Macroeconomics Equation Sheet

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Chapter 16

The marginal prosperity to consume (MPC)
The marginal prosperity to consume (MPC) is the portion of additional income spent on consumption:

$$\text{MPC} = \frac{\text{change in consumption}}{\text{change in income}} \tag{1}$$

The multiplier effect is significant when we focus on aggregate demand in the economy; each time people earn new income, they spend part of it.
The spending multipler (m^s) Tells us the total impact on spending from an initial change of a given amount; the multiplier depends on the marginal propensity to consume: the greater the marginal propensity to consume, the greater the spending multiplier. The formula for spending is

$$m^s = \frac{1}{1 - \text{MPC}} \tag{2}$$

because the MPC is a fraction between 0 and 1, in principle the multiplier must come out larger than 1. *Note that the multiplier concept applies to all spending, no matter whether the spending is public or private.*
Some Laffer Curve equations Total income tax revenue depends on the level of income and tax rate:

$$\text{income tax revenue} = \text{tax rate} \times \text{income} \tag{3}$$

Increasing tax revenues:

$$\uparrow \text{income tax revenue} = \uparrow \text{tax rate} \times \text{income} \tag{4}$$

But at some point, tax rates become so high that they provide significant disincentives for earning income. This is the case, where increases in the tax rate leads to less tax revenue; at this point, an increase in the tax rate reduces income enough that net tax rate revenues falls:

$$\downarrow \text{income tax revenue} = \uparrow \text{tax rate} \times \downarrow\downarrow \text{income} \tag{5}$$

Chapter 17

In the end, the impact on the money supply is a large multiple of the initial increase in money; the exact multiple depends on the **reserve ration** (rr) the banks decide to maintain. The rate at which banks multiply money when all currency is deposited into banks is called **simple money multiplier** (m^m). The formula is:

$$m^m = \frac{1}{rr} \tag{6}$$

Chapter 20

The law of one
Which says that after accounting for transportation costs and trade barriers, identical goods sold in different

locations must sell from the same price. We can state that the law of one price in equation form, where p_a is the price of a good in location A and p_b is the price of the same good in location B:

$$p_a = p_b \tag{7}$$

Purchasing power parity (PPP)
Is the idea that a unit of currency should be able to buy the same quantity of goods and services in any country. PP is an extension of the law of one price.

$$p_a = \text{exchange rate} \times p_b \tag{8}$$

In the short run, PPP may not hold perfectly, and we explain the reasons for this...in the long run, after all the adjustments have taken place, PPP holds. We can also rewrite the equation to derive a key implication of PPP:

$$\text{exchange rate} = \frac{P_a}{P_b} \tag{9}$$

This equation is a direct extension of the law of one price to international trade in all goods and services.
Now we arrive at an important principle with regard to the balance of payments, which we call the *key indentity of the balance of payments:* while either account can be in deficit or surplus, together they sum to zero. A positive balance in the current account means there must be a negative balance in the capital account, and vice versa. We can also write this principle in equation form:

$$\text{current account balance} + \text{capital account balance} = 0 \tag{10}$$

Recall GDP!

$$\text{GDP} = Y = C + I + G + NX \tag{11}$$