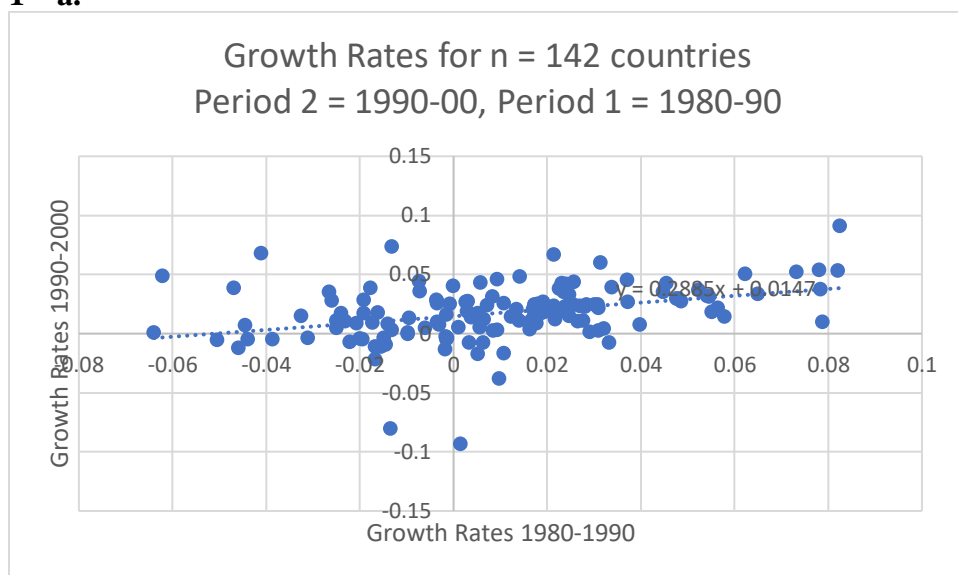


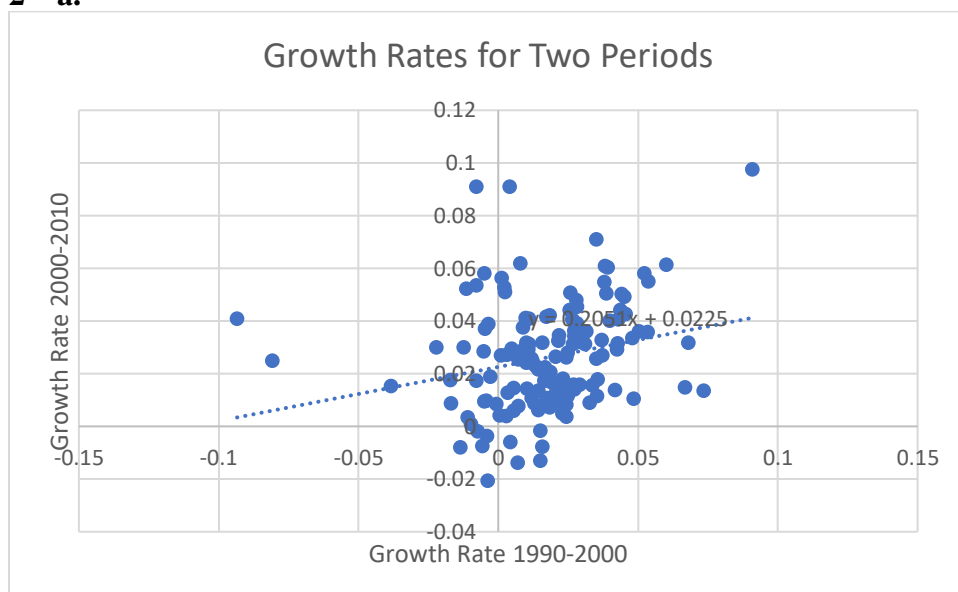
1 – a.



1 – b.

| country | r_1980_90 | r_1990_00 |
|--------------------------|-----------|-----------|
| Botswana | 0.0784331 | 0.037379 |
| Israel | 0.0173781 | 0.0242224 |
| Korea, Republic of | 0.0820798 | 0.0535242 |
| - | | |
| Kuwait | 0.0409919 | 0.068114 |
| Sierra Leone | 0.0014743 | -0.093413 |

2 – a.



2 – b.

=CORREL(B2:B143, C2:C143) -> 0.23701828. They are positively correlated.

3 – a.

| <i>Regression Statistics</i> | |
|------------------------------|-------------------|
| Multiple R | 0.23701828 |
| R Square | 0.05617767 |
| Adjusted R Square | 0.04943608 |
| Standard Error | 0.02004296 |
| Observations | 142 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|------------|------------|------------|-----------------------|
| Regression | 1 | 0.00334753 | 0.00334753 | 8.33300179 | 0.00451108 |
| Residual | 140 | 0.05624081 | 0.00040172 | | |
| Total | 141 | 0.05958834 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95%</i> |
|---------------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|------------------|
| Intercept | 0.02254735 | 0.00209591 | 10.7578072 | 4.7955E-20 | 0.01840363 | 0.02669106 | 0.01840363 |
| X Variable 1 | 0.20512026 | 0.07105716 | 2.88669392 | 0.00451108 | 0.06463645 | 0.34560408 | 0.06463645 |

3 – b.

| <i>Regression Statistics</i> | |
|------------------------------|-------------------|
| Multiple R | 0.21372605 |
| R Square | 0.04567882 |
| Adjusted R Square | 0.03886224 |
| Standard Error | 0.02328827 |
| Observations | 142 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|------------|------------|------------|-----------------------|
| Regression | 1 | 0.00363432 | 0.00363432 | 6.70113528 | 0.01065208 |
| Residual | 140 | 0.07592808 | 0.00054234 | | |
| Total | 141 | 0.0795624 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95%</i> |
|-----------|---------------------|-----------------------|---------------|----------------|------------------|------------------|------------------|
| Intercept | 0.01401064 | 0.00239596 | 5.84760124 | 3.361E-08 | 0.00927369 | 0.01874759 | 0.00927369 |

| | | | | | | | |
|---------------------|-------------------|------------|------------|------------|------------|------------|------------|
| X Variable 1 | 0.16324687 | 0.06306242 | 2.58865511 | 0.01065208 | 0.03856907 | 0.28792467 | 0.03856907 |
|---------------------|-------------------|------------|------------|------------|------------|------------|------------|

3 – c.
(optional)

3 – d.

1. The regression coefficient tells us how ceteris paribus one unit increase in the independent variable changes the dependent variable's unit.
2. The R squared value represents how the variations in independent variables explain the variation in the dependent variable on a scale from 0 to 1.

4 – a.

| <i>Regression Statistics</i> | |
|------------------------------|-------------------|
| Multiple R | 0.38211131 |
| R Square | 0.14600905 |
| Adjusted R Square | 0.11437976 |
| Standard Error | 0.00882566 |
| Observations | 29 |

| <i>ANOVA</i> | | | | | |
|--------------|-----------|------------|------------|------------|-----------------------|
| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
| Regression | 1 | 0.00035957 | 0.00035957 | 4.61626019 | 0.04079766 |
| Residual | 27 | 0.00210309 | 7.7892E-05 | | |
| Total | 28 | 0.00246266 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> |
|---------------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|
| Intercept | 0.00771889 | 0.00345317 | 2.23530459 | 0.03386518 | 0.00063357 | 0.0148042 | 0.00063357 |
| X Variable 1 | 0.28196885 | 0.13123691 | 2.14854839 | 0.04079766 | 0.01269296 | 0.55124475 | 0.01269296 |

4 – b.

| <i>Regression Statistics</i> | |
|------------------------------|-------------------|
| Multiple R | 0.2817142 |
| R Square | 0.07936289 |
| Adjusted R Square | 0.07106886 |
| Standard Error | 0.02075917 |
| Observations | 113 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|------------|------------|------------|-----------------------|
| Regression | 1 | 0.00412356 | 0.00412356 | 9.56867875 | 0.00250416 |
| Residual | 111 | 0.04783468 | 0.00043094 | | |
| Total | 112 | 0.05195823 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95%</i> |
|---------------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|------------------|
| Intercept | 0.02539353 | 0.0023105 | 10.9904786 | 1.8577E-19 | 0.02081512 | 0.02997195 | 0.02081512 |
| X Variable 1 | 0.23619809 | 0.07635727 | 3.0933281 | 0.00250416 | 0.08489106 | 0.38750511 | 0.08489106 |

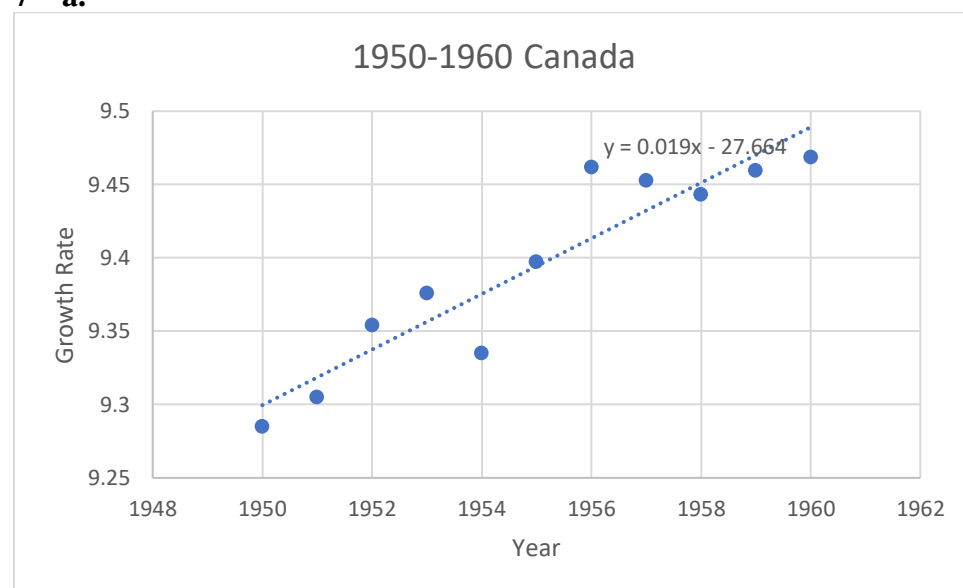
5 – a.

Please refer to the excel sheet.

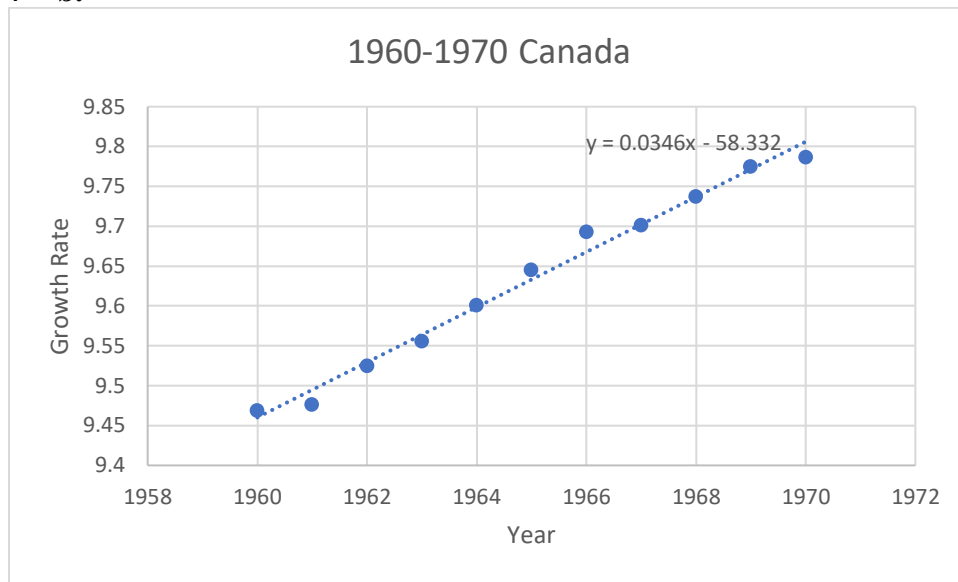
6 – a.

Please refer to the excel sheet.

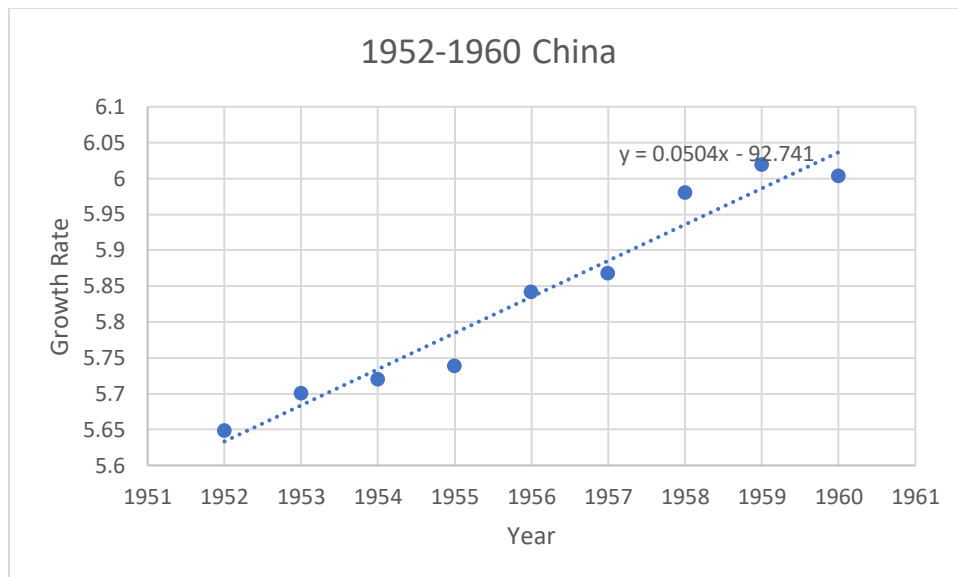
7 – a.



7 – b.

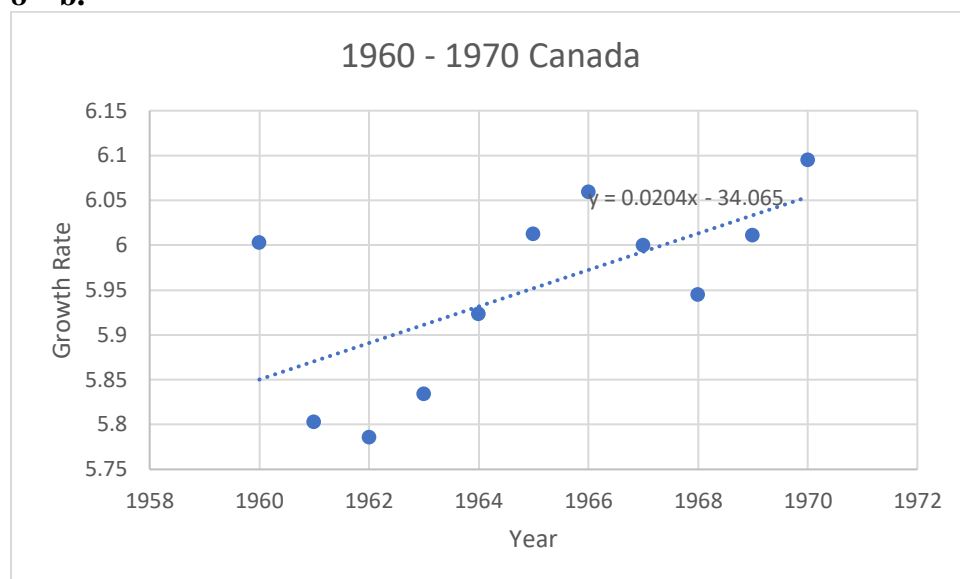


8 – a.



No. 1950 & 1951 data are missing.

8 – b.



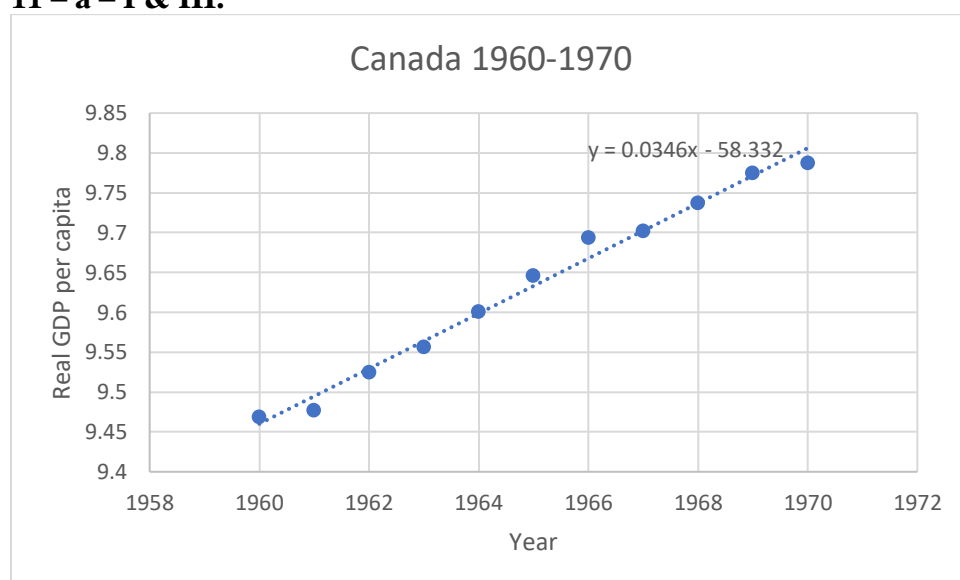
9 – a.

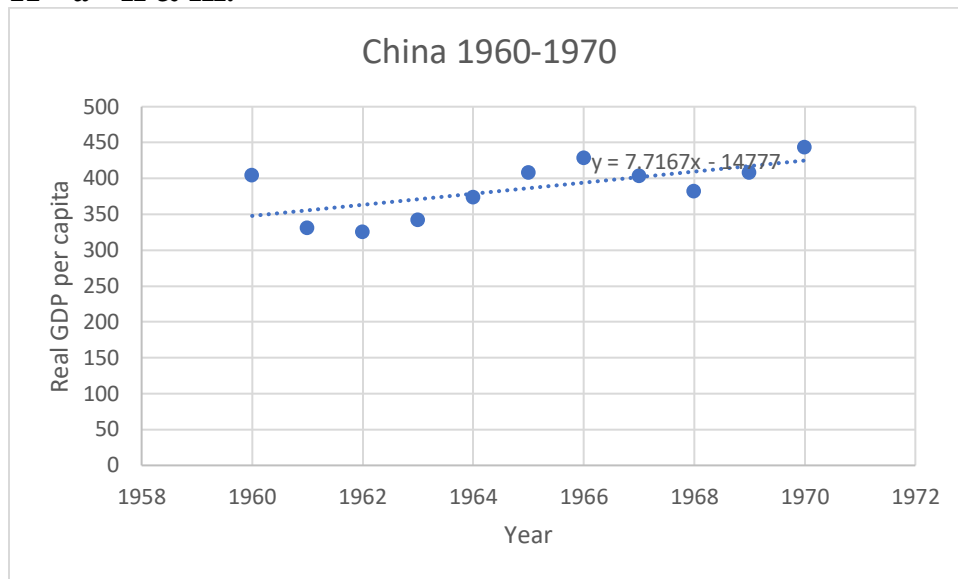
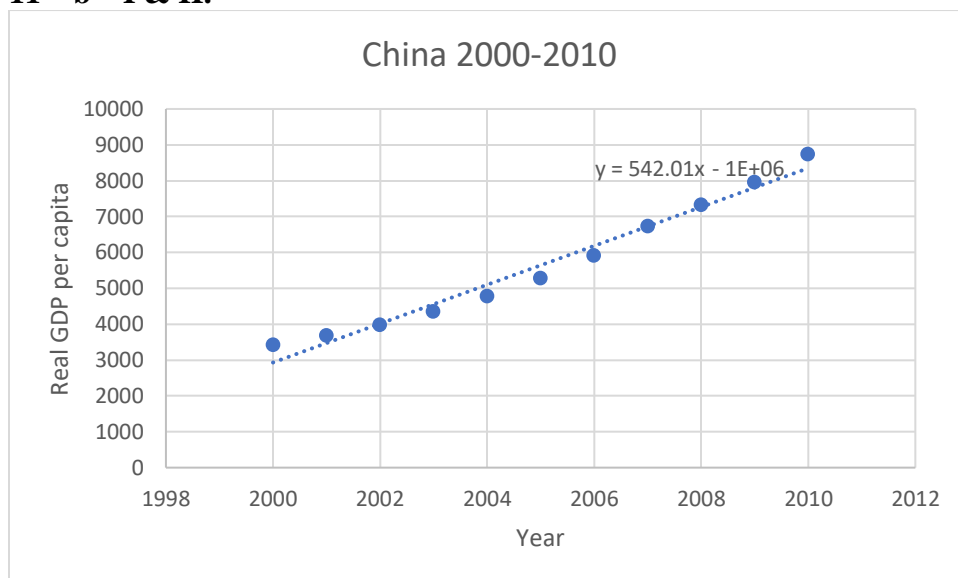
| Country | countrycode | r_1950_60 | r_1960_70 | r_1970_80 | r_1980_90 | r_1990_00 | r_2000_10 |
|---------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Canada | CAN | 0.018956 | 0.034588 | 0.028135 | 0.019457 | 0.020556 | 0.009165 |
| China | CHN | 0.050397 | 0.020365 | 0.038701 | 0.082514 | 0.090921 | 0.097351 |

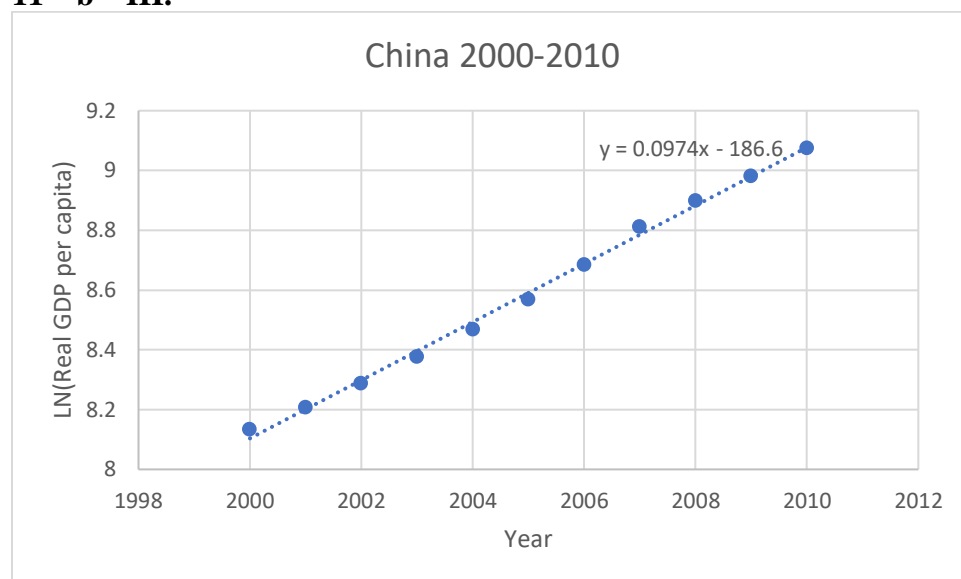
10 – a.

142 & 852 respectively.

11 – a – I & III.



11 – a – II & III.**11 – b – I & II.**

11 – b – III.**11 – b – IV.**

Both scatter plots have a positive linear trend, but the regression coefficient on the LN values are easier to understand and interpret, as they describe percentage changes.

12 – b.

The paper examines whether the economy in Asia, such as China and India, will have a rapid growth as our census views anticipate. The paper utilizes “estimated annual growth rate of GDP per capita” data from 1950 to 2010, and real GDP at constant 2005 national prices data. The authors suggest that, although a sharp decline in economy does not seem to be inevitable, their statistical analysis suggests that a discontinuous decline in growth is more likely occur than our general expectation suggests in China. As “Table B.2: Growth rate estimates for Canada and China” suggests, the growth rate of a county is not constant overtime. Furthermore, “Figure of Table 1” demonstrates how cross-national growth rates across two continuous decades are positively correlated along with various positive coefficient values, but how those rates two decades apart are negatively correlated which suggest a non-constant growth rate overtime. The authors used natural log to estimate the real GDP per capita, as using natural log allows us to capture the percentage changes in real GDP per capita across years, which are the changes in “rates” that serve as a tool for answering the research question.