HEALTH INSURANCE AND PREGNANCY OUTCOMES: AN ANALYSIS OF EMPLOYMENT, FERTILITY AND PRENATAL CARE IN MEXICO

Jorge R. Gallardo-García

ABSTRACT

This dissertation analyzes family decision-making about labor force sector participation, health insurance, fertility, and prenatal care in Mexico, where a large proportion of the population has little or no access to medical services and where the incidence of low birth weight and infant mortality rate are relatively high. The lack of access to health care is mainly due to a large uncovered labor market sector, where workers are not eligible for government health benefits. I develop and estimate a forward-looking, dynamic discrete choice model that can be used to study the interplay between employment and insurance decisions and pregnancy outcomes. The model incorporates a birth weight production function and a probability of infant death. I estimate the model using panel data from the Mexican Family Life Survey (MxFLS). The estimates show that prenatal care has a positive effect on birth weight of 13% on average. It is estimated that being born with normal birth weight, as opposed to low birth weight, decreases the probability of infant death from 37% to 5%. Additionally, I use the model to evaluate alternative policies aimed at increasing access to prenatal care services, such as the Universal Access Health Insurance (SPS), health care vouchers programs, and construction of health care centers. The most beneficial policy, in terms of pregnancy outcomes, is to build health care centers in every locality to decrease the cost of prenatal care; low birth weight incidence decreases from 6.77% to 5.68%, and infant mortality rate drops from 3.96% to 3.83%. The government's SPS

has smaller impact on infant health because it has a strong crowding-out effect on the demand for private doctors, which are of higher quality than government hospitals. Vouchers programs have positive impact but of smaller magnitudes and at a higher cost to the government than SPS. Results from the policies' simulations suggest that, if the objective is to improve infant health, the government should not only try to increase the usage of prenatal care through subsidies, but it should implement policies aimed at improving the quality of the government health centers and their physical availability in the localities.

Introduction

In many Latin-American countries, a large proportion of the population has little or no access to health care services. The lack of access is, in part, due to a large uncovered labor market sector, in which workers are not eligible for government health benefits. Many of these same countries have high rates of infant mortality and a high incidence of low birth weight. For example, Mexico ranks very high among OECD countries in terms of percentage of low birth weight children (9%) and infant mortality rate (2.5%). In recent years, improving infant health has become a primary concern of many governments and international institutions. For instance, the UN made reducing infant mortality rates in developing countries its fourth Millennium Development Goal.[1]

One of the potential policy instruments for improving birth outcomes is prenatal care, but whether and to what extent prenatal care affects child health outcomes is a matter of much debate.[2] Empirical estimates of the impact of prenatal care on birth weight vary widely, depending on the data set and the estimation approach used. One of the main problems addressed in the economic literature is how to control for

[1] See World Health Organization (2005a,b).

[2] See, for example, Corman *et al.* (1987), Grossman and Joyce (1990), Rosenzweig and Wolpin (1991, 1995), Racine *et al.* (1992), Joyce (1994, 1999), Alexander and Korenbrot (1995), Frankenberg (1995), Paneth (1995), Shiono and Behrman (1995), Conley and Bennett (2000), Behrman and Rosenzweig (2004), Evans and Lien (2005), Almond *et al.* (2005), and Black *et al.* (2005).

endogeneity in the choice of prenatal care services. For example, studies like Corman *et al.* (1987), Grossman and Joyce (1990), Rosenzweig and Wolpin (1991, 1995), and Joyce (1994, 1999) use fixed effects and instrumental variables methods to control for unobserved determinants of prenatal care decisions. This literature also studies how the timing and quality of prenatal care services affect child health outcomes.

Even if existing studies are able to consistently estimate the birth weight production technology, knowledge of the technology alone is insufficient for conducting policy experiments that would likely modify the behavior of families in their choice of inputs. For example, if the government subsidizes the cost of prenatal care, then we not only need to know the effect of prenatal care on outcomes, but also how families will change their insurance and prenatal care choices. A decrease in child mortality resulting from such a policy could also lead to different fertility decisions, as families no longer replace children who die. Another limitation of the existing literature is that most studies use data from developed countries where a high percentage of pregnant women receive some prenatal care,[3] so the findings are not necessarily generalizable to a developing country setting. In Mexico, the availability of medical services and the pricing of those services is closely tied to labor force sector participation and family income. Therefore, understanding how government policies affect prenatal care access and child health outcomes requires a fuller consideration of the determinants of labor supply, fertility and health care provider choices in a way that recognizes their interlinkages.

This work is the first to relate and jointly study family decision-making about labor sector participation of the husband and wife, health insurance, fertility and

[3]See Racine *et al.* (1992) and World Health Organization (2005c).

prenatal care with a focus on understanding the consequences of these decisions for pregnancy outcomes. To this end, I develop and estimate a forward-looking dynamic behavioral model using a new panel data set called the Mexican Family Life Survey (MxFLS). The model incorporates a birth weight production function that specifies the relationship between health inputs and birth weight outcomes, as well as stochastic child mortality. It allows for unobserved heterogeneity that may affect decisions to get prenatal care. In each period in the model, a husband and wife receive wage offers from both the covered and uncovered sectors and make decisions about whether and where to work. They also decide on health insurance, fertility, and, for pregnant women, on type of provider (if any) for prenatal care. Their choices are constrained by the prices they face and by their geographic location.

The dynamic model builds on earlier static models of related choices in Rosenzweig and Schultz (1983), Grossman and Joyce (1990), and Rosenzweig and Wolpin (1991). It is the first model to consider how the covered/uncovered sectoral choice decisions may depend on access to medical services. My model also builds on earlier work on dynamic fertility models such as Hotz and Miller (1988), Eckstein and Wolpin (1989), Mira (1995), Rosenzweig and Wolpin (1995), Shnaps (2001), Todd and Wolpin (2003) and Gayle and Miller (2003).

The model estimates indicate that prenatal care has a positive and important effect on birth weight. The direct effect of prenatal care amounts to 13% of the birth weight, on average, which are approximately 379 grams (13 ounces). Additionally, being born with normal birth weight, as opposed to low birth weight, decreases the probability of dying within the first year of life from 37% to only 5%.

I use the estimated behavioral model to simulate and evaluate alternative government policies that extend the provision of prenatal care services, for which there are no available data. For example, I evaluate the recently installed Universal Access Health Insurance (*Seguro Popular de Salud*, SPS) which is an attempt by the Mexican government to extend the covered sector health care insurance (IMSS) to all the population regardless of their labor sector participation.[4] The simulations of this policy indicate that its impact on infant health is relatively small, mainly because of the strong crowding-out effect that this policy has on the demand for private health care services, which, as the model estimates indicate, are of better quality than IMSS services.

As an alternative to the SPS, I evaluate a hypothetical policy that consists on different schemes of health care vouchers program, which are targeted to low-income families. The impacts of these policies are smaller than those of the SPS and also report a higher cost for the government.

Finally, I evaluate the impact that building more hospital facilities would have on infant health, given that the estimates of the model suggest that the distance from the household to a health care center is a very important component of the total cost of seeking prenatal care services. Having a hospital in each locality or neighborhood improves infant health indicators better than the SPS.

These results suggest that, when the government's main objective is to improve infant health through prenatal care services usage, it may not be enough to just sub-

[4]IMSS is the Social Security Mexican Institute which provides health care services to covered sector individuals and their families.

sidize such services. From the health care quality differences and the results from the hospitals construction policy simulations, it seems that the government would improve infant health in higher magnitudes through more long-run policies such as government hospital's quality improvement and increments in physical availability of health care centers.

Bibliography

Alexander, Greg and Carol Korenbrot (1995), "The Role of Prenatal Care in Preventing Low Birth Weight", *The Future of Children*, volume 5, no. 1.

Almond, Douglas, Kenneth Chay and David Lee (2005), "The Costs of Low Birth Weight", *The Quarterly Journal of Economics*, volume 120, no. 3, 1031–1083.

Behrman, Jere and Mark Rosenzweig (2004), "Returns to Birthweight", *The Review of Economics and Statistics*, volume 86, no. 2, 586–601.

Black, Sandra, Paul Devereux and Kjell Salvanes (2005), "From the Cradle to the Labor Market? The Effect of Birth Weight on Adult Outcomes", Working Paper, IZA.

Conley, Dalton and Neil Bennett (2000), "Is Biology Destiny? Birth Weight and Life Chances", *American Sociological Review*, volume 65, no. 3, 458–467.

Corman, Hope, Theodore Joyce and Michael Grossman (1987), "Birth Outcome Production Function in the United States", *The Journal of Human Resources*, volume 22, no. 3, 339–360.

Eckstein, Zvi and Kenneth Wolpin (1989), "Dynamic Labour Force Participation of Married Women and Endogenous Work Experience", *Review of Economic Studies*, volume 56, no. 3, 375–390.

Evans, William and Diana Lien (2005), "The Benefits of Prenatal Care: Evidence from the PAT Bus Strike", *Journal of Econometrics*, volume 125, no. 1-2, 207–239.

Frankenberg, Elizabeth (1995), "The Effects of Access to Health Care on Infant Mortality in Indonesia", *Health Transition Review*, volume 5, no. 2, 143–162.

Gayle, George-Levi and Robert Miller (2003), "Life-Cycle Fertility and Human Capital Accumulation", GSIA Working Papers, Carnegie Mellon University, Pittsburg.

Grossman, Michael and Theodore Joyce (1990), "Unobservables, Pregnancy Resolutions, and Birth Weight Production Functions in New York City", *Journal of Political Economy*, volume 98, no. 5, Part 1, 983–1007.

Hotz, Joseph and Robert Miller (1988), "An Empirical Analysis of Life Cycle Fertility and Female Labor Supply", *Econometrica*, volume 56, no. 1, 91–118.

Joyce, Theodore (1994), "Self-Selection, Prenatal Care, and Birthweight Among Blacks, Whites, and Hispanics in New York City", *The Journal of Human Resources*, volume 29, no. 3, 762–794.

Joyce, Theodore (1999), "Impact of Augmented Prenatal Care on Birth Outcomes of Medicaid Recipients in New York City", *Journal of Health Economics*, volume 18, no. 1, 31–67.

Mira, Pedro (1995), Uncertain Child Mortality, Learning and Life Cycle Fertility, Ph.D. thesis, University of Minnesota, Twin Cities.

Paneth, Nigel (1995), "The Problem of Low Birth Weight", *The Future of Children*, volume 5, no. 1, 19–34.

Racine, Andrew, Theodore Joyce and Michael Grossman (1992), "Effectiveness of Health Care Services for Pregnant Women and Infants", *U.S. Health Care for Children*, volume 2, no. 2, 43–57.

Rosenzweig, Mark and Paul Schultz (1983), "Estimating a Household Production Function: Heterogeneity, the Demand for Health Inputs, and Their Effects on Birth Weight", *Journal of Political Economy*, volume 91, no. 5, 723–746.

Rosenzweig, Mark and Kenneth Wolpin (1991), "Inequality at Birth: The Scope for Policy Intervention", *Journal of Econometrics*, volume 50, no. 1-2, 205–228.

Rosenzweig, Mark and Kenneth Wolpin (1995), "Sisters, Siblings, and Mothers: The Effect of Teen-Age Childbearing on Birth Outcomes in a Dynamic Family Context", *Econometrica*, volume 62, no. 2, 303–326.

Shiono, Patricia and Richard Behrman (1995), "Low Birth Weight: Analysis and Recommendations", *The Future of Children*, volume 5, no. 1.

Shnaps, Reuven (2001), Estimating the Effect of Smoking on Birth Weight in a Dynamic Model when Fertility is a Choice, Ph.D. thesis, University of Pennsylvania, Philadelphia.

Todd, Petra and Kenneth Wolpin (2003), "Using a Social Experiment to Validate a Dynamic Behavioral Model of Child Schooling and Fertility: Assessing the Impact of a School Subsidy Program in Mexico", PIER Working Papers Archive, University of Pennsylvania.

World Health Organization (2005a), "Make Every Mother and Child Count. A Toolkit for Organizers of Activities", Technical report, WHO, Geneva, Switzerland.

World Health Organization (2005b), "World Health Organization Statistical Information System (WHOSIS)", Technical report, WHO, Geneva, Switzerland, URL www3.who.int/whosis/menu.cfm.

World Health Organization (2005c), "World Health Report 2005: Make Every Mother and Child Count", Technical report, WHO, Geneva, Switzerland.