# Problem Set 1

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## Lecture 1: Motivation — Inflation, the price level, and nominal anchors

(1) The **price level** $P_t$ is best interpreted as _____

(A) the growth rate of prices between $t$ and $t+1$

(B) the value of money in terms of goods

(C) the nominal interest rate set by the central bank

(D) the real interest rate that clears the goods market

(2) **Inflation** $\pi_t$ is _____

(A) the rate of change of the price level

(B) the level of real GDP

(C) the nominal money supply

(D) the real wage divided by productivity

(3) A **nominal anchor** is needed because otherwise _____

(A) output is not uniquely determined in the long run

(B) the labor market cannot clear

(C) the price level can drift without a force pinning down its level

(D) the government cannot issue nominal debt

(4) In the 2021–2022 U.S. episode, one headline puzzle motivating the course is _____

(A) inflation fell immediately once deficits rose

(B) real GDP was constant while inflation changed

(C) policy rates rose sharply before inflation rose

(D) inflation rose substantially while policy rates initially stayed near zero

(5) The fiscal-theory/debt-valuation equation conceptually says the real value of nominal government liabilities equals _____

(A) the current money growth rate

(B) the present value of expected future primary surpluses

(C) the present value of expected future GDP growth

(D) the current-period tax revenue only

(6) A key reason *"deficits cause inflation"* is not a complete theory is that _____

(A) deficits always reduce output

(B) deficits can only be financed by money printing

(C) what matters is the expected *path* of future fiscal backing, not just current deficits

(D) deficits mechanically determine the real interest rate

(7) In the debt-valuation view, unexpected inflation can be triggered by _____

(A) news that lowers expected future primary surpluses (backing)

(B) higher current productivity with no other changes

(C) a fall in money demand with fixed $P$

(D) an increase in labor supply holding everything else fixed

(8) Under a regime where the public expects future taxes/spending to adjust to stabilize debt, a temporary deficit is most consistent with _____

(A) large and permanent inflation regardless of policy

(B) an immediate collapse in output

(C) a permanent fall in the price level

(D) relatively muted inflation pressure from the deficit alone

(9) A clean way to summarize the course motivation is: theories of inflation must explain _____

(A) only the long-run growth rate of output

(B) timing and comovement of $\pi$, $i$, output, and policy during episodes

(C) only cross-sectional variation in firm prices

(D) only the money multiplier

(10) In Cochrane-style framing, disagreements about inflation often boil down to disagreements about _____

(A) whether labor supply is elastic

(B) whether investment has adjustment costs

(C) the policy regime and the nominal anchor

(D) whether production is Cobb–Douglas

## Lecture 2: IS–LM — money market, goods market, and aggregate demand

(11) The money-demand function $M^d/P = L(Y, i)$ typically satisfies _____

(A) $\partial L/\partial Y > 0$ and $\partial L/\partial i < 0$

(B) $\partial L/\partial Y < 0$ and $\partial L/\partial i > 0$

(C) $\partial L/\partial Y = 0$ and $\partial L/\partial i < 0$

(D) $\partial L/\partial Y > 0$ and $\partial L/\partial i = 0$

(12) If output $Y$ rises (holding $M$ and $P$ fixed), the LM curve implies the equilibrium interest rate _____

(A) falls because money demand falls

(B) rises because money demand rises

(C) stays constant because money supply is fixed

(D) becomes indeterminate because goods market clears first

(13) Holding nominal money supply $M$ fixed, an increase in the price level $P$ _____

(A) raises real balances $M/P$ and shifts LM right

(B) does not affect LM because $M$ is nominal

(C) lowers real balances $M/P$ and shifts LM left

(D) shifts IS right through higher government spending

(14) A monetary expansion ($M \uparrow$) with $P$ fixed shifts the LM curve _____

(A) up/left

(B) not at all

(C) up/right

(D) down/right

(15) In standard IS logic, a fall in the interest rate increases equilibrium output because _____

(A) investment (and other interest-sensitive spending) rises

(B) money demand rises

(C) productivity rises

(D) labor supply falls

(16) A rightward shift of IS can be caused by _____

(A) an increase in money demand holding everything else fixed

(B) an increase in government purchases $G$

(C) an increase in the price level $P$ holding $M$ fixed

(D) a fall in productivity $A$

(17) IS–LM equilibrium is the point where _____

(A) the labor market and goods market clear

(B) only the goods market clears

(C) both the goods market and money market clear

(D) money demand equals investment demand

(18) The **aggregate demand** (AD) curve slopes downward because _____

(A) $P \downarrow \Rightarrow M/P \uparrow \Rightarrow$ LM shifts right $\Rightarrow Y \uparrow$

(B) $P \downarrow \Rightarrow$ wages rise $\Rightarrow Y \uparrow$

(C) $P \uparrow \Rightarrow$ productivity rises $\Rightarrow Y \uparrow$

(D) $P \downarrow \Rightarrow$ taxes rise $\Rightarrow Y \uparrow$

(19) In the IS–LM-to-AD derivation, which variable is treated as changing to trace out AD? _____

(A) $Y$

(B) $i$

(C) $G$

(D) $P$

(20) In the short run of the textbook IS–LM story, it is common to treat the price level $P$ as _____

(A) fully flexible within the period

(B) predetermined/sticky so IS–LM pins down $Y$ given $P$

(C) irrelevant because money is neutral

(D) chosen by households directly

## Lecture 3: AD–AS — demand vs supply shocks and short-run vs medium-run

(21) The FE (full-employment) line in $(Y, P)$ space is typically _____

(A) downward sloping because higher $P$ raises real balances

(B) upward sloping because higher $P$ raises labor supply

(C) vertical because full-employment output is determined by real factors

(D) horizontal because prices are fixed

(22) A rightward shift in AD (holding AS fixed) typically leads to _____

(A) $Y \uparrow$ and $P \uparrow$ in the short run

(B) $Y \uparrow$ and $P \downarrow$ in the short run

(C) $Y \downarrow$ and $P \uparrow$ in the short run

(D) $Y \downarrow$ and $P \downarrow$ in the short run

(23) A negative productivity shock is best represented in AD–AS as _____

(A) AD shifting right

(B) AD shifting left

(C) SRAS shifting right

(D) SRAS shifting left (and FE shifting left)

(24) A supply shock that shifts AS left tends to generate _____

(A) $Y \uparrow$ and $P \downarrow$

(B) $Y \downarrow$ and $P \uparrow$

(C) $Y \uparrow$ and $P \uparrow$

(D) $Y \downarrow$ and $P \downarrow$

(25) The comovement diagnostic says: demand shocks typically make $(Y, P)$ move _____

(A) in the same direction

(B) in opposite directions

(C) not at all

(D) randomly

(26) In the medium-run adjustment story, if $Y > Y^{FE}$ after an AD expansion, then price adjustment typically implies _____

(A) the price level falls until $Y$ rises further

(B) $Y$ stays permanently above $Y^{FE}$

(C) the price level rises, reducing real balances and moving $Y$ back toward $Y^{FE}$

(D) the money supply must fall one-for-one with output

(27) A fiscal expansion $G \uparrow$ shifts AD right. In a model with a vertical FE line, the long-run effect on output is _____

(A) permanently higher output

(B) permanently lower output

(C) output becomes indeterminate

(D) no permanent change in output; mainly a higher price level

(28) In AD–AS, an outward shift of AD combined with an inward shift of AS is most consistent with _____

(A) disinflation and a boom

(B) higher inflation with ambiguous output (depends on magnitudes)

(C) lower inflation with lower output

(D) unchanged inflation and higher output

(29) The main reason Lecture 3 follows Lecture 2 is that IS–LM gives AD, but _____

(A) inflation requires a supply/price-adjustment side (AS)

(B) the labor market disappears in IS–LM

(C) money demand is irrelevant for policy

(D) GDP accounting fails

(30) In a simple AD–AS framework, "stagflation" refers to _____

(A) low inflation and high output

(B) low inflation and low output

(C) high inflation and low output

(D) high inflation and high output

## Lecture 4: Inflation dynamics — Fisher, Phillips curves, policy rules, and Cochrane-style distinctions

(31) The Fisher equation can be summarized as _____

(A) $i_t \approx r_t - E_t\pi_{t+1}$

(B) $i_t \approx r_t + E_t\pi_{t+1}$

(C) $r_t \approx i_t + E_t\pi_{t+1}$

(D) $E_t\pi_{t+1} \approx r_t - i_t$ and is always zero

(32) Under adaptive expectations $\pi_t^e = \pi_{t-1}$, the ex-ante real rate is _____

(A) $r_t = i_t + \pi_{t-1}$

(B) $r_t = i_t - \pi_{t+1}$

(C) $r_t = i_t - \pi_{t-1}$

(D) $r_t = i_t$ always

(33) A backward-looking Phillips curve with a cost-push shock is closest to _____

(A) $\pi_t = \beta E_t \pi_{t+1} + \kappa x_t$

(B) $\pi_t = \pi_{t-1} - \kappa x_t$

(C) $\pi_t = E_t \pi_{t+1} + u_t$

(D) $\pi_t = \pi_{t-1} + \kappa x_t + u_t$

(34) Rearranging $\pi_t = \pi_{t-1} + \kappa x_t + u_t$ implies _____

(A) $x_t = (\pi_t - \pi_{t-1} - u_t)/\kappa$

(B) $x_t = (\pi_{t-1} - \pi_t - u_t)/\kappa$

(C) $x_t = (\pi_t + \pi_{t-1} + u_t)/\kappa$

(D) $x_t = \kappa(\pi_t - \pi_{t-1}) + u_t$

(35) Suppose policy follows a Taylor rule $i_t = \bar{i} + \phi_\pi \tilde{\pi}_t + \phi_x x_t$ and $\pi_t^e = \pi_{t-1}$. Then the real-rate gap can be written as _____

(A) $r_t - r^n = \phi_\pi \tilde{\pi}_{t-1} + \phi_x x_t - \tilde{\pi}_t$

(B) $r_t - r^n = \phi_\pi \tilde{\pi}_t + \phi_x x_t - \tilde{\pi}_{t-1}$

(C) $r_t - r^n = \phi_\pi \tilde{\pi}_t - \phi_x x_t + \tilde{\pi}_{t-1}$

(D) $r_t - r^n = \tilde{\pi}_t - \tilde{\pi}_{t-1}$ only

(36) With IS in gap form $x_t = -\sigma(r_t - r^n) + \varepsilon_t^d$, substituting the expression in the previous question and solving for $x_t$ gives _____

(A) $x_t = -\sigma\phi_\pi \tilde{\pi}_t + \varepsilon_t^d$

(B) $x_t = \sigma\phi_\pi \tilde{\pi}_t - \sigma\tilde{\pi}_{t-1} + \varepsilon_t^d$

(C) $x_t = \dfrac{-\sigma\phi_\pi \tilde{\pi}_{t-1} + \sigma\tilde{\pi}_t + \varepsilon_t^d}{1 + \sigma\phi_x}$

(D) $x_t = \dfrac{-\sigma\phi_\pi \tilde{\pi}_t + \sigma\tilde{\pi}_{t-1} + \varepsilon_t^d}{1 + \sigma\phi_x}$

(37) Combining IS + backward-looking Phillips curve + Taylor rule yields an AR(1) for inflation deviations $\tilde{\pi}_t = a\tilde{\pi}_{t-1} + \cdots$. In this system, a sufficient condition for mean reversion ($a < 1$) is _____

(A) $\phi_\pi < 1$

(B) $\phi_\pi = 1$

(C) $\phi_\pi > 1$

(D) $\phi_x = 0$ always

(38) A positive demand shock $\varepsilon_t^d > 0$ raises inflation in the Old-Keynesian system primarily because _____

(A) it directly increases $\pi_t$ even if $x_t = 0$

(B) it raises $x_t$ (output gap), which feeds into inflation via $\kappa x_t$

(C) it lowers the policy rate mechanically through the Fisher equation

(D) it shifts full-employment output $Y^{FE}$ immediately

(39) A positive cost-push shock $u_t > 0$ means _____

(A) inflation rises even if $x_t = 0$; offsetting it requires $x_t < 0$ (slack)

(B) inflation rises only if the policy rate falls

(C) inflation must fall because firms become more productive

(D) inflation is unchanged because $u_t$ cancels in equilibrium

(40) Cochrane emphasizes "distinguishing theories" because different models imply different predictions about _____

(A) the accounting identity $Y = C + I + G$

(B) whether $x_t$ is defined as $Y_t - Y^{FE}$

(C) whether CPI or PCE should be used

(D) inflation under interest-rate pegs/Taylor rules and the role of fiscal backing/news