

“Fiscal
Sentiment and the Weak
Recovery from
the Great
Recession: A
Quantitative
Exploration”

by
Finn Kydland
and Carlos
Zarazaga

Discussion:
Sumru Altug

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Koç University and CEPR

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Introduction

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- This is an ambitious paper that seeks to account for the puzzling phenomenon that recovery from the Great Recession has not been as fast as predicted by standard neoclassical framework.
- The paper argues that incorporating financial frictions or other types of shocks into the standard framework, e.g. as in Jermann and Quadrini (2012), does not help this problem.
- Instead they propose the artifact of introducing beliefs regarding the introduction of higher capital income taxes in response to burgeoning public deficits and public debt at some future date, which they call “fiscal sentiment.”

Main Features

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- This is different than the approach of assuming “animal spirits”, which generate multiple equilibria that depend on self-fulfilling prophecies.
- Instead, the paper seeks to explain the phenomenon in question by using the transitional dynamics from a steady state which is too “high” given beliefs about the future path of taxes.
- This scenario provides a way to account for the recent observations.
 - With perceptions of higher future capital taxes, investment is lower due to the transition to a new lower steady state capital stock, and so is labor hours, as households need to work less to produce less investment goods. Likewise, consumption is higher as households devote a larger fraction of output to consumption.

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- The interest in the paper derives from its claim to provide a *quantitative* assessment of these predictions.
- The paper is rich in detail on a variety of dimensions. These include:
 - measurement and treatment of the government sector
 - accounting for non-recurring changes in female labor participation in determining aggregate hours and hence, output
 - solution method with both random and deterministic processes
 - second-order approximation method to account for the role of uncertainty and regime shifts

Model and Calibration

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- The model is a representative consumer model with CRTS technology with balanced growth around a deterministic trend.
- The government sector is assumed to display budget balance but at some date s , households hold a perception of a shift to a new regime in which taxes on capital will be higher.
- There is an adjustment for the fraction of discretionary time that households spend working for the public sector.
- Aside from tax policy, the model is calibrated so as to match the steady state values to the sample averages observed for the US economy over the period 1977-2007 as well as restrictions from the model.

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- The formulation and calibration of the projected tax process is a key issue for the paper.
 - The public is assumed to form beliefs of future higher tax rates in 2009.
 - Estimates of projected deficit reduction are taken from the CBO, which entail additional revenues of 2.5% of GDP between 2013 and 2022.
 - Taxes are assumed to be lowered after 2022 (but not previous levels) to generate tax revenues of 0.3% of GDP thereafter.

Key Issue

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- The key issue of the paper is quantifying the impact of an event that has not been realized in the data.
- The current paper takes the approach of assuming a one-time change in consumer's beliefs about future tax rates, which it models as a deterministic process.
- An alternative approach is to postulate regime shifts using stationary regime shift probabilities and to assume different stochastic processes for various fundamentals in the different regimes.
- This is the approach taken by Altug, Demers, and Demers in their paper “Political Risk and Irreversible Investment”, *CES-ifo Economic Studies* (2007).

An Alternative Approach

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- In their analysis , the probability of ending up in different regimes is also tied to the party in political power, which imparts a political economy flavor to the model.
- Specifically, their paper assumes that *given* the party in power, there is a stochastic process which determines which state the economy will be in next period, a “good” state in which the distribution for fundamentals are favorable and a “bad” state in which they are not.
- The paper also assumes that elections take place every five years, and the probability of remaining in power depends on the *time-to-election*, which has a given law of motion and which ends being a state variable together with the current state of fundamentals that is in effect.

Political Economy Considerations

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- This approach would have to be modified to apply it in the presidential system that prevails in the US. In that case, the “good” and “bad” state would correspond to the low and high tax states, while the party in power might be Republican or Democrat (accounting for differences in party affiliation in the executive versus legislative branches).
- Thus, the probability of observing a high tax regime would depend on which party was in power and for how long, and conditional on that event, whether its members vote to enact higher taxes - the “bad” tax state.
- In some sense, the paper is mute about the political process needed to pass higher capital income taxes, instead assuming that current budget and debt projections necessitate this act.


The Role of Irreversibility and Uncertainty

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- Another issue is that the paper abstracts from investment irreversibility. Admittedly, this is difficult to incorporate in the current set-up in that it entails corner solutions.
- However, the advantage is that it gives rise to an endogenous "uncertainty" premium arising from uncertainty about the nature of future fundamentals or policy variables such as taxes.¹
- With irreversibility, assuming an interior solution at t , the firm's capital accumulation decision depends on modified cost of capital as $c_t + \Phi_t$, where c_t is the traditional Jorgensonian cost of capital given by $p^{kH}(r + \delta)$.

¹See, e.g., Altug, Demers, and Demers (2003, 2007, 2009). See also N. Bloom, "The Impact of Uncertainty Shocks", *Econometrica* (2009). 

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- Likewise, Φ_t is an endogenous risk premium (or endogenous cost of adjustment) which arises if the firm expects the irreversibility constraint to bind in the future:

$$\Phi_t = (1-\delta)E_t \left\{ p_{t+1}^{kH} - \beta E_{t+1} V_K((1-\delta)K_{t+1}, h_{t+2}, p_{t+2}^{kH}) \right\},$$

where $V_K((1-\delta)K_{t+1}, h_{t+2}, p_{t+2}^{kH})$ is the shadow value of future installed capital.

- By contrast, the second-order approximation to the difference equations characterizing the model's solution in equations (19) and (20) is not explicit about the nature of the “uncertainty” premium that arises when consumers believe that taxes will change for a specific period of time in the future.

Solution Technique

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- Another advantage of this alternative modelling approach is that the solution to the problem can be obtained using stationary dynamic programming techniques with value or policy function iteration, which yield the global optimum.
- By contrast, the solution technique in the current paper is based on a local approximation that combines stochastic and deterministic processes. The solution, in particular, is obtained for one possible deterministic future tax process.
- In the first period, fourteen new “leading state variables” corresponding to the future rates to be in effect between 2009 and 2022 are included in the analysis, which disappear consecutively until year 2022, in which the model reverts to a new state with permanently higher taxes.

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- An alternative approach would be to use a global solution that models the regime shifts in determining future tax policy and allows for possibly binding irreversibility constraints.
- Beningo, Chen, Otrok, Rebucci and Young (2009) show how to obtain optimal policy functions with occasionally binding credit constraints using a global method that is adapted from Kydland (1989). They solve for both the household's and policy-maker's optimal policies, which is different than the approach in the current paper.
- One possibility is that this approach could be applied to the problem to allow for regime switches about tax policy and irreversibility as a way of generating the drop in investment and labor input that is the focus of the paper.

Concluding Remarks

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- This is a very interesting paper that seeks to examine the impact of consumers' beliefs about an event that has not taken place in the data for explaining the behavior of aggregate series in the Great Recession.
- The focus on the potential investment (and labor input) drop today in response to future tax changes seems a promising avenue to account for the observations.
- Some questions that remain:
 - modelling political economy considerations determining the transition between the different regimes
 - allowing irreversibility and the the endogeneous “uncertainty” premium characterizing investment decisions
 - implementing a global solution technique.