



Course information 2015-16

EC3044 Economics of development

This course extends and deepens students' understanding and application of microeconomic and macroeconomic principles. It equips students with the theories and principles which are necessary to analyse problems of economic development, introduces students to relevant empirical work and analyses policy issues in the light of both economic theory and empirical evidence.

Prerequisite

If taken as part of a BSc degree, courses which must be passed before this course may be attempted:

EC2065 Macroeconomics

and either

MN3028 Managerial economics

or

EC2066 Microeconomics

Exclusions

May not be taken with
DV2169 Economic policy analysis in international development.

Aims and objectives

The aims of this course are to:

- discuss key issues in the process of economic development
- enhance students' ability in applying economic models to study development problems
- discuss the relevant empirical literature with an eye toward forming policy recommendations

Assessment

This course is assessed by a three hour unseen written examination.

Learning outcomes

At the end of this course and having completed the essential reading and activities students should be able to:

- ✓ outline the main theories and concepts in development economics
- ✓ Select and analyse economic theories relevant for issues in economic development
- ✓ summarize and evaluate empirical work in development economics
- ✓ compare and contrast empirical work for the purpose of designing policy for a specific context

Essential reading

The main reference for this course will be Ray, D. *Development Economics*. (Princeton NJ: Princeton University Press, 1998)

The course will however extensively use journal articles for the empirical parts. The following recent book provides a good start for the micro topics:

Banerjee, A. and E. Duflo, *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, (Public Affairs, 2011)

Syllabus

This is a description of the material to be examined, as published in the *Programme handbook*. On registration, students will receive a detailed subject guide which provides a framework for covering the topics in the syllabus and directions to the essential reading.

The following topics are covered in different parts of the guide:

Part I: Cross-country differences and macro models of development

Concept and measurement of economic development and the characteristics of developing countries.

Models of economic growth and development including endogenous growth theories and multiple equilibria models and their potential in explaining income disparities across countries.

Role of history and institutions in shaping current economic outcomes and explaining development.

Part II: Markets in developing countries

Understanding demand for education, role of education infrastructure, and the incentives of education providers in developing countries.

Demand for health and nutrition in developing countries, provision of public health services and the issue of sex imbalance.

Importance of agriculture and land reform in shaping lives of the poor. Forms of agricultural contracts.

Forms of credit and insurance markets in developing countries. Microfinance and its impacts on lives of the poor.

Part III: State and the process of development

Infrastructure and its impact on development; globalization and the role of trade policy; environment and development.

Taxation and development, informal economy and tax evasion. Development aid and its effectiveness in improving outcomes.

Students should consult the *Programme Regulations for degrees and diplomas in Economics, Management, Finance and the Social Sciences* that are reviewed annually. Notice is also given in the *Regulations* of any courses which are being phased out and students are advised to check course availability.

Examiners' commentaries 2015

EC3044 Economics of development – Zone A

Important note

This commentary reflects the examination and assessment arrangements for this course in the academic year 2014–15. The format and structure of the examination may change in future years, and any such changes will be publicised on the virtual learning environment (VLE).

Information about the subject guide and the Essential reading references

Unless otherwise stated, all cross-references will be to the latest version of the subject guide (2014). You should always attempt to use the most recent edition of any Essential reading textbook, even if the commentary and/or online reading list and/or subject guide refer to an earlier edition. If different editions of Essential reading are listed, please check the VLE for reading supplements – if none are available, please use the contents list and index of the new edition to find the relevant section.

Comments on specific questions

Candidates should answer EIGHT of the following twelve questions: FIVE from Section A (5 marks each) and any THREE from Section B (25 marks each). Candidates are strongly advised to divide their time accordingly.

If more questions are answered than requested, only the first answers attempted will be counted.

Section A

Answer five questions from this section.

Question 1

Standard of living differences between countries can be correctly measured by PPP adjusted real per capita GDP. True or False? Explain.

Reading for this question

Subject guide, Chapter 1.

Ray, D. *Development economics*. (Princeton, NJ: Princeton University Press, 1998) [ISBN 9780691017068] Chapter 2.

Deaton, A. 'Income, health and wellbeing around the world: evidence from the Gallup World Poll', *Journal of Economic Perspectives* 22(2) 2008.

Approaching the question

False. PPP adjusted per capita income is to adjust per capita income for purchasing power parity. Why is this important? The reason is that although the prices of goods may abide by the law of one price (more or less and in the long run), there is no force to make the non-tradable goods/services prices equalise. Hence \$1 will always buy more goods and services in New Delhi than in New York. So we need to adjust for PPP. Even

though this is probably the best measure we have, there are still problems, particularly because output in developing countries may be undervalued because output in subsistence agriculture is not monetised and hence not counted (i.e. a farmer may keep part of their rice output for next year's seed instead of buying from the market), the informal sector/black economy, and the value of housework and DIY. Standards of living are also affected by leisure time, and buying merit goods (such as free education and health), and public goods such as defence. To the extent that different countries are different in any of the above, standards of living cannot be precisely comparable. As an example, a thick coat is a necessity in Norway, but not in most of India. To buy a thick coat will mean making an expenditure so this cost will be higher in Norway than in India, and will be reflected in output/expenditure. But does it mean that standards of living in Norway are that much higher?

Question 2

Assume a family owns two plots of land, one cultivated by the husband and the other by the wife. If the family is an 'efficient household' then it must try to maximise income/output and only afterwards work out how to split the gains among the two cultivators. Does empirical evidence support this view?

Reading for this question

Banerjee, A. and E. Duflo *Poor economics: a radical rethinking of the way to fight global poverty*. (New York: PublicAffairsTM, 2011) [ISBN 9781586487980] Chapter 7, particularly p.125.

Approaching the question

Chris Udry (in Banerjee and Duflo, 2011, p.124) has tested this in Burkina Faso where each household member works a separate plot. Empirical findings reject the efficient household model. Plots cultivated by women were allocated less male labour, less child labour and less fertiliser. He argues that, especially in the case of fertilisers, using a little bit more on all plots would have increased output considerably more than using a lot on one (male) plot. By reallocating some fertiliser and a little bit of male labour to plots cultivated by women, the household could have increased output by 6 per cent without increasing expenditure.

Question 3

In a world where poor households have many children, children of those households receive less education. True or false? Explain.

Reading for this question

Subject guide, Chapter 7.

Banerjee and Duflo (2011) Chapter 7, particularly pp.108–09.

Angrist, D.J., V. Levy and A. Schlosser 'New evidence on the casual link between the quantity and quality of children', NBER Working paper 11835, 2005.

Approaching the question

True. This is the classic Becker's argument regarding the quality-quantity trade off (specified in Banerjee and Duflo, 2011, pp.108–09). When a household has many children, the parents devote fewer resources to each (in terms of food, health expenditure and schooling) and hence they are less healthy and educated. There are many studies that have empirically tested this. Angrist et al. (2005) found that large family size has no negative effect on the education of children in Israel, even among the Israeli Arabs, who are mostly poor. An experiment in Bangladesh introduced family planning in Matlab as well as improved health care

for the participating children. The women who participated reduced their fertility (to 1.2 fewer children on average) and the experiment resulted in improved child health and hence survival; however, it did not increase the height, weight, school enrolment or years of education of the participating children. In general, therefore, the evidence tends to support the statement.

Question 4

Assume in a remote village villagers pool their income to help each other (perfectly insure). Now assume one villager experiences a fire in his farm that destroys his crop. No other farm is affected. Is there a need for government intervention in this case?

Reading for this question

Subject guide, Chapter 11.

Ray (1998) Chapter 15.

Approaching the question

Shock effects can be modelled in the following way. In a particular village $Y_i = A + \theta + \varepsilon_i$, Y_i is villager i 's income, A is the global average, θ is the village level shock and ε is idiosyncratic shock to each villager. If everyone in the village pools their income and consumes the average income, then average $Y = A + \theta$. Since all individuals pool their income, then consumption = average $Y = A + \theta$. The individual farm's fire damage affects ε_i so the affected individual is covered and there is no need for government intervention.

Question 5

Evidence shows that more accountable governments are more successful in dealing with disasters. True or false? Explain.

Reading for this question

Sen, A.K. *Poverty and famines: an essay on entitlement and deprivation*. (Oxford: Oxford University Press, 1983) [ISBN 9780198284635].

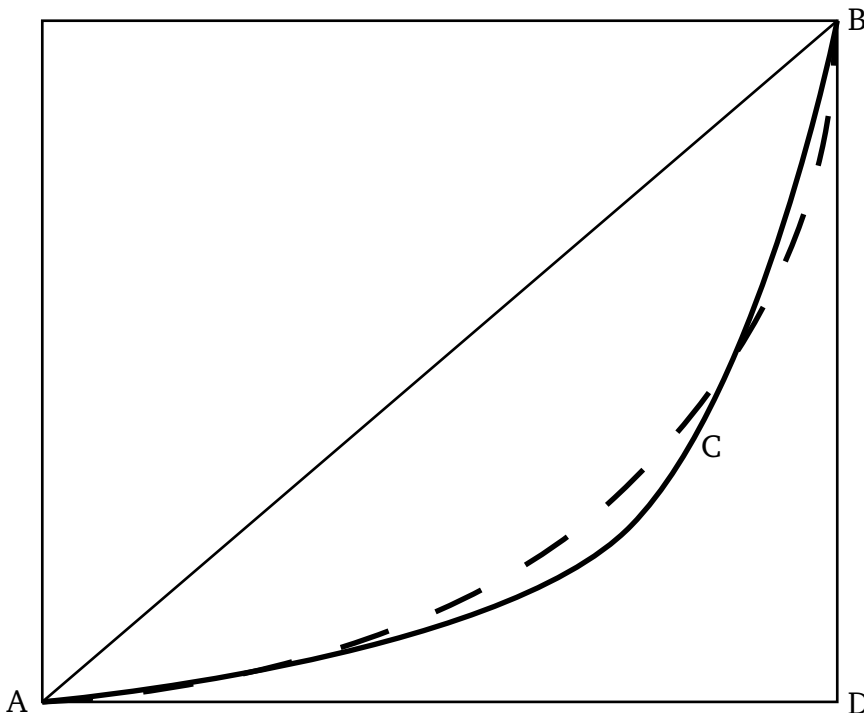
Besley, T. and R. Burgess 'Halving global poverty', *Journal of Economic Perspectives* 17(3) 2003, pp.3–22.

Approaching the question

True. Sen showed that the more left-wing states of India dealt with famines better than others, as they mobilised public works programmes faster and to a greater extent. Besley and Burgess (2003) showed that the states in India where there was a higher circulation of newspapers were significantly more responsive to food shortages that resulted from droughts. In addition, elected state governments spent more on food distribution programmes during disaster periods in these areas. Hence empirical evidence tends to support the hypothesis that the more accountable governments are more successful in dealing with disasters.

Question 6

Briefly explain how we measure inequality by a Lorenz curve and by the Gini coefficient. Consider the following graph. Will the Lorenz curve and the Gini coefficient rank the two countries in the same way?



Reading for this question

Subject guide, Chapter 5.
Ray (1998) Chapter 6.

Approaching the question

A good answer must first explain the Lorenz curve and the Gini coefficient. The Lorenz curve is the plot of the cumulative population share versus the cumulative income share. We can only say that a country has less inequality if the Lorenz dominance is present. This means the country's Lorenz curve lies entirely within the other country's Lorenz curve and closer to the line of perfect equality, AB. The Gini coefficient is the ratio of ACB to triangle ADB. From the diagram, the two Lorenz curves cross and hence it is impossible to say which is more equal using the Lorenz curves. All we can say is that at the top of income distribution, the country represented by the dotted curve is more equally distributed, and in the middle the other country is more equally distributed, but at the bottom they are very similar. However, it is possible for the Gini coefficient to give the same ranking or different ranking to the two countries.

Section B

Answer three questions from this section.

Question 7

Reading for this question

Subject guide, Chapter 16.

Burnside, C. and D. Dollar, 'Aid, policies and growth', *American Economic Review* 90(4) 2000, pp.847–68.

- a. **What are the arguments for foreign aid having a positive impact on developing countries?** (10 marks)

Approaching the question

Developing countries are likely to suffer from a lack of investment or sufficient foreign exchange to purchase capital goods. This is the classic two gap model. Here $S - I = X - IM$ where the LHS is the savings gap and the RHS is the foreign exchange gap. The growth of the economy is impeded by whichever of the gaps is smaller. It is argued that foreign aid fills in these two gaps. The alternative theoretical model to use is the Harrod-Domar model where $g = s/v$. If the target rate of growth is g^* and $g^* > g$ and the country does not have sufficient domestic resources to finance the planned investment to achieve g^* then we can use foreign aid such that $g^* = (s + a)/v$ where a is Aid/GDP. In both of these cases the use of foreign aid is assumed to be productive.

- b. **Critically assess the impact of foreign aid in the presence of the 'savings displacement effect' and 'fungibility'.** (10 marks)

Approaching the question

Here the argument is based on Griffin's analysis using an inter-temporal consumption model. Aid can be saved and invested and hence raise future income, or it can be consumed. The inflow of capital is also likely to reduce interest rates and hence reduce incentives to save. This is the savings displacement idea. Almost all empirical evidence on the relationship between aid and savings shows a negative relationship between the two. The fungibility argument centres around the idea that aid might be diverted from the purpose it is given, or that the recipient government may reduce efforts to raise tax revenue, hence aid may not be that effective. Empirical evidence shows in some cases (the Dominican Republic) aid was fungible and in others (Indonesia, Bangladesh) it was not. In general the effect of aid on growth also depend on methodology, sample or country studied. The type of aid is also important. For example, it is argued that project aid is more productive than programme aid, or aid given by the UK is more effective than aid given by Scandinavia or France.

- c. **It is argued that foreign aid is only effective if 'good macroeconomic policies are present'. Does empirical evidence support this statement?** (5 marks)

Approaching the question

This was originally argued by Burnside and Dollar and others in a number of studies. The idea is that good macro policies (i.e. good fiscal and good monetary policy as well as more open trade policy) interact with aid to raise growth. It was also argued that good governance is also important. However, many studies since then have shown that good macro policies are very important but the effect of good governance was sample- and period-specific. In other words, if the Burnside and dollar data is extended in time, and by countries included, this result does not stand any more.

Question 8

Consider a small developing economy, Landistan, which produces two goods, wheat and tractors. The tractor industry has just been established. Landistan is relatively more endowed in land and wheat production is relatively more land-intensive. You can use either partial equilibrium analysis and/or general equilibrium analysis in your answer.

Reading for this question

Subject guide, Chapter 13.

Ray (1998) Chapters 16 (particularly section 3) and 17.

- a. **Starting from an autarkic position (no trade) show that Landistan will gain from trade, if it specialises and exports the product that it has a comparative advantage in, i.e. wheat, and imports tractors. (10 marks)**

Approaching the question

The analysis here should use general equilibrium analysis (using production possibility frontiers, PPF). It is essential to define comparative advantage. A rise in the relative price of a good in which a country has a comparative advantage results in specialisation in that good and gains from trade. After trade opens up, Landistan will produce more wheat, export wheat and get to a higher indifference curve. If we use the factor endowment theory the PPF is non-linear (see Ray, 1998, Chapter 16.3), and Landistan after trade will not completely specialise (unlike the Ricardian version in Ray, 1998, Chapter 16, section 2), but will produce more of the good that is intensive in the factor that Landistan is more endowed with – that is, wheat.

- b. **Show that imposing a tariff on imports of tractors will reduce welfare in Landistan. (10 marks)**

Approaching the question

Here candidates can use general or partial equilibrium analysis. It is easier to use partial equilibrium. Imposition of a tariff raises the domestic price of a product, raises domestic production, reduces consumption (demand) and results in a deadweight loss. Candidates should show this clearly in a graph. (The graph is presented in Ray, 1998, p.666.) Clearly the sum of the two areas WRV and SUT is the deadweight loss of the tariff. (These two areas are the difference between the loss of consumer surplus minus the gain to the government in the form of tariff revenue and the gain to the producers as producer surplus rises.)

- c. **It is argued by some that the tractor industry is an 'infant industry' in Landistan and therefore the country's welfare will rise if a tariff is imposed on imports of tractors to protect the infant industry. Analyse the potential impact of using a tariff to protect the infant industry and show the condition under which welfare may improve. (5 marks)**

Approaching the question

The results here are the same as above. Protection results in a deadweight loss. However, in the case of the infant industry there are two arguments: there is a learning effect and economies of scale. These two effects, after some time, reduce the cost of production and shift the supply of the tractors to the right. Mill argues that if the tariff is removed and there is a positive level of domestic production, then protection is justified. In other words, if the tractor industry has a positive output at the world price, with free trade, then the industry should be protected. However, for the country to gain we must have the Mill-Bastable condition. As the supply shifts right, a new producer surplus is created. After the tariff is removed, if this

new gain is greater than the deadweight loss, then protecting the tractor industry increases the net welfare of Landistan.

Question 9

Consider the case of a landlord and a landless tenant (peasant farmer) who can enter into different types of contracts with the landlord. Output is either high (H , where $H > 0$) or zero. The probability of obtaining a high output depends on the effort of the agent. If the agent puts in effort e , where $1 \geq e \geq 0$, high output H occurs with probability e and output is zero with probability $1-e$. The cost to the agent of providing effort e is $c(e) = 1/2(ce^2)$ and $c > H$. The agent's effort is unobservable to the landlord.

Reading for this question

Subject guide, Chapter 9.

Ray (1998) Chapters 11 and 12.

- a. What is the optimal amount of effort in the case where land is cultivated by the owner? How will a change in H or c affect the optimal level of effort? (10 marks)

Approaching the question

Consider the socially optimal amount of effort, which is the expected output less the cost of effort. If the landlord cultivates himself, then the total surplus is maximised and this gives the first best solution. The owner/landlord maximises the surplus $[eH + (1-e)0] - 1/2(ce^2)$. The terms in the square brackets give the expected value of output and the third term is the cost of effort. To maximise we need $dL/de = H - ce^* = 0$, therefore $e^* = H/c$ and e^* is the optimal amount of effort, or the level of effort that yields the highest social return. Hence H is positively related to effort – that is, the higher the potential gain the more effort is exerted. And c is inversely related to effort – that is the greater the cost of effort, the less effort is provided.

- b. Assume now the landlord may wish to hire the tenant. In this case the landlord pays h if the output is H and pays l if output is 0. What is the optimal amount of effort by the tenant? (10 marks)

Approaching the question

In this case the tenant maximises $[eh + (1-e)l] - 1/2(ce^2)$. In a high output state the tenant gets h per effort. In a low state the tenant gets l per effort. Therefore the expected output is $[eh + (1-e)l]$. The tenant will maximise his share, which is the expected output less the cost of effort (assumed to be the same as that of the landlord). The first order condition implies that $dL/de = h - l - ce^{**} = 0$, hence $e^{**} = (h-l)/c$. This is the incentive compatibility constraint.

- c. Assume now that the landlord offers a fixed wage, w , to hire the peasant. What is the optimal amount of effort by the peasant now? (5 marks)

Approaching the question

In this case the landlord gets to maximise $ew + (1-e)w - 1/2(ce^2)$. The first order condition is $dL/de = w - w - ce^{***} = 0$, so $e^{***} = (w-w)/c = 0$. This is related to the principal-agent problem. The extra reward, w , does not provide extra incentive for the tenant to work harder.

Question 10

It is often claimed that there are millions of missing women, particularly in India and China.

Reading for this question

Subject guide, Chapter 8.

Qian, N. 'Missing women and the price of tea in China: the effect of sex specific earnings on sex imbalances', *Quarterly Journal of Economics* 123(3) 2008, pp.1251–85.

- a. What is meant by the term 'missing women' and what are the likely causes of this phenomenon? (10 marks)**

Approaching the question

This is a concept first used by A.K. Sen. His argument was that during the West Bengal famine, infant mortality of girls rose dramatically. This is contrary to expectation since usually infant mortality of girls is usually lower than that of boys. Later Sen argued that if we apply conventional sex ratios there should be 250 million more women in China and the Indian subcontinent. The explanation for this is that, when experiencing severe poverty, parents choose between allocating resources to sons or daughters. A preference for sons, for whatever reason, implies that people in these situations feed their sons better than their daughters and provide better health care for sons compared to daughters.

Approaching questions 10 (b) and (c)

The following two answers are based on Qian, N. 'Missing women and the price of tea in China: the effect of sex-earnings on sex imbalances', *Quarterly Journal of Economics* 123(3) 2008, pp.1251–85.

The table referred to is on p.1272.

- b. With respect to 'gender balance' discuss the central objectives and the main findings of the study. (10 marks)**

In the table, tea x post and Orchard x post are the interaction effects between tea regions and post reform, and fruit regions and post reform. Qian argued that women are better at the production of tea, which needs nimble fingers, and men in the production of orchard fruit, which requires heavy lifting. In the early period of agricultural reform in China (1978–80) households were allowed to choose what they wished to produce. Qian uses exogenous increases in the price of tea and fruit, and hence wages in tea production and fruit production, to look at gender ratios. Gender ratio tends to favour girls in tea-producing areas. See the coefficient of gender x post and against them in fruit-producing parts, and the increase in the male fraction in fruit-producing parts after the reform. In regions that were not particularly suitable for either tea or fruit production, gender ratios did not change. The idea is therefore that economic incentives result in a gender imbalance among children. Where daughters are valuable, gender bias is observed less.

- c. Why does Qian use an instrumental variable technique and what is/are her instrument(s)? (5 marks)**

The problem might be that the increase in the price of tea might change the reasons for women to pick tea. Families that have preference for girls may switch to tea production. To account for this Qian uses the instrumental variable technique. She uses the average slope of farms in the region as an instrument and finds identical results – see the table on p.1272 of Qian (2008).

Question 11

Assume parents in a poor developing country provide education to their children for a selfish reason, the child transfers a proportion, λ , of her income to the parent when she starts working, after completing her education. This implies that the utility function of the parent is $U = U(y,S) = \lambda \log y - \theta(S)$, where $\theta(S)$ is the cost of providing schooling to the child. The relationship between education and earnings is assumed to be linear, and is given by: $\ln y = \alpha + \beta S$, where S is years of education and β is the average return to an extra year of education. Assume that the marginal cost of education is $\delta h(S)/\delta S = h'(S) = \Delta + \mu S$, where $\mu > 0$ and $\Delta > 0$. Δ and μ are parameters and positive showing showing direct (cost of books, school fees, etc) and the opportunity cost of S , which is the forgone earnings if the child was working.

Reading for this question

Subject guide, Chapter 7.

Banerjee and Duflo (2011) Chapter 4.

- a. Interpret the $h'(S)$ function. (5 marks)

Approaching the question

This is the marginal cost of education and it is derived from the assumption that the cost of education is convex and increasing in S , years of education. The marginal cost is $\Delta + \mu S$, where $\mu > 0$ and this implies that the marginal cost increases in years of education.

- b. Derive an expression for the optimal years of schooling provided by the parent and interpret the result. (10 marks)

Approaching the question

We start by $U = U(y,S) = \lambda \log y - \theta(S)$. Now substitute $\ln y = \alpha + \beta S$ into the utility function. In this case we get $U = U(y,S) = \lambda \log y - \theta(S) = \lambda (\alpha + \beta S)$. Maximising the utility function implied setting the first order with respect to S equal to zero. This gives $S^* = (\beta \lambda - \Delta)/\mu$. This implies that the higher the return to S , which implies higher potential earnings for the child in the future, the higher S provided by the parent. Similarly the higher the share of income transferred to the parent in the future, the more the parent provides S . On the other hand, the higher the cost of providing S , the lower the numbers of years of education provided. Hence, S is increasing in returns to the parent and decreasing in costs to the parent.

- c. Can this model be used to explain why average years of S may be lower for females compared to males? (10 marks)

Approaching the question

The male-female differences may be explained by the potential extra cost of educating girls. In some societies, dowries are paid upon the marriage of daughters, which is effectively a fixed cost. This increases the cost of having daughters. Also, girls may marry and leave home (to live in their husbands' village) hence no transfer is made to the parents. Even if they are still at home, daughters may earn a lower wage, because of discrimination, and therefore their ability to make a transfer to their parents in future is lower.

Question 12

Banerjee and Duflo (2010), *Poor Economics*, identify five stylised facts about informal credit markets.

Reading for this question

Subject guide, Chapter 10.

Ray (1998) Chapter 14.

Banerjee and Duflo (2011) Chapter 7.

Banerjee, A.V. and E. Duflo 'Giving credit where it is due', *Journal of Economic Perspectives* 23(1) 2009, pp,167–92.

- a. Briefly explain the five stylised facts. (5 marks)**

Approaching the question

The stylised facts mentioned in Banerjee and Duflo (2009, 2011) are:

- Higher lending rates in the informal sector. In Pakistan an average interest rate of 79 per cent was observed when the marginal cost of funds was only 48 per cent.
 - Variance of interest rates within the same credit market was high. Standard deviation of interest rates in Pakistan was 38 per cent.
 - The rich pay a lower interest rate than the poor.
 - Default rates are low and cannot explain the large variation in the interest rates.
 - Lenders do not have high monopoly power. In Pakistan there is no evidence that local moneylenders make a lot of profit.
- b. Explain the lender's risk hypothesis and calculate what interest rate the local money lender has to charge if he can borrow from the formal market (local borrowers do not have access to the formal market) at 10% and wants to make an additional 10% return on top of the breakeven interest charge when the probability of default is 50%. For simplicity assume the size of the loan is 1. (10 marks)**

Approaching the question

Candidates should derive the model. The solution, assuming the zero profit condition, is $p(1+i) - (1+r) = 0$, where i is return to lender to cover the opportunity cost of lending, r , with a repayment rate of $p = 0.5$. The answer is 120 per cent.

- c. Assume a potential borrower has an asset (collateral) of value w and wishes to borrow amount k to invest, where $k > w$. This investment results in $f(k)$ units of output. Explain under what circumstances the borrower might strategically default and show the amount of the loan is positively related to initial wealth, w . (10 marks)**

Approaching the question

Strategic default occurs if the borrower can spend 's' proportion of his capital and hide his success. The borrower will default if the net profit from repayment is smaller than net profit from defaulting. If he chooses to repay this is the payoff: $f(k) - (1+i)(k-w)$. If he defaults the payoff is $f(k) - sk$ so the default condition is $f(k) - (1+i)(k-w) < f(k) - sk$, which gives $k <= (1+i)w / \{(1+i)-s\}$. This implies that the larger the evasion cost, s , the greater the amount borrowed.