ECOS3007: International Macroeconomics

Balance of payments (BOP)

Balance of payments (BOP) summarizes transactions between residents and non-residents during a period. Structure of BOP by most countries is supposed to conform to the guidelines set out by IMF (Latest document released in 2009). Consists of 3 accounts:
1. Current account – trade, income and transfers flows – payments of interest, profit, transfer payments (pensions to people living overseas). Records flows
2. Capital account – acquisitions of non-financial assets (not significant in this course), e.g. sale of embassy's
3. Financial account – (used to be known as capital account prior 2009) – overseas acquisitions of financial liabilities, selling Australian assets, purchasing overseas bonds. Records changes in stocks

E.G. Purchasing an import = demand for forex on the current account, this will result in either a:
– reduction in assets (transfer of ownership of a bank deposit to a non-resident)
– acquisition of a liability on financial account (credit extended by non-resident to resident)

E.G.2 Sale of an export = supply of forex on the current a/c, this will result in either a:
– increase in assets (purchase of a foreign bank deposit)
– relinquishment of a liability on the financial a/c (e.g. reduction in outstanding debt of a resident to a non-resident)

On financial a/c: purchase of a financial asset by resident (e.g. shares in a foreign company) => a reduction in financial assets (e.g. transfer of ownership of a bank deposit)

Creation of a financial liability e.g. a foreign currency loan from non-resident to resident => an increase in financial assets (currency holding of resident increases)

Financial account sales and purchases should be paired with offsetting transactions on that a/c
Hence any net change in assets less liabilities on the financial account should reflect overall deficit or surplus on the combined current plus capital a/c's

Every transaction in capital account has a corresponding entry in financial account. purely financial transactions will have a pair in asset and liability section of financial account.
The balance on the financial account, should match the balance of the current account.
A deficit in the current account e.g. ceteris paribus imports are greater than exports, then to finance these imports we must have a reduction in assets or an increase in liabilities

A deficit in the current account would reflect changes in net borrowing assets minus liabilities goes down.
A surplus in the current account then means that net assets minus liabilities goes up
The economic interpretation of
Economic interpretation of the Composition of balance of payments is important in two respects:

1. the sign of the current a/c balance and its financial implications – e.g. with a capital ac balance persistently at deficit, this means continuing falling assets minus Liabilities on financial ac i.e. Increasing net borrowing from rest of the world or decreasing assets
2. composition of BOP - important in understanding relations between the exchange rate and the role of "reserve assets" in the financial a/c – forex reserves of central bank – If there is excess demand or supply of AUD if the CB wants to maintain exchange rate then it has to use up stock of forex reserves which will take the burden of large fluctuations in exchange rates
   - CB's stock of forex reserves reconciles private sector demands for forex (in exchange for $Aus., e.g. importers, purchases of assets from non-residents) and private sector supplies of forex (in exchange for $Aus., e.g. exporters and non-residents purchases of domestic currency denominated assets)

Exchange rates

For simplicity we are ignoring current a/c in the following topic.

ACTUAL Net (non-reserve) demand for forex = imports + income and transfers paid overseas + new acquisition of assets from non-residents. (does not include changes in central bank reserve) MINUS exports + income and transfers received from overseas + new acc of liabilities

- Demand less supply for forex not including central bank changes

Non-Reserve Balance (NRB) = financial account balance (change in assets MINUS change in liabilities) excluding change in central bank reserves
e.g. ignores income and transfers in current account, just focusing on trade for simplicity
Therefore, if there is a current account deficit then NRB must show deficit

A SIMPLIFIED SAMPLE BOP			
Imports (M)		100	
Exports (X)	80		
Current A/C Bal.			-20
	Net Acqu. Assets	Net Acqu. Liabilities	
Direct Inv.	+20 (X)	0	
Portfolio Inv.	+40 (X)	+50(M)	
Other	+20 (X)		
	-40 (M)	0	
NRB	+40	+50	-10
CB Reserves	-10		
Fin A/C Bal.	+30	+50	-20

- $50 Aus (imports) + $80 Aus (FA asset acqu.) + $10 $Aus bank deposit sale = $140 Aus to be exchanged for forex
- Forex worth $80Aus (exports)+ $50 Aus (FA liabilit. acqu.) (= $130 Aus forex equivalent) to be exchanged for $Aus
- Excess demand "can" be met by CB i.e. CB forex reserves fall by $ 10 Aus

MODEL Net (non-reserve) demand for forex = net rundown (change) in forex reserves = imports – exports + NRB
Alternatively worded:
Net accumulation of fore reserves by CB
= exports – imports + net acquisition liabilities – net acquisition assets
= exports – imports - NRB

Therefore, If the current account is in defecit (in this simple examples imports > exports) for a zero net change in CB reserves the the financial account must also be in defecit (net acquisitions liabilites must > net acquisitions assets (not including change is CB reserves)

- If exports - imports – NRB > 0 → an excess supply of forex in exchange for $Aus (forex looking to be exchanged for austrlian dollars exceeds the amount of dollars looking to be exhcnaged for foreing exchnage). This excess supply of forex must be absorbed (increase accumulation of forex by CB) by the central bank or else there will be upward pressure on $AUS
- If exports - imports – NRB < 0 → an excess demand for forex in exchange for $Aus which either must be met by the central bank (decrease in CB forex reserves) or pressure for ↓ $AUS

Factors that govern (determine) the size of current a/c balance and size of NRB

$$NX = \overline{NX} - m.Y - v.\varepsilon$$

NX = Net Exports. Composed of:
$\overline{NX}$ = Autonomous part

m.Y = Part that depends on level of income (Y) (m = marginal propensity to import) as Y↑ → NX↓

v.ε = part that depends on the real exchange rate (↑ε (real appreciation) → ↓NX (makes imports more competitive))

$$NRB = f. \left(r^* - \frac{\Delta E^e}{E} - r \right)$$

f = a positive constant (>0)

Demand for foreign assets against demand by foreigners for the liabilities we issue is a function of relative rates of return. Therefore NRB is a function of the relative rates of return $\left(r^* - \frac{\Delta E^e}{E} - r \right)$

→ Assumes flows behind NRB responds to differences between domestoc and foreign interest rates (from UIP)

Balance of payments (BOP) equilibrium – when there is no pressure on the exchange rate or change in CB forex reserves. Since ΔReserves = exports - imports – NRB, then:

$$\Delta Reserves = \overline{NX} - m.Y - v.\varepsilon - f. \left(r^* - \frac{\Delta E^e}{E} - r \right)$$

Equilibrium occures when ΔReserves = 0 (NX – NRB = 0)

$$0 = \overline{NX} - m.Y - v.\varepsilon - f. \left(r^* - \frac{\Delta E^e}{E} - r \right)$$

(re-arrange)

This is known as the **BP Relation** for a given $r^*, f, m, \overline{NX}, v, \varepsilon, \frac{\Delta E^e}{E}$ (holding everything but Y and r constant)

$$r = r^* - \frac{\Delta E^e}{E} + \frac{1}{f}. (m.Y - \overline{NX} + v.\varepsilon)$$

→ BP relation is similar to the IS-LM model – interest rate, income combinations that represent equilibirum in BOP.

→ To maintain 0 BOP for a given $\frac{\Delta E^e}{E}$ and r^*, requires that r increases as Y increases (since ↑Y → ↓NX) – A decrease in NX mean an excess deman for foreign exchange, if you want to maintain 0 BOP balance you have to increase the liabilities sold to foreigners (inflow of forex) compared to the assets we are buying (outflow of forex) to balance financial account. A higher domestic rate of interest,r, is what would increase inflow of forex to balance – so at a higher rate of income, the interest rate would have to be higher for BOP equilibrium

→ Given, $r^*, f, m, \overline{NX}, v$, the level of r corresponding with each level of Y falls with a fall in ε - A decrease in ε means improved the current account at each level of income – so if you have a defecit it gets smaller, this improves CA. A smaller defecit in the current account if you have BOP equilibrium means in the financial account the gap between liabilites (non residents purchasing our liabilities minus us purchasing foreign financial assets) has to be smaller (you need less inflow of forex on the financial account hence you want get away with lower real interest rate)

→ f coefficient represent the degree of **mobility of financial flows** – degree of responsiveness of financial flows to different rate of returns, if f is very large there is perfect mobility of financial flows.

Perfect vs. imperfect mobility of finacial flows (FF)

Perfect mobility of FF
  → FF are highly sensitive to rates of return – practically equivalent to UIP condition so that $r = r^* - \frac{\Delta E^e}{E}$ – this is why BP curve is horizontal
  → as f gets larger, BOP balance gets closer to 0
  → Horizontal BP means regardless of income level orsize of current account deficit, under UIP, only need to set interest rate consitant with UIP
  → The only way you can set interest rate different to the world rate is if there is an expectation of changes in exchange rate. In diagram, the higher expected rate of interest under BOP equilibirum the exhchage rate you have to be E1 so that the expected echnage rate in the future balances out with the higher domestic rate compaired to foreign rate.
  → Domestic and foreign rates are different due to expectations, but eventualy the expectations will become reality - A rise in the expected exchange rate will shift UIP curve right to UIP1, so that the exhcnage rate would have to rise to E2 to maintain domestic E
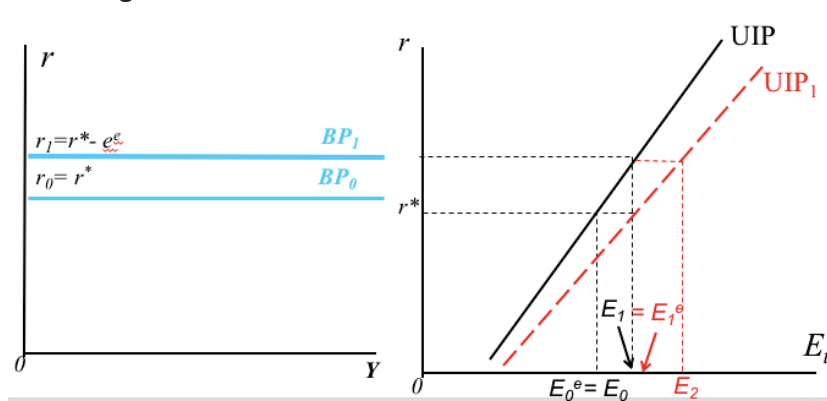
  → One other way you can have the domestic rate of interest being different to the foreign rate of interest is if you introduce a **risk premium (σ)** so that investing in the domestic currency is deemed to be a little bit more risky that investing in other currencies. So under UIP, even though you have no changes in expected exchange rates, your domestic rate of interest has to be equal to the foreign one PLUS some expected risk premium

$$r = r^* + \sigma$$

So including a risk premium, UIP becomes:

$$1 + r - \sigma = \frac{E_t}{E^e_{t+1}} . (1 + r^*)$$

If you have a positive risk premium, then at each level of exchange rate, UIP will be higher – domestic rate of interest would have to be higher at each level of the exchange rate