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Health expenditure and GDP

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ABSTRACT

The analysis has been done to understand the trend in health expenditure and GDP using 3 yearly moving average and least square method. It also helps in understanding the future trends in health expenditure.

Keywords— Health, Expenditure

1. INTRODUCTION

Health is both a resource for, as well as an outcome of, sustainable development. The goals of sustainable development cannot be achieved when there is a high prevalence of debilitating illness and poverty. Development, not only the height of the economic indicators, are expressed in terms of education, health and social structure. The amount of health expenditure is one of most important indicators of development. All the countries and associations aimed to improve the health conditions and expenditures. Development policies need to take into account current and future impacts on health and the environment. Healthy generation; is a part of qualified human resources and huge importance for sustainable development.

2. HEALTH EXPENDITURE AND GDP

The data shows the health expenditure incurred in different years by different regions and their contribution towards the GDP. An extract of the data is given below

	A	B	C	D
1	LOCATION	YEAR	HEALTH EXPENDITURE	GDP
41	AUS	2010	15.63	1.324
42	AUS	2011	15.311	1.315
43	AUS	2012	15.308	1.336
44	AUS	2013	14.989	1.32
45	AUS	2014	14.386	1.306
66	AUT	2010	12.368	1.251
67	AUT	2011	12.473	1.236
68	AUT	2012	12.181	1.234
69	AUT	2013	12.222	1.245
70	AUT	2014	12.324	1.268
71	AUT	2015	12.407	1.28
107	BEL	2010	15.677	1.555
108	BEL	2011	15.345	1.547
109	BEL	2012	14.599	1.487
110	BEL	2013	14.273	1.48
111	BEL	2014	13.851	1.44
112	BEL	2015	14.209	1.489
153	CAN	2010	18.471	1.951
154	CAN	2011	18.32	1.872
155	CAN	2012	17.883	1.828
156	CAN	2013	17.575	1.778

3. ANALYSIS

3.1 Analyzing Health Expenditure using Least Square Method

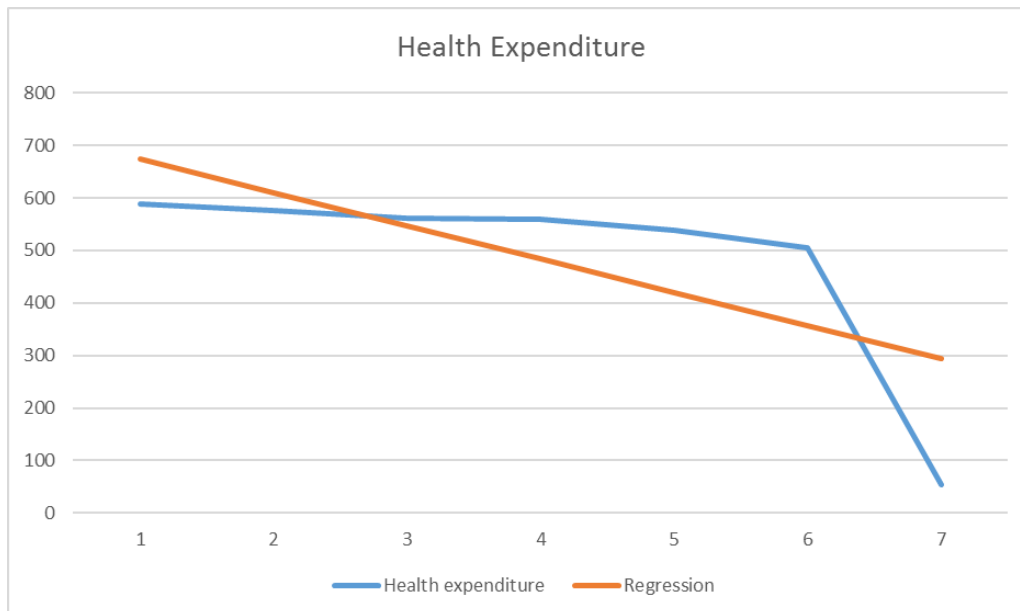
Year	Sum of HEALTH EXPENDITURE	X=Year-Middle Year
2010	588.821	-3
2011	576.649	-2
2012	562.014	-1
2013	559.098	0
2014	537.564	1
2015	505.671	2
2016	53.629	3

Middle Year 2013

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.714192							
R Square	0.51007							
Adjusted R Square	0.412084							
Standard Error	146.7734							
Observations	7							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	112140	112140	5.205542	0.071398			
Residual	5	107712.1	21542.43					
Total	6	219852.1						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	483.3494	55.47513	8.712904	0.00033	340.7461	625.9528	340.7461	625.9528
X=Year-M	-63.2851	27.73756	-2.28157	0.071398	-134.587	8.016604	-134.587	8.016604

Regression Equation-	Y= a + bX
	Y= 483.35-63.29X

	Year	Health expenditure	Regression
	2010	588.821	673.2046429
	2011	576.649	609.9195714
	2012	562.014	546.6345
	2013	559.098	483.3494286
	2014	537.564	420.0643571
	2015	505.671	356.7792857
	2016	53.629	293.4942143
TREND	2017		230.2091429
	2018		166.9240714
	2019		103.639
	2020		40.35392857



There is a falling trend in health expenditure every year.

3.2 Analyzing GDP using Least Square Method

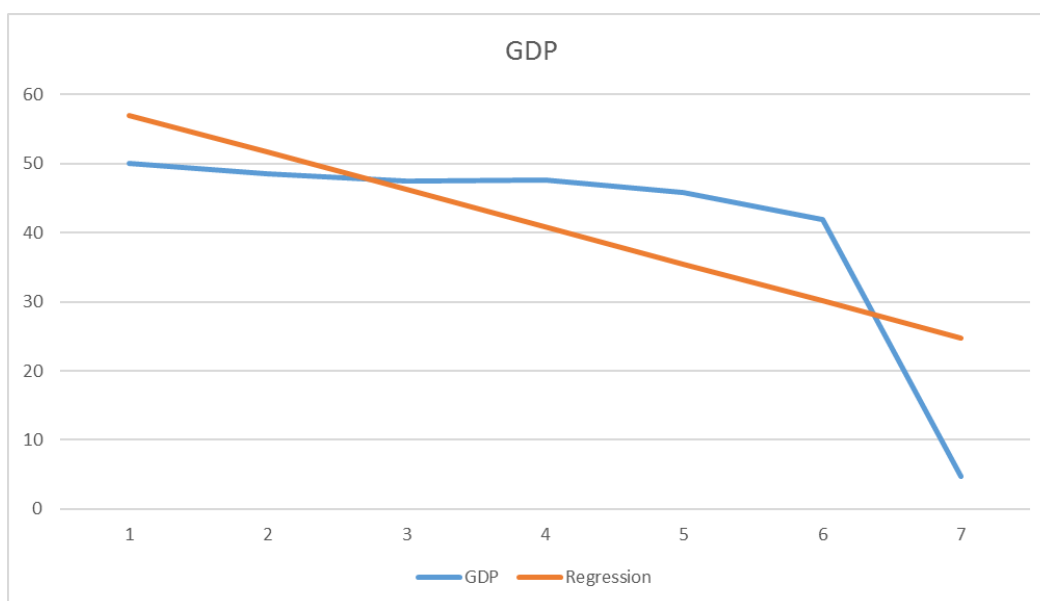
Year	Sum of GDP	X=Year-Middle Year
2010	50.02	-3
2011	48.52	-2
2012	47.465	-1
2013	47.631	0
2014	45.753	1
2015	41.961	2
2016	4.779	3

Middle Year 2013

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple F	0.720578							
R Square	0.519233							
Adjusted R Square	0.42308							
Standard Error	12.24367							
Observations	7							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	809.5074	809.5074	5.400051	0.067732			
Residual	5	749.5368	149.9074					
Total	6	1559.044						
<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>	<i>Upper 95.0%</i>	
Intercept	40.87557	4.627671	8.83286	0.000309	28.97976	52.77138	28.97976	52.77138
X=Year-M	-5.37689	2.313835	-2.3238	0.067732	-11.3248	0.571011	-11.3248	0.571011

<u>RegressionEquation-</u>	$Y = a + bX$
	$Y = 40.88 - 5.38X$

	Year	GDP	Regression
	2010	50.02	57.00625
	2011	48.52	51.6293571
	2012	47.465	46.2524643
	2013	47.631	40.8755714
	2014	45.753	35.4986786
	2015	41.961	30.1217857
	2016	4.779	24.7448929
TREND	2017		19.368
	2018		13.9911071
	2019		8.61421429
	2020		3.23732143



There is a falling trend in GDP every year.

MOVING AVERAGES- Health Expenditure

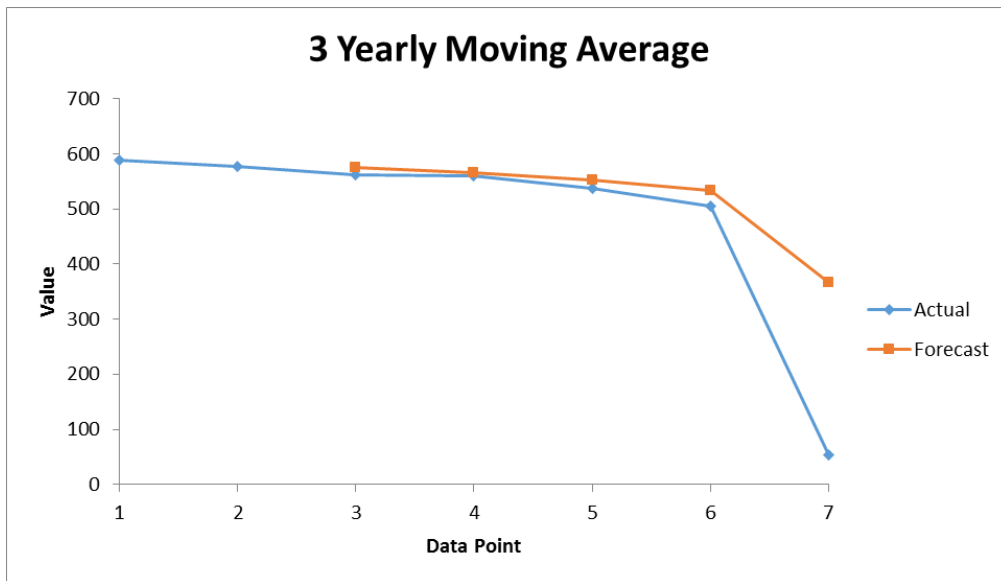
Moving Averages are used to identify the current trend in health expenditure as compared to the forecast.

Year	HealthExpenditure
2010	588.821
2011	576.649
2012	562.014
2013	559.098
2014	537.564
2015	505.671
2016	53.629

The above data shows the sum of health expenditure incurred every year.

3 Yearly Moving Average

3 yearly moving average	
#N/A	
#N/A	
575.828	
565.9203333	
552.892	
534.111	
365.6213333	



4. CONCLUSION

The analysis shows that as health expenditure decreases, GDP also declines. One of the main reasons for this can be that since expenditure in health sector is less, therefore people are less efficient. Hence, the level of productivity falls which leads to an overall fall in output and employment. It further affects the livelihood of people. The data also depicts that there is a downward trend in health expenditure which leads to a decline in the GDP of the economy.

6. REFERENCES

Data collected from <https://datahub.io/>