

SHORT QUESTIONS (30 points)

A) TRUE OR FALSE QUESTIONS: (6 Points each)

Please state whether the following two statements are TRUE or FALSE (there is no uncertain choice) with a short explanation (3 or 4 lines). Each question counts 3/100 points. If you do not give any answers, 1.5 points will be deducted!

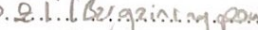
- 1) When the marginal propensity to save is 0.4, the responsiveness of investment to output is 0.1, the proportional tax rate is 0.1, and the marginal propensity to import is 0.1, the good market multiplier is 2.5. (TRUE / FALSE)

[illegible]

- 2) When the Turkish Central Bank sells government bonds, the price of bonds falls, and the interest rate rises. (TRUE / FALSE)

Selling bonds: Contr. + Netting Mon. policy 2 m.s.d. $\rightarrow$? $\uparrow$
P.B. 1. P.B. 2. = EV $\rightarrow$ $\frac{EV}{1+i}$ = P.B. $\rightarrow$? $\uparrow$ $\rightarrow$ P.B. $\downarrow$

- 3) An increase in minimum wages can result in a higher unemployment rate in the medium run. (TRUE/FALSE)

$W_2 = p_{N_2} f_{N_2}(z) \rightarrow \text{min wage } \uparrow \Rightarrow z \uparrow$ (Bargaining power)
 W_1 will shift to the right $\rightarrow$ 
 $W_2 \uparrow$

- 4) There will be full crowding out when money demand is unresponsive to interest rate changes. (True/False)

Ind. is incompensable & relatively steep. Ind. curve & LM curve
is also relatively steep. $\Rightarrow$  $IS, \rightarrow \uparrow \uparrow$
($\uparrow \uparrow$ but LM does not respond)
So what will be? movement along full-carrying out
on IS.

- 5) When the income of your trading partners falls, you can enjoy it as that would result in your country's income rising relatively in the world (TRUE / FALSE)

$Y^* \downarrow$ b. Since domestic output (Y) depends on exports, when $Y^* \downarrow$, $X \downarrow = Y \downarrow$.

LONG QUESTIONS: (70 points)

1) IS-LM and AS-AD (45 points)

Consider an economy characterized by the following relationships:

Goods Market: $Y = C(Y-T) + I(Y, i) + G$

Financial Markets: $M/P = Y \cdot L(i)$

Wage Setting: $W = P_e \cdot F(u, z)$

Price Setting: $P = (1+m) \cdot W$

Production Technology: $Y = D \cdot N$ Constant Size of Labor Force: L , C is the productivity

$F(u, z) = 1 - p \cdot u + z$

All variables and functions are defined in lectures and the textbook. Aggregate Supply (AS) relationship relates the price level in the economy to the expected price level, the level of firm competition (m), labor market conditions (z), and the output level in the economy.

- a) Using the AS relationship (derive), show that high economic activity results in higher prices and explain the reasons (5 points)

AS is derived by labor market equilibrium. $\rightarrow P_S = W_S$

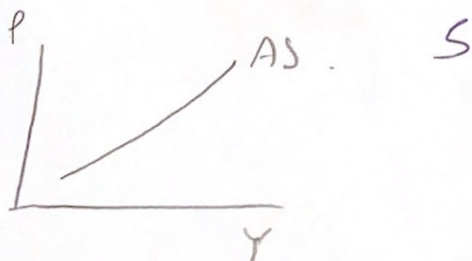
$$P_S = W = (1 + \mu)P_e \quad W_S = W = P_e \cdot (1 - p \cdot u + z)$$

$$Y = D \cdot N \Rightarrow \frac{Y}{D} + \frac{u}{2} = \frac{N}{2} = 1 \Rightarrow \frac{u}{2} = 1 - \frac{Y}{D} \Rightarrow \frac{u}{D} = 1 - \frac{Y}{D} \Rightarrow \frac{u}{D} = 1 - \frac{Y}{D}$$

$$W = P_e \cdot (1 - p \cdot (1 - \frac{Y}{D}) + z) \rightarrow P = P_e \cdot (1 - p \cdot (1 - \frac{Y}{D}) + z) \cdot (1 + m) = AS \text{ relation}$$

$$P = P_e \cdot (1 + p \cdot (-1 + \frac{Y}{D}) + z) \cdot (1 + m) = AS \text{ relation}$$

High economic activity $\rightarrow Y \uparrow$ and Y is positively related with price levels. So when $Y \uparrow$, $P \uparrow$ too.



On the next page, you are given three policy changes. For each, you are to describe the short-run and medium-run dynamics of the economy. To get full credit, you must provide:

In the top-left graph, there is a clear accounting of the shifting AS and/or AD curves.

Use the bottom-left graph to show how the underlying IS and LM curves move. In each graph, the drawn curves represent the initial equilibrium.

Label short-run movements these equilibriums with a "1" and medium-run movements with a "2". Include the following axis or curve labels (Y^n is the natural rate of output):

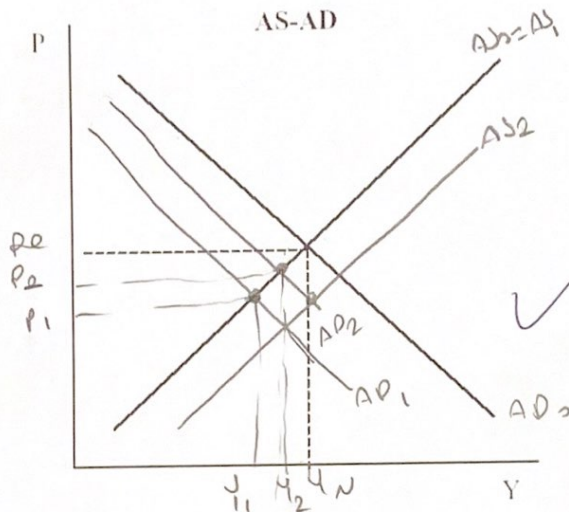
- Initial Equilibrium: $AS_0, AD_0, IS_0, LM_0, P_0, P_0^e, Y_0, Y_0^n, i_0$
- Short-Run Equilibrium: $AS_1, AD_1, IS_1, LM_1, P_1, P_1^e, Y_1, Y_1^n, i_1$
- Medium-Run Equilibrium: $AS_2, AD_2, IS_2, LM_2, P_2, P_2^e, Y_2, Y_2^n, i_2$

If appropriate, use the IS-LM graph to show how this model's short-run response differs from the fixed-price model studied in the first section of this course.

Please also mention how we move from short-run equilibrium to medium-run equilibrium!

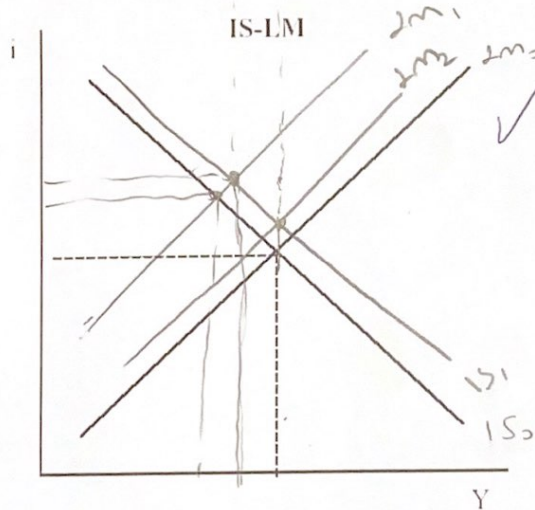
- b) The central bank is fighting against hyperinflation, and the government is willing to undo the impact of monetary policy on output before the election time. The magnitude of monetary policy is bigger than the fiscal policy.

What kind of a policy mix should be implemented? (5 points) Show the changes in the graphs below (5 points). Explain what happens to investment, consumption, price level, output level, and interest rate in the Short-Run and Medium Run. (5 points)



Hyperinflation: Co. monetary policy
 Co. mon. policy = $Y \downarrow \Rightarrow$ do gov.
 should do exp. fiscal for $Y \uparrow$ back

S2
 Co. mon. policy $\rightarrow$ $MS \downarrow$, $? \uparrow$
 $Y \downarrow$, $P \downarrow \Rightarrow$ shift of AD
 and LM curve to the
 $AD_0 \rightarrow AD_1$, $LM_0 \rightarrow LM_1$
 Exp. fiscal $\rightarrow$ $CT \rightarrow Y \uparrow$
 $P \uparrow$, $C \uparrow \Rightarrow$ AD shifted
 right from $AD_1 \rightarrow AD_2$
 IS shifted to the
 $IS_0 \rightarrow IS_1$. So eventually
 in SR $Y \downarrow$ a little,
 $P \downarrow$, $C \uparrow$, $I \downarrow$.



M2
 $Y_2 < Y_N$ AS curve
 will make adjustment
 Since $P_2 < P_2$ AS curve
 will shift to the
 right. ($P_2 \downarrow \Rightarrow P_2$)
 $AS_0 \rightarrow AS_2$

do $P \downarrow \rightarrow$ LM curve
 will also shift since

$$\Delta M = \frac{M_2}{Y_2} \cdot \Delta Y$$

$$LM_1 \rightarrow LM_2$$

so, Y_N remains same. $P \downarrow$.

$C \uparrow$ (loss + in SR, bigger than
 initial) C constant, $I \downarrow$ since

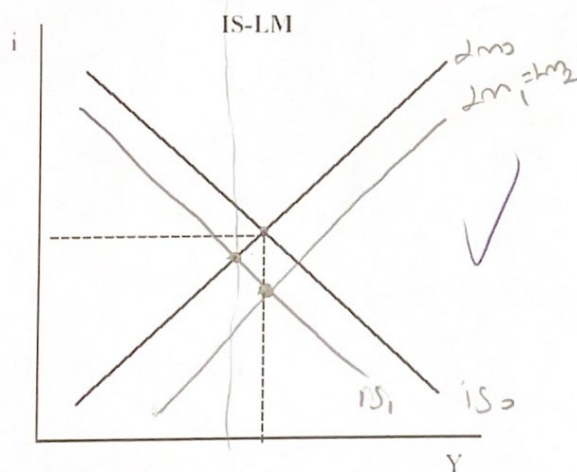
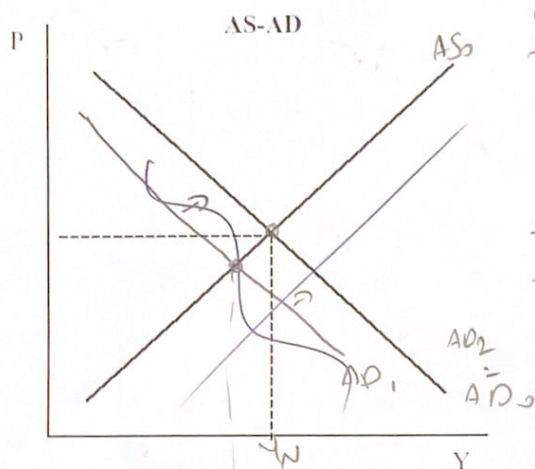
the initial $P \uparrow$ to

c) After the European Debt Crises, there were substantial budget cuts in the Greek Economy

What kind of policy should be implemented? (5 points).

Show the changes in the graphs below (5 points).

Explain what happens to investment, consumption, price level, and interest rate in the Short-Run and Medium Run. (5 points)



needs market in (next Econ)
 $C \downarrow$ or $T \uparrow$ = contractionary
 fiscal policy was used.
 It will shift the AD
 and IS curve leftwards.
 $P \downarrow$ & $C \downarrow$: $AD_0 \rightarrow AD_1$, $IS_0 \rightarrow IS_1$

to $Y \uparrow$ again without touching
 the gov. budget CB should
 do 2 exp. mon. policy.
 LM shifts $\rightarrow LM_0 \rightarrow LM_1$

and also AD will
 shift back. $\rightarrow AD_0 = AD_2$

$C \downarrow$: $Y \uparrow$ again so the Y_N
 price level did not change.

for ML the curves are
 $AD_0 = AD_2$ and $LM_1 = LM_2$
 and $IS_1 = IS_2$.

Because of the policy
 change of CB price level
 and AS curve did not
 change. So a decrease in
 C is compensated with
 increase in I .

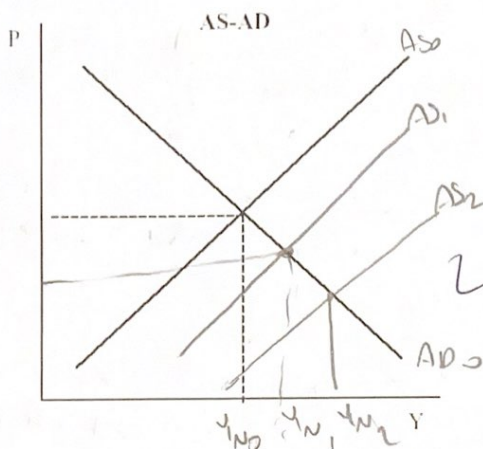
$\% \Delta C = \% \Delta I = Y_N$ const.
 $C \downarrow$, P , C , $I \uparrow$

d) innovations in Renewable Energy resulted in a fall in energy prices.

(Hint: Think what will happen in the Labor Market first)

Show the changes in the graphs below (5 points).

Explain what happens to investment, consumption, price level, output level, and interest rate in the Short-Run and Medium Run. (5 points)



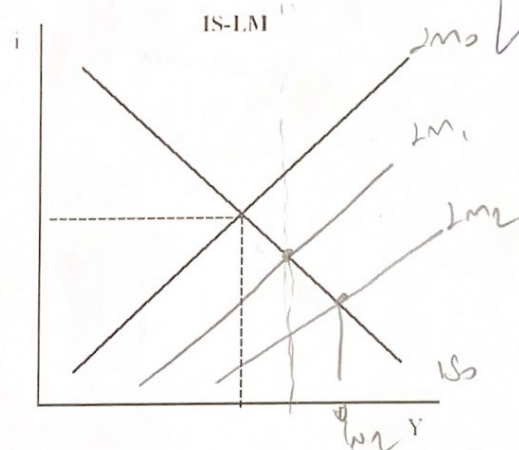
Fall in energy prices will reflect as more up $\downarrow$ in labor market
 $\frac{1}{P} \rightarrow P \downarrow \rightarrow \frac{W}{P} \uparrow, Y \downarrow, Y \uparrow$
 AS shifts to the right, $P \downarrow$
 $AS \rightarrow AS_1$

money market
 $P \downarrow \rightarrow LM$ curve shifts to the right since $P \downarrow$ money $\downarrow$
 $LM \rightarrow LM_1$

we assume that AD does not change.

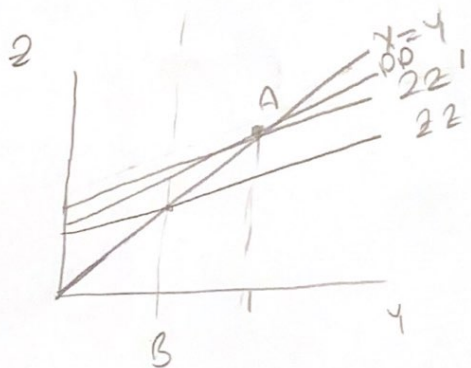
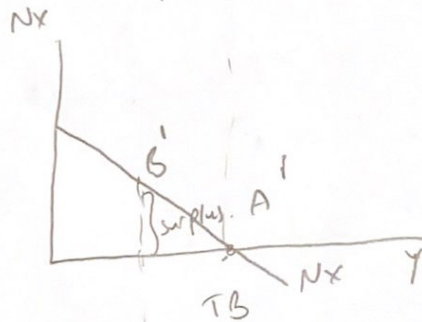
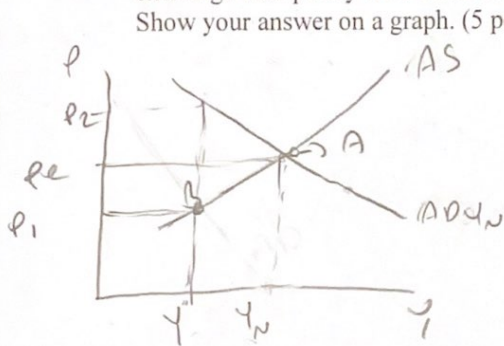
In SR, Price of energy $\downarrow$
 $MB \rightarrow P \downarrow, Y \uparrow, C \uparrow$
 $\uparrow \uparrow$

In MR the shift of AS and LM will continue to the rightwards. Because IP capital accumulation $\uparrow = Y \uparrow$. Therefore $P \downarrow$ and C will fall even more, Y , C , I will increase more. then SR.



II) OPEN ECONOMY (15 points).

1) If Y is **lower** than Y_N (Natural Rate of Output), there is a **trade surplus**.
(Think about the internal and external imbalance) What kind of a fiscal and exchange rate policy mix could help to have both internal and external balance?
Show your answer on a graph. (5 points)



$Y < Y_N \rightarrow$ initial point $\rightarrow B$
If gov. do 2 exp. fiscal policy $\rightarrow C \uparrow, Z \uparrow Y \uparrow$
So on AD-AS curve the point changes from B to A.
Also $C \uparrow$ so $Y \uparrow$ since imports are positively related with Y , $M \uparrow$ therefore NX will decrease. There will be 2 movements along on NX curve from $B' \rightarrow A'$ which means that $Y = Y_N$ and trade surplus vanished.

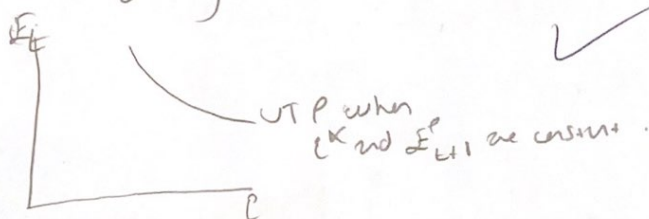
$Z \uparrow \rightarrow \uparrow C$
on A $PD = Z \uparrow = Z \uparrow Y$
S

2) Explain how we decide to hold domestic versus foreign financial assets. Derive the uncovered interest parity condition mathematically and explain it intuitively. Use the new exchange rate definition of 1 Dollar = E Turkish Liras. (5 Points) Draw the new UIP graph (2 points). Assume that the US inflation rates are announced and are higher than expected, and the FED is expected to solve this problem in the future (no actual policy change has been made). What would be the effect of this on the exchange rate? (3 points)

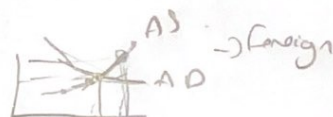
1 dollar = E_t TL, i^{domestic} interest, i^{USA} interest, If we have FTL to buy an asset we can decide by examining returns of the bonds in some currency.

Turkish	USA
$E_t \rightarrow E_t(1+i)TL$	$i^{\text{USA}} + 1(\text{dollar}) \rightarrow \text{returns}$
$E_t(1+i)TL$	$\downarrow$ convert in TL end of the year when $1\$ = E_{t+1}^e + L$
$E_t(1+i)TL$	$(i^{\text{USA}} + 1) \cdot E_{t+1}^e TL \rightarrow \text{returns in TL}$
$E_t(1+i) = (i^{\text{USA}} + 1) \cdot E_{t+1}^e \rightarrow$ to decide $\rightarrow (1+i) = (i^{\text{USA}} + 1) \cdot \frac{E_{t+1}^e}{E_t} = \text{UIP}$	

To UIP, domestic (Turkish) i depends on foreign i , both expected and current interest rates.
 i is positively related with i^{USA} and E_{t+1}^e
 but negatively related with E_t since $E_t \downarrow$, TL appreciates, demand for TL $\uparrow$.

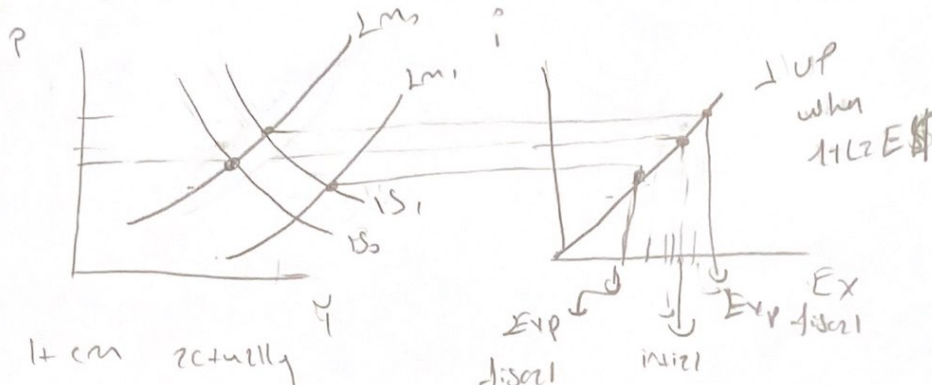


If $\pi^{\text{USA}} > \pi^{\text{expected}} \rightarrow p^{\text{USA}} < p \rightarrow Y^{\text{USA}} < Y \rightarrow$



By the time AS curve will shift upwards until it meets with Y_n , as a result, the LM curve will also shift upwards and will increase i^{USA} . If $i^{\text{USA}} \uparrow$ $E_t \uparrow$ which means that TL will depreciate.

3) Using the Mundell-Flemming model, IS-LM, and UIP (Uncovered Interest parity) graphs. Show the impact of Türkiye's monetary and fiscal expansion until 2023. Is it possible to say that depreciation TL was a result of these policies? (Explicitly show the impact on interest rates, output, and exchange rate.) (5 points)



It can actually
if the magnitude
of Exp monetary
is higher $i \downarrow$
 $Ex \downarrow$ TL depreciate.

+ Expansion

$$\text{Since } (1+p)_2 = \frac{(1+p^*) \cdot E_0}{E_{t+1}}$$

IS2 relation in mundell fleming $\rightarrow Y_2 C + I(p, Y) + G + NX(Y, Y^*, E)$

Also by these policies $Y \uparrow$ by the time since
 $NX(Y, Y^*, E) = X(Y^*, E) - \frac{Im(Y, E)}{E} \rightarrow$ Imports will
increase, demand
for foreign
currency $\uparrow$ TL
depreciates.

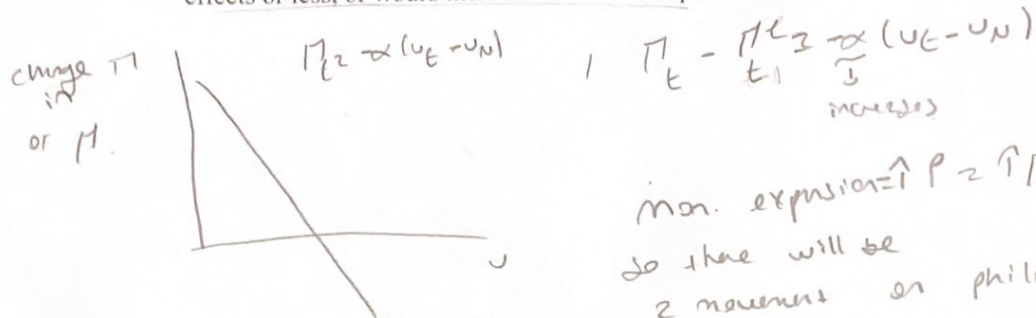
Note

Herein, I assumed that questions 2 and 3 are
not related. Therefore, I accepted the exchange rate we did
during classes $\Rightarrow$ I den. currency $\neq$ foreign currency.

III) PHILIPS CURVE

Explain the following concepts. For full credit, explain in detail. (10 points, 5 points each)

- a) Assume that in an economy, the Philips curve gets steeper. If that is the case, should CB be more concerned about a monetary expansion and its possible effects or less, or would there be no relationship?



Also monetary expansion Philips would not change u_n in m2.

If we assume $u_n \rightarrow u_n = 1 - \frac{u_n}{2}$
if u_n is constant u_n is also constant

mon. expansion $\uparrow P \rightarrow \uparrow \pi$
so there will be
2 movement on Philips
this would not change
the slope $(-\alpha)$.
do no relationship. 3

- b) What is Lucas Critique, and what does it suggest in terms of monetary policy and central banking in the existence of a time inconsistency problem?

Lucas Critique claims that we don't need to increase π for dec. π_{t-1} . If we assume that people's expectations are rational so $\pi_{t-1} = \pi_{t-1}$. we will have
a Philips curve such as $\pi_t - \pi_{t-1} = -\alpha(u_t - u_n)$
which means that we can change inflation without changing unemployment by expectation on inflation. For π_t a country needs a reliable CB. How the important thing is the credibility. 3

BONUS:

- 1) According to the Norway Ambassador's visit, how do you think Norway was able to maintain a strong democracy besides being a fossil fuel exporter?

- 2) What did Erdem Basci mean when he mentioned, 'Inflation is due to «too much money chasing too little goods»? Explain using the quantity theory of money.

To explain quantity theory of money we need to
revisit the equation of exchange which is $M \cdot V = P \cdot Q$
 M = money Q = output
 V = velocity P = prices.
In 2d Q and V are constant. So there will be a relationship
such as change in $M = \Delta(\text{inflation})$. So if M increases or
too much in 2d the inflation is unavoidable.