THE IMPACT OF LOCAL LABOR MARKET CONDITIONS ON THE FEDERAL DISABILITY INSURANCE PROGRAM: EVIDENCE FROM THE BAKKEN OIL BOOM

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Overview

While much of the United States was suffering from the Great Recession, parts of Montana, North Dakota, and South Dakota were experiencing unprecedented economic growth and labor market activity as a result of an oil boom. This paper seeks to examine the extent to which an economic boom resulting in increased earnings and labor force participation contributes to the decrease in Disability Insurance (DI) payments and participation. I use the value of county oil reserves as an instrument for earnings to estimate a causal relationship between local economic boom and a decrease in DI payments and program participation in Montana, North Dakota, and South Dakota. Because current DI applicants and beneficiaries are likely to be more responsive to local economic conditions, this new evidence can shed light on the impact of local labor market conditions on the growth of DI payments and participation. My estimates suggest a strong relationship between local economic conditions and DI program participation. I find an elasticity of DI payments with respect to local earnings of -1.04.

Methods

Econometric Sprecifications. In this paper, I examine the impact of local labor market conditions on DI payments and participation. The objective of this paper is to provide new estimates of this relationship that reflect the changes to the makeup of the labor force and DI applicant and beneficiary pools over the past two decades. Estimating a causal relationship between local labor market conditions and DI payments and participation is intrinsically difficult. A fundamental challenge is that at the level of the local labor market, earnings, employment, and DI participation are jointly determined. That is, an increase in county-level earnings will increase both employment and the value of an individual's potential DI payments. The value of individual DI payments is expected to increase due to the increase in earnings, which increases the level of income replacement from DI.

To surmount these challenges, I develop an instrumental variable to proxy local labor market conditions. Following closely the approach of Black et al. (2002), I exploit variation in in local earnings growth within states to examine how changes in local labor market conditions affect participation in the DI program. I use an instrumental variables (IV) strategy, with the value of county oil reserves as an instrument for earnings, to estimate a causal relationship between the local economic boom and a decrease in DI payments and program participation.

Data Description and Instrument Construction. Using shape files from the Energy Information Administration (EIA) and MapInfo software, I aggregate oil reserves at the county level from estimates of oil field reserves. I use midpoint estimates for each oil field then aggregate at the county level as the reserves are listed in ranges. Oil reserves are in millions barrels of oil equivalent (MMBOE). I calculate the reserve value used in the specifications by multiplying a county's oil reserves by the real price per barrel of West Texas Intermediate (WTI) crude oil, also obtained from the EIA. I use county-level administrative earnings data from the Internal Revenue Service (IRS), and DI payment and beneficiary data from the Social Security Administration (SSA).

Results

I estimate two IV models with the log difference of oil reserve value and two of its lags as instruments. In the first spefication, the dependent variable is county-level DI payments. My estimates for the first specification suggest a strong, statistically significant impact of earnings growth on DI expenditures. A 10 percent increase in a county's earnings would result in a decrease in DI payments within the county of nearly 10.4 percent. Increases in county earnings seem to substantially decrease DI payments. In the second specification, the dependent variable is county-level DI participation, the number of DI beneficiaries in each county. I find that a 10 percent increase in county earnings decreases the number of beneficiaries by 6.7 percent. This represents a substantial and statistically significant inverse relationship between county earnings growth and growth in the number of DI beneficiaries in the county. Additionally, the instruments perform well in identification tests.

My results show that, for this three-state region, the earnings growth in local labor markets generated by the oil boom significantly decreased DI payments as well as the number of DI beneficiaries. These results are in line with the broader literature, which finds a negative relationship between economic conditions and DI program participation, including Black et al. (2002) and Autor and Duggan (2003).

Conclusions

In this paper, I use variation in local labor market conditions to estimate the impact of economic growth on DI payments and program participation. The oil boom created an exogenous shock to local economies. I use data from three oil-producing states and use the oil boom as a natural experiment to identify the causal impact of earnings growth on DI program participation. The oil boom substantially increased earnings in oil-rich areas within the region. The economic benefits, however, were not spread evenly across the region. I use the variation in the price of oil over time combined with the variation in oil reserves across space (together, these make up the value of the county's oil reserves) to investigate the impact of economic growth on DI. I find that for the DI program, the elasticity of program payments with respect to earnings growth is -1.04; the elasticity of program participation with respect to earnings growth is -0.67.

My research provides new insights into the impact of economic boom on the labor force participation of low-skilled workers. Consistent with previous literature, these results suggest that current DI beneficiaries are more responsive to economic shocks than beneficiaries of previous generations.

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