American Economic Journal: Applied Economics 2012, 4(3): 116–137
http://dx.doi.org/10.1257/app.4.3.116

The Economic Benefits of Pharmaceutical Innovations: The Case of Cox-2 Inhibitors†

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Despite dramatic improvements in medical technology, little attention has been paid to the role of these innovations in improving economic outcomes. This study estimates the labor supply effects of Cox-2 inhibitors, a widely prescribed class of pharmaceuticals used for the treatment of chronic pain and inflammation and primarily marketed under the brand names Vioxx, Celebrex, and Bextra. This paper exploits the removal of Vioxx from the market in 2004 as an exogenous change in drug use. This removal was associated with a 0.35 percentage point decrease in overall labor force participation and $19 billion in lost wages. (*JEL* I12, J22, L65, O31).

Physical and mental health is a primary determinant of labor supply (Currie and Madrian 1999). This is particularly true among older Americans for whom negative health shocks are an important cause of labor force exits (Haider and Loughran 2001). In recent years, the prevalence of chronic conditions among all Americans has grown (Wu and Green, 2000; Hoffman and Schwartz, 2008). Given that the incidence of chronic conditions rises with age, it is reasonable to expect the labor force participation of elderly individuals would have decreased. Instead, the last two decades have seen dramatic increases in the labor force participation of older Americans. Figure 1 reports the change in labor force participation from the Current Population Survey between 1987 and 2007 for males and females grouped in five-year age ranges. Both males and females over the age of 60 increased their labor force participation over this time period far more than their younger counterparts. As a result of greater overall labor force participation trends, the change for females was consistently larger than the change for males. Importantly, the increase was still largest for older women compared to younger women.

To explain these labor supply increases, economists have examined factors, such as mandatory retirement law changes, Social Security reforms, and shifts from defined benefit to defined contribution pensions (Quinn 1999). However, the labor supply effects of improved medical technology have been largely ignored. The dearth of research concerning the economic effects of medical innovation is remarkable, given

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