Universität Siegen

Fakultät III – Wirtschaftswissenschaften

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Exam "Aggregate Economic Accounting Systems"
Winter Semester 2015-16
(1st Exam Period)

Solution

Available time: 60 minutes

For your attention:

1. The exam is made up of 8 pages (including this cover page). Please check and see if the exam you are holding is **complete**.

2. For your answers, use the designated spaces. Should these not suffice, use the backside of the pages. Please do not use a **pencil**.

3. Additional materials you may use for the exam: a non-programmable calculator. (Smart phones and mobile **phones** are **not** allowed!)

4. ATTENTION: The names for variables have the same meaning as in the lecture. Insofar as you also use the same symbols for the variables as we did in the lecture you will not have to define these any further.

Question	**1**	**2**	**3**	**4**	**5**	**Sum**	**Mark**
Points achievable	10	9	17	18	6	60	
Points achieved							

Problem 1: Contributions to Growth

We consider a closed economy: $GDP_t = C_t + I_t$

We want to derive the change of GDP_t from the change of C_t and I_t .

a) Please write the above equation in terms of absolute changes by using the following approach: $\Delta X_t = X_t - X_{t-1}$). [1.5 points]

Solution: $\Delta GDP_t = \Delta C_t + \Delta I_t$
(0.5) (0.5) (0.5)

b) We want to explain the growth rate of GDP_t by the "growth contributions" of its components C_t and I_t . Please show how to derive the corresponding equation, starting from the solution to a). [5 points]

Solution:

$$\frac{\Delta GDP_t}{GDP_{t-1}} = \frac{\Delta C_t}{GDP_{t-1}} + \frac{\Delta I_t}{GDP_{t-1}}$$
(1) (1) (1)

$$\frac{\Delta GDP_t}{GDP_{t-1}} = \frac{C_{t-1}}{GDP_{t-1}}\frac{\Delta C_t}{C_{t-1}} + \frac{I_{t-1}}{GDP_{t-1}}\frac{\Delta I_t}{I_{t-1}}$$
(1) (1)

c) Please give a very brief economic interpretation of the components of the growth contribution of consumption. [3.5 points]

$\frac{C_{t-1}}{GDP_{t-1}}$: weight in GDP
(1) (1)

$\frac{\Delta C_t}{C_{t-1}}$: growth rate (1.5)

Problem 2: Calculation of Output: the Case of Banks

The following are the simplified data for a bank:

- foreign exchange commissions: 32 980
- stock-market trading commissions: 23 430
- interest received: 357 850
- interest paid: 204 650
- purchases of materials: 34 520
- purchases of IT consultancy services: 32 890
- purchases of software: 12 590
- inventory of materials at the start of the period: 7 420
- inventory of materials at the end of the period: 3 860

Calculate the output, the intermediate consumption and the value added. Assume the figure for FISIM is interest received minus interest paid. [9 points]

Output =

Intermediate consumption =

Value added =

Answer:

Output: 32 980 + 23 430 + 357 850 – 204 650 = 209 610
(0.5) (0.5) (0.5) (0.5) (1)

Intermediate consumption: 34 520 – (3 860 – 7 420) + 32 890 = 70 970
(0.5) (1) (1) (0.5) (1)

Value added: 209 610 – 70 970 = 138 640
(0.5) (0.5) (1)

Problem 3: The US Approach: Forecasting Using Chained Accounts

a) For the second quarter of 2002, called 2002 Q2, please calculate the level and the annual growth rate of total personal consumption expenditure at “2002 Q1 dollar levels”. Please show your calculation and fill in the results in the last column of the table. [12 points]

	2002 Q1		2002 Q2	
	Current dollar level	Chained dollar levels	**Forecasted growth at annual rate**	“2002 Q1 dollars” levels
Personal consumption expenditures				
Durable goods	859	976	**2.0**	
Nondurable goods	2 085	1 921	**-0.1**	
Services	4 230	3 642	**2.7**	

Answer:

$(1 + 0.02)^{1/4} * 859 = 863$
(0.5) (0.5) (0.5) (0.5)

$(1 - 0.001)^{1/4} * 2085 = 2084$ (2)

$(1 + 0.027)^{1/4} * 4230 = 4258$ (2)

[Total personal consumption expenditure 2002 **Q2** at “2002 Q1 dollar levels”:

863 + 2084 + 4258 = 7205

Total personal consumption expenditure 2002 **Q1** at “2002 Q1 dollar levels”:

859 + 2085 + 4230 = 7174]

Growth rate, annualized: $[1 + (7205 / 7174)]^{4} - 1 = 0.017 = 1.7\ \%$
(1.5) (1.5) (1) (2)

	Current dollar level	Chained dollar levels	**Forecasted growth**	"2002 Q1 dollars"
Personal consumption expenditures				
Durable goods	859	976	**2.0**	863
Nondurable goods	2 085	1 921	**-0.1**	2 084
Services	4 230	3 642	**2.7**	4 258

b) Please carefully explain the disadvantage of using chain-linked volume numbers for 2002 Q2 (instead of using expenditures at 2002 Q 1 dollar levels). [5 points]

Answer:

- they are not additive (2)

- thus, we cannot calculate the aggregate by summation of the components (3)

Problem 4: Current Accounts

We look at the following accounts:

a) On top of each account, please write the corresponding name of the account. [5 points]

b) In the accounts, the balancing items are missing: each missing item is represented by an empty box.

Please enter the names of the missing balancing items in the empty boxes in left part in each account. Please then reproduce these items in the appropriate empty boxes in the right parts of the following accounts. [13 points]

Uses	Resources
Intermediate consumption	Output at producers’ prices
Consumption of fixed capital	

Uses	Resources
Compensation of employees	
Taxes on production and imports less subsidies	

Uses	Resources
Compensation of employees	Compensation of employees
Property income	Property income
	Taxes on production and imports less subsidies

Uses	Resources
Current transfers	Current transfers

Uses	Resources
Final consumption expenditure	
Adjustment for the change in pension entitlements	Adjustment for the change in pension entitlements

Solution:

(1)

Uses	Production Account	Resources
Intermediate consumption		
Consumption of fixed capital		Output at producers' prices
Value added, net (1.5) (0.5)		

(0.5) (0.5)

Uses	Generation of Income Account	Resources
Compensation of employees		
Taxes on production and imports less subsidies		Value added, net (0.5)
Operating surplus (1)		
Mixed income (1)		

(0.5) (0.5)

Uses	Allocation of Primary Income Account	Resources
		Operating surplus (0.5)
		Mixed income (0.5)
Compensation of employees		Compensation of employees
Property income		Property income
Balance of primary incomes (0.5) (1) (0.5)		Taxes on production and imports less subsidies

(0.5) (0.5)

Uses	Secondary Distribution of Income Account	Resources
		Balance of primary incomes (0.5)
Current transfers		Current transfers
Disposable income (1.5) (0.5)		

(0.5) (0.5)

Uses	Use of Disposable Income Account	Resources
Final consumption expenditure		Disposable income (0.5)
Adjustment for the change in pension entitlements		Adjustment for the change in pension entitlements
Saving (2)		

Problem 5: Disposable Income versus Adjusted Disposable Income

a) We first look at the aggregate redistribution of income in kind account of an economy:

Uses Redistribution of Income in Kind Account Resources

	Disposable income 1604
Social transfers in kind, payable 215	Social transfers in kind, receivable 215
Adjusted disposable income 1604	

a) What are "social transfers in kind"? [4 points]

Answer:

Goods and services …

- … that are provided by general government or NPISHs
  (1) (0.5) (0.5)

- … and are delivered to individual households.
  (1) (0.5) (0.5)

b) Why are "social transfers in kind" payable (left hand-side) and receivable (right hand-side) equal in the above account? [2 points]

Answer:

Because it is the aggregate account (2)

or: because there are no social transfers in kind to and from non-residents