ps389/cics301: Lecture Notes on

<u>Capitalism, Not Globalism:</u> <u>Capital Mobility,</u> <u>Central Bank Independence, and</u> <u>the Political Control of the Economy</u>

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<u>Part b</u>: Central Bank Independence, Macroeconomic Policy & Management in the Open (Globalized) Economy (IS-LM-BoP), and Context-Conditional Political Cycles: Theory

- I. Structural Context of Macroeconomic Policy Choice (Ch. 2)A. Basic Argument/Consideration:
 - 1. Common Assumptions Electoralist & Partisan Models:

a) Policymakers Sufficient Macroeconomic Policy Control &

b) Policies Sufficient Efficacy to Influence Macroeconomic Outcomes

(1) [Whether actually considering effect on outcomes or just policies, if not at least expected to be efficacious by policymakers, then hard to motivate use of policies.]

2. However:

a) Policymakers not actually full control...partly b/c world not deterministic and limited information, but also because *strategic interaction w/ other* actors.

b) Policy not always efficacious, depends on domestic & international (political-) economic conditions.

3. Consider 2 Such Limiting Factors in Particular:

a) *Central Bank Independence* (*CBI*) [define],

b) *International Capital Mobility* (*CapMob*), with effect of CapMob on policy autonomy/efficacy depending on *Exchange Regime*, *fixed (peg) or float (flex)*.

4. Consider 1st simple *decision-theoretic* then *strategic game-theoretic* model.

B. Decision-Theoretic Model:

1. *CBI & Control*: As CBI \uparrow , likely friction b/w incumbent's incentives & policy \uparrow ; Plausible that \uparrow CBI $\Rightarrow \downarrow$ partisan & electoral cycles 2.Clark's Figures 1 & 2 illustrate

a) [Fig1 places x^L unhelpfully; if L-CB compromise same 50-50 as R-CB, x^L closer to R, & see that x^L-x^R , cycles under CBI=.5, smaller than L-R, cycles under CBI=0]:





Fig. 2. The effect of central bank independence on the relationship between preferences and policies in the electoralist model

3. If CBI=1, then $m=m_b^*$; & no partial or electoral cycles in monetary policy; otherwise [as is always the case], CBI $\in (0..1)$

a) \Rightarrow *m*=some compromise m_{b}^{*} and m_{g}^{*}

b) $\Rightarrow \oint (m_l^* | \text{CBI} - m_r^* | \text{CBI})$, partial monetary cycle under some CBI, relative to $(m_l^* - m_r^*)$, part mon cycle under no CBI; & analogously $\oint (m_e^* | \text{CBI} - m_{-e}^* | \text{CBI})$... for electoral monetary cycles. [Franzese *AJPS* '99 elaborates broader implications of this proposition]

4.Aside: Elaboration of PE Theory of CBI and monetary policy / inflation

a) PolSci & Econ gen'ly agree CBI $\Rightarrow \downarrow$ infl; both also similarly def CBI as degree of autonomy of (conservative) CB from political authority in making monetary pol.

(1)From PolSci view:

(a) CB=bureaucratic institution, populated by financial experts generally hawkish on inflation, whether socialized to that view or coming from a population w/ those interests.

(b) Govt instead, & especially in democracy, more responsive to various societal pressures that may emerge for inflation.

(c) Only most conservative Govts as anti-inflationary as CB, so delegation of monetary-policy authority to CB, i.e., CBI, \downarrow inflation.

(2)From the (neoclassical) economist's view:

(a) Monetary policy involves a *time-inconsistency problem* \Rightarrow inflationary bias if policy controlled by a discretionary, i.e., responsive, authority.

(b) Credible delegation of monetary authority to an independent & conservative (i.e., a non-responsive) CB offers commitment device to evade time-incons. & so infl. bias \Rightarrow CBI \downarrow infl

b) Aside: Elaboration of neoclassical model monetary policy by rule vs. discretion:

(1)Start with a "rational expectations" model of a perfect-competition economy:

(a) Equation (1), the economy: $Y = Y_n + \alpha(\pi - \pi^e)$.

(b) I.e., output (Y) generally equal to natural output (Y_n), but short-run prices may be sticky so, if monetary authority created INF>expected INF (i.e., if π - π e>0), then Y temporarily exceeds natural rate. I.e. short-run (or expectations-augmented) Phillips curve (with slope α).

(2)Now suppose the policymaker has value function given by:

(a) Equation (2), policymaker's objective: $V = -(1/2)A(Y-YT)^2-(1/2)\pi^2$

(i) I.e., policymaker does not like deviations of output from some (presumably high) target rate Y^T , & also dislikes inflation (deviations from target, set to 0 for simplicity).

(3)So, policymakers w/ preferences described by (2) facing economy described by (1) & controlling INF rate directly (*a simplification*), will act as if solving following maximization:

(a) $\operatorname{Max}_{\pi} - (\frac{1}{2})A(Y_n + \alpha(\pi - \pi^e) - Y^T)^2 - (\frac{1}{2})\pi^2$ where, notice, (1) has been substituted into (2) (b) $\Rightarrow -A \alpha (Y_n + \alpha(\pi - \pi^e) - Y^T) - \pi = 0$...maximize by taking derivative of expression to be maximized w/ respect to control variable (π) & setting result equal to zero...

(c)
$$\Rightarrow \pi = -A\alpha^2 \pi - A\alpha (Y_n - \alpha \pi^e - Y^T)$$
 ... rearranging...
(d) $\Rightarrow \pi(1 + A\alpha^2) = -A\alpha (Y_n - \alpha \pi^e - Y^T)$... rearranging again...

(e)
$$\Rightarrow \pi (1 + A\alpha^2) = A\alpha^2 \pi^e - A\alpha (Y_n - Y^T)$$
 ...and again...

(4)So, policymakers w/ preferences (2), facing economy (1), choose INF given by (3e),

(a) but here's the *rational expectations* part: Price setters know policymakers behave this way, so their π^{e} expectations also given by (3e). I.e., in eqbm, something Abe-Lincoln-like: "you can't fool all the people all the time". On avg, π^{e} will equal π . So, rewriting (3) with $\pi^{e}=\pi$ gives you:

c) Rational-Expectations Equilibrium: $\pi = A\alpha(Y_n - Y^T)$; and, substituting $\pi^e = \pi$ back into economy, (1), we also get that in eqbm: $Y = Y_n + \alpha(\pi - \pi^e) = Y_n$. I.e., monetary policy has no real effects in eqbm. (Note: if so, then to avoid real costs of monetary contraction: simply announce contraction soon enough & be believed so $\pi^e = \pi$ reflected in wage & price contracts will include expected contraction...]

d) CB Autonomy from political authority in monetary policy-making, matter of $^{\circ}$

(1) Never complete b/c CB authority invariably derives from (usually) legal statute, i.e., law, or (occasionally) constitutional provision.

(2) Either subject to change by political authorities if CB policies ever sufficiently distasteful to them to justify expending political capital necessary to change CB status.

(3) Furthermore, CB authorities' appointed & perhaps replaced by govt...

e) Nor can Govt costlessly ensure CB conducts policy precisely as current will:

(1) CB expertise &/or an information advantage over govt in monetary policy,

(2) Plus, time & other resources for govt even to monitor CB, much less conduct monetary policy itself. (3) So, CB always at least some modicum leeway.

f) CBI must, therefore, measure how far CB could stray from current govt's will before govt would bear political-economic costs to alter CB law or seize mon pol itself. Therefore, mon pol (& so infl) always partly CB & partly govt control \Rightarrow

(1)Actual monetary policy (inflation) = wtd average what would be if conservative CB credibly, fully, & autonomously controlled monetary policy & what would be if instead curr govt made mon pol w/o any CB influence, w/° CBI measuring wt on former:

$$m = CBI \times m_b^* \left(\mathbf{X}_b \right) + \left(1 - CBI \right) \times m_g^* \left(\mathbf{X}_g \right)$$

(2) \Rightarrow anti-infl effect of CBI not constant; it varies depending on political-economic environment in which CB operates. (Also implies all converses: [show derivatives].) (3)E.g., anti-inf effect CBI greater when left govt than when right $\mathfrak{S} v.v.$, less the more open the econ $\mathfrak{S} v.v.$, vary depending other labor- & goods-market institutions $\mathfrak{S} v.v.$, etc.

This is the generalization referenced earlier of the "*CBI reduces electoral-* & *partisan-cycles*" proposition.

C. International Capital Mobility & Exchange-Rate Regimes:

1.Clark: CB affects control, not efficacy [act'ly, can affect both, but nev. mind]; CapMob can affect efficacy (depending on exchange regime) [act'ly, can affect control & efficacy depending on cap-mob & e.r. regime, but nev. mind].

2.Mundell-Fleming Model Open-Economy Macroeconomics: Summary

a) CapMob & Fixed E.R. \Rightarrow monetary pol ineffective [unavailable, act'ly]; fiscal extra-effective.

 $(1)\uparrow m \Rightarrow \downarrow i \Rightarrow (\text{would }\uparrow I, \text{ but also}) \text{ exchange depreciation, which must fight by }\downarrow m \text{ back}$ so $\uparrow i$ back (so not affect I); alternative quick explanation: if Fix E.R. & CapMob, then must use *m* to fix *i* at rate necessary to maintain peg.

(2) \uparrow deficit (G-T) \Rightarrow \uparrow AD & $\uparrow i \Rightarrow$ exchange appreciation, which must fight by $\downarrow m$ to $\downarrow i$ (i.e., fiscal expansion forces reinforcing monetary move also, so efficacy reinforced)

b) CapMob & Flexible E.R. \Rightarrow fiscal [relatively] ineffective; monetary extra-effective.

 $(1)\uparrow m \Rightarrow \downarrow i \Rightarrow \uparrow I$, & also exchange depreciation, which allowed/accommodated so $\Rightarrow \uparrow (X-M)$ also (exchange depreciation makes exports cheaper & imports more expensive). (2) $\uparrow deficit (G-T) \Rightarrow \uparrow AD$, but also $\uparrow i \Rightarrow$ appreciation, $\Rightarrow \downarrow (X-M)$ (i.e., 2 sources crowding out now, crowding invest as before b/c $\uparrow i$ & now $\downarrow (X-M)$ b/c apprec., so fiscal [relatively] ineffective).

3. \Rightarrow Context-Conditional Electoral or Partisan Cycles: we should see cycles via monetary policy, or via fiscal policy, or not at all depending on combinations of CBI, CapMob, and Exch.Rate Regime

II. Open-Economy Macroeconomics (IS-LM-BoP Model)

A. Simultaneous eqbm in goods, money, & international markets:

1. Money (Liquidity) Market (LM): demand for, supply of money:

a) $\mathbf{M}^{s}(\text{set by mon pol-mkr}) = \mathbf{M}^{d}(\text{private actors demand for }, \text{ which depends on } i, Q)$

2.Goods (Investment & Saving) market (IS): balance demand for investment funds & supply, Savings (which is 1-Pub&PrivNetConsumpt)

a) Balance Savings (Supply of Funds), which depends i, Q (roughly, income=Q, minus priv C & pub (G-T)) with Investment (Demand for Funds), I, which depends i, Q.

3.Int'l Trade & Capital Markets: *B*alance *o*f *P*ayments (BoP): net exports, trade surpluses (deficits), earn (require) foreign exchange, which flows out (in) as capital outflow (inflow).

a) Net Exports, X-M, net earnings from rest of world (RoW) or net spending in RoW; for latter, need foreign currency (capital) inflow; former balanced by capital outflow.

B. Equilibrium:

1. Interest rates (*i*) & national income (*Q*) that simultaneously clear goods & money markets (IS & LM), & that balance external accounts (BoP).

C. The LM (liquidity mrkt) Curve (eqbm in money mrkt)

1. For any given money supply (M^s), some interest rate, *i*, needed for folks to demand exactly that quantity of money given their income, *Q*. So, for some fixed M^s , can draw line as pairs of *i* & *Q* that equate M^d to that M^s .

2. **Slopes upward:** if more income, *Q*, demand more goods & services, \Rightarrow want more money, but for a given M^s, that additional demand for money only \Rightarrow price of money (*i*) must rise:

3. From pt A in fig, $\uparrow Q \Rightarrow \uparrow$ demand money, stock of money fixed, so *i* rises, to pt B, say, to keep M^d = that M^s . Or from B, $\downarrow Q \Rightarrow \downarrow$ demand money, stock fixed, so *i* falls, to pt A, say, to keep M^d = M^s . [Just illustrating;not mean suggest any tend. cycle like this.]



Q

C. Balance-of-Payments (BoP) Curve (eqbm in external accounts)

1. **Balance-of-Payments (BoP)**: Current Account (Trade Balance: X – M) + Capital Account (Net Outflow: Cap Outfl. – Cap Inflow) = 0. I.e., X+M=NetCapFlow. *[another accounting identity]*

2. Trade surplus matched by capital outflow (earnings from surplus flows out as investment abroad, a.k.a., outward *foreign-direct-investment*, FDI, + outward *portfolio-investment*); trade deficit matched by capital inflow (excess domestic consumption funded by foreign capital inflow).

3. For any *i*, some *Q* brings Trade Balance & Capital Account to parity, & v.v.

a) Import demand, M=f(Q); X not depend on Q.

b) Capital Account = Capital (investment) out-/in-flow responds to i; $\uparrow \downarrow i$ brings in, sends out.

4. Slope: If $\uparrow Q$, imports rise, exports not \Rightarrow trade deficit \Rightarrow need cap inflow; to get it, need higher *i*; and v.v. for $\downarrow Q \Rightarrow$ trade surplus, which needs outflow, which get by $\downarrow i$.

5. Importantly, **BoP line flatter** (more elastic, *i.e.*, more interest-sensitive) the more mobile is cap. Cap flows greater in response to $i \uparrow \downarrow$, the more mobile capital. Perfect capital mobility \Leftrightarrow horizontal BoP curve.



D. IS (investment-savings) Curve (equilibrium in goods markets)

- 1. National Income = National Expenditures: Y=Q=C+I+(G-T)+(X-M)
- 2. IS-curve slopes downward: For given C, (G-T), & (X-M), any $\downarrow i \Rightarrow \uparrow I \Rightarrow \uparrow Q$.
- 3. **FISCAL POLICY:** \uparrow (G-T) \Rightarrow \uparrow Q at any given *i*; i.e., outward shift of IS curve.



E. General Equilibrium in IS-LM-BoP Model: All 3 Curves Intersect



Q

F. Using the IS-LM-BoP Model for Policy Analysis

1.<u>Capital Mobile</u>:

i

a) Monetary Policy under a Fixed Exchange-Rate Regime with highly Mobile Capital

(1) From pt A: $\uparrow M^s \Rightarrow LM$ shifts out, but this $\Rightarrow \downarrow i$ along IS curve to pt B, but this \Rightarrow capital outflow (investors leaving the lower *i* for better options elsewhere) \Rightarrow depreciation (b/c selling domestic currency for foreign to buy those better options), which violates Fixity. So pol-maker has to $\downarrow M^s$ back (keep *i* pegged to *i**).



b) Fiscal Policy under a Fixed Exchange-Rate Regime

(1) \uparrow (G-T) \Rightarrow IS shifts out (from pt A to pt B), but this \Rightarrow $\uparrow i$ along LM curve, but this \Rightarrow capital inflow \Rightarrow appreciation, which violates Fixity, so monetary policy must accommodate, i.e., M^s must expand to bring $\downarrow i$ back (from pt B to pt C), which amplifies stimulus.

(2) \downarrow (G-T) \Rightarrow ...[same chain, opp. dir. ... \Rightarrow M^s must shrink to \uparrow i back, amplifies contraction... [could follow from C to unlabeled pt opposite B as IS shift in, to A as LM curve shifts in also]

(3) UPSHOT: *Fiscal Policy extra-effective under Cap Mob & Peg* (because it forces monetary policy to come along with it (& so amplify the fiscal) in order to maintain peg).



c) Monetary Policy under a Floating Exchange-Rate Regime

(1) $\uparrow M^s \Rightarrow LM$ shifts out, but this $\Rightarrow \downarrow i$ along IS curve (from pt. A to pt B), but this \Rightarrow capital outflow \Rightarrow depreciation, which allowed under float, so $\uparrow (X-M) \Rightarrow$ IS shifts out (from pt. B to pt C).

(2) $\downarrow M^s \Rightarrow \dots$ [same chain, opposite direction]... \Rightarrow appreciation, which... $\downarrow (X-M) \Rightarrow$ IS shifts in. [could follow from C to unlabeled intersection at opposite of B as LM curve shifts in, to A as IS curve shifts in also]

(3) UPSHOT: Monetary Policy extra-effective under Cap Mob & Float Exchange-Rate.





(1) \uparrow (G-T) \Rightarrow IS shifts out \Rightarrow $\uparrow i$ along LM curve (from pt A to pt B) \Rightarrow cap inflow \Rightarrow appreciation (as dollars bought to capture that higher *i*), which appreciation $\Rightarrow \downarrow$ (X-M), which \Rightarrow some shift back of IS, might be more or less or same as original shift... [...depends on slopes of



curves & exchange-rate elasticity of net exports, etc.].

i

(2) UPSHOT: Fiscal Policy relatively ineffective if Cap Mob & Float

2. Capital Immobile: Model reduces to IS-LM (without BoP) (i.e., our simple AD-AS models from before) \Rightarrow

a) Can Peg or Float w/o forsaking monetary autonomy, or amplifying or dampening monetary-policy or fiscal-policy efficacy.

b) Both fiscal policy & monetary policy retain their normal efficacy from before.

II. Purchasing-Power Parity & Interest Parity

- C. Alternative way to see how Cap Mob may constrain monetary autonomy
- **D. PPP:** $P=EP^*$ or, in logs (*ln*), $p=e+p^*$

1. Given free trade, price of basket in one currency must equal price of same basket in another currency multiplied by the exchange rate.

2. Logic of *no-arbitrage*: could make ∞ \$ if this not true & trade is free (& costless).

3. Empirical: PPP holds very well on avg over long periods (annual level or longer); not very well in short run (monthly).

E. IP: $i = i^* + E(\hat{e})$ (... $\hat{e} = \%$ change e.r. & $E(\cdot)$ is "expected")

1. Logic similar, relies on no-arbitrage condition in diff mrkts (money mrkts) though

2. If not, all investors would want the better-return currency only, so \hat{e} , i.e., expected depreciation must equalize the returns.

3. Empirical: holds very well up to extremely short-run [although one might note that prediction is VERY flexible given difficulty estimating second term on the right...]

4. So: any diff in nominal int-rates (mon policy) will be met fully by nom. exchange-rate depreciation (flexible e.r.) or real exch.-rate deprec. (fixed e.r.). If cap *perfectly* mobile, these capital flows *infinite*, which perfectly unsustainable, so perfect mobility means mon. authorities tiny country must match domestic to foreign policy

D. Clark's Context-Conditional Electoral & Partisan Cycles Predictions: (CBI & CabMob+E.R.Regime being the "context") [My summary version] [See also same info in flow charts at end (I think much easier follow)]:

1. Upshots from IS-LM-BoP, plus CBI:

a) If Cap Immob, then both Mon & Fisc available & effective

b) If Cap Mob & E.R.Flex, monetary extra-effective but fiscal ineffective (to some degree)

c) If Cap Mob & E.R.Fix, monetary unavailable but fiscal extra-effective

d) If CB Independent, monetary policy unavailable (to domestic *political* actors).

2. Political-economic implications for policymakers:

a) If CapImmob <u>OR</u> E.R. Flex, pol-mkrs can use mon pol for electoralist or partian purposes \Rightarrow macro cycles by monetary mechanism; these monetary-driven cycles would be dampened by CapMob $\underline{\mathfrak{S}}$ Fix E.R.

b) If *CapImmob* <u>OR</u> E.R. Fix, pol-mkrs can use fisc pol for electoralist or partian purposes \Rightarrow macro cycles by fiscal mechanism; these fiscal-driven cycles dampened by *CapMob* <u> \mathfrak{S} Flex E.R.</u>

c) However, furthermore: If *CBI*, macro cycles by mon mech constraind/damp'd; fiscaldriven cycles still possible (although CB might also work some against these).

d) \Rightarrow Cycles achievable under any combo except *CBI+CapMob+Flex* [interesting: may be that these developed democracies have been moving in this direction?].

E. Game-Theoretic (Strategic) Model:

1.Basic Structure: Govt Controls Fisc Pol; CB Controls Mon Pol, but (conservative) CB Prefs Differ from Govt's Only If [insofar as] Indep.2.Model:

a) Goals of Policymakers: $L_i = (y - y_i^*)^2 + \alpha^i (\pi - \pi_i^*)^2$ [DEFINE TERMS] (1)Real Target: $y_g^* = k_g y^n$: for electoralist model: k>1 if election year; for partisan model: k>1 if left government; k=1 if non-elect, right, or if *CBI*=1. (2)Simplify: $\alpha_i = \pi_i^* = 0 \Rightarrow$ policymakers differ in real target only b) Economy: $y = y^n + \mu(\pi - \pi^e) + \phi g$ [Define terms; note: ϕ =fisc & μ =mon efficacy] (1)Expectations-augmented Phillips Curve + simple Keynesian fiscal efficacy; n.b., all else equal fiscal-policy preferred to monetary (b/c g not in Loss function, L, but π is). (2)*CapImmob* $\Rightarrow 0 < \phi, \mu < 1$; (3)*CapMob*, *Fix* $\Rightarrow \phi = 1, \mu = 0$; (4)*CapMob*, *Flex* $\Rightarrow \phi = 0, \mu = 1$.

c) Order of Play:

(1)All learn game structure (E or~E; R or L; *CBI* or ~*CBI*, all parameters of model); *n.b.*, actually no role for π here; game as modeled entirely b/w CB & govt, no citizens.

(2)Govt chooses g; then bank chooses π . Note:

(a) Actually, bank chooses π given expects *g* from govt optimize \Rightarrow some π (g); symmetrically, govt chooses *g* knowing this is how bank will act.

(b) [game somewhat odd for CBI=0 case; because then govt would optimize over g & π]

3.*Implications*: As before but CB not only not act *electorally* or *partisan-ly* but leans monetarily against govt if indep & retains mon. auton.

4. Predictions:

a) If CapImmob, fiscal manipulation regardless of E.R. or CBI, but CBI likely dampens. [note: fiscal policy Pareto-preferred ceteris paribus in this model.]

b) If *CapMob*, fiscal manipulation under *Fixed E.R* but not under *Flex E.R.*, regardless of *CBI*. [note: fiscal 100% ineffectual under *Flex* in this model.]

c) *If CapImmob*, monetary manipulation in contractionary direction [more generally, monetary counters fiscal policy] if *CBI*.

d) If *CapMob*, monetary manipulation in expansion dir only if ~*CBI* & *Flex E.R.*

5. Main Difference from Non-strategic (Decision-Theoretic) Model: CapMob, Fix, & CBI \Rightarrow fiscal effective & CB constrained from countering \Rightarrow fiscal cycles, if anything, greater outcome cycles w/ CapMob than w/o.

6. [TABLE 3: *n.b.*, absolute (none, all) statements mostly due to dichotomized conditions & extreme resolution of assignment problem (all fiscal policy); viewed as relative statements should hold though.]

	No Central Bank Independence	Central Bank Independence
No capital mobility	Fiscal policy: expansion Monetary policy: indeterminate National income: expansion	Fiscal policy: (smaller) expansion Monetary policy: contraction National income: (smaller)
Capital mobility and fixed exchange rates	Fiscal policy: (larger) expansion Monetary policy: none National income: expansion	expansion Fiscal policy: (larger) expansion Monetary policy: none National income: expansion
Capital mobility and flexible exchange rates	Fiscal policy: none Monetary policy: expansion National income: (smaller) expansion	Fiscal policy: none Monetary policy: none National income: none

7.NOTE: CBI, CapMob, E.R. all viewed as exogenous.

8.*Policymaking Highly Context-Dependent*; misleading at best to explore [theoretically or] empirically w/o consider context

F. Diagrams summarizing Clark's Central-Bank-Independence, Capital-Mobility, & Exchange-Rate-Regime Conditional Electoral and Partisan Cycles Theory (1st w/ steps elab'd; 2nd just upshots):



