14.05 Paper Requirement

Length
The draft and the final version should be approximately 5,000 words long.
On your cover sheet, please include a word count. The word count should not include your bibliography. Both the draft and the final version must be between 4,000 and 6,000 words long.

Topic
You can write your paper about any topic in the course that you find interesting.
We provide some detailed guidelines on how to write a paper comparing the growth experiences of two countries. (See some guidelines below from last year.) However, if you have a different idea you would like to pursue, talk with one your TAs first.

Regardless of the topic you write about, be sure that your paper has an interesting question it is trying to answer. We will talk more about this in recitation.
Your paper should have a strong empirical component, unless you obtain approval to do otherwise. This means the paper should analyze data in some way. For example, the guidelines from last year include a growth accounting exercise.

Expectations for the draft
Treat the draft as if it were the final version.

Expectations for the final version
With the final version, you should attach one paragraph describing the changes you have made from the draft. (You will find this is an aspect of submitting to some journals or revising a paper in a public policy institution.)

Grading
The first draft will be graded on a scale of 0 to 60. The final version will be graded on a scale of 0 to 40. The sum of the grades will constitute your grade for the paper. As you can see, the grading system provides incentives to produce a strong draft.
Drafts or papers that are up to 6 hours late will be penalized with a loss of 50% of the grade. Late submission beyond this 6-hour window will result in a complete loss.

When should I start?

The sooner, the better. If you start early, you will have plenty time to work on your paper and to solicit our advice.
Good luck!

14.05 Paper Guidelines –

Topic 1 - Growth Comparison

PROJECT DESCRIPTION

1. Selection of Countries

The aim of this paper is to compare and contrast the growth experiences of two different countries. Select two countries for which you think a growth comparison would be interesting.
Restrict your choice to countries for which the capital stock series are available in the Penn World Tables (PWT) 5.6. DO NOT CONSIDER THE U.S.

2. Growth Accounting

Identify the contributions of capital accumulation and productivity growth to growth. Construct the Solow residuals using the following equation:
Growth in Y/L = alpha*(Growth in K/L) + Solow Residual
Assume alpha = 0.35, which is a common estimate for the share of capital.
Make two plots. The first should compare the growth rates of the two countries. The second should plot the three components of the equation above to see how growth is broken into two components: the part that comes from capital accumulation (building more machines) and the part that comes from productivity improvements.

3. Possible Explanations

Come up with a few fundamental explanations, which explain some of the features of the plots above. You should try to identify differences between the two economies which might generate the divergent results from the growth accounting. We want to see whether you have developed a good economic reasoning. So if you present some economic explanations which may be responsible for some of the observed features, this satisfies the purposes of this class.
The appropriate framework to think about this exercise is as follows:
☐ Fundamental differences (e.g. government policy, institutional differences, differences in education levels etc.)
☐ Mechanical differences (more/less capital accumulation, more/less productivity improvement)
☐ Differential growth experience (more/less growth)

For example, the countries might differ in their political structure: Communist versus Capitalist.
In the communist country there would be lower incentives for technological innovation, which would lead to lower productivity growth. You may wish to examine the rewards structure for managers of industrial plants in order to understand their incentives for improving productivity.
Or you may argue that the monopoly of state-owned enterprises diminished the incentives for creating new products, because inventors of these products would not realize any gains from their inventions. In addition, the closed nature of the economy might lead to slower diffusion of ideas within the economy and from abroad.

Remember, focus on explanations for differences in growth, not differences in levels. For example, a state-owned monopoly may have an inefficient level of production, but this is a statement about levels. You should examine the implications for productivity growth. There are many potential explanations.

Just pick a few which you think are most responsible for the differences and try to make an economic argument that links these explanations to the mechanical observations from the growth accounting part. It is very important to show relevant data and historical evidence that supports your arguments. Marks will be awarded for well-constructed arguments. You must present a clear thesis and line of argument to explain the differences in growth.

Topic 2 - Business Cycles

PROJECT DESCRIPTION

1. Selection of Country
The aim of this paper is to study and explain the dynamics of consumption, investment and other key macroeconomic variables of a single country, over a long time span. You will have to identify the cyclical components of the economy, explain the source of the fluctuations and also the relationship between the macro aggregates, through the lens of the Real Business Cycle model. Restrict your choice to countries for which the capital stock series are available in the Penn World Tables (PWT) 5.6.
DO NOT CONSIDER THE U.S.

2. Compute long run variables
As in Problem set 2, you will have to construct the Solow residuals, and with them construct the long run versions of the key macroeconomic variables: GDP, consumption and investment.

(a) Compute the real, log per capita variables we need. If $\{y_t\}$ is a per capita variable, data series, regress

$$\log(y_t) = a + b*t + e_t$$

estimating a and b. Then keep the residuals $\{r_t\}$, calculating:

$$r_t = \log(y_t) - a - b*t$$

(b) - Construct the Solow residuals as explained in the lecture notes

(c) - Compute the savings rate s as the average Investment/GDP ratio.

(d) - Assume alpha = 0.35, and you can also set $n + \delta = 0.025$ to build the per capita time series for capital k_t, GDP y_t, consumption c_t, and investment i_t measured in logs.

(e) – Plot the simulated variables together with the observed data, showing the fluctuations of the data with respect to the theoretical long run aggregates

3. Identify fluctuations and possible explanations
Comment on some of the features of the plots above. Try to identify the sources of the observed fluctuations, explaining both the nature of the potential TFP shocks. As in the Growth Accounting exercise, we want to test your economic reasoning. Try presenting economic explanations that are

consistent with the observed fluctuations.

Topics to consider:

☐ Sources of fluctuations (macroeconomic shocks, trade accounting, government policy, terms of trade fluctuations)
☐ Response of macroeconomic aggregates to the shocks, both in terms of sign (increase/decrease) and size.
☐ Co-movements between key macroeconomic variables.

Focus on a particular event (a crisis fluctuation, a boom) and find a potential explanation for its source. For example, a boom could be driven by an increase in exports (driven by favorable terms of trade, high demand for the country's main tradable goods).

Also, you can focus your attention to a particular crisis episode, identifying the shocked sector (e.g. a financial crisis), and give an intuitive explanation of the response of the economy to it, through the lens of the RBC model. As explained in the growth exercise guidelines, you must use either journalistic or academic articles to base your explanations and arguments, as well as supporting data (e.g. exports and imports, for the export boom example). As before, marks will be awarded for well-constructed arguments.

FOR BOTH TOPICS:

SOME POINTS TO CONSIDER AS YOU WRITE THE PAPER

1. Research: While it is important to use the PWT as well as your class notes and text in helping to write your paper, your research should not end there. We expect that all of you will SPEND TIME IN THE LIBRARY looking for further data and non-quantitative evidence in support of your arguments. Econlit which indexes and abstracts more than 550 international economic journals is a great starting point for finding relevant articles.
It is critically important that in analyzing the results from growth accounting, you appeal to data, arguments, and perhaps other models that you'll find in library resources. While this sort of research process may be new to many of you, the good news is that the library has a group of excellent research librarians whose entire job it is to help you in your quest. Use them! Go visit the library and after trying to find resources on you own, tell the librarians what you're looking for and ask them what other resources are available that might prove helpful.

2. **Thesis**: We cannot emphasize this enough. It is imperative that you have an argument and state that argument clearly and concisely early on in the paper (i.e in Section 1!!!) For example, for the growth exercise, using the Solow model as a lens through which you initially consider the question of how your two countries developed, you must state and then prove WHY you get your growth accounting results

3. **Style:** Grammar, spelling, proper citation and overall presentation (e.g. page numbers, clearly delineated sections etc.) are all very important. For those of you for whom English is not a first language or who simply find writing good prose challenging, please visit the folks at the Writing

Center (32-081). At the least, consider having a friend whom you think writes well read over your paper and make suggestions.

4. **An Example:** A good example paper: A Comparison of the Growth of Singapore and Hong Kong from 1970 to 2000, David Seif, The MIT Undergraduate Journal of Economics, Volume II, 2002-2003.

5. **Organizing Your Paper:**

Section 1: Introduction. In Topic 1 you will have to explain WHY you've chosen your 2 countries, highlight the main results of your growth accounting analysis and offer a CLEAR THESIS STATEMENT as to why you think you got those results. In Topic 2, you have to explain why you chose your country, and offer a summary of the particular fluctuation events that you will be focusing on.

Section 2: Present your data and do the growth accounting (and the simulated data for topic 2). Do not re-derive the Solow or the RBC model. Rather, write out the key equations, show how you made your calculations and present your growth accounting results (both for the whole period and subintervals) in a clear way (think TABLE/GRAPHS!!!)

Section 3: This is the heart of your paper and will certainly be the longest part. You may even divide it up into 2 sections if there is some sort of logical break in the way you structure your arguments. Here you will fully flesh out your thesis statement explaining, for example, WHY you got your growth accounting results. You may introduce new models or new data in this section. Whatever you do, please remember that this is an economics paper first and foremost and you must make economic arguments. You must have strong economic reasoning and (to the extent possible) DATA to support your ideas. Of course, some narrative and cohesive interpretation of the data is important as well.

Section 4 or 5: Conclusion. Summarize your key results.

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