

How Does Tax Progressivity and Household Heterogeneity Affect Laffer Curves?

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Introduction

- The recent public debt crisis in many developed economies implies an urgent need to cut spending or rise revenues.
- Is raising revenue an option for all countries?
- Where are we on the Laffer curve?
- Even for countries with little debt, the Laffer curve provides a useful benchmark with respect to optimal taxation.

Introduction

- The shape of the Laffer curve will critically depend on the response of labor supply to taxes.
- Large literature on taxes and labor supply, little on the Laffer curve.
- Trabandt and Uhlig (2011) study Laffer curves for several OECD economies using a representative agent model with flat taxes.
- How does the shape of the Laffer curve depend on household heterogeneity and on the progressivity of the tax system?

Why would we think that progressivity matters?

- Several potentially opposing effects.
- Negative: Higher marginal tax rate for most people will depress labor supply.
- On the positive side the presence of an extensive margin typically leads to high labor supply elasticity for low earners. Progressive taxes may increase LFP and thus increase revenue.

Why would we think that progressivity matters?

- Older people have high wages and more elastic labor supply. No precautionary savings motive and no human capital accumulation incentive.
- Human capital effect.

What We Do

- Develop an overlapping generations model with uninsurable idiosyncratic risk, endogenous human capital accumulation, labor supply decisions along the intensive and extensive margins, 4 family types and transitions between them.
- We calibrate the model to macro, micro and tax data from the US (and soon some European countries)
- Characterize the labor income tax Laffer curve under the current country-specific choice of the progressivity of the labor income tax code and when adjusting progressivity
- Study the impact of household heterogeneity on the Laffer curve

What We Find

- More progressive labor income taxes significantly reduce tax revenues. Redistribution through the shape of the labor income tax schedule comes at a price!
- Surprisingly robust to many forms of economic inequality, implying that societies with higher a-priori inequality should choose a more progressive tax system.
- Modeling some types of heterogeneity (1-, and 2 person households, extensive margin, human capital) is important for the shape of the Laffer curve.
- Modeling income heterogeneity in standard single household infinite horizon and life-cycle models has a very small impact on the Laffer curve.

- Tax-Progressivity: Definition and cross-country comparison
- Model (brief summary)
- Calibration (brief summary)
- Results

Tax Progressivity in the OECD

- There are many ways to measure tax progressivity. We will use the below progressivity wedge:

$$PW(y_1, y_2) = 1 - \frac{1 - \tau(y_2)}{1 - \tau(y_1)}$$

- We estimate the Benabou (2002) tax function, for which the above progressivity wedge is uniquely determined by θ_1 for many countries:

$$ya = \theta_0 y^{1-\theta_1} \quad \Rightarrow \quad \tau(y) = 1 - \theta_0 y^{-\theta_1}$$

Tax Progressivity in the OECD 2000-2007

Country	Progressivity Index	Relative Progressivity (US=1)
Japan	0.101	0.74
Switzerland	0.133	0.97
Portugal	0.136	0.99
US	0.137	1.00
France	0.142	1.03
Spain	0.148	1.08
Norway	0.169	1.23
Luxembourg	0.180	1.31
Italy	0.180	1.31
Austria	0.187	1.37
Canada	0.193	1.41
UK	0.200	1.46
Greece	0.201	1.47
Iceland	0.204	1.49
Germany	0.221	1.61
Sweden	0.223	1.63
Ireland	0.226	1.65
Finland	0.237	1.73
Netherlands	0.254	1.85
Denmark	0.258	1.88

Model Overview

- Rich heterogeneous agent economy with economic growth.
- Life-cycle, overlapping generations, general equilibrium
- 4 family types: single, married with 0,1,2 children. Transitions between family types. Family type specific taxes.
- Individuals are heterogeneous with respect to permanent ability and idiosyncratic productivity shocks.
- Extensive margin labor supply and human capital accumulation for females.

Model Overview

- Nonlinear family type specific labor income taxes.
- Consumption and capital taxes
- Separate social security system with employee and employer side social security taxes.
- Government spends revenues on government consumption, lumpsum redistribution, transfers to non-working, paying interest on debt.

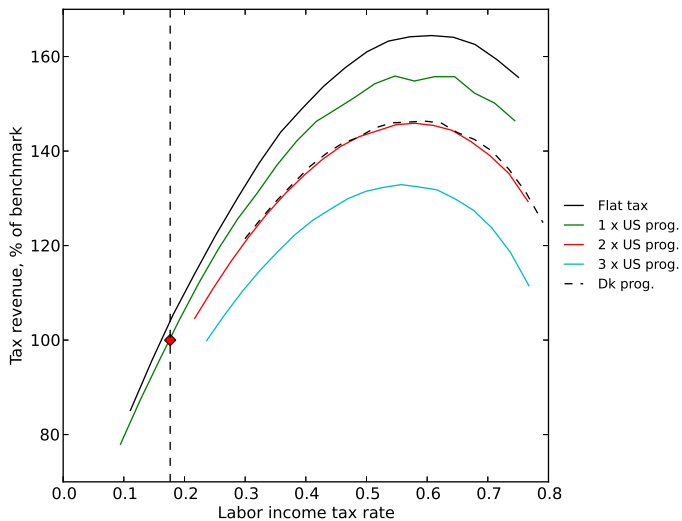
Calibration

- So far only US
- Tax data from OECD
- Micro data from PSID and CPS
- Aggregate moments from BEA

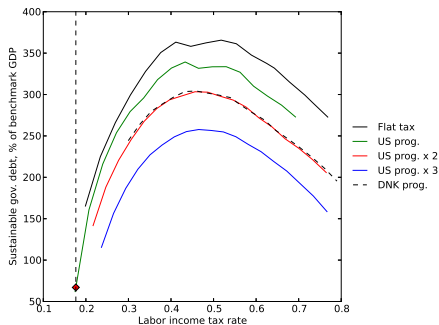
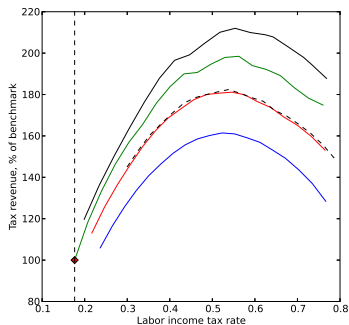
Computational Experiments

- We trace out 2 types of Laffer curves:
- g-Laffer curves. Similar to Trabandt and Uhlig (2011)
- b-Laffer curves
- $\tau(y) = 1 - \theta_0 y^{-\theta_1}$.

Results: The Impact of Progressivity



Results: The Impact of Progressivity (b-curves)



Summary of Results: Current US Tax Progressivity

- The US is far from the peak of the Laffer curve.
- Increasing the average tax rate from 17% in the benchmark economy to 55% increases revenue by 55% for the g-Laffer curve and 95% for the b-Laffer curve
- The US can sustain 330% more debt than in 2000-2007 by raising the average tax rate to about 42%.
- Note: Since 2000-2007 the US debt is almost doubled. However, consistent with low default risk the interest is still low.

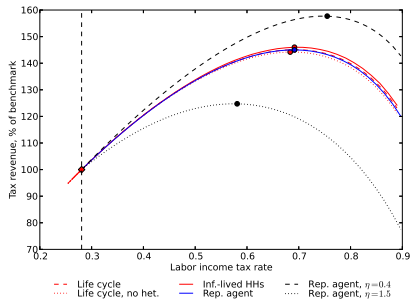
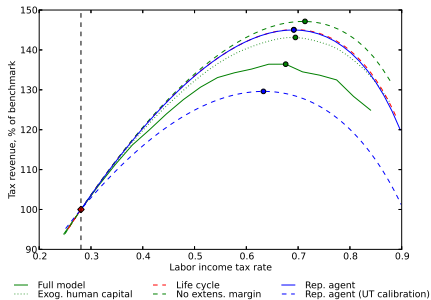
Summary of Results: Progressivity

- The progressivity of the labor income tax code matters (slightly more for b-curves)
- Converting to a flat tax elevates the peak of the Laffer curve by 6% and 7% for g-curves and b-curves respectively. The maximum sustainable debt level is 8% higher.
- Converting to a twice as progressive tax system (similar to Denmark) lowers the peak of the Laffer curve by 7% and 10% for g-curves and b-curves respectively. The maximum sustainable debt level is 11% lower.

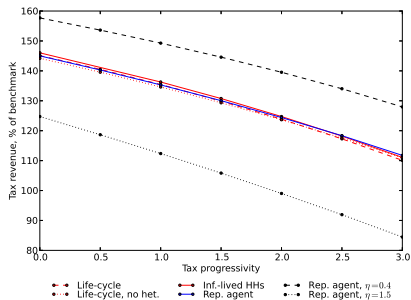
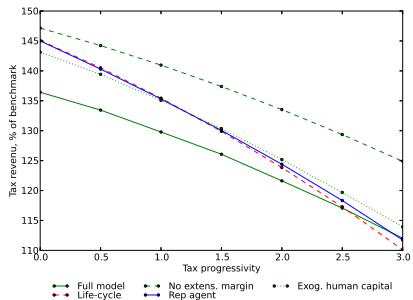
Computational Experiments: The Impact of Heterogeneity

- Is it important to model household heterogeneity?
- How does heterogeneity interact with progressivity?
- To answer these questions we draw Laffer curves for a number of different models

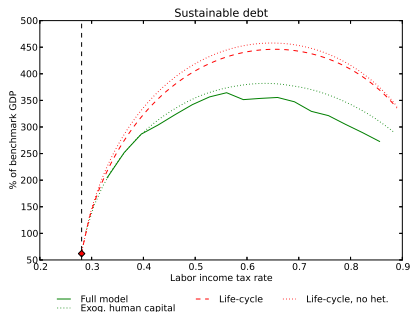
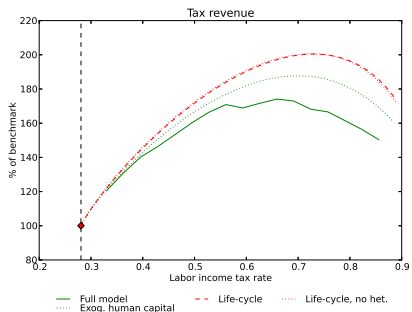
Results: The Impact of Heterogeneity (g-curves)



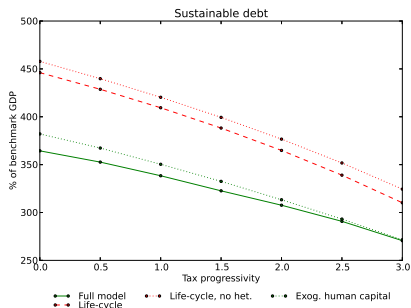
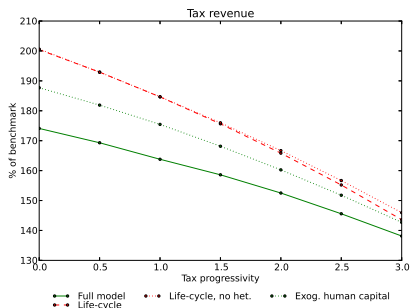
Interaction Between Heterogeneity and Progressivity



Results: The Impact of Heterogeneity (b-curves)



Interaction Between Heterogeneity and Progressivity



Summary of Results: Heterogeneity

- The impact of modeling income heterogeneity in standard life-cycle and infinite horizon models on the Laffer curve is very small.
- Modeling 1- and 2-person households, extensive margin labor supply and endogenous human capital is important.
- The impact of progressivity is smaller with different family types.
- Adding an extensive margin reduces the level of the laffer curve and increases the impact of progressivity.
- Introducing endogenous human capital has a big negative level effect on the laffer curve, however, the impact of progressivity falls.

Conclusion

- More progressive labor income taxes significantly reduce tax revenues. Redistribution through the shape of the labor income tax schedule comes at a price!
- Modeling some types of heterogeneity is important for the shape of the Laffer curve. We shouldn't expect the rep. agent to get it right.
- To do:
 - ▶ Impact of inequality in the full model?
 - ▶ International Laffer curves. What is the impact of cross-country differences in skill distributions, returns to experience, social security systems etc.?