Jobless Growth- An Empirical Analysis of Economies with High Unemployment Rate

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Abstract: The purpose of this study is to determine whether the world economies witnessed jobless growth in the recent years and if so, then in what ways it has affected different sectors within these economies. The existence of this phenomenon has been claimed by many authorities, including United Nations Development Program and World Economic Forum. Jobless growth is considered to be an increase in real GDP, with a simultaneous rise in unemployment rate. The significance behind investigating this problem is why it occurred in recent years across the world and what made it emerge as one of the top global economic trends of world economic forum in 2015. Moreover, whether this problem could last in future or is it a short term phenomenon which could be overcome by effective government policies. To approach this issue, appropriate theory, historical background and secondary data have been used in order to examine the reasons behind emergence of this problem in recent years and its scope in the future. This study concludes that many of those world economies which have faced this problem over the last decade might have faced it mostly in the first five years than the latter. However, in some of the countries the problem was dominant in the later five years, while in others it persisted throughout the ten years.

Keywords: Job, growth, Unemployment, Agriculture, Industry, services.
JEL Classification: J64, O13, L70, L80, R11

1. Introduction

The term jobless growth recently gained prominence during 2015 when this phenomenon was ranked higher in the world economic forum than that of the former year's trends. The term "jobless growth" is however, an old term, used first by the New York Times article in 1994. United Nations Human Development report of 1994 also stated that many parts of the world faced jobless growth during 1990s. It is a situation which causes many people to become jobless and it makes extremely difficult for them to get employed even after long durations of searching for work yet this unemployment does not stop the country's economy from exiting a recessionary phase. What

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makes these workers to remain unemployed for certainly no specific reason is something of particular interest to look upon and when this persistently high unemployment becomes less relevant to an economy's growth rate are the few pressing questions which will be studied in this research.

Sustained economic growth is one of the milestones which every country yearns to achieve and is of special importance to the developing countries. One of the ways to achieve this type of economic growth is through reducing poverty. Poverty can be overcome through numerous ways, but the suitable of all the solutions is through job creation. Providing people with jobs will enable them to earn for their living and making them economically productive.

Economic history shows that when the Great recession ended it left sustained unemployment. The overall economic activity did get a boost afterwards, but the labor market did not exhibit any good sign of recovery since then, not at least to a great extent. This situation was similar to the one reported by International Labor Organization (ILO) which stated that world experienced severe employment crisis in 1990s since the end of Great Depression of 1930s. The end of great recession also led to a slowdown in job market which caused a loss of income generation among 300 metropolitan cities, known as major hubs for the high productivity, increased economic growth rates and large parts of population.

Jobless growth however, does not always imply that an increase in output is necessarily associated with a complete lack of job creation, rather a low employment generation. The term 'jobless growth' can also be interpreted as a comparison of employment growth with the labor force growth and comparison of total employment/unemployment with the overall economic growth. The reasons behind jobless growth include a mismatch in labor market including restructuring of organization and industrial reallocation, little efforts put in by the unemployed workers to find jobs which might be due to unemployment benefits and technological progress, the latter has introduced greater efficiency and time saving techniques in labor market and has affected the retirement decisions, skill acquisition and the inter industry wage compositions.

In the US in 1990, 50-100,000 robots caused unemployment among 100,000 workers according to Upjohn institute of employment research. Technological innovation changes in the demand composition of labor, by raising the demand for some type of labor and decreasing the demand for other type of labor. China is another example in which over the past twenty years technology has taken over manual work to a great extent.

This research will primarily focus on the above issues in the context of world economies that have been affected by this phenomenon and since how long they have been affected? Whether this problem is a short run one or it has the ability to last for a long period of time?

The objective of this research is to examine the impact of jobless growth on the overall well-being of the economies and to assess whether this impact is short run or not.

2. Literature Review

A significant and organized amount of literature that directly deals with the study of the impact of jobless growth on the world economies has been taken from the point of view of different authors.

Padalino (1997) studied the intensity of employment in economic growth of the G-7 countries. The study examined the technological change which has affected and weakened the positive relationship between economic growth and employment. Correlation between growth and employment has been found and the key empirical outcome contrasted. Using descriptive analysis real GDP, evolution of employment, working hours in the G-7 countries for industrial and total sectors have been used for the time period 1960-94. Jobless growth hypothesis contrasted with the view that economic growth is an outcome of employment growth.

Bhalotra (1998) worked on the puzzle of jobless growth in Indian economy during 1980s which did pursue deregulation in industrial sector and in trade and this resulted in employment fall. This paper offers an explanation to behavior of employment in terms of increased total factor productivity and actual hours worked. Robust methods have been used which showed that a neglect in hours worked leading towards a considerable bias in estimates of

the wage elasticity. Productivity growth and hours appeared to have been
linked to each other with the reform process, with an increase in the hours
worked showing recovery in lost time.

Xiaochuan (2004) examined the jobless growth and dynamics of
disequilibrium in labor market. Models of labor market disequilibrium
process have been discussed, the dynamic path of the wage rate and the
adoptive and optimal economizing roles of the economic agents have been
stated. Supply of labor has been derived from household's utility
maximizing behavior together with few institutional factors, sticky wages
which have been modified by labor market demand and supply. The drive
for gains from productivity along with sticky wage rates is the main reason
concluded by this study behind jobless growth.

Khemrai *et al.,* (2006) have researched on the case of U.S economy exiting
recession during 1990s using Okun's coefficient which shows a decline and
is therefore being consistent with the jobless growth. The finding draws a
contrast with other countries which show an increase in the time varying
Okun coefficient.

Onaran (2008) estimated labor demand equation which was based on panel
data of the manufacturing sector in the Central and East European
economies. The findings showed that employment does not respond to
wages in half of the cases. The output elasticity of labor demand is positive
and low and in many situations output is not linked to the employment.
However, there has been integration among European economic sphere due
to FDI and international trade has not prevented job losses in the industrial
sector. There are more situations of positive effects and insignificant effects
of trade and FDI mostly in this study.

Hanusch (2012) examined the economic growth in East Asia and whether
it was jobless or not? He used data from eight East Asian countries for the
time period 1997-2011 to estimate the coefficient of Okun's law. The
coefficient represents the relationship between growth and employment and
suggests that the growth was not jobless in this study. However, there has
an important implication drawn out from this research and that was the

significant variation across nations and effect of growth on employment is supposed to magnify under more hiring and firing flexibility of rules. Even when labor markets are regulated tightly, economic growth does impact employment in composition and evidence shows that agricultural employment does move counter-cyclically compared to the industrial employment. This suggests that agriculture does serve as a shock absorber for laid off labor in industrial sector which isolates the non-agricultural type of employment and confirms a strong relationship between employment generation and growth.

Porcescu *et al.,* (2014) researched the case of Moldovan economy, a former Soviet Union's country since 1990's. The research was conducted using a stylized depiction of brain drain demonstration effect which compared the domestic job market with that of abroad and concluded that Moldova relies on migration and foreign remittances as its main engine of economic growth. Moldovan economy can be characterized as remittance-led jobless growth since 2000. It has been recommended under the study that the country should achieve sustainable economic growth in the long run and to invest more in job-oriented education and training.

Schmitt-Grohé and Uribe (2015) analyzed the simultaneous occurrence of liquidity trap and jobless growth recoveries and special features include downward normal wage rigidity, a Taylor-kind interest rate feedback rule, the zero lower bound on nominal interest rates and a confidence shock. The model shows that low inflation and high unemployment become chronic in the absence of policy and in the presence of capital accumulation the model predicts an investment slump. The paper shows a new fisherian effect in which increase in nominal interest rate targets extended period of time which can foster inflationary expectations and give boost to employment.

Islam (2015) researched jobless growth as a challenge faced by developing economies by using cross-country data set. The study concluded that high economic growth rate is mandatory for poverty reduction, but this relationship is not invariant. Moreover, economic growth is not a sufficient condition to reduce poverty, rather intensity of employment in economic growth plays a vital role as well in explaining variation in rate of poverty decline.

Kashyap (2016) found that the main determinants of productivity are technology and human capital capability. The study used input output Tables for years 1993-94 and 2006-07 for output and employment. The data sets have been extracted from the databases of National sample survey organization (NSSO) and Annual Survey of Industries (ASI). The impact of new policy regime is assessed and disaggregate sector-wise employment elasticity has been calculated. Results showed that human capital and growth dynamics have been analyzed widely at cumulative level, but at disaggregate level, all the sectors do not act similarly. When analyzed at disaggregate level, employment growth resulted in much steadier growth compared to that of output and productivity growth levels, indicating that there has been jobless growth in Indian economy.

3.   Descriptive Analysis

In Table 1, five year averages have been calculated to draw a comparison between employments in the three sectors in eleven selected countries. From the above Table the comparison of each country's performance in the first five years has been done with that of the second five years. Beginning this comparison from the Indian economy, India's first five years average shows there has been a majority of people employed in the agricultural sector of the country compared to the other two sectors. Whereby, the sector which shows the lowest contribution towards growth is the industrial sector which on average contributes only 22.4 percent of the total labor force. This can be due to the theoretical reasons investigated in the chapter 3 which claimed that Indian economy faces the issue of employability in the industrial sector as it is difficult to convert the agricultural labor into the industrial one. In the second five years, there has been increase in the employment contribution from industrial sector and services sector. Some of the labors from the agricultural sector seem to have been adjusted into the other two sectors.

Table 1: Comparison of the sectoral employment generation: employment in the agricultural sector, the industrial sector, and the service sector

Country	Time	Employment in agriculture (% of total employment)	Employment in industry (% of total employment)	Employment in services (% of total employment)
India	2006-10	51.10	22.40	26.60
	2011-15	48.40	23.15	30.10
South Africa	2006-10	5.52	25.28	61.80
	2011-15	4.80	23.70	71.40
Morocco	2006-10	41.48	21.38	37.10
	2011-15	39.45	21.60	38.80
Philippines	2006-10	34.90	15.00	50.10
	2011-15	31.65	12.32	42.34
Turkey	2006-10	22.14	26.95	50.19
	2011-15	21.55	27.27	51.17
United States	2006-10	1.50	19.22	79.28
	2011-15	1.50	19.22	79.28
China	2006-10	3.30	44.18	48.94
	2011-15	2.50	46.90	47.00
Sweden	2006-10	9.57	21.08	76.66
	2011-15	1.77	19.45	39.33

Moldova	2006-10	31.32	18.92	50.46
	2011-15	27.60	18.53	53.83
Tunisia	2006-10	17.93	32.38	48.78
	2011-15	48.59	38.50	40.56
Nigeria	2006-10	48.59	8.50	42.90
	2011-15	7.53	8.50	42.90

South Africa is another country which has witnessed a decline in the employment in both agriculture and industrial sector which support the South African economy along with the services sector. The services sector alone has seen an increase in employment from the first five years to the next five years on average and this shows that this sector alone could not have lead towards an increase in overall employment level in the country. Hence, joblessness has been an issue over the decade in South Africa, which might be because of labor acts and labor reforms, making it very difficult for the employers to hire workers in this country.

Morocco is another country which has been affected by social, labor and macroeconomic reforms which it has implemented since the past 20 years in order to improve the GDP and households' welfare in the country, but little did these reforms actually did for the labor market improvement in the country. As per the five year averages, Employment has slightly increased in the industrial and services sector with a decrease in agricultural sector's employment in the past ten years.

In Philippines, the phenomenon of jobless growth has overshadowed the economy over the past two years, therefore the averages taken for the last decade could be of little help to assess the case of this country, however, it is to be noted here that the claim made by Asian Development Bank (ADB) about Philippines' economy that the jobless growth exists because of the lack of employment in the country's industrial sector can be tested by using

these five year averages. From the averages, the country has experienced a significant decline in the employment in industrial sector and the claim of ADB has been essentially correct and the main reason behind Philippines jobless growth is the failure of industrial sector to generate inclusive growth in the country and therefore needs boosting.

In Turkey, industrial and services sectors have shown an increase in the employment. However, it is to be noted that whether these increases have actually led to an increase in GDP growth or the overall unemployment in the country or not can be compared and argued in the next section of this chapter which deals with the comparison of countries' GDP growth with their unemployment rates. Turkish economy as per studies has been said to have faced jobless growth because of its dependence on the imported goods such as textiles, food, wood, tobacco etc. and therefore, this has led to joblessness in the Turkish agricultural sector, which is the main reason behind jobless growth in Turkey. This is confirmed by the Table above, whereby, the five years average of the agriculture's employment has decreased in Turkey in the second five years. Hence, the country has faced jobless growth in the second half of the last ten years.

In United States, the discrepancy existed between jobs and growth even before the economic recession. It was furthered by the corporate profits and the country could not generate enough jobs to correspond growth in the country. These theoretical justifications have been confirmed by the five year averages taken in the above Table through the sectoral employment contribution.

China is rising as a strong economy, but apart from a slight increase on average in the industrial employment over the decade, the country has faced a decline in the other two sectors' employment over the last ten years. This can be due to the country's bias towards industrialization as per the studies and theory, but this sector has done very little to give boost to employment in China because of high productive growth in this sector and it hinders demand for more workers.

Swedish economy has experienced a decrease in the employment of all three sectors as per the five year averages. These sectors' decline in employment can be attributed to reduced employment in public sector and

the lack of expansion in the service sector to cater to the unemployed labor from industrial and public sectors.

Moldova, a former Soviet Union member, has witnessed a decrease in both agriculture and industrial sector in the last decade except for the service sector which has shown an increase in employment over the ten years on average. This shows that there has been joblessness in the country which can be due to the migrant labor, as the country is labor scarce overall and needs to widen its resource base in order to tackle the issue of jobless growth.

Tunisia has on average shown an increase in agricultural employment and a decrease in both service and industrial sectors' employment over the previous ten years. This is because of the inability of trade liberalization which has failed to bring inclusive growth in Tunisia.

Nigeria needs to invest in entrepreneurial ability and infrastructure along with modernizing industrial sector and improving education.

Table 2: Comparison of GDP growth and Unemployment rate

Country	Years	GDP growth (annual%)	Unemployment, total (% of total labor force)
India	2006-10	8.10	3.90
	2011-15	6.74	3.58
South Africa	2006-10	3.13	23.20
	2011-15	1.85	24.80
Morocco	2006-10	5.01	9.46
	2011-15	3.95	9.33
Philippines	2006-10	4.95	7.50

	2011-15	5.58	7.05
Turkey	2006-10	3.31	11.48
	2011-15	2.03	7.70
China	2006-10	11.27	4.17
	2011-15	7.81	4.53
Sweden	2006-10	1.68	7.34
	2011-15	1.95	8.00
Moldova	2006-10	3.47	6.06
	2011-15	3.88	4.14
Tunisia	2006-10	4.54	12.72
	2011-15	1.35	14.73
Nigeria	2006-10	7.21	7.6
	2011-15	4.70	7.53

GDP growth rate and unemployment rate for eleven countries have been assessed by using five year averages. GDP growth has been the highest for China for the last decade and especially the last five years on average, corresponding to that the Chinese unemployment rate has increased over the decade and especially in the last five years on average. This means there has been jobless growth and its persistence in China over the ten years' time period. Similarly, the lowest GDP growth has been achieved by Tunisia on average and corresponding to that the unemployment rate has increased as well. Hence, in this case Tunisia has seen both joblessness and lack of growth especially in the second five years on average. The reason behind Tunisia's overall joblessness is because of the less share of employment from service and agricultural sectors. Trade liberalization has generated

jobs in the industrial sector of Tunisia, but it has not lead to an overall increase in the inclusive growth as well as the employment level overall. Rather there has been both unemployment and lesser growth in the country due to Trade liberalization and as seen from the previous Table in previous section only the industrial sector containing exporting manufacturing industries has flourished to some extent.

The other nations have faced higher unemployment rates compared to the high GDP growth rates. Okun's law which postulates that a 1% decrease in unemployment will lead to a 3% increase in output level has not been proven in these nations cases to much extent. As the countries on average have faced higher unemployment rates and increase in GDP growth at the same time.

4. Empirical Analysis

The relationship between GDP growth and unemployment rate in the 11 world economies which have experienced the problem of jobless growth is being investigated in this study using the following regression function. The annual data set for this examination is based on the time period 2006-2015. The dataset for the selected variables has been taken from the world development indicators.

The phenomenon has been experienced in the countries which have been discussed in the previous chapter and the time period has been selected as a last decade, because jobless growth has gained global prominence and persistence over the past ten years.

4.1 Model of the Study

$$GDP = f(Unemp, Empagri, Empindus, Empser) \qquad (1)$$

The regression equation becomes
$$Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 \qquad (2)$$
$$Y = -0.9491 - 0.1448 X1 + 0.0701 X2 + 0.2108 X3 + 0.0003 X4 \quad (3)$$
Where

Y   = GDP growth (annual %) (GDP)
X1 = Unemployment, total (% of total labor force) (Unemp)
X2 = Employment in agriculture (% of total employment) (Empagri)
X3 = Employment in industry (% of total employment) (Empindus)
X4 = Employment in services (% of total employment) (Empser)

4.2 Methodology

Under this, two tests have been applied in order to analyze the stationarity of variables: Levin-Lin Chu (LLC) (1992) and IPS t-bar (1997). In order to determine the presence of co integration among variables, numerous tests have been used in this study such as Pedroni co-integration test (1999) and Kao (1999) test have been applied. Panel co integration has a null hypothesis of no co integration and has seven statistics. Pedroni (1999) has proposed many tests for the null hypothesis of co integration in a panel data model which does allow a considerable existence of heterogeneity. This test has been carried out to assess whether the co integrating relationship exists. If a set of variables have been found to have one or more co-integrating vectors, then vector error correction model (VECM) is used which adjusts to both short run changes in variables and deviations from equilibrium. This study has used FMOLS technique in order to find out the long run relationship between variables after proving that there is a co-integration among them. It is the most appropriate technique to provide optimal results of co integration regression.

5. Results and Discussions

Table 3: Unit Root Test

Variable	Situation	Common Unit Root Test	Individual Unit Root Test
		LLC-ADF	IPS-ADF
gdpg	Individual intercept	-0.5229 6.7427	-1.1284 0.8788
uemp	Individual intercept	-0.9208 -0.3100	-1.0732 0.1416
empagri	Individual intercept	-1.0914 0.1100	-0.5637 0.2865
empindus	Individual intercept	-1.4968 0.4488	-1.2464 0.1063
empser	Individual intercept	-2.2099 0.0136**	0.5231 0.6995

**shows 5% level of significance.

Table 4: Panel Unit Root Test at First Difference

Variable	Situation	Common Unit Root Test	Individual Unit Root Test

		LLC-ADF	IPS-ADF
gdpg	Individual intercept	-13.8520 0.0000***	-2.9043 0.0181**
uemp	Individual intercept	-7.5752 0.0000***	-2.5924 0.0048***
empagri	Individual intercept	-5.0801 0.0000***	45.6198 0.0009***
empindus	Individual intercept	-3.9603 0.0000***	-2.9643 0.0015***
empser	Individual intercept	-1.7132 0.0433**	-0.5167 0.3027

***, **shows 1% and 5% level of significance.

The above tests show that unit root null hypothesis has been rejected and there has been an existence of stationarity among variables which further allowed us to carry out co-integration tests in order to check co-integration among variables.

Table 5: Pedroni Co-integration test

Panel Cointegration Statistics (Within-Dimension)	GDPG, UEMP, EMPAGRI, EMPIND, EMPSER	Group Mean Panel Cointegration Statistics (Between-	GDPG, UEMP, EMPAGRI, EMPIND, EMPSER

		Dimension)	
Panel v-statistics	1.3079 0.9046	Group ρ-statistics	2.8761 0.9980
Panel ρ-statistics	1.2079 0.8865	Group pp-statistics	-10.9302 0.0000***
Panel PP-statistics	-7.3550 0.0000***	Group ADF-statistics	-7.8841 0.0000***
Panel ADF-statistics	-5.2840 0.0000***		

***shows 1% level of significance.

Table 6: Kao Test

Kao's Residual Panel Co integration Test		
Null Hypothesis	t-statistic	probability
No Cointegration	-30.9696	0.0000***

***shows 1% level of significance.

Both the above tests run for co integration shows that there exists co-integration among variables and which allows running FMOLS for checking the long run relationship.

The representation of Vector Error Correction Model (VECM)

$$\Delta gdpgi, t = \propto 0 + \propto 1ecm + \propto 2unempi, t + \propto 3empagrii, t + \propto 4empindi, t + 5empseri, t + ei, t \qquad (5)$$

$$= -39.0249 - 0.417ecm - 0.2742uempi, t - 0.3172empagrii, t - 0.3274empindi, t - 0.3304empseri, t + ei, t$$

The rate of adjustment in disequilibrium will be 41% per annum toward GDP and it will take $\frac{1}{0.4170} = 2.398 \approx 2 \; years$ to correct the disequilibrium in the economy.

Table 7: Dependent Variable, GDP growth rate (annual%)

Panel Group	Whole Panel
INTERCEPT	-0.9494
	0.5018
UEMP	-0.1448**
	0.0104
EMPAGRI	0.0750***
	0.0004
EMPIND	0.2107***
	0.0000
EMPSER	0.0003
	0.5087

***, **, * are 1%, 5% and 10% level of significance respectively.

The results in the above Table which have been calculated using FMOLS tell about the long run relationship's existence, which in this case does not apply as the variables are negative and insignificant. This means, if jobless growth exists in the eleven nations, even then the claim that rising unemployment levels correspond to rising GDP levels, does not stay for longer time period and this has been confirmed by the above VECM results which showed that there has been an existence of jobless growth in the world economies for the short run time period and to correct the disequilibrium in the economies will take about 2 years approximately which means that this issue can be actually resolved by the governments if they make unemployment a priority and focus less towards technological progress and more on the means of production which could actually give rise to employment generation along with economic growth in the country.

This is again confirmed by the five year average analysis made in the beginning of methodology chapter, that the eleven nations which have been claimed by theoretical analysis and evidences to have faced jobless growth in the recent decade have either faced it in the first five years on average or the later five years, but not persistently throughout the ten years. This further justifies that the impact of jobless growth on the world economies can be severe, yet it can also be a minute or a short lived one if controlled by effective government policies, as it has been seen in many of the countries case profiles and as per those nations which are said to have been going through jobless recovery would also require governments attention towards the matter, which in the case of Indian economy can recently be seen, where the Indian government is trying to resolve the matter and to generate employment by taking into account sectoral contribution towards employment levels in the country. Whether, India succeeds in overcoming jobless growth or not and whether it lives for a short period of time in this country will all depend on how effectively and tactfully Indian government addresses the issue.

The results in all the above Tables have led to conclude that the impact of jobless growth on the world economies in the recent ten years have more of been short-term in nature than that of the long run. Of course, it did cause a lot of distress in these nations which might have led it to become one of

the emerging economic trends globally by 2015 among world economists, yet its feasibility, as had been predicted by the world economic forum, depended more on how the governments take stands in resolving the matter whether they do it through improving education or fostering innovation, it all depends on how they address the problem and it does actually get resolved in a span of few years (2 years approx. as per VECM results) if given enough attention.

6. Conclusions and Recommendations

As observed and mentioned in the introduction there has been an occurrence and prominence of jobless growth in many parts of the world in the recent years and even during the 1990s as noted by the UNDP Human Development Report of 1994. In this phenomenon, there is a simultaneous increase in unemployment and real GDP. Recently, it has been revived and listed by the world economic forum in 2015 as the second major issue confronting world economies. The eleven countries discussed and selected in this study have been observed to have faced this phenomenon over a decade. This research has assessed different sectors in these eleven economies in order to determine whether these countries have experienced jobless growth and if so, what sectors are responsible for the existence of this phenomenon.

Region wise, nations which have been analyzed and their data indicated that jobless growth appeared in the second five years more than the first five years chosen. This indicates, that the phenomenon has been more of short lived, than that of a long term. It does persist for some years, but given the correct policies adopted by the governments, the problem can be overcome or at least reduced. Some of the countries including India, China, U.S, Tunisia, South Africa, Moldova and Turkey have experienced more jobless growth in the first five years that is from 2006-2010 as per the five year average. On the other hand, economies like Philippines, Sweden and Nigeria have experienced this phenomenon in the second five years on average that is from 2011-15.

Morocco has been the only country as per the five year average, which has experienced jobless growth throughout the ten year time period and this phenomenon has persisted here longer than in the others.

The empirical findings also supported the claim that the jobless growth does not persisted in the countries over the last decade especially for a long time, the confirmation of short run existence of this phenomenon through VECM has led to the estimation through the FMOLS technique in order to find the long run relationship between unemployment and GDP growth, however, the latter did not support the relationship as positive, rather confirmed that this phenomenon persisted over a long term time period, as the variables have been negative and insignificant after the findings. Now, this tells more about the impact of jobless growth on the world economies, as the impact could be phenomenal, it could only last for some time and cause greater devastation in a country's labor market than to persist and cause a permanent damage. The world, in recent years did witness it as a growing problem which was of great concern, but given the solutions which are enlisted in the recommendations, some of the countries did overcome the problem already to a great extent before it has been listed as a global threat.

Based on the results, the study suggest the following recommendations:

- Effects of jobless growth are harmful both for nations and international economies, yet this phenomenon should be given serious attention at the state level in order to resolve the problem.
- The empirical results did show the absence of jobless growth in the recent years, but in a few countries it did persist throughout the decade and in future it can arise again, therefore, countries should try to foster education and innovation in order to increase the productivity of labor and to make the workers to generate greater yield.
- Governments are highly recommended to invest more in developing all the sectors equally and not just show bias towards the growth of a particular sector (China – industrialization). Instead those sectors should be focused and invested in which have greater potential to contribute towards employment creation.

- As per the world economic forum, jobless growth was one of the top threats to the global economies in 2015 however, the persistence of this issue remained uncertain since then. The economies should try to correct the labor market structures within their countries and to end the mismatch between jobs in order to avoid this problem in future.
- The surplus labor which has gets unemployed due to technological progress should be put to employment in infrastructural development, in order to bring improvements in it in developed as well as in emerging economies.
- The exogenous factors do harm the internal structures of the international economies; yet, their impact can be reduced, if the internal problems combining with them are being controlled.

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