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Why does education pay off? Relations between institutional context and the mechanisms by which education pays off in the labor market

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Publication date
2013

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Citation for published version (APA):

Bol, T. (2013). *Why does education pay off? Relations between institutional context and the mechanisms by which education pays off in the labor market.*

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Education increasingly determines who advances in society. Highly educated people not only perform better in the labor market, but they are also healthier, have a longer life expectancy, and show higher rates of political and civil participation than individuals with lower levels of education (e.g., Nie, Junn, and Stehlik-Barry 1996; Cutler and Muney 2008). Education is negatively related to criminal behavior, addiction, depression, and the likelihood of being divorced, to name only a few examples. The strength of most of these relationships has increased in recent decades (e.g., Goldin and Katz 2008; Isen and Stevenson 2010), indicating that the importance of education for success according to a wide spectrum of outcomes has never been higher. This dissertation addresses the importance of education, and more specifically, how and why education is so strongly related to success in the labor market.

A well-established literature shows that education improves individual achievement in the labor market, measured by, for example, earnings, occupational status, job stability, and the duration of the school-to-work transition.¹ Evidence for the effect of education on labor market outcomes was found in early empirical studies (e.g., Glick and Miller 1956; Houthakker 1959; Duncan and Hodge 1963), and this finding has been frequently reconfirmed (for recent reviews, see Card 1999; Psacharopoulos and Patrinos 2004; Hout 2012). In Figure 1.1, the aggregate wage returns to education are shown, lending graphical support for the educational payoff in the labor market. In all of the 27 countries analyzed, the average earnings of those with a tertiary education are the highest, while individuals with a degree below an upper secondary level earn the least (OECD 2011: 147).²

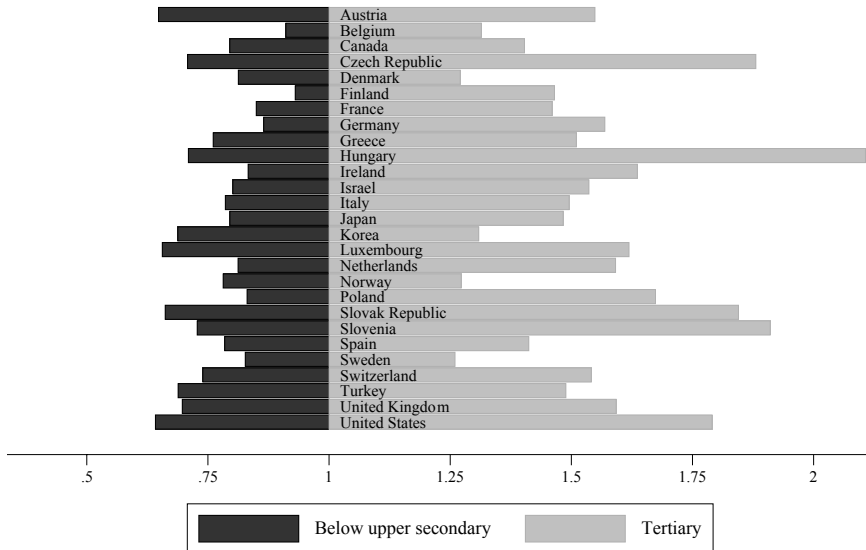
A first interesting question that may be addressed on the basis of Figure 1.1 is why the effect of education on earnings differs between countries. While the figure makes clear that those with higher levels of education earn more on average, the wage premium to education varies across the countries. These country differences in the strength of the education effect on labor market outcomes have been the subject of much scholarly work in the past three decades. They are often explained by comparing the institutional characteristics of societies, such as the educational systems and different labor market institutions (e.g., Maurice, Sellier and Silvestre 1986; Shavit and Müller 1998; Müller and Gangl 2003). A common finding, for example, is that for upper secondary educational degree holders, the likelihood to be unemployed is dependent on the specificity of vocational skills that are provided in a country's educational system (Shavit and Müller 2000).

A second interesting question that Figure 1.1 raises is *why* education pays off. Although it is evident that there is a positive relationship between education and earnings, the figure does not tell us anything about the mechanism by which education

1. It is important to note that this research is directed towards the individual-level returns to education. The overall focus of this dissertation, as well as the literature review, solely addresses the private returns to education rather than the social returns to education.

2. There are obviously large differences in educational returns for different groups. For example, it is a well-established fact that educational returns are lower for females than males and that these gender effects differ across countries (e.g., Grunow 2006). These differences are not captured in the figure. However, the main point we make here is merely that education is positively related to labor market returns and that these returns are not equal across different countries.

FIGURE 1.1: AVERAGE EARNINGS RELATIVE TO UPPER SECONDARY EDUCATION
 Aggregate effects of educational level on earnings for the total population aged 25–65 (2009)



Source: Based on data from the OECD (OECD 2011: 147)

yields a high return on investment. A large body of literature that originated in the 1960s and 1970s focuses on this question and proposes several alternative theoretical mechanisms that account for the education effect on labor market outcomes. In the early 1960s, the dominant explanation was that education pays off because it provides individuals with skills that are rewarded by employers (Mincer 1958; Schultz 1961; Becker 1964). In response to this human capital framework, alternative theoretical mechanisms have been proposed; for example, education has been claimed to increase labor market returns because of its signaling capacity (Arrow 1973; Spence 1973; Stiglitz 1975; Thurow 1975) or because it is an instrument of social closure (Berg 1970; Illich 1970; Bourdieu and Passeron 1973; Collins 1971, 1979).

Both of the aforementioned questions are central problems in the field of stratification, and both form the center of a large body of literature. Unfortunately, these two literatures developed independently of one another: in the research on how the strength of the education effect on labor market outcomes differs across institutional contexts, little attention is devoted to the mechanisms by which education yields a high return on investment (however, see Van der Velden and Wolbers 2007; Van de Werfhorst 2011a, 2011b; Matković and Kogan 2012). Similarly, studies that focus on the mechanisms often study them in isolated contexts without taking the possible influence of institutions into account.

The goal of this book is to bridge both literatures by investigating the main question that guides this dissertation: is the importance of the mechanism(s) by which education pays off dependent on the institutional context? Instead of focusing on how institutions, such as educational systems, influence the *strength* of the education effect, we aim to study how the institutional context influences the mechanism by which education yields a high return on investment. Is it the case that the reason for which

education is positively related to labor market success is dependent on institutional contexts? Most scholars who draw comparisons between mechanisms often persist in a mechanism competition and point to one mechanism that explains it all. The main contribution of this dissertation is that it develops a theory that integrates both literatures on mechanisms and institutions. The core proposition is that while all mechanisms that explain the education effect may be significant, the relative strength of these mechanisms depends upon their institutional context.

This chapter proceeds as follows. First, we will review existing studies that focus on the influence of institutional context on the strength of the education effect. Next, we will discuss the literature that addresses why education pays off and propose a classification of three general mechanisms. In the fourth section, we present the research questions. In section five, we set out our main theory and discuss the institutional conditions that are expected to enhance the importance of one of the three mechanisms. In the final section, we provide an overview of the remaining book chapters.

1.2 INSTITUTIONS AND THE EDUCATION EFFECT

In this section, we examine the literature that has addressed cross-societal differences in the size of the educational payoff, a question that has guided numerous studies. While many researchers investigate cross-national variations in the private returns to education by using cross-sectional methods, the theoretical assumptions concerning the influence of context on the educational payoff are based on the behaviors and the opportunities of individuals during their life course. Individuals make decisions, whether or not intentionally, that influence their options later in life. The context in which they make these decisions is important, as it constrains the possible options that individuals have. Concerning the educational payoff in the labor market, different institutions offer different trajectories that are available in the transition from school to work (e.g., Blossfeld et al. 2005). Cross-national variation in educational systems, for example, is used as an explanation for systematic cross-national variation in the strength of the education effect: different educational systems offer different routes to the labor market—for example, via general or vocational programs—which may influence the extent to which education pays off. This perspective emphasizes the impact of, often national, institutional contexts on the strength of the education effect. As a consequence, the majority of the research that has been performed in this tradition has a cross-national focus.

In the first studies that explicitly addressed cross-national variation in the strength of the education effect, the general strategy was to compare a small number of countries, for example, France and Germany (Maurice, Sellier, and Silvestre 1986); Germany, Sweden, and the United States (Allmendinger 1989); Britain and France (Marsden and Germe 1991); or the United States and Japan (Rosenbaum and Kariya 1991). Beginning in the mid-1990s, the number of countries analyzed increased rapidly, for example, via international collaborations in edited volumes (Shavit and Müller 1998; Müller and Gangl 2003; Blossfeld et al. 2005; Shavit, Arum, and Gamoran 2007), as well as by the growing availability of comparable (cross-) national survey data (e.g., Scherer 2005; Wolbers 2007; Andersen and Van de Werfhorst 2010). All

of these studies find empirical evidence for the influence of institutional context on the relationship between education and labor market outcomes. We discuss two types of institutions that are argued to affect the strength of the education effect: (1) educational systems and (2) labor market institutions.

1.2.1 Educational systems and the education effect

While there are numerous aspects of educational systems that can be analyzed, stratification research often distinguishes between three characteristics of educational systems (e.g., Kerckhoff 1995, 2001; Shavit and Müller 2000): the level of standardization, the level of tracking, and the level of vocational orientation. Although some researchers argue that standardization influences the educational payoff (e.g., Allmendinger 1989), most studies show that the effect of standardization on the strength of the education effect is marginal, especially when the vocational orientation and the level of tracking of an educational system are taken into account (e.g., Shavit and Müller 1998; Bol and Van de Werfhorst 2011a). We will follow these earlier findings and focus on the level of vocational orientation and tracking when discussing the role of educational systems.

First, the level of tracking refers to the existence of different educational programs at the same time point in an educational trajectory. These programs are hierarchically ranked, and it is clear which track is “higher” and which is “lower” (Allmendinger 1989). Tracking mainly takes place in the context of secondary education, although there is curriculum tracking in post-secondary education, as well. The second dimension on which educational systems differ is their level of vocational orientation: that is, the extent to which education provides students with vocational skills and the specificity of these skills. Education can supply students with both general and specific skills, and the balance between these two differs across educational systems. This second dimension, the vocational orientation, is primarily associated with upper secondary vocational education, which consists of educational programs that emphasize the learning of (occupation-)specific skills, often in the form of a dual system whereby employers influence the curriculum. In Figure 1.2, countries are plotted on two indicators that scale national educational systems according to their levels of tracking and vocational orientation. How these indicators are constructed is extensively discussed in Chapter 2; the main objective here is to provide an overview of the cross-national variation in educational systems.

In their influential cross-national study on the school-to-work transition in 13 countries, Shavit and Müller (1998) find support that both dimensions of educational systems play an important role in the school-to-work transition. Although education has a positive effect on labor market outcomes in all countries, and in almost all countries the effect of tertiary educational degrees on occupational attainment is significantly stronger than the effect of intermediate degrees, there is systematic cross-country variation: in countries with a high level of tracking and a strong orientation towards vocational education, the effect of education on occupational attainment is stronger.

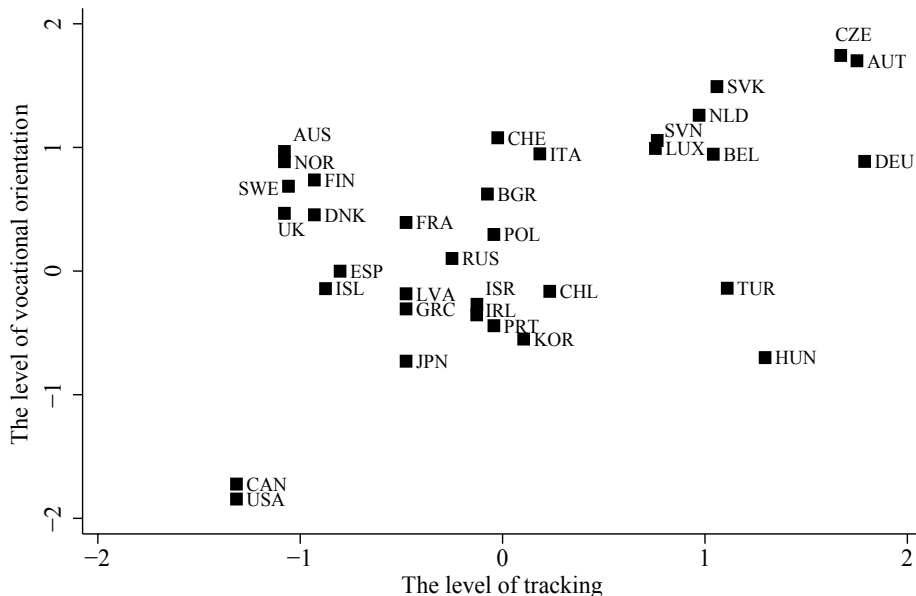
Other researchers confirm the importance of the educational system for the education effect on labor markets, albeit by studying different countries and using different dependent variables. While vocational education reduces the odds of being unemployed in most countries, this effect is stronger in countries with an educational

system that has a strong focus on vocational education. Especially in these systems, vocational education functions as a “safety net” (Arum and Shavit 1995; Shavit and Müller 2000). Comparable results are found by other authors, and in general, the likelihood of becoming unemployed is lower in more vocationally oriented educational systems (e.g., Müller and Gangl 2003; Breen 2005; Müller 2005). Similarly, the length of the school-to-work transition is known to be shorter in countries with more vocationally orientated educational systems (Ryan 2001; Van der Velden and Wolbers 2003; Blossfeld et al. 2005; Wolbers 2007).

Comparable results are found when tracking is the main dimension under analysis: in highly tracked educational systems, there is a tighter link between education and occupation, and hence a stronger effect of educational attainment on occupational status (Allmendinger 1989; Kerckhoff 2001; Scherer 2005; Andersen and Van de Werfhorst 2010). Moreover, when there is more tracking, job stability increases, as the school-leavers remain in the same occupation for a longer time (Maurice, Sellier, and Silvestre 1986; Allmendinger 1989: 239). Both the level of tracking and the vocational orientation of educational systems are argued to enhance the access of school-leavers to the labor market. While the majority of these studies predict a common effect for students in all tracks, more recently, authors have shown that the contextual effects of educational systems (tracking) differed across individuals from different educational tracks (Ianelli and Raffe 2007; Wolbers 2007; Andersen and Van de Werfhorst 2010).

Although the level of tracking and the vocational orientation of educational systems are known to facilitate the school-to-work transition (Shavit and Müller 2000), it is also widely acknowledged that both dimensions, especially tracking, enhance the inequality

FIGURE 1.2: THE LEVEL OF TRACKING AND VOCATIONAL ORIENTATION



Source: Table 2.1

of educational opportunities (Van de Werfhorst and Mijs 2010). In countries where secondary education is highly tracked, the effect of social origin on performance is stronger (Brunello and Checchi 2007; Schuetz, Ursprung, and Woessmann 2008; Horn 2009; Dronkers, Van der Velden, and Dunne 2011; Bol et al. 2012). When tracked educational systems became comprehensive educational systems, the inequality of educational opportunities decreases (Erikson and Jonsson 1996; Pekkarinen, Uusitalo, and Pekkala 2009). This inequality-magnifying effect of tracking is explained by the life course hypothesis: when students are sorted into different tracks at a younger age, social class background is argued to be of greater significance (cf. Shavit and Blossfeld 1993). The influence of tracking on the reproduction of inequality not only affects educational performance: several studies show that the effect of social origin on labor market outcomes (e.g., employment, occupational status) is stronger in countries with more tracked educational systems (e.g., Andersen and Van de Werfhorst 2010). More generally, education takes a central position in transmitting inequalities in societies, but the extent to which it does so depends on the institutional context.

A large body of literature gives strong evidence for the pivotal role that educational systems have in the transition from education to work. The vocational orientation of an educational system seems to particularly influence the strength of the education effect, as the school-to-work transition is found to be simpler when countries rely on vocational education to a greater extent. However, differentiation in educational systems, mainly via the implementation of hierarchical educational tracks, is argued to magnify existing inequalities between individuals. There seems to be a trade-off between these two functions of educational systems, as systems that do well with respect to the labor market allocation of school-leavers perform worse in promoting equality of opportunity (see also Chapter 2).

1.2.2 Labor market institutions and the education effect

Although the literature on the relationship between institutional context and the education effect on labor market outcomes has a strong focus on educational systems, the contextual characteristics of labor markets are also found to be important determinants of the strength of the educational payoff (see Ryan 2001 for an overview). Similar to educational systems, labor market institutions vary across societies, and the way they are set up is argued to influence the educational payoff, as they structure the entry from education into jobs. There are several approaches that relate labor market institutions to the education effect.³ First, a body of literature aims to describe the development of institutions and discuss their mutual dependence. Second, stratification research studies the effects of different labor market institutions on the educational payoff.

A dominant way to characterize labor markets is proposed by the "varieties of capitalism" (VoC) approach (Hall and Soskice 2001), a broad theoretical framework that is built around cross-national variation in labor markets and categorizes market economies along their levels of labor market coordination. The main distinction is between countries with a low level of labor market coordination, that is, liberal market economies (LMEs), and countries with a high level of labor market coordination, that

3. Several authors study how the educational payoff is influenced by the interplay between educational systems and labor market institutions (e.g., Van der Velden and Wolbers 2003; Andersen and Van de Werfhorst 2010).

is, coordinated market economies (CMEs). Institutions are not treated in isolation, but rather the VoC approach is interested in full institutional configurations and the complementarities between institutions. In CMEs, educational systems play a central role in the provision of occupation-specific skills; in these systems, vocational programs are developed in mutual coordination between employers, unions, and the state (Thelen 2004). The opposite is true for LMEs, where educational systems offer generic skills. The educational payoff, however, is not only structured by the educational system but also by how it interacts with the strictness of the employment protection legislation (Estevez-Abe, Iversen, and Soskice 2001, Busemeyer 2009; but see Tählin 2008). Specific skills are argued to be a safer investment when employment protection is high, and because of the skill specificity and strict employment protection, employees are not expected to be very mobile. The absence of a strong employment protection in LMEs is less problematic, as educational systems mainly provide individuals with transferable general skills. While the VoC approach thus offers detailed accounts of how labor market institutions evolve over time and between countries, less attention is devoted to how differences in institutional contexts influence micro mechanisms,⁴ such as the transition from school to work (however, see Busemeyer and Jensen 2012).

In stratification research, authors place less emphasis on the origins of institutions and focus more on the effects of institutions. With respect to the educational payoff, much importance is attached to the lines along which labor markets are segmented, whether as internal labor markets or occupational labor markets (Doeringer and Piore 1971; Blossfeld and Mayer 1988; Marsden 1990). Maurice, Sellier and Silvestre (1986) argue that the transition from school to work is simpler in countries with skill-specific vocational education and strong occupational labor markets. In occupational labor markets, jobs are defined by content, and because essential training already took place in vocational programs, educational degrees (or skills) are easily transferable between jobs within the same occupation. The transition from school to work follows a different pattern if countries provide students with more generic skills and rely on internal labor markets. In these countries, firms instead of jobs are the central units of the labor market, and the skills (or degrees) acquired in education have a different function, as most of the job training takes place within the same firm (Doeringer and Piore 1971). Consequently, the effect of education on labor market outcomes tends to be weaker, as job seekers more often enter the occupational ladder on a low rung and work their way up (Scherer 2001).

In a similar vein, authors argue that the education effect on labor market outcomes is dependent on the nature of the employment relationship, a factor that varies across countries. Employment relationships can be open or closed (Sørensen 1983; cf. Weber [1922] 1978): open employment relationships refer to positions in the labor market where allocation is based on market principles, whereas closed employment relationships are based on promotional ladders and refer to positions that are mainly found where there are strong internal labor markets. The education effect is expected to be stronger when employment relationships are open, as labor market success in internal labor markets relies less on skills (or degrees). When employment relations

4. See also Andersen and Van de Werfhorst (2010), who formally test the influence of labor market coordination on the strength of the education effect. Their main finding is that tracking and vocational orientation increase the strength of the effect, while labor market coordination has a “dampening effect” on the educational payoff.

are closed, educational attainment is a less important prerequisite for advancement on the promotional ladder. Compared to more open employment relationships, social class background is a more important determinant of access, thereby increasing the intergenerational transmittance of social inequalities.

The accessibility of positions in the labor market is not only determined by the existence of strong internal labor markets but also by the level of employment protection. In countries with a strict employment protection, there is less employee mobility in the labor market, and young school-leavers have more difficulties in entering the labor market (Nickell 1997). Indeed, several studies find that in countries with a high level of employment protection, the placement of students in the labor market takes longer (Müller and Gangl 2003; Müller 2005; Wolbers 2007), and the risk of falling into unemployment after formal education is higher (Ryan 2001; Breen 2005). Blossfeld and colleagues furthermore find that systems where insiders are protected create an “inequality of uncertainty,” as the entry into the first job is especially difficult for poorly educated young people (Blossfeld et al. 2005).

Both educational systems and labor market institutions have been shown to influence the education effect on labor market outcomes. This finding has important implications for the study of social inequalities among individuals, as it is known that both the educational system and several labor market institutions can exacerbate or decrease existing inequalities. While most of the studies discussed present thorough investigations of how the education effect varies across institutional contexts, they also tend to ignore the question of why education pays off in the labor market, or they assume that one explanation is dominant (e.g., Shavit, Arum, and Gamoran 2007: 30). In the following section, we will discuss several theories that explain the educational payoff.

1.3 THREE MECHANISMS

While a large literature is directed towards comparing the strength of the education effect across institutional settings, a similarly large body of research focuses on the question of why education pays off in the labor market. In recent decades, numerous theories have been formulated to account for the education effect in labor market outcomes: human capital theory, signaling theory, sorting theory, job competition theory, sheepskin effects, social reproduction theory, credentialist theory, and so on (for an exhaustive overview, see Bills 2003). The goal of this book is to compare the strength of these theories across institutional settings. However, some theories share important characteristics, and it is therefore useful to group different theories together instead of comparing each individually. We label these groups of theories as mechanisms, as they all share important assumptions that describe the relationship between education and labor market outcomes.

The comparison of different theories is not uncommon. In the field of economics, a mechanism that stresses the role of education as a provider of productivity enhancing skills is often contrasted to one that emphasizes the crucial role of educational degrees (e.g., Hungerford and Solon 1987; Groot and Oosterbeek 1994; Altonji and Pierret 2001; Bedard 2001; Fang 2006). The baseline assumption in the economic literature is that education is functional and that it provides individuals with skills that enhance

their future productivity. This baseline view is then contrasted with an alternative model, where education pays off because of educational degrees instead of acquired skills (Jaeger and Page 1996) or because education is a signal for employers (Spence 1973; Stiglitz 1975).

In the sociological literature, however, fine-grained distinctions are used, and it is more common to distinguish between more than two mechanisms (e.g., Rosenbaum et al. 1990; Traag et al. 2005; Van de Werfhorst 2011a; Matković and Kogan 2012). Here, we will differentiate between three broad mechanisms that explain the educational payoff in the labor market: productivity enhancing skills, positional good, and social closure. Before we discuss the differences between the mechanisms, and hence the legitimization of the threefold distinction, we will elaborate on all three of them. It is important to note that the mechanisms we describe below are ideal types. In reality, we do not expect any of these mechanisms to fully explain the education effect on labor market outcomes. Instead, our main argument is that the extent to which each of these mechanisms is a valid explanation for the educational payoff in the labor market depends on the institutional context.

1.3.1 Productivity enhancing skills

There is a large strand of research that argues that education yields high returns in the labor market because it provides individuals with skills. During their education, individuals accumulate human capital, that is, all of those characteristics that raise their earnings, improve their health, enhance their good habits, and so on (Mincer 1958; Schultz 1961; Becker 1964). Investment in human capital is the total of the “activities that influence future monetary and psychic income by increasing [...] resources in people” (Becker 1964: 3). Education can be seen as the most important provider of human capital, as it is argued to equip individuals with skills. Those with more education, or a higher level of education, have acquired more skills and thus more human capital.

Skills that are obtained through education increase labor market rewards, as they enhance individuals’ productivity. Employers reward those employees with higher levels of education more because they are more productive and thus yield more returns for the firm; education has a direct and positive effect on productivity. Through education, individuals maximize their marginal product (their skills) and, consequently, the returns to their marginal product (Becker 1964). Education is seen as an investment in human capital: those who invest more will reap the benefits in the labor market. While several scholars nuance the deterministic nature of human capital theories (e.g., Tomaskovic-Devey, Thomas, and Johnson 2005; Kambourov and Manovski 2009), it is not a straw man: the mechanism as described here takes a central position in current research (e.g., Lanzi 2007; Goldin and Katz 2008), as well as in policy (e.g., OECD 2010a: 24).

In this book, human capital theories are grouped under the rubric of the **productivity enhancing skills mechanism**. This mechanism is based on two important assumptions: (1) *education provides individuals with skills that increase their level of productivity* and (2) *employers reward employees on the basis of their productivity*. From these two assumptions, it logically follows that education has a positive effect on labor market outcomes. By emphasizing the pivotal role of education in turning individuals into productive workers, the productivity enhancing skills mechanism explains the educational payoff

in the labor market.

1.3.2 Positional good

In contrast to the productivity enhancing skills mechanism, there are several theories emphasizing that education does *not* provide students with skills that directly increase their productivity in the labor market. An implicit assumption in the productivity enhancing skills mechanism is that employers have complete information about the productivity of job seekers, an assumption that is false according to critics of the human capital paradigm: “to hire someone [...] is frequently to purchase a lottery” (Spence 1973: 356). In other words, during the hiring process, employers have little information on the actual productivity levels of job candidates. The reason that education pays off in the labor market is therefore not that it increases skills but because it functions as a signal (Spence 1973; Wolpin 1977) on whose basis employers may screen potential employees (Arrow 1973; Layard and Psacharopolous 1974; Stiglitz 1975). Education functions as a sorting device, and those with the strongest signals obtain the highest rewards (Weiss 1995).

Instead of viewing the level of productivity as being attached to individuals, productivity is, in this line of thought, argued to be a characteristic of a job: “the marginal product resides in the job and not in the man; the individual’s earnings depend upon the job he acquires and not directly upon his own characteristics” (Thurow 1975: 77). What does an educational degree signal when productivity is attached to the job instead of the individual? According to job competition theory, education is a signal of trainability or the capacity to learn skills and become productive (Thurow 1975). Employers thus tend to prefer the job applicant with the highest educational degree, as they want to minimize their future training costs. As a consequence, education holds only relative value in the hiring process, and the return on an educational degree depends upon the educational composition of all job seekers.

Thurow (1975) discusses this relative role of education by distinguishing between two queues: the labor queue and the job queue. In the labor queue, job seekers are ranked on the basis of their future training costs and hence their relative level of education. Education is a signal of trainability, and those with stronger signals are at the front of the queue. In the job queue, on the other hand, jobs are ranked according to their rewards and attractiveness for employees. The allocation of job seekers to the labor market is thus dependent on a dual queuing process, in which the job seeker will prefer the job that is front-most in the job queue, while employers will select the job seeker that is front-most in the labor queue. Education is argued to be a positional good, as the extent to which it pays off in the labor market is dependent on the educational composition of the pool of job seekers.

The theories we discussed above are grouped in the **positional good mechanism**, which is built on two assumptions: (1) *education is a signal of trainability* and (2) *employers want to minimize future training costs and therefore prefer to hire those with the highest relative educational position*. The positional good mechanism differs from the productivity enhancing skills mechanism, which stresses the relevance of the skills acquired in education. Instead, education is expected to have a positive effect on labor market outcomes because of its role as a signal. Furthermore, in contrast to the productivity enhancing skills mechanism, the returns to education are argued to be dependent on the educational composition of the pool of job seekers. Although the productivity

enhancing skills and positional good mechanism are different, both have in common that they expect education to pay off in the labor market for reasons of (expected) productivity: education provides students with skills or increases their trainability.

1.3.3 Social closure

However, a large body of literature disregards this functional character of education and instead stresses its role in the process of social closure. Social closure, a concept introduced by Max Weber, is the practice by which social groups increase their rewards by excluding others from access to their resources (Weber [1922] 1978; Parkin 1979; Murphy 1988). Exclusionary barriers are set up to monopolize opportunities and an, often economic, benefit is generated for the members (Weber [1922] 1978: 342). According to theories of social closure, education functions as one of the most important barriers, and educational degrees give access to more beneficial positions in the labor market. Education does not merely yield high returns on investment because those with higher levels of education have more skills or are easier to train for specific jobs; the main reason that it is rewarded in the labor market is because it provides access to closed social groups.

There are different views regarding how this closure takes place. Bourdieu and Passeron (1973) argue that education sorts students according to their level of cultural capital. The educational degree is thus a marker of a certain level of cultural capital, which gives access to a specific place in the social class hierarchy. A similar argument is made by Bowles and Gintis (1976), who argue that instead of providing productivity enhancing skills, education supplies students with skills that are neither cognitive nor technical. In schools, students learn how to act, speak, and behave in certain circumstances. It is especially these habits and preferences (“incentive-enhancing preferences”) that are rewarded in the labor market. A third influential perspective is the credentialization theory (Collins 1971, 1979), which describes the reproduction of social class in education by focusing on the role of educational degrees or “credentials.” Educational credentials are an entry requirement to closed social groups, and education is solely rewarded because it provides access to particular labor market positions.

All of these theories provide detailed accounts of how education reproduces the social class structure by raising entrance barriers (cultural capital, incentive-enhancing preferences, credentials) to social groups, often defined as status groups, or social classes. An important question is at what level these status groups or social classes exist and at what level social closure processes take place. Recent studies argue that, instead of large social class categorizations (e.g., Erikson and Goldthorpe 1992), social class differences emerge at the disaggregated *occupational* level (Grusky and Sørensen 1998; Weeden and Grusky 2005a, 2012a; Jonsson et al. 2009; however, see Erikson, Goldthorpe, and Hällsten 2012). Following this “micro-class” approach, social closure is the process by which the access to occupations is restricted. Indeed, in the few efforts to empirically assess the role of social closure, authors emphasize the importance of occupations in the process of social closure (Weeden 2002; Kleiner and Krueger 2010; Weeden and Grusky 2012b; however, see Van de Werfhorst 2011a).

In line with earlier findings, we therefore focus on occupational closure, a specific type of social closure whereby occupational groups pursue their monopolistic interests by establishing legal orders that protect their monopolistic advantage (Weber [1922] 1978: 342). Educational credentials are a prime example of such a legal order and are

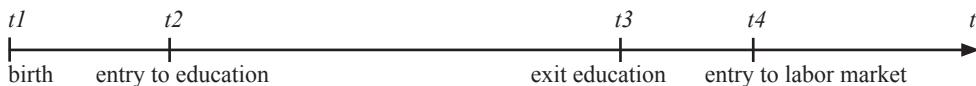
often seen as one of the stronger sources of occupational closure (Sørensen 2000: 1554; Weeden 2002). Only those individuals who possess a credential are allowed to perform job tasks of occupations closed by credentials. By placing barriers on access to occupations, occupational closure strategies, such as educational credentialing, create an artificial scarcity of workers. This restriction of supply increases wages as it generates economic rents, that is, wage premiums that are “independent of the efforts and abilities of individuals and tied to aspects of social structure” (Sørensen 1996: 1345). According to the social closure mechanism, education yields high returns in the labor market because it is a rent-generating closure strategy. Credentials might also increase labor market returns because they are often a prerequisite for another well-known closure strategy: licensure. Occupational licensure is found to generate economic rents (Friedman 1962; Kleiner 2000, 2006; Kleiner and Krueger 2010; Humphris, Koumenta, and Kleiner 2011), and education increases labor market returns insofar as occupational licenses require an educational credential.

This third perspective is categorized as the **social closure mechanism**, which has two important assumptions: (1) *educational rewards are unrelated to expected productivity* and (2) *education pays off because it gives access to, and increases the rewards for, closed occupations*. According to this perspective, education is not functional in terms of productivity: its main role is not to provide students with productivity enhancing skills nor to make them more trainable. Instead, educational credentials function as entrance barriers to closed occupations, thereby generating economic rents.

1.3.4 Similarities and differences

We have described three different accounts of why education pays off in the labor market: the productivity enhancing skills mechanism, the positional good mechanism, and the social closure mechanism. All three offer different explanations of what the role of education is and why it is the case that education has a positive effect on labor market outcomes. There are also similarities between the three mechanisms—that is, all three are not equally different from one another in all aspects. Here, we will discuss the main differences and similarities between the three mechanisms, thereby legitimizing the threefold distinction of all theories that explain the educational payoff. In doing so, we focus on the differential role that the three mechanisms assign to education in different phases of the life course, as schematically presented in Figure 1.3.⁵

FIGURE 1.3: SCHEMATIC OVERVIEW OF THE EARLY LIFE COURSE



The productivity enhancing skills mechanism argues that education pays off as it increases the worker’s skill level and thus productivity, which is rewarded in the labor market. According to this mechanism, individuals obtain productivity enhancing skills

5. This schematic overview is for illustrative purposes only. For the sake of the argument, several breaks within education are disregarded.

during the course of their education, between t_2 and t_3 . Furthermore, the longer this period lasts, and the longer that individuals have been educated, the more skills they acquire. In the individuals' transition into the labor market, at t_4 , employers give full returns to their marginal product, the individuals' skills. The productivity enhancing skills mechanism attaches no added value of educational qualifications or credentials; only the skills determine the payoff in the labor market.

The positional good mechanism sees education primarily as a signal and argues that education is rewarded because employers will pick those job candidates with the highest level of education (and thus the strongest signals) relative to other job seekers. In comparison to the productivity enhancing skills mechanism, the period between t_2 and t_3 is not crucial to becoming a productive worker: although individuals become more trainable, real productivity enhancing skills are acquired on the job. Instead, education functions as a sorting machine, and employers screen and reward job applicants on the basis of their signals, that is, their educational degrees. It is therefore not so much the length of the period between t_2 and t_3 that matters; rather, the degree an individual acquires at t_3 determines his or her labor market success. Furthermore, in comparison with the productivity enhancing skills mechanism, students with equal levels of education are not equally rewarded in the labor market. According to this mechanism, education is positional, and the educational payoff at t_4 is determined by the educational composition of all job-seekers.

The social closure mechanism, lastly, argues that education pays off because it provides access to closed occupations. While the other mechanisms attach some value to the period between t_2 and t_3 (to become productive or to become more trainable), the social closure mechanism attaches no value to this period: labor market returns to education are predominantly based on the possession of educational credentials at t_3 . Entry to particular labor market positions at t_4 is restricted by educational credentials and is unrelated to expected levels of productivity or trainability. Those with (high-level) educational credentials, often those from a high social class at t_1 , obtain access to more rewarding positions in the occupational structure. Entry to some occupations is restricted by institutional barriers, such as licensure laws or educational requirements. Educational credentials thereby artificially restrict the supply of labor to these occupations, which generates economic rents and thus increases labor market returns for those who possess credentials.

All three mechanisms offer different accounts as to why education pays off in the labor market. However, there are similarities between some of the mechanisms. First, both the productivity enhancing skills and positional good mechanism claim that education is functional: it is argued to directly increase productivity or increase the level of trainability. The importance of these acquired skills at t_4 differs between both mechanisms, as the positional good mechanism argues that not the skills but the signaling capacity of an individual's relative level of education is rewarded by employers.

A second similarity is the importance that the positional good and social closure mechanism attach to educational degrees, whether as a signal or as a credential. However, these mechanisms' interpretations of the role of degrees highly differs: while the positional good mechanism argues that degrees signal the relative educational position on whose basis assumptions are made regarding expected productivity levels, the social closure mechanism contends that degrees are credentials that secure

entry into occupations, irrespective of their relative position or signaling strength. Furthermore, the positional good mechanism attaches some importance to the acquisition of skills through education (becoming easier to train on the job), while the social closure mechanism argues that skills are only important insofar as access to the training for these skills is restricted (cf. Weeden and Grusky 2012b).

Although there are similarities between the three mechanisms, the differences are far more pronounced. We therefore argue that these three mechanisms provide three distinct explanations for the education effect on labor market outcomes while also being parsimonious. In Table 1.1, the main characteristics of all three mechanisms are briefly summarized.

1.4 RESEARCH QUESTIONS

As we have shown, there is a significant body of literature concerning how the education effect on labor market outcomes differs across institutional settings, just as numerous authors focus on the mechanisms by which education pays off. These two literatures are, unfortunately, rarely merged. In cross-national comparisons of the strength of the education effect, the mechanism by which education pays off is often taken for granted. However, it is likely that the reason that education pays off varies systematically across institutional contexts; even when the strength of the education effect is of a comparable size across countries, the mechanism by which education pays off might differ (Van de Werfhorst 2011a). The goal of this dissertation is to test this proposition: the reason for which education pays off in the labor market differs across institutional contexts.

However, it is difficult to directly study the influence that institutional context has on the importance of mechanisms that explain the educational payoff in the labor market. The strategy of this dissertation is therefore to investigate the educational payoff in the labor market in research designs that include implications for which mechanism drives this effect. For example, according to the productivity enhancing skills mechanism, educational degrees are not expected to have an effect on labor market outcomes when controlled for skills. The positional good and social closure mechanisms do expect this effect. While we empirically focus on the linkages between institutions, education, and labor market outcomes, specific research designs enable us to develop theories on the importance of the three mechanisms in different institutional contexts (see also 1.5.4). Thus, our two research questions are the following:

- 1) *How do institutional frameworks impact the linkages between education and the labor market?*
- 2) *What do these linkages reveal about the importance of the three different mechanisms in relation to the institutional context?*

In the following section, we will develop a theory of how we expect different institutional conditions to increase the importance of one of the three mechanisms.

TABLE 1.1: THE THREE MECHANISMS

	Productivity enhancing skills	Positional good	Social closure
What is the role of education?	Education equips students with skills that increase their later productivity.	Education provides students with skills that decrease on-the-job training costs.	Education provides students with an educational credential.
Why does education pay off?	Employers reward the skills of individuals.	Employers hire those who have, relative to others, the highest level of education to minimize training costs.	Educational credentials artificially restrict the supply of labor to occupations and thereby generate a wage premium for credential-holders.

1.5 INSTITUTIONAL CONTEXT AND THE THREE MECHANISMS

The theoretical aim of this dissertation is to hypothesize the institutional circumstances under which one of the three mechanisms best explains the educational payoff in the labor market. In doing so, we envision an interaction between institutions at a macro level and individual behavior at a micro level. This work can thereby be positioned in the tradition of new institutionalism, which argues that the behavior of social actors is shaped by their institutional context (e.g., Brinton and Nee 1998). Institutions are defined as “dominant system[s] of interrelated informal and formal elements—customs, shared beliefs, norms and rules—which actors orient their actions to, when they pursue their interests” (Nee 2005: 55). Social actors make decisions and pursue their interests within a given context; hence, it is vital to take this context into account. New institutionalism thus leaves room for agency even as it acknowledges the importance of structure.

Applied to this dissertation, the new institutionalist argument is that employers’ recruitment and reward behavior in the labor market is dependent on the institutional context in which they make their decisions.⁶ The three mechanisms are not entered in a horse race, as we do not argue that one mechanism fully explains the educational payoff in the labor market. Instead, we aim to formulate conditions under which one of the three mechanisms is more likely to explain the educational payoff (following van de Werfhorst 2011a, 2011b; Matković and Kogan 2012), while acknowledging the likelihood that all three mechanisms explain the education effect to a certain extent in all institutional contexts. We are, however, interested in the variation that exists between institutional settings, predominantly between countries but also between changing institutional settings over time. These variations in the explanatory strength of the three mechanisms cannot be seen as a zero-sum game: if one mechanism becomes more important, another mechanism does not necessarily diminish in importance. Here, we test the simpler, and more testable, claim that certain institutional conditions affect the importance of a particular mechanism without making a deterministic argument about the other mechanisms.

By formulating the conditions under which we expect one of the three mechanisms to be a more important explanation for the educational payoff, we develop a theory in which we combine the literature that links institutions to the strength of the education effect with the literature that investigates why education yields a high return on investment. The resulting theory has important implications for inequality research, as the extent to which inequalities are (re)produced in education depends on the mechanism by which education pays off. When employers select employees on the basis of their productivity enhancing skills, for example, social class background is likely to play a small role in the recruitment of employees (although access to those skills is obviously dependent on social class). The social closure mechanism, however, is based on the assumption that individuals’ access to particular positions in the labor market is largely dependent on their social class background; hence, the reproduction of social inequalities is likely to be stronger in settings where this mechanism is of higher

6. However, as is the case for many studies (cf. Stolzenberg 1978), instead of directly studying the employers’ behavior, we study labor market outcomes. We implicitly assume the vital role that employers take in the transition that individuals make from school to the labor market (for employer studies, see e.g., Bills 1988; Jackson 2009; Di Stasio 2012).

importance.⁷ In the conclusion, we will return to these discussions and embed our findings in the literature concerning inequality. First, we hypothesize the institutional conditions that are likely to increase the importance of each of the three mechanisms.

1.5.1 Institutional context and the productivity enhancing skills mechanism

The extent to which recruitment occurs on the basis of productivity enhancing skills is likely to be influenced by the types of skills that are provided by the educational system. As argued above, according to this mechanism, education provides individuals with skills, which in turn increase their future productivity in the labor market. There is, however, cross-national variation in the specificity of the skills that educational systems provide (Shavit and Müller 1998). Some educational systems provide students with generic skills, while others are characterized by a strong dual system in which employers influence the types of skills that the educational system confers (e.g., Ryan 2001). In a dual system, students combine education with on-the-job training by employers. As a consequence, the skills that are provided in dual systems are expected to directly increase the productivity of students in the labor market (e.g., OECD 2010a). Hence, in those countries where the educational system provides vocational skills—for example, in the form of a dual system—the productivity enhancing skills mechanism is likely to be a more important explanation for the education effect on labor market outcomes (Van de Werfhorst 2011b).

In addition to the vocational orientation of educational systems, several labor market institutions are also likely to create conditions under which it is likely that the productivity enhancing skills mechanism is a tenable explanation for the education effect. The productivity enhancing skills mechanism is more likely to be of importance when employers demand skills immediately, as is the case in liberal market economies, with their low levels of employment protection (Van de Werfhorst 2011a). Although some labor markets are more oriented towards an enduring career, others are characterized by shorter careers and a higher fluidity of employees. The average duration of careers is highly influenced by the level of employment protection, as especially in those countries with a rigid labor market, employees remain in the same occupation for a longer period of time (Nickell 1997). When employment protection is low, as is the case in more liberal market economies, employees change jobs more often. In coordinated market economies, in contrast, employees are offered longer-term contracts, and recruitment is not guided by a demand for immediate productivity, as there are several options for employees to become productive during their career (for example, through on-the-job training). The job duration in liberal market economies is generally much shorter, and recruitment is therefore more likely to take place on the basis of productivity enhancing skills: employees have little time to become productive in their jobs, and employers therefore demand employees who are immediately productive.⁸

7. However, as we show in Chapter 5, some forms of closure (e.g., unions, apprenticeships) may also decrease existing inequalities by generating economic rents for those at the bottom of the wage distribution. Other forms of social closure (e.g., licensure, educational credentialing) are not expected to raise the bottom floor but rather to increase the wages of those at the top of the income distribution. In the conclusion, we will discuss this issue more extensively.

8. This third institutional characteristic is, however, conditioned by the absence or presence of technological innovation. In times of strong technological innovations, skill requirements change rapidly, making selection on the basis of immediately productive skills impossible. It is known that fluctuation in these

The two institutional conditions that influence the importance of the productivity enhancing skills mechanism—the vocational orientation of the educational system and the level of employment protection—are related. Several studies find that in countries with high levels of employment protections, individuals invest more in highly specific education (Estevez-Abe, Iversen and Soskice 2001; but see Tåhlin 2008). The extent to which students participate in skill-based vocational educational programs depends on their expectations regarding the duration of their career: when workers are easily laid off, they are less likely to invest in highly job-specific vocational education.

A final institutional condition that is argued to influence the extent to which skills are rewarded in the labor market is the expansion of education. Instead of focusing on cross-spatial variation (as with the two institutional conditions described above), here we focus on cross-temporal variation in enrollment rates. Modernization theorists argue that education becomes increasingly important to advance in society; as education expanded in the 20th century, education became increasingly rewarded because of the function it has in the production processes of modern economies (Blau and Duncan 1967; Treiman 1970; Bell 1974). The productivity enhancing skills mechanism is thus strongly related to modernization theory (Barone and Van de Werfhorst 2011), as this mechanism emphasizes the functional aspects of education. According to this mechanism, the reason that education is increasingly rewarded is because individuals are increasingly rewarded for the productivity enhancing skills that they have acquired through education. We therefore expect that with educational expansion, employers increasingly recruit and reward on the basis of an individual's productivity enhancing skills.

1.5.2 Institutional context and the positional good mechanism

The extent to which the positional good mechanism explains the educational payoff in the labor market is hypothesized to vary across time as well. Across different periods, both institutions in the educational systems and the labor market changed tremendously. The first institutional condition we expect to influence the importance of the positional good mechanism is the changing size of the educated population. During the second half of the 20th century, all countries experienced educational expansion, although the pattern by which this expansion took place varied (Hannum and Buchmann 2005). An important assumption of the positional good mechanism is that only the *relative* educational position pays off in the labor market: a university degree increases in value the fewer university graduates there are. When the pace at which education expands exceeds the expansion of the occupational structure, a mismatch between educational attainment and demanded skill levels occurs (Clogg and Shockey 1984; Freeman 1974; Van der Ploeg 1994; Wolbers, De Graaf, and Ultee 2001). This process is expected to increase selection on the basis of the positional good mechanism because “when education expands faster than the number of jobs requiring educational credentials, employers intensify the screening process” (Hirsch 1977: 49). With educational expansion, employers will increasingly recruit on the basis of relative educational positions rather than the absolute level of education (as argued by modernization theory). As a consequence, the positional good mechanism is expected to become more important with the increase in educational expansion.

Labor market institutions are expected to influence the importance of the skill requirements vary not only over time but also across countries (Mayer and Solga 2008).

positional good mechanism as well, although here we depart from cross-temporal variations and again focus on variations across countries. We expect that the type of market (production or service) influences the importance of the positional good mechanism for the explanation of the education effect on labor market outcomes. When a labor market predominantly relies on tertiary-sector work, the link between education and occupation is less apparent. As a result, employers will find it difficult to differentiate between the educational signals of job seekers. Instead, those with the highest available level of education, who have the strongest signals relative to other job seekers, are chosen for more complex jobs. When labor markets are characterized by service jobs in the tertiary sector, the positional good mechanism is expected to be more important.

A final institutional characteristic that is likely to influence recruitment on the basis of the positional good mechanism is the extent to which the markets depend on technological innovation. An important assumption of the positional good mechanism is that education does not provide individuals with skills that enhance productivity; instead, individuals become productive on the job. When labor markets experience rapid technological changes, their skill requirements also change rapidly (Autor, Levy, and Murnane 2003; Spitz-Oener 2006; Goldin and Katz 2008). Employers therefore do not attach much value to a fixed set of skills acquired through formal education. Instead, trainability is a crucial hiring criterion: in times of innovation and technological change, employees need to adapt to new skill requirements frequently. Those job seekers that have the highest level of education relative to others are therefore more likely to be selected by employers, as they require the lowest training costs (cf. Thurow 1975). Thus, the positional good mechanism is expected to be a more important explanation for the education effect when markets are more dependent on technological change and innovation.

1.5.3 Institutional context and the social closure mechanism

Finally, the importance of the social closure mechanism is hypothesized to vary across countries according to structural differences in the institutional conditions. First, we expect that educational credentials yield higher returns on investment when education takes place in a highly tracked and vocationally oriented educational system. In societies with a highly tracked educational system, the tight link between education and occupation is often described in terms of skills (e.g., Mayer and Solga 2008; Shavit, Arum and Gamoran 2007). Alternatively, this strong match can be explained by processes of social closure (cf. Solga and Konietzka 1999; Hansen 2011). When educational credentials are job-specific, as is the case in more vocationally oriented and tracked educational systems (e.g., Brauns, Scherer, and Gangl 2001; Klein 2011), they function particularly well as an occupational closure strategy. In comparison to general degrees, job-specific educational credentials are, for obvious reasons, better at restricting the supply to occupations and securing a wage premium for credential-holders. In societies where educational systems are highly tracked, the social closure mechanism is expected to be a more important explanation for the education effect on labor market outcomes.

Specific variants of educational credentials are those preceded by an apprenticeship. Most apprenticeships are embedded in a dual system, in which formal education is combined with working and on-the-job acquisition of occupation-specific skills.

While apprenticeships are often discussed in terms of productivity enhancing skills (Shavit and Müller 1998; Culpepper and Finegold 1999), they are also described as closure strategies (cf. Weber [1922] 1978: 344), as “apprenticeship system[s] [are] designed to restrict entry to skilled trades” (Parkin 1974:13). Implementing mandatory apprenticeships allows for restrictive access to training, and consequently, to the occupation itself. When apprenticeships are legally enforced—for example, in the form of a dual-system—they are expected to be more effective closure strategies. Hence, the social closure mechanism is expected to be more important in countries with a strong dual system.

In the labor market, there are many institutional conditions that are hypothesized to increase recruitment on the basis of educational credentials. The strength of the unions is one of them: unions often control access to training and the acquisition of skills that are formally required to perform particular jobs (see Bills 2005: 78; Busemeyer 2009: 394). More generally, the level of labor market coordination seems to be an important institutional condition. In countries with high levels of labor market coordination, unions, employers, and the state negotiate working conditions, such as wages. Most of these negotiations are formalized in legally binding collective labor agreements (CLAs). These legally binding agreements often include formal entry requirements for occupations, educational credentials, as well as other occupational closure strategies (Weeden 2002). When there is a high level of labor market coordination, unions, employers and the state often raise legally enforced educational entry requirements. We therefore expect that educational degrees function better as access-providing credentials in countries with a high level of labor market coordination.

1.5.4 How the mechanisms are examined in this book

A final question that remains is how to test our expectations concerning the potential influence of institutional contexts on the three mechanisms that shape educational payoff in the labor market. As we argued in section 1.4, it is difficult to directly study mechanisms by which education yields high returns on investment. Instead, we estimate the effect of education on labor market outcomes, but we do so in research designs that enable us to differentiate between the three mechanisms. In these designs, some indicators are only expected to have an effect when a certain mechanism is present or absent. To distinguish between the mechanisms, this dissertation uses three different research designs, all primarily focused on one of the three mechanisms: (1) sheepskin effects, (2) the relative educational position, and (3) occupational closure effects.

The first research design that is used focuses on sheepskin effects: the effects of educational degrees on top of years of schooling (Layard and Psacharopoulos 1974; Hungerford and Solon 1987). In the field of economics, the sheepskin design is the most common way to differentiate the productivity enhancing skills mechanism from other mechanisms. This model follows the logic that when education increases an employee’s future productivity, it should do so for each year of education; therefore, an educational degree is not expected to increase wages on top of years of education. In economic terms, two individuals who invested equally in education (measured by years of schooling) should receive the same marginal returns in the labor market irrespective of the degree they hold. Most studies confirm the existence of sheepskin effects: the effect of education on labor market returns is found to be non-linear, as degrees indeed have an effect on top of years of education (e.g., Heywood 1994; Jaeger and

Page 1996; Belman and Heywood 1997). Whereas the productivity enhancing skills mechanism refutes the existence of degree effects, both the positional good and social closure mechanism give importance to degrees as signals or as credentials, respectively. Although some studies investigated cross-national variations in the effects of degrees on top of years of schooling, we are the first to analyze whether the strength of the degree effect on top of years of schooling depends on the institutional context (see Chapter 3).

While the first design predominantly contrasts the productivity enhancing skills mechanism with the other two, the second research design centers around the positional good mechanism. Here, we exploit the importance that the positional good mechanism attaches to the relative educational position: the size of the educational payoff is highly dependent on the educational composition of other job seekers. This relationship does not exist for the productivity enhancing skills mechanism, which argues that individuals with comparable levels of education should receive comparable returns in the labor market irrespective of the educational levels of other job seekers. In the second research design, we therefore compare the returns on an absolute measure of education with the returns on a relative measure of education (Sørensen 1977; Olneck 1979; Ultee 1980; Olneck and Kim 1989). As an absolute measure of education, we use years of schooling. The relative measure of education, in contrast, converts this absolute indicator into a ranked variable, where the score of each individual depends on the educational level of other job seekers. According to the productivity enhancing skills mechanism, the effect of the relative measure should not be stronger than the effect of the absolute measure: individuals are rewarded for their skills regardless of where one stands in the educational ranking. The positional good mechanism, however, expects a stronger effect of the relative measure; in this model, the relative educational position is a stronger determinant for labor market success than the absolute level of education. Here, we are especially interested in how the labor market returns on an absolute and relative measure of education are influenced by educational expansion (see Chapter 4).

The final design used in this book focuses predominantly on the social closure mechanism. As argued above, we expect social closure to take place primarily at the occupational level, where educational credentials form entrance barriers to access. If one wishes to investigate the effects of credential closure, one must estimate the wage premium that is generated by entrance restrictions to occupations. Following Weeden (2002), we estimate this wage premium in a hierarchical data structure (using multilevel models), where individuals are nested in occupations. Information about educational skills is added at the individual level, while data on closure practices such as educational credentials are accounted for at the occupational level. The productivity enhancing skills mechanism does not expect any effect of the occupational-level closure variables: individuals are rewarded for their skills irrespective of their occupation. The social closure mechanism, in contrast, expects that closure practices are positively related to labor market returns, as individuals accumulate economic rents when they gain access to closed occupations. In this final design, we are therefore able to estimate the labor market returns to occupational closure. Because we wish to know whether the mechanism by which education pays off differs across institutional settings, we compare the wage returns to occupational closure in Germany and the United Kingdom (see Chapter 5).

1.6 OVERVIEW OF BOOK CHAPTERS

This book consists of four empirical chapters. Each of these chapters was originally written as an article and can therefore be read independently. As a consequence, the descriptions of the data and methodological considerations differ for each empirical study and are described in each chapter. Before we study how the mechanisms by which education pays off differ across institutional settings, we build upon the existing literature concerning the relationship between the institutional context and the strength of the education effect. The first empirical chapter (Chapter 2) aims to bridge the existing literature to the other empirical chapters, which focus primarily on how institutions influence the mechanisms that explain the education effect. The remaining three empirical chapters center around the main research questions, and each chapter focuses on one of the three mechanisms (and research designs as discussed in section 1.5.4): productivity enhancing skills (Chapter 3), positional good (Chapter 4), and social closure (Chapter 5). An overview of the research designs and main findings of the four empirical chapters is provided below.

In **Chapter 2**, we empirically investigate cross-national differences in the relationship between two dimensions of educational systems (the level of tracking and the level of vocational orientation) and the education effect on labor market outcomes. This study makes two contributions to the current literature. First, we develop new cross-national indicators for the two relevant dimensions of educational systems. Earlier studies provide measures that are often poorly documented, offering fewer possibilities for replication. Second, we investigate a frequently mentioned trade-off between labor market allocation and equality of educational opportunities: while earlier studies find that educational systems with a high level of tracking and a strong vocational orientation increase the allocation of school-leavers in the labor market, these systems are also argued to increase the inequality of educational opportunity. This trade-off is tested empirically by using country-level data and estimating country-level regressions. Our empirical findings confirm the existence of such a trade-off, although the inequality of educational opportunity seems, at least at the country level, to be more driven by the level of tracking than by the level of vocational orientation. In contrast, the labor market allocation is more strongly related to the vocational orientation of the educational systems.

In **Chapter 3**, we cross-nationally compare the productivity enhancing skills mechanism to the two other mechanisms. The main interest of this chapter is the added effect of educational degrees on top of years of schooling. This sheepskin design has as its main proposition that if two individuals have attained the same level of schooling (quantitatively measured as years of schooling), they should be equally skilled, equally productive, and thus equally rewarded. While the productivity enhancing skills mechanism does not expect an effect of degrees on top of years of schooling, the other two mechanisms do expect such an effect. In a cross-national study of 23 European countries (data from the European Social Surveys of 2008 and 2010) in which occupational status is used as the dependent variable, we estimate the influence of three institutional conditions on the effects of degrees on top of years of schooling: the level of the educational systems' vocational orientation, the level of the educational systems' tracking, and the level of labor market coordination. We expect all three institutional conditions to positively impact the size of the sheepskin

effects: degrees are expected to have a stronger effect in countries with high levels of tracking, vocational orientation and labor market coordination. We find that strongly vocationally oriented and tracked schooling systems have relatively strong net effects of qualifications on occupational status, which are explained by the more important role of educational degrees as signals or credentials in those countries. Furthermore, in coordinated market economies, we find that vocational degrees lead to higher status jobs than in liberal market economies. This finding is explained by higher levels of social closure implemented by coordination institutions.

Chapter 4 focuses on the positional good mechanism and analyzes whether the importance of an individual's relative educational position changed with the strong educational expansion in the 20th century. We argue that during educational expansion, the way in which education operates in labor markets changed tremendously, while this shift has not been acknowledged in the existing literature. More specifically, we study the claim that education has increasingly become a positional good during the expansion of education. When it is indeed the case that there is a growing misalignment between an individual's level of education and place in the occupational structure, employers will find it increasingly difficult to reward job-seekers for their actual set of skills. Instead, they will predominantly reward job-seekers according to their relative educational position. Alternatively, during periods when education was highly dispersed, with few graduates of higher education, employers would view educational levels as informative about the absolute skill level of employees. We argue that this human capital model of education has been replaced by a positional model of education, where rewards do not primarily depend on workers' absolute skill levels but rather on their relative position in the educational distribution. Using data from the International Social Survey Program (ISSP) from 1985 to 2008, which allows us to create cohorts of people who graduated between 1951 and 2003 for 30 countries, we test the influence of educational expansion on both an absolute (following the productivity enhancing skills mechanism) and relative (following the positional good mechanism) measure of education. We estimate the impact of both technological innovation and the importance of the secondary sector on both measures. Our main finding is that while the effect of the relative educational measure on both earnings and occupational status increases in times of educational expansion, this relationship is not found for the absolute measure of education. This finding supports our main claim that education has become increasingly positional.

Chapter 5 is the final empirical chapter, and here we focus on the social closure mechanism. We examine the rent-generating capacities of several occupational closure strategies in a prototypical liberal market economy (LME), the United Kingdom, and in a prototypical coordinated market economy (CME), Germany. In this chapter, we focus on four closure strategies: educational credentialing, licensure, unionization, and apprenticeship systems. Although we expect occupational closure to generate rents in both countries, we hypothesize that the wage premium of the different closure strategies varies in systematic ways across the two market economies. With respect to cross-level variation in the effectiveness of occupational closure; the effects of educational credentialing, unionization and apprenticeships are expected to be stronger in Germany, with its highly differentiated educational system and strongly regulated labor market. Licensure, on the other hand, is expected to generate a larger wage premium in the United Kingdom than in Germany. To test these hypotheses,

we combine micro data from the German Microcensus (2006) and the British Labor Force Survey (2006/2007) with newly collected occupation-level data on the four sources of closure. In separate multilevel models for each country, we estimate the wage effects of occupational closure net of individual-level measures of human capital. In this way, we are able to predict the importance of the social closure mechanism net of the importance of the productivity enhancing skills mechanism. Our empirical analyses show that in both countries, three out of four closure practices (credentialing, licensure, and unionization) increase mean occupational wages. The magnitude of the closure wage premium varies across both countries in predicted ways.