

Homework 1

Professor Mark Gertler

Intermediate Macro: Theory Section

Spring 2011

Problem Set #1

A controversial issue in economics involves the debate over why in the last several decades European unemployment has tended to be much higher on average than in the U.S. As US. Nobel laureate Edward Prescott describes in his 2004 paper "Why Do Americans Work So Much More Than Europeans? Americans now work 50 percent more than do the Germans, French, and Italians.

One major difference between the two areas are the tax rates: they are much higher in Europe. According to Prescott, "tax rates alone account for most of [the differences in labor supply for the major advanced industrial countries."

Use the following model to answer a few questions:.

There is a representative household with preferences given by: $U(C, N) = \ln(C) - b\frac{1}{1+\varphi}N^{1+\varphi}$ that faces a budget constraint $C = (1 - \tau)WN + \Pi + TR$, where W is the wage, Π is lump-sum dividend income, and TR is the lump-sum redistributed transfers from the government.

The firm has technology $Y = AN^{1-\alpha}$, where $A \geq 1$ is the total factor productivity parameter.

The government balances its budget: $TR = \tau WN$

In this model, "Europe" has higher τ (and thus higher TR).

1. After solving for the Competitive equilibrium allocation, let us analyze the validity of Edward Prescott's argument. How do tax rates(τ) influence labor supply (N)?

Economists have very divergent estimates for the parameter φ . Let us take two values in the literature: $\varphi_L = 1/2$ and $\varphi_H = 10$. Analyze the tax argument for each case.

To see this numerically, use the following values for parameters: $b = 1, A = 1, \alpha = 1/2$. Calculate the allocation of labor for both φ_L and φ_H , given a tax rate of $\tau = 0.3$ - close to the US average tax rate.

Now, we are going to look at the European rate. Calculate the labor allocation using both φ_L and φ_H given $\tau = 0.6$ (close to the German average tax rate).

Which φ estimate would best support Ed Prescott's case?