

Escape room

Escape Inflation

Overview

Age group	16-19
No. of participants	min. 3; max. 12 (or play multiple in parallel)
Subject matter	Economics → macroeconomics → inflation and monetary policy
Keywords	Inflation, monetary policy
Playing time	60' + debriefing time
Authors	Annette Kern, University of Education Freiburg

In a few words

The escape room depicts the situation of a country which has experienced very high inflation rates for some time. The Central Bank governors have fled the country, so now the group (the students) are put in charge for monetary policy. They must find a way for the country to escape inflation, otherwise the financial system will break down and a panic will evolve. They need to solve several tasks and puzzles related to the terminology, the measurement, the causes and the consequences of inflation, before getting to decide about the monetary policy instrument to use.

The various tasks, if solved correctly, all lead to solutions made up of number codes necessary to open a total of six locks on the way to the official monetary policy toolbox.

This escape room is designed to serve as a **summative** assessment tool, so it should typically be played after the concepts have been studied. The level of difficulty of the tasks is matching the higher level economics curriculum of the IB diploma (macroeconomics; inflation; monetary policy).



Learning outcomes *[here rather: prerequisites!]*

The students ...

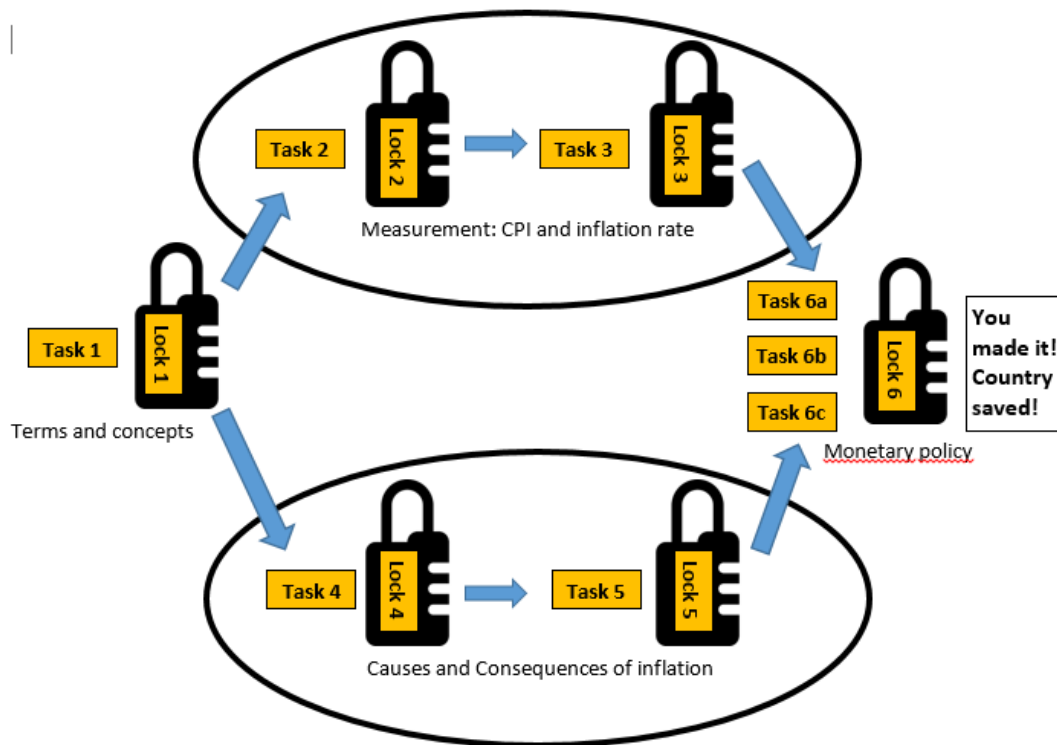
1. ...are familiar with concepts and terms related to inflation and monetary policy.
2. ...are able to calculate consumer price index (CPI) from given data on prices and quantities.
3. ...are able to calculate the inflation rate from CPI values.
4. ...are able to distinguish plausible causes from implausible causes for inflation.
5. ... are able to identify which economic actors are likely to be affected by inflation in which way.
6. ... are able to distinguish fiscal from monetary policy and choose the appropriate type of monetary policy in case of inflation.
7. ...are able to explain how monetary policy works, i.e. how an interest rate change is transmitted to affect the price level.
8. ... are able to identify potential ways in which monetary policy might fail.

Use scenario

The ER should be used as a summative assessment tool at the end of a unit on macroeconomics/inflation/monetary policy. It may also be used as revision. There are a total of 8 tasks, some of which may be worked on simultaneously – so there is some flexibility as to the ordering of tasks. For most of the tasks, however, it is recommended not to involve more than 3-4 people. For larger groups, you could have several tasks to be worked on simultaneously, or you might want to let two or more groups play the ER in parallel (there could be a competition of which group saves the economy first).



Gameflow



Phase	Duration	Description	Materials
1	5'	Introduction. Instructor reads the introductory message to introduce players to the narrative scenario.	Introductory message
2	10'	Task 1. Players are given envelope with task 1 (terms and concepts) => joint solution => unlock padlock 1	Task 1 (several copies, depending on group size); locked box
3	20'	Tasks 2-5. Players work in parallel on task 2 and 4, moving on to tasks 3 and 5, respectively, once locks have been opened.	Tasks 2 – 5 with locked boxes
4	15'	Final task 6. Players work parallelly on tasks 6a,b,c => each yields one of the three digits needed for lock 6	Tasks 6 a,b,c with locked box => prize and congratulation message in final box
5	15'	Debriefing. Instructor facilitates debriefing: What were the key contents reviewed in this ER? Which were the most difficult parts? Feedback about tasks, organisation, collaboration/ teamwork,	-



Escape room set-up

Escape room materials

Print “student material” once in case of a small group (3-6), multiple times for bigger groups or several competing groups.

Print “teacher material” for yourself once – it includes both the tasks and their solutions.

Print “material to prepare” once – this would be best on thicker paper, and you need to cut some parts here.

Colour print is **necessary** for task #1 (and its solution) only, for some other tasks it is nice to have, but not essential.

For a good overview, it is recommendable to prepare each student task in a separate envelope:

For task 2, make sure you include the small papers with receipts and notes.
For task 6, you might want to prepare 3 distinct envelopes for parts I - III.
Don't forget to include the cards for part I, and small paper scraps for part III.

Then...

- ... include envelopes for task 2 and task 4 in the box locked with lock #1.
- ... include task 3 in the box locked with lock #2.
- ... include task 5 in the box locked with lock #4.
- ... include task 6 in the box locked with **two locks** #3 and #5.
- ... include congratulations/prize in the final box locked with lock #6.

(of course, other ways of sequencing are also possible!)

Task #1 are handed to the students at the start, after the teacher has read out the introduction and clarified any questions.

Jokers may be given to students at the beginning or on the way – I recommend to hand them one Joker right at the beginning, a second one in the box locked with lock #1, and a third Joker in the box locked with two locks. But feel free to do it any other way.

Equipment

5 treasure chests or simple boxes with a total of 6 padlocks (3-digit-code)

=> the codes need to be set up according to the info given in “0_introduction_solution” in the teacher material

Stopwatch to set total time

Calculators for the groups

Pens and paper

Ruler

Prize for the final box



Escape room in action

Starting the escape room

An introductory text for the teacher to read out, and for the students, is part of the package.

Playing the escape room

The teacher should be in the classroom while students play the escape room. The teacher may be needed to give hints (some “extra clues” are provided in the package, in case students get stuck with the first task, and of course the teacher is provided with all the solutions) or reveal individual padlock code digits (students may use a JOKER to request them, the jokers are provided in the package).

Debriefing

Since this escape room is meant to be summative in nature, in the debriefing, students (and teacher) should bring up all the tasks they struggled with, so that knowledge gaps can be closed, and important/difficult points can be reviewed and consolidated.

In addition, the teacher might ask the following reflection questions:

- How did you feel having such responsibility and being under time pressure?
- What were the benefits (or drawbacks?) of having a team to work on the various tasks?
- What would you do differently next time you play such an escape room?
- How do you think monetary policy makers work in reality? (You might want to get some further information from your national central bank)

Debriefing might take 15 min or longer, if content needs to be reviewed.

"Escape Inflation!" - The Situation

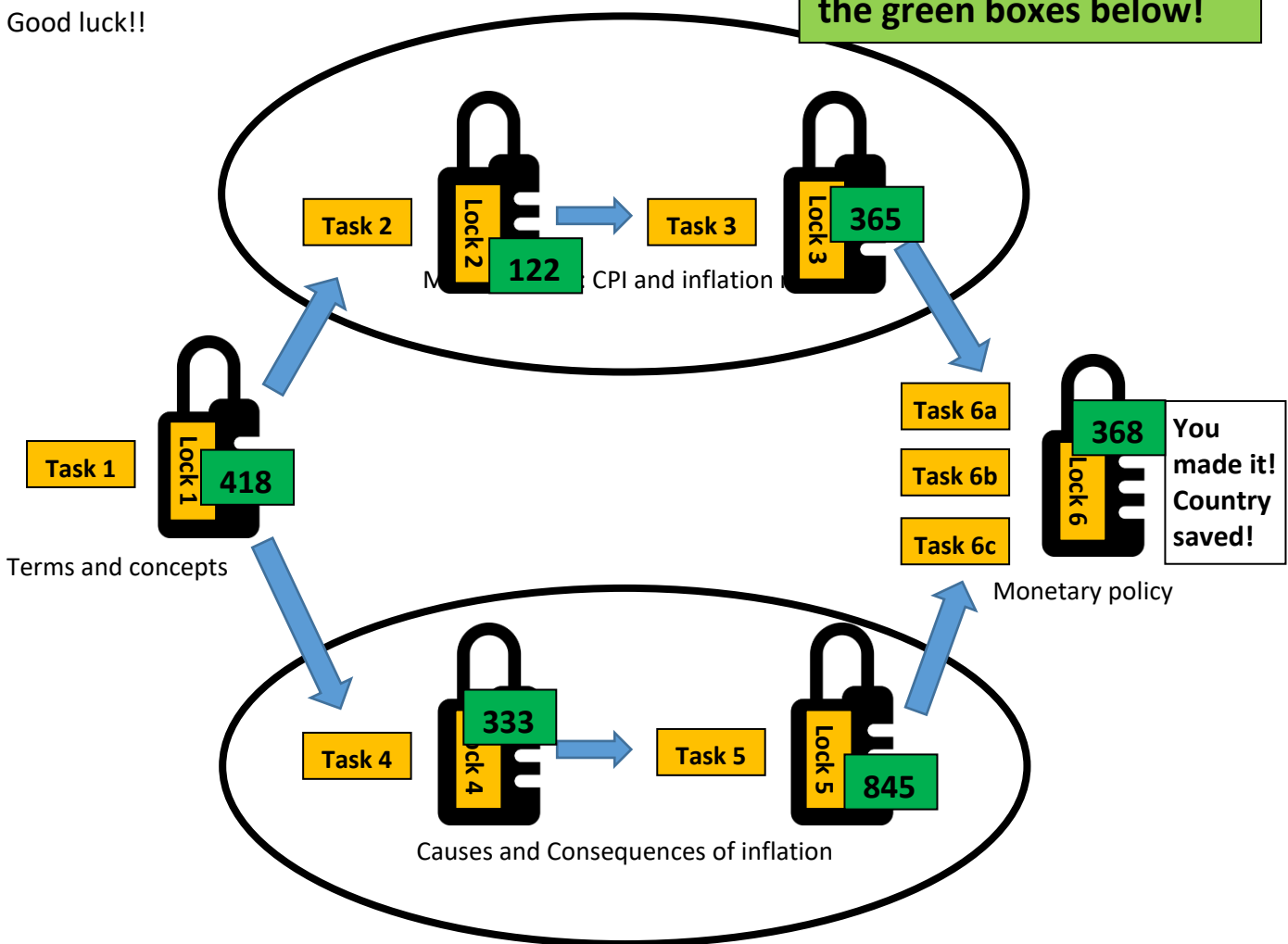
Your country is in a mess: high inflation for several years now. The Central Bank governors have fled the country. Your group has been put in charge for monetary policy. You must find a way for your country to escape inflation. You have 60 minutes before the financial system will break down and a panic will evolve. However, if during these 60 minutes you manage to find the right monetary policy tool, and are able to solve the questions on the way, you can save your country from the brim.

The various tasks will help you find the number codes necessary to open a total of six locks on the way to the official monetary policy toolbox. An opened lock will give you access to the next task. However, be aware that any lock will only allow three opening attempts! If you fail to enter the right code for the third time, you have lost it.

Keep cool, use your economics, and cooperate – then you can make it!

Good luck!!

The final solution codes for the locks are given in the green boxes below!



"Escape Inflation!" – Task 1 – Some key terms

The former central bank governors have installed an "entry check" – you first have to show that you know some key terms related to price stability and monetary policy, otherwise you cannot access any further information. To make it more difficult, they've used brainteasers rather than standard textbook definitions. When you're done, you need to come up with a 3-digit number code. => This code is needed to unlock the next tasks.

Clue	Solution	Extra clue (standard definition)
Forget about food and energy!	C O R E I N F L A T I O N	A measure of price level growth where price changes of some commodities are omitted
The sum of two macroeconomic evils	S T A G L A T I O N	A situation of economic depression and price level rises at the same time
STOP SUCH inflation (and rearrange it)	C O S T P U S H	A type of inflation which is caused by supply side factors
The prices go UP and UP and UP	D I S I N F L A T I O N	When inflation rates are positive, but decreasing
Sounds like this type of monetary policy is based on a <i>legal agreement</i>	C O N T R A C T I O N A R Y	The type of monetary policy that would be used to curb inflation
Prices are dragged upwards (and the supply side is acting the innocent)	D E M A N D P U L L	A type of inflation caused by an increase of e.g. aggregate consumption or investment
What Brazilians get paid in exchange for their factors of production?!?	R E A L I N C O M E	The amount of money earned when inflation is accounted for

CLUE (to indicate which digit goes where):



Solution:

FOUR => 4
 ONE => 1
 EIGHT = 8

} 3 digits: 4-1-8

Final solution (three digit code to open lock #1):

4	1	8
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Escape Inflation – Task 2 – Find the Consumer Price Index

Background:

The main news media is claiming that you are not qualified, and they demand that you prove your understanding by calculating the inflation rate (next task, #3), based on a consumer price index (this task, #2). The former central bank governors weren't able to do it properly...

You know your economics, so you first want to determine the Consumer Price Index (CPI) for the three following years: 2017, 2018 and 2019, using 2017 as the base year. You will find some hints in the "notebook of a representative household" which might help you.

Task:

Check out the enclosed "notebook of a representative household". From this, you figure out that there are only four goods/services traded in your economy: cars, car fuel, jazz concerts and bread. Now, taking the title of the notebook literally, and making systematic use of the information provided there, while being aware of some potential pitfalls, you should be able to calculate the CPI for 2017, 2018 and 2019, respectively. These are needed to identify the three digits needed to open the lock to #3.

Solution

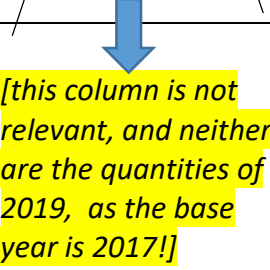
Year	CPI value (rounded)			Solution clue:
2017	1	0	0	Use first digit of this CPI value
2018	1	2	6	Use second digit of this CPI value
2019	1	7	2	Use third digit of this CPI value

Solution (three digits):

1	2	2
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2_CPI CALCULATION (solution)

From the "notebook of a representative household"...

	What we purchased (2017)	What we purchased (2018)	Price per unit 2017 / average expenditure per year	Price per unit 2018 / average expenditure per year	Price per unit 2019 / average expenditure per year
Car	1 every 5 years	1 every 7 years	12,000 ₺	15,000 ₺	21,000 ₺
			2,400 ₺	3,000 ₺	4,200 ₺
Car fuel	25 litres per month	20 litres per month	1.00 ₺ / l	1.50 ₺ / l	2.20 ₺ / l
			300 ₺	450 ₺	660 ₺
Jazz concerts	2 per month	2 per month	10.00 ₺	15.00 ₺	12.00 ₺
			240 ₺	360 ₺	288 ₺
Bread	15 loafs per month	16 loafs per month	2.00 ₺	2.00 ₺	3.00 ₺
			360 ₺	360 ₺	540 ₺
Cost of the consumption basket for 1 year (= value of the base year basket)			3,300 ₺	4,170 ₺	5,688 ₺
CPI (rounded)			100	126	172

[CPI formula: $CPI \text{ of a specific year} = \frac{\text{value of the base year basket in that specific year}}{\text{value of the basket in the base year}} \times 100$]

Remarks:

A common mistake students make is that they use the actual quantities of each year, instead of just referring to the quantities of the base year.

A possible difficulty is to transform the quantities purchased in different time spans ("1 every 5 years", "25 per month", etc.) into a common measure, for example "per year" (as in the table above). Note that the same correct final results are obtained if they use "per month" or any other time span, as long as it is the same for all the goods.

Another potential mistake of students is to use the *net* prices (i.e. without VAT) instead of the total (gross) prices of the goods.

3_INFLATION RATE (solution)
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Escape Inflation – Task 3 – Find the Inflation rate

Task:

Using the *rounded* CPI figures from task 2, calculate the inflation rate (price level of 2019 compared to 2018), rounded to one decimal place. This will help you to open lock #3 which – together with lock #5 – is needed to access the final set of tasks #6.

Solution (three digits):

3	6	5
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To calculate the rate of inflation, when you are given CPI values:

$$\textit{inflation rate in year } t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \times 100\%$$

i.e.

$$\frac{172 - 126}{126} \times 100\% = 36.5\%$$

**4_CAUSES
(solution)**

Escape inflation_Task 4_Causes of inflation_Task description

Background:

When there's inflation, it can be useful to know what the causes are. Often, it is a variety of causes at the same time. Clearly, in your country's case, one problem has been incompetent central bankers not knowing their economics, and applying wrong policies in the past. But what other determinants are potentially at play? This is something you would like to explain to the public, for them to understand that you are taking various factors into account. A former central bank intern has compiled a list of recent changes in the economy, and you would like to use it. But are all of these plausible explanations for inflation?

Task:

Read the enclosed list of six recent changes in the economy. Determine which of these are *plausible factors to cause inflation*. If in doubt, use AD-AS diagrams to check.

Using the arrow clues, you will find one digit in the solution grid at the bottom of the list.

Use the following additional clue to come up with a three-digit solution needed for lock #4:

Additional clue: Extract the root and "multiply" it by itself => then you'll get a real "three-digit solution"! This will open lock #4.

Solution (one digit):

9



The root of 9 is 3. 3 "multiplied" by 3 is 333.
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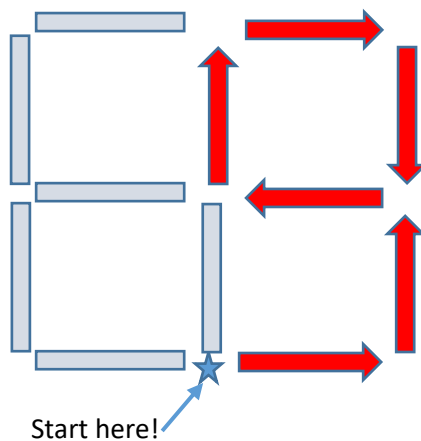


Final solution (three digits):

3	3	3
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**4_CAUSES
(solution)**

(This order is important)	Recent changes, and possible causes for rising price levels – use AD-AS diagrams to find if these are plausible causes!	If it is a plausible cause for a rising price level, then follow this arrow...	If it is not a plausible cause (but rather the opposite), then follow this arrow...
1	Our country's exchange rate appreciated (= gained in value)	↑	→ ✓
2	The oil price has risen. (And our country doesn't have oil.)	↑ ✓	←
3	The government has abolished the minimum wage.	→	← ✓
4	Consumer and investor confidence have risen.	↑ ✓	↓
5	There's a global economic upswing, and demand for our exports have increased.	→ ✓	←
6	The government has increased taxes considerably.	←	↓ ✓



=> 9

"Escape Inflation!" – Task 5 – who is affected and how?

Background:

The inflation in your country is affecting many people quite significantly. Some households have approached the central bank to complain how much they are harmed by the high inflation rate from 2018 to 2019 – either because of what they consume, or because of what their incomes are. But not everybody is affected in the same way, for some households the situation is worse than for others.

Also, the new interim finance minister (who seems to be struggling with his economics) has approached you. He wants to understand how the inflation affects his government budget and needs your expertise.

Task:

Read the three enclosed documents: On the left hand side you will find the households' or the finance minister's descriptions of their situation, respectively. On the right hand side, you will find general descriptions of how households or the government budget may be affected by the inflation in your country. Your task then is for each statement on the left hand side to find the corresponding general description on the right. On each of the three sheets, the correct matching will lead to one digit being "hit". The overall solution for this task consists of these three digits.

The solution is needed as one of the access codes to task #6.

Hint: You need to refer to information from task 2 and 3 to solve this correctly!

Final solution (three digits):

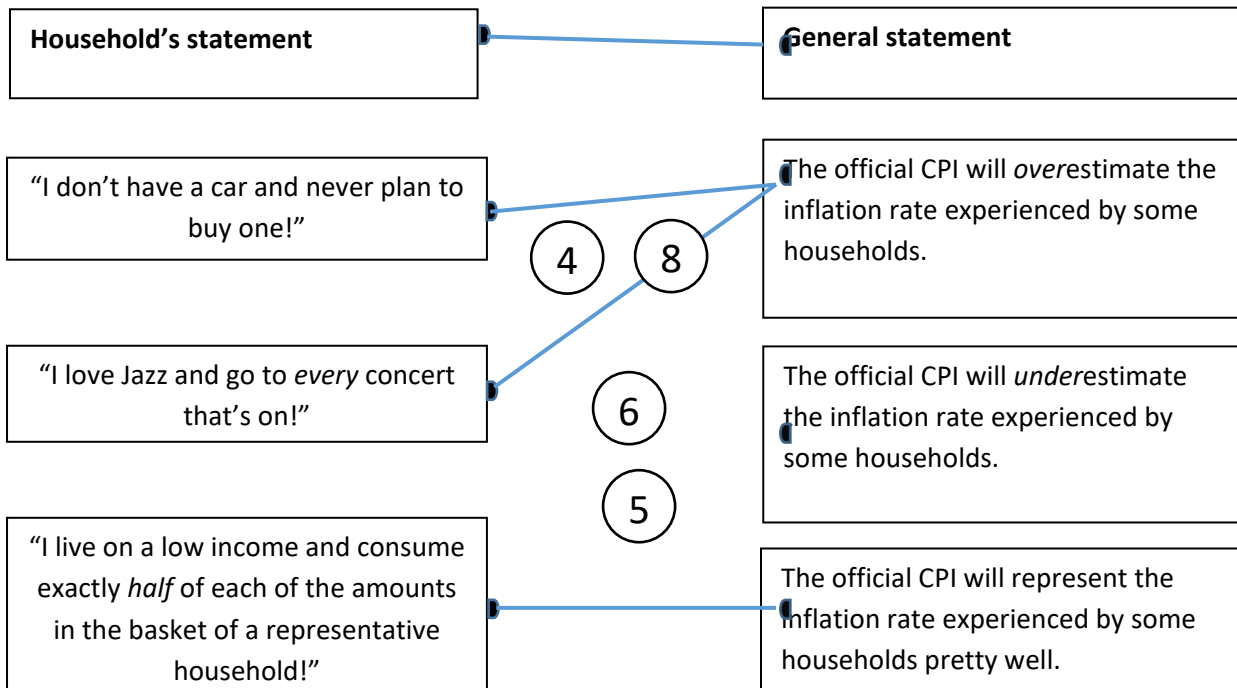
Sheet 1	Sheet 2	Sheet 3
8	4	5

"Escape Inflation!" – Task 5 – Who is affected and how? – Sheet 1: Consumers

For each household's statement, find the general statement which best corresponds to it.

Note: not every general statement may be matched, and a general statement may be matched by more than one household statement!

To do this correctly, you need to *refer to information from task 2 and 3.*



When you're done and have matched everything correctly, **one** of the number circles will be **"hit"**
=> this is the first digit you need for lock #5.

=> Solution digit (only number which is "hit"): **8**

Remarks:

The students really need to refer to the data in task 2 and 3, in order to compare the price changes of the different goods with the general rate of inflation. It shows that prices for cars and fuel have risen relatively MORE than the cost of the consumption basket as a whole. Therefore, people without a car will experience personally a lower inflation rate than the official one. Likewise, Jazz concert prices have even decreased since last year, so people who spend relatively more on concerts will also experience a lower personal inflation than the official one. Hence the matching statement "CPI will overestimate for some households". (Of course "underestimation" will also apply to some, but there's no such household's statement here!)

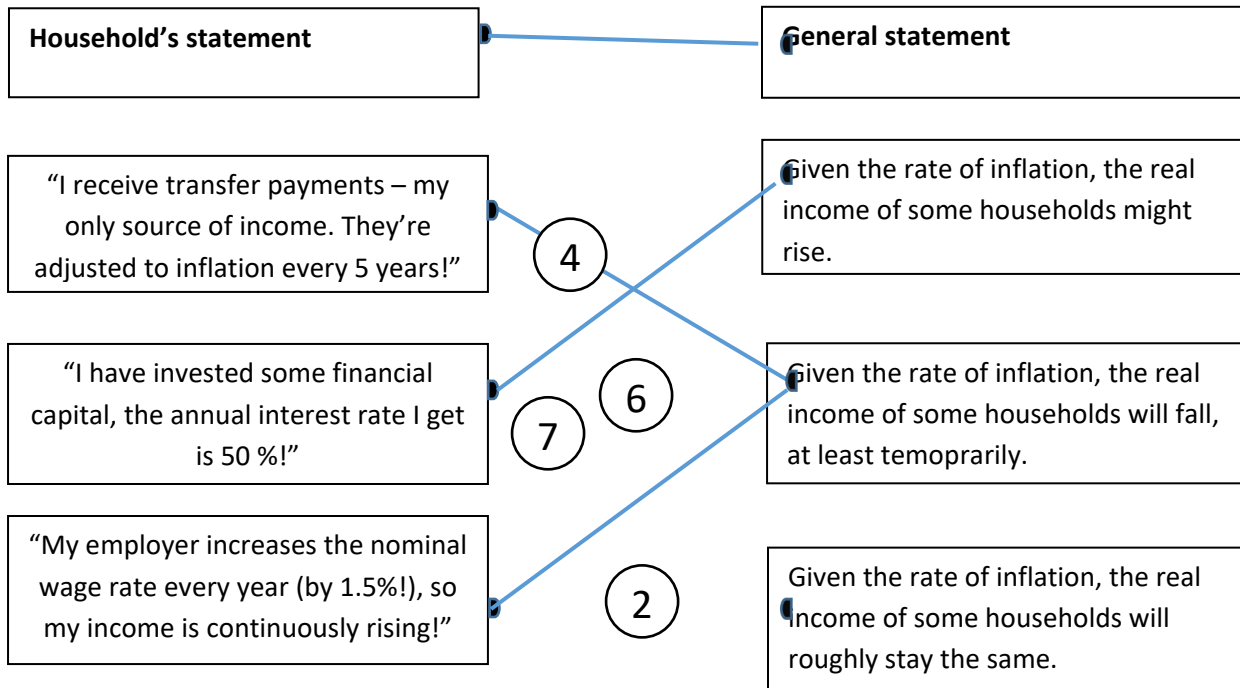
Lower income may, but doesn't have to, mean a different inflation rate. If, as in the above statement "exactly half of each of the amounts", the relative weights of consumption goods in the basket is the same as for the official (representative) basket, it must be the same inflation rate.

Escape Inflation – Task 5 – who is affected and how? – Sheet 2: Income earners

For each household's statement, find the general statement which best corresponds to it.

Note: not every general statement may be matched, and a general statement may be matched by more than one household statement!

To do this correctly, you need to refer to information from task 3.



When you're done and have matched everything correctly, **one** of the number circles will be "hit"
=> this is the second digit you need for lock #5.

=> Solution digit (only number which is "hit"): **4**

Remarks:

"Adjustment to inflation every 5 years" means that for 5 years, no adjustments are made, so real income will fall during these years, if there is inflation.

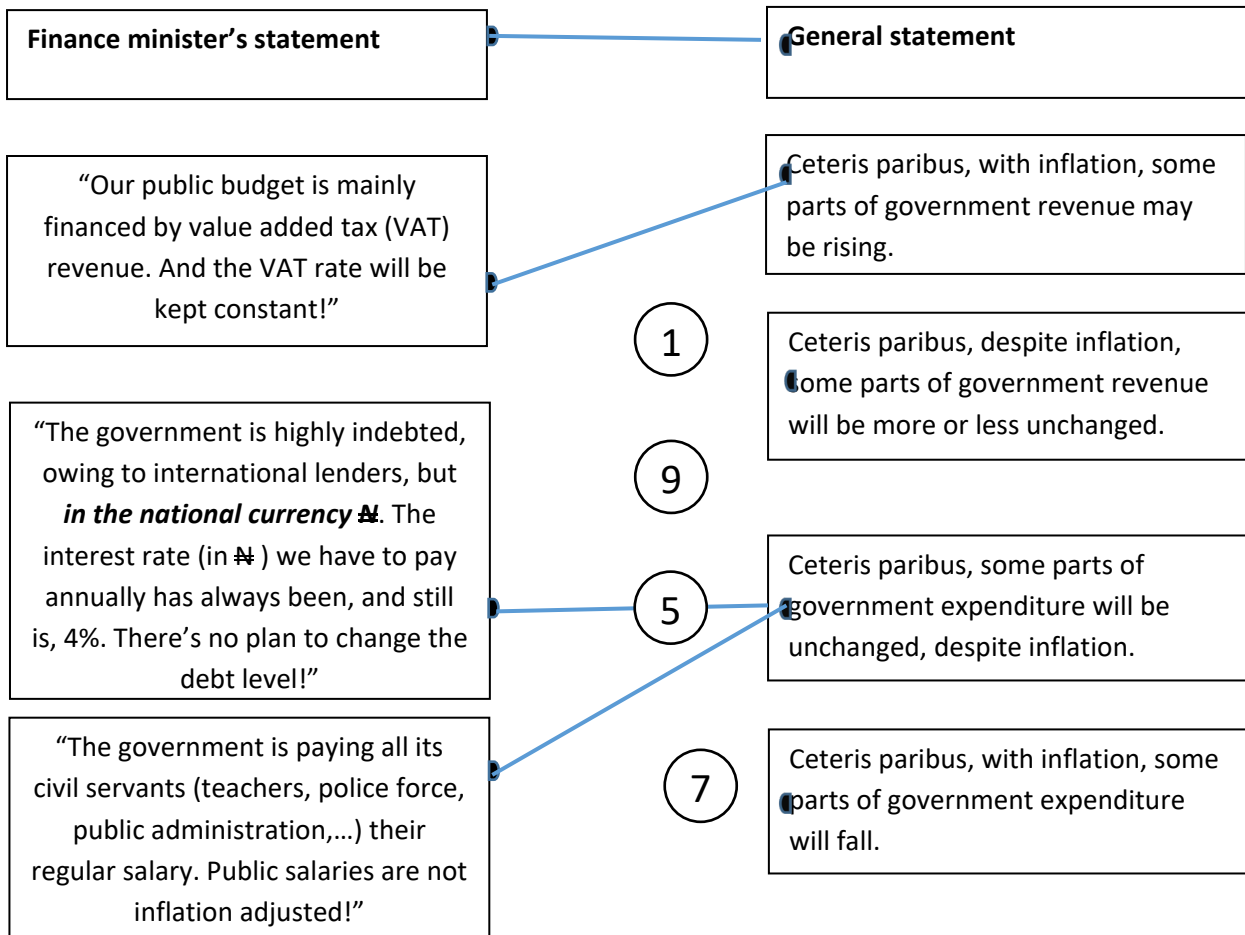
Income from capital (interest rate) may well in some cases be higher than the inflation rate, in that case real income increases.

Even if the nominal wage rate continuously rises by some fixed growth rate, real income will fall if the inflation rate is higher than the wage growth rate.

Escape Inflation – Task 5 – who is affected and how? – Sheet 3: Finance minister

For each household's statement, find the general statement which best corresponds to it.

Note: not every general statement may be matched, and a general statement may be matched by more than one finance minister statement!



When you're done and have matched everything correctly, **one** of the number circles will be "hit"
=> this is the third digit you need for lock #5.

=> Solution digit (only number which is "hit"): **5**

Remarks:

With rising prices, VAT revenue will also rise (because it's a percentage of the price!).

Some students may try to argue based on exchange rates in the "international lenders" question, but the important info is that debt is in the national currency ₺, so this is actually straightforward.

"Escape Inflation!" – Task 6 – Monetary Policy – Part 1: Which policy instrument(s)?

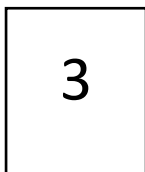
Background:

Now, you are finally getting to decide on the monetary policy instrument(s) to save your country from a further escalation of inflation. A Central Bank typically has certain instruments at its disposal which it can/should use to conduct contractionary monetary policy. The previous Central Bank governors discussed three proposals what they should do to fight the inflation.

Task:

Read the proposals and decide which of these (it could be none of them up to all three) make sense – i.e. a Central Bank can and should pursue it/them in times of inflation. Then, rotate each card accordingly, so that the "thumb" shows in the right direction (to signal an approval or turning down of the proposal). Finally, combine the cards in some way to come up with **one** digit.

Solution (one digit):



This is the **first** digit of the final lock.

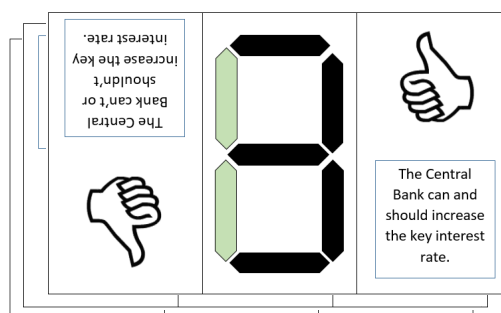
Remarks:

"Central bank can and should increase key interest rate." is correct => thumb up

"...should increase money supply" is wrong => thumb down

"... can and should reduce govt. spending" is nonsense, as this is fiscal policy, not monetary => Central Bank can't do this => thumb down

=> Putting all three sheets on top of each other (the order doesn't matter) with the thumbs in the right direction will yield a "3" overall in the digit place.



Background:

Once you have decided on your monetary policy move(s) with the aim of reducing inflation, you would expect certain effects to show in the macro economy. According to basic macroeconomic theory, a chain of cause-and-effect-relationships is likely to happen. The former governors had collected some bits and pieces of "what might happen", they are given on the enclosed sheet of paper.

Task:

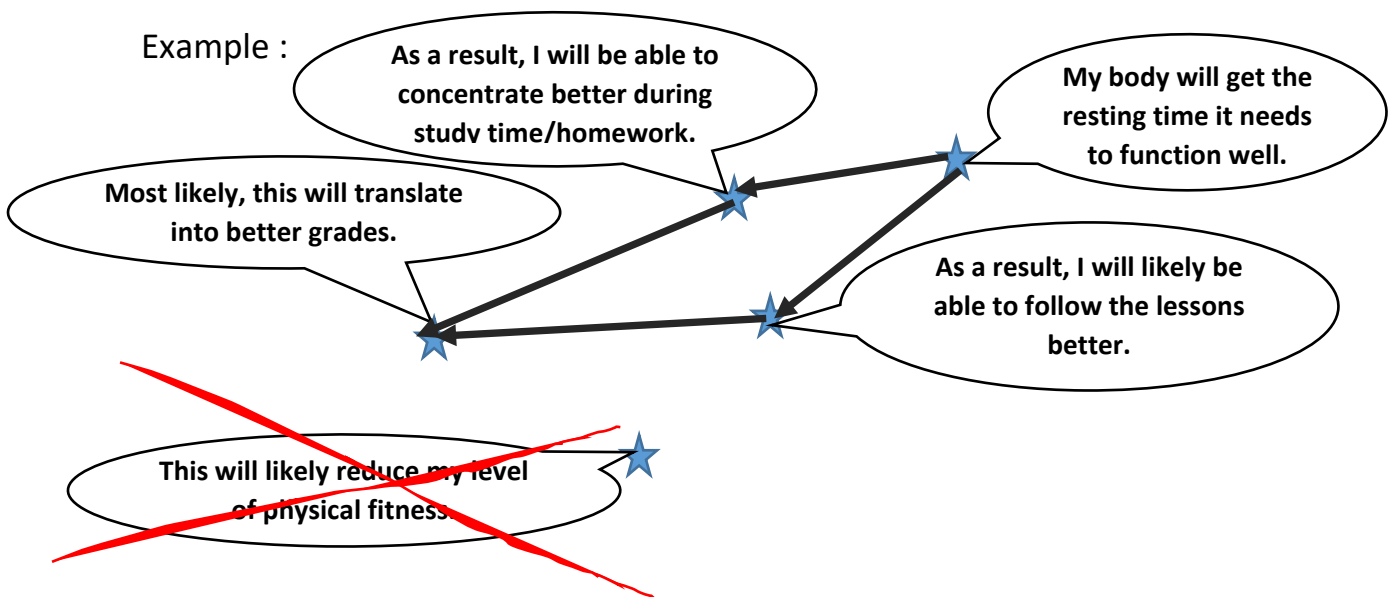
Read the "what might happen" statements, and for each of them think carefully...

... whether they have a part in the chain of causes and effects as a result of contractionary monetary policy (or not).

... what the proper order of causes and effects is.

First, cross out the ones that have nothing to do with it. Then, for any direct causal relationship, draw an arrow between the cause and the effect, using the little stars marked for each statement. Note that a cause might have *more than one direct effect*, and that an effect might be caused by *more than one cause*.

Example :



When you have solved this task correctly, **one digit** should magically appear.

Solution (one digit):

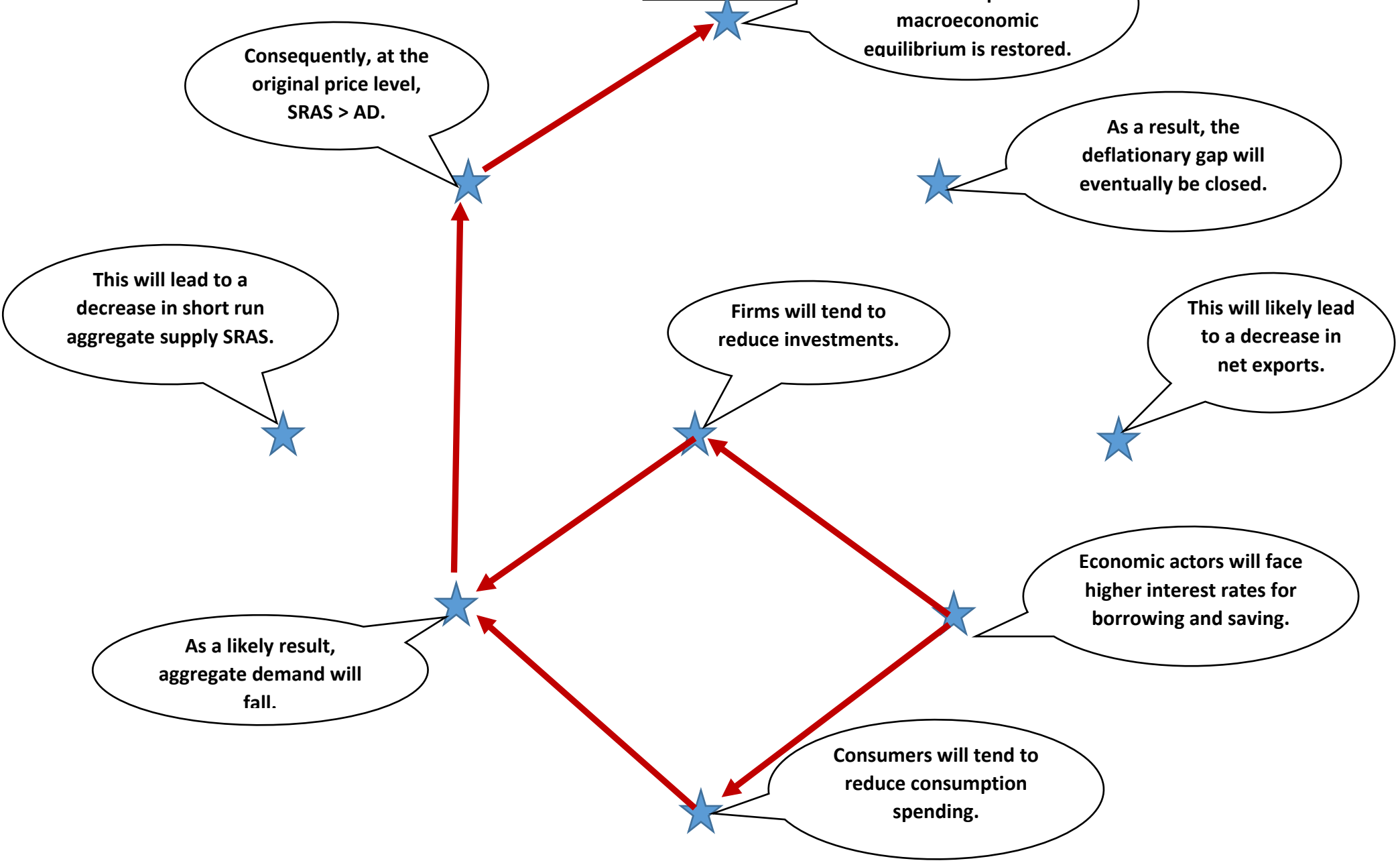
6

This is the **second** digit of the final lock.

"Escape Inflation!"

Educational Escape Room in Economics

6_MONETARY POLICY (solution II)



Background:

Sometimes, monetary policy doesn't quite seem to work as suggested by economic theory. If this happens, and your efforts don't show result quickly – i.e. the price level, or at least the rate of inflation, doesn't go down – this may be explained by several factors. Even though you are confident, that your policy action will bring the desired outcome, you still want to be aware, just in case.

The former Central Bank governors seemed to be aware of this: In the wastepaper basket, some scraps of paper have been found, which indicate that the governors have thought about possible failures of macroeconomic policies. Taking a closer look at these paper scraps will give you a clue to solve this final task.

Task:

- 1) Read the enclosed paper scraps with explanations of potential policy failures.
- 2) For each of these explanations, find the matching economic term (from the paper scraps).
- 3) Identify which of the explanations are valid to account for a *potential failure of contractionary monetary policy* that you will be using, and which of them aren't valid => **discard the invalid ones.**
- 4) Solve the calculation that is indicated by all the matching terms paper scraps of the *valid* explanations, in the given order.

When you have solved this task correctly, you will have found **one digit**.

Solution (one digit):

8

This is the **third** digit of the final lock, lock #6.

**6_MONETARY POLICY
(solution III)**

Explanation	Economic Term	Calculation (only if applicable! i.e. only if the phenomenon could be a reason for contractionary monetary policy to fail)
Prices may not adjust downwards, no matter how much they have been inflated beforehand. This might mean that the price level will not fall, even if contractionary monetary policy leads to the slowdown of inflation.	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">RATCHET 2</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">EFFECT 0</div> </div>	20
Even if a central bank might take decisions quickly and act faster than governments in the case of fiscal policy, still the actual transmission process until actors adjust their behaviour in response to interest rate changes, might not take place immediately. Hence the desired impact may not be observed instantly.	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">TIME +</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">LAG 4</div> </div>	+ 4
When government spending is increased, and this is financed by borrowing, then interest rates might rise. This could discourage private firms to invest.	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">CROWDING -</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">OUT 6</div> </div>	[-6]
The Central Bank may not be the only actor to change their policy and induce changes in people's and firms' action. If, for example, at the same time fiscal policy or supply side policy is conducted, the fundamental assumption for causal relationships in economics is violated.	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">CETERIS :</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">PARIBUS 3</div> </div>	: 3

Not relevant as this is about *expansionary* and *fiscal* policy!

Solution: 8