Dynamic Effects of H-1B and Section 127 Policy Interaction on Higher Education

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Abstract

as the quality of instruction appears to decline following turnover despite the fact that most work shows higher attrition for less effective teachers. This raises concerns that confounding factors bias estimates of transition differences in teacher effectiveness, the adverse effects of turnover or both. But we find that these turnover effects can be fully accounted for by the resulting loss in experience and productivity loss following the reallocation of some incumbent teachers to different grades.

It is widely believed that employer educational assistance increases the quantity demanded for higher education, but the original passage of Section 127 which enables this tax-deduction for employers is associated with a reduction to the growth of higher education enrollment, and a simple regression of the assistance limit on total enrollment indicates a significant negative correlation. Comparative supply-side and demand-side explanations are discussed and evaluated. After taking extensive steps to account for policy and other changes in the economy, real variation in employer educational assistance over time is exploited to identify the effect of the employer assistance amount on higher education enrolment using Dynamic Ordinary Least Squares (DOLS). We robustly identify a positive effect on enrollment from employer educational assistance. In the preferred ordinary least squares regression, an increase in tax-deductible employer educational assistance in the amount of one dollar is associated with an increase of about 600 to national total enrollment in institutions of higher

education. However X Therefore Y

1. Introduction

Basic supply and demand theory indicate that a reduction in price is associated with an increase to the quantity demanded. In 1978, employer educational assistance became tax-deductable in the United States up to the original, nominal limit of 5,000 dollars. It is surprising, therefore, that 1978 is associated with a local decrease in the growth rate on both total and public university enrollment. This study exploits real variation in the tax-deductable employer educational assistance limit to eventually identify the expected positive effect, but not before identifying and correcting for several interesting things going on in the economy. Specifically, an interaction between H-1B policy and Section 127 employer educational assistance is discovered and assessed.

1.1. Supply-Side Explanations

Before forming more exotic theories, some simpler hypotheses should be checked. One hypothesis is that there is an adjustment period after the passage of Section 127 and before widespread employer provision of the newly deductable benefit. Allowing for a 3 or 5 year lag around the passage of Section 127 in 1978 does not resolve the issue. Across the eight five-year periods from 1970 to 2010, the five-year public enrollment growth rate was above 9 percent as often as it was below. Two of the four low-rate intervals occured immediately subsequent to the 1978 creation of Section 127. The interval just prior, from 1970-1975, saw the highest growth in enrollment across the period. It does not appear to be a one-year fluke that the employer educational assistance is associated with declined enrollment growth.

An alternative to the 3 or 5 year lagged analysis is to directly refer to surveys of employers. Cappelli[**?**] identifies 3 employer surveys from 1992 and 1993 which indicate that at least 86 percent of surveyed employers provided educational assistance. These studies were samples of convenience with a focus on large employers, but additional information leads Cappelli to claim that a substantial majority of employers offer such plans over his period of analysis from about 1990 to 2004. Cappelli notes that employee utilization of the

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benefit favors graduate education with about 20 percent of graduate students receiving employer assistance and roughly 6 percent of undergraduates doing so. Common provision of the benefit has remained true in later years. In 2013, SHRM reported that 61 percent of employers offer tuition assistance[?]. In 2017, World at Work found that 85 percent of employers offered such a benefit, with another 7 percent offering non-reimbursement tuition assistance, such as upfront tuition discounts[?].

1.2. H-1B, GI Bill, and Stafford Loan Connections

The idea that graduate students mainly use employer education benefits motivates hypotheses around undergraduate access. Increasingly since the 1990s, developed economies have experienced degree inflation and experience inflation. Entry level positions now require a degree when previously this was not necessary, even when technology has made the work easier. It is possible that undergraduate access to employer benefits are reduced simply because employers increasingly hire individuals that already have the degree. Employers are known to value the degree as a signal of labor quality, but these days there are plenty of other, richer data sources on quality for certain professions. In computer programming we see some employers completely dropping the degree requirement and preferring technical interviews, digital portfolio evaluation, and other signals. Why, then, do other leading employers continue to require the degree? One answer is that the degree requirement forms an H-1B justification. Since the passage of the Immigration Act of 1990[?], a corporation must claim a shortage of qualified specialized labor to justify an H-1B. The "attainment of a bachelor's or higher degree" is written into the law as a test of whether labor is qualified and specialized. This would motivate employers to begin requiring the degree in order to obtain cheap immigrant labor, even while knowing the degree may not be necessary.

Zero employers offered Section 127 educational assistance in 1977, but the majority offered the benefit by 1993. Immigration policy is a change which interrupts this period of analysis, but there are two other major policies to

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take note of. Stafford loans were available before Section 127, but the limits and rules for these loans and other government assistance to higher education fluctuated over the period of analysis. Government educational benefits for veterans is another major policy in the higher education assistance space. It becomes difficult to imagine a proper Section 127 analysis which does not include dynamic correction for these potentially important factors, as well as correction for general price changes and economic conditions in the economy over time. Such a corrected analysis is exactly what this paper completes.

1.3. Demand-Side Explanations

The prior explanations consistitute a supply-side exploration of the impotence of Section 127. An alternative explanation is that there simply wasn't much demand for college in the early years of Section 127. Indeed, lack of market demand appears to be a good explanation for the consistent college-age enrollment percent which is observed at 25.7 percent in both 1970 and 1980. A demand-side explanation is consistent with the falling average tuition and fees observed for all institutions from 1972 to 1980. After 1980 we see an upward trend in price and also an upward trend in college-age enrollment percentage, as well as simple total enrollment.

With an increase to the Stafford limit in the 1977 school year, a major change to the GI Bill in the 1981 school year, Section 127 beginning in the 1978 school year, and price changes in higher education and for all other goods, claims about a particular cause become dubious without full and corrective statistical treatment. Even so, there is some plausibility to the claim that Section 127 was passed during a time when demand was weak, so that there may have been a positive effect on the part of Section 127 as early as the first year, but it was overshadowed by general decline. The main contribution of this line of thought to a more general analysis is that corrective statistics should include price data for education in particular, and also for the general economy.

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2. Empirical Model

Equation 1 is an ordinary least squares model of total enrollment for all accredited institutions of higher education in the United States.

$$Y = \beta_1 X_1 + \beta_2 X_2 ... + \beta_k X_k + e \tag{1}$$

The Section 127 policy coefficient is the parameter of interest. Three other policy variables are included for federal lending policy, GI Bill education benefits, and H-1 Visa policy. In addition to the four policy variables, enrollment is modelled as a function of time, and the price of tuition and fees. A variable for personal consumption expenditures (PCE) as an measure of inflation is also included.

For robustness and analytical completeness, I test two other left hand variables using ordinary least squares, then I also test the relation of interest with two other modelling approaches. Specifically, I explore vector autoregressive (VAR) models and an instrumental variable regression following the Anderson–Hsiao pattern[?] with the lagged variable of interest as an instrument.

3. Data

Information on the average undergraduate tuition and fees for full-time students in all degree-granting postsecondary institutions is provided in constant 2016 dollars by NPSAS:19

PCE data is based on a series provided by the Federal Reserve.

Nominal Section 127 limits are a matter of public law (cite)

GI Bill major changes are based on law (cite)

and stafford (law cite)

The real employer assistance limit values are my own calculations, based on the public nominal limits and corrected based on NPSAS tuition and fees rather than PCE. Because this could present a deviation from the general price level, I also tested adjusting the employer assistance limit based on PCE, and I also

included PCE as an independent variable. In neither case did PCE present as a significant factor.

4. Aggregate Results

1. ¿ .995 adjusted r2 for preferred ols model 2. empassist has positive coefficient in the range of 150-850; preferred measure around 600 3. visa effects are complex and important, but signing the effect is sensitive to specification 4. stafford and gi bill effects are also significant in the prefered model.

5. Conclusions