



## Health and the labor market – New developments in the literature



### 1. Overview of the special issue

This special issue contains 13 papers on a range of topics at the overlap between health economics and labor economics. These papers address health and human capital formation over the life cycle, ranging from fertility decisions to child, youth, and, of course, adult outcomes. The rich coverage of issues pertaining to early health in particular is indicative of the importance of and interest in this area; see for example Aizer and Currie (2015). Reflecting the recent developments in the field, some papers in the issue analyze physical health while others are concerned with mental health and well-being. The volume takes note of the important role of public policy in influencing health and labor outcomes.

The special issue is organized around several separate but related branches of the literature. There is growing recognition that some of the determinants of human capital formation and long-term success could be traced to parental circumstance and actions that take place in the pre-natal period. The first two papers analyze women's fertility choices. Mølland (2016) uses Norwegian register-based data to study the effects of access to abortion, which first became available in Oslo, Norway in 1969. She finds that abortion availability delayed child bearing but did not affect completed family size. At the same time, access to abortion increased educational attainment for women. A number of important studies have previously shown that the legalization of oral contraceptives increased women's levels of education and delayed marriage and child bearing (e.g. Goldin and Katz, 2002; Bailey 2006, 2009; Guldi, 2008; Hock, 2007). The novelty of Mølland's paper, however, lies in her ability to track the children of mothers who had access to abortion. This is something only very few studies have been able to do; see for example Ananat and Hungerman (2012) and Madestam and Simeonova (2016). Interestingly, Mølland finds that the first-born children of affected mothers have more education, are more likely to be employed, and are less likely to depend on welfare

Of course, one may wonder whether access to abortion or oral contraceptives was more important for women – and men in the long run – and whether effects on career aspirations and children's outcomes vary with socio-economic background. Indeed, a recent addition to the US-based literature suggests that access to abortion, rather than the pill, was driving the gains in affected women's long-term outcomes initially ascribed to the pill (Myers, 2012). The second paper in the special issue adds to this strand of the literature by comparing and contrasting the effects of access to abortion and the pill. Steingrimsdottir (2016) uses data informative about a large sample of US college freshmen and shows that early access to the pill was more important for career aspirations of high ability (as measured by college selectivity and high school grade point average), white women. Access to abortion, on the other hand, mainly affected low ability women. This is important because it implies that research that seeks to identify the short- and

long-term effects of related public policies must acknowledge that such policies might affect different subgroups of the population of women. Interestingly, Steingrimsdottir shows that both access to the pill and abortion positively affected career plans of black men.

A large literature has documented that health endowments at birth are highly predictive of future-life health and economic outcomes (for a review, see Currie, 2009). The third paper in the volume, by Elder et al. (2016), offers novel analysis of the well-established link between maternal socio-economic status and birth outcomes. This connection is increasingly in the spotlight of social research. Because of the strong connection between health and productivity, at least part of the well documented intergenerational transmission of socio-economic status is likely due to the persistence of health inequality across generations. Using data from the US Vital Statistics for the period 2000–2004, Elder, Goddeeris and Haider examine the extent to which differences in maternal socio-economic status can explain differences in the infant mortality rate (IMR). They study the origins of the infant mortality gaps between the major ethnic and racial groups and find that the main drivers behind those disparities can be attributed to maternal age, marital status and education. As birth weight is strongly correlated with the infant mortality rate, the authors further examine whether the mortality gaps appear at different birth weights across racial and ethnic groups. This analysis bears potentially important evidence for policy interventions – if most of the IMR gap is explained by differences in birth weight, then efforts to improve weight at birth are more likely to succeed. A novel finding is that Native Americans experience higher mortality rates at higher initial birth weights, which suggests a substantially different mechanism than the drivers behind the rest of the documented gaps.

A well-known “paradox” in the literature is that infants born to Mexican American mothers have better health outcomes across the spectrum of infant health measures. Elder et al consider differences between all foreign- and native-born mothers and find a “foreign mother” advantage across all ethnic and racial groups. This new finding readily explains the “Mexican paradox” described in the literature – because many Mexican mothers were born in Mexico, their birth outcomes advantage can be attributed to the mother's foreign-born status. The interesting question that remains to be answered is why we observe a foreign mother advantage, conditional on socio-economic status and maternal age

The important issue of how differences in infant mortality arise and how they are related to maternal SES transcends national boundaries. Elder et al.'s findings are corroborated in a recent study by Chen et al. (2016) that investigates the reasons behind the differences in the infant mortality rate between the US and European countries. Chen and co-authors report that contrary to common perception, which attributes differences to reporting of live births around the threshold of viability, the US-Europe gap in infant health outcomes is driven by high post-

neonatal mortality (>28 days of life) among lower SES groups in the US. Identifying the sources of such differences and the affected subgroups of the population is imperative for public policy.

Social policies that affect families' decisions about the allocation of time and investment in children both in the pre- and post-natal period could have long-term effects on the health of the next generation. Child care availability and paid parental leave have been linked to women's labor force participation, children's cognitive and education outcomes and health. The recent policy debate around these issues in the US warrants a close look at studies from other countries that have significant experience with such institutions. The evidence in the literature is mixed. For example, [Havnes and Mogstad \(2011\)](#) argue that in Norway, subsidized public daycare arrangements do not significantly impact mothers' labor force decisions because they mostly crowd out private informal care. Still, using the same reform to identify the effects of universal child care on children's long-term outcomes, the same authors report significant heterogeneities in the effects, with children from low-income household gaining the most in term of long-term income and children from high-income household losing the most ([Havnes and Mogstad, 2015](#)). Similar heterogeneity is found for Denmark in effects of enrolment in center-based care; see [Datta Gupta and Simonsen \(2010\)](#). Turning to maternity leave policies [Carneiro et al. \(2015\)](#) find that Norwegian children gained in terms of less high school drop-out and higher wages if their mothers took more leave. [Rasmussen \(2010\)](#) and [Dustmann and Schönberg \(2012\)](#), on the other hand, find no effects on child human capital from extensions of maternity leave in Danish and German settings

In the fourth paper in this volume, [Beuchert et al. \(2016\)](#) use the change in maternity leave policy in Denmark to identify the effects of length of paid maternity leave on the physical and psychological health of the family. The Danish policy was changed from a fairly generous maximum of 24 weeks of full compensation pre-reform to a new maximum level of 46 weeks of full compensation post-reform. As a result, on average, mothers extended their paid leave by 32 days. Notably, in Denmark the alternative arrangement available to mothers who return to work is to place children in high quality publicly subsidized daycare. While no effects were found on the health of the child directly affected by the reform, the study reports beneficial effects on maternal health and the health of (older) siblings, as measured by the probability of a hospital admission within a year. A possible mechanism is that while on extended maternity leave because of the newborn, the mother allocates more time to her older children. Extending the length of maternity leave also appears to have a negative effect on subsequent fertility

Children's mental wellbeing is the theme of two other papers in the special issue. Both of these papers focus on children with Attention Deficit-Hyperactivity Disorder (ADHD); one of the most common mental health conditions among children. [Schwandt and Wuppermann \(2016\)](#) investigate ADHD misdiagnosis in Germany. One way of doing this is by comparing children born just before an administratively set school entry cutoff date with children born just after the cutoff date (e.g. [Elder, 2010](#); [Evans et al., 2010](#); [Dalsgaard et al., 2012](#)); children born just before the cutoff date will be systematically younger when they enter school (and therefore more immature) than children born just after the cutoff date. But birthdate should not correlate with the risk of ADHD and a significant relationship between the two is therefore indicative of diagnosis-flaws. Based on the universe of outpatient claims for Germany, [Schwandt and Wuppermann](#) show that children who are younger at school start are more likely to have an ADHD diagnosis. In Germany, school entry cutoff dates differ across states and within states over time, hence children around the cutoff are physiologically similar as they experienced comparable external environment conditions while in utero and the ADHD differences are therefore likely evidence of misdiagnosis. [Schwandt and Wuppermann](#) show that overall ADHD levels are linearly increasing with ADHD misdiagnosis rates, across German states as well as across countries for which estimates are available (Denmark, Canada Iceland, and the US). This is an important result,

especially because there is disagreement in the existing literature. [Dalsgaard et al. \(2012\)](#) speculate that this disagreement is at least partly caused by the diagnosing physician: in the US, children are typically diagnosed by general practitioners, whereas Danish children are typically diagnosed by specialists. [Schwandt and Wuppermann](#) also elegantly bring the existing evidence together by showing that the degree of misdiagnosis is (weakly) negatively associated with area-specific access to specialists, whereas class size and area-level socio-economic status are positively associated with the degree of misdiagnosis

[Chorniy and Kitashima \(2016\)](#), in contrast, look at pharmacological treatment of ADHD and its effects on risky behaviors, by exploiting variation in physicians' preferences for prescribing medication. Apart from an early, small-scale, randomized controlled trial (Multimodal Treatment of Attention Deficit Hyperactivity Disorder (MTA) Study; [MTA Cooperative Group, 1999](#)), there exists only scant evidence showing causal effects of this commonly prescribed type of treatment. Recent papers ([Currie et al., 2014](#); [Dalsgaard et al., 2014](#)) indicate that effects may vary across outcome domains; [Currie et al. \(2014\)](#) document negative effects of treatment on academic outcomes, while [Dalsgaard et al. \(2014\)](#) find gains in terms of health outcomes and to some extent in terms of crime. [Chorniy and Kitashima](#) add to this literature with important new evidence, showing that pharmacological treatment of ADHD leads to improvements in risky behaviors.

There is a long-standing debate in the literature about the link between education and long-term health, with some studies showing that higher education leads to improvements in health ([Lleras-Muney, 2005](#); [Buckles et al, 2013](#)) while others find inconclusive or very precisely estimated negligible effects of education on aggregate mortality (e.g. [Clark and Royer, 2013](#); [Meghir et al., 2012](#); [Meghir et al., 2013](#)). Because of the mounting evidence that health behaviors affect morbidity in older ages, some studies have explored whether increasing the amount and quality of attained education could have heterogeneous effects on mortality from different causes ([Meghir et al., 2012](#)). In this volume, [Leuven et al. \(2016\)](#) investigate the relationship between education and cancer risk using a schooling reform implemented in Norway in the 1960s. Registry data from Nordic countries is exceptionally well-suited to investigate such issues because of the wealth of accurate information on individual education, morbidity, health treatments and mortality. Cancer is a particularly interesting outcome for several reasons. First, a substantial part of overall mortality among individuals still active in the labor market is due to cancer. It is a costly diagnosis both in terms of treatment, the duration of treatment, and the loss of productivity associated with it. Furthermore, the epidemiology and medical literatures have provided substantial evidence in favor of environmental and behavioral determinants of cancer morbidity that can be affected by education. [Leuven et al](#) report no significant effects of the education reform on overall cancer mortality, which coupled with the strong negative correlation estimated by the OLS implies that unobserved factors are affecting both the cancer risk and the level of obtained education. Contrary to [Palme and Simeonova \(2015\)](#) who find positive effects of exposure to a similar reform in Sweden on breast cancer mortality for women, they find no evidence of a positive or negative relationship between women's education and cancer risk for all cancer sites. Among men, they find lower mortality from lung and prostate cancers, which is the opposite to [Meghir et al. \(2012\)](#) who use Swedish data and a similar education reform in Sweden. The heterogeneity in the findings of this small literature underscores the necessity for more well-identified, population-based studies that can adequately detect even small changes in long-term disease risk attributable to education policies

Sickness absences and ultimately the extent of disability benefit payouts are major policy concerns in developed countries. A range of papers uncover individuals' responses to incentives inherent in sick leave policies (e.g. [Henrekson and Persson, 2004](#); [Johansson and Palme, 2005](#); [Ziebarth, 2013](#); [Ziebarth and Karlsson, 2014](#)) and a recent paper also considers firms' employment responses ([Fevang et al., 2014](#)). Still,

we know very little about how various sick leave policies actually affect firm performance. Godøy (2016) considers consequences of access to graded sick leave on firm performance. Graded sick leave implies that individuals can work part time, depending on their ability to work. Graded leave has previously been found to lead to shorter absences and higher subsequent employment rates compared to regular sick leave (Markussen et al., 2012) and Godøy shows that graded leave does indeed mitigate the negative effects of total sickness absence on firm profits.

Productivity in the labor market is determined by a host of factors, including the physical and psychosocial atmosphere at the work place. Eriksen et al. (2016) use rigorous empirical analysis to explore the relationship between workplace bullying and sickness absence. While some studies have examined the effects of bullying on children and young adults (e.g. Eriksen et al., 2014), there is less high quality evidence available about effects on working-age adults; see for example the review by Einarsen et al. (2010). Using data from the “The Bullying Cohort” on 54 companies in Denmark linked with registry data on employment and individual health, the authors define workplace bullying using responses to the Negative Acts Questionnaire. The rich registry data allow them to control for a host of pre-existing individual characteristics such as health history and utilization of mental health care. The unique nature of the survey and the setting allows the investigators a peek into the phenomenon of workplace bullying. They find that targets of bullying are systematically different from the rest of survey respondents. They are more likely to be young, unmarried, or divorced males. However, both men and women report being targets of bullying behavior, and according to the study's findings, women suffer worse consequences of being exposed to bullying. The authors report that targets of bullying are much more likely to experience a long-term sickness absence in the wake of the bullying episode than their non-bullied peers. This elevated propensity remains for three years after the bullying episode, so that on average bullying increases long-term absence by about 1.3 weeks. This result is economically meaningful and highly relevant from a policy perspective – as sickness absence is covered by employers as well as local welfare programs. An important additional finding is that some work locations are much more prone to bullying than others. Potentially, this could be ascribed to the propensity of potential bullying targets to congregate in certain work locations. A much more plausible explanation is that work culture and management style affect how individuals behave in the workplace, suggesting some capacity for intervention and remediation. Future research is needed to uncover common characteristics across work locations prone to bullying as well as the effects of various interventions intended to resolve the issue.

Social policies aimed at improving the health and wellbeing of the population frequently have (unintended) consequences for the labor market. In another paper in the special issue, Dillender (2016) investigate the effects of Massachusetts' health insurance reform on part-time work in the state. This is an important question because mandates on employer-sponsored health insurance in the US have a number of provisions that allow exceptions depending on the number and type of employees – such as part-time or full-time workers. Massachusetts' reform exempted part-time employees from compulsory employer-sponsored health insurance. Dillender et al. show that the incidence of part-time work in the state increased disproportionately after the reform relative to the rest of the nation for workers without a college degree. These individuals have less bargaining power in the labor market which may be a contributing factor. This is a non-trivial result because it suggests that low-skilled participants in the labor force in institutional settings similar to the US may be unintentionally adversely affected by health policies such as the Affordable Care Act.

In a related study from the Netherlands, Vermeer et al. (2016) analyze the determinants of responses of Dutch individuals when asked whether workers in demanding occupations should be allowed to retire early and gain access to public pensions. Recent advances in life expectancy and the quality of life at older ages, coupled with issues of fiscal

sustainability of many nations' pension systems, have raised the public's awareness about retirement and associated benefits. The findings of the study are highly relevant to the debate around pension reform and possible increases in the retirement age, as well as the substitution between early retirement and disability benefits. Little is known about individuals' willingness to grant early retirement to workers in demanding occupations and how they assess their own occupation relative to others in terms of suitability of early retirement. Vermeer, Mastrogiacomo and van Soest report that in the Dutch context, those in physically demanding occupations such as construction workers or nurses are considered more deserving of early retirement than individuals in mentally demanding occupations. The difference in the average age considered suitable for retirement ranges from 1.6 to 2.7 years. Perhaps most importantly, respondents indicated that they would be willing to contribute to funding earlier retirement for workers in demanding occupations even though the respondent themselves were not in such an occupation. If we extrapolate from the survey results to the entire population, these results suggest substantial public support in favor of allowing differences in the retirement age by the type of occupation. At least part of the justification for this comes from the perception that health deteriorates more quickly when workers are engaged in some occupations and thus individuals cannot be expected to perform up to the same standard when they age.

Due to higher life expectancy and lower fertility rates, there is has been an increase in the old-age-dependency ratio and a decrease in the youth-dependency ratio over time in all OECD countries; see OECD (2007). This has put pressure on welfare programs in economically developed nations. It is therefore important to understand, and ultimately to try to limit, factors that reduce labor supply among older workers. Trevisan and Zantomio (2016) use data from two large surveys – the English Longitudinal Study of Ageing (ELSA) and the Survey of Health, Ageing and Retirement in Europe (SHARE) to compare how health shocks affect the labor supply of older workers in 16 European countries for the period 2002–2013. Studying the effects of three types of severe health shocks – acute myocardial infarctions (AMI), stroke and cancers, they find differential labor market responses among men and women. The strongest labor market response across both genders is to stroke, perhaps reflecting the fact that strokes tend to result in the most physical limitations that could affect the ability to work. The weakest response is to AMIs, mostly driven by males (who are also more likely to experience them) who return to the labor force and even increase the number of hours worked. There is a SES gradient in the propensity to report back to work. Even though both men and women of low education report more functional limitations after the onset of a health shock, men of higher education are more likely to return to the labor market after the shock while the opposite is true among women. The institutional setup in the country of residence also plays an important role, with individuals living in countries with more generous welfare and disability generosity reducing their labor supply by more than those living in less generous societies.

Health shocks and labor market attachment is also the theme of the last paper in the volume. As opposed to Trevisan and Zantomio (2016), Lindeboom et al. (2016) study health shocks starting at earlier ages. Using the British National Child Development Survey (NCDS) the authors investigate how unexpected health shocks such as car accidents affect employment and disability status across the SES spectrum. Studies have demonstrated an SES gradient in health (e.g. Smith, 1999), however the identification strategy in this paper requires only that the exact timing of accidents is not anticipated by the affected individuals. The authors show that experiencing such a health shock substantially increases the likelihood of the onset of a disability, while it does not have direct effects on employment at later ages. This finding is used to simulate the causal effects of the onset of a disability on later employment outcomes. These simulations show that about two-third of the association between disability and employment can be explained by the causal effect of the onset of a disability on employment. The remaining



one-third is due to unobserved factors specific to the individual. For men and lower-educated workers the association is mainly explained by the causal effect, while for women heterogeneity is more important.

## 2. Directions for further research

Several of the papers in this volume analyze topics of particular relevance for the development of children; a topic that lies within the grand challenges of the World according to the Global Grand Challenges initiative supported by Grand Challenges Canada, USAID, and the Bill and Melinda Gates Foundation. And while we have seen an increase in the number of papers analyzing early child development in the economics literature, it clearly deserves further attention. For example, we still need more empirical evidence on the production of child human – and health – capital and the way in which endowments and various investments (or shocks) interact over the life-course; see for example Aizer and Cunha (2012).

Other papers in the volume are concerned with mental health. Mental and behavioral disorders are, in fact, a leading global contributor to years lived with disability; see Vos et al. (2012) – and have become a key challenge for the US Social Security Disability Insurance program (Autor, 2015). First onset of many mental and behavioral disorders occurs in childhood and during adolescence (Kessler et al., 2007), coinciding with school completion and entrance into the labor market. We believe that a fruitful line of research will continue to focus on the onset of mental health disorders and its consequences for human capital attainment just as a better understanding of effective treatment, broadly speaking, may ultimately help alleviate the pressure on disability programs.

Curbing the consequences of poor mental health is crucial, but there is also a continued need for policy evaluation more generally. The papers in this volume spur a range of questions: can work-place interventions affect bullying incidence and what types of interventions work best to prevent such behavior? How do we construct sick leave policies that both allow individuals to recover and are not too costly for firms? How does health policy interact with the labor market? And are there institutional settings that are more conducive to positive health and labor market outcomes? Society stands to gain substantially from policies based on the findings of such studies.

Finally, even when effective policies are in place, we often do not really understand *why* they work. One way to interpret the positive change in length of maternity leave in Humlum et al., for example, is as an increase in family resources. A clear direction for future research is to identify the mechanisms and potential heterogeneity in responses to similar policies by family background and child endowments. A body of work (e.g. Almond, Edlund, and Palme, 2008; Aizer and Cunha, 2012; Yi et al., 2015) demonstrates that following a shock to child endowment coming from changes in policy or the environment, families of different socio-economic status react differently. Low SES families shift resources toward the high-ability children or those children favored by the exogenous intervention. High-SES families, on the other hand, work to compensate children subjected to negative shocks or those not positively affected by external changes. How institutions, financial resources and public policies interact with the underlying mechanisms driving these phenomena is an important open question.

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