Tax bracket creep and its effects on income distribution ☆

Burkhard Heer [a,c], Bernd Süssmuth [b,c,*]

[a] University of Augsburg, Department of Economics, Universitätsstr. 16, 86135 Augsburg, Germany
[b] University of Leipzig, Institute for Empirical Research in Economics, Grimmaische Str. 12, 04109 Leipzig, Germany
[c] CESifo, Munich, United Kingdom

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ABSTRACT

We quantitatively analyze the way inflation alters the inequality of the income distribution in the U.S. economy. The main mechanism emphasized in this paper is the "bracket creep" effect according to which inflation pushes income into higher tax brackets. Governments adjust the nominal income tax brackets slowly and incompletely due to the rise in prices. In the U.S. postwar history, this typically happens less often than once every other tax year. In the first part of the paper, we study time series from the U.S. economy. As our central result we find that irrespective of the level of inflation more frequent income tax schedule adjustments make the relationship between inflation and income inequality more transitory in nature. In the second part of the paper, we develop a general equilibrium monetary model with income heterogeneity that is in line with our time series evidence. We find that a longer duration between two successive adjustments of the tax schedule reduces employment, savings, and output.

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1. Introduction

The "bracket creep" defines a shift of personal income into a higher tax bracket when taxable income grows over time. It occurs due to inflation. Higher inflation possibly increases tax burdens under a progressive personal income tax as taxpayers near the top-end of a tax bracket are more likely to "creep" to a higher bracket. Clearly, this effect alters inequality in after-tax income. Whether it increases or decreases inequality depends, among others, on the level and duration of inflation, the top income tax rate, and the initial distribution of income. The purpose of this paper is to assess the impact of the "bracket creep", or rather its attenuation through inflation indexation of the tax schedule, on the distribution of income both empirically and in a dynamic stochastic general equilibrium (DSGE) model for the U.S. economy.

Like in the U.S. most personal income tax systems are progressive, i.e. structured with marginal tax rates exceeding average rates and increasing with the base. Taxpayers who receive only nominal increases in wages to offset higher inflation tend to be pushed into higher brackets. This effect is considered to be particularly severe ("the cruelest tax") in times of high inflation as was seen during the last half of the 1970s when U.S. inflation rates averaged 8.9% annually (Blinder and Esaki, 1978). To combat bracket creep in the U.S. the Reagan Administration implemented an indexation of the personal exemptions and the tax brackets based on a cost-of-living index derived from the Consumer Price Index for All Urban Consumers (CPI-U).
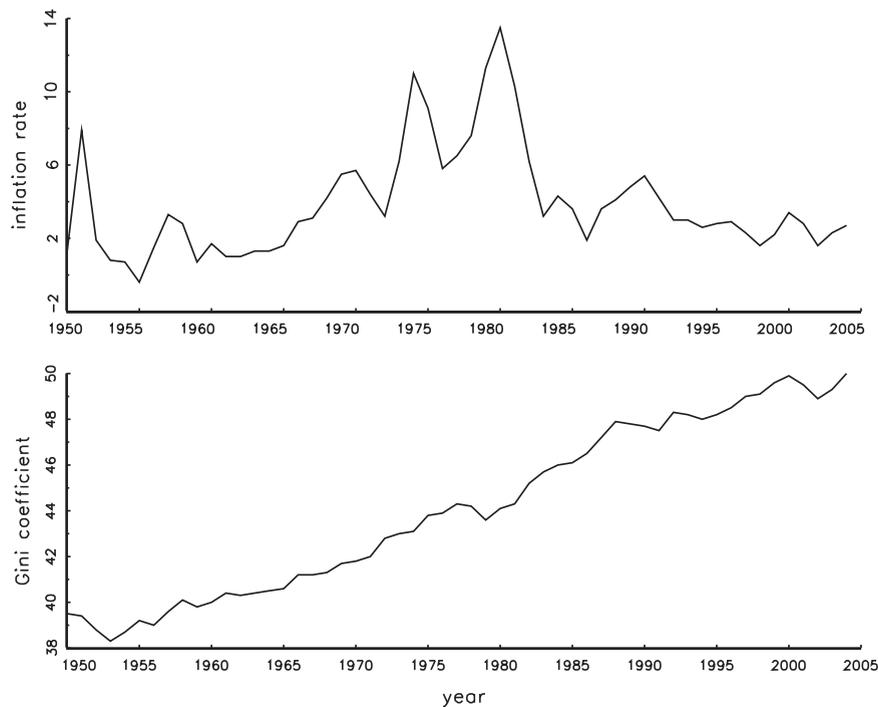
Fig. 1. Inflation rate and Gini coefficient, 1948–2004.

These provisions were actually enacted in 1981 as part of Economic Recovery Tax Act (ERTA), but delayed in their implementation and did not become effective until 1985; see Altig and Carlstrom (1991, 1993) and Auerbach and Feenberg (2000).

In inflationary environments, with unchanged or loosely adjusted rate schedules and brackets, tax collections tend to rise. This raises the claim that bracket creep is strategically used by some governments to maintain tax revenues. A loose or strategically implemented "pure one-year-lag" index system can be shown to cause taxable income to be overstated by the current rate of inflation (Altig and Carlstrom, 1991, 1993). Apart from its (mis-)use as revenue instrument, the omisson of inflation adjustment of marginal tax rates is also very likely to have a considerable effect on the distribution of income.

Fig. 1 shows the annual time series of inflation and the Gini coefficient of market income (before taxes) for the period from 1948 to 2004. It highlights the relationship between the two series. Both series are coined by an upward trend up to the 1980s. While this trend continues for the Gini, the inflation rate calms down and follows a slight downward trend as of the early 1980s. Overall, the two series seem to comove – sometimes more, sometimes less in phase – at business cycle frequencies. A close inspection reveals that the series get more entrained after the mid-1980s, suggesting that indexation following ERTA has led to a more contemporaneous relationship.

These observations are in line with the empirical part of the present study which finds that inflation has a transitorily inequality reducing impact that leads aggregate measures by about two years. The central strategy of this part, however, is to take a stand on how the effective U.S. tax system was affected during the total postwar period and then to investigate the consequences of infrequent indexation relative to the sort of system that has been in place since the mid 1980s. Methodologically, we focus on a bivariate study of the correlation structure of the inflation rate and Gini coefficient series at business cycle frequencies in the spirit of Sims (1981).[1] Our methods are primarily descriptive and as such imposing less assumptions than the more structural specifications used in the literature. Yet we seek to contribute to the literature by assessing whether the progressive bias of inflation is predominantly driven by the level and persistence of positive inflation or rather by an infrequent adjustment of the tax schedule. This task requires to go beyond descriptive time series analysis.

To summarize our empirical results in Section 2, we find, using correlation analysis, that the relationship between the Gini coefficient and inflation rate dynamics got both more contemporaneous and statistically robust after introducing the indexation scheme. The former is confirmed by studying bivariate spectral measures.

In the theoretical part of the paper, we develop a monetary DSGE model of progressive income taxation.[2] In our simulations, we compare both high inflation environments (1970s) with moderate inflation environments (rest of postwar U.S. history)

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[1] Recent studies examining the effects of bracket creep on income use either panel data or large scale macro-models (Saez, 2003; Immervoll, 2005). Romer and Romer (1998) and Galli and van der Hoeven (2001) analyze inflation as one central explanatory variable of inequality in cross-sections.

[2] In a monetary DSGE model with sticky prices and a progressive income tax similar to ours, Heer and Maussner (2012) show that in the presence of a lagged adjustment of marginal tax rate and pensions higher unexpected inflation results in a more unequal distribution. However, they only consider an adjustment lag of one year and do neither study the effect of the adjustment frequency nor the bracket creep in isolation. In addition, they consider the effects of a temporary increase of inflation rather than a permanent one.