EMPLOYMENT IN THE GLOBAL ECONOMIC SYSTEM: A CONSOLIDATED QUANTITATIVE APPROACH TO THECURRENT TREND IN EMPLOYMENT AND THE RELATIONSHIP BETWEEN LABOUR AND THE MAJOR ECONOMIC DETERMINANTS OF THE GLOBAL ECONOMY

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Abstract

This is a study of the global trend in employment as well as the relationship between employment and major economic determinants from a socio-economic standpoint.

It is based upon a consolidated approach to world employment figures similar to the way multinational corporations report on their financial positions. The relevance of the subset of countries that disclose unemployment rates at a given time and thereby the validity of the study carried out thereupon for extrapolation to the entire study population, made up of 214 countries and the like, is ascertained by considering validity control ratios measuring the share of the afore-mentioned subset in world labour force and in world economy.

There is evidence that (i) the world regains the levels of employment prior to major crises only temporarily, if at all, and that (ii), in spite of temporary betterment every now and again, unemployment is generally and continuously on the rise. Over two decades of fully-fledged globalisation, it appears world economy has failed to create jobs on an ongoing basis and in sufficient amounts.

Moreover, the relevance of the globalisation model, based upon free trade, market growth, liberalisation and deregulation, as a purveyor of employment is in question. Statistical analysis does not substantiate any robust causal relationship between (i) the major determinants of the current global system, namely gross domestic product, exports of goods and services and foreign direct investment, and (ii) active labour force. The myth about further economic development for more jobs has known better days as job creation seems to be fostered by economic growth, that is to say a transitional state of economy, not a state of larger economy per se. Likewise, figures reveal that free trade does not contribute to massive job creation or, put differently, the amount of employment created by trade itself does not offset the loss recorded in other economic sectors. Last but not least, foreign direct investment does not necessarily create or sustain employment, for, although a decline in foreign direct investment comes along with a decline in employment, the inverse is not always true.

In the light of the findings of study, there is reason to believe economic sophistication, which results from concentration of resources, efficient organisation, including division of labour, and extensive use of technology, together with greater market accessibility by bringing down barriers to entry negatively impacts employment outlook worldwide.

Keywords: Socio-economics, economics, employment, unemployment, global analysis, consolidated quantitative study, labour, global economy, globalisation, gross domestic product, international trade, exports, foreign direct investment, economic determinants, economic indicators, factors

Introduction

Labour is a key factor in economic theories. However, concern is growing as to its place in the modern economic system and thus the prospect of jobs for all in an ever-increasing populated world.

A major hurdle in addressing the issue of employment, or lack thereof, is the usual domestic approach whereby each and every country keeps its own tally, if possible, in consideration of various calculation methods, whose level of accuracy may vary significantly.

But, no matter how valid the national statistical data may be, such a parochial approach fails to reveal the true picture of employment in a globalised world.

With a view to remedying this shortcoming, we suggest taking on a consolidated approach to world employment figures similar to the way multinational corporations report on their financial positions with a view to bringing out the current trend on the one hand and looking further into the relationship between labour and the major economic determinants of the global economic system on the other.

Methodology

Let S be the total study population of n elements (or 'countries') C_i where $i \in \{1, 2, ..., n\}$. In this instance n equals 214 countries and the like1. But, when it comes to dealing with unemployment, we are pitted against two critical impediments.
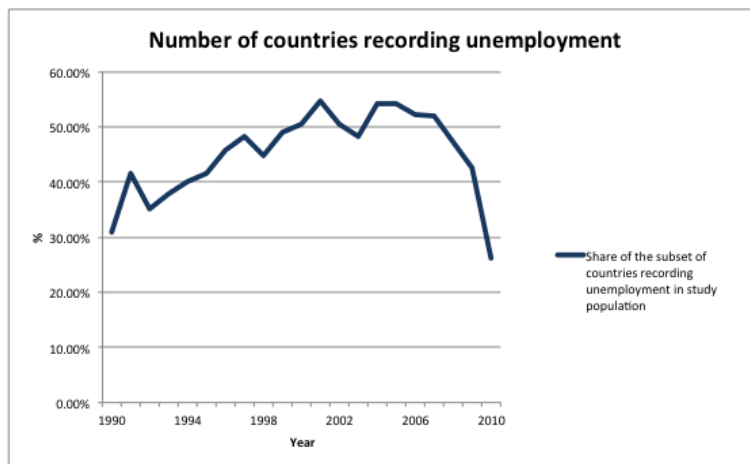

Figure 1

Firstly, not all countries in the world disclose data (Figure 12). One reason is a number of administrations find it hard to carry out accurate surveys and monitor unemployment because of a lack of material resources or organisational capability. Another reason is simply the will not to do so3.

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[1] See 'Study population' page 6 in Appendix

[2] Page 3. The countries that record unemployment make up subset $S[wr]$ in study population S. The somewhat low figure recorded in 2010 (26.17% to be compared with an average of 46.05% over period 1990-2009) is attributed to lateness in disclosing data. No tangible element indicates a sharp decrease in the number of countries disclosing unemployment-related figures from the previous years.

[3] It would be interesting to look further into the reason why the number of countries disclosing unemployment-related figures has been decreasing steadily since 2005.

Secondly, where available, unemployment-related data seldom reflect a true picture of reality. Unemployment, or joblessness, being a sensitive socio-economic issue, the validity of data disclosed is very much impacted by calculation methods and political will. As a result, we may contend at this point that, the unemployment rates disclosed being kept intentionally at lowest levels, the picture we are looking at is a conservative one. The situation is at best as depicted herein or, under most unfavourable circumstances, even less auspicious. In no way may the situation be expected to be any better than that brought out by the study.

With this in mind, in order to ensure greatest relevance and accuracy, we suggest carrying out the study on the subset of countries that disclose unemployment rates at a given time4 (hereinafter noted $S[wr]$). It is understood that subset $S[wr]$ will vary year on year in size (i.e. number of elements) as well as in the combination of elements themselves5. But, it does not affect the relevance of the study at macro level, for the specific features of the elements making up the subset are not determinants in the study and therefore will not be taken into consideration.

Validity control ratios

Relevance of subset $S[wr]$ and thereby the validity of the study carried out thereupon for extrapolation to the entire study population S is ascertained by considering validity control ratios. The share of subset $S[wr]$ in world labour force ($R[L]$) and in world economy ($R[G, X, I]$) will be retained for this purpose6. World economy is expressed by means of three key economic indicators, namely gross domestic product, exports of goods and services and foreign direct investment7.

Below are the ratios used for ascertaining the relevance of subset $S[wr]$ and the validity of the findings of study extrapolated to study population S. The ratios below reflect the shares of subset $S[wr]$ (i) in study population S, (ii) in world labour force and (iii) in world economy.

Share of $S[wr]$ in study population

Set S (study population) and subset $S[wr]$ have n and k elements respectively.

We have for the share of subset $S[wr]$ in study population:

$$R[S] = \frac{k}{n}$$

where $R[S] \in [0,1]$. $R[S]$ is expressed as a percentage rounded off to the nearest hundredth.

Share of $S[wr]$ in world labour force

Let L_i be total labour force for element C_i of set S ($i \in \{1, 2, \dots, n\}$). Let L_j be total labour force for element C_j of subset $S[wr]$ ($j \in \{1, 2, \dots, k\}$).

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[4] See Figure 1 page 3

[5] See Figure 1 page 3, 'Share of $S[wr]$ in study population' page 4 and data entitled 'Share of $S[wr]$ in study population ($R[S]$)' (Significance of subset $S[wr]$ of countries recording unemployment) in 'Data table' page 6. An illustration of differences in the combination of elements year-on-year is the case of Brazil in 1990 and in 1991. Brazil is an element of $S[wr]$ in 1990 with an unemployment rate of 3.70%. However, it is not an element of it in 1991 in the absence of data. (See 'Data set supplement' page 6 for country-related data)

[6] See 'Validity control ratios' page 4 for further details.

[7] See 'List of data in use' page 6 for the definitions of *gross domestic product*, *exports of goods and services* and *foreign direct investment* (net inflows). For greater significance, the value of gross domestic product and exports of goods and services is denominated in constant 2000 US dollars, not in current US dollars.

We have the following aggregate values for set S and subset $S[wr]$:

$$L[T] = \sum_{i=1}^{n} L_i \qquad L[wr] = \sum_{j=1}^{k} L_j$$

We have for the share of subset $S[wr]$ in world labour force:

$$R[L] = \frac{L[wr]}{L[T]} = \frac{\sum_{j=1}^{k} L_j}{\sum_{i=1}^{n} L_i}$$

where $R[L] \in [0,1]$. $R[L]$ is expressed as a percentage rounded off to the nearest hundredth.

The greater the value of $R[L]$, the greater the share of subset $S[wr]$ in world labour force as recorded by study population S and thus the greater the validity of the findings of the study extrapolated to study population S.

Share of $S[wr]$ in world economy

Let G_i, X_i and I_i be the values of gross domestic product, exports of goods and services and net inflows of foreign direct investment respectively for element C_i of set S ($i \in \{1, 2, \dots, n\}$).

We have the following aggregate economic indicators for set S:

$$G[T] = \sum_{i=1}^{n} G_i \qquad X[T] = \sum_{i=1}^{n} X_i \qquad I[T] = \sum_{i=1}^{n} I_i$$

With reference to the aggregate economic indicators $G[wr]$, $X[wr]$ and $I[wr]$ calculated earlier[8], we have for the share of subset $S[wr]$ in world gross domestic product ($R[G]$), in world exports of goods and services ($R[X]$) and in world net inflows of foreign direct investment ($R[I]$) respectively:

$$R[G] = \frac{G[wr]}{G[T]} = \frac{\sum_{j=1}^{k} G_j}{\sum_{i=1}^{n} G_i}$$

$$R[X] = \frac{X[wr]}{X[T]} = \frac{\sum_{j=1}^{k} X_j}{\sum_{i=1}^{n} X_i}$$

$$R[I] = \frac{I[wr]}{I[T]} = \frac{\sum_{j=1}^{k} I_j}{\sum_{i=1}^{n} I_i}$$

where $R[G] \in [0,1]$, $R[X] \in [0,1]$ and $R[I] \in [0,1]$. $R[G]$, $R[X]$ and $R[I]$ are expressed as a percentage rounded off to the nearest hundredth.

The greater the values of $R[G]$, $R[X]$ and $R[I]$, the greater the share of subset $S[wr]$ in world economy as recorded by study population S and thus the greater the validity of the findings of the study extrapolated to study population S. For convenience, we will consider the following aggregate share of $S[wr]$ in world economy:

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[8] See 'Aggregate economic indicators' page 6

$$R[G, X, I] = \frac{R[G] + R[X] + R[I]}{3}$$

where $R[G, X, I] \in [0,1]$. $R[G, X, I]$ is expressed as a percentage rounded off to the nearest hundredth.

The greater the values of $R[G, X, I]$, the greater the share of subset $S[wr]$ in world economy as recorded by study population S and thus the greater the validity of the findings of the study applied to study population S.
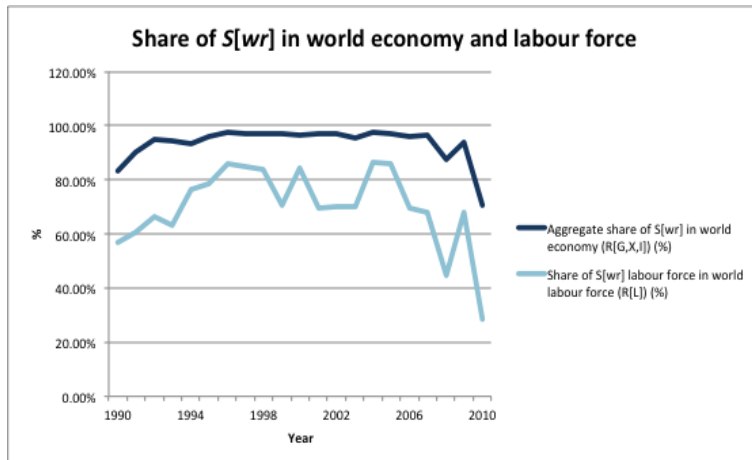

Figure 2

As Figure 29 shows, with no mention of the figures recorded in 201010, subset $S[wr]$ represents between 44.70% and 86.56% of total labour force, with a mean value of 72.26% and values of over 70.00% recorded over a ten-year period11. The aggregate share12 of subset $S[wr]$ in world economy ranges between 83.34% and 97.57%, over the study period. With such high values, significance of the findings of the study carried out on subset $S[wr]$ and extended to study population S is ascertained. Lastly, we will bear in mind that the findings of research are as good as the validity of data reported by the sources of data, a major source of error, allows them to be.

Below are the mathematical definitions of the main labour force-related ratios, and the aggregate economic indicators upon which the study builds. All the decimal values retained for study are rounded off to the nearest thousandth. Percentages are rounded off to the nearest hundredth13.

Active labour force/unemployment rates

In this section we define the two main aggregate indicators, namely the active labour force rate and the unemployment rate.

Let U_i be the unemployment rate for element C_i where $i \in \{1, 2, \ldots, n\}$. Let $S[wr]$ be the subset of elements C_i where U_i is not null. Subset $S[wr]$ has k elements $\{C_1, C_2, \ldots, C_j, \ldots, C_k\}$. $\forall j \in \{1, 2, \ldots, k\}$, let U_j, L_j, u_j and a_j be the unemployment rate, total labour force, total unemployed labour force and total active labour force respectively recorded by element C_j at a given time.

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[9] Page 6

[10] The somewhat low figures recorded in 2010 (28.53% of world labour force and 70.40% of the aggregate share in world economy in comparison with mean values of 72.26% and 94.78% respectively over period 1990-2009) are attributed to lateness in disclosing data. No tangible element substantiates a sharp decrease in the share of subset $S[wr]$ in world labour force and in world economy from the previous years.

[11] The ten years may or may not be contiguous over the period of study.

[12] See 'Share of $S[wr]$ in world economy' page 5 for the definition of the term 'aggregate share'.

[13] See 'Data table' page 6 in Appendix

We have for u_j and a_j:

$$u_j = U_j \times L_j$$

$$a_j = \left(1 - U_j\right) \times L_j$$

We recall that $L_j = u_j + a_j$.

We have the following aggregate values for subset $S[wr]$:

$$L[wr] = \sum_{j=1}^{k} L_j \qquad u[wr] = \sum_{j=1}^{k} u_j \qquad a[wr] = \sum_{j=1}^{k} a_j$$

Based upon the afore-mentioned, let us compute the unemployment rate $R[u/L]$14 and the active labour force rate $R[a/L]$15 at a given time.

We have for $R[u/L]$ and $R[a/L]$:

$$R[u/L] = \frac{u[wr]}{L[wr]} = \frac{\sum_{j=1}^{k} u_j}{\sum_{j=1}^{k} L_j} = \frac{\sum_{j=1}^{k} U_j \times L_j}{\sum_{j=1}^{k} L_j}$$

$$R[a/L] = \frac{a[wr]}{L[wr]} = \frac{\sum_{j=1}^{k} a_j}{\sum_{j=1}^{k} L_j} = \frac{\sum_{j=1}^{k} \left(1 - U_j\right) \times L_j}{\sum_{j=1}^{k} L_j}$$

where $R[u/L] \in [0,1]$ and $R[a/L] \in [0,1]$. $R[u/L]$ and $R[a/L]$ are expressed as a percentage rounded off to the nearest hundredth.

Aggregate economic indicators

Let G_j, X_j and I_j be the values of gross domestic product, exports of goods and services and net inflows of foreign direct investment respectively for element C_j of subset $S[wr]$ ($j \in \{1, 2, \ldots, k\}$).

We have the following aggregate economic indicators for subset $S[wr]$:

$$G[wr] = \sum_{j=1}^{k} G_j \qquad X[wr] = \sum_{j=1}^{k} X_j \qquad I[wr] = \sum_{j=1}^{k} I_j$$

In addition, let $G[wr]_n$ and $G[wr]_{n-1}$ be the value of gross domestic product recorded by subset $S[wr]$ at year n and year $n - 1$ respectively.

We have for the annual gross domestic product growth rate $GDG[wr]_n$ recorded by subset $S[wr]$ at year n from year $n - 1$.

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[14] The term 'unemployment rate' is construed as the 'ratio of total unemployment to total labour force'. $R[u/L]$ is an aggregate value.
[15] The term 'active labour force rate' is construed as the 'ratio of total active labour force to total labour force'. $R[a/L]$ is an aggregate value.

$$GDG[wr]_n = \frac{G[wr]_n - G[wr]_{n-1}}{G[wr]_{n-1}}$$

where $GDG[wr]_n \in]-\infty, \infty[$. $GDG[wr]_n$ is expressed as a percentage rounded off to the nearest hundredth.

Findings of study

To start with, we will have an overview of evolution of world population, labour force and unemployment. Later on, employment figures will be checked against a number of significant economic indicators with a view to figuring out the relationships between employment and major economic determinants as well as the place of labour in the global economic system.

Overview

World population increased by 30.23% to around 6.871 billion people in 2010 from 1990. Total labour force increased by 37.37% to make up 46.86% of world population over the same period of time (Figure 3[16]).
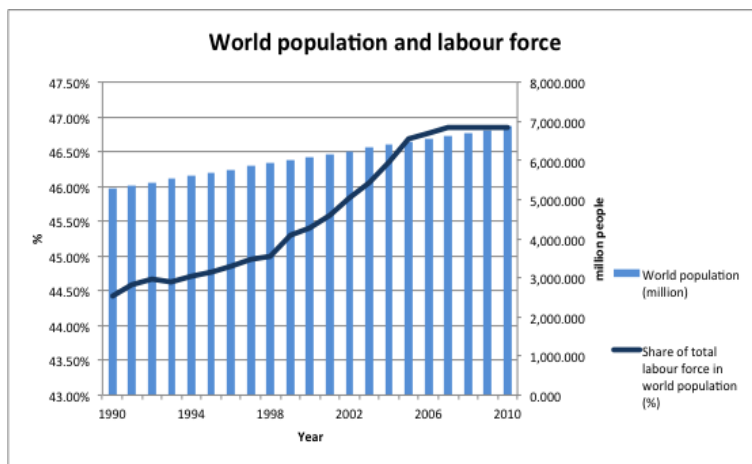

Figure 3

However, we obtain two different pictures in terms of annual growth (Figure 4[17]). While world population appears to be growing at a steady yet ever-decreasing rate over the period of study[18], it is impossible to bring out any definite trend for total labour force besides the fact that it seems to be decreasing continuously from 2004 onwards.

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[16] Page 6
[17] Page 6
[18] Annual world population growth rates were 1.64% and 1.16% respectively in 1991 and 2010.
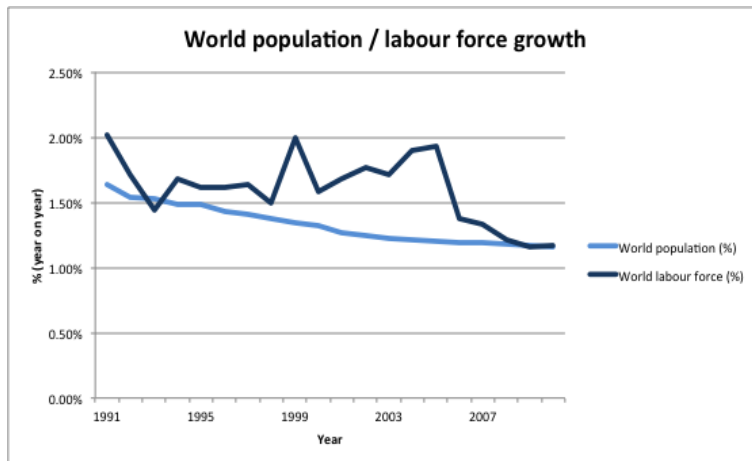
Figure 4

More importantly, labour force is not synonymous with employment. According to the definition retained by the World Bank, 'total labour force comprises people ages 15 and older that meet the International Labour Organization definition of the economically active population, that is to say all people who supply labour for the production of goods and services during a specified period. It includes both the employed and the unemployed 19.'

The least we may say is evolution of the unemployment rate20 $R[u/L]$ (Figure 521) and, conversely, of the active labour force rate22 $R[a/L]$ (Figure 623) for subset $S[wr]$ does not let us augur well about world outlook.
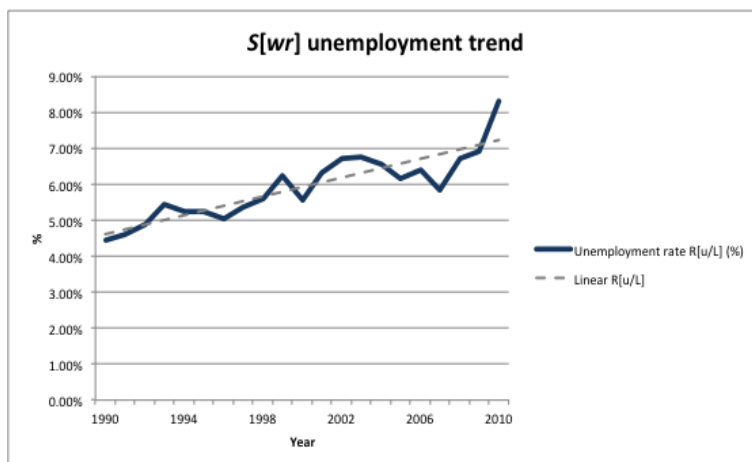

Figure 5

It goes without saying that such major economic downturns as those primed by the financial meltdown in Southeast Asia in 1998 and subprime crisis in 2008, followed by further economic hardship, contribute to a rise in unemployment at some point in time.

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[19] While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in general the labour force includes the armed forces, the unemployed, and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector. (Source: World Bank)

[20] See 'Active labour force/unemployment rates' page 6 for further information on calculation methods.

[21] Page 6

[22] See 'Active labour force/unemployment rates' page 6 for further information on calculation methods.
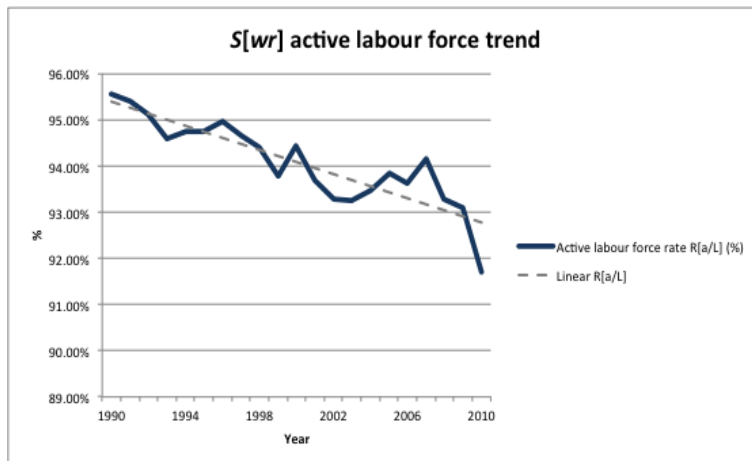
[23] Page 6

Figure 6

However, more importantly, let alone the circumstantial fluctuations inherent in crises breaking out continually for one reason or another, which alone is evidence of a manifest lack of a mastery of economics for the good of all, we may acknowledge an upward trend for unemployment and, conversely, a downward trend for active labour force from 1990 until 2010.

There is evidence that (i) the world regains the levels of employment prior to major crises only temporarily, if at all, and that (ii), in spite of temporary betterment every now and again, unemployment is generally and continuously on the rise. Over two decades of fully-fledged globalisation, world economy has failed to create jobs markedly on an ongoing basis and in sufficient amounts.

Employment and major economic indicators

With the afore-mentioned in mind, let us take a look at the relationship between employment, or lack thereof, and world economic performance from a quantitative point of view. Thus, we will be able to test out the relevance of the globalisation model, which is based upon free trade, market growth, liberalisation and deregulation, as a purveyor of employment for the socio-economic good of individuals and societies.

With a view to doing so, we suggest checking active labour force data against three economic indicators, namely gross domestic product[24], exports of goods and services[25] and foreign direct investment[26].

Table 12[27] reads the Pearson's correlation coefficients[28] between employment and significant economic indicators.

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[24] It encompasses both total value and annual growth. See 'List of data in use' page 6 for the definition of *gross domestic product*. For greater relevance, the value of gross domestic product is denominated in constant 2000 US dollars, not in current US dollars.

[25] See 'List of data in use' page 6 for the definition of *exports of goods and services*. For greater relevance, the value of exports of goods and services is denominated in constant 2000 US dollars, not in current US dollars.

[26] See 'List of data in use' page 6 for the definition of *foreign direct investment* (net inflows).

[27] Page 6

[28] Hereinafter simply referred to as *correlation coefficients*.

S[wr] active labour force-related Pearson's correlation coefficients				
	GDP[wr]	GDG[wr]	EXP[wr]	FDI[wr]
Active labour force (a)	0.41	0.57	0.31	0.23
Active labour force rate (R[a/L])	**-0.73**	**0.77**	**-0.74**	-0.51

GDP[wr]: Gross domestic product
GDG[wr]: Gross domestic product annual growth rate
EXP[wr]: Exports of goods and services
FDI[wr]: Foreign direct investment (net inflows)

Table 1

For relevance, we will retain the highest significance level (alpha value) in consideration of the size of study population29. With reference to the table of the critical values of the Pearson's correlation coefficient, an alpha value of 0.001 or 99.99% significance demands that the correlation coefficient should be greater than 0.665 and an alpha value of 0.01 or 99.90% significance demands that the correlation coefficient should be greater than 0.549.

Employment is hereinafter articulated by means of the relative active labour force rate $R[a/L]$. The reason for doing so instead of retaining $S[wr]$ active labour force (a) data lies in the fact that to consider employment only in absolute terms does not make complete sense from a socio-economic point of view whereby labour is not only an economic factor but also an essential element of the social fabric. With this in mind, it is not so much the number of jobs created by the economic system as the proportion of labour force employed in the said economic system30 that matters regardless of non-economic factors such as demographic growth and segmentation. The socio-economically meaningful concept of "the proportion of labour force whose economic contribution generates an income, no matter the level thereof" underpins our study and discussion.

We will note at this point that (i) no correlation materialises between active labour force a and the afore-mentioned economic indicators31 and (ii) further analysis of graphic representations corroborates the manifest lack of natural link between labour on the one hand and the main drivers of the global economic system on the other.

There seems to be a fairly strong correlation between $R[a/L]$ and (i) gross domestic product both in constant 2000 US dollars value and in percentage growth and (ii) real exports of goods and services. A coefficient of -0.506 indicates the absence of a correlation between employment and nominal foreign direct investment. Besides, a major cause of concern lies in negative correlation coefficients, which tend to indicate that employment on the one hand and economic development32 and exports of goods and services on the other have been going opposite ways over the period of study.

But, socio-economics being a complex science with a great number of factors and variables to be taken into account, we will see that we do not draw hasty conclusions on the sole basis of correlation coefficients. It is therefore of the utmost importance that we should look further into possible relationships by looking directly at the charts. The latter will feature linear or polynomial regression curves wherever greatest significance is ensured.

We will also bear in mind that correlation does not imply causation. In other words, correlation is an indicator of a possible causal relationship between two variables (in either direction). A correlation between A and B does not imply that A determines B and conversely. It just highlights the fact that their respective patterns of evolution might be related, which may be purely accidental for that matter. As a consequence, further investigation is always necessary.

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[29] Study population for Pearson's product-moment correlation coefficients and regression analysis is made up of 21 entries, that is to say the aggregate values recorded by subset $S[wr]$ annually from 1990 until 2010.
[30] Referred to as *active labour force*.
[31] See Table 1 page 6
[32] The term 'economic development' will be construed as 'a given state of economy in value', not as 'economic growth', which defines as a transitional period of time from one state of economy to another.

Employment and gross domestic product

Although it is commonly assumed that economic growth naturally has a positive impact on employment, readings from Figure 7[33] give grounds for further questioning. We can hardly draw a positive causal relationship between active labour force ($R[a/L]$) and gross domestic product ($GDP[wr]$).
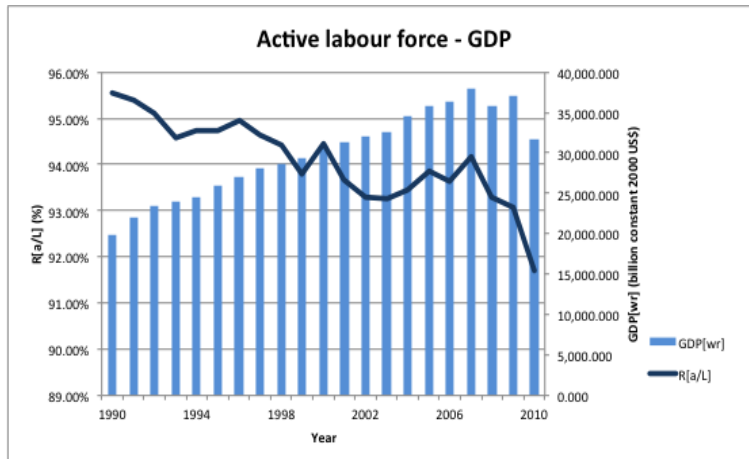

Figure 7

Granted economic growth paired with job creation almost continuously during periods 1993-1996 and   2003-2007. However, it was far from being the case on a long-term basis over period 1990-2003, during which the unemployment rate increased by 2.31 percentage points to 6.75% despite a substantial 63.26% rise in gross domestic product. Furthermore, while gross domestic product slid from record levels over period 2007-2009[34], the world also recorded a sharp and steady rise in unemployment.

The least we may say is the relationship between active labour force and gross domestic product is both a most unpredictable one and an uneasy one (Figure 8[35]). We may identify three clusters of elements featuring three different patterns of evolution.

Pattern A[36] definitely is about what we all expect to see, that is to say a positive correlation between growth and employment, which, should a causal relationship be established, otherwise translates into 'the greater the value of gross domestic product, the more jobs'.

However, general acceptance is unequivocally contradicted by the fact that an increase in the value of gross domestic product may very well pair with less employment (Pattern B[37]).

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[33] Page 6

[34] The value of gross domestic product reached 37,911.037 billion constant 2000 US dollars in 2007, up 4.13% from 2006.

[35] Page 6. The 6th order polynomial regression has an R² value of 0.72282.

[36] See Patterns A₁ and A₂ in Figure 8 page 6

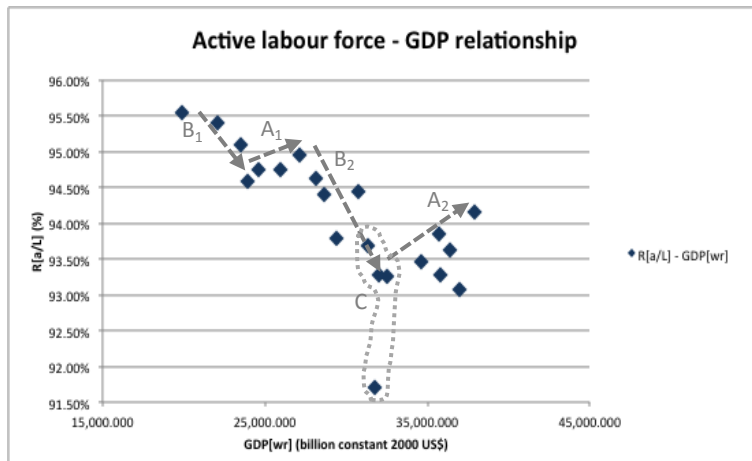[37] See Patterns B₁ and B₂ in Figure 8 page 6

Figure 8

Besides, there is also evidence that the active labour force rate may vary significantly despite the absence of a major change whichever way in the value of gross domestic product. For instance, it appears indeed we have quite a confusing situation played out around 31,500 billion constant 2000 US dollars, for the unemployment rate rose by 31.33% and fell by 18.67% for a mere 1.46% and 2.35% change in the value of gross domestic product respectively38.

That being said, we can hardly see any firm positive causal relationship between the two indicators. Surely, the myth about further economic development for more jobs has known better days. Another issue of interest lies in the relationship between active labour force and annual gross domestic product growth.
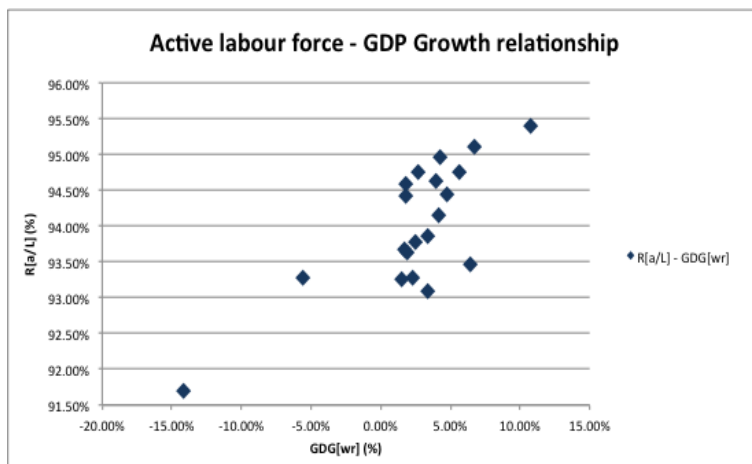

Figure 9

Indeed, in spite of a lack of significant regression (Figure 939), we may notice that active labour force and annual gross domestic product growth evolve either upward or downward in very similar ways over a given period of time (Figure 1040). Such observation corroborates the correlation coefficient of 0.77541.

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38 See Pattern C in Figure 8 page 6. +1.98 percentage point recorded at GDP value of 31,758.535 billion constant 2000 US dollars from a 6.32% unemployment rate recorded at GDP value of 31,302.764 billion constant 2000 US dollars and -1.55 percentage points recorded at GDP value of 32,507.181 billion constant 2000 US dollars from a 8.30% unemployment rate recorded at GDP value of 31,758.535 billion constant 2000 US dollars.
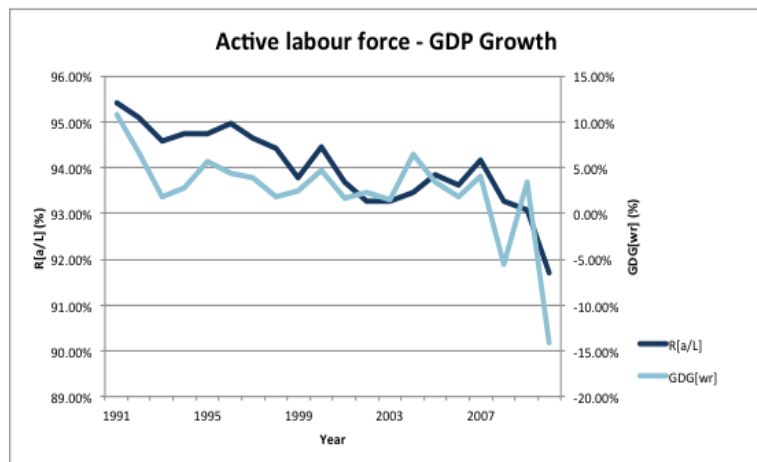39 Page 6
40 Page 6
41 See Table 1 page 6

Figure 10

We will note though that the reverses of the trend from growth to decline and conversely for both indicators, may not always be in phase. We reckon such discrepancies in time may be attributed to socio-economic inertia, which occurs for a number of reasons at micro and macro levels. It remains nonetheless that active labour force outlook is more related to economic fluctuations (growth or decline) than to a given level of economic development in value42.

There is a necessity to further delve into the nature of such a connection along with the type of causality, if any. Nevertheless, such findings only leave us with mixed feelings. On the one hand, that economic growth may foster employment is good news. On the other, we cannot but question the rationale and sustainability of the global economic model where growth, not an advanced state of economy, provides jobs. It stands for trading short-term gain for long-term pain, as we are pursuing a goal that runs counter to individuals' best interests over time.

Where employment or job creation is intimately related to a transitional state of economy, it may only be viewed as a means to an end, not the very end itself. Last but not least, owing to utter complexity and the impact of external factors and unforeseen events, experience proves that the path to mastered and continuous growth is a most unpredictable one. With this in mind, we understand the difficulty in implementing viable and sustainable measures for supporting employment on the sole basis of economic growth.

Employment and exports of goods and services

Unless we missed something about the theory of free trade as a prerequisite for job creation, Figure 1143 reveals a puzzling picture of reality.

Granted an increase in exports goes hand in hand with a growing share of active labour force in total labour force from 2003 until 200744. However, such a relationship is by no means a general rule. While trade kept on growing manifold continuously from 1990 to 200345, the world was not faring all too well as far as the long-term

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[42] Also referred to as 'state of economy'.
[43] Page 6
[44] Exports of goods and services and $R[a/L]$ increased by 43.39% (from 8,113.140 billion constant 2000 US dollars) and by 0.91 percentage points (from 93.25%) respectively over period 2003-2007.
[45] Exports of goods and services almost tripled to 8,107.925 billion constant 2000 US dollars in 2003 from 2,806.623 billion constant 2000 US dollars in 1990.

employment trend is concerned with about 2.31 percentage points lost over the period. Moreover, despite rising employment from 2003 to 2007, the active labour ratio nonetheless lost 1.40 percentage points from 199046.
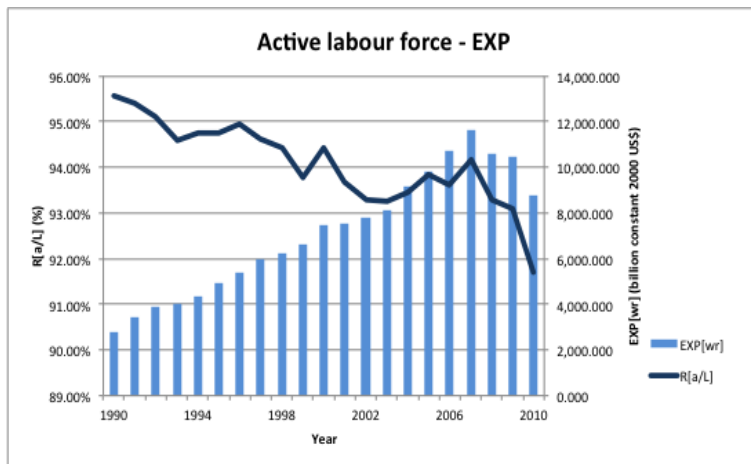

Figure 11

Besides, although it is impossible to ascertain any positive causal relationship between trade growth and job creation, there is a concurrence of events when it comes to decline, as epitomised by the pattern of evolution that developed during period 2007-201047. The two indicators somehow seem to be closely related   (Figure 1248).

What with significant polynomial regression49 and the beautiful scattering of elements $\{EXP[wr], R[a/L]\}$ along the x-axis50, we cannot deny the existence of a negative relationship between exports and employment. Further interpretation of the readings requires delicate handling though.
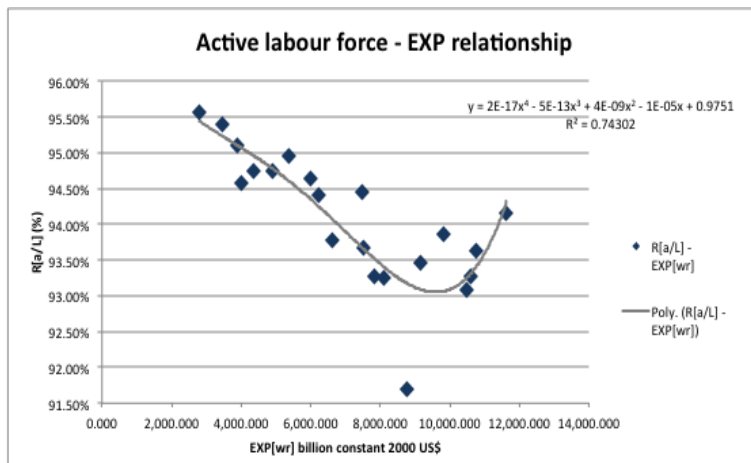
Figure 12

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[46] Exports of goods and services grew by a staggering 314.50% to 11,633.500 billion constant 2000 US dollars in 2007 from 2,806.623 billion constant 2000 US dollars in 1990. Over the same period, $R[a/L]$ decreased to 94.16% from 95.56%.
[47] Exports of goods and services and $R[a/L]$ decreased by 24.69% (from 11,633.500 billion constant 2000 US dollars) and by 2.46 percentage points (from 94.16%) respectively over period 2007-2010.
[48] Page 6
[49] R^2=0.74302
[50] The chart does not feature any significant vertical clustering of elements $\{x, y\}$ whereby substantially different values of y are recorded for a given value of x.

To begin with, it is crucial to differentiate (i) employment created by trade, in other words jobs in the logistics sector and the like, which are purely related to exchange of goods and, to a lesser extent, services, from (ii) that in other economic sectors such as industry, which is impacted by trade yet not directly related thereto.

Let us bear in mind at this point that the volume of exports is driven not only (i) by the state of economy and thereby production levels but also (ii) by relocation of operations to a select number of destinations meant for serving markets overseas. Consequently, a rise in exports may very well signify the replacement of local production with imported goods and services without entailing higher consolidated production levels. From a statistical viewpoint, correlation coefficients51 and regression analysis52 bring out a robust connection between exports of goods and services and gross domestic product along with foreign direct investment.

Having said that, besides job creation in the logistics sector, the extensiveness of which remains to be estimated, the reverse of the trend around 9,000-10,000 billion constant 2000 US dollars 53 does not imply increasing employment exclusively or mainly as a result of exports picking up. Indeed, with reference to the steep increase in gross domestic product and foreign direct investment over the same period of time54, we are inclined to think that growing trade volumes build upon brisk economic growth worldwide together with massive relocation of operations overseas, most probably into cost-effective countries as far as manufacturing facilities are concerned. We are looking at a conjunction of events, not a positive causal relationship between exports and employment.

With the afore-mentioned in mind, we are inclined to contend that free trade does not contribute to massive job creation or, put differently, the amount of employment created by trade itself does not offset the loss recorded in other economic sectors.

Employment and foreign direct investment

The relationship between active labour force and foreign direct investment is very similar to that discussed when looking at exports of goods and services (Figure 1355).
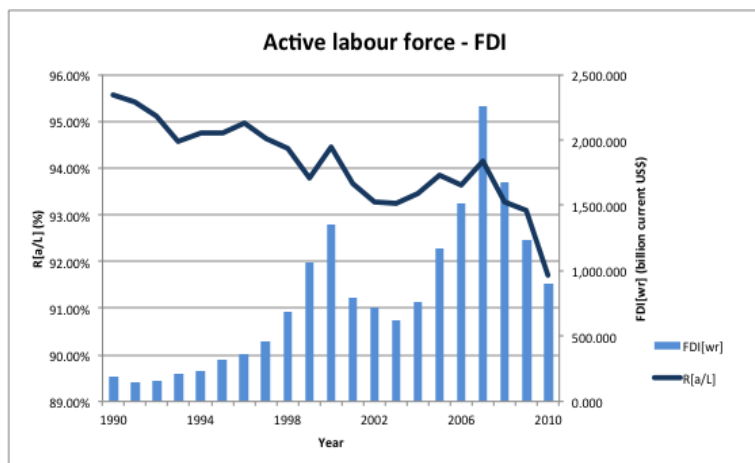
Figure 13
A decline in foreign direct investment comes along with a decline in employment56. Still, as the long-term trend recorded over period 1991-2000 indicates, the inverse is not always obvious.

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[51] See Table 2 page 6 in Appendix
[52] See Figure 15 page 6 and Figure 16 page 6 in Appendix
[53] See Figure 12 page 6
[54] See period 2003-2007 in Table 4 page 6 in Appendix
[55] Page 6
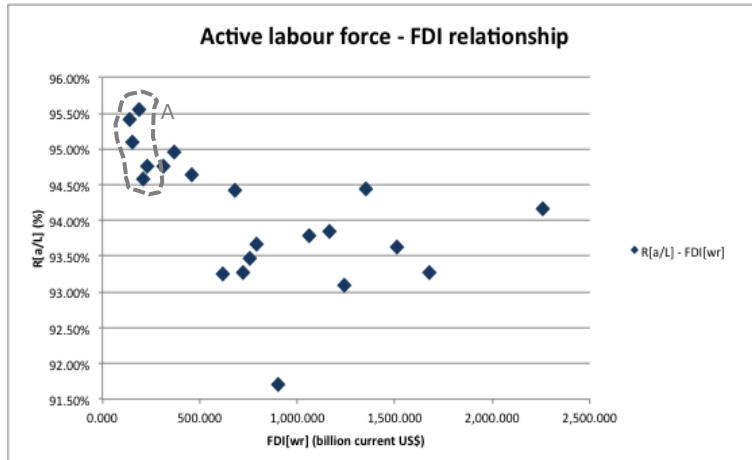[56] See periods 2000-2003 and 2007-2010 in Figure 13 page 6

Figure 14

Besides, unlike for exports, the distribution of elements $\{FDI[wr], R[a/L]\}$ is not significant enough for bringing out a definite relationship based upon regression analysis57 (Figure 1458). All we may say at this point is foreign direct investment does not necessarily create or sustain employment.

Conclusion

It is beyond question the current economic system falls short of the number of jobs required worldwide for the socio-economic good of all. Owing to a significant increase in both world population and the share of labour force in total population, the demographic factor will not be overlooked. However, it must not be viewed as the one and only cause of the problem. Further creation of employment represents a tremendous ordeal despite the unprecedented levels of output, trade and investment reached by the global economy. More, it appears the world is gradually losing jobs, even more so crisis after crisis. There is therefore a necessity to attempt to bring out the inherent causes of what is ever-increasingly seen as a structural shortcoming in order to be able to turn the situation around.
As one of the four economic factors59, labour is input in the manufacturing process. Consequently, like for commodities, there should be a positive relationship with the level of output. Curiously, there is no robust link between the active labour force rate and the amount of gross domestic product. Only do we have a strong relationship with growth, which is unsustainable in essence, for, whether it be initiated by external factors beyond our power or by design, change always proves provisional and most unpredictable until a new equilibrium is reached. The findings of study also highlight the fact that neither free trade nor foreign direct investment, two pillars of the global economic system, begets employment in essence.

In an attempt at comprehension, we reckon the problem the world is facing stems from the negative effect of economic sophistication, hypercompetition and free trade60.

Granted economic sophistication61 along with hypercompetition has worked wonders in fulfilling basic needs. The former allows for greater productivity and low-cost mass manufacturing while, as opportunities get scarcer, business

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57 We fail to produce a relevant regression curve and significance is affected by vertical clustering (See Pattern A in Figure 14 page 6).
58 Page 6
59 *Economic factors* are *land* (otherwise known as *raw materials* or *commodities*), *labour*, *capital* and, in consideration of the working principles of knowledge-based society, *knowledge*.
60 See the technical handbook by the author entitled 'Insight into the Basics of World Dynamics' for further discussion about the working principles of *economic sophistication*, *hypercompetition* and *free trade*.

entities are ever-increasingly adamant to work out the market fundamentals62 so they can cater to larger segments. The benefits are beyond question, with an ever-increasing number of people around the world availing themselves of better quality products and decreasing prices.

However, in order to benefit to the utmost from concentration of resources, critical mass, the learning effect, the spillover effect and economies of scale, a robust industrial base is unlikely to develop in all parts of the world under the current circumstances. Greater productivity and the necessity to minimise fixed costs per unit do not encourage manufacturers to consider multiple locations with a view to serving markets worldwide. Ever-increasing efficiency on the production side widens the gap between the need for an extended manufacturing base on the one hand and market sizes on the other. We will note that such rationalisation also applies indiscriminately to the agriculture, services and public sectors, a fortiori where there is an increasing impetus to drive operating costs down and, as far as public administrations are concerned, to reduce budget deficits.

Besides, we are confronted with a puzzling negative relationship between employment and exports63. The reason for it is, in a boundary-free world, there is no incentive to run overly redundant operations, in other words to replicate and localise operations notwithstanding the inherent loss in cost-effectiveness. On the contrary, it supports concentration of resources, critical mass, the learning effect and economies of scale, whereby high levels of productivity are reached at the expense of employment. Therefore, let alone the marginal number of jobs created directly by exchange of goods and services64, it takes particular, if not exceptional, economic circumstances for exports to spur employment on a much larger scale, for instance, where serving unattended markets demands for expansion of production capacity that creates jobs65.

Consequently, owing to sheer imbalance between large-scale manufacturing capacity operated by ever-increasingly consolidated businesses on the one hand and that of market demand on the other, facilitated by free trade and efficient logistics, fewer people need to work and people need to work less for the system to serve more people and fulfil their needs on a much larger scale. Particularly affected thereby is job redundancy, that is to say the replication of a given activity, operation or professional occupation, which results from market atomicity66 along with market inaccessibility because of the existence of entry barriers of some form67.

Whether it be driven by purely profit-making strategies or by the mere consequence of modernism and today's requirements for success, the current economic system proves detrimental to creating and sustaining much-needed jobs for viable socio-economic development. It does not create jobs on the whole besides the provisional ones derived from rapidly increasing demand. Moreover, it appears continual economic crisis aggravates the downward trend by encouraging economic players to seek out greater rationalisation in response to economic hardship and to a crucial need for critical mass. In this context, we find it hard to consider job creation as an option. Rather, all we may expect under best auspices is mainly job transfer from one place to another. If so, we venture to ask at the expense of whom such transfer may be taking place in future. The question remains entirely open.

About the author

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[61] *Economic sophistication* stems from the combination of *concentration of resources*, *efficient organisation* and *extensive use of technology*.

[62] See, among others, the concepts of *concentration of resources*, *critical mass*, *the learning effect*, *economies of scale* and *synergy*.

[63] See 'Employment and exports of goods and services' page 6

[64] It concerns the logistics sector and related activities.

[65] Expansion of production capacity takes place only in stages where maximum production levels are reached at existing facilities. Problem is intensive use of capital and technology results in (i) a high ratio of output to labour and (ii) high production capacity thresholds.

[66] See 'market economy and perfect competition' (Economic theories) in the technical handbook by the author entitled 'Insight into the Basics of World Dynamics'.

[67] Entry barriers encompass, among others, natural geographical remoteness, customs barriers (tariffs and quotas), technical standards and other rules and regulations.

Oliver De Meistre is an expert in international project management and socio-economics. In addition to extensive knowledge of European countries, he has a long-standing relationship with Asia. To date, besides being consulted by business entities on leverage and international project management, Oliver De Meistre is involved in fundamental research as well as academic and socio-economic development in South East Asia. He is also the founder of the Fundamental Socio-Economics Programme. Oliver De Meistre dedicates a substantial amount of time to making sense of the determinants and effects of world dynamics for the good of societies and individuals. His reference publications and findings of research are acknowledged and disseminated worldwide by leading international organisations and academic institutions.

Appendix

Study population

The study population68 is made up of the following 214 countries and the like69:

Afghanistan, Albania, Algeria, American Samoa, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas (The), Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Cayman Islands, Central African Republic, Chad, Channel Islands, Chile, China, Colombia, Comoros, Congo (Dem. Rep.), Congo (Rep.), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Curacao, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt (Arab Rep.), El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Faeroe Islands, Fiji, Finland, France, French Polynesia, Gabon, Gambia (The), Georgia, Germany, Ghana, Greece, Greenland, Grenada, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong (SAR, China), Hungary, Iceland, India, Indonesia, Iran (Islamic Rep.), Iraq, Ireland, Isle of Man, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Korea (Dem. Rep.), Korea (Rep.), Kosovo, Kuwait, Kyrgyz Republic, Lao (PDR), Latvia, Lebanon, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxembourg, Macao (SAR, China), Macedonia (FYR), Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia (Fed. Sts.), Moldova, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Caledonia, New Zealand, Nicaragua, Niger, Nigeria, Northern Mariana Islands, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russian Federation, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Sint Maarten (Dutch part), Slovak Republic, Slovenia, Solomon Islands, Somalia, South Africa, South Sudan, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Martin (French part), St. Vincent and the Grenadines, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Turks and Caicos Islands, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Venezuela (RB), Vietnam, Virgin Islands (U.S.), West Bank and Gaza, Yemen (Rep.), Zambia, Zimbabwe.

Period of study

The period of study spans twenty-one (21) years from 1990 until 2010 included. The data collected are dated 22 July 2012.

Data and sources

Data set supplement

The data set supplement may be downloaded online at the following address:

https://docs.google.com/open?id=0B7ZSGNdwOULqa1N1RHlKVzAxcms

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[68] Abbreviations read as follows in order of appearance: Dem. (Democratic), Rep. (Republic), SAR (Special Administrative Region), PDR (People's Democratic Republic), FYR (Former Yugoslav Republic), Fed. (Federal), Sts. (States), RB (Republica Bolivariana) and U.S. (United States).

[69] In view of marked differences in socio-economic fundamentals, *Hong Kong SAR*, *Macao SAR*, *Sint Maarten (Dutch part)*, *St. Martin (French part)* and *Virgin Islands (U.S.)* will be considered as independent elements of the study population regardless of their being indissociable geographical and political entities of China, Netherlands, France or the United States. For convenience, each element of the study population will be referred to as 'country'.

List of data in use

Below is the exhaustive list of data retained for study:

Exports of goods and services70 (X) in constant million US dollars as of year 200071,

Foreign direct investment72 (I) in million US dollars,

Gross domestic product73 (G) in constant million US dollars as of year 200074,

Total labour force75 (L) in million people,

Total unemployment76 (U) as a percentage of total labour force.

Sources of data

data in use77 are as made available online by the World Bank and disclosed by the following acknowledged and reliable sources78 listed in alphabetical order:

International Labour Organization (www.ilo.org),

International Monetary Fund (www.imf.org),

Organisation for Economic Co-operation and Development (www.oecd.org),

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[70] *Exports of goods and services* represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. (Source: World Bank)

[71] Dollar figures are converted from domestic currencies using 2000 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. (Source: World Bank)

[72] *Foreign direct investment* are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. (Source: World Bank)

[73] *Gross domestic product* at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. (Source: World Bank)

[74] Dollar figures are converted from domestic currencies using 2000 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. (Source: World Bank)

[75] *Total labour force* comprises people ages 15 and older that meet the International Labour Organization definition of the economically active population: all people who supply labour for the production of goods and services during a specified period. It includes both the employed and the unemployed. While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in general the labour force includes the armed forces, the unemployed, and first-time job seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector. (Source: World Bank)

[76] *Unemployment* refers to the share of the labour force that is without work but available for and seeking employment. Definitions of labour force and unemployment differ by country. (Source: World Bank)

[77] See 'List of data in use' page 6

[78] Web addresses are provided for information purposes only. Readers are informed that, although they were valid at the time of publishing, the web addresses mentioned herein may have been subject to change without prior notice since then.

United Nations (www.un.org),

World Bank (www.worldbank.org).

Data available from the above-mentioned sources are also supplemented by data from the United Nations Conference on Trade and Development and official national sources as and where the need arises[79].

Supplementary charts and tables

Exports-related Pearson's correlation coefficients		
	$GDP[wr]$	$FDI[wr]$
Exports ($EXP[wr]$)	**0.991**	**0.894**

$GDP[wr]$: Gross domestic product
$FDI[wr]$: Foreign direct investment (net inflows)
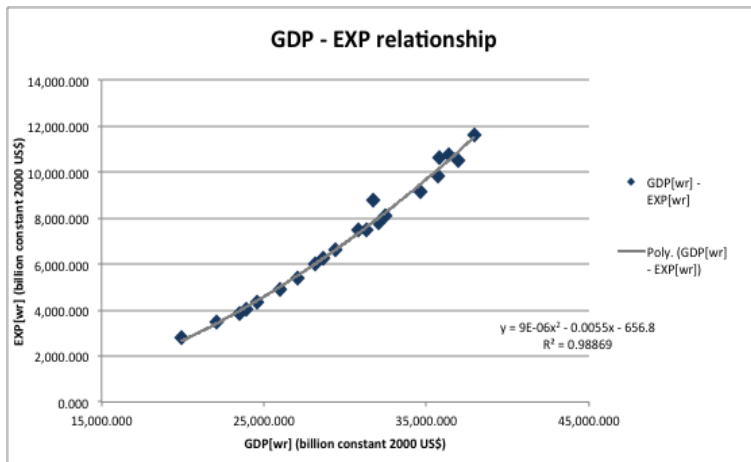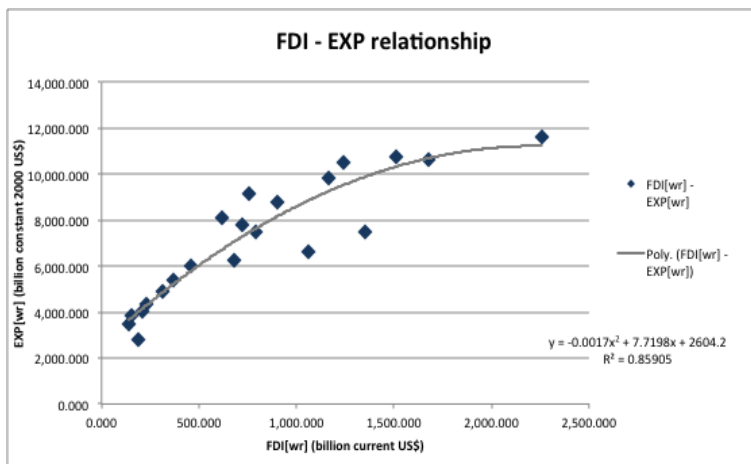Table 2

Figure 15

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[79] See World Bank notes on data sources for further details.

Figure 16

Data table

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
World population											
Total population (a) (million)	5,276.088	5,362.558	5,444.939	5,528.008	5,610.038	5,693.449	5,774.755	5,856.349	5,937.114	6,016.625	6,095.947
Annual growth rate (%)		1.64%	1.54%	1.53%	1.48%	1.49%	1.43%	1.41%	1.38%	1.34%	1.32%
Total labour force											
Total labour force (b) (million)	2,343.995	2,391.174	2,432.012	2,467.181	2,508.624	2,549.214	2,590.369	2,632.653	2,672.054	2,725.302	2,768.365
Annual growth rate (%)		2.01%	1.71%	1.45%	1.68%	1.62%	1.61%	1.63%	1.50%	1.99%	1.58%
Share of labour force in population											
Ratio of (b) to (a) (%)	44.43%	44.59%	44.67%	44.63%	44.72%	44.77%	44.86%	44.95%	45.01%	45.30%	45.41%
Significance of subset $S[wr]$ of countries recording unemployment											
Share of S[wr] in study population S ($R[S]$) (%)	30.84%	41.59%	35.05%	37.85%	40.19%	41.59%	45.79%	48.13%	44.86%	49.07%	50.47%
Share of $S[wr]$ labour force in world labour force ($R[L]$) (%)	56.71%	60.69%	66.42%	63.02%	76.27%	78.61%	85.88%	85.04%	84.11%	70.76%	84.44%
Aggregate share of $S[wr]$ in world economy ($R[G,X,I]$) (%)	83.34%	90.43%	95.05%	94.45%	93.39%	95.99%	97.57%	97.19%	96.88%	97.18%	96.51%
Share of $S[wr]$ in world GDP ($R[G]$)	82.87%	90.35%	94.36%	94.40%	93.91%	96.46%	97.35%	97.41%	96.93%	96.10%	96.29%
Share of $S[wr]$ in world EXP ($R[X]$) (%)	75.44%	89.31%	94.76%	94.45%	93.49%	95.38%	97.83%	97.00%	96.42%	97.30%	96.77%
Share of $S[wr]$ in world FDI ($R[I]$) (%)	91.69%	91.64%	96.04%	94.49%	92.77%	96.12%	97.51%	97.17%	97.30%	98.15%	96.48%
$S[wr]$ unemployment data											
$S[wr]$ total labour force (L) (million)	1,329.206	1,451.163	1,615.381	1,554.901	1,913.356	2,003.859	2,224.679	2,238.764	2,247.549	1,928.415	2,337.529
Active labour force rate $R[a/L]$ (%)	95.56%	95.40%	95.10%	94.58%	94.75%	94.75%	94.95%	94.64%	94.41%	93.78%	94.44%
$S[wr]$ active labour force (a) (million)	1,270.125	1,384.442	1,536.290	1,470.551	1,812.867	1,898.639	2,112.324	2,118.674	2,121.928	1,808.467	2,207.579
Unemployment rate $R[u/L]$ (%)	4.44%	4.60%	4.90%	5.42%	5.25%	5.25%	5.05%	5.36%	5.59%	6.22%	5.56%
$S[wr]$ unemployed (u) (million)	59.081	66.721	79.091	84.350	100.490	105.220	112.355	120.091	125.621	119.949	129.950
$S[wr]$ economic indicators											
Gross domestic product ($GDP[wr]$) (billion constant 2000 US$)	19,911.184	22,043.895	23,518.552	23,938.207	24,591.589	25,979.381	27,095.433	28,156.541	28,669.603	29,384.882	30,784.086
Gross domestic product growth ($GDG[wr]$) (annual, %)		10.71%	6.69%	1.78%	2.73%	5.64%	4.30%	3.92%	1.82%	2.49%	4.76%
Exports of goods and services ($EXP[wr]$) (billion constant 2000 US$)	2,806.623	3,456.228	3,873.743	4,015.868	4,359.133	4,917.909	5,382.857	5,992.877	6,226.848	6,612.234	7,479.966
Foreign direct investment ($FDI[wr]$) (net inflows, billion current US$)	186.236	142.397	157.095	209.341	230.995	316.272	366.468	457.591	683.075	1,058.654	1,353.712

Table 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
World population										
Total population (a) (million)	6,173.324	6,249.992	6,326.615	6,403.446	6,480.456	6,557.722	6,635.551	6,714.190	6,792.771	6,871.240
Annual growth rate (%)	1.27%	1.24%	1.23%	1.21%	1.20%	1.19%	1.19%	1.19%	1.17%	1.16%
Total labour force										
Total labour force (b) (million)	2,814.902	2,864.630	2,913.750	2,968.918	3,026.111	3,067.803	3,108.547	3,146.304	3,182.721	3,219.860
Annual growth rate (%)	1.68%	1.77%	1.71%	1.89%	1.93%	1.38%	1.33%	1.21%	1.16%	1.17%
Share of labour force in population										
Ratio of (b) to (a) (%)	45.60%	45.83%	46.06%	46.36%	46.70%	46.78%	46.85%	46.86%	46.85%	46.86%
Significance of subset $S[wr]$ of countries recording unemployment										
Share of $S[wr]$ in study population S ($R[S]$) (%)	54.67%	50.47%	48.13%	54.21%	54.21%	52.34%	51.87%	47.20%	42.52%	26.17%
Share of $S[wr]$ labour force in world labour force ($R[L]$) (%)	69.83%	70.27%	69.95%	86.56%	86.15%	69.68%	68.22%	44.70%	67.89%	28.53%
Aggregate share of $S[wr]$ in world economy ($R[G,X,I]$) (%)	97.25%	97.11%	95.41%	97.40%	97.12%	95.97%	96.44%	87.32%	93.68%	70.40%
Share of $S[wr]$ in world GDP ($R[G]$)	96.27%	96.57%	95.46%	97.69%	97.58%	95.60%	95.80%	89.26%	94.36%	78.16%
Share of $S[wr]$ in world EXP ($R[X]$) (%)	97.57%	97.74%	96.21%	97.73%	97.35%	97.03%	97.42%	87.06%	96.65%	70.96%
Share of $S[wr]$ in world FDI ($R[I]$) (%)	97.90%	97.01%	94.55%	96.78%	96.42%	95.27%	96.11%	85.64%	90.04%	62.08%
$S[wr]$ unemployment data										
$S[wr]$ total labour force (L) (million)	1,965.685	2,013.042	2,038.129	2,569.757	2,606.967	2,137.629	2,120.675	1,406.273	2,160.765	918.767
Active labour force rate $R[a/L]$ (%)	93.68%	93.28%	93.25%	93.46%	93.85%	93.62%	94.16%	93.28%	93.08%	91.70%
$S[wr]$ active labour force (a) (million)	1,841.408	1,877.717	1,900.655	2,401.722	2,446.691	2,001.309	1,996.795	1,311.763	2,011.325	842.539
Unemployment rate $R[u/L]$ (%)	6.32%	6.72%	6.75%	6.54%	6.15%	6.38%	5.84%	6.72%	6.92%	8.30%
$S[wr]$ unemployed (u) (million)	124.277	135.325	137.474	168.035	160.276	136.320	123.880	94.510	149.440	76.228
$S[wr]$ economic indicators										
Gross domestic product ($GDP[wr]$) (billion constant 2000 US$)	31,302.764	32,013.330	32,507.181	34,587.222	35,741.198	36,407.277	37,911.037	35,786.133	36,979.776	31,758.535
Gross domestic product growth ($GDG[wr]$) (annual, %)	1.68%	2.27%	1.54%	6.40%	3.34%	1.86%	4.13%	-5.60%	3.34%	-14.12%
Exports of goods and services ($EXP[wr]$) (billion constant 2000 US$)	7,513.865	7,817.808	8,113.140	9,160.713	9,810.156	10,743.841	11,633.500	10,610.372	10,487.474	8,760.640
Foreign direct investment ($FDI[wr]$) (net inflows, billion current US$)	794.089	722.899	616.896	757.103	1,166.887	1,513.544	2,256.072	1,675.366	1,237.427	903.283

Table 4