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Indexing the income tax code, monetary/fiscal interaction, and the great moderation

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ABSTRACT

This paper considers the consequences of automatically indexing the US federal income tax code to inflation. Indexation, implemented during the 1981 federal tax overhaul, and active monetary policy constitute necessary conditions for a unique rational expectations equilibrium in standard New Keynesian models with a generalized, progressive labor income tax. Additionally, fixing the monetary regime shows that indexation reduces overall volatility in the model as well as the contribution of supply-side disturbances. Together, these results support a fiscal extension to the "good policy" hypothesis of the Great Moderation and encourage further indexation of the United States tax code.

1. Introduction

This paper studies the impact of indexing an income tax code to inflation, finding that active monetary policy and indexation are necessary conditions for a unique rational expectations equilibrium (REE) in New Keynesian models with a generalized, progressive labor income tax code. Additionally, indexation within a determinant environment reduces volatility in the model, especially variation originating from supply-side shocks. *Indexation* is a policy in which the nominal bounds on tax code brackets are adjusted for inflation on a consistent basis.[1] Such policies are important even in low-inflation economies because they eliminate *bracket creep*: the growth of a household's tax liability when its real income remains unchanged. Fig. 1 shows the effective income tax rates for fixed real income levels over time. Though easier to see during periods of high inflation (i.e. 1965–1980), bracket creep has been found to cause disruptions even in low inflation environments. Heer and Süssmuth (2013) find that distortions are greater in long-term, low-inflation environments than in those of a short-term, high-inflation nature. The mechanism behind long-run distortions like this is intuitive. Basic labor theory finds that income taxes put upward pressure on wages in general. Without indexation, inflation can cause increases in income tax liabilities outside of any real increase in wages. Due to the progressive nature of the tax code, the resulting

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[1] While typically done annually, there are other methods of indexing a tax code (see Thuronyi, 1996), but this is the largest component and thus is the focal point of this paper.

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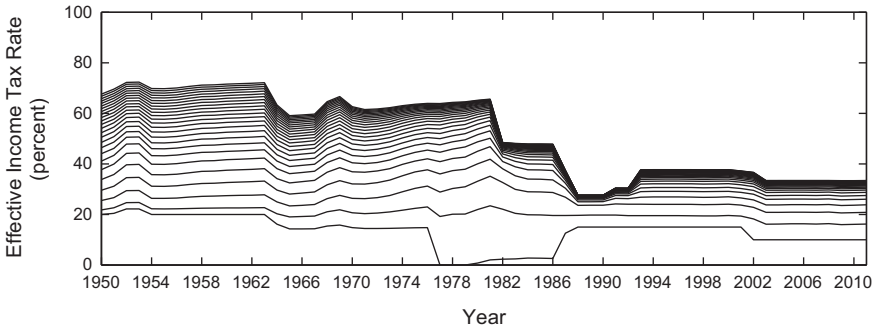

Fig. 1. Time series of effective tax rates.
Note: Time series of effective tax rates for 24 evenly-spaced, synthesized real income levels between $10,000 and $2 million from 1950 to 2011 considering only the legislated, federal personal income tax code. These time series do not represent the true, overall effective tax rates, but only those applied to the actual tax code with no regard to deductions or other forms of income taxes such as capital gains taxes, etc.

upward pressure on wages further amplifies tax liabilities, both directly through the structure of the code and indirectly through additional inflationary pressure, resulting in a tax-wage-inflation spiral. Simply removing the effect of the initial condition (inflation) eliminates the spiral.

Common misperceptions of bracket creep generally come in two modes: (a) it abruptly ends once a household reaches the top marginal tax bracket and (b) it occurs only when a household makes a jump to a tax bracket associated with a higher marginal rate. Given the structure of the federal income tax code in the United States, this process is continuous in both cases. Since the tax code is broken into progressive brackets, a household's effective tax rate approaches the code's top marginal tax rate asymptotically. This implies that, while there is a diminishing marginal effect, bracket creep is a permanent component of any economy with an unindexed, progressive tax code. Additionally, bracket creep occurs within each bracket. As a household's nominal income rises, a higher percent is taxed at its highest marginal rate, increasing the effective tax rate without jumping into a new bracket.[2] Even in small-scale New Keynesian models such as the one presented here, these two characteristics of an unindexed, progressive tax code create volatile or explosive dynamics. While the literature suggests monetary policy can counteract fiscal policy decisions to ensure a unique REE, in this case it is unable to do so. The permanency of bracket creep makes monetary policy unable to simultaneously hit its inflation and output gap targets, making only environments with sunspot equilibria or explosive behavior achievable. Only indexing the income tax code removes bracket creep and shuts down the resulting inflation channel, allowing monetary policy to hit its targets and reach a unique REE environment.

1.1. The cost of bracket creep

While bracket creep is an inherently subtle part of any unindexed tax code, the erosion of real disposable income can be substantial even in the short run. Since this is an increase in tax liability, it can also be viewed as an increase in fiscal revenue. Table 1 shows a rough estimate of the additional tax revenue generated by inflation in the United States from the adoption of new tax legislation of 1981 to the establishment of an index in 1985. This time series is constructed by first calculating the effective personal income tax rates via nominal receipts from income taxes. These rates are then applied to the respective real incomes calculated using the percent change in average hourly earnings. Since new brackets were set in 1981, the additional revenue for the first year is zero, but with higher inflation during this period, the additional tax receipts accumulated quickly, even in the face of falling effective tax rates.[3] This, in effect, was the reasoning behind delaying the automatic index in the United States. Indexation of the federal income tax code in the US was addressed with the passing of the Economic Recovery Tax Act of 1981. Headlining this bill was the reduction of the top marginal tax rate from 70 to 50 percent, but it also established that an automatic index would start in 1985. It was thought that lowering these tax rates would eventually raise revenues through increased economic growth, but a policy lag was also assumed, which would have greatly cut into fiscal revenues in the short run. This change, therefore, was held back until 1985 to accommodate the lag.

1.2. Literature review

The primary focus of this paper is equilibrium stability in a macroeconomic model as described by Blanchard and Kahn (1980). A rational expectations model of the economy is said to be stable if it has a unique solution. Instability can stem from there being no solution or an infinite number of solutions. No solution implies that the model exhibits explosive behavior, either in an immediate or gradual sense. A model with an infinite number of solutions (sunspots) is called *indeterminate*, and

[2] So while this effect may not be smooth, tax liabilities constantly rise as nominal income rises under an unindexed regime.
[3] The effective tax rates fell due to the fact that the tax reductions were imposed over multiple years, but the brackets were established in 1981.