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Empirical essays on education and health

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Chapter 6

Conclusion

This thesis consists of four essays. The first essay, presented in Chapter 2, deals with the long-term effects of Ramadan fasting during pregnancy on the health of the offspring. Chapter 3 presents an experiment in which the main question is whether Dutch teachers give ethnic minority students lower grades than they would have given ethnic majority students for the same work. Chapter 4 and 5 are meta-analyses that aim to reconcile the varying results from previous studies on peer effects in school; they respectively review studies on the effects of peers' socioeconomic status and studies on the effects of peers' ethnicity on students' test scores.

In Chapter 2, building upon the work of Almond & Mazumder (2008), and using Indonesian cross-sectional data, I show that Ramadan fasting during pregnancy may cause considerable negative long-term health effects on the offspring. I find that people who were exposed to Ramadan fasting during their mother's pregnancy have a poorer general health and are sick more often than people who were not exposed. This effect is especially pronounced among older people, who, when exposed, also report health problems more often that are indicative of coronary heart problems and type 2 diabetes. The exposed are a bit smaller in body size and weigh less. Among Muslims born during, and in the months after, Ramadan, the share of males is lower, which is most likely to be caused by death before birth. Ramadan fasting during pregnancy may harm the offspring's health, irrespective of the phase of pregnancy during which fasting took place: just after conception, shortly before giving birth, or somewhere in between. But some health problems are more likely to show up if fasting took place during certain phases. E.g. diabetes 2-related symptoms are most strongly associated to fasting late in gestation. The differential effects over phases of pregnancy that I find closely follow the predictions from medical research. I show that the health effects that I find are unlikely to be an artifact of common health shocks, correlated to the occurrence of Ramadan, or of fasting mainly occurring among women who, irrespective of fasting or not, would have had unhealthier children anyway. Although the effects I find are often substantial in size, they are likely to be underestimates of the true effect, mainly because I only know, based on people's birthdates, whether their mothers *may* have fasted, but do not know whether the mothers actually did so. If not all Muslim-women who were pregnant during a Ramadan fasted, then the effect of being exposed is larger than what my estimates suggest.

In Chapter 3, I look at teachers' grading behavior. Although grading is an important aspect of schooling, it is also a subjective evaluation procedure. Previous studies show that ethnicity, independent of its correlates, may affect the grades students

receive in school (Dee, 2004; Lindahl, 2007; Ouazad, 2008). This may happen due to subjectivity in teachers' grading behavior, i.e. teachers may give different grades to ethnic minority students for the same work, but also because teachers may unintentionally treat students differently because of their ethnicity, which consequently induces these students to perform poorer.

I use an experiment in which 113 ethnic Dutch teachers each graded ten short essays written by 11-year old students. Unknown to the teachers, the students' names on the essays were manipulated, so that the essays alternately appeared to be written by ethnic Dutch and by ethnic Turkish / Moroccan students. I find that the average grade given to essays does not differ with the purported ethnicity of the writer, despite evidence supporting that teachers noticed and believed the manipulated ethnicity of the students. I also find no subgroups of teachers that do exhibit such a direct grading bias: neither subgroups who give ethnic minority students lower grades, nor subgroups who give them higher grades. These findings rule out one important potential way in which ethnicity may affect students' grades. However, I do find that teachers have lower expectations from ethnic minority students than from similar ethnic majority students and that they have relatively unfavorable attitudes toward ethnic minorities in general. Both are likely to unwittingly affect teacher behavior towards minority students, which may in an indirect way affect the performance of ethnic minority students in school (Jussim & Harber, 2005). Effects of being taught by ethnic majority teachers on minority students' grades therefore seem more likely to be indirect than direct.

Chapter 4 presents a meta-analysis in which 30 previous studies on the effect of peer socioeconomic status (SES) on student achievement are systematically reviewed, with the aim of understanding why the effects reported by these studies vary so much. Results show that the size of the peer effect that researchers find is strongly related to how they measure SES and to their choice of estimation model. Measuring SES dichotomously (e.g. free lunch eligibility) or including several average SES variables in one model is associated with smaller effect estimates than using a thoroughly constructed composite that includes several of the dimensions of SES. Composition measured at cohort/school level is associated with smaller effects than composition measured at class level. Researchers estimating the peer effect without controlling in their model for prior achievement or not taking into account the potential for omitted variables bias, risk overestimating the effect. On the other hand, including in a model a large set of covariates that are not well thought-over may lead to an underestimation of the peer effect, since it artificially explains away the effect. Little evidence was found that effect sizes differ with sample characteristics such as test type (language vs. math) and country. Estimates for a hypothetical study, making a number of "ideal" choices, suggest that peer SES may considerably affect academic achievement.

The meta-analysis in Chapter 5 reviews 13 studies on the effect of ethnic minority share on students' test score. This peer effect is usually treated as the same in nature, irrespective of the ethnic group that is concerned. To structure the field, we introduce a classification both in the type of ethnic group that causes the effect and in the type of

group that is affected. From the existing research, it appears that peer effects are small in general, but may be larger when the ethnic minority group that causes the effect is African Americans in the USA, than when the minority group consists of immigrants. A high ethnic minority share seems to affect the achievement from students with the same ethnicity more, than the achievement of students belonging to the ethnic majority or belonging to other ethnic minority groups. Effects of the share of immigrants on test scores of ethnic majority students even seem to be close to zero. No evidence was found that these peer effects may differ with the test type used (language vs. math). Robustness checks confirm these results. Chapter 5 also discusses the risk of overestimation of this peer effect that arises if researchers do not deal sufficiently with the potential for omitted variables bias.

