Problem Set 2: Due Sunday, September 13

Problem 1

In this problem, we will extend some of the results in Aguiar and Hurst into the 2010s. On my website, I have collected some materials relevant for this problem. (Much of this material is lightly modified material taken from Mark Aguiar's website).

1. Download the ATUS activity, cps, respondent, and roster files for 2003 and 2013, from the following websites: http://www.bls.gov/tus/datafiles_2003.htm and

   http://www.bls.gov/tus/datafiles_2013.htm . Within the zip files, there are pieces of code with which you can construct STATA .dta files from the given .dat files. Run these pieces of code. Save the resulting datasets as atusact_2003.dta, atuscps_2003.dta, atusresp_2013, atusrost_2013 (with analogous names for 2013.)

2. From my website, run the following stata files: format_03.do, format_13.do, and merge_datasets.do. At this point, you should have a relatively well-formatted dataset called merged_datasets.dta.

3. For each gender×education group (less than HS, HS, some college, ≥college) status, compute the average number of leisure. Make sure to account for changes in age and have children status, using Aguiar and Hurst's fixed-weighting method. For which demographic groups has leisure increased most? How have these differences changed over the last 50 years?

4. For each gender×education group (less than HS, HS, some college, ≥college) status, compute the standard deviation of leisure hours. Make sure to account for changes in age and have children status, using Aguiar and Hurst's fixed-weighting method. For which demographic groups are within-group leisure differences the greatest? How have these within-group differences changed over the last 50 years?

5. What is the relationship between household income and time spent in home production? Between wages and leisure time? Are these relationships different in the pre-2000 and post-2000 periods? Include gender, age group, and have child status as explanatory variables in your regressions.

Problem 2

On Monday, we'll start discussing Kongsamut, Rebelo, and Xie. The subsequent questions consider the draft of the paper given in http://restud.oxfordjournals.org/content/68/4/869.full.pdf

1. A goal of the authors, in this paper, is to have a model consistent with a balanced growth path. Why is this a worthwhile goal? More generally, what is the contribution of this paper?

2. In this question, we will derive Equation 3.9 of the paper.

   (a) First, use the fact that F is homogeneous of degree 1 to show that $\dot{K}_t+\delta K_t+M_t = N_t^M X_t B_M F\left(\frac{K_t}{X_t}, 1\right)$

   (b) Second, add $N_t^A X_t B_M F\left(\frac{K_t}{X_t}, 1\right)+N_t^S X_t B_M F\left(\frac{K_t}{X_t}, 1\right)$ to each side of the equation from part (a)

   (c) Finally, plug in the relationships $B_M = B_A P_A$ and $B_M = B_S P_S$ into your answer from part (b). Simplify until you arrive at the desired result.

3. Write out the time-t intratemporal maximization of the representative household as

$$\begin{aligned} & \max_{A(t),M(t),S(t)} \left(A(t)-\bar{A}\right)^{\beta} M(t)^{\gamma} \left(S(t)+\bar{S}\right)^{\theta} \text{ such that} \qquad (1) \\ I(t) &= P_S S(t)+P_A A(t)+M(t) \end{aligned}$$

   Take first-order conditions with respect to $S(t)$, $M(t)$, and $A(t)$. Use these first order conditions to express the income elasticities $\frac{\partial \log S(t)}{\partial \log I(t)}$, $\frac{\partial \log A(t)}{\partial \log I(t)}$. Are these expressions bigger than or smaller than 1?