

Department of Economics

Instructions:

Write your **identification number** on each paper.

Each answer shall be submitted in this folder.

Course name: Intermediate Development Economics

Date: 30th October 2014

Exam result	
Total points	100
Grade	A

Amazing!

(10)

Section A
Question 1

Section A

Question 1

The standard model for choices looks the following way

U(c) = u(c_0) + \beta u(c_1) + \beta^2 u(c_2) + ... \beta < 1

Every ~~action~~ ^{cost or benefit} that lies in the future has less value. It gets discounted with \beta per period. This model allows time consistent choices but cannot ^{fully} explain why people make poor choices and ^{eventually not that good} change their decision when the day they have to pay for something finally arrives.

This phenomena is explained by the hyperbolic discounting models looking like that:

U(c) = u(c_0) + \delta [\beta u(c_1) + \beta^2 u(c_2) + ...] ; \delta < 1 \beta < 1

So everything that lies in the future gets discounted with another factor \delta and has less value. Or in other words: all costs or benefits happening right now have a special ^{high} value.

Therefore ~~people~~ people don't stop smoking. If u(c_1) is the cost of not smoking and u(c_2) the benefit of better health and \delta \beta^2 u(c_2) > \delta \beta u(c_1) people decide to stop ~~but~~ when the day finally arrives the cost is u(c_0) and the benefit \delta \beta u(c_1) and it is really likely that

u(c_0) > \delta \beta u(c_1) since the benefit gets discounted twice.

Therefore, people don't stop smoking when it would be time to do so. ~~Thus~~ You can see that this model explains time-inconsistent choices due to the special discount factor \delta.

of time inconsistent choices

Another example [✓] is buying expensive products on credit. ~~With the~~ ^{With the} standard model it does not make a difference whether the benefit is now and the cost in the future or both are period costs.

With hyperbolic discounting it is a difference since you value the benefit of having the product now a lot more than the cost in the future since they get discounted more.



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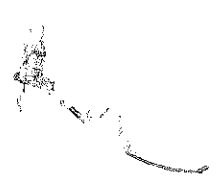
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Question points: 10

10

Section A
Question number: 2

Section A Question 2

The theory is that settlers that colonized countries either installed good or bad institutions. Good institutions protect property rights and got ~~stalled~~^{inst} in place the settlers wanted to stay because they liked to live there.

Poor institutions were only ~~meant~~ meant to extract as much resources as possible in a short period of the settlers stay.

This happened at places with a high settler mortality rate due to e.g. malaria. These institutions rejected the rights of the local population.

They estimate this with a instrumental variable estimator, the settler mortality being the instrument. This instrument is according to the authors of the study exogenous and relevant since the settler mortality rate ^{in 1500 in the colonies} did only affect the institutions but not the economic development ~~because~~ ^{because} the local population was immune against malaria.

They first plotted the average expropriation rate being a proxy for good or bad institutions against today's GDP. They got a correlation between low expropriation risk and high GDP. With the instrumental variable estimator they proved this not to be only a correlation but a causality. In their second paper they wanted to show that these institutions are the reason for long-run economic development and not geographic factors like natural resources, soil, rainfall.

To do this, they plotted the population density in 1500 being a proxy for wealth against the GDP today. According to

at that time

The ~~rich~~ geography theory, places that has been rich in 1500 due to their resources, ~~and~~ climate, soil and other factors should today still be rich. In the data we see however exactly the opposite. The authors call this reversal of fortune.

This can be explained by the institution theory. Rich places got extractive institutions and therefore property rights were not secured with was the main cause for not being able to take part in the industrial revolution.

Therefore, formerly rich places are poor now.

These two papers lead ~~to~~ Acemoglu, Johnson and Robinson to the conclusion that institutions instead of geographic factors determined long-run growth.

*since these factors did not change.



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Section A

Question points: 10

Question number: 3

Section A Question 3

The optimal allocation of capital is shown by the following formula:

$$p_i F_i'(K_i, L_i) = p_j F_j'(K_j, L_j)$$

This means that in the optimum the marginal revenue product of capital should be equal between different firms and goods.

If ~~the~~ a firm has a higher marginal ^{revenue} product of capital than the others it would be useful to add more capital to this firm instead of others and if a firm has a lower marginal revenue product of capital than all others we should ~~take~~ ^{take away} capital from the firm since it is not using it as efficiently as others could.

In the graph we can see that for China and India:

the marginal product of capital across firms has a ~~wide~~ ^{wide range} of ~~range~~ whereas in the US it is more centered around the

1. We can see that a lot more firms in China and India have too much capital ($\frac{1}{8}$ to $\frac{1}{2}$) and ~~too~~ not enough (2 to 8) capital than in the US. Hence, these countries could improve their average productivity by ~~reducing~~ ^{reducing} their capital misallocation. They could have a higher growth rate with the same amount of capital.

The reason for the misallocations are mostly credit market imperfections and corruption. A perfectly working credit market would achieve the formula mentioned above in theory.

The US achieves this a lot better than China and India ~~since~~ ^{since a lot more} ~~the~~ ^{of the firms'} marginal products of capital

are centered around the 1 which is equality between the firms

In a perfect situation ^{every company} ~~every~~ would have the same marginal revenue product of capital being 1 in the graph.



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Question points: 10

Ecton A
Question number: 4

Section A Question 4

This statement is false.

If we take a look at the main functions of the Solow model

$$Y = F(K, L) = AK^\alpha \cdot L^{1-\alpha}$$

$$\dot{K} = sAK^\alpha - (d+n)K$$

We can see that there are a lot more parameters to be determined than ^{from} the population growth rate n . Therefore, ~~just~~ just making an assumption about one parameter we can not conclude for long-run growth.

It is indeed true that countries with exactly the same parameters but ^{country} A ~~is~~ having a higher population growth rate than ^{country} B would end up in a different per capita capital stock. B would have a higher per capita capital stock than A due to the capital deepening effect which means that the accumulated capital ^{in country} has to be distributed over more people and therefore everyone has less in average in the end. If the statement said like this it could be true.

But the statement is not true since it could happen that A has a higher population growth rate than B but also saves a bigger share of the income to be invested in capital. These effects could balance out each other and A ~~and~~ B would end up in the same per capita capital stock in the long run.

You can imagine as well scenarios where A has a higher ^{per} capita capital stock due to higher TFP or less depreciation.

General statements ~~is~~ derived from the Solow model are very likely ^{to be} true. (1)

important since there are lot of parameters to pay attention to



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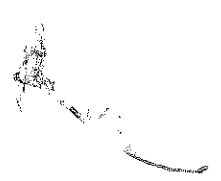
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Question points: 10

Section A
Question number: 5

Section A Question 5

I would run a ~~randomized~~ ^{fully} randomized controlled trial experiment.

~~To do this~~ To do this, we need two groups of farmers.

They should be exactly similar except for the fact that group 1 ^{fully} owns that land they are working on and group 2 has a share-cropping contract. ~~But~~ But the region and therefore climatic impacts, ~~and~~ the (land) size and all other factors should be the same. Then we would measure factors like agricultural output, expenditure, working hours, fertilizer use and use of other inputs and technologies over a period of a few years.

Since all other factors are the same the differences we observe between the two groups must be the causal effects of owning land or having a share-cropping contract.

To expand the experiment we could also have different sub groups for group 2 with ~~share-cropping~~ share-cropping contracts differing in the amount the farmer can keep of his return.

How many is the

The ~~share~~ should be able to observe that the lower the share is the farmer can keep, the lower are the incentives to invest and work hard and therefore the lower is the productivity. Doing this we could even estimate the ^{incentive} effect of a 1% increase in the share the farmer can keep.



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Section A

Question points: 10

Question number: 6

Section A Question 6

Average GDP per capita is

$$\frac{\sum P_{ijt} \cdot X_{ijt}}{N_{jt}}$$

P_{ijt} : price of good i in country j at time t

X_{ijt} : quantity of good i in country j at time t

N_{jt} : population in country j at time t

also called amount of goods and services produced in a country in a year per capita.

We can use this as a measurement for average wealth and can conclude from this about poverty but

1) Average GDP per capita does not include home production, black markets and ~~the~~ negative externalities for the environment. Especially the home production and black markets form a big part of a lot of developing countries' economy which we therefore estimate as far too unproductive and lost.

2) Average GDP per capita does not say anything about the distribution of this wealth within the country. It doesn't matter for average GDP per capita if one person has all wealth or whether it's equally distributed.

The distribution is very important when talking about poverty. But we need different instruments than average GDP per capita to measure this like for example Gini-coefficient or poverty counts.

3) The prices of the goods produced are important for the average GDP per capita but on the one hand they are not the social value and only the ~~price~~ willingness to buy of the marginal buyer and on the other hand some goods are hard to be priced like education, research and development and life saving treatments.

than average GDP per capita



To conclude, we also need other instruments to be able to talk about poverty.



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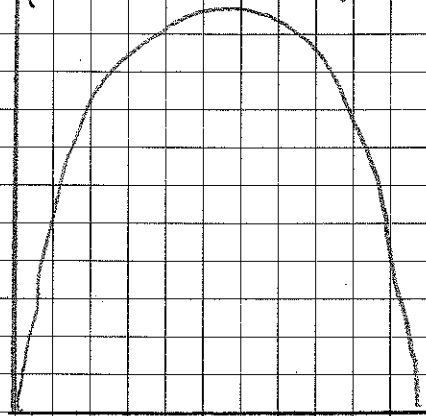
Question points: 20

Section B
Question number: B.1

Section B

Question B.1

a)



Kuznets curve

Simon Kuznets hypothesis:

For countries there's a natural way the inequality within the country ~~changes~~ ~~changes~~ during the development.

~~At the beginning there's low inequality~~

Development

~~Because everyone's poor. Therefore, the wages are low. Capital owners ~~start~~ with companies can now cheaply hire the workers and make a lot of profits until the medium stage of development. Then labour gets scarce, wages rise and the capital owners earn less and the workers more. ~~This~~ This is the reason why the inequality declines until the late stages of development.~~

~~At the end of the curve there's low inequality~~

At low stages of development there's low inequality. The inequality rises to its maximum in the medium stage of development and gets less again at late stages of development.

b) Kuznet got this idea because he looked at how the society and income distribution developed during the industrial revolution. At this time we can roughly observe such a pattern. In the beginning there was low inequality because most people were poor. Therefore, the wages were low. Capital owners with companies could now cheaply hire

workers and make a lot of profit until the medium stage of development. During the industrial revolution more and more companies opened and labour got scarce. Therefore, the wages increased leaving less profit to the capital owners and more to the workers. This is the reason why inequality declined at later stages of development according to Simon Kuznet. But this is not true and by far no "natural" development but mainly formed by workers fighting for their share and institutions redistributing income.

c) In the beginning of this graph we roughly observe what Simon Kuznet predicted. The share of national income which the richest 10% possessed grew fast leading to a rising inequality between 1910 and 1930. This share got less and in the 1940s sharply fell forming almost the curve Kuznet predicted.

At first glance it seems as if the data is in favour of Kuznet's hypothesis but this impression is wrong. The data we see is strongly against Kuznet's hypothesis.

The drop in the share of national income possessed by the richest 10% is no natural development and is not caused by wages. Thomas Piketty mentions in his book that the wage to capital income ratio does not change significantly.

The reason for this development ^{are} the two world wars. We can see a small drop in the graph around 1918 and a big one between 1940 and 1945. What is the reason for this? In the war a lot of companies ^{capital} and machines were destroyed and this means huge losses to the capital owners being the richest 10% _{or workers due to recession}.

Section B Question B1.

c) Part II Page 3

This theory is supported by the ongoing development in the data. The share of national income the richest 10% possess has ^{from the 70s to now} ~~fallen~~ ^{gone} again to the level we had in the 1930s. This is only interrupted ^{shortly} for a few times due to the oil crises, dot-com bubble and the Economic crisis in 2008/9. Nevertheless, we don't see anything that looks like the promised decline in inequality due to wage rise in late stages of development that Kuznet promised.

To conclude, the data is strongly against Simon Kuznet's hypothesis!



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Question points: _____

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Question number: _____

Section B

B.2.

Section B Question B.2.

a) In the scenario of adverse selection we have two different kind of borrowers. We have safe borrowers that want to invest in a safe project with return R_s and probability of success p_s . Moreover, we have risky borrowers which want to invest in a risky project with return R_r and probability of success p_r .

Assumption. $R_r > R_s$ but $p_r < p_s$

They both want a loan from the bank but the bank cannot distinguish between the two. ^{So it has to offer one interest rate for both}

Option 1. The bank charges the interest rate $r = \frac{R_s}{p_s}$ which is due to the high probability of success of the safe borrowers the lower interest rate. This cannot be an equilibrium since the bank cannot cover the ^{present defaults} ~~losses~~ of the risky borrowers with their risk premium ~~loss~~ $\frac{R_r}{p_r} - r$

Option 2. They have to pool the interest rate. Let s be the fraction of safe borrowers.

$$s p_s r + (1-s) p_r r = \gamma$$

$$r = \frac{\gamma}{s p_s + p_r} > \frac{\gamma}{p_s}$$

Now we have a higher interest rate ~~loss~~ and the bank ~~is~~ not to get bankrupt but the safe borrowers don't want to invest anymore since the interest rate is so high that their project is not profitable anymore. The safe borrowers get driven out of the market due to the pooling with the risky borrowers.

Now the bank has only risky borrowers as clients and has to charge a even higher interest rate $r = \frac{d}{p_1} > \frac{2d}{p_1 p_2} > \frac{d}{p_2}$.

Therefore we now have adverse selection ^{ad credit market imperfection} leading to high interest rates and low repayment rates. The high interest rates have to cover the frequent defaults of risky borrowers leading to a low repayment rate.

b) Karlan and Zinman did research on adverse selection and moral hazard in credit markets. ~~Research~~ To do this they cooperated with a South-African bank lending short-term high interest rate loans. They sent letters to good customers of the bank advertising different loans. The customers had to have a loan within the last 24 months and no ~~outstanding~~ ^{outstanding} repayments.

~~Research~~ Karlan and Zinman made 3 different groups by randomly sending different letters with different credit offers.

Group I low interest rate at the beginning, ~~stay low~~

Group II high interest rate advertised but when ^{ask} ~~pay~~ ^{pay} money the customers got told that they only have to pay back a low interest rate.

Group III high interest rate that stayed high.

Next from that the groups shouldn't be different in any character etc.

~~Research~~ Then they looked at the repayment rates of the groups. To estimate moral hazard they compared group I and III and to estimate adverse selection they compared group I and II.

Section B Question B.2

b) Part II

In the group with the high interest rate there should be more risky borrowers but since they have the same interest rate when the money was paid out ~~the~~ ~~lender~~ and ~~there~~ eliminated the moral hazard which makes it possible to estimate adverse selection.

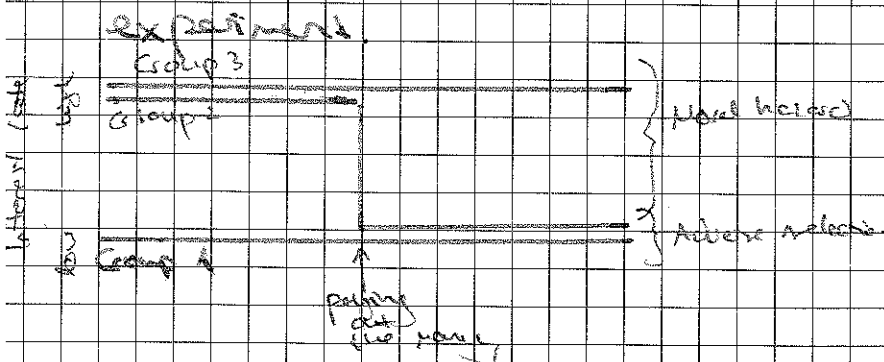
A simple reduction in interest rates would not have been possible since they could not distinguish between moral hazard and adverse selection ^{effect} interest rate.

If adverse selection plays an important role we would see significantly ~~lower~~ lower repayment rates in group II which contains more risky borrowers.

But their findings were that this group does not have significantly ~~lower~~ lower repayment rates.

At least in their setting adverse selection does not play an important role but moral hazard does.

Nevertheless, we cannot fully deny the effect of adverse selection since all of their groups contained only borrowers with good credit history and therefore the groups were not entirely random samples but a lot a ~~lot~~ of really risky borrowers have probably been already excluded from the



NO QUESTION B.3! Only B.1 and B.2 solved!