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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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# CHAPTER 6

## CONCLUSION

## 6.1 WHY DOES EDUCATION PAY OFF?

Why does education pay off? In this dissertation, we investigated how the institutional context influences the importance of three mechanisms that explain the educational payoff in the labor market: productivity enhancing skills, positional good, and social closure. While a large body of literature studies the effects of institutional context on the strength of the education effect, and much has been written on the mechanism(s) by which education pays off, these two literatures are rarely combined. Just as the literature on mechanisms has developed largely without reference to the institutional context, so too has the research on cross-country variation in the education effect developed largely without reference to the mechanisms by which education yields a high return on investment. The central goal of this dissertation has been to bridge both literatures and propose a new framework to study the influence of the institutional context on the importance of the mechanisms by which education pays off in the labor market. Two main research questions that guided this dissertation were:

- 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 introductory chapter, the different theories that describe the causal effect of education on labor market outcomes were divided into three mechanisms: the productivity enhancing skills mechanism, the positional good mechanism, and the social closure mechanism. Several institutional conditions were formulated that might increase or decrease the importance of one or more mechanisms. Three empirical chapters focused primarily on the relationship between the institutional context and the three mechanisms (Chapters 3-5), while the first empirical chapter (Chapter 2) built upon the existing literature that studies the influence of institutions on the strength of the education effect. In the remainder of this chapter, we summarize and discuss the main findings of all of these chapters. We furthermore discuss the academic and policy implications of our findings and suggest directions for future research.

## 6.2 THE MAIN FINDINGS

How does the institutional context influence the importance of the mechanisms by which education pays off in the labor market? Before describing the broader implications of this dissertation (section 6.3), this book's main findings for each of the mechanisms are summarized.

### 6.2.1 Productivity enhancing skills

In the three empirical chapters that focus on the relationship between institutional context and mechanisms, the productivity enhancing skills mechanism is discussed, often in contrast to the positional good and social closure mechanisms. *With respect to*

*the educational system, we do not find evidence to suggest that in more differentiated educational systems, employers recruit on the basis of productivity enhancing skills (Chapter 3). When using occupational status as the dependent variable, the effect of educational degrees on top of years of schooling is stronger the more tracked an educational system is. Such degree effects, estimated net of years of education, have been referred to as “sheepskin effects” (Hungerford and Solon 1987). The vocational orientation also has a positive effect on the importance of degrees, as sheepskin effects are larger when vocational programs take a more prominent role in the educational system.*

These results are in line with earlier studies that show that the effect of education is stronger in more vocationally oriented and tracked educational systems (e.g., Shavit and Müller 1998). In an empirical part of this dissertation that does not fully focus on the mechanisms, we confirm this claim with new data for educational systems (Chapter 2). The analyses reveal that the allocation of students in the labor market is more successful when educational systems are more differentiated: the relative duration of the school-to-work transition is shorter when educational systems are more vocationally oriented. *Although we find that education pays off more in more differentiated educational systems, the cross-national study of sheepskin effects shows that this larger payoff is better explained by the role of educational degrees than the level of accumulated human capital, as traditionally measured by years of education.*

This finding is somewhat surprising, as many researchers argue that the education effect in countries with a more vocationally oriented educational system is stronger due to the productivity enhancing skills that students acquire in such a system (e.g., Blossfeld 1992; Culpepper and Finegold 1999; OECD 2010a). We do not find evidence for this claim; instead, the greater educational payoff in more differentiated educational systems seems to be caused by larger sheepskin effects. Educational degrees, more than the amount of human capital, account for a larger share of the educational returns when educational systems are more vocationally oriented. One interpretation of this finding is that the degrees themselves indicate skills more than do standard human capital indicators, such as years of education. However, in another part in this dissertation, more evidence is given that strongly vocationally oriented educational systems do more than improve workers' skill levels. In a comparison of the wage premium to occupational credential closure between Germany and the United Kingdom, it was shown that in Germany, with its highly differentiated educational system, educational degrees yield high returns. This payoff is found at the individual level (see Appendix I) and at the occupational level: while occupational closure by vocational degrees generates a wage benefit in Germany, this relationship does not exist in the UK, even after holding constant the skill demands of occupations. Moreover, the returns to various variables that indicate skills at the occupational level are comparable between the two countries. This finding gives further evidence for the claim that the stronger effect of education on labor outcomes in countries with a more differentiated educational system results in part from the important role of educational degrees instead of the more productivity enhancing skills that job-seekers have acquired. Such closure mechanisms have largely been ignored in comparative stratification research, where vocationally oriented educational systems have been examined primarily in relation to the work-relevant skills that students acquire.

A second hypothesis was that in market economies with low levels of coordination and with an absence of central planning and strict employment protections, employers

rely on spot-market contracting and immediately demand productive employees (Van de Werfhorst 2011a). We confirm this hypothesis: *the effect of years of education on occupational status—net of educational degrees—is smaller in more coordinated market economies*. Following the economic literature on sheepskin effects, the negative interaction between labor market coordination and years of education would be interpreted as a smaller importance of productivity enhancing skills in countries with high levels of coordination. However, such an interpretation of sheepskin effects (years of education equals skills) is not uncontroversial (cf. Bills 2003; Flores-Lagunes and Light 2010). At least, we can argue that, in contrast to what is commonly expected, no evidence was found for the claim that especially in highly coordinated market economies, productivity enhancing skills yield high returns on investment (cf. Culpepper and Finegold 1999). Instead, our results showed that in Germany, a highly coordinated market economy, educational degrees and processes of credential closure were more important for the determination of wages than in the UK, a prototypical liberal market economy. In sum, we did not find any evidence that skills are *more* important when markets are highly coordinated, and we have found some support for the hypothesis that skills are rewarded less when labor market coordination is high.

Third, cross-temporal variation in the importance of productivity enhancing skills mechanism was studied by looking at how in 30 countries, the effects of years of education on labor market outcomes (income and occupational status) changed with educational expansion between 1951 and 2003 (Chapter 4). The results showed that the effect of years of education did not change with educational expansion (however, see Goldin and Katz 2008). Modernization theory anticipates that education is increasingly rewarded for its function as a skill provider (Barone and Van de Werfhorst 2010), hence the effect of an absolute measure of education (years of schooling) was expected to increase with educational expansion. This hypothesis was not confirmed; instead, the main finding was that education became more positional as it expanded in the second half of the 20<sup>th</sup> century (see 6.2.2).

### 6.2.2 Positional good

The second mechanism that was investigated in this dissertation is the positional good mechanism. The essential aspect of this mechanism is that education is associated to labor market outcomes because of the relative position that job seekers take in the educational distribution. *Our main finding is that with the rise of mass education between 1951 and 2003 education increasingly became positional* (Chapter 4). Educational expansion is argued to cause a displacement of workers, as the supply of (highly) educated workforce exceeds the demand (Wolbers, De Graaf and Ultee 2001; but see Goldin and Katz 2008). When there is indeed such a growing mismatch between educational attainment and demanded skill levels, selection on the basis of the positional good mechanism will increase. The main hypothesis in this study was therefore that with educational expansion, education is increasingly rewarded for its positional value instead of its absolute value. The effects of an absolute and a relative measure of education on two labor market outcomes (income and occupational status) were interacted with educational expansion. While the effect of the relative measure increased with educational expansion, the strength of the effect of the absolute measure remained stable in times of changing enrollment rates. As education expanded, the relative educational position became more important, thereby indicating that the

importance of the positional good mechanism varies structurally with levels of (higher) educational expansion. These results give strong evidence for the hypothesis that educational expansion converted education to a positional good.

*We did not find any evidence that the positional good mechanism is more important when there is more technological innovation or when the industrial composition changes.* The interaction effects of the absolute and relative measure of education with the number of patent applications (technological innovation) pointed in the same direction: when there is more technological innovation, the effect of the relative measure of education decreases, as is the case for the absolute measure. Both the absolute and relative measure of education also had a comparable effect on the percentage of workers in the secondary sector: when societies rely more on the secondary sector, both the effects of the relative and absolute measure are stronger. Following Thurow's (1975) ideas regarding on-the-job training, we expected that employers select more often on levels of trainability when the skill-demand changes more rapidly (technological change) or when there is a stronger emphasis on services instead of products. The results do not confirm these claims, instead showing that education becomes more important (secondary sector) or less important (technological change), regardless of whether it is positional or not.

### 6.2.3 Social closure

The final mechanism analyzed in this dissertation is the social closure mechanism. A *main finding is that educational degrees are more effective credentials when educational systems are more differentiated and that this is especially true when labor markets are highly regulated.* The social closure mechanism is more important in countries with a more tracked and vocationally oriented educational system because of the tight link between education and occupation. When education takes place in tracked form, degrees that are handed out are often occupation-specific and hence more effective in establishing credential closure to occupations. Restriction to supply is better achieved when credentials are legally enforced entry requirements to occupations, as is more often the case in countries with a high level of labor market coordination. The positive influence of both the level of differentiation of the educational system and the level of labor market coordination on the importance of the social closure mechanism is substantiated by two different empirical studies.

First, as was discussed above, degree effects—net of years of education—are stronger when educational systems are more tracked and vocationally oriented (Chapter 3). However, these sheepskin effects can be explained both by the positional good (stronger signals) or the social closure (credentials) mechanisms. In an attempt to clarify this issue, the role of the labor market coordination was investigated. Following earlier studies, we hypothesized that in coordinated market economies (CMEs), vocational degrees function particularly well as education credentials, as there are often formal agreements between employers, unions, and the government on access conditions (Hansen 2011). The analyses confirm this claim: sheepskin effects are stronger in countries that have coordinated labor markets, which is especially the case for vocational rather than general degrees.<sup>1</sup> While the sheepskin design that was used makes it hard to disentangle a credential from a signaling explanation, the results

1. However, we do find that tertiary (general) degrees have a stronger effect on occupational status in more coordinated market economies, in line with our results from Chapter 5.

show that particularly the effect of vocational degrees on top of years of schooling can be ascribed to credentialization processes, which are rubricated under the closure perspectives.

This finding was confirmed by a comparative study of the wage returns to credential closure and apprenticeships in Germany (highly tracked educational system, coordinated market economy) and the United Kingdom (comprehensive educational system, liberal market economy). The prevalence of occupational closure strategies varied as expected: more credential closure and closure by apprenticeships occurred in Germany than in the UK. While credential closure increased wages in both countries, the pattern by which it did so varied in predicted ways: in the UK, closure by tertiary educational degrees increased the mean occupational wages, but closure by intermediate degrees had no effect on labor market returns. In Germany, tertiary credentials also secured the largest wage returns; however, closure by intermediate vocational degrees still led to a significant wage premium.

These results confirm the claim that *vocational degrees are a more effective closure strategy when there is a high level of labor market coordination*. In the highly coordinated labor market of Germany, access by educational credentials is often legally enforced by the state. Tripartite negotiations between employers, the state, and unions results in a formalization of access conditions for occupations in collective labor agreements, which is not the case in the liberal labor market of the UK, where the state has less influence over the access requirements for occupations. Furthermore, the highly tracked educational system in Germany provides school-leavers with occupation-specific degrees, which are more efficient in restricting access to occupations than the more generic degrees that are issued in the UK. Apprenticeships are not found to increase mean occupational wages in either country. Especially for Germany, with its highly institutionalized apprenticeship system, this result is surprising. One explanation might be that apprenticeships secure a wage premium only when they are embedded in the educational system (the dual system). The absence of an effect of apprenticeships is then explained by the positive wage premium that is associated with vocational credentialing. A second explanation is that apprenticeships are an effective form of closure, but only in the lower part of the occupational structure (e.g., manual, operative, and craft occupations).

Admittedly, any generalization is dangerous with an analysis of two countries. However, just as with the findings in the cross-national study of sheepskin effects, these results point to a systematic variation between countries, thereby supporting our claim that the importance of the social closure mechanism for the educational payoff depends on the level of labor market coordination and the educational system. Social closure is more prevalent and effective when educational systems are more tracked, a finding that is compatible with another outcome of this dissertation: the inequality of educational opportunity is greater when educational systems have a higher level of tracking (Chapter 2). Differentiation in educational systems is related to a trade-off between labor market allocation and the equality of educational opportunity. When students are placed in different tracks, they are more successfully allocated in the labor market, but the effect of social class background on educational performance is greater. Although we only investigated the effect of tracking on the inequality of educational opportunity at the country level, these results point to a greater importance of social closure processes when educational systems are more tracked.

## 6.3 THEORETICAL IMPLICATIONS: FIVE POINTS OF PROGRESS

Why are these findings important? Here, we will discuss the theoretical implications of this dissertation by raising five points of progress: (1) combining institutions and mechanisms, (2) vocational education and degree effects, (3) educational systems and policy tradeoffs, (4) educational expansion and relative education, and (5) occupation rents and wage inequality.

### 6.3.1 Combining institutions and mechanisms

The central contribution of this dissertation is that it shows how important it is to take institutions into account when studying mechanisms. This finding is an important point of progress for the current literature that focuses on the mechanisms by which education pays off in the labor market. It is also an important contribution to the literature on cross-institutional variation in the strength of the education effect on labor market outcomes, as we have shown that it is crucial to discuss the mechanisms that cause the education effect on labor market outcomes rather than assuming potential differences away. In this study, two types of institutions—educational systems and labor market institutions—are related to the importance of three different mechanisms that explain the educational payoff: productivity enhancing skills, positional good, and social closure. We will briefly discuss what we already know and how the main findings of this dissertation can contribute to the existing literature.

Previous studies that related educational systems to the educational payoff in the labor market mainly focused on the *strength* of the education effect. A central finding in these studies is that the effect of education on labor market outcomes is stronger in more-differentiated educational systems (Allmendinger 1989; Shavit and Müller 1998). Without testing why this is the case, authors assume that this effect is, for example, explained by the productivity enhancing skills that are provided in strongly vocationally oriented systems (e.g., Blossfeld 1992). Others argue that the effect of education is stronger because educational degrees are more effective signals in the job matching process in tracked educational systems (e.g., Allmendinger 1989), or they point to processes of social closure that take place more frequently in educational systems that are highly diversified and characterized by strong apprenticeship systems (e.g., Solga and Konietzka 1999; Klein 2011). Often, however, authors assume a combination of mechanisms without explicitly connecting them to institutional conditions (e.g., Shavit and Müller 2000).

This dissertation thus demonstrates that it is extremely relevant to empirically study linkages between mechanisms and educational systems instead of only hypothesizing about them afterwards. Our findings imply that in tracked educational systems, the education effect is particularly strong because of the credentialization processes induced by educational degrees. In contexts where the educational system offers occupation-specific educational degrees, degrees are more effective in generating economic rents, and the returns to these credentials are higher. Our study did not give evidence for a relation between the productivity enhancing skills mechanism and the existence of vocational orientation, a somewhat surprising finding that we will discuss more extensively in section 6.3.2.

There is a large literature on the influence of labor market institutions on the

education effect as well. Authors, for example, argue that the education effect is stronger when markets are segmented along occupations instead of firms (Doeringer and Piore 1971; Stinchcombe 1979; Maurice, Sellier, and Silvestre 1986) or that employment protection legislation has a negative effect on the smoothness of the school-to-work transition (Müller and Gangl 2003; Van der Velden and Wolbers 2003). Just as with the studies that relate educational systems to the educational payoff, little attention is given to cross-sectional or cross-temporal variations in the mechanisms by which education yields high returns on investment. In occupational labor markets, education can have a greater effect because it provides students with more occupation-specific skills or is a stronger signal or because occupational closure is more effective when labor markets are segmented according to occupations.

Our findings contribute to this field, as well, by showing that the importance of the three mechanisms varies systematically across labor markets. Most convincing is the support we have found for the relationship between the levels of labor market coordination and the social closure mechanism. In Germany's institution-dense labor market, occupational closure, including educational credentials, pays off more. The combination of a strongly coordinated and occupational labor market creates ideal conditions for occupational closure and the generation of economic rents, that is, wages in excess of what would prevail in a fully competitive labor market (Sørensen 2000).

### 6.3.2 Vocational education and degree effects

While the more general conclusion and contribution is that the mechanism by which education pays off depends on the institutional context, here we wish to highlight one important finding. An extensive body of research argues that the education effect is stronger in countries with more vocationally oriented educational systems because of the productivity enhancing skills that students obtain in such a system (e.g., Blossfeld 1992; Witte and Kalleberg 1995; Ryan 1998; OECD 2010). However, the evidence for this claim is limited. Our results showed that education is rewarded more in vocationally orientated educational systems because degrees are better-functioning occupational closure strategies. This finding does not suggest that students do not obtain any productivity enhancing skills when they are enrolled in vocational education; we merely argue that these skills are not the only reason for the higher educational payoff in countries that rely heavily on vocational education.

Our results provide an important nuance to many comparative studies that implicitly assume that the stronger education effect in more vocationally oriented educational systems results from skill-acquisition. While we do find a stronger education effect in vocationally oriented educational systems, our evidence suggests that this is not primarily because of productivity enhancing skills. Rather, vocationally oriented educational systems incorporate strongly occupation-specific *degrees*. Germany's famous vocational educational system is not a mere "skills machine" (Culpepper and Finegold 1999) but also a credential machine. The reason that education has a stronger effect on labor market outcomes when educational systems confer more vocational degrees is because these degrees are more effective in establishing and maintaining social closure. Highly occupation-specific vocational qualifications restrict the supply of access to occupations, thereby generating a wage premium for vocational degree-holders. This finding is an important contribution to the existing literature, as it nuances the idea

that it is especially the productivity enhancing skills that cause a higher educational payoff when educational systems are more differentiated and rely more on vocational education.

### 6.3.3 Educational systems and policy trade-offs

A third point of progress does not pertain as directly to the link between mechanisms and institutions; rather, it is a contribution to the field that studies how educational systems shape educational outcomes. Differentiation in educational systems influences both the allocation of students in the labor market and the equality of educational opportunity (Chapter 2). The school-to-work-transition is smoother when educational systems are more vocationally oriented and tracked (Shavit and Müller 1998). At the same time, differentiation in educational systems, mainly in the form of tracking, increases the inequality of educational opportunity (cf. Oakes 1985; Hallinan 1988; Brunello and Checchi 2007). Both labor market allocation and equality of educational opportunity can be seen as policy goals of education, and our findings provide evidence for a trade-off between these two functions.

While earlier studies pointed to the possible existence of such a trade-off (Shavit and Müller 2000; Van de Werfhorst and Mijs 2010) or discussed it by focusing on the historical roots of differentiation in educational systems (Benavot 1983), this dissertation provides one of the first empirical studies on this theme. Its main contribution to current literature is that we empirically show that it is important to focus on how characteristics of educational systems—in this case, differentiation in educational systems—cause potential tradeoffs between policy outcomes.

### 6.3.4 Educational expansion and relative education

The finding that education became more positional with educational expansion is a contribution that can be listed under section 6.3.1, as it shows that the mechanism by which education is rewarded in the labor market is dependent on the institutional context. This finding, however, has implications that extend beyond the claim that institutional context influences the importance of mechanisms. We can argue that measuring education in diverse ways is useful, as different operationalizations can lead to different interpretations of the education effect (see also Sørensen 1977; Ultee 1980; Olneck and Kim 1989). More importantly, the finding that education became more positional with educational expansion has important implications for the literature on wage inequality as well.

Goldin and Katz (2008) relate educational expansion to the rise of wage inequality in the United States. Their main argument is that the rapid increase in wage inequality is due to an increase in demand of skilled labor, which has not been followed by an increase in supply. There is not enough educational expansion, and as demand outpaces supply, the rewards for educated workers increase, thereby fuelling wage inequality. This idea is based on the neo-classical economic view that education is rewarded because it is productivity enhancing: skills are sold in the labor market, and when there is more demand than supply, the price of the skills rise. Our results, however, question this line of reasoning. Given a particular level of technological development, higher levels of educational expansion do not necessarily reduce inequality when rewards are increasingly set on the basis of a worker's relative position instead of his or her skills: "if everyone stands on tiptoe, no one sees better" (Hirsch 1977: 5).

### 6.3.5 Occupation rents and wage inequality

In accordance with earlier studies, we found that occupational closure strategies generate economic rents in Germany and the UK. Again, there are theoretical implications that reach beyond the more general point that is made by this dissertation, namely, that institutions should be taken into account when studying mechanisms by which education yields high returns on investment. To the least, this empirical result is an extension of earlier work on occupational closure, as the US has been the primary subject for the study of occupational closure practices (Weeden 2002). However, the study of occupational closure in Germany and the UK has important implications for the literature on wage inequality as well.

Occupation rents, which are economic rents generated by occupational closure, will influence wage inequality, although these effects are dependent on (1) the effect of occupational closure on mean occupational wages, (2) the effect of occupational closure on the within-occupation wage inequality, (3) the distribution of closure practices across occupations, and (4) the relative size of the closure effect across different types of occupations. When occupational closure has a larger effect on earnings for occupations that, in the absence of closure, would be at the top of the wage distribution, closure is argued to increase wages. Occupational closure would also increase wage inequality if closure strategies were disproportionately clustered in occupations at the top of the wage distribution. Closure could, however, decrease aggregate levels of wage inequality as well, especially when those closure practices that secure rents for lower-paid occupations are prevalent in a country.

To demonstrate that this hypothesized link between occupational closure and wage inequality is more than an assumption, we offer some first evidence for the existence of this relationship. When the wage premium to closure is plotted against the mean earnings of an occupation, it is possible to see whether high-paid occupations benefit more from closure than low-paid occupations. Ideally, the mean earnings of occupations are obtained in the absence of occupation rents, as the mean earnings are already polluted by these rents. We therefore do not use the actual mean occupational earnings but the predicted occupational earnings, which are predicted without taking the occupational closure effects into account and are therefore not contaminated by rents. These predicted wages can be seen as what the average occupational earnings would be if individuals were purely rewarded for the demographic and human capital characteristics of themselves and their occupations.<sup>2</sup> The graphs below show how occupational closure affects the between-occupation wage inequality in Germany and the UK. The predicted occupational closure effect<sup>3</sup> (vertical axis) is plotted against the predicted occupational wages.<sup>4</sup> All information is based on Model 3 of Tables 5.5 and

2. We by no means argue that these predictions are rent-free. Instead, it is likely that the effect of individual education attainment can be partially addressed by rents (see Weeden and Grusky 2012b). However, with this estimation, we come as close to estimating true market-conform wages as possible with these data.

3. The predicted closure effect is calculated for each occupation separately by multiplying the level of closure (the  $X$ ) with the predicted effect of the closure strategy (the  $\beta$ ). The total predicted closure effect  $c$  for occupation  $j$  is calculated by the following formula:  $c_j = (X_1 * \beta_1) + (X_2 * \beta_2) + (X_3 * \beta_3) + (X_4 * \beta_4)$ , where  $X_1$  to  $X_4$  are the scores for each occupation on the four closure strategies, and  $\beta_1$  to  $\beta_4$  are the predicted effects of the corresponding closure strategies in Tables 5.5 and 5.6.

4. The predicted wages  $w$  for occupation  $j$  are calculated by the following formula:  $w_j = (XB_j + U_j) - c_j$ , where  $XB_j$  are the total predicted earnings based on the fixed effects,  $U_j$  is the best linear unbiased prediction of the random intercept, and  $c_j$  is the predicted occupational closure effect.  $W_j$  is therefore the predicted

5.6 for the UK and Germany, respectively.

Figure 6.1 and 6.2 clearly show that occupations that are already highly paid in the absence of occupation rents benefit more from closure than low-paid occupations. Occupational closure therefore magnifies the between-occupation wage inequality in both countries, although more so in Germany than in the UK. This finding might be explained by the strong occupational labor market in Germany relative to the UK. However, the differences between Germany and the UK require further study. Most important for now is that these analyses give a first indication that those at the top of the wage distribution benefit more from economic rents, thereby increasing wage inequality. This finding can lead to progress in the field that focuses on wage inequality, and more specifically, the literature that shows that a large share of overall wage inequality occurs between occupations (e.g., Weeden et al. 2007; Kim and Sakamoto 2008; Mouw and Kalleberg 2010; Williams 2012).

## 6.4 POLICY IMPLICATIONS

While the previous section summarized some implications of this dissertation for the academic field, another relevant question is what practical policy advice results from the main findings. Governments and policy-makers are interested in the school-to-work transition. For example, they wish to ensure that students are efficiently allocated into the labor market (OECD 2010a) or to reduce the inequality of educational opportunity (OECD 2007b). We will discuss four policy implications: (1) awareness of institutional context, (2) changing mechanisms by changing institutions, (3) the (un)necessity for educational expansion, and (4) inequality and occupational barriers.

First, this dissertation shows that it is important to take the institutional context into account when discussing the mechanism by which education yields a high return on investment, information that is also valuable for policy-makers. In many policy reports, the productivity enhancing skills mechanism is dominant: policy-makers rely primarily on neo-classical economic literature (e.g., OECD 2010b; van Elk, Lanser, and Van Veldhuizen 2011), not fully acknowledging that there are other relevant mechanisms. The general claim of this study is that the importance of any mechanism, including the productivity enhancing skills mechanism, depends on the institutional landscape in a specific country. A first piece of policy advice is therefore not to focus solely on one of the three mechanisms but instead to take country-specific conditions into account when designing policies for the school-to-work transition.

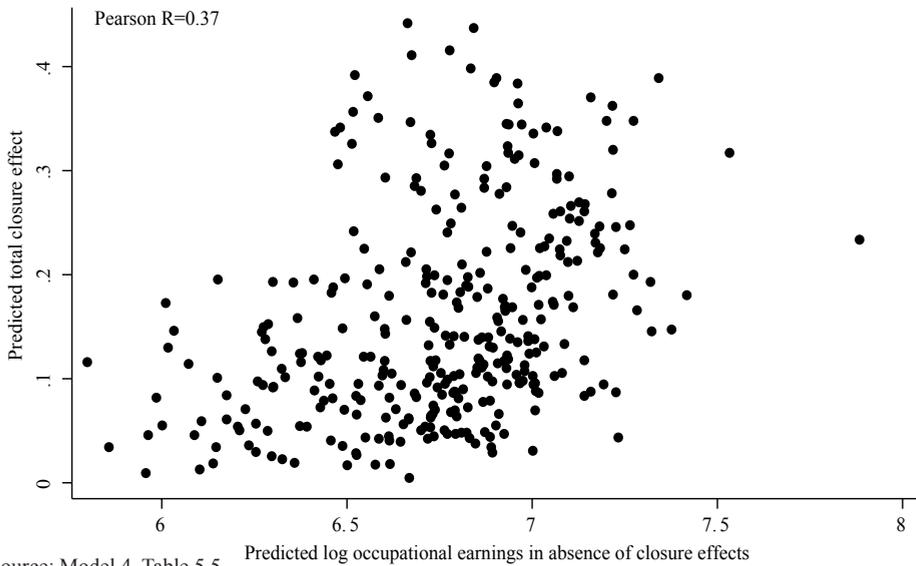
Specific institutions influence the salience of the mechanisms by which education pays off in the labor market. An implication is then that by changing the institutional context, selection and recruitment behavior is also altered.<sup>5</sup> The second piece of policy advice is thus that when governments prefer certain policy outcomes, it is useful to implement changes in specific institutions. Most governments will endorse a meritocratic ideal, whereby educational performance and labor market success

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earnings for each occupation without taking the closure effects into account.

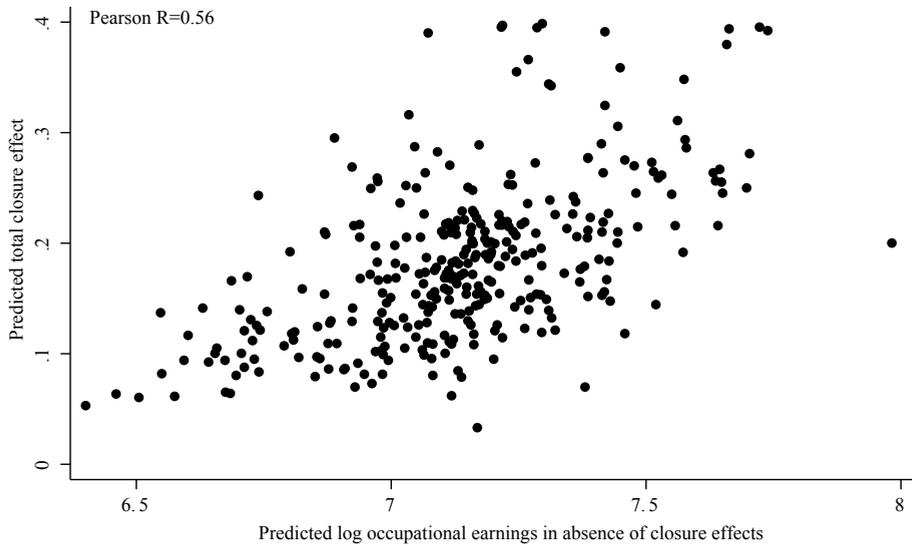
5. The predominantly cross-sectional design of the current study gives only partial support for this claim. While our results hint at such an interpretation, more research is needed, most importantly of a longitudinal nature, where changes in institutional context over time are related to changes in the importance of mechanisms.

FIGURE 6.1: WHO BENEFITS FROM CLOSURE? ESTIMATES FOR THE UK



Source: Model 4, Table 5.5

FIGURE 6.2: WHO BENEFITS FROM CLOSURE? ESTIMATES FOR GERMANY



Source: Model 4, Table 5.6

are solely based on merit. This perspective is strongly connected to the productivity enhancing skills mechanism. Some caution is required for this advice: institutions often influence more than one mechanism (see section 6.2). When governments implement changes, it is therefore important to focus on policy tradeoffs.

In most Western countries, especially in Europe, policy is directed to increase the share of the population with tertiary education. All European member states have agreed that at least 40% of the population between 30-34 should possess a tertiary education as of 2020 (EU 2010: 9). Governments actively promote educational expansion, motivated by the idea that expansion increases the human capital stock of a country and thereby enhances economic growth. This idea is purely based on the productivity enhancing skills mechanism: if education makes individuals productive, more education makes individuals more productive, and this rise in productivity will ultimately increase the wealth of a country. Our findings refute this line of reasoning: with educational expansion, education becomes more positional and is less rewarded for its skill-enhancing capacities. It therefore seems that policies that aim to increase the proportion of highly educated workers only makes sense insofar as there is a demand for highly educated individuals. If this demand is absent, education will only become positional without translating into a greater human capital stock.

This dissertation shows that occupational closure increases wages predominantly for those at the top of the wage distribution, a finding that has important implications for policies on occupational closure practices. Our advice is not to abolish all formal entry restrictions to occupations (who *would* feel comfortable undergoing a heart operation from a surgeon who has no credentials?). However, most occupations are not closely related to saving lives. For these occupations, educational credentials generate economic rents instead of protecting consumers from malevolent practitioners (see, e.g., Kleiner 2006). The previous section provided initial evidence that wage inequality is increased by occupational closure. A recent study shows that social capital is more important for access to closed occupations (Bol and Di Stasio 2012). To the extent that social capital is unevenly distributed across social class groups, it provides further evidence for our claim that occupational closure amplifies inequalities. As stated above, governments should not eliminate all formal entry restrictions. However, a large portion of closure legislation results from strategic actions of occupational insiders who wish to increase the occupational returns. Rewarding this strategic action will likely exacerbate the existing inequalities.

## 6.5 SEVEN RECOMMENDATIONS FOR FURTHER RESEARCH

While this dissertation answered several questions, it raises at least as many new questions. There are several things that could have been done, should have been done, and most likely also would have been done if space and time allowed. In this final section, we propose seven recommendations for further research on the topics that are addressed in this dissertation.

First, the school-to-work transition was studied using cross-sectional data. We suggest that the same questions that we addressed in this dissertation should be studied using longitudinal data. The transition from school to work takes place over the life course; the mechanisms that are discussed in this dissertation concern what education

does (or does not do) for individuals over their life courses. Figure 1.2 clearly shows that the mechanisms are more easily distinguishable when studying changes between two time points instead of focusing on one point in time, as we have done here. An important reason that no individual-level longitudinal data were studied in this dissertation pertains to the availability, or the lack of availability, of cross-national longitudinal data.

Related to the first recommendation is the second advice for further research. This dissertation dealt with institutional variation most clearly in a cross-sectional way (an exception is Chapter 4). It would be interesting to determine whether institutional change (for example, the transition from a tracked to a comprehensive educational system) alters the mechanism by which education yields high returns on investment. In addition to studying individual behavior over time (the first recommendation), we suggest investigating institutional variations over time. A comparable design is used by several authors who investigate the effects of educational reforms on the inequality of educational opportunity (e.g., Erikson and Jonsson 1996; Braga, Checchi, and Meschi 2011). This design is more suitable to defend a causal relation between institutions and individual behavior.

Third, we focused on a limited number of institutions, and there are several other institutions that are likely to influence the mechanisms by which education pays off. A first example of an unstudied but interesting institution is the level of standardization of the educational system. As mentioned in the introduction, several studies show that the level of standardization of an educational system is important for the strength of the education effect (Allmendinger 1989, but see Shavit and Müller 1998). It is likely that the mechanism by which education pays off is also influenced by the level of standardization, as educational degrees are more trustworthy signals when educational systems are standardized. A second example is to more directly study the influence of labor market segmentation on the mechanism by which education pays off. In labor markets with closed positions (both occupational and internal labor markets), education is more likely to be rewarded for its functional as signal or credential, as access to these closed positions is often dependent on educational degrees instead of achieved skills. In labor markets with open positions (external labor markets), in contrast, employers are more likely to reward the productivity enhancing skills of job seekers (cf. Matković and Kogan 2012). These are only two examples, and there are many more institutions that relate to the importance of mechanisms that explain the education effect on labor market outcomes.

A fourth recommendation is to continue the research on educational expansion and education as a positional good. The claim that is made in this dissertation, that education becomes more positional, is provoking and requires additional support. One important caveat for the current argument is that we ignore cross-national variation in institutional characteristics. As a first step, we merely wished to find support for the more general claim that educational expansion makes education more positional. A second, equally important, question is whether educational expansion has the same effect on the positional good mechanism across different countries. What are the cross-national differences in educational systems and labor market regimes, and how do these different institutional settings affect changes in recruitment behavior when educational distributions shift over time? Does educational expansion have the same effect on recruitment behavior in labor markets that emphasize internal labor markets

compared to occupational labor markets (Maurice, Sellier, and Silvestre 1986)? These are important, but still unexplored, questions that should be addressed in future studies.

Fifth, the relationship between educational expansion, technological change, and wage inequality can be further investigated. In an important contribution, Goldin and Katz (2008) argue that the wage premium to education, and hence wage inequality, should decrease when changing skill demands are met by an increase in supply. However, they do not measure the change in skill-demands by using an actual indicator of technological change. Instead, they assume that education is rewarded for the skills it confers and that an increase in educational returns can *only* be caused by an increase in demand. When education becomes more positional, educational expansion does not necessarily decrease the educational returns. It therefore seems important to re-test the Goldin and Katz hypothesis with an actual indicator of skill demand, as is available in our dataset used for Chapter 4.

The sixth recommendation is to expand existing research on occupational closure and its relationship to wage inequality. While numerous studies make assumptions about closure processes, few researchers study them empirically. The findings in this dissertation provide initial evidence that there is systematic cross-national variation in the extent to which occupational closure generates economic rents. To find additional support for this claim, however, more countries must be studied. This need becomes more important if one wishes to investigate cross-national differences in the relationship between economic rents and wage inequality (Weeden and Grusky 2012b), as our results show that occupational closure has important implications for wage inequality.

The final and most important recommendation is to follow the line of research that is set out in this dissertation and structurally study how the importance of mechanisms differs across institutional settings. While a few studies address these questions (Van de Werfhorst 2011a, 2011b; Matković and Kogan 2012; Di Stasio 2012), much work remains to be done. A practical improvement is to use more designs that are suitable to study the importance of mechanisms. For example, one could examine the institutional linkages with levels of over-education, which is education in excess of what is demanded for a job (Groot and Maassen van den Brink 2000; Hartog 2000; Verhaest and Van der Velden 2012). According to the productivity enhancing skills mechanism, over-education should be rewarded. The positional good mechanism refutes this idea, as productivity resides in the job instead of the worker.

Another way to distinguish between mechanisms is to analyze the detours that students take in their educational career (Groot and Oosterbeek 1994). In the Netherlands, one can take a detour to a university degree, for example by graduating from MBO (intermediate vocational), which provides access to the HBO (higher vocational), which in turn allows for entry to a university. According to the productivity enhancing skills mechanism, such a detour should yield high returns on investment: students who took a detour are trained longer and have more skills. The social closure mechanism, however, would argue that such a detour has no effect at all, as it is the educational credential that explains the positive effect of education on labor market outcomes. Researchers can continue to differentiate between mechanisms and connect these designs to institutional contexts.

We believe that this line of future research is promising, as the current study

provides evidence that institutions affect the reason for which education is rewarded in the labor market. The title of this dissertation is “Why Does Education Pay Off?” Any answer to this important question should always be conditioned upon place and time, as the mechanism by which education pays off depends on the institutional context in which the employers and employees are situated.