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Discussion

Comment on: "Politico economic consequences of raising wage inequality" by Corbae, D'Erasmo and Kuruscu

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1. Introduction

The idea that voting preferences are determined by the trade off between the redistributive gains of policies and the cost of their distortions is well established in the political economy literature. Because the net gains from redistribution are inversely related to the earned income, low income voters prefer higher taxes than high income voters. The voting outcome is, thus, determined by the distribution of income: higher inequality will be associated with higher taxes. The paper uses this mechanism to understand how the increase in earning inequality observed in the US economy during the 1980s and 1990s has contributed to the changes in redistribution by the US fiscal system.

2. What model should we use?

Although the basic mechanism that links inequality to the degree of redistribution is simple, the specification of the economic model is not secondary for the quantitative results. The model chosen by the authors has the typical structure of the neoclassical growth model with the addition of idiosyncratic risks. Some of the key features can be summarized as follows:

1. Infinite lived agents with concave utility in consumption.
2. Endogenous labor supply.
3. Idiosyncratic risks to labor skills.

In principle, the question addressed by the paper could be answered with a simpler model. For example, we could abstract from the accumulation of capital and consider a static model with risk neutral agents differing only in earning skills. In general, more complex models are more likely to be better representations of the real world. However, we also

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want to understand in what ways the more complex features improve the quantitative performance of the model and provide more reliable predictions. In the following sections I will discuss the importance of the three features listed above.

2.1. Dynamic setup

The dynamic feature of the model is key in generating endogenous saving decisions and capital accumulation. Since a significant share of income is generated by capital, agents internalize the economic effects that taxes have on capital incomes. Essentially, higher (future) income taxes create distortions in the accumulation of capital. Lower accumulation of capital reduces future wages and generate a cost for all agents. Therefore, as long as voting takes place in every period and the vote is for future taxes, the distortions induced by income taxes on the accumulation of capital prevent the median voter from choosing the highest possible tax rate.

2.2. Endogenous labor supply

The endogenous nature of savings already introduces a mechanism that makes income taxes costly, as described above. However, this cost is usually not very high. Therefore, in the absence of other distortions caused by taxes, the median voter would prefer extremely high levels of redistribution. It is in this respect that the assumption of an endogenous labor supply plays an important role in these models.

When the supply of labor is endogenous, high income taxes discourage not only the accumulation of capital, but also working hours. The distortions that income taxes impose on the supply of labor are much stronger (more costly) than the distortions induced on the accumulation of capital. Thanks to this stronger effect, the equilibrium taxes predicted by the model take more reasonable values even if the distribution of income (and wealth) is as big as in the data. As shown in Krusell and Rios-Rull (1999), the preferences of the median voter in a neoclassical growth model with endogenous savings and endogenous labor supply can predict reasonably well the actual economic size of the US government.

2.3. Idiosyncratic shocks

The consideration of idiosyncratic risks is the real innovation of Corbae, D'Erasmo, and Kuruscu' model compared to the model studied in Krusell and Rios-Rull (1999). While in Krusell and Rios-Rull' model agents have permanent differences in earning abilities, in Corbae, D'Erasmo, and Kuruscu' model the differences are temporary. To be more specific, if I live in a Krusell and Rios-Rull' world and today I have low earning ability, I will continue to be at the lower end of the distribution also in the future. If instead I live in Corbae, D'Erasmo, and Kuruscu' world, my future earnings are stochastic and, even if today I have low earnings, I expect to revert to the average earnings in the long-run. In other words, agents are "mobile" over time.

One question immediately arises: what is gained by adding idiosyncratic shocks and allowing for mobility? Considering that the addition of idiosyncratic risks makes the model much more difficult to solve, is it worth facing the higher complexity?

One difference between the model with earning risks and the model without earning risks is that in the former the distribution of wealth is uniquely determined. No matter what the initial distribution of wealth is, the long-run distribution is always the same. Without idiosyncratic risks, instead, the long-term distribution depends on the initial distribution.

Although the uniqueness of the distribution of wealth in models with idiosyncratic risks is a desirable property, these models struggle to generate a distribution of wealth resembling that observed in the data. See Quadrini and Rios-Rull (1997).

Being unable to replicate the actual degree of inequality, one may wonder whether the model accurately captures the actual demand for redistribution determined through the representative voting process. In this respect, the model used by Krusell and Rios-Rull can be considered more accurate because the degree of wealth concentration observed in the data can be imposed exogenously. Therefore, I do not consider the endogeneity of the distribution of wealth to be the key justification for adding idiosyncratic risks.

The important innovation of Corbae, D'Erasmo, and Kuruscu' paper is that the consideration of idiosyncratic risks allows for the explicit formalization of two additional mechanisms determining the voters' preferences over redistributive taxes. The first mechanism relates to the insurance that taxes provide against earning risks. This increases the individual benefit of taxes (or reduces the individual cost from the aggregate distortions discussed above) and should lead to higher equilibrium taxes.

The second mechanism relates to mobility. Because voting outcomes affect future policies, what matters is the voter's expected earnings for the time when the policies are implemented, not the voter's current earnings. Without idiosyncratic shocks, future earnings are simply equal to current earnings. But with shocks there is mobility. What matters then is not the current distribution of earnings but the distribution of "expected" future earnings. In the extreme case of perfect mobility, each agent expects the same income for the future, and therefore, agents do not expect any redistributive gain from taxes even if their current income is very low. This second mechanism tends to reduce the equilibrium taxes.

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These two mechanisms are important for answering the main question addressed in the paper. It is not only the change in the distribution of wealth that matters for the political outcome, but also the change in the dynamic features of the earning process. For example, if the increase in inequality has been associated with an increase in mobility and the effect of "mobility" dominates the effect of "risk", then the extent of redistribution may actually decrease, not increase.

This point can be easily illustrated with a simple two-period model. Suppose that there is a continuum of agents with per-period utility

$$u\left(c_t - \frac{h_t^2}{2}\right),$$

where c_t is consumption and h_t is labor. Their income comes from two sources: endowment, e_t, and labor, h_t.

Individual endowment income evolves according to

$$\ln(e_{t+1}) = \rho \cdot \ln(e_t) + \varepsilon_{t+1},$$

where $\varepsilon_{t+1} \sim N(0, (1-\rho^2)\sigma^2)$. This implies that the economy-wide distribution of log-endowments is normal with mean zero and variance σ^2, that is, $\ln(e_t) \sim N(0, \sigma^2)$. By changing ρ we change the persistence of endowments but we keep the economy-wide distribution (inequality) constant. Essentially, ρ determines the degree of mobility: higher values of ρ imply lower mobility.

The government taxes incomes, from endowment and labor, at rate τ_t, and redistributes the revenues as lump-sum transfers. The budget constraint for the government is

$$T_t = \tau_t \int (e_t + h_t)\, \mathrm{d}F,$$

where F denotes the distribution of agents over endowments which, by assumption, is log-normal.

Agents do not save and solve a static optimization problem. Given the tax rate and the transfer, they maximize the period utility by choosing the labor supply h_t, subject to the following budget constraint:

$$c_t = (e_t + h_t)(1-\tau_t) + T_t.$$

Taking first order conditions we get the supply of labor given by $h_t = 1 - \tau_t$. Substituting in the utility function and re-arranging we get the indirect utility of an agent with current endowment e^i

$$U^i(\tau_t) = u\left(\tau_t \int e_t\, \mathrm{d}F + \tau_t(1-\tau_t) + e_t^i(1-\tau_t) + \frac{(1-\tau_t)^2}{2}\right).$$

Now suppose that agents vote for the next period tax rate τ_{t+1}. The tax rate preferred by an agent with current endowment e_t^i is the one that maximizes the expected next period indirect utility, that is

$$\max_{\tau_{t+1}} E_t\left[u\left(\tau_{t+1} \int e_{t+1}\, \mathrm{d}F + \tau_{t+1}(1-\tau_{t+1}) + e_{t+1}^i(1-\tau_{t+1}) + \frac{(1-\tau_{t+1})^2}{2}\right)\middle| e_t^i\right].$$

Notice that the voter forms expectations about the future endowment conditional on the current endowment. Of course, higher is the persistence and higher is the dependence of the expected value from the current value.

Taking first order conditions and solving we get the preferred tax rate

$$\tau_{t+1}(e_t^i) = \int e_t\, \mathrm{d}F - E_t[e_{t+1}|e_t^i] - \frac{\mathrm{Cov}(\mathrm{d}U_{t+1}, e_{t+1}|e_t^i)}{E[\mathrm{d}U_{t+1}|e_t^i]},$$

where $\mathrm{d}U_{t+1}^i$ denotes the derivative of the indirect utility for agent i with respect to the next period tax rate.

The first term is the mean value of the economy-wide endowment. The second term is the expected endowment of agent i given the current endowment. Obviously this is increasing in e_t^i, unless $\rho \leqslant 0$, which is excluded by assumption. Therefore, ignoring the third term, the preferred tax rate decreases with the current endowment. The third term captures the role of risk aversion. Because $\mathrm{d}U_{t+1}$ decreases with the realization of next period earnings, the covariance term is negative. This implies that agents prefer higher taxes the higher the concavity of the utility function. This is the effect of risk aversion.

Given that the preferred tax rate is monotonically decreasing in the current endowment, the equilibrium tax rate is the one preferred by the agent with the median endowment. Using the fact that endowments are log-normally distributed and the log-endowment of the median voter is zero, the conditional expectation of the next period endowment for the median voter is $E_t[e_{t+1}|e_t^{Med}] = \exp((1-\rho^2)\sigma^2/2)$ and the economy-wide average is equal to $\int e_t\, \mathrm{d}F = \exp(\sigma^2/2)$. Substituting in the previous expression we have that the equilibrium tax rate is

$$\tau_{t+1}(e_t^{Med}) = \exp\left(\frac{\sigma^2}{2}\right) - \exp\left(\frac{(1-\rho^2)\sigma^2}{2}\right) - \frac{\mathrm{Cov}(\mathrm{d}U_{t+1}, e_{t+1}|e_t^i)}{E[\mathrm{d}U_{t+1}|e_t^i]}.$$

It is now easy to see how inequality, mobility and risk aversion all contribute in the determination of redistributive taxes. Suppose that the increase in inequality, a higher σ, is not accompanied to a change in mobility, that is, a change in ρ. Then

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the model predicts unambiguously an increase in redistribution. However, suppose that the increase in cross-sectional inequality, σ, is associated to a decrease in ρ, that is, to an increase in mobility. This implies that while the first and third terms increase, the second term decreases. So redistribution may actually decrease. Essentially, while the ex-post distribution becomes more unequal and agents face more risk, the median agent expects that the future endowment is closer to the average value even if he or she is today much poorer than the average. Because of this, the median voter expects less benefits from redistribution. In fact, if mobility is perfect, that is, $\rho = 0$, the income expected by the median voter is exactly equal to the mean income. If agents are risk neutral so that the third term is zero, the equilibrium tax rate would be zero.[1]

The important contribution of Corbae, D'Erasmo, and Kuruscu's paper is the ability to incorporate all of these effects. The actual change within the fiscal system predicted by the model is the net impact due to the changes in cross-section inequality, longitudinal inequality (mobility) and demand for insurance. Even if they do not provide a decomposition of these three effects, they are all implicitly accounted for in the calculation of the empirical transition matrices for earnings in the first and second sample periods. It is in this respect that the use of a model with idiosyncratic risks provides a more solid and revealing answer to the question addressed by the paper.

3. Final remarks

The quantitative exercise shows that the model can capture only some of the changes in redistributive characteristics of the fiscal system observed in the US during the 1980s and 1990s. Of course, the change in the characteristics of earnings is not the only change that has taken place in the US economy during this period. For example, this is the period in which the world has become more globalized. Globalization changes the attitude of the representative voter toward taxation, especially for the taxation of factors that are internationally mobile. See, for example, Wildasin (2003). Because the paper models only the change in earnings, it is not surprising that it does not capture all the changes observed in the redistributive characteristics of the US fiscal system.

The exercise conducted in the paper should not be interpreted as testing the ability of the model to explain the whole changes observed in the US fiscal system but as a quantitative evaluation of how the static and dynamic evolution of the distribution of earnings has contributed to these changes. The main finding is that the evolution of the distribution of earnings is important but other changes must have also played a role.

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[1] We can also analyze the case in which only mobility changes. Suppose that cross-sectional inequality stays the same (σ does not change) but mobility increases (ρ decreases). What will be the effect on taxes? All depends on the strength of risk aversion. If agents were risk neutral, the third term would disappear and the reduction in ρ would generate lower taxes. If risk aversion is strong, however, the equilibrium taxes could increase with higher mobility. This is because mobility increases the risk.

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