

International Economics: Lecture 22

Elasticity Approach to CAB

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Elasticity approach to current account balance

When the dram depreciates,

- domestic goods (exports) become relatively cheaper and
- foreign goods (imports) relatively more expensive.

Hence, we would expect Armenian exports to \uparrow and imports to \downarrow .

What is the formal rule, under which a depreciation causes the trade balance to move toward surplus?

Elasticity approach to current account balance

Assume a 2 country world in which trade is initially balanced, $X=M=TB=0$.

The question: When will a depreciation cause a change in X greater than in M.

The Marshall-Lerner
condition

$$\varepsilon_X + \varepsilon_M > 1$$

Export + Import elasticities
with respect to exchange rate

The proof of the Marshall-Lerner condition

$$TB = PX - SP^*M$$

$$\varepsilon_X = \frac{dX / X}{dS / S}$$

$$\frac{dTB}{dS} = P \frac{dX}{dS} - SP^* \frac{dM}{dS} - P^*M$$

$$\varepsilon_M = -\frac{dM / M}{dS / S}$$

$$\frac{dTB}{dS} = \varepsilon_X \frac{PX}{S} + \varepsilon_M P^*M - P^*M$$

$$\frac{dTB}{dS} = P^*M \left(\varepsilon_X \frac{PX}{SP^*M} + \varepsilon_M - 1 \right)$$

Trade is initially
balanced, so

$$PX = SP^*M$$

$$\frac{dTB}{dS} > 0$$

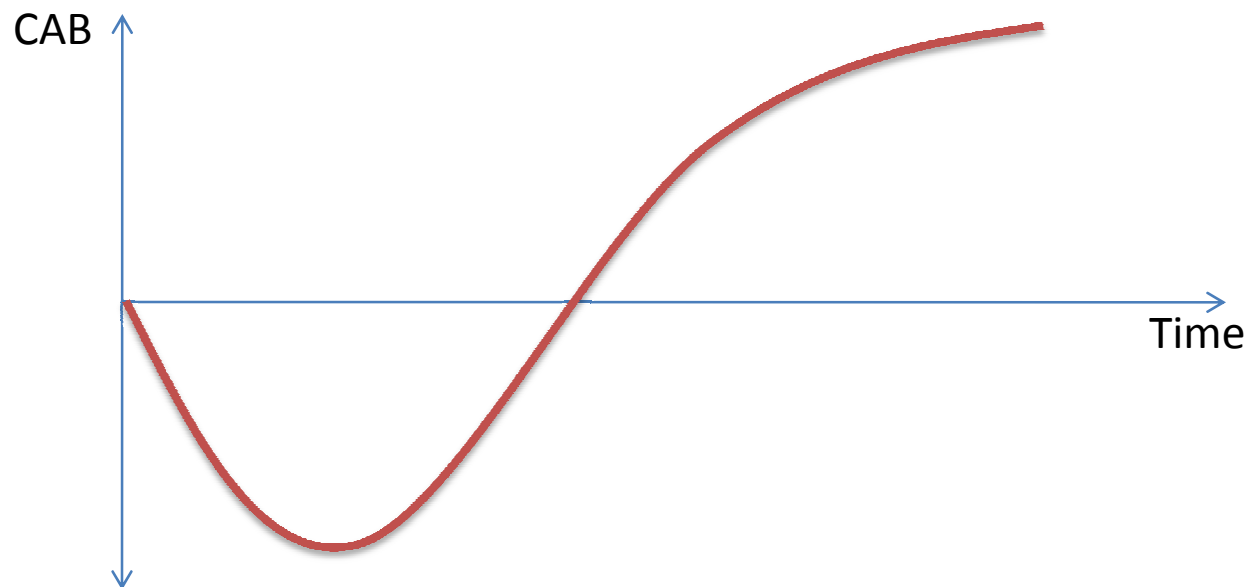
$$\varepsilon_X + \varepsilon_M > 1$$

The J-curve

In the short-run the Marshall-Lerner condition usually doesn't hold, as

- in the short-run exports and imports volume do not change that much,
- thus, the price effect dominates.

Therefore, the trade balance worsens immediately after the depreciation and only later improves.



ML condition: An example

Assume dram/dollar spot rate is 250 initially, and 300 after depreciation.

Export price is 600 drams, import price is \$4.

	Quantity (units)	Price	Value in drams	Value in dollars
<i>Before depreciation, S=250</i>				
Export	50	600 drams	30,000	120
Import	30	\$4	30,000	120
<i>Balance</i>			0	0
<i>After depreciation the TB improves, S=300</i>				
Export	57.5	600 drams	34,500	115
Import	27	\$4	32,400	108
<i>Balance</i>			2,100	7

$$\varepsilon_X = (7.5/50) / (50/250) = 0.75$$

$$\varepsilon_M = -(-3/30) / (50/250) = 0.5$$

$$\varepsilon_X + \varepsilon_M = 1.25$$

ML condition: An example

Assume dram/dollar spot rate is 250 initially, and 300 after depreciation.

Export price is 600 drams, import price is \$4.

	Quantity (units)	Price	Value in drams	Value in dollars
<i>Before depreciation, S=250</i>				
Export	50	600 drams	30,000	120
Import	30	\$4	30,000	120
<i>Balance</i>			0	0
<i>After depreciation the TB deteriorates, S=300</i>				
Export	54	600 drams	32,400	108
Import	27.6	\$4	33,120	110.4
<i>Balance</i>			-720	-2.4

$$\varepsilon_X = (4/50) / (50/250) = 0.4$$

$$\varepsilon_M = -(-2.4/30) / (50/250) = 0.4$$

$$\varepsilon_X + \varepsilon_M = 0.8$$

The Marshall-Lerner condition: An evaluation

1. What if trade is NOT initially balanced?

$$PX \neq SP^*M \quad \frac{dTB}{dS} > 0 \quad \varepsilon_X \frac{PX}{SP^*M} + \varepsilon_M > 1$$

2. Depreciation rises imported raw material prices, and makes exports less competitive.
3. The increase of net exports has a multiplier effect on income, which increases imports.

BUT the basic idea holds true:

A depreciation improves the Balance of Trade, if export and import elasticities are high, or, more specifically, if the responsiveness of trade volumes to exchange rate changes is sufficiently large.

Thank you and take care,

but remember

The only things you learn
are the things you tame.

Antoine de Saint-Exupery, The Little Prince