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Developing Of Methodology Of World Bank's Knowledge Economy Indicator From The Perspective Of Internal Growth Models

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Abstract:

The research objective is to develop a methodology for the World Bank's knowledge economy indicator from the perspective of internal growth models. The research aims to analyze the approach of internal growth models in interpreting the impact of knowledge on the knowledge economy and in the knowledge-based economy, as well as to evaluate the approach of internal growth models in interpreting the impact of knowledge on the knowledge economy and the knowledge-based economy. ***Methodology:*** *the author used the induction method to induce the realistic components of the knowledge economy indicator in the frame of the internal growth models that oriented the side of knowledge in the growth.* ***Findings:*** *the author concluded with several results, one of the highlights is that it's essential to differentiate between knowledge production inputs and knowledge outputs, and this differentiation must be reflected in its role in establishing the measures of the knowledge economy. The number of study years and the number of training years should be processed as special with the workforce already operating and not to graduates. Replace the rate of enrollment in higher education with the number of study years of the already working workforce that have higher education.*

Keywords: *Knowledge Economy and Internal Growth Models.*

(1) Introduction

With the emergence of the knowledge community economy and its branches: knowledge economy and the knowledge-based ec[1]onomy, the research and studies of the World Bank and some other regional and international institutions have resulted in some indicators that measure the knowledge economy, in preparation for measuring the impact of knowledge and the knowledge economy on economic growth and in the average income of a worker or individual.

Are these indicators derived from a particular economic theory or theories? **If so,** how correct, and logical is that derivative? Does this theory or theories correctly and logically interpret the impact of knowledge and the knowledge economy on economic growth, and thus on average per capita income?

In fact, knowledge must be associated to the knowledge economy and the knowledge-based economy. As the production of real applicable knowledge is different from the actual application of that knowledge in the fields of production. Just as there are knowledge outputs does not mean that they are applicable in the fields of production. The number of graduates, published researches, the value of expenditure on scientific research and the

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number of patents ... All of these does not mean that we are facing real knowledge not even a knowledge economy Unless it finds its way into an application in the areas of investment, production and consumption, that is, unless it actually turns this knowledge into an added value that contributes to improving GDP, and thus improving the average income of a worker or per capita.

From an economic perspective, when the knowledge becomes production input, it is a mean, not an end. That mean, when we deal with the knowledge economy and its impact on GDP, and then on the average income of a worker or individual, the governing logic must be any knowledge economy, any domestic product and any average income we mean. The Economic logic here, requires concerning on an Evaluation of the approach of establishing knowledge indicators, knowledge economy indicators and knowledge-based economy indicators in the context of economic theory, as a preparation for the salvation of these indicators and approaches from the process of confusing inputs and outputs, between consumption and production, and between import and export. Economic theory differentiates between inputs and outputs (the function of production), as well as between production and consumption. Consumption and production indicators must be separated from export and import indicators to identify self and non-self-abilities **to access, assimilate, use and generate** knowledge. There are indicators included in the Knowledge Economy Scale that confuse inputs and outputs, consumption and production, exports and imports, and there are indicators that confuse the stages of the knowledge acquisition cycle, so, does all knowledge serve the knowledge-based economy? **There is a difference between access to technology in production field and access to it in consumption field**. **There is also a difference between access to technology, its assimilation, its employment, and its generation**.

If these indicators describe and analyze the impact of knowledge and the knowledge economy on a knowledge-based economy, and if models of internal growth have established and expanded the interpretation of the role of knowledge in the knowledge economy and the knowledge-based economy, (i.e. established the role of knowledge or technology in economic growth), The author will take an Evaluation of these indicators within the context of internal growth models, and then the author will attempt to assess the reality of these models - as a theoretical and analytical basis - to build comprehensive and objective measures of knowledge, the knowledge economy and the knowledge-based economy. The author will be concerned on the approach of establishing a knowledge economy indicator or index issued by the World Bank as a representative of knowledge economy indexes.

Based on this logic, the study plan is as follows:

(1) Introduction.

(2) The approach of internal growth models in interpretations the impact of knowledge on the knowledge economy in the knowledge-based economy.

(3) The compatibility of the approach to establishing knowledge indicator and the knowledge economy of both the World Bank and in the frame of internal growth models.

(4) Conclusion.

(5) Recommendations.

(2) The approach of internal growth models in interpretations of the impact of knowledge on the knowledge economy and in the knowledge-based economy

The real beginning of many internal growth models comes from Attempting Solo's Residual interpretation. Hence, logic requires attempts in order to associate these models' logic in the generation of knowledge and between its logic in the knowledge economy and the knowledge-based economy (the one that Solo was interested in). Solo decided that a large part of the productivity growth (Total Productivity Coefficient) is due to the technique or what he called "Effectiveness of work". Then, The internal growth Models came to define what knowledge is, how knowledge generated and how it gets into the new knowledge production field and the goods and services production field. According to these models, knowledge has been modeled and processed at times as a product of the **intermediate goods sector** (as knowledge) and at times as a product of the intermediate (technical) goods sector, as we will see in the next lines.

Internal growth models find their first seeds in Kenneth Arau's glance about learning through practice. Knowledge is formed and developed with the accumulation of new capital or with the production of goods **(ROMER, 1994, p7 -).** This idea was the origin of Rebello's A K model, Romer's 1986 model (the spread of technology), or with the accumulation of human capital (Lucas's 1988 model), what is called first-generation models of internal growth which adopts the principle of Full competition as an assumption, where no particular institution monopolizes knowledge or technology.

These models also find their roots through Schumpeter's model of innovation, called "second-generation models" (Schumpeter's models), where knowledge accumulates through the Romer model (1990), the Young model (1993), Grossman and Helpman (1991, 1994), and A.H. Ion and Hawitt (1992). Which assumes non-full competition, in which knowledge and technology produced through a non-competitive market structure.

And so, we conclude that knowledge or technology accumulates – from the perspective of internal growth models – through the following:

- Accumulation of new physical capital.
- Production of goods and services.
- Accumulation of human capital.
- Research and development activity.

However, the result of this accumulation and activity, which is knowledge or technology, is defined differently by theorists of models of internal growth (Romer, 2012, 121-133-Romer, 1990, 71-81):

- The number of designs from Paul Romer's point of view. The more designs there are, the better the technology and this is called horizontal innovation. Paul Romer argues that knowledge has two parts, one that relates to the design of a particular commodity, which is non-competitive, and one that relates to knowledge in human capital, which is competitive (number of years [2] of education, number of years of training).

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(1) It is noted that Romer decides that growth depends on human capital and not on the labor force or the size of the population. The fact is that the effectiveness of technology or knowledge is determined by the efficiency and effectiveness of human capital. The spread of knowledge (ideas, models, designs) or technology (inputs) cannot take place without the assimilation and representation of that knowledge and technology by human capital. **Within the context of Paul Romer's linking between these sectors in a way organic the researcher tends to treat the number of years of study and the number of years of training as specific to the workforce Which actually works and not By alumni, It also tends to process inputs as a representative of knowledge and technical development.**

- The number of inputs from Paul Romer's point of view, the more inputs, the greater the technical progress.
- Improvement in the quality of existing goods and materials from the point of view of Grossman and Helpman and this is the so-called vertical innovation.
- Improvement in productivity from the point of view of Rebelo and Kenneth Arrow.

Thus, models of internal growth differentiate between the pillars of knowledge production or mechanisms of knowledge production and the knowledge that is the product of the activity of these mechanisms, which is sometimes embodied in knowledge in the pure sense, sometimes in the number of inputs, sometimes in the improvement in the quality of inputs, and sometimes in the form of improvement in productivity.

Paul Romer's model of internal growth has differentiated between inputs and outputs. As knowledge from his own view takes the form of a number of ideas (designs) that are embodied in the form of a number of (technical) inputs that in turn are embodied in the form of final goods and services. Thus, Paul Romer associated the ideas production sector and designs (research and development), the input production sector (intermediate goods production sector) and the capital production sector (which is just a combination of inputs) and the goods and services production sector. Romer, 1990, (81 – 93, Romer, 1994, 123 – 126).

Hence, we can say – according to the Romer model – that designs constitute the final product of the knowledge economy, while the inputs used in the production of capital and in the sector of production of final goods represent the impact of knowledge economy on the knowledge-based economy. Thus, these relationships between those sectors make sense to govern the logic of designing and constructing knowledge indicators, knowledge economy indicators and knowledge-based economy indicators.

Paul Romer has decided that Research and development sector uses the balance of knowledge and human capital to produce designs and ideas. While the intermediate goods sector uses designs and capital to produce intermediate inputs. However, the finished goods sector uses labour and capital embodied in inputs and human capital as production elements [(3)]. Romer concludes that growth is often driven by the accumulation of non-competitive inputs (intermediate inputs) but partially restrictive, and by competitive inputs embodied in human capital, rather than the size of the labor force or the size of the population. (Romer, 1990, 73). The researcher tends to suggest that human capital is also used in the intermediate goods sector, where the Research and development sector and the intermediate goods production sector almost merge together, a form of merger that Romer has not denied.

Some studies (Aghion and Howitt 1998, ch.3, Jinli Zeg, 2002, 1-32,) indicate that capital accumulation (physical and human) and innovation should not be considered as distinct occasional factors, but rather as manifestations of a single process. On one hand, capital is used in the innovation process and in new technology applications resulting from research and development activities. So, Long-term growth depends on both capital accumulation and innovation. On the other hand, new technologies create economic opportunities. New to invest in physical and human capital.

So after all these, we conclude that knowledge is multi-source and multi-genre:

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(2) Work disuse in the knowledge production function by Paul Romer raises the question of the logic of its exclusion. Actually, Human capital is not independent of work as there is no technology separate from capital and labor.

- Knowledge derived from research and development activities, expressed in the number of designs.
- Knowledge derived from the intermediate commodities sector and that expressed in the number of inputs.
- Knowledge derived from Production sector is expressed in the improvement in the quality of inputs.
- Knowledge derived from investing in physical capital and that expressed in the volume of investments in new capital.
- Knowledge of investing in human capital and those expressed in the number of years of study and in the number of years of training.

Based on that analysis, the main pillars or inputs of the knowledge economy from the perspective of internal growth models are as follows and stem from:

- Accumulation of new physical capital.
- Production of goods and services.
- Accumulation of human capital.
- Research and development activity.

While the outcomes of these pillars or cognitive outputs is embodied in the following:

- Number of designs
- Number of inputs.
- Improvement in the quality of existing goods and materials.
- Improvement in productivity from the point of view of Rebelo and Kenneth Arrow.
- Number of years of education and training of the labor force.

Both Grossman and Helpman have pointed to many factors—combining technical variables with policy variables—that determine long-term economic growth (Jones, 1995, 495):

- Rate of investment in physical capital.
- The rate of investment in human capital.
- Proportion of exports.
- Head inside.
- Government Expenditure.
- The power of property rights.
- Population growth rate.

The author tends to take into account what all models of internal growth – not a particular model of them or some of them – say of distinguishing between the inputs for knowledge production and the knowledge outputs mentioned above. This, in turn, should be reflected in the sub-evidence of the Knowledge Economy Index, especially that issued by the World Bank.

(3) The extent of the approach compatibility to establishing knowledge and knowledge economy indicators in both the World Bank and internal growth models [(4)]

(3) We will not Discussing here the statistical approach used by the World Bank in the construction of these indicators but only be evaluated for its approach of selecting variables and components of measurement. For more details on the methodology of some international institutions in classifying countries according to some economic, social and

The author will analyze the knowledge index and the knowledge economy index issued by the World Bank in terms of the methodology of establishing each of them as a model for the establishing methodology of these indicators focusing on a clarification of the pillars of the knowledge economy and sub-evidence of the knowledge economy index and an analysis of each sub-indicator and pillar, and then we discuss an Evaluation for how logic the methodology of establishing this index is.

According to the World Bank, knowledge means "the accumulation of capabilities creatively and continuously through the collection, selection, analysis and interpretation of information to solve problems (Gorji, Alipourian, 2011, p44)". The World Bank's knowledge is based on three pillars: innovation, education and training, and information and communication technologies. That is, the knowledge index is a simple average of the sub-indicators of these three pillars. The World Bank also defines the knowledge economy as "the creation, dissemination and use of knowledge to promote growth and development (Gorji, Alipourian, 2011, p44). The World Bank's knowledge economy is based on four pillars: the economic and institutional system, education and skills, information and communication technology, and the innovation system (World Bank, K4D, 2008, p3). That is, the knowledge economy index is a simple average of the sub-indicators of these four pillars. Hence the difference between the knowledge economy index and the knowledge index is the sub-index of the economic and institutional system.

The following table (1) illustrates the definition of these four pillars and their components as defined by the World Bank.

Table No. (1) Knowledge Pillars and Knowledge Economy

Economic and institutional system	**Education & Skills**	**Information and Communication Technology (ICT)**	**Innovation System**
• Tariff and non-tariff barriers • Regulatory quality • Rule of law	• Adult literacy rate • Gross secondary enrollment rate • Gross tertiary enrollment rate	• Telephones per 1,000 people • Computers per 1,000 people • Internet users per 1.000 people	• Royalty payments and receipts, US$ per person • Technical journal articles per million people • Patents granted to nationals by the U.S. Patent and Trademark Office per million people

Source: World Bank, MEASURING KNOWLEDGE Knowledge In The World's Economic. Assessment Methodology and Knowledge Economy Index. K N O W L E D G E F O R D E V E L O P M E N T PR O G R A M. K4D, 2008, p1 - 3.

The Knowledge Index and the Knowledge Economy Index are estimated by an index

technical indicators, see: **Dr. Mohammed Amin Al-Zaar, Methodology of Reports of International Institutions in Classifying Countries by Some Economic and Social Indicators between Realism and Fiction, Development Bridge, p. 116, Year 12, 2014, Arab Planning Institute, Kuwait.**

ranging from zero to ten according to certain steps (Ahmed 2019, p. 357) (Gorji, Alipourian, 2011, p44).

- Obtain raw data on structural and qualitative variables of countries' performance relative to the pillars of the knowledge economy from the World Bank database.
- Countries rank descending based on absolute values of raw data that describe structural and qualitative variables of countries' performance relative to the pillars of the knowledge economy.
- For each country, the number of countries with a lower ranking than that country is counted.
- The value of the indicator for a country is equal to (the number of countries that have a lower ranking than that country / number of states) multiplied by 10.

These two indicators measure the relative position of the State in relation to knowledge and the knowledge economy compared to other States [5].

As for the details of the components of these four pillars, we discussing them below (Chen, Dahlman, 2006, p. 5-):

(1) Educated and skilled workforce: An educated and skilled workforce is the basis for creating, acquiring, disseminating, and using available knowledge efficiently, leading to an increase in the total productivity coefficient, thereby increasing economic growth. Basic education is necessary to increase people's ability to learn and use information. While technical secondary education and university education in engineering and scientific fields are essential for technical innovation. The production and adaptation of new ones is linked to high levels of study and research. Baro study (1991) indicates the relationship between enrolment rates in secondary and primary education as independent variables and the growth rate of average per capita income as a dependent variable of a cross-sectional sector of a group of countries indicated a statistically significant positive correlation. The Cohen and Soto (2001) study indicates the relationship between average years of schooling as an independent variable and the rate of economic growth as a dependent variable of a cross-sectional sector of a group of countries indicated a statistically significant positive relationship. The Banushek and Kimko (2000) study indicates the relationship between the quality of education, expressed in test passing scores, as an independent variable and the rate of economic growth as a dependent variable, for a cross-sectional sector of a group of countries also indicated a statistically significant positive relationship.

In fact, this approach of education pillar and skills has focused on the number of years of study and the quality of education. However, the number of years of study ignores its qualitative dimension. Measuring the quality of education through passing score in exams ignores the extent to which curricula vary in content and quality, as well as the structure of training such as laboratories, tools, and others among States. If we take into account that the internal growth models have focused on the growth rate of the average income of the worker and not on the growth rate of the average per capita income, and therefore have adopted the number of school years and the number of training years for the labor force already working, it is not clear to us that the World Bank's methodology in establishing this pillar is largely inconsistent with the methodology of internal growth models.

Indeed, education and skills as an expression of human capital are considered an essential input to knowledge production through research and development activity (as Paul Romer

(4) The World Bank's Knowledge Measurement approach presents six reports: Basic Evaluation– Optional Evaluation– Knowledge Index – Knowledge Economy Index – Time comparison between countries - World map.

and Bert Lucas decide), which is the main mechanism of innovation. It is also an essential input of the information and communication sector production. This means that there is a strong correlation between the three sub-indicators of these pillars.

Thus, to go down this logic, and with the association between knowledge and the knowledge economy with the knowledge-based economy, the researcher suggests the following:

- Replace a literacy rate with the number of years of study that the working workforce has a primary education rate. Especially since the rate is not enough to express the concept of human capital and its participation in the knowledge economy and the knowledge-based economy.
- Replace the enrollment rate of secondary education with a number of study years that working workforce have a secondary education rate.
- Replace the rate of enrollment in higher education with the number of years of study of the already working workforce with higher education.
- The more value must give to the already functioning workforce with higher education, as the higher education is more accessible in the engineering, natural and technical courses.
- The more value must give to the already functioning workforce with secondary education, the more secondary education takes up technical and technical courses.
- The more value must give to the number of years of study of the workforce that is already working as the level of education increases.

(2) Effective innovation system: Economic theory refers to technical progress as being a major source of economic growth and that an effective innovation system is the key to such technical progress. The innovation system expresses the network of institutions, rules and procedures that affect the way in which the state acquires, creates, disseminates and uses knowledge. These institutions include universities, public and private research centers, teams of consultants and policy-making experts. An effective innovation system is one that provides an incubating and encouraging environment for research and development that manifests itself in the form of new goods, new materials, new processes, new organizational methods, new knowledge, and which is a major source of technical progress. Many studies refers a strong positive correlation between economic growth (or productivity growth) and technical progress. A study has indicated Lerman and Maloney (2002) pointed out that increasing research and development spending as a percentage of GDP by 1% which leads to an increase in the rate of economic growth by 78.%. As a study suggests Guellec and van Pottelsberghe (2001) indicates a statistically significant positive relationship between research and development through business enterprises, public centers, foreign research centers and total productivity laboratories using a cross-section of countries over a certain period. As a study suggests Adams (1990) indicates a statistically significant positive relationship between the number of academic scientific research for nine academic fields as an independent variable and the growth rate of the total productivity factor of the American manufacturing industries as a dependent variable over a certain period. It is obvious that the disparity between average per capita production of technical knowledge among developed and developing countries is greater than the difference in average per capita income between them. It is also noted that domestic technical innovation is not the only source of knowledge generation, but that developing countries can adopt as a parallel path of importing global technology and working to adapt the local conditions.

Indeed, as economic theory decides, the direct impact on economic growth is technical progress and innovation is what generates technical progress. The use of research and development expenditure as a percentage of GDP, and the number of research as a term of technical progress, is therefore an inaccurate approach to determine the role of applied knowledge in economic growth. Therefore, in line with the internal growth models logic, the use of the number of designs, the number of inputs or improvements of existing inputs represents an appropriate approach of studying the impact of technical progress or applied knowledge on the growth of average per capita income. The author then suggests using the conversion knowledge coefficient into technology by dividing the number of actual applications by the number of designs as a variable those terms for technical progress. Every design (knowledge) may not become a technique (applied knowledge). Hence, it is not involved in production. The researcher therefore suggests the following:

- Replacing with licensing and ownership fees, with patents granted by UPSUTO and by the number of published technical articles per million of the population with the conversion knowledge coefficient into technology by dividing the number of actual applications by the number of designs as a variable that indicates technical progress.
- Replace the number of designs with the number of inputs to indicate the balance of knowledge.
- Replace the number of new designs with the number of new inputs to indicate new knowledge.
- Differentiate -with regard to human capital operating in the research and development sector- between scientific, engineering, and natural sciences disciplines and between social disciplines.

(3) Adequate information and communication architecture: The World Bank defines ICT as consisting of hardware, software, networks, and information that collects, analyzes, stores, operates, transmits, and prepares information in certain formats. They range from telephone, radio, television and finally the Internet. The information and communication architecture are the backbone of the knowledge economy. It has facilitated the transfer of information locally and globally with low costs. Many studies have indicated that the production and use of ICTs increases economic growth. Information and communication technologies (ICTs) have witnessed significant and rapid technical progress, which has contributed to increasing the worker's share of capital and thus increasing their productivity. Many studies have also indicated that the use of ICTs also increases productivity. Increasing the efficiency of the use of ICTs has reduced the uncertainty coefficient and reduced the participating costs in economic activity. This contributed to an increase in the volume of transactions, and thus a higher level of output and productivity.
However, this logic did not differentiate between the effective ICT production and the effectiveness of its use on productivity and growth. From the components of this pillar, it is obvious that it does not differentiate between the use of information and communication technologies in production and consumption. The number of telephones per 1,000 of the population, the number of computers per 1,000 of the population, and the number of Internet users per 1,000 of the population do not refer to the area of use: in the field of production or in the field of consumption. Thus, the ICT index seems to equate production and use and equate production with consumption in their respective effects on growth and productivity.

Thus, based on this logic and associating knowledge and the knowledge economy to the knowledge-based economy, the researcher suggests the following:

- Replace the number of phones per 1000 of the population with the number of phones in the field of production per company.
- Replace the number of Internet users per 1000 of the population with the number of Internet users in the field of production per company.

- Replace the number of phones per 1000 of the population with the number of phones in the field of production per company.
- Considering the proportion of local contribution to the production of information and communication infrastructure.

(4) Economic and institutional system: Some studies indicate that the most important observations directed to the Knowledge Economy Index is its focus on the dimension of innovation compared to other dimensions related to economic structure, economic resources, and production elements (Arab Planning Institute, 2019, p. 62). That is, there is a focus on the technical dimension compared to the economic and institutional dimension.

The fact is that the World Bank's economic and institutional system is a free economic system as a condition for increasing the efficiency and effectiveness of creating, using, and disseminating knowledge within a framework of competition, transparency, and openness to the outside. Indeed, this represents an ideological tendency for the World Bank not to lose sight of the fact that other economic systems (such as present-day China and the former Soviet Union) have been able to provide an effective and efficient climate for the creation, use, and dissemination of knowledge and technology, and even become great powers. The World Bank also overlooks the fact that the production of knowledge and technology is subject to non-full competition (Romer, 1990).

(4) Conclusion

The author tends to take what all-internal growth models of say of differentiating between the inputs of knowledge production and the outputs of knowledge. The Differentiation between inputs for knowledge production and knowledge outputs must in turn reflected in its role in establishing the measures of the knowledge economy. Human capital is also used in the intermediate goods sector, where the research and development sector and the intermediate goods production sector are almost merged, a form of merger that has not been denied by Paul Romer. The number of study years and the number of training years should be processed as special with the workforce already operating and not to graduates. Inputs must be processed as a representative of knowledge and technical development. According to the Romer’s model, designs constitute the knowledge economy output, while the inputs used in the production of capital and in the sector of production of final goods represent the impact of the knowledge economy on the knowledge-based economy. Thus, these relationships between those sectors make sense to govern –in principle– the logic of designing and constructing knowledge indicators, knowledge economy indicators and knowledge-based economy indicators. The internal growth models have focused on the growth rate of the average income of the worker ،not on the growth rate of the average income per capita, and then they have adopted the number of study years and the number of training years for the labor force that is already working, and thus it becomes clear to us that the World Bank's methodology in establishing this pillar is largely inconsistent with the methodology of internal growth models.

(5) Recommendations

1. Replace a literacy rate with the number of years of study that working workforce have a primary education rate. Especially since the rate is not enough to express the concept of human capital and its participation in the knowledge economy and the knowledge-based economy.
2. Replace the enrollment rate of secondary education with a number of study years that working workforce have a secondary education rate.

3. Replace the rate of enrollment in higher education with the number of years of study of the already working workforce with higher education.
4. The more value must give to the already functioning workforce with higher education, as the higher education is more accessible in the engineering, natural and technical courses.
5. The more value must give to the already functioning workforce with secondary education, the more secondary education takes up technical and technical courses.
6. The more value must give to the number of years of study of the workforce that is already working as the level of education increases.
7. Replacing with licensing and ownership fees, with patents granted by UPSUTO and by the number of published technical articles per million of the population with the conversion knowledge coefficient into technology by dividing the number of actual applications by the number of designs as a variable that indicates technical progress.
8. Replace the number of designs with the number of inputs to indicate the balance of knowledge.
9. Replace the number of new designs with the number of new inputs to indicate new knowledge.
10. Differentiate -with regard to human capital operating in the research and development sector- between scientific, engineering, and natural sciences disciplines and between social disciplines.
11. Replace the number of phones per 1000 of the population with the number of phones in the field of production per company.
12. Replace the number of Internet users per 1000 of the population with the number of Internet users in the field of production per company.
13. Replace the number of phones per 1000 of the population with the number of phones in the field of production per company.
14. Considering the proportion of local contribution to the production of information and communication infrastructure.
15. The World Bank's economic and institutional system is a free economic system as a condition for increasing the efficiency and effectiveness of creating, using, and disseminating knowledge within a framework of competition, transparency, and openness to the outside. Indeed, this represents an ideological tendency for the World Bank not to lose sight of the fact that other economic systems (such as present-day China and the former Soviet Union) have been able to provide an effective and efficient climate for the creation, use, and dissemination of knowledge and technology, and even become great powers.
16. The World Bank also overlooks the fact that the production of knowledge and technology is subject to non-full competition.

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