FernUniversität in Hagen

Fakultät für Wirtschaftswissenschaft
Lehrstuhl für Internationale Ökonomie
Prof. Dr. Hans-Jörg Schmerer

Name: _____ Vorname: _____

Matrikelnummer _____

Klausur:
International Trade and Economic Development

Modulnummer:
32721

Prüfer:
Prof. Dr. Hans-Jörg Schmerer

Termin:
17.09.2019

9.00 - 11.00 Uhr

Question:	1	2	3	Total
Points:	40	35	25	100
Score:				

Note: _____

Datum: _____

Unterschrift des Prüfers: _____

Please pay attention to the following points!

The distributed exam should have 25 pages with questions including four additional sheets of paper. Please check immediately if you have all pages and write your name and matriculation number on the title page.

Write your answers on the free space under the questions or on the additional sheets. If you need additional space, you can use the reverse side.

The exam consists of 3 questions. You have to answer all questions. You can achieve a maximum number of 100 points. The exam is passed if you achieve at least **50** points.

Permitted are dictionaries (German - English / English - German) for the sole purpose of translation; not allowed are lexica, technical dictionaries, or monolingual dictionaries as well as collections of sheets, handwritten, copied or printed from the internet. Additional entries (particularly remarks, underlining, and stickers) are not permitted.

The use of a pocket calculator is only allowed if and only if it belongs to one of the following model series:

- Casio fx86 or Casio fx87,
- Texas Instruments TI 30 X II,
- Sharp EL 531.

The use of other pocket calculator models will be rated as attempt to deceive and sanctioned with the grade unsatisfactory (5,0). You can check if a pocket calculator belongs to one of the model series stated above by comparing the model name attached to the pocket calculator with one of the names above: if there is full accordance, the model is allowed. If the model name on the calculator is more extensive but contains one of the model names stated above in full, the model is permitted, too. In all other cases the model is not permitted. Previous or successor models, which are not stated in the list above, are not permitted, too.

Hinweise zur Klausur - Bitte unbedingt beachten!

Die ausgeteilten Klausurunterlagen bestehen aus insgesamt 25 Seiten mit Fragen inklusive vier Seiten Extrapapier. Bitte kontrollieren Sie sofort, ob Sie ein vollständiges Klausurexemplar erhalten haben und tragen Sie auf dem Deckblatt Ihren Namen und Ihre Matrikelnummer ein.

Notieren Sie Ihre Lösungen auf den Lösungsbögen. Sollten Sie zusätzlichen Platz benötigen, können Sie auch die Rückseite der Lösungsbögen oder das Zusatzpapier verwenden.

Die Klausur besteht aus 3 Aufgaben. Es sind alle Aufgaben zu beantworten. Die maximal erreichbare Punktzahl beträgt 100. Die Klausur ist bestanden, wenn Sie mindestens **50** Punkte erzielen.

Zugelassen sind Wörterbücher (Deutsch - Englisch / Englisch - Deutsch) zum Zwecke der Übersetzung; nicht zugelassen sind Lexika, Fachwörterbücher oder einsprachige Wörterbücher sowie handgeschriebene, aus dem Internet ausgedruckte, oder kopierte Blattsammlungen. Zusätzliche Eintragungen (insbes. Anmerkungen, Unterstreichungen und Klebezettel) sind nicht erlaubt.

Die Verwendung eines Taschenrechners ist dann und nur dann erlaubt, wenn dieser einer der folgenden Modellreihen angehört:

- Casio fx86 oder Casio fx87,
- Texas Instruments TI 30 X II,
- Sharp EL 531.

Die Verwendung anderer Taschenrechnermodelle wird als Täuschungsversuch gewertet und mit der Note nicht ausreichend (5,0) sanktioniert. Ob ein Taschenrechner einer der Modellreihen angehört, können Sie selbst überprüfen, indem Sie die vom Hersteller auf dem Rechner angebrachte Modellbezeichnung mit den oben angegebenen Bezeichnungen vergleichen: Bei vollständiger Übereinstimmung ist das Modell erlaubt. Ist die auf dem Rechner angebrachte Modellbezeichnung umfangreicher, enthält aber eine der oben angegebenen Bezeichnungen vollständig, ist das Modell ebenfalls erlaubt. In allen anderen Fällen ist das Modell nicht erlaubt. Eventuelle Vorgänger- oder Nachfolgermodelle, die nicht in der oben aufgeführten Liste enthalten sind, sind ebenfalls nicht erlaubt.

1. In the basic Solow model the fundamental law of motion in per capita representation and φ normalized to 1 reads as

$$k(t+1) = s \cdot o(k(t)) + (1-\delta)k(t) \tag{1}$$

   (a) Interpret the fundamental law of motion in equation 1.

(b) Compute the steady state equilibrium and illustrate your results in an appropriate graph.

(c) Use the Implicit Function Theorem and show how per capita capital stock reacts to a higher saving rate s. Explain your result intuitively.

(d) To achieve the optimal steady state one has to choose an appropriate saving rate s. How is the optimal saving rate called? Is it optimal to aim at a saving rate that maximizes output or consumption? Give reasons for your answer.

(e) Derive the optimal saving rate using appropriate calculus.

(f) Illustrate your result in an appropriate graph.

2. The model of Feenstra and Hanson considers two countries which we call North (N) and South (S). The production function is

$$\ln Y = \int_0^1 \alpha(z) \ln x(z) dz \tag{2}$$

with

$$x(z) = A \left[\min \left\{ \frac{L(z)}{a_L(z)}, \frac{H(z)}{a_H(z)} \right\} \right]^{\theta} K(z)^{1-\theta} \quad , \quad z \in [0,1]. \tag{3}$$

(a) Explain how production takes place in this model. Which input factors are used? What do all parameters in equation (3) mean? What is produced?

(b) In EA2 you already showed that the minimum costs of producing one unit of $x(z)$ in country $i, i = N, S$ takes the form

$$c(w_i, q_i, r_i; z) = B_i \left(w_i a_L(z) + q_i a_H(z)\right)^{\theta} r_i^{1-\theta} \tag{4}$$

where w_i, q_i and r_i denote the factor prices of low- and high-skilled labor and capital. B_i depends on θ and A, $i = N, S$.

Suppose that the factor prices are different and that Northern capital earns a lower rate of return, i. e. $r_N < r_S$. In addition, assume that the ratio of high- to low-skilled wages is lower in the North, i. e. $\frac{q_N}{w_N} < \frac{q_S}{w_S}$.

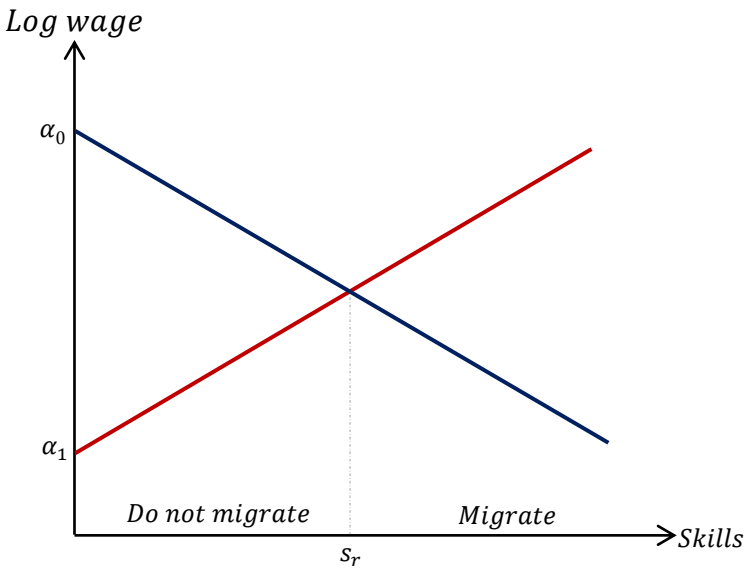
Assume that for fixed wages $c(w_i, q_i, r_i; z)$ is continuous of z.

Explain the slopes of the cost functions in North and South relative to each other. Give reasons for your answer. In addition, provide a graphical representation of your answer.

(c) Suppose that capital owners in the North shift a part of their capital to the South to earn the additional return. Explain the initial impact of this capital flow on the rate of return to capital and the costs of production. How do the production activities change? Provide a graphical representation of your answer.

(d) Explain briefly the impact of the relative demand for high-skilled labor in North and South which results from this capital flow.

3. Consider the graphical illustration of migrants self-selection in fig. 3:



(a) Borjas assumes that earnings in the origin country 0 are given by

$$\ln w_0 = \mu_0 + \epsilon_0, \tag{5}$$

If individuals migrate to country 1, they get the earnings in the destination country which are given by

$$\ln w_1 = \mu_1 + \epsilon_1, \tag{6}$$

Give an intuitive explanation of both equations and explain the two terms μ and ϵ.

(b) Assume that the migration cost is given by $C = \pi w_0$. Derive the earnings differential, I, and discuss the decision to migrate based upon the earnings differential.

(c) Define $\nu = \epsilon_1 - \epsilon_0$ and $z = -\frac{(\mu_1 - \mu_0 - \pi)}{\sigma_\nu}$ for simplicity and note that ν is a normal random variable. since ϵ_0 and ϵ_1 are normal random variables. The probability of migrating from country 0 to country 1 can be expressed as

$$\begin{aligned} P &= Pr[I > 0] && (7) \\ &= Pr\left[\frac{\nu}{\sigma_\nu} > z\right] && (8) \\ &= 1 - \Phi(z). && (9) \end{aligned}$$

Give an intuitive interpretation of this expression and show how to come from the first line (equation 7) to the second line (equation 8).

(d) It is possible to use these expressions to derive the expected earnings

$$E(\ln w_0|I>0) = \mu_0 + E\Big(\epsilon_0|\frac{\nu}{\sigma_\nu} > z\Big) \tag{10}$$

$$= \mu_0 + \frac{\sigma_0\sigma_1}{\sigma_\nu}\Big(\rho - \frac{\sigma_0}{\sigma_1}\Big)\Big(\frac{\phi(z)}{1-\Phi(z)}\Big) \tag{11}$$

$$= \mu_0 + Q_0 \tag{12}$$

Similarly, the expected value of the earnings in the destination country, conditional on migration is equal to

$$E(\ln w_1|I>0) = \mu_1 + E\Big(\epsilon_1|\frac{\nu}{\sigma_\nu} > z\Big) \tag{13}$$

$$= \mu_1 + \frac{\sigma_0\sigma_1}{\sigma_\nu}\Big(\frac{\sigma_1}{\sigma_0} - \rho\Big)\Big(\frac{\phi(z)}{1-\Phi(z)}\Big) \tag{14}$$

$$= \mu_1 + Q_1. \tag{15}$$

Interpret the selection bias terms Q_0 and Q_1 with regard to Fig. 3. Give necessary and sufficient conditions for the relationship between ρ, σ_0 and σ_1 to establish the self-selection pattern in Fig. 3.

Additional sheets of paper...