Geographical Economics Winter 2014/2015
Assignment #1: Due October 28th 2014

Hints for solutions

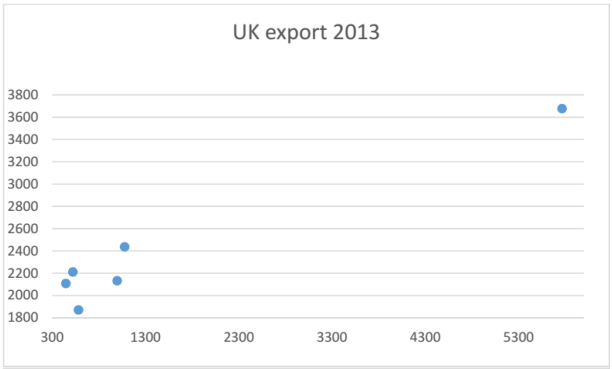
1 Exercise # 1

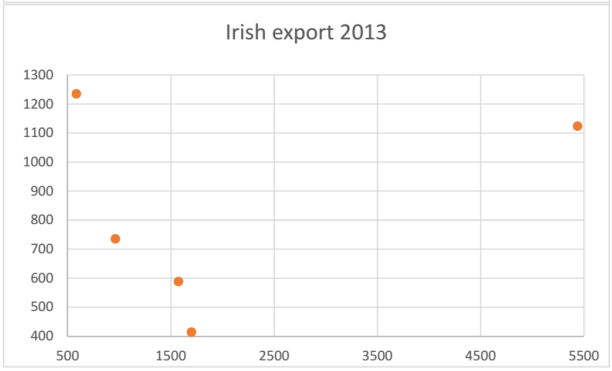
Here you are the data:

Data				(IMF)	
		Export 2013 Mill €		GDP PPP int $	Distance (km)
UNITED KINGDOM	UNITED STATES	3677		53101	5766
UNITED KINGDOM	GERMANY	2437		40006	1075
UNITED KINGDOM	NETHERLANDS	2211		41710	520
UNITED KINGDOM	SWITZERLAND (ind. LI	2133		46430	995
UNITED KINGDOM	FRANCE	2108		35783	446
UNITED KINGDOM	IRELAND	1870		30547	581
IRELAND	UNITED KINGDOM	1235		37306	584
IRELAND	UNITED STATES	1124		53101	5439
IRELAND	BELGIUM (and LUXBG -	735		37880	962
IRELAND	SWITZERLAND	588		46430	1573
IRELAND	GERMANY	414		40006	1699

Looking at data, it is not so evident that geographical proximity matters for export direction in the case of the two countries. In the case of UK, the lack of this effect is more evident. Available income in the destination country seems being a more important factor than physical distance for UK export. In case of Ireland, as one should expect, the most important destination for export is UK, while the other countries seems being ranked by income rather than by distance.

The plots are:





Comments: in the case of the Irish exports there is somewhat a negative relationship between exports and distance if we exclude the (outlier) observation referring to the US. Instead, the case of UK is at odds with the statement that there exists a negative relationship between volume of export and distance.

Warning:

- In the previous graphs, the distance is on the horizontal axe and value of exports on the vertical one. You can obtain the same qualitative graphs by using the GDP of the destination country rather than the value of the exports. Both the indicators are proxies for *the size of the export market*.

2 Exercise # 2

According to the elements affecting location choices discussed in class, in case of intermediate (average) transport costs, it will be convenient to open another plant in the other region where all your competitors have already settled the second plant. The system is basically in the fully even situation: only one firm makes the difference between North and South. This is the reason for having a "partial agglomeration". An extra firm in North will exacerbate competition, shrinking mark-ups in North. This result can be argued either with the simple numerical example we discussed in class or focusing on the EEKK model, but approx with the even distribution situation and moving along the curves.

Instead, in the case your competitors have just one plant (in North), transport costs are infinite and population is immobile the best choice is to locate the second plant in South. This is a market without any firm (then, no competitors over there) and, so, entering the market will allow you to serve all the demand. By construction, in the model, there is always population in South to be served. The high level of transport costs makes exports a not suitable option to serve the market. Again this result can be proven with a numerical example or the EEKK graph.

Warning:

- Pay attention to the initial situation. You are in a situation very very close to the (0.5; 0.5) point. The problem assumes that you have N firms in region North and N-1 firms in region South. Therefore, this is not the case in which the EE-KK crossing point is clearly above (0.5; 0.5).
- In this type of models (and as we discussed in class) you always need a part of your population to be immobile (the farmers, in the example we discussed in class), and allow the rest (the one working in firms) to be mobile or not.
- Consider all the forces at work: transport costs; market size; externalities and competition among firms (which affects the mark-up and prices).
- The EE curve shift iff we have the entry of NEW resources (new immigration, or unexpected increase of income). In all the other cases, you move along the curve. The same applied to the KK curve.

3 Exercise # 3

(NB: This exercise has been taken from the last year exam)

a) In a Solow-Swann setting, consider the case of an economy with population growth but no knowledge growth. How can you represent graphically the key components of this economy?

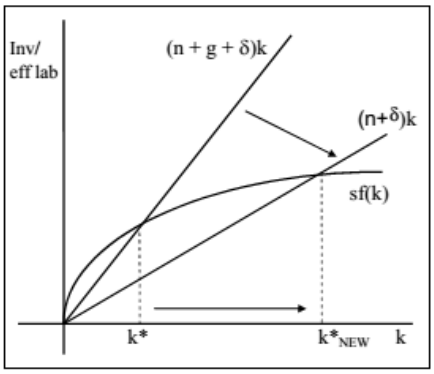
Answer: Canonical setting

$$sY(k) = (n + \delta + g)k$$

The absence of knowledge growth makes $g = 0$ and therefore the previous conditions become:

$$sY(k) = (n + \delta)k$$

The graph is:



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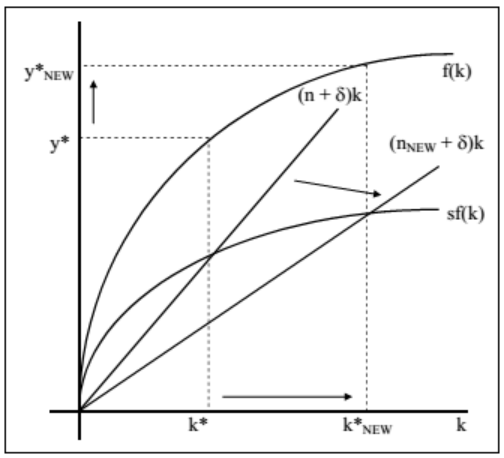
b) Does this economy achieves the balanced growth path? The optimal value k* would be larger than the canonical case when we admit knowledge growth? Show graphically

Answer: Refer to the graphic above. The absence of knowledge growth does not produce any structural change in the balanced growth path. The economy achieve a new k^*whose value is larger than the previous one, because the slope of $(n + \delta)k$ is flatter than the original one. The presence of the technology/knowledge progress accelerate the convergence to the point k^*.

c) Refer to case a), now, suppose that the rate of population growth falls. What happens to the value k*? And to the output per worker? Show it graphically

Answer: Refer to the graph below:



The reduction of the population growth rate makes $(n_{NEW}+\delta)k$ flatter than $(n+\delta)k$. Therefore our balanced growth path is expected to achieve a golden rule point $k^*_{NEW} > k^*$. As a consequence we achieve a higher level of output per worker. The graph shows that $y^*_{NEW} > y^*$.

Warning:

- Please pay attention to the meaning of the absence of knowledge ($g = 0$) and the way to embed it into the setting.
- As for the way the curve shifts: pay attention ! In case of not having clear ideas about the direction of the shift, replace parameters with numbers and draw the curves !

4 Exercise # 4

The results you get are strongly associated with your selected sample. In general, if you select a sample of countries whose GDP-per capita is similar (namely, it has a similar magnitude) you are expected to get absolute convergence. In the other cases, this effect can be blurred. Then, geographical proximity may have a minor or major role in boosting convergence according to the sample selection. Time dimension is important: convergence can be appreciated when considering a long-term period. Definitely, the time dimension may be more relevant than geography.

Warning:

- In order to map the potential convergence according to the Baumol's equation, remind that the logarithm of the initial GDP lies on the horizontal axe. On the vertical axe you need to consider the difference between the logarithm of the most recent GDP and the logarithm of the initial GDP. These data need to be clearly identified.
- In order to compute the convergence process, you need to map all data referring to your selected sample in a same graph. The sample need to be maintained through the whole exercise.