Final Report

2009 Canadian Health Economics Study Group Conference

Conference Agenda and Details

May 26th, 2009

8:00am: Breakfast and Registration

9:00am: Keynote Speaker: Prof. Martin Gaynor

Martin Gaynor gave a talk on the role and functioning of competition and markets in the health care sector. He started out by identifying the peculiarities of health care markets. Given that these issues play a role, so Gaynor argues, health care markets are distinctly different from (most) other markets. Given that these peculiarities constitute departures from the first fundamental theorem of welfare economics, we cannot expect to achieve an efficient allocation of resources. So if more competition in health care markets is introduced in the hope to get rising health care expenses under control and provide incentives to improve the quality of care one has to carefully investigate the effects of competition along all relevant dimensions – including the desired effects and side effects. This is what Gaynor did by reviewing the theoretical as well as empirical literature on competition in health care markets.

Gaynor argued that product heterogeneity in health care markets does not preclude competition. Competitive markets that are characterized by horizontal and/or vertical product differentiation do exist without competition being questioned. Gaynor admitted that there are several barriers to entry, but that restrictions such as licensing may advance quality by guaranteeing that certain educational requirements are met. Most importantly, Gaynor discussed the role of asymmetric information in health care markets and its potential consequences. For example, health plans could engage in cream-skimming. He reports a large body of evidence for selection but argues that the results are not rooted in competition but in the fact that premiums are not related to individual risk characteristics (community rating). Gaynor also highlights that consumer information increases with the frequency of purchase. As a result, asymmetric information should play a negligible role when services are consumed frequently. Moral hazard incentives on the side of providers can only materialize in markets with infrequent purchases. Finally, Gaynor addressed competition effects on prices and quality. While quality may be compromised when prices are set competitively, quality may improve when prices are regulated.

Overall, Martin Gaynor was optimistic that competition could advance health care systems in terms of efficiency and quality. But he admitted that distorted competition may be dominated by an NHS-type system.

10:00am: “The 'Trendiness' of Sleep: An empirical analysis using Canadian time-use data”

Presenter: Catherine Deri-Armstrong, University of Ottawa

Discussant: Kate Rybczynski, University of Toronto.

Abstract

Using Canadian time use data, we exploit exogenous variation in local unemployment rates to investigate the cyclical nature of sleep time and show that for both men and women, sleep time decreases when the economy is doing relatively better. Our results suggest that in a recession Canadians will sleep an average of 2 hours and 11 minutes more per week, or roughly 20 minutes more per day. The effect is strongest for those of prime-age and is present for both men and women, but is experienced through different channels. This finding contributes to two distinct literatures. First, given the importance of even small changes in sleep time on such measures of cognitive functioning as reaction time and concentration, our findings may help explain the countercyclical nature of mortality found in the works of Ruhm (2000 and 2007) and Gerdtham and Ruhm (2006). These papers show that overall and cause specific mortality increases as economic conditions improve - and the effect is largest for fatalities disproportionately experienced by younger adults: motor vehicle accidents and other accidents. Accidents of all kinds are more likely to occur and perhaps be more severe when sleep times are lower. Second, we show that part of the effect of unemployment rate on sleep time occurs

through the effect of UR on personal income - through changes in individual's opportunity cost of time. Our results thus also contribute to the works of Szalontai (2006) and Biddle and Hamermesh (1990) who show that the quantity of sleep time should not be treated as exogenously determined as is the norm in standard economic models, but, like any other resource, determined by its relative cost.

Discussion

- Kate Rybczynski suggested analyzing the effect of the business cycle on the amount of sleep workers in different industries get and exploring whether the effect is the same for all the job classes. Moreover, she proposed analyzing not just the average effect, but also the effect on the whole sleep and income distribution. In fact, it is quite reasonable to imagine that the effects could be quite different for people who are used to sleep much less or much more than the average.
- The main point made during the general discussion was related to the difficulty of identifying the direct effect that the business cycle has on sleep. In fact, since the time budget is given, during a recession the amount of time spent on activities other than work has to go up. This concern is even more relevant considering that only three cycles of the time use survey are used; therefore it is quite difficult to capture the cyclical behavior of sleep.

11:00am: "Short and medium term effects of maternity leave on child outcomes: Evidence from the NLSCY"

Presenter: Mohamood Zarrabi, University of Calgary

Discussant: Cynthia Perry, Ontario Ministry of Health and Long-Term Care

Abstract

Increases in the female labour force participation rate over the last several decades have substantially affected the family environment and consequently might have affected children's health and development outcomes. Literatures in psychology and health sciences have found a mixed effect of the mother working on children's outcomes, from an adverse effect to no effect, and even a positive effect, during childhood. The controversial results probably have aroused

because of complexity in the correlation between the mother working and children's outcomes. In this study, I tried to disentangle the effect of unobservable heterogeneity in mother's skills for balancing home tasks and work responsibilities from the casual effect of the mother working on children's outcomes. I estimated the effect of maternity leave using a flexible functional form of an endogenous switching regression model with error terms that follow trivariate t-student distribution. Exogenous variation in maternal work status arises from a natural experiment driven by reform in maternity leave mandates in Canada on December 31, 2000. I examined the short and the medium term effects of maternity leave longer than six months on variety of children's outcomes, including health, temperament, behaviour, milestone achievements, cognitive development, literacy, breastfeeding, parenting and family functioning. Using data of the National Longitudinal Survey of Children and Youth (NLSCY) 1996-2005, I distinguished the effect of maternity leave on children whose mothers were randomly selected from the population from the effect on children whose mothers were randomly selected from the treated population, e.g. those who stayed in home longer than six months after giving birth. I found maternity leave longer than six months does not have any contemporaneous effect, but some positive and a few negative effects appeared in later lives of children when aged 2 to 5 years old, in which cognitive development, breastfeeding and children's temperament improve while aggressive behaviors, family functioning and hostile parenting worsen with the longer leave. Moreover, I found the negative effects disappear in later lives of children

Discussion

- The main points discussed by Cynthia Perry regarded the estimation method and the relevance of the estimates. In particular, the discussant asked the author to address why an Average Treatment Effect (ATE) model suits the goals of this paper better.
- Moreover, she suggested making clear how sample exclusions (the province of Quebec in particular) affect the obtained estimates. It is also suggested to reduce the number of outcomes studied, potentially grouping them in indexes. In fact, when too many outcomes are analyzed it is quite possible that some of them are significant just by chance and interpretation becomes challenging.

- Finally, the discussant points out that “old” children can be affected in their health outcomes by maternal leave for younger siblings.
- From the general discussion two different questions emerged. The first one was why the author hasn’t considered a regression discontinuity design which would have been feasible. The second one was about the share of women with less than 6 months maternity leave to get an idea about the minimum required inputs in terms of absence from work (40% have maternity leave shorter than 6 months).

11:45am: “The evolution of health outcomes from childhood to adolescence”

Presenter: Paul Contoyannis, McMaster University

Discussant: Audrey Laporte, University of Toronto

Abstract

Using data from the Canadian National Longitudinal Survey of Children and Youth (NLSCY), this study examines how and why health outcomes exhibit persistence during the period from childhood to adolescence. We first examine the distribution of health outcomes and health transitions using descriptive analysis. Then we explore the determinants of these distributions by estimating the contributions of family SES, unobserved heterogeneity and state dependence and also allowing for heterogeneity of state dependence parameters across categories of neighborhood status. In addition to previously used empirical methods, we implement a recently proposed estimation approach: a non-linear dynamic panel data model with fixed effects and bias-correction. The results of this study are informative in two ways. Firstly, knowing the potential reasons for observed persistence in child health helps target health promotion and social support programs to those trapped in the state of persistent ill health. Secondly, the implementation of the new estimation approach provides more robust estimates and thus more reliable indicators of the determinants of health dynamics during this critical period of development.

Discussion

- Audrey Laporte observes that some of the samples used to estimate transition probabilities have a small size, which generates some concerns.

- Moreover, some of the effects are ambiguous, in particular when the person who knows the most about the child is not the mother.
- The discussant also noticed that the sign of some estimates depend on the chosen specification. One of the possible explanation for such behavior is that the current and the mean values of the explanatory variables are strongly correlated, therefore there is little variation to produce precise estimates
- Finally, she discussed the possibility that the estimates regarding the pure effect of neighborhood on health outcomes may be affected by self selection. For instance it is possible that rich individuals are healthier and they live in rich neighborhood; therefore dealing with selection is necessary in order to pick the pure effect of neighborhood on health outcomes.
- The main focus during the general discussion has been on the estimation method. In particular, someone asked how the bias correction affects the efficiency of the estimates.

14:00 “A Model of public and private care in the presence of private insurance”

Presenter: Marie Allard, HEC Montreal

Discussant: Lutz-Alexander Busch, University of Waterloo

Abstract

In many health-care systems, individuals are fully insured but often face long waiting times. Although the introduction of a private sector may allow individuals to avoid long waiting times, care can be very expensive. In this paper, we build a model where patients may opt for the private or the public sector. We then extend the model by allowing patients to purchase private insurance for care in the private sector. Although care in the public sector is exogenous to the patient, care in the private sector is endogenous (i.e., patients may purchase health-care services at the market price). We derive conditions under which individuals opt for the public and the private sector in the absence and presence of private health-care insurance. We show that private health-care insurance not only leads individuals to over-consume private health care (the traditional moral hazard problem) but also potentially leads individuals to opt for the private

sector too soon (i.e., for inefficiently low illness severities and waiting times). We also discuss the likely general equilibrium effects and policy implications.

Discussion

- First, Lutz Busch pointed out that the choice between purchasing insurance versus not is not considered, making this paper a comparative static exercise
- Moreover, he pointed out that there is no time; therefore any reference to the timing of private care is confusing.
- The discussant also noticed that in the presented model the lack of wait times and service levels are substitute and that this model carefully shows that for quicker services it is possible to reduce service levels and have the same health outcomes.
- From the general discussion, someone suggested that the authors consider supply side responses in the model as these had been neglected so far.

14:45 “Standardization under Group Incentives”

Presenter: Pierre-Thomas Leger, HEC Montreal

Discussant: Erin Strumpf, McGill University

Abstract

Group-based incentives can reduce a firm’s costs more than individual incentives by providing a rationale for standardizing decisions across employees or agents. We theoretically demonstrate and empirically test this in the context of hospital services, where fragmentation between hospitals and physicians has promoted high growth in spending. Specifically, we analyze recent gainsharing programs in cardiology in which hospitals establish group incentives for their non-employee physicians to control spending on highly priced drugs and devices. We find that gainsharing lowered hospitals’ prices for drugs and devices via switching to lower-priced items, increased contract compliance due to higher standardization of purchasing decisions, and lower negotiated prices due to hospital’s credible threats to switch to alternative sources. The model

describes the conditions under which each of these outcomes is achieved. As the model also indicates, actual standardization was less widespread.

Discussion

- After discussing the nature of the double agency problem faced by physicians (to patients and to hospitals), Erin Strumpf discussed the potential of the data set used by the authors of the paper. In particular, she suggested studying how hospitals that have already introduced gain sharing mechanisms have performed and if there exists other incentives affecting hospitals' decisions.
- Moreover, the discussant questioned the possibility of studying whether market input (expensive medical devices) and efforts are substitutes.
- The discussant also suggested studying the effects of gain sharing on health outcomes, in particular for complicated cases.
- Finally, she discussed the econometric methods used to estimate the effects of gain-sharing, pointing out the importance of dealing with possible outliers.
- The discussant raised doubts about the external validity of the study: a sample with 6 gain-sharing hospitals and 138 without is unlikely to be representative.

15:45 "Can higher cigarette taxes still improve birth outcomes? Evidence from recent large increases"

Presenter: Justin Smith, University of Manitoba

Discussant: Mike Farnworth, University of New Brunswick

Abstract

Using U.S. natality data from 1999 to 2003, we examine the impact of cigarette excise taxes on maternal smoking participation and low birth weight status. In particular, we implement three empirical strategies: First, we estimate standard two-way fixed effect models. Second, we examine the impact of large state-specific tax increases by matching large-increase states to non-increasing states with similar levels of measured "anti-smoking sentiment". Finally, we match

these same large-increase states to non-increasing states with similar pre-increase trends in maternal smoking. Taken together, our findings imply that large cigarette taxes can still reduce maternal smoking and, in turn, improve birth outcomes, especially for less-educated mothers.

Discussion

- In his discussion, Mike Farnworth mostly focused on econometric issues. First of all, he suggested to better account for possible heteroscedasticity.
- After proposing a probit specification as the most appropriate one, M. Farnworth advised to aggregate some months, in order to have a time dimension that is more consistent with the likely effect of higher cigarette taxes.
- Moreover, he pointed out that internet purchases can play a crucial role on the effects of taxes on cigarette demand.
- Finally, he underlined that selection could be an important issue to determine which provinces/states experience high cigarette tax increases.
- During the general discussion, someone asked how reliable retrospective data are and how the results may be affected by systematic errors.

16:30 “The Economics of smoking bans”

Presenter: Ian Irvine, Concordia University

Discussant: Hideki Ariizumi, Wilfrid Laurier University

Abstract

We use cigarettes as our motivating example of a product of which the government wishes to reduce the consumption. The government has two possible policies - increasing the price (imposing a tax) or limiting when the product can be consumed (imposing a ban on smoking in the workplace). The government ability to reduce smoking by increasing the tax is limited by the ability of the smoker to buy illegal but untaxed cigarettes on the black market. We show that the use of a smoking ban - which we consider to be in the spirit of a quantity control is always welfare -enhancing.

Discussion

- Hideki Ariizumi discussed how rational individuals may react to the introduction of smoking bans. In fact, one of the main points of this paper is that smoking bans increase the variance of consumption and therefore affect the presence of nicotine in the blood. Therefore, he suggested that authors think how nicotine patches affect the effectiveness of smoking bans to reduce the consumption of cigarettes.
- Moreover, he proposes to better explain which mechanism drives the results and why positive effects of smoking bans dominate negative effects.
- During the general discussion it emerged that the existence of an optimal level of smoking bans and its eventual determination should be discussed in the analysis of the model.

May 27th, 2009

9:00am : Keynote Speaker: Prof. Dale Poirer

In his talk, Dale Poirer underlined the increasing relevance of Bayesian Econometric Methods in economics and in health economics in particular. After discussing the main differences between the frequentist approach, based on the sample size, and the Bayesian approach, that makes wide use of simulations, he pointed out that, thanks to MCMC (Markov Chain Monte Carlo), computation difficulties do not represent a good reason to prefer the frequentist approach over the Bayesian one.

Structural economic models are usually composed by several simultaneous equations and they can be tested using both a frequentist and a Bayesian approach. The Bayesian analysis is composed by a set of fixed components: a prior, a likelihood function, Bayes' Theorem, a Loss Function, a commandment (minimization of the expected posterior loss), a prediction of future distribution and a sensitivity analysis.

Furthermore, Dale Poirer discussed the importance of subjective probability in Bayesian econometrics and how subjective probability differs from objective probability. In particular he focused on the role of de Finetti's representation theorem on statistical inference. In fact, such theorem represents the foundation for Bayesian econometrics and it allows to connect the Bayesian and the frequentist reasoning.

Finally, he explained how to build a Bayesian model, composed by a likelihood function and a prior, presenting 5 principles of model building. The first principle dictates that inference regarding the unknown parameters should be made conditional on the observed data. The second assigns a formal consideration to subjective prior beliefs. The third principle serves to remind that the likelihood function and parameters are just artifacts of the mind. The fourth principle suggests performing sensibility analysis in order to test the model. The last principle states that researchers should never assign a probability equal to one to the model they have chosen.

10:00am: "Social Security and the Rise in Health Spending"

Presenter: Kai Zhao, University of Western Ontario

Discussant: John Burbidge, University of Waterloo

Abstract

I provide a novel explanation of the rise in health care spending as a share of GDP over the last 50 years in the United States. Health care spending was approximately 5% of the U.S. GDP in the 1950s, and it jumped to 15% in 2000. I argue that the dramatic rise in health care spending is largely due to the expansion of the pay-as-you-go social security system in the U.S. after WWII. My theory emphasizes the following mechanisms: 1) social security transfers resources from the young to the elderly (age 65+) whose propensity to spend on health care is higher, thus raising the aggregate health spending of the economy. 2) Social security pays the elderly in the form of annuities, which implies that people who live longer would get more social security payments. Therefore, social security provides the elderly with incentives to invest in their health in order to live longer. 3) Furthermore, the elderly live longer as their health care spending rises, which further raises the aggregate health spending (% of GDP) by raising the population share of the

elderly. It is worth noting that the impacts of social security on aggregate health spending may be further amplified by the Medicare program introduced in 1966. Medicare subsidizes the health care spending of the elderly, thus it further enlarges the health spending gap between the young and the elderly, which implies that transferring resources from the young to the elderly should have a larger impact on aggregate health spending. Data shows that the rise in health spending has come largely from the elderly, which supports this theory. I formalize the above-described mechanisms in a life cycle version of a standard Grossman (1972) model in which health is treated as a durable capital stock. I solve the model numerically and calibrate the model to the U.S. economy. The preliminary results show that social security and Medicare together account for 61% of the rise in health care spending as a share of GDP in the U.S. from 1950 to 2000, while Medicare alone only accounts for 14% of the rise.

Discussion

- John Burbidge discussed how the nature of health assistance has changed in the last century. In particular, he discussed how the role of the family changed: in the past, most of the inter-generational transfers happened within the family, whereas today they take place through government spending.
- He also asked how the model behaves out of steady state, stimulating further interest on the analysis of the transitions between steady states.
- Finally, John Burbidge suggested complementing the empirical part of the paper with more recent micro-data.

11:00am: “The Impact of Mental Health Insurance Laws on State Suicide Rates”

Presenter: Matthew Lang, University of California – Santa Barbara

Discussant: Paul Grootendorst, University of Toronto

Abstract

In the 1990s and early 2000s a number of states passed laws requiring employers to include mental health benefits in their health insurance coverage. The variation in the strength and

enactment date of the laws provide an opportunity to measure the impact of these laws on mental health outcomes, in particular state suicide rates. Results show that when states enact laws requiring insurance coverage to include mental health benefits at parity with physical health benefits, the suicide rate decreases by five percent. These findings are robust to a number of different specifications and the effect of the law on suicide rates is persistent over time.

Discussion

- Paul Grootendorst emphasized the importance of mental health care. In fact, he pointed out that mental health problems are quite common and that they generate high costs for society.
- In particular, he asked whether and how mental health care helps to reduce the morbidity and mortality burden. He expressed how difficult it actually is to measure this effect properly.
- During the general discussion, the main focus was on the generosity of the policy changes, in order to understand which kind of conditions typically receive insurance coverage.

11:45am: Paper “The Ability of Various Measures of Fatness to Predict Application for Disability Insurance”

Presenter: Maximilian Schmeiser

Discussant: Michel Grignon, McMaster University

Abstract

This paper compares a variety of measures of fatness (e.g. BMI, waist circumference, waist-to-hip ratio, percent body fat) in terms of their ability to predict application for Social Security Disability Insurance (DI). This is possible through a recent linkage of the National Health and Nutrition Examination Survey (NHANES) III to Social Security Administration (SSA) administrative records. Our results indicate that the measure of fatness that best predicts application for DI varies by race and gender. For white men, BMI consistently predicts future

application for DI. For white women, almost all are consistently predictive. For black men, none predict application. For black women, waist circumference and waist-to-hip ratio are the only significant predictors of DI application. This variation across race and gender suggests that the inclusion of alternative measures of fatness in social science datasets should be considered, and that researchers examining the impact of fatness on social science outcomes should examine the robustness of their findings to alternative measures of fatness.

Discussion

- Michel Grignon's discussion started with questioning why different methods of measuring fat produce different information about body fat. In particular, this is relevant because there is no general consensus on the optimal level of body fat and on Body Mass Index (BMI) thresholds.
- He then focused on the potential endogeneity of applications to disability insurance, underlying that some bias could be present in the estimates.
- Finally, he recalled the existing literature evidence that a positive correlation between the level of fat measured by BMI and wage is observed in western countries. He suggested analyzing whether this correlation is robust to different fat measures.