

Human capital development at school and work

Citation for published version (APA):

Ferreira Sequeda, M. (2019). *Human capital development at school and work*. [Doctoral Thesis, Maastricht University]. ROA. <https://doi.org/10.26481/dis.20190510mf>

Document status and date:

Published: 01/01/2019

DOI:

[10.26481/dis.20190510mf](https://doi.org/10.26481/dis.20190510mf)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
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Valorisation Addendum

The research results presented in this dissertation can be a source of evidence and inspiration for policy makers, schools, firms and workers when making decisions to foster skill development throughout the lifecycle. Nowadays, both in schools and the workplace, policy makers and other decision makers face several challenges in this field. Harnessing the best returns of skills requires a complex assessment of timely and well-matching investments in human capital formation related to initial education, the amount and quality of the abilities available in the population, the skills required in the labour market, and the development and effective use of those skills in good jobs.

Chapters 2 and 3 in this thesis focus on the effects of school grade retention on children's skill formation and development in the context of a developing country, where universalisation of education continues to be a challenge. Chapter 2 analyses the effects on school performance (math and language test scores) and Chapter 3, the effects on school dropout. On the one hand, Chapter 2 shows that higher retention in secondary school does not have any significant effect on the math performance of retained and non-retained students. On the other hand, increased retention is shown to have a modest positive impact on the language performance of retained students. This result suggests that by repeating a grade, students at the lower end of the ability distribution could gain a more thorough understanding of the material in certain subjects that enables them to perform better in later stages of their lives. Very importantly, these positive effects are nonlinear, which implies that increased retention has marginally decreasing returns on students' performance. Identifying the optimal levels of retention rates is one of the critical implications for schools, given that at some point in the lower end of the ability distribution, students will no longer benefit from being retained.

Making the decision of when lower performing students should be retained or promoted becomes more complex when the spill-over effects of retention on the non-retained peers are taken into consideration. According to our analyses, higher retention leads non-retained students to perform worse in language tests. This finding implies that the positive selection effects for non-retained students may be dominated by the plausibly negative influence of less able peers in the classroom because, for instance, teachers could feel inclined to adjust the level of their teaching downward because of the higher share of repeating students in the classroom. Our study shows the importance of analysing the effects of retention simultaneously for retained and non-retained students and at different margins of the ability distribution to be able to estimate more accurately the net effects of retention at aggregated levels. A better estimation of these effects will better

inform policy makers and schools not only in their decisions on whether to retain or promote low performing students but also in their consideration of alternative policies to grade retention such as early class repetition or reinforcement and/or reallocation of students to more similar groups.

In Chapter 3, I further investigate the effects of grade retention on school dropout rates during secondary education. The findings of this chapter complement the analyses of the previous chapter by enriching our understanding of whether the performance gains and losses of retention can be outweighed by lower costs of school dropout or strengthened by higher costs of school dropout. In this chapter, we find a remarkably large positive effect of grade retention on end-of-year dropout rates among retained students and a positive, although relatively smaller, effect of grade failure on consecutive dropout rates among all students enrolled in the year following retention. This finding contributes to the evaluation of the costs and benefits of retention practices for society. It is important to take both the effects of retention for retained and non-retained students into consideration, analysing both the positive and negative effects retention may have not only on school performance but also on the decisions of continuing secondary school studies until graduation. First, this study suggests that there are differences between the processes of dropping out early and dropping out late that would be hidden by considering all dropouts together. Second, the result that increased retention has a large impact on the probability of children leaving their studies questions whether the moderate gains of retention on children language performance are a sufficient argument for a higher retention rate. This could imply either a trade-off or a double challenge for policy makers and schools in developing countries, where skill development is crucial for social mobility but also where school dropout is a very serious issue given the limitations in realising the universalisation of schooling.

Moreover, in Chapter 3 we analyse the heterogeneous effects of retention on dropouts depending on the timing of the retention. We have distinguished retention from grade 6 to grade 11 of secondary education. Notably, we find that the overall positive effect of retention on dropout rates for the full cohort of students on the year following retention is stronger in the earlier grades of secondary school and that there is not any significant effect during the last two years of high school. These results imply that the strongest dropout effect takes place during the year of transition from primary to secondary education, i.e. grade 6. This also implies, in light of the human capital literature, that earlier investments to remedy skill deficits might be much more effective than later attempts to repair such deficits. Conversely, the retention effect on the dropout rates of retained students at the end of the year of their retention is strongest if students are retained at the end of grade 9 and grade 11, suggesting that particular attention to retained students at these two specific grades is necessary since leaving school at these stages would imply the highest costs of retention due to the forgone opportunity for students to finalise either one of the two cycles of secondary education and receive the corresponding certificate.

The studies presented in Chapters 2 and 3 emphasise the importance of developing a more holistic approach to assess the effects of retention. To answer the question of whether – and when – low-achieving students should repeat

a failed grade or not, policy makers and school directors need to take into consideration more than the extent to which grade retention affects the retained individuals. It should also be considered to what extent grade repeaters may affect their classmates when they repeat the grade in the following year as well as whether the context and the timing mitigate the undesirable effects of grade retention or intensify its positive effects on the human capital development of pupils. More accurate procedures to identify the risks and benefits of grade retention will help schools' awareness of the extent to which they need to retain students or provide interventions of a different kind instead.

In Chapter 4, we study the difference in informal learning at work between temporary and permanent workers across 20 OECD countries. Remarkably, we find that workers in temporary jobs engage more intensively in informal learning than employees with a permanent contract do, although the former are, indeed, less likely to participate in formal training. However, the hypothesis that temporary workers could substitute informal learning for the lack of formal training is not supported by our analysis. Instead, we find complementarity between these two types of learning, which is consistent with the idea that human capital accumulated through different sources not only enhances skills but also increase the learning capacity in a dynamic complementary process. The results of this study suggest that temporary jobs could incentivise higher investments in informal human capital for workers to increase their chances of promotion to a more secure job. This finding implies that workers perceive more intense learning as a profitable investment in their career development, particularly when facing the uncertainty of a temporary contract.

Chapter 4 derives several implications. First, it highlights the importance of informal learning for human capital development and that learning is a life-time matter that also takes place outside of schools and continues throughout life. Skill development through informal learning in the workplace, or work experience, is often neglected in policy discussions because of the difficulties to measure it or the current emphasis on formal education. However, the findings in this chapter suggest that informal learning in the workplace is an important source of career development in a modern economy. Once we recognise and make more visible the importance of informal sources of learning for skill formation and development, we could think about policies to foster skill in many other different ways.

Second, our analyses point towards a potential positive feature of temporary contracts that has important implications. Temporary jobs need not be dead-end jobs. If temporary jobs are taken by individuals in lieu of unemployment in search for further individual promotion in the labour market, these jobs could offer them opportunities for learning by doing particular tasks and productive interaction with other workers. This is important not only as a source of productive accumulation of human capital while working but also as a potential advantage for individuals who would otherwise be unemployed. Such jobs with high learning content could then be a stepping stone towards more stable employment.

Therefore, the challenge for firms and policy makers is in harnessing the learning potential of temporary employment. The findings of this chapter sug-

gest the existence of two different kinds of temporary jobs in terms of their learning opportunities: (1) good temporary jobs, with high levels of task autonomy and collaboration, offering good opportunities for training and informal learning and, likely, leading to positive career expectations of upward mobility, and (2) bad temporary jobs, which have no or very few opportunities to foster workers' human capital. In the latter jobs, workers could get trapped in a cycle between precarious jobs and unemployment. This implies labour segmentation within temporary employment due to the distinction between jobs of low and high learning content. Since policy makers have already stressed the importance of finding an appropriate balance between labour market flexibility and job security, policies should be supported by analysing how contract incentives influence workers' skill investments and their career development expectations. The design of these policies underlines the importance of improving firms' learning strategies to optimise the benefits of both training and informal learning to foster sustainable employability of a flexible workforce as well as the aggregate productive capacity of the economy in the long term.

In Chapter 5, we analyse the extent to which formal training and informal learning on the job are related to the skill development of workers across 28 European countries. The results confirm that investments in both types of on-the-job learning contribute to a greater improvement of workers' skills, although the contribution of informal learning to this improvement seems to be the strongest. However, this result does not suggest that participation in training is not important or could be substituted by informal learning. Our results suggest that investments in training and informal learning are complementary, which empirically validates a key feature of the technology of skill development in the sense that the skills acquired by training and informal learning can mutually reinforce each other in a multiplier process with strong synergistic components over the life cycle.

The results described above are, moreover, heterogeneous with respect to the workers' initial job-skill mismatch status. We find that, compared to those in a job that matches well with their skills, the skill development of under-skilled workers appears to benefit most from both training and informal learning, whereas the skill development of the overskilled benefits the least. This finding suggests that on-the-job learning helps to improve the skills of both matched and mismatched workers, nonetheless to a different extent. The finding for under-skilled employees suggests that human capital investments on the job could help to improve the job-skill match of these workers by closing the gap between workers' potential productivity and the productivity of the job in which they are employed. In contrast, the finding for overskilled employees suggests that work-related human capital investments for these workers play a more critical role in the restoration and replenishment of human capital in the context of skill depreciation, that is, human capital investment could be more relevant in maintaining the skills they do not use in their job or as a mitigating factor counteracting skill obsolescence, which could eventually provide them with prospects to find a better job match in the current firm or other firms.

This study then suggests that the interaction between work-related human capital investments and the utilisation of workers' initial stock of skills in their

job plays an important role in the process of skill development. Since lifelong learning and workers' skill development are essential for the productivity of firms as well as macro-economic growth, knowledge about heterogeneities in the role of training and informal learning in workers' skill development with respect to their initial skill mismatch is crucial to make efficient decisions on human capital investments. Optimal decisions on investment in lifelong learning could contribute to reduce the misalignment between workers' potential productivity and the optimal productivity of their jobs.

Overall, this thesis emphasises that developing and maintaining human capital throughout the lifecycle is a key challenge for several decision makers in both the fields of education and lifelong learning while at work. Skill development policies require coherence and cooperation across diverse areas and levels of governments, as well as with the private sector, schools, teachers and workers. Skills development could be more effective if the world of learning and the world of work are better linked. This holds in both developed and developing countries. In the end, earlier investing in human capital and good quality jobs is likely to be in the long run much less costly than remediation interventions to combat poorer health, lower incomes, unemployment and social exclusion as related outcomes of lower levels of human capital development.