

# Universität Siegen

Fakultät III – Wirtschaftswissenschaften  
Univ.-Prof. Dr. Jan Franke-Viebach

Exam "International Financial Markets"  
Summer Semester 2020  
(1<sup>st</sup> Exam Period)

## Solution

Available time: 45 minutes

### For your attention:

1. Please do **not** directly write your answers into this problem set. Use the set of solution pages.
2. Please do **not** use a **pencil**.
3. Additional materials you may use for the exam: a non-programmable calculator.
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.

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Question	1	2	3	4	Sum	Mark
Points achievable	10	9.5	13.5	12	45	
Points achieved						

### **Problem 1: Listing Shares Abroad**

Please briefly explain two reasons, why firms from less-developed countries get their shares listed in stock markets abroad. [10 points]

#### **Solution:**

- reducing their cost of capital because the foreign market is more liquid  
(3) (2)
- increasing their sales of shares may be impossible at home  
(3) (2)
- signalling the quality of the firm by accepting ...  
(3)  
... the foreign rules of a better corporate governance system (2)  
  
(or: ... the scrutiny of more informed investors)

**Problem 2: Price Relations between International Financial Markets**

We are given the following variables where the domestic country is the euro area, while the foreign country is the USA:

$i$ : nominal interest rate of domestic asset (one-year rate)

$i^f$ : nominal interest rate of foreign asset (one-year rate)

$e$ : spot exchange rate [€/€]

$P$ : domestic price level

$\frac{dP}{P}$ : domestic inflation rate

$P^f$ : foreign price level

$x^e$ : expected value of  $x$

a) From the perspective of a domestic investor, please define the real rate of return on a domestic asset ( $r$ ). [2.5 points]

$r =$

**Solution:**  $r = i - \left(\frac{dP}{P}\right)^e$

(0.5) (0.5) (0.5) (0.5)

b) From the perspective of a domestic investor, please define the real rate of return on a foreign asset ( $r^f$ ). [3.5 points]

$r^f =$

**Solution:**  $r^f = \left[ i^f + \left(\frac{de}{e}\right)^e \right] - \left(\frac{dP}{P}\right)^e$

(0.5) (0.5) (0.5) (0.5) (0.5)

c) Which assumption is needed to equalize the rates of a) and b)? Please derive that assumption in mathematical terms and interpret it. [3.5 points]

**Solution:**  $r = r^f \rightarrow i = i^f + \left(\frac{de}{e}\right)^e$

(0.5) (0.5) (0.5) (0.5)

Uncovered interest rate parity  
 (0.5) (0.5) (0.5)

**Problem 3: Reference Rates**

a) What is the purpose/use of a reference rate? [2.5 points]

**Solution:** Basis (or: reference) for rates of debt instruments  
(1) (0.5) (1)

b) Please name two characteristics that a reference rate should have. [4 points]

**Solution:**

- reflect general market conditions (2)
- rate the best borrower has to pay (2)
- be established in the most liquid market segment (2)

**ATTENTION: maximum 4 points**

c) Please name two reference rates in the money market of the euro area and explain one of them. [7 points]

**Solution:**

- EURIBOR ; EONIA  
(1) (1)
- EURIBOR:
  - o rates at which banks are able to borrow from other banks (1) (1)
  - o calculated daily (1)
  - o maturities: from one month to twelve months (1)
  - o calculated as an average of the rates communicated by a panel of banks (1) (1)
- EONIA:
  - o rate at which banks are able to borrow from other banks (1) (1)
  - o calculated daily (1)
  - o maturity: overnight (1)
  - o calculated as an average of the rates communicated by a panel of banks (1) (1)

**ATTENTION: maximum 7 points**

#### Problem 4: Germany's External Financial Position

The tables on the next pages show Germany's financial balance sheet for the year 2018.

- a) Was Germany a net debtor or a net creditor to the rest of the world at the end of 2018? Please name the corresponding indicator and give the amount of Germany's net debtor/creditor position? [5 points]

**Solution:**

- indicator: negative "net financial assets" of "rest of the world"  
(1) (1) (1)
- position: Germany was a net creditor (1)
- amount: 1794 (1)

- b) Please calculate Germany's total liabilities for the end of 2018. What percentage of those were liabilities against the "rest of the world"? [7 points]

Please show your calculations!

**Solution:**

Liabilities:

domestic non-financial sectors: 9254.7 (1)

domestic financial sectors: 13242.1 (1)

total: 22496.8 (1)

Percentage:  $6661.4 / 22496.8 = 0.296$  ( or: 29.6 % )  
(3) (1)

End-of-year level; € billion

Item	Non-financial corporations	Domestic financial sectors				Total
		Monetary financial institutions 1	Non-MMF investment funds	Other financial intermediaries	Insurance corporations and pension funds 2	
<b>Financial assets</b>						
Monetary gold and special drawing rights	.	135.8	.	.	.	135.8
Currency and deposits	575.8	1 810.4	94.7	174.9	394.7	2 474.6
Currency and transferable deposits	461.5	1 180.5	58.6	59.5	22.8	1 321.4
Time deposits and savings deposits 3	114.3	629.9	36.1	115.4	371.9	1 153.3
Debt securities	43.1	1 686.5	953.8	12.9	463.4	3 116.7
short-term debt securities	4.2	8.3	7.0	0.1	3.2	18.5
long-term debt securities	38.8	1 678.3	946.8	12.9	460.2	3 098.2
Memo item						
Debt securities of domestic sectors	19.2	1 061.1	146.3	9.1	117.3	1 333.7
Debt securities of the rest of the world	23.8	625.5	807.5	3.9	346.1	1 783.0
Loans	279.5	3 529.9	26.4	312.4	292.0	4 160.6
short-term loans	195.3	366.4	.	171.3	32.4	570.1
long-term loans	84.2	3 163.4	26.4	141.1	259.6	3 590.5
Memo item						
Loans to domestic sectors	81.7	3 013.0	2.0	84.4	233.1	3 332.5
Domestic corporations	74.5	971.4	2.0	61.6	53.8	1 088.8
General government	7.2	358.1	.	0.0	93.6	451.7
Households	.	1 683.5	.	22.8	85.6	1 791.9
Loans to the rest of the world	197.8	516.9	24.4	228.0	58.8	828.1
Equity and investment fund shares	2 119.9	399.7	866.1	176.0	1 301.5	2 743.3
Equity	1 955.6	223.8	432.8	152.2	250.8	1 059.6
Listed shares of domestic sectors	302.6	57.2	92.0	97.3	9.1	255.6
Listed shares of the rest of the world	46.3	19.2	293.9	24.6	3.9	341.6
Other equity 4	1 606.8	147.4	46.9	30.2	237.9	462.4
Investment fund shares	164.3	176.0	433.3	23.8	1 050.7	1 683.7
Money-market fund shares	1.0	0.1	9.9	0.4	3.1	13.6
Non-MMF investment fund shares	163.3	175.8	423.4	23.4	1 047.6	1 670.2
Insurance technical reserves	59.0	0.0	.	.	.	0.0
Financial derivatives and employee stock options	43.7	449.3	18.6	6.9	3.8	478.6
Other accounts receivable	481.7	208.5	35.8	14.2	61.7	320.1
<b>Total</b>	<b>3 602.7</b>	<b>8 220.1</b>	<b>1 995.4</b>	<b>697.3</b>	<b>2 517.0</b>	<b>13 429.8</b>
<b>Liabilities</b>						
Monetary gold and special drawing rights	.	14.7	.	.	.	14.7
Currency and deposits	.	5 568.8	.	.	.	5 568.8
Currency and transferable deposits	.	3 612.4	.	.	.	3 612.4
Time deposits and savings deposits 3	.	1 956.3	.	.	.	1 956.3
Debt securities	187.8	1 143.3	.	150.5	20.7	1 314.5
short-term debt securities	6.1	106.7	.	2.9	1.0	110.6
long-term debt securities	181.6	1 036.6	.	147.6	19.7	1 203.9
Memo item						
Debt securities held by domestic sectors	78.9	579.8	.	81.8	5.2	666.8
Debt securities held by the rest of the world	108.9	563.5	.	68.6	15.5	647.7
Loans	1 447.4	.	39.5	705.9	24.1	769.6
short-term loans	404.0	.	.	342.0	18.3	360.3
long-term loans	1 043.4	.	39.5	364.0	5.8	409.3
Memo item						
Loans granted by domestic sectors	994.0	.	36.6	192.1	2.7	231.4
Domestic corporations	931.9	.	36.6	192.1	2.7	231.4
General government	62.0	.	.	0.0	.	0.0
Loans granted by the rest of the world	453.5	.	2.9	513.9	21.4	538.2
Equity and investment fund shares	2 684.8	321.8	2 059.1	105.4	259.7	2 746.0
Equity	2 684.8	319.1	.	105.4	259.7	684.3
Listed shares held by domestic sectors	691.2	37.3	.	27.5	44.3	109.2
Listed shares held by the rest of the world	732.9	- 8.5	.	34.9	74.5	100.8
Other equity 4	1 260.7	290.4	.	43.0	140.9	474.2
Investment fund shares	.	2.6	2 059.1	.	.	2 061.7
Money-market fund shares	.	2.6	.	.	.	2.6
Non-MMF investment fund shares	.	.	2 059.1	.	.	2 059.1
Insurance technical reserves	274.0	32.6	.	4.2	2 126.0	2 162.8
Financial derivatives and employee stock options	23.3	419.8	13.2	1.6	1.1	435.7
Other accounts payable	516.4	102.8	16.0	9.7	101.6	230.1
<b>Total</b>	<b>5 133.6</b>	<b>7 603.7</b>	<b>2 127.8</b>	<b>977.4</b>	<b>2 533.2</b>	<b>13 242.1</b>
Net financial assets 5	- 1 531.0	616.4	- 132.5	- 280.0	- 16.2	187.7

1 Credit institutions including the Deutsche Bundesbank, building and loan associations and savings certificates. 4 Unlisted shares and other equity. 5 Financial associations and money market funds. 2 Including private pension funds, burial funds assets less liabilities. and supplementary pension funds. 3 Including deposits with building and loan

General government				Domestic non-financial sectors	Rest of the world	All sectors	Item
	Households	Non-profit institutions serving households	Households and NPISHs				
<b>Financial assets</b>							
.	.	.	.	.	14.7	150.5	Monetary gold and special drawing rights
364.1	2 455.5	61.2	2 516.7	3 456.5	1 699.2	7 630.3	Currency and deposits
129.0	1 623.4	37.4	1 660.8	2 251.3	1 234.0	4 806.7	Currency and transferable deposits
235.1	832.1	23.8	855.9	1 205.3	465.1	2 823.7	Time deposits and savings deposits <sup>3</sup>
122.7	115.7	35.6	151.4	317.1	1 726.7	5 160.5	Debt securities
0.0	2.1	2.4	4.6	8.8	163.2	190.6	short-term debt securities
122.6	113.6	33.2	146.8	308.3	1 563.5	4 970.0	long-term debt securities
							Memo item
12.4	79.9	17.8	97.7	129.3	1 726.7	3 189.8	Debt securities of domestic sectors
110.3	35.9	17.8	53.7	187.8	.	1 970.8	Debt securities of the rest of the world
152.6	.	.	.	432.2	1 072.3	5 665.1	Loans
37.0	.	.	.	232.3	488.6	1 291.0	short-term loans
115.7	.	.	.	199.9	583.8	4 374.2	long-term loans
							Memo item
62.0	.	.	.	143.8	1 072.3	4 548.6	Loans to domestic sectors
62.0	.	.	.	136.5	991.6	2 217.0	Domestic corporations
.	.	.	.	7.2	80.6	539.5	General government
.	.	.	.	.	0.1	1 792.1	Households
90.6	.	.	.	288.4	.	1 116.5	Loans to the rest of the world
488.8	1 138.9	89.6	1 228.4	3 837.2	1 504.2	8 084.7	Equity and investment fund shares
457.4	583.2	12.8	596.0	3 009.0	1 362.9	5 431.5	Equity
50.2	183.0	9.1	192.1	544.8	833.7	1 634.2	Listed shares of domestic sectors
3.5	98.2	3.7	101.9	151.6	.	493.2	Listed shares of the rest of the world
403.7	302.0	.	302.0	2 312.6	529.2	3 304.1	Other equity <sup>4</sup>
31.4	555.7	76.8	632.5	828.2	141.3	2 653.2	Investment fund shares
0.0	2.3	2.9	5.2	6.2	0.7	20.5	Money-market fund shares
31.4	553.4	73.9	627.3	822.0	140.6	2 632.8	Non-MMF investment fund shares
0.9	2 274.3	.	2 274.3	2 334.3	102.5	2 436.8	Insurance technical reserves
- 38.6	.	.	.	5.1	346.5	830.1	Financial derivatives and employee stock options
87.3	31.5	.	31.5	600.5	195.3	1 115.9	Other accounts receivable
1 177.8	6 016.0	186.4	6 202.4	10 982.9	6 661.4	31 074.1	Total
<b>Liabilities</b>							
.	.	.	.	.	14.4	29.0	Monetary gold and special drawing rights
13.8	.	.	.	13.8	2 047.8	7 630.3	Currency and deposits
13.8	.	.	.	13.8	1 180.5	4 806.7	Currency and transferable deposits
.	.	.	.	.	867.4	2 823.7	Time deposits and savings deposits <sup>3</sup>
1 687.5	.	.	.	1 875.3	1 970.8	5 160.5	Debt securities
52.7	.	.	.	58.8	21.1	190.6	short-term debt securities
1 634.8	.	.	.	1 816.5	1 949.6	4 970.0	long-term debt securities
							Memo item
717.4	.	.	.	796.3	1 970.8	3 433.8	Debt securities held by domestic sectors
970.1	.	.	.	1 079.1	.	1 726.7	Debt securities held by the rest of the world
539.5	1 775.6	16.4	1 792.1	3 779.0	1 116.5	5 665.1	Loans
71.1	58.1	0.6	58.8	533.9	396.8	1 291.0	short-term loans
468.5	1 717.5	15.8	1 733.3	3 245.2	719.7	4 374.2	long-term loans
							Memo item
459.0	1 775.6	16.3	1 791.9	3 244.9	1 116.5	4 592.8	Loans granted by domestic sectors
459.0	1 775.6	16.3	1 791.9	3 182.8	1 025.9	4 440.2	Domestic corporations
.	.	.	.	62.0	90.6	152.6	General government
80.6	0.0	0.1	0.1	534.2	.	1 072.3	Loans granted by the rest of the world
.	.	.	.	2 684.8	2 653.9	8 084.7	Equity and investment fund shares
.	.	.	.	2 684.8	2 062.4	5 431.5	Equity
.	.	.	.	691.2	493.2	1 293.6	Listed shares held by domestic sectors
.	.	.	.	732.9	.	833.7	Listed shares held by the rest of the world
.	.	.	.	1 260.7	1 569.2	3 304.1	Other equity <sup>4</sup>
.	.	.	.	.	591.5	2 653.2	Investment fund shares
.	.	.	.	.	17.8	20.5	Money-market fund shares
.	.	.	.	.	573.7	2 632.8	Non-MMF investment fund shares
0.0	.	.	.	274.0	.	2 436.8	Insurance technical reserves
.	.	0.4	0.4	23.6	370.8	830.1	Financial derivatives and employee stock options
71.5	16.2	.	16.2	604.2	281.6	1 115.9	Other accounts payable
2 312.4	1 791.9	16.8	1 808.7	9 254.7	8 455.9	30 952.6	Total
- 1 134.6	4 224.1	169.6	4 393.7	1 728.2	- 1 794.4	121.4	Net financial assets <sup>5</sup>