Comparative and Absolute Advantage and the Production Possibilities Frontier[1]
In-Class Problem[2]

Assume we have two nations (Gore and Eccles) capable of producing two goods (capital and consumables). Gore has 3,500 persons in the productive labor force and Eccles has 8,000. Their respective production capabilities are parameterized by the following matrix:

	Capital (K) per worker	Consumables (C) per worker	Labor Force
Gore	30	55	3,500
Eccles	75	60	8,000

a) Describe the Absolute Advantage (AA) observable between these two nations.

Eccles has an AA in Capital (K) and Consumables (C) as 75>30 and 60>55, respectively. Eccles holds the mutual absolute advantage.

b) Describe the Comparative Advantage (CA) observable between these two nations.

	Capital (K) per worker	Consumables (C) per worker	1 unit of K =	1 unit of C =
Gore	30	55	$\frac{C}{K} = \frac{55}{30} = 1.83\ C$	$\frac{K}{C} = \frac{30}{55} = 0.54\ K$
Eccles	75	60	$\frac{C}{K} = \frac{60}{75} = .8\ C$	$\frac{K}{C} = \frac{75}{60} = 1.25\ K$

To ascertain CA we consider the nation with lowest opportunity cost in the production of a particular good – that nation has the CA in the production of that good.

In this case, Gore's opportunity cost of producing K= 1.83C and is higher than Eccles' cost of .8C such that Eccles has the **Comparative Advantage** in the production of K. Gore's opportunity cost of producing C= .54K and is lower than Drovanna's cost of 1.25K such that Gore has the **Comparative Advantage** in the production of C.

[1] This primer is intended to present an abbreviated discussion of the included economic concepts and is not intended to be a full or complete representation of them or the underlying economic foundations from which they are built.

[2] This In-Class Problem was developed by Rick Haskell, Ph.D. Student, Department of Economics, College of Social and Behavioral Sciences, The University of Utah, Salt Lake City, Utah (2014).

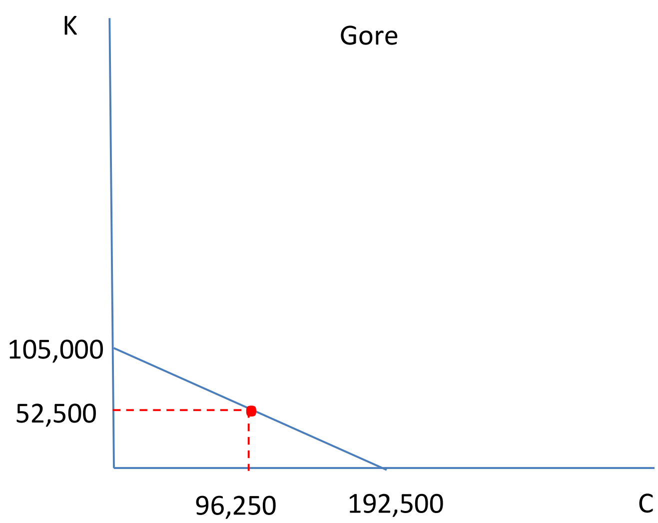
c) Let's assume that these nations do not trade: they are in Autarky. If each nation employs 50% of their productive capacity in the production of each good, what would be their combined production of each good be?

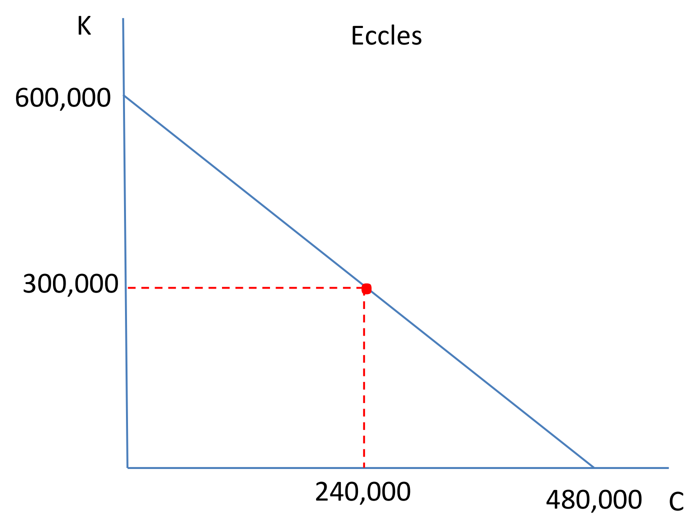
	Capital (K)	Consumables (C)
Gore	$\frac{[(30K)(3{,}500)]}{2} = 52{,}500K$	$\frac{[(55C)(3{,}500)]}{2} = 96{,}250C$
Eccles	$\frac{[(75K)(8{,}000)]}{2} = 300{,}000K$	$\frac{[(60C)(8{,}000)]}{2} = 240{,}000C$
Combined	352,500	336,250

d) Given the productive capacities stated and the allocations as noted in (c), what does each nation's Production Possibilities Frontier (PPF) look like?

Based on the productive capacities and labor force values stated we know the total possible production of K and C:

	Capital (K)	Consumables (C)
Gore	$(30)(3{,}500) = 105{,}000K$	$(55)(3{,}500) = 192{,}500C$
Eccles	$(75)(8{,}000) = 600{,}000K$	$(60)(8{,}000) = 480{,}000C$





e) Based on the PPF curves and data given, which of the two nations might appear to enjoy the greatest level of wealth?

From these respective PPF's it would appear that Eccles may be a much wealthier nation than Gore.

f) Now let's assume that the two nations enter into trade to take advantage of the possible gains that might arise. How might we think about the optimal production levels each nation may pursue?

For the two nations to enjoy increased levels of K and C the two are going to need to produce >352,500K and >336,250C. Based on what we know about their comparative advantages, let's plan for Gore to employ 100% of its capacity in the production of C (in which it has the CA), such that Gore will produce 192,500C. This still leaves us 143,750C short of the needed 336,250C so let's also plan for Eccles to employ 40% of its capacity in the production of C. Let's then expect that Eccles employs 60% of its capacity in the production of K such that it will produce 360,000K > 352,500K.

	Production of K	Production of C
Gore	0	$(55C)(3{,}500)(1.00) = 192{,}500C$
Eccles	$(75K)(8{,}000)(.60) = 360{,}000K$	$(60C)(8{,}000)(.40) = 192{,}000C$
Combined	$360{,}000K > 352{,}500K$	$384{,}500C > 336{,}250C$

The choice for Eccles to employ 40% of its capacity to the production of C was somewhat arbitrary. What was necessary was for the combined production of C and combined production of K to be greater than that experienced before trade and that we have each nation place the greater part of their productive capacity in the production of the good in which they enjoy a CA.

g) How might we think about the decisions these nations will make in terms of how much of their production to keep and how much to trade?

We know that each needs to retain at least as much of the goods they produce to meet the needs of their population. We normally consider this sin terms of consumables first since it's not very popular to plan for your population to go without their consumption needs. So let's expect that Gore will retain 100,000C > 96,250C. This leaves them with 92,500C to trade with Eccles. Eccles on other hand needs to retain > 300,000 K of the so let's suppose that it will retain 305,000K > 300,000K and trade the remaining 55,000K >52,500K to Gore.

	Capital (K)	Consumables (C)
Gore	55,000	100,000
Eccles	305,000	284,500
Combined	360,000	384,500

h) Given the production and trade choices identified in (g), what do the two nation's PPF's look like and how might we visualize the gains they enjoy from trade?