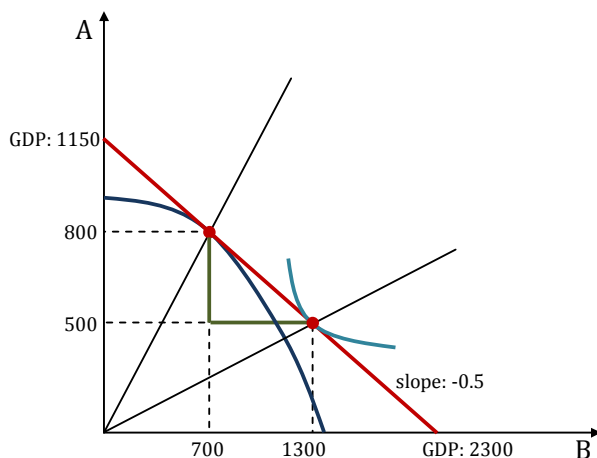


Exercise #1: Implications of Growth for Trade

Assume a small country produces two goods: A and B; using two resources: L and K. The production of A is 800 units, and that of B is 700 units. The consumption of good A is 500 units. The terms of trade (price of A in terms of B) are constant and equal to 2.

Question #1: How much is the consumption of good B?



As the production of A is higher than the consumption, A is being exported. And its exports is equal to $300 = 800 - 500$ (*exports = production - consumption*).

Trade is balanced, therefore $imports = exports \times terms\ of\ trade$. Remember, we have defined the terms of trade as price of A in terms of B. It means one unit of A is exchanged with 2 units of B. And in our case A is the exported good, and B is the imported good. That is why $imports\ of\ B = 300 \times 2 = 600$.

Equivalently, we might define terms of trade as “price of B in terms of A”. In that case imports would be equal exports times one over terms of trade:

$$imports = exports \times \frac{1}{terms\ of\ trade} \quad \Leftrightarrow \quad exports = imports \times terms\ of\ trade$$

It is given that the production of B is equal to 700 units. As the imports of B is equal to 600 units, the consumption of B is equal to $1300 = 700 + 600$ units (*consumption = production + imports*).

Question #2: How much is the GDP of the country?

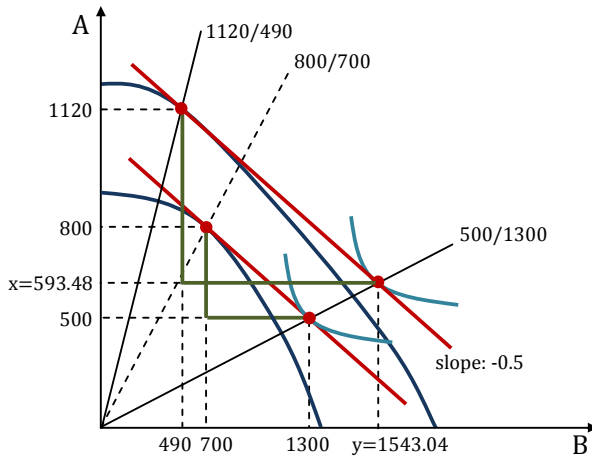
GDP is the value of final products produced within a specific time period. In our problem we have just two goods, and the production of A is 800 units, and that of B is 700 units. We should never add the physical amounts of A to B. The best which we will get out of that may be a Thai salad (if A is seafood, and B is fresh coconut, for example), but we will never get GDP.

That is why we should convert either A into B, or B into A, taking into account their relative price, which is given by terms of trade.

Specifically, GDP in terms of B is equal to $800 \times 2 + 700 = 2300$, because 800 units of A are equivalent in value to $800 \times 2 = 1600$ units of B.

Equivalently, GDP in terms of A is equal to $800 + 700/2 = 1150$, because 700 units of B are equivalent in value to $700 / 2 = 350$ units of A.

Question #3: Assume the production of A increases by 40%, and that of B decreases by 30%. The terms of trade are constant. Assume also after growth relative consumption doesn't change (new consumption occurs along the same consumption ray). How much have the consumption of A and B changed?



We have the following:

	A	B
<i>Before growth</i>		
Production	800	700
Consumption	500	1300
<i>After growth</i>		
Production	+40%= 1120	-30%= 490

Let us denote the after growth consumption of A by x , and that of B by y . At the new consumption point the following are true:

$$\frac{x}{y} = \frac{500}{1300}$$

$$y - 490 = (1120 - x) \times 2$$

By solving this system of equations we get, that $x = 593.48$, $y = 1543.04$.

	A	B
Consumption before growth	500	1300
Consumption after growth	593.48	1543.04
Change	18.7%	18.7%

Question #4: How much have the exports and imports changed as a result of the growth?

	A	B
<i>Before growth</i>		
Production	800	700
Consumption	500	1300
Export	300	
Import		600
<i>After growth</i>		
Production	1120	490
Consumption	593.48	1543.04
Export	526.51	
Import		1053.04
Export change	+75.51%	
Import change		+75.51%

Question #5: How much has the GDP changed?

	GDP in term of A	GDP in terms of B
<i>Before growth</i>	1150	2300
<i>After growth</i>	$490/2+1120=1365$	$1120 \times 2+490=2730$
GDP change	18.7%	18.7%

