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## ECONOMICS 8344 – Macroeconomic Theory III, Fall 2007

**Guide to reading Chapter 10 in Obstfeld-Rogoff 1996.**

Chapter 10 of Obstfeld and Rogoff is a bit of a "tour-de-force," but the details are not really unfamiliar, although most of you don't have experience with the log-linearization technique (which is tedious if not conceptually hard).

Since it is easy to loose track of the flow, I here outline the role of each part of the chapter:

- Equations (1)–(11): Setting up the model and deriving the demand curves and aggregate price-indices.

- Equations (12)–(16): FOCs: Euler Equations, Cash vs. bond holdings, and labor-leisure trade-off (which at the abstraction level of this model is the same as the supply function for output).

- equations (17)-(18): World adding-up constraints.

- Equations (19-(21): Some steady-state conditions.

- Equations (22)-(26): Conditions that hold in **symmetric** steady-state. (OR restricts themselves to a symmetric steady-state since it is too hard to solve the model for the more general case.)

- Equations (27)–(39): Log-linearization around the symmetric steady-state.

- Equations (40)–(52): Log-linarization of the change in steady-state as a function of a change in the steady-state value of $B_t$ (the financial wealth of Home). Note three things. 1) This is a change in the *steady-state* values, which basically means that the system is in the flexible price equilibrium—the log-linearization in (27)–(39) did not impose that condition, which implies that those equations are valid even if prices are sticky. 2) As a technical point, it turns out to be quite easy to solve for the difference between home and foreign "$x_t - x_t^*$" for each variable $x$ [in Equations (42)–(46)] and then afterward find the world-wide values and the country-specific values. 3) When we consider the fix-price situation where prices are fixed for one period when there is a surprise change in, e.g., policy the system will revert

to steady-state after one-period—but with either home or foreign likely to have acquired international assets ($B_t \neq 0$), so the change in the steady-state (which arrives after one period can be approximated by knowing the (log-linearized) effect of $B_t$ on the steady state, besides the (log-linearized) effects on variables, including $B_t$, in the period when policy change.

- Equations (53)–(74) solve for the effect of a (permanent, un-expected) change in the money supply.

- Equations (75)-(76) find the welfare effects. Note, it is strongly advisable to go through most of the derivations up to this point. If you understand this, you can always modify the model. The rest of the chapter shows some modifications. (The effects analyzed are important, but in order not to get an over-load of log-linearizations, we will not do many of the details.)

- Equations (77)–(81) analyze the (more realistic) situation with distorting taxes.

- Equations (82)–(99) allow for a tradeable and a non-tradeable goods. If you are interested in a more careful modelling of exchange rates, this is essential material.

- Equations (100)–(107) analyze the effect of productivity shocks.

- Equations (108)–(130) analyze the effect of government spending shocks (fiscal policy).

- Equations (131)–(144) examine if the properties of the model change significantly if wages, rather than prices, are sticky. The differences to the previous setting with sticky prices is not large, but to some extend the is because of the way the models are set up. Empirical work, that aims to see which precise "institutional" set-up approximate the real world better, is needed in order to get to more specific predictions from this type of model. (Or to put it differently, I see the models of this chapter as examples of the power of the framework, but not as "final" or "realistic" models for policy analysis.