
fire brigade personnel	0.8				0.8									
safety inspectors	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4		2.4			2.4
chimney sweeps	11.8	11.8					11.8				11.8			
health insurance professionals	8.1			8.1						8.1				
court clerks	4.8								4.8					
legal representatives and conultants	10.6								10.6					
executors of the law	1.5								1.5					
publicists	19.7								19.7					
interpreters and translators	22.0								22.0					
librarians, archivists, and museum professio	12.1								12.1					
musicians	24.0												24.0	
performing artists	30.9												30.9	
graphic artists	18.8												18.8	
decorators and sign-writers/painters	5.1								5.1					
artistic and associated professionals	39.9												39.9	
spacial/visual designers	7.8								7.8					
photographers	12.6								12.6				7.8	
artists, professional athletes, artistic assistar	9.1												12.6	
doctors/medical practitioners	0.8			0.8									9.1	
dentists	4.0			4.0										
veternarians	4.4								4.4					
pharmacists	1.8		1.8	1.8										
Alternative healers	13.6			13.6										
masseurs, pysiotherapists	2.4			2.4									2.4	
nurses, midwives	0.8			0.8										
nursing assistants	6.2			6.2										
dieticians, pharmaceutical technicians and a	4.0			4.0										
speech therapists	4.2			4.2		4.2								
medical lab technicians	3.0			3.0										
social workers and carers	4.2			4.2										
social workers (pedagogical)	3.4			3.4		3.4								
areers advisers/counsellors	3.2					3.2								
nursery nurses and nannies	3.5			3.5										
high school teachers, lecturers	2.5					2.5								
Grammar school teachers	7.3					7.3								
comprehensive and other school teachers	8.8					8.8								
technical and vocational school teachers	6.6					6.6								
music teachers	24.1					24.1								
PE teachers	7.3					7.3								
other teachers	10.4					10.4								
economic and social scientists	6.7					6.7			6.7					
humanities	25.9					25.9			25.9					
natural scientists	13.7					13.7			13.7					
Faith-based pastoral carers	16.4								8.1		16.4			
hairdressers	3.4										3.4			
other personal care	8.1			8.1										
Restauranteurs hotelliers, restaurant mercha	5.1													
waiters, stewards	4.2													
other hospitality staff	16.5													
home economics advisors	13.3			13.3		13.3					13.3			
consumer advisers	6.7										6.7			
domestic workers	18.3										18.3			
cleaners	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
textile and chemical cleaners and dyers	8.7	8.7												
household cleaners	38.9						38.9				38.9			
glass and building cleaners	9.1						9.1				9.1			
street cleaners	1.2				1.2						1.2			
vehicle cleaners and orderlies	7.2	7.2	7.2											
machinery and tank cleaners	7.1	7.1												
interns, and volunteers (without special job	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Jobseekers without specified professions.	37.6													
AVERAGE		9.625341558	11.0179233	10.63161162	14.69423825	14.61547443	11.43183689	12.19582589	12.70621214	14.14933185	14.116464	15.55171596	17.6003655	15.8177163

Translations used for job types

KldB-1988 Code	German Title	English interpretation
011	Landwirte	Farmer
012	Weinbauern	Wine grower
021	Tierzüchter	Animal breeder
031	Verwalter (Landwirtschaft u. Tierzucht)	Managers (Agriculture and animal husbandry)
032	Agraring., Landwirt. Berater	Agriculture/ Farming consultant
041	Landarbeitskräfte	Land labourers
042	Melker	Milker
044	Tierpfleger, verw. Berufe	Vet and associated occupations
051	Gärtner, Gartenarbeiter	Gardners and Garden workers
052	Gartenarchitekten, Gartenverw.	Landschape architects, garden management
053	Floristen	Florists
061	Forstverwalter, Förster, Jäger	Forest managers, foresters, hunters
062	Waldarbeiter, Waldnutzer	Forest workers
071	Bergleute	Miners
083	Erdöl-, Erdgasgewinner	Oil and natural gas extractors
091	Mineralaufbereiter, -brenner	Mineral processer/burner
101	Steinbearbeiter	Stone cutters
112	Formstein-, Betonhersteller	brick and concrete manufacturer
121	Keramiker	Ceramics manufacturer,
131	Glasmassehersteller Glass melt producers	Glass melt producers
132	Hohlglasmacher	Hollow glass makers
133	Flachglasmacher	Flat glass makers
134	Glasbläser (vor der Lampe)	Glassblowers
135	Glasbearbeiter, Glasveredler	Glass processors, glass refiners
141	Chemiebetriebswerker	Chemical plant workers
142	Chemielaborwerker	Chemical laboratory workers
143	Gummihersteller, -verarbeiter	Rubber manufacturing and processing
144	Vulkaniseure Vulcanizers	Vulcanisers
151	Kunststoffverarbeiter	Plastics processors
161	Papier-, Zellstoffhersteller	Paper and cellulose producers,
162	Verpackungsmittelhersteller	packaging makers
163	Buchbinderberufe	bookbinders
164	Sonstige Papierverarbeiter	other paper processors
171	Schriftsetzer	typesetters
172	Druckstockhersteller	print stock manufacturers
173	Buchdrucker (Hochdruck)	Bookprinters (relief printing)
174	Flach-, Tiefdrucker	Planographic and intaglio printing
175	Spezialdrucker, Siebdrucker	Special printer, screen printer

176	Vervielfältiger	Copiers
177	Druckerhelfer	Printing assistants
181	Holzaufbereiter	Wood processors
183	Holzwarenmacher	Producers of wood products
191	Eisen-, Metallerz., Schmelzer	iron and metal ore smelters
192	Walzer	Roller (mettalurgy)
193	Metallzieher	metal extractor
201	Former, Kernmacher	Casting, core-making
202	Formgießer Casters	Casters
203	Halbzeugputzer, sonst. Formgießerberufe	Cleaner of pre-fabricated components, other casting professions
211	Blechpresser, -zieher	sheet metal presser
212	Drahtverformer, -verarbeiter	wire shapers
213	Sonstige Metallverformer (spanlos)	other metal shapers
221	Dreher	lathe operators
222	Fräser Chamferers	Chamferers
224	Bohrer	Drillers
225	Metallschleifer	Metal grinders
226	Übrige spanende Berufe	Other machining occupations
231	Metallpolierer	Metal polisher
232	Graveure, Ziseleure	Engravers
233	Metallvergüter	annealer
234	Galvaniseure, Metallfärber	galvanisers, metal-colourers/dyers
235	Emaillierer, Feuerverzinker u.a.Veredler	Enamellers, galvanisers and other refiners
241	Schweißer, Brennschneider	Welders, gas cutters
242	Löter Solderers	Solderers
251	Stahlschmiede	Steel forgers
252	Behälterbauer, Kupferschmiede	Tank builders, coppersmiths
261	Feinblechner	sheet-metal smith
262	Rohrinstallateure Pipe fitters	pipe fitters
263	Rohrnetzbauer, Rohrschlosser	pipe network builders, pipe fitters
270	Schlosser, o.n.A.	metalworker / locksmith
271	Bauschlosser	building fitter
272	Blech-, Kunststoffschlosser	sheet metal and plastics processing
273	Maschinenschlosser	Machinist
274	Betriebs-, Reparaturschlosser	matinenance and repair
275	Stahlbauschl., Eisenschiffb.	steel and iron construction workers,
281	Kraftfahrzeuginstandsetzer	motor vehicle repairers
282	Landmaschineninstandsetzer	agricultural machinery repairs
283	Flugzeugmechaniker	aircraft mechanic

284	Feinmechaniker	precision mechanic
285	Sonstige Mechaniker	other mechanics
286	Uhrmacher	watchmaker
291	Werkzeugmacher	toolmakers
301	Metallfeinbauer, a.n.g.	precision metal workers
302	Edelmetallschmiede	precious metal smith/forger
303	Zahntechniker	dental technician
304	Augenoptiker Opticians	optometrists and opticians
305	Musikinstrumentenbauer	musical instrument maker/ luthier
306	Puppenmacher, Modellbauer, Präparatoren	doll makers, model makers, taxidermists
311	Elektroinstallateure, -monteur Electricians	electricians and plubmers
312	Fernmeldemonteure, -handwerker	telecommunications technicians and artisans
313	E-Motoren-, Trafo-Bauer Electric motor, transformer assemblers	assemblers of electric moters and transformers
314	Elektrogerätebauer	electrical devices constructor
315	Funk-, Tongerätemechaniker Radio, audio devices mechanics	radio, audo devices mechanics
321	Elektrogeräte-, Elektroteilemontierer	electrical appliances, electrical compoments assembler
322	Sonstige Montierer	other assemblers
323	Metallarbeiter, o.n.A.	metal worker
331	Spinner, Spinnvorbereiter	spinner
332	Spuler, Zwirner, Seiler	bobbin winder
342	Weber	weaver
344	Maschenwarenfertiger	knitwear preparer
345	Filzmacher, Hutstumpenmacher	felt-makers, hat makers
351	Schneider	cutters
352	Oberbekleidungsnäher	outerwear tailor
353	Wäscheschneider, Wäschenäher	clothing and fabrigs cutter/tailor
354	Sticker	embroider
356	Näher, a.n.g.	sewing worker
357	Sonstige Textilverarbeiter	other textile workers
362	Textilausrüster	textile supplier
371	Lederhersteller, Darmsaitenm.	leather manufacturer, maker of gut-strings
372	Schuhmacher	shoemaker
373	Schuhwarenhersteller	footwear manufacturer
374	Groblederwarenhersteller	coarse leather goods manufacturer
376	Lederbekleidungsherst., Lederverarbeiter	leather clothing manufacturers, leather workers
378	Fellverarbeiter	fur processors
391	Backwarenhersteller	bakery products maker
392	Konditoren	confectioners

401	Fleischer	butchers
402	Fleisch-, Wurstwarenhersteller	meat and sausage makers
403	Fischverarbeiter	fish processors
411	Köche	cooks
421	Weinküfer	cellearmen (wine)
422	Brauer, Mälzer	brewers, maltsers
423	Sonstige Getränkehersteller	other beverage makers
424	Tabakwarenmacher	tobacco products makers
431	Milch-, Fettverarbeiter	milk and fat processors
432	Mehl-, Nährmittelhersteller	flour and nutriments producers
433	Zucker-, Süßwaren-, Speiseeishersteller	sugar, confectionary and ice cream manufacturers
441	Maurer	stone masons
442	Betonbauer	concrete workers
451	Zimmerer	carpenters
452	Dachdecker	roofers
453	Gerüstbauer	scaffloders
461	Pflasterer, Steinsetzer	pavers
462	Straßenbauer	road builders
463	Gleisbauer	track builders
464	Sprengmeister (außer Schießhauer)	domilitions experts (except mine blasting)
465	Kultur-, Wasserbauwerker	culture(?) and water building construction workers
466	Sonstige Tiefbauer	other civil engineering
471	Erdbewegungsarbeiter	digging/excavation workers
472	Sons. Bauhilfsarbeiter, Bauhelfer, a.n.g	various constricution workers, construction assistants
481	Stukkateure, Gipser, Verputzer	plasterers
482	Isolierer, Abdichter	insulators and sealers
483	Fliesenleger	tilers
484	Ofensetzer, Luftheizungsbauer	oven-fitters, airheating engineers
485	Glaser	glazers
486	Estrich-, Terrazzoleger	floor and terrace layers
491	Raumausstatter	interior decorators
492	Polsterer, Matratzenhersteller	upholsters, mattress manufacturers
501	Tischler	joiners
502	Modelltischler, Formentischler	model carpenters, form carpenters
504	Sonstige Holz-, Sportgeräteb.	other wood and sporting appliance workers
511	Maler, Lackierer (Ausbau)	painters and laquerers
512	Warenmaler, -lackierer	goods painters and laquerers
513	Holzoberflächenveredler, Furnierer	wood surface finishers and veneerers

514	Kerammaler, Glasmaler	ceramics and glass painters
521	Warenprüfer, -sortierer, a.n.g	goods autitors and sorters
522	Warenaufm., Versandfertigm.	merchendice and shipment preparers
531	Hilfsarbeiter ohne Tätigkeitsangabe	labourers without specified activity
541	Energiemaschinisten	energy machinists
543	Sonstige Maschinisten	other mahcine operators
544	Kranführer	crane operators
545	Erdbewegungsmaschinenführer	drivers of mechanical diggers
546	Baumaschinenführer	construction machine drivers
547	Maschinenwärter	machine operators
549	Maschineneinrichter, o.n.A.	machine-setters
601	Maschinen- und Fahrzeugbauingenieure Machinery and vehicle construction engineers	machine and vehicle constructino engineers
602	Elektroingenieure Electrical engineers	electrical engineers
603	Architekten, Bauingenieure	architects, civil engineers
604	Vermessungsingenieure	surveyors
605	Bergbau-, Hütten-, Gießereiingenieure	mining, metallurgical, foundry engineers
606	Übrige Fertigungsingenieure	other manufacturing engineers
607	Sonstige Ingenieure	other engineers
611	Chemiker, Chemieingenieure	chemists, chemical engineers,
612	Physiker, Physikingenieure, Mathematiker	physicists, physics engineers, mathematicians
621	Maschinenbautechniker	mechanical engineers
622	Techniker des Elektofaches	technicians of electro-disciplines
623	Bautechniker	building surveyors
624	Vermessungstechniker	surveyors
625	Bergbau-, Hütten-, Gießereitechniker	mining, metallurgical and foundary technicians
626	Chemietechniker	chemical technicians
627	Übrige Fertigungstechniker	other production engineers
628	Techniker, o.n.A	technicians of electro-disciplines
629	Industriemeister, Werkmeister	foremen
631	Biologisch-technische Sfk	biological-technical specialists
632	Physikal.- u.mathem.-techn.Sonderfachkr.	physical and mathematical-technicians, specialists
633	Chemielaboranten	chemical lab technician
634	Photolaboranten	photo lab technicians
635	Technische Zeichner	technical craftsmen
681	Groß- u. Einzelhandelskaufl., Einkäufer	wholesale and retail merchants and buyers
682	Verkäufer	sellers
683	Verlagskaufleute, Buchhändler	publishing merchants, booksellers

684	Drogisten Chemists	chemists
685	Apothekenhelferinnen	pharmacy assistants
686	Tankwarte	Petrol station attendant
687	Handelsvertreter, Reisende	sales reps, travelers
691	Bankfachleute	banking professionals
692	Bausparkassenfachleute Home savings and loans association professionals	Home savings and loans association professionals
693	KV-fachleute (nicht Sozialversicherung)	Statutory health insurance professionals (not social security)
694	Versicherungsfachleute	Insurance professionals
701	Speditionskaufleute	forwarding agents
702	Fremdenverkehrsfachleute	tourism professionals
703	Werbefachleute	advertising experts
704	Makler, Grundstücksverwalter	brokers and estate anagers
705	Vermieter, Vermittler, Versteigerer	lessors, agents and auctioneers
706	Geldeinnehmer,Kartenverk., -kontrolleure	cashiers and ticket sellers
711	Schienenfahrzeugführer Rail operators	rail oeprators
712	Eisenbahnbetriebsregler	railway operation controllers
713	Sonstige Fahrbetriebsregler	other traffic controllers
714	Kraftfahrzeugführer	motor vehicle drivers
716	Straßenwarte	*Unknown*
721	Nautiker	Navigators
722	Techn. Schiffsoffiziere, Schiffsmaschin.	Technical ship's officers, ship mechanics
723	Decksleute (Seeschiffahrt)	Deckhans (sea)
724	Binnenschiffer	boatmen
725	Sonstige Wasserverkehrsberufe	other water transportation ocupations
726	Luftverkehrsberufe	aviation jobs
732	Postverteiler	mail-sorter
734	Telefonisten	telephone operators
741	Lagerverwalter, Magaziner	stock keeper, stockroom/warehouse worker
742	Transportgeräteführer	transportation equipment operators
743	Stauer, Möbelpacker	stevedore, mover
744	Lager-, Transportarbeiter	storage and transportation workers
751	Unternehmer,Geschäftsführer,Bereichsltr.	entreprenours, managers,
752	Unternehmensberater	management consultant
753	Wirtschaftsprüfer, Steuerber.	autitors, tax consultants
762	Leitende Verwaltungsfachleute Executive administrators	executive administrators
763	Verbandsleiter, Funktionäre	association directors and officials
771	Kalkulatoren, Berechner	calculators/estimators

772	Buchhalter	accountants
773	Kassierer	cashiers and ticket sellers
774	Datenverarbeitungsfachleute	data processing professionals
781	Bürofachkräfte	office professionals
782	Stenographen, -typisten, Maschinenschr.	stenographers, typists
783	Datentypisten	data typists
784	Bürohilfskräfte	office assistants
791	Werkschutzleute, Detektive	site security, detectives
792	Wächter, Aufseher	supervisors
793	Pförtner, Hauswarte	porters and caretakers
794	Haus-, Gewerbediener	domestic and commercial servants
801	Soldaten,Grenzschutz-,Polizeibedienstete Soldiers, border guard and police officers	soldiers, border guards and police officers
802	Berufsfeuerwehrleute Professional fire brigade personnel	fire brigade personnel
803	Sicherheitskontrolleure	safety inspectors
804	Schornsteinfeger	chimney sweeps
805	Gesundheitssichernde Berufe	health insurance professionals
812	Rechtspfleger	court clerks
813	Rechtsvertreter, -berater	legal representatives and conultants
814	Rechtsvollstrecker Executors of the law	executors of the law
821	Publizisten	publicists
822	Dolmetscher, Übersetzer	interpreters and translators
823	Bibliothekare,Archivare,Museumsfachleute	librarians, archivists, and museum professionals
831	Musiker	musicians
832	Darstellende Künstler	performing artists
833	Bildende Künstler, Graphiker	graphic artists
834	Dekorationen-, Schildermaler	decorators and sign-writers/painters
835	Künstlerische und zugeordnete Berufe	artistic and associated professionals
836	Raum-, Schauwerbegestalter	spacial/visual designers
837	Photographen	photographers
838	Artisten,Berufssportler,künstl.Hilfsber.	artists, professional athletes, artistic assistants
841	Ärzte Medical practitioners	doctors/medical practitioners
842	Zahnärzte	dentists
843	Tierärzte	veternarians
844	Apotheker	pharmacists
851	Heilpraktiker	Alternative healers
852	Masseure, Krankengymnasten u.verw.Berufe	masseurs, pysiotherapists
853	Krankenschwestern, -pfleger, Hebammen Nurses, midwives	nurses, midwives
854	Helfer in der Krankenpflege	nursing assistants

855	Diätassistenten, Pharmaz.-techn. Assist.	dieticians, pharmaceutical technicians and assistants
856	Sprechstundenhelfer	speech therapists
857	Medizinallaboranten	medical lab technicians
861	Sozialarbeiter, Sozialpfleger	social workers and carers
862	Heimleiter, Sozialpädagogen	social workers (pedagogical)
863	Arbeits-, Berufsberater	areers advisers/counsellors
864	Kindergärtnerinnen, Kinderpflegerinnen	nursery nurses and nannies
871	Hochschullehrer, Dozenten	high school teachers, lecturers
872	Gymnasiallehrer	Grammar school teachers
873	Real-, Volks-, Sonderschull.	comprehensive and other school teachers
874	Fachschul-, Berufsschulehrer	technical and vocational school teachers
875	Lehrer für musische Fächer	music teachers
876	Sportlehrer	PE teachers
877	Sonstige Lehrer	other teachers
881	Wirtschafts- u. Sozialwissenschaftler	economic and social scientists
882	Geisteswissenschaftler, a.n.g.	humanities
883	Naturwissenschaftler, a.n.g.	natural scientists
893	Seelsorge-, Kulthelfer	Faith-based pastoral carers
901	Friseure	hairdressers
902	Sonstige Körperpfleger	other personal care
911	Gastwirte,Hoteliers,Gaststättenkaufleute	Restauranteurs hotelliers, restaurant merchants
912	Kellner, Stewards	waiters, stewards
913	Übrige Gästebetreuer	other hospitality staff
921	Hauswirtschaftsverwalter	home economics advisors
922	Verbraucherberater	consumer advisers
923	Hauswirtschaftliche Betreuer	domestic workers
931	Wäscher, Plätter	cleaners
932	Textil-, Chemischreiniger und Färber	textile and chemical cleaners and dyers
933	Raum-, Hausratreiniger	household cleaners
934	Glas-, Gebäudereiniger	glass and building cleaners
935	Straßenreiniger Street cleaners	street cleaners
936	Fahrzeugreiniger, -pfleger	vehicle cleaners and orderlies
937	Maschinen-, Behälterreiniger	machinery and tank cleaners
982	Praktikanten,Volontäre (o. Berufsangabe) Trainees, volunteers (without job specification)	interns, and volunteers (without special job specification)
983	Arbeitsuchende ohne Berufsangabe	Jobseekers without specified professions