**ECON 6470 Midterm: Key challenges to Growth & Development Fall 2019**

Please ***answer these questions section by section writing your answer single spaced right after each question mark in a font that is not dark red. Please use single space and italics for quotes, citing author date and page number. Quotes with page numbers are great, section in italics are extra credit (not to be confused with quotes in your answers ink color*** Turn your answers using this word template on BB by the due date, see BB for the due date, if BB does not work you can also email a copy to [mcleodassign@gmail.com](mailto:mcleodassign@gmail.com) with “ECON 6470 Midterm Q1 & Q2 your name” as the subject line. This Economics Nobel prize has a nice web page, but right now I cannot access it (again). Luckily the urls below are working. The Economics prize is a bit different, but at least it is on the same page as the other prizes. Let me know if these background papers urls stop working, I saved pdf copies. We will revisit some of these issues in class and via the Aghion and Howitt text…

**Question M-1A** Does knowledge driven growth inevitably lead to regional inequalities and concentration of wealth. As it happens both Michael Kremer and Paul Romer have similar theories of knowledge driven growth. Knowledge is nonrival, it has spread to manufacturing centers in China, Mexico and Poland (Baldwin, 2016) creating a new middle class (in September the majority of the world’s population became middle class, see Kharas et al.). This should be good news, but instead we have populist backlash and rioting all over (Chile, Hong Kong, etc.) why? M-1B Why is there no rioting (political instability) in China, or India or Africa? There is unrest in Ethiopia, whose President just won the Nobel Peace Prize, has Ethiopia used the traditional manufacturing exports model? How is Ethiopia doing now (despite some political unrest) see the most recent forecasts from the October 2019 WEO (is the SSA REO out yet?). Most of the young people living today are in SSA, what sort of development challenges does this present?

**Question M-1A**

Kremer, Michael, “[Population Growth and Technological Change](http://faculty.econ.ucdavis.edu/faculty/gclark/210a/readings/kremer1993.pdf): One Million B.C. to 1990,”

*Quarterly Journal of Economics*, August 1993, *108* (4), 681–716.

Klenow, Peter J. and Andres Rodriguez-Clare, “The Neoclassical Revival in Growth Economics: Has It Gone Too Far?,” in Ben S. Bernanke and Julio J. Rotemberg, eds., *NBERMacroeconomics Annual 1997*, Cambridge,MA:MIT Press, 1997.

Paul Romer: Ideas, Nonrivalry, and Endogenous Growth\*

Jones, Charles I. "[Paul Romer: Ideas, Nonrivalry, and Endogenous Growth](https://onlinelibrary.wiley.com/doi/pdf/10.1111/sjoe.12370?casa_token=9sAEKFDo3gMAAAAA:kyYGv2XaNhvmV51es82H4v9wQV5jrYu0M4cEZLV7VFu2fVQyxA3hy6xAeczft1k4vjDOiksT-c1vIfY)." The Scandinavian Journal of Economics 121, no. 3 (2019): 859-883.

JonesChapter5.pdf is very similar to Jones and Volrath,

ChadJones2019RomerNobelHightlights2.pdf

https://economics.mit.edu/files/12569

<http://faculty.econ.ucdavis.edu/faculty/gclark/210a/readings/kremer1993.pdf>

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**Midterm-Q1** (Masters & PhD) Use the Royal Academy of Sciences report on “[Integrating nature and knowledge into](https://www.nobelprize.org/uploads/2018/10/popular-economicsciencesprize2018.pdf) economics 2018” Prize report to summarize the Nobel Committee’s assessment of Paul Romer’s and William D. Nordhaus’s contribution to growth and development. We will return to climate change, but for now focus on Romer’s contribution. What do key issues/questions do Figures 1 and 2 focus on? What period does Figure 1 cover? What changed after 2000? What does Figure 1 imply about the Solow model (they claim)? What was Romer’s “major breakthrough”? Is Figure 2 based on Romer 1986 or (1990)? How does Romer (1990) imply growth driven by ideas is different that growth driven by physical capital? How do imperfect competition and unregulated markets enter the picture? Is there a role for development policy (governments and legal systems, institutions?). EC1 *How do nonrival goods and R&D enter the global value chains driving Baldwin’s “Great Convergence” (let me know if you need a copy of this book)*.  *EC2: Use Nordhaus’ simulations in Figure 3 to compare the Stern’s scenario 2 (what happens to emission in 2040 in scenario 2 and 4)? What happens if we “do nothing” beyond 2015 policies? Relate these findings to the recent IPCC update on the outlook for climate change.*

**Midterm-Q2 (**PhD and Masters Students, M**Q2A** Use the Committee for the Prize in Economic Sciences in Memory of Alfred Nobel\* 2018 Scientific background study “[Economic Growth, Technological Change and Climate Chang](https://www.nobelprize.org/uploads/2018/10/advanced-economicsciencesprize2018.pdf)e” October 8th to summarize what Romer’s and Nordhaus’ contributions have in common, the shortcomings of existing theory their work addresses, and what the Nobel committee thinks are the major challenges remaining (see pages 1-5). MQ2B Skip the standard Solow-Swan model (section 2) and go to the introduction to Section 3 (Endogenous Technical change) if you have not already (if so just cut and paste) go into a bit more detail on Romer’s “empirical starting point” (p. 10) and how he made technology endogenous (p. 11) and intuitively how we get “sustained long-run growth. **MQ1C (PhD students only)** explore Romer’s “love for variety” idea a bit more formally, how does globalization. Write your summary using math and motivation (copied from their report, or with reference to equation numbers if your are pressed for time…). In what sense is Romer (1986) and endogenous growth model? What stylized fact does this class of models explain (starting with the AK model) what stylized fact do they not explain? Section 3.2 focuses on the production of ideas, see Figure 2. Do markets or planners supply “new ideas”? If long term profits from new ideas are zero, why would private R&D firms produce new ideas? What drives profits from new ideas to zero in the long run? *As already mentioned at the outset of this section, Romer’s 1986 first paper was the first in which the long-run growth rate is nontrivially determined and – at the same time – the equilibrium outcomes agree with a set of historical growth facts for the U.S. economy. What was a model “trivally” determined the long run endogenous growth rate (before Romer, 1986).*  **MQ1D (PhD & Masters)** Briefly discuss some “alternative drivers of endogenous growth” and some alternative R&D settings (who made the most influential contribution in this area?) more on this in Chapter 4 of our text, for now briefly summarize (quotes?) the empirical “tests of growth theory” cited by this report (Section 3.5 through) page 22 now stop this is a enough.

**References (please add Google Scholar citations or GSC where missing)**

Barro, R. J. (1991). Economic growth in a cross section of countries. QJE, 106(2), 407-443.

Lucas, R. E., Jr. (1988). “On the Mechanics of Economic Development.” JME, 22, 3–42. (GSC 31163)

Lucas, R. E., Jr. (1990). “Why Doesn’t Capital Flow from Rich to Poor Countries?” AEReview, 80, 92–96

Mankiw, N. G., Romer, David, & Weil, D. N. (1992). A contribution to the empirics of economic growth. QJE, 107(2), 407-437. (GSC 17382)

Romer, P. (1986). “Increasing Returns and Long-Run Growth.” JPE 94, 1002–1037. (GSC 25485)

Romer, P. (1987). “Growth Based on Increasing Returns Due to Specialization.” AER, 77, 56–62. (GSC 2202)

Romer, P. (1990). “Endogenous Technological Change.” JPE 98, 71–102. (GSC 6288)

Romer, P.M. (1993) Two Strategies for Economic Development: Using Ideas and Producing Ideas, in

Proceedings of the World Bank Annual Conference of Development Economics 1992, Wash DC: World Bank

<http://documents.worldbank.org/curated/en/353181468739245145/pdf/multi0page.pdf>

Sachs, J. D., Warner, A., Åslund, A., & Fischer, S. (1995). Economic reform and the process of global integration. Brookings papers on economic activity, 1995(1), 1-118. (GSC 2202)

Solow, R. M. (1956). “A Contribution to the Theory of Economic Growth.” QJEconomics, 70, 65–94.

Solow, R. (1957). “Technical Change and the Aggregate Production Function.” RE & Statistics, 39, 312–320.

http://documents.worldbank.org/curated/en/353181468739245145/pdf/multi0page.pdf

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