

Written Exam Economics summer 2016

Development Economics

23. August, 2016

(3-hour closed book exam)

Model Answer

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by “eksamen på dansk” in brackets, you must write your exam paper in Danish.

This model answer consists of 8 pages in total

The following texts are referred to in the model answer:

PRLB: Dwight H. Perkins, Steven Radelet, David L. Lindauer and Steven A. Block, 2013. “Economics of Development”, 7th edition, W.W. Norton & Company.

Ray: Debraj Ray, 1998. “Development Economics”, Princeton University Press.

Weil: David N. Weil, 2013. “Economic Growth”, Pearson International Edition, 3rd Edition, Chapters 4, 6-10, 12, 13.

Lucas, R. E. 1990. Why doesn't capital flow from rich to poor countries?. American Economic Review, 80(2), 92-96.

Weil, D. N., and Wilde, J. 2009. How relevant is Malthus for economic development today? American Economic Review, 99(2): 255-260.

Problem A

Please provide short answers to the following questions and statements:

1. Please explain briefly the difference between exchange rate conversion and PPP conversion of GDP.

This is explained in PRLB, chapter 1+2. The former provides the answer to the question: how many units of a particular currency (say, US\$) can country x's GDP be exchanged into? The latter provides the answer to the question: how many units of goods and services can you command if you have country x's GDP. In other words, it provides a measure of the purchasing power of the attained local GDP. Naturally, only the latter is useful in the context of international comparisons.

2. Please explain why global poverty is measured by the PPP \$1.25-a-day line and describe, briefly, how it was constructed.

The PPP \$1.25-a-day poverty line is described in PRLB p. 186. To determine the extent of absolute poverty in the world, the World Bank examined 34 country-specific poverty lines from both developed and developing nations. These poverty lines generally rose with income level. Focusing only on the low-income nations in this group, the country specific poverty lines tended to fall within a range of \$275 to \$370, measured in terms of 1985 PPP dollars per person per year. The upper bound of this range, just over \$1 was adopted as a global poverty threshold. Later compilations of poverty lines and new PPP estimates have led to adjustments of the international poverty line. The 2005 PPP conversion prices have given rise to the \$1.25-a-day line. It is the average poverty line for the 15 poorest countries in the sample.

3. Please define and explain two obstacles to international transfer of technology.

The obstacles are discussed in Weil, Section 8.4.

- a) Appropriate technology: Technology is created/developed in the rich countries—hence it is appropriate for the existing rich country production mode and level, it is not necessarily appropriate for the poor country production mode and level (capital-bias, skill-bias)
- b) Tacit knowledge: Use of new technology requires both codified knowledge (blueprints) and often tacit (implicit, unstated) knowledge. Rich countries can only transfer the codified knowledge

4. A micro lending organization is attempting to provide loans to small farmers. It is lending to farmers in groups of two.

- a. Please provide at least two reasons why a strategy of group lending may be better than a strategy of lending to individuals.
- b. Please provide at least two reasons why a strategy of group lending may be worse than a strategy of lending to individuals.

Group lending is discussed in Ray (Section 14.5.2). It may increase repayment probabilities if the borrowers have private information about each other, such that they can reduce moral hazard problems, specifically too risky investment project may be avoided. It can also be an advantage in an adverse selection setting if the matching of borrowers separates the high risk from the low risk borrowers (positive assortative matching).

Group lending may be a bad strategy, for example, if one of the lenders is hit by a negative shock, making it impossible for him/her to repay. In that situation the optimal choice for the other farmer is to default because the groups credit rating is destroyed regardless of his/her actions. Another problem is that peer-monitoring may lead to selection of overly safe investment projects with sub-optimally low returns.

5. Suppose that educated and uneducated workers both produce the same output, but that educated workers earn more because they can steal part of what the uneducated produce. If this were true, how would it affect estimation of the return to education

- i. using individual based wage equations (mincer regressions), and
- ii. using country based macro production function equations?

A mincer regression would show a significant return to education as educated workers earn more than uneducated workers. The macro production function would show an insignificant (zero) return to education as production is not higher in countries with more educated workers, everything else equal.

6. Please, explain what "the Lucas paradox" is all about.

This is explained in Lucas 1990. Consider a situation where aggregate income per capita is produced by capital and labour. Suppose capital is subject to diminishing returns, and that factor prices are determined by the (aggregate) marginal productivities of capital and labour. If income differences across countries are due to differences in capital per worker, then we immediately reach the conclusion that the real rate of return ought to be far higher in poor places than in rich places; given realistic variation in income per capita, by a huge margin. Yet, capital does not flow to poor countries, which is labelled "the Lucas paradox".

The paradox can be – fully or partially resolved – if one is willing to admit that poor and rich countries also differ in terms of production factors that are complementary to capital; human capital, for example. Lucas manages to show that the real rate of return differences disappear when one takes human capital into account, while admitting sizable externalities. Yet many remain sceptical whether human capital externalities of the magnitude required are realistic.

7. Please list at least five of the ten components of Williamson's Washington Consensus.

The ten components of the Washington Consensus are the following (PRLB p. 147):

1. Fiscal discipline
2. Reordering public expenditure priorities
3. Undertake a tax reform
4. Liberalization of interest rates
5. Competitive exchange rates
6. Trade liberalization
7. Liberalization of foreign direct investment
8. Privatization
9. Deregulation
10. Secure property rights

Problem B

The answer to this question should be based on Weil Ch. 4, Weil and Wilde and PRLB Ch. 7.

Please discuss issues related to population growth and economic development. Specifically,

- *describe different theoretical links from population growth to income per capita (or labor productivity)*

This question relates to two issues: what is the impact of income (per capita) on population growth? and, what is the impact of population growth on income per capita?

First, on the former issue. Assuming children have time costs, and increases utility, rising income per capita has in principle two countervailing effects on optimal family size (fertility) and, conditional on mortality, on population growth. On the one hand, higher income induces individuals to increase desired family size (the traditional “income effect”), on the other hand higher income increases the opportunity costs of children which in isolation leads to smaller desired family size (“the substitution effect”). The net effect is, in general ambiguous.

As a result, even if rising income per capita tends to increase longevity (through improvements in nutrition, improvements in shelter or perhaps better sanitation), the net effect of income on *population growth* will then depend on whether the income or substitution effect dominates in the context of fertility.

Turning to the second issue, one may wish to divide the answer into two parts: The view of population “optimists” and of population “pessimists”.

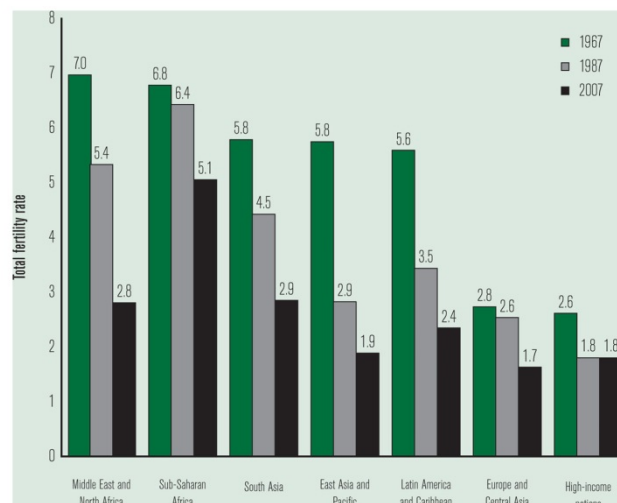
Population optimists view population growth as potentially conducive to growth. A classic account is the Boserupian view, that population pressure breeds the desire to adopt new technologies, which allows for a more intensive exploitation of the land and helps alleviate these pressures. Adam Smiths’ argument was that a larger market facilitated the division of labor to the benefit of growth. Many students undoubtedly have come across innovation based growth models, which often have the property (unless suitably modified) that a larger population size spurs innovation since “more people means more ideas”.

On the pessimistic side we find a strand of literature which starts with Thomas Malthus. The Malthusian view essentially boils down to the observation that, due to the presence of a fixed factor of production (land), a larger population tends to lower income per capita as a consequence of diminishing returns to labor input. If this effect is in operation, and if income serves to increase fertility (and lower mortality perhaps), the economy may be stuck in stagnation. Rising productivity will in the short run increase income per capita, and raise fertility (lower mortality) so that the size of the population rises in the longer run. As a result, in the long run income per capita reverts to its initial states, and the only impact from productivity is greater population density.

Weil and Wilde tries to gauge the quantitative significance of this standard diminishing returns impact from population size across the world today. They first estimate the elasticity of substitution between labor and natural resources (land), which they find to be around 2. Subsequently they ask how much income is lowered by doubling the size the population; they find the answer to be around 30%. In other words, this channel does not appear to be quantitative important.

More recent growth theories, such as the Solow model, has a milder implication due to the possibility of capital accumulation. Rising population growth tends to dilute capital per worker, and thus works to lower the long-run income per capita level. Again population growth (thus larger population size) is bad for growth. Reasonably calibrations, however, suggest the effect is relatively minor in light of observed per capita income differences around the world.

- *describe and explain the observed decline in fertility across the world*



During the past half century fertility rates have declined massively, and the biggest reductions have taken place in the poorer corners in the world, cf figure from PRLB. While it is still the case that fertility rates are higher in poor countries, the gap to rich countries have generally narrowed visibly. Today, population growth in rich and the poor differ by about 2 percent per year. According to some UN scenarios global depopulation may start to occur before 2050.

The three leading theories of the fertility decline, which should be described are: (i) the role of income (and increasing importance of the substitution effect, discussed above); (ii) the role of declining mortality (precautionary motive for kids may incite smaller families when mortality declines); (iii) the quantity-quality trade off; the process in which households lower family size but increases investments per child.

- *discuss in what sense family planning policies can be expected to lead to lower fertility rates in developing countries.*

In China family planning programs seems to have been rather successful in reducing family size; the one child policy (and previous programs such as the later-longer-fewer program) seems to have generated the fertility transition by State decree.

Other family planning policies, centered around information or aid to take preventive measures toward child birth, have been less successful. An interpretation of this is that people, on average, seem to obtain the kids they want. Weil, citing a study by Pritchett, shows a close association between desired and actual fertility. The average deviation between the two is less than one child,

which favorably could be compared with the range of total fertility rates of about 7. Accordingly, which preventive measures may impact on fertility its quantitative significance will remain minor, compared to policies that are able to reduced desired fertility. Which policies are relevant depends on the which theory is correct in the context; if child mortality reductions serve to bring down fertility it is clear that health investments will be a very effective “family planning program” etc.

Problem C

The answer to this question should be based on PRLB chapter 14.

Please discuss issues related to foreign aid from donor countries to recipient countries. Specifically,

- *describe and discuss different donor motives for foreign aid;*

The various motives for foreign aid are discussed in PRLB pp. 514-518.

1. Foreign policy objectives and political alliances: Keywords for this set of motives are the Cold War (USA, USSR and also European donors), the Middle East (USA), National Security (War against terror) and historical political motives where European donors give aid to their former colonies.
2. Income levels and poverty: Donors generally provide their most concessional aid to the poorest countries and give fewer grants and subsidized loans for higher income countries. (This is also seen as the humanitarian motive)
3. Commercial ties: Bilateral aid is often designed to help support the economic interests of certain firms or sectors in the donor country (Japan is a case in point, but food aid from USA is also an example).
4. Democracy: Since the end of the Cold War, donors have tended to increase their aid to countries that have become democracies.
5. Country size: Donors provide much more aid to smaller countries than to large countries.

- *describe the four broad economic and development objectives, that foreign aid is designed to meet;*

The four broad economic and development objectives are given in PRLB p. 518. The objectives are

- To stimulate economic growth through building infrastructure, supporting productive sectors such as agriculture or bringing new ideas and technologies.
- To promote other development objectives, such as strengthening education, health, environmental, or political systems.
- To support subsistence consumption of food and other commodities, especially in emergency situations after natural disasters or humanitarian crises.
- To help stabilize an economy after economic shocks.

- *describe and discuss three views on the impact of aid on economic growth*

The three views are presented and discussed in PRLB pp. 502-535. The views are illustrated graphically in Figure 14-5 (given below).

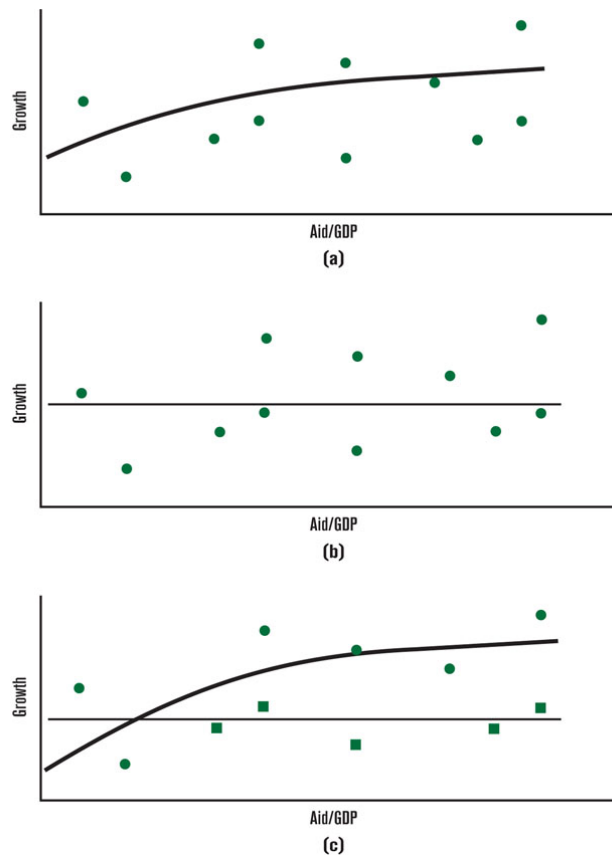


FIGURE 14-5 Three Views on Aid and Growth

(a) View 1: Aid has a positive impact on growth with diminishing returns after controlling for the impact of other variables. (b) View 2: Aid has little or no impact on growth and may have a negative impact. (c) View 3: Aid has a positive impact on growth in some circumstances (circles) but no impact in others (squares).

GDP, gross domestic product.

The first view is stated as: “Although not always successful, on average, aid has a positive impact on economic growth and development”. Or as stated in the figure: “Aid has a positive impact on growth with diminishing returns after controlling for the impact of other variables”.

According to this view, poor countries are unable to generate sufficient amounts of saving on their own to finance the investment necessary to initiate growth, or if they do they can finance only very slow growth. In the strongest version of the view, the poorest countries may be stuck in a poverty trap, in which their income is too low to generate the saving necessary to initiate the process of sustained growth. In a more moderate version, the poorest countries may be able to save enough to begin to grow, but only at very slow rates. Thus aid flows provide a way to augment domestic saving and accelerate the growth process. (PRLB p. 521) In addition, for defenders of View 1, aid can have a positive impact on other important development objectives that may affect growth only indirectly or affect it only after a long period of time, such as health, education, or the environment. Similarly, it can provide emergency assistance or humanitarian relief or be used to help achieve macroeconomic stability (PRLB p. 522).

The second view is stated as: “Aid has little or no effect on growth and actually may undermine growth”. There are several ways in which aid may be wasted. If donors build large bureaucracies or

spend the money on expensive technical experts from their home country that write reports no one reads; Aid may wind up in the personal off-shore bank accounts of government officials (PRLB p. 526). More insidious, if aid breeds corruption, government officials and their cronies spend their time plotting about how to siphon aid money to their own bank accounts rather than increasing output. (PRLB p. 527). Perhaps the most important way in which aid could slow growth is by undermining incentives for private sector activity. Large aid flows can spur inflation and cause a real appreciation of the exchange rate, which reduces the profitability of production of all tradable goods. Aid flows can enlarge the size of the government and related services supporting aid projects, drawing workers and investment away from other productive activities (PRLB p. 527). Finally aid programs may weaken the institutions that society needs to enhance the process of development.

The third view is stated as “Aid has a conditional relationship with growth, stimulating growth only under certain circumstances, such as in countries with good policies or institutions”, or as stated in the figure: “Aid has a positive impact on growth in some circumstances but no impact on others.

This view recognizes that aid seems to have stimulated growth in some countries under certain circumstances but not in others and focuses on trying to decipher the key characteristics that might explain these differences. The most influential of the conditional perspectives is that the impact of aid depends on the quality of institutions and policies in the recipient country (PRLB 534). Other analysts argue that differences in donor practices or the type of aid are likely to influence aid effectiveness.