TAIWAN MOFA-NCL

CENTER FOR HIGHER GLOBAL ECONOMIC STUDIES ASIA-PACIFIC

TKU- TAMSUI

TAIWAN: A MODEL OF GLOBAL ECONOMIC GROWTH. INVESTMENT IN TECHNOLOGY, RESEARCH, INNOVATION, PRIORITIZING HEALTH, EDUCATION AND SAFETY THAT HAVE ALLOWED IT TO BE A MODEL FOR THE WORLD IN THE COVID 19 PANDEMIC.

Author: Dr. Carlos Manuel Wong Rivera

TAIPEI - TAIWAN

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DEDICATION

Gratitude

"He who doesn't know where he wants to go...

he will never find the path "

THE BUDISHMO -ZEN

"Sow education and reap all your life"

CONFUCIO

"My deep gratitude to Taiwan and its noble people for allowing me to live these extraordinary and unforgettable experiences"

"*A Ncl, Mofa Taiwan, TKU.* - for having contributed to my professional, academic and humanist training."

"To Mr. Ambassador Ivan Lee, Dr Kung Kwo Wei. To Dr. Celso Gonzales Ch. Ing Deyvid Almonacid For His Permanent And Selfless Support, in the revision and formulation of the model."

"To Carlos Alfredo, Alvaro And My Family. For Being My Existential Reason"

SUMMARY

Since 1989, with the fall of the Berlin Wall, a new world order emerged, called GLOBALIZATION, in which the production of intangibles-services and investment in Innovation, Research and Development R + R & D, has been a priority for some countries and companies case TAIWAN and other countries of Southeast Asia, called the Asian tigers, for the successful form of their development models, that have allowed sustainable and sustainable economic growth as evidenced by the efficiency of the system and the high living standards of its population until the arrival of the COVI19 crisis. TAIWAN being the country that has best managed the crisis. Despite the high number of deaths worldwide, Taiwan only registered in one year 1068 positive cases and 10 deaths, having the lowest mortality rate worldwide, a country that never became in quarantine and that knew how to overcome the pandemic in a short time thanks to the measures adopted in a timely manner by its Government and for having invested steadily in health, education and the well-being of its population. Counting on a TAIWAN HEALTH FOR ALL health system. that has been an example and reason of admiration for the World, for the results obtained, reaching, including to discover its own COVI19 vaccine, implement new technologies and biosecurity equipment.

Making millionaire donations, to many countries hit by the COVI19 CRISIS.

After the Second World War and the crisis of 1949 TAIWAN, as a state and commitment to its population, implemented development policies in education, health technology and innovation, achieving a substantial increase in its GDP AND PERCAPITA INCOME, being one of the highest worldwide, becoming the first producer of chips and microchips worldwide, with the best technology park in Asia,

The Hsinchu Science and Industrial Park, considered the silicon valley of Asia, improving its productivity and global competitiveness indices, reaching position in 2021 in position 8 with 92.6 points as highlighted by the Institute of Management Development (IMD) of Switzerland. similarly TAIWAN has come to position itself in 6th place of economic freedom in the current year 2022 among 184 economies (heritage foundation. wall street journal). being a republic with the highest standards of democratic exercise, economic freedom and education at all levels, which have allowed it to continue growing in the midst of the covi19 crisis.

A regressional analysis supported by statistical techniques allows us to conclude that there is a positive correlation between the policies of development, investment in health, education, technologies that TAIWAN has implemented over time, in a sustained way, being a MODEL OF DEVELOPMENT and reason for admiration for the world.

(KEYWORDS: Research, development and innovation centers, technology, Correlation, Innovation and Economic Growth, per capita income, Productivity, competitiveness).

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INTRODUCCION

A.- GENERAL PRESENTATION OF THE TOPIC[1]

Since 1989, with the fall of the Berlin Wall, a new world order called globalization[1] emerged, in which new models of producing and creating wealth appeared, with the opening of a globalized world, with large-scale production predominating, the integration of international markets through free trade agreements, the predominance of services over products, creating added value and forms of exponential growth in companies that have invested in t-i and states that have prioritized the health, safety and education of their population with an equitable form of wealth redistribution. case of the economic powers of South-East Asia such as Taiwan. Korea, Hong Kong and Singapore, known as the Asian Tigers; especially Taiwan, and which consequently are a successful model for the world in situations of global crisis. - COVID 19 case. from 1989 and during the process of globalization. its rulers and business leaders have led their organizations and population towards economic growth, progress and better redistribution of wealth. having a vision, a mission and an organizational culture that makes them more efficient, productive and competitive in the global world, prioritizing the education and health of their population, achieving better living standards. through an inclusive model. participatory achieving sustainable-sustainable economic growth as shown by world statistics (GDP. per capita income).

TAIWAN CASE

Artificial intelligence, machine learning, big data or the cloud have appeared on the map of Taiwan in recent years. "Connected devices will go from 1 million to 14 million in 2022 and in 2030, 25 billion users will have smart devices. Therefore, we have started working with IoT to know the demands of citizens," adds Jenny Tsai, director of Taitra (Taiwan Foreign Trade Development Council) in Barcelona.[2]

INICIATIVAS

A good example is Taipei. The Taiwanese capital boasted as early as 2011 of its Taipei Free WiFi service, which offers citizens free Internet access in thousands of public spaces in the city.

To continue with this bet, the Government announced earlier this year the signing of an agreement with the IOTA foundation to turn the city into a true smart city with the use of blockchain technology. IOTA[3], which is the inventor of the Tangle blockchain platform, has already launched its digital cards for citizens to have virtual identity, which allows authentication in encrypted form with the main purpose of avoiding identity fraud (Montse, 2018).[3]

This initiative joins others that are already underway in the city such as the Airbox project, which with 300 sensors distributed throughout Taipei detect temperature, pollution, humidity and light to know the quality of the air.

The country is in full digital transformation and from the Government have discovered that to lead this change it is important to have innovative companies by (2) John McCarthy (1955)

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[1] IMF (1995-2005) Globalization is a phenomenon based on the continuous increase in the interconnection between the different nations of the world at the economic, political, social and technological levels.

[2] John McCarthy (1955) Dartmouth, the concept of Artificial Intelligence denotes a process by which "to make a machine behave in ways that would be called intelligent if a human being did that."

[3] IOTA (2015). It is a distributed data logging technology of open source, whose objective is to allow in a secure way the exchange of information and value in the Internet of Things.

Dartmouth, the concept of Artificial Intelligence denotes a process by which "make a machine behave in ways that would be called intelligent if a human being did that".

This reason, since 2016 Taiwan has a project called 'Asia Silicon Valley'. as[4] explained in the bases of the initiative, it is a way to promote innovation in the IoT sector and to create an ecosystem of technology and entrepreneurship. "This program helps foreign start-ups move to Taiwan to test their products or ideas in one of the best computer environments in the world," says Alfredo Shu (Juste, 2018).

In 2017, the Taiwanese government allocated $348 million to the science and technology budget, but additionally created a $3.3 billion investment vehicle for innovation and technological transformation and allocated $330 million to start-ups.

"We have become an attractive place for entrepreneurs. In fact, it is surprising to see how in a country with only 23 million inhabitants there are 572 start-ups and 5,433 investors, while in Spain, although there are many more companies, 3,295, there are only 3,125 investors. These figures show that Taiwan has become an attraction for entrepreneurs, because the success rate of companies is high and the government encourages their creation with very high salaries and tax aid, "says Shu.

BEYOND[5] CHIPS

Another of Taiwan's great industries is textiles, but as in everything in the country, there is also technology involved. From the Taiwan Textile Research Institute (TTRI) they boast of carrying out one of the most innovative textile industries in the world (The Republic, 2018).[5]

More than 70% of all outdoor products sold around the world are made with materials produced in Taiwanese factories. "We are now focused on smart clothing and we already have garments in production."

These are clothes that can be connected with other devices, such as the phone and are very functional. Companies such as Nike or Adidas have already shown their interest, but we have tried to convince Inditex of the value of these garments and it does not seem that they will collaborate with us. They prefer Chinese textiles with cheaper labor," complains Shu (Juste, 2018).

INTERNATIONAL FAIRS

Since 1981, Taipei has become the capital of technology for one week a year. The Computex fair attracts visitors from all over the world, including Spain, to present the main novelties in information and communication technologies. It is the largest fair of its kind in Asia and the second largest of its kind worldwide, after CeBIT (El Comercio, 2019).

According to TAITRA, Computex 2018, which took place in early June, welcomed 42,284 visitors from 168 countries. The fair, focused on artificial intelligence, 5G, Internet of Things, virtual reality, and blockchain technology, hosted a total of 1,602 exhibitors from 30 countries spread over a total of 5,015 stands (El Comercio, 2019). In parallel to Computex and to demonstrate the country's interest in small businesses, InnoVex was held, an exhibition dedicated to start-ups that this year brought together 388 exhibitors from 21 countries and attracted 17,687 visitors, 18% more than in 2017 (Taiwan News, 2020).

In total, only the Taiwanese capital hosts 14 technology fairs a year, among which, in addition to Computex, Taitronics (Taipei International Electronics Show) or Smart City Summit & Expo, one of the main smart home fairs in the world. (The Republic, 2018).

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[4] Asia Silicon Valley- Hsinchu Science and Industrial Park (PCIH), Taiwan (1980). Senior Center pchip production, the largest microchips in the world, with the best global quality standards.

[5] CHIPS- **chip** or **microchip**, is a structure of small material dimensions semiconductor, **normally silicon**, on which they are manufactured electronic circuits usually by photolithography.

Taiwan Semiconductor Manufacturing Company (TSMC), the world's largest semiconductor manufacturer is significantly increasing its investment to produce more products in order to cover market share. The market is tremendously competitive, for example, the United States produces with very high standards and quality. ASML in the Netherlands monopolizes the machines needed to make the best chips, while Japan is the main supplier of equipment, chemicals and wafers. But as demand shifts toward smaller, more powerful chips that require less power, TSMC finds itself at a huge competitive advantage for years to come. This specialization has helped Taiwan form an integrated ecosystem around it, which has enriched the country but reduced economic diversification.

What chip manufacturers are in Taiwan?

Top 10 Semiconductor Companies in Taiwan

TSMC (Largest Semiconductor Manufacturer in the World)

ASE Technology.

AU Optronics.

MediaTek.

LITE-ON Technology.

United Microelectronics.

Nanya Technology.

GAME.

TAIWAN EDUCATION

In practice, this model of educational development is translated into concrete salary data for teachers. Teachers, along with Taiwan's military and senior officials, are the best paid. Thus, a full professor charges about 1,800 dollars per month; an adjunct professor USD 1,100 per month; a head of practical work about USD 1,280 and a school assistant charges USD 775 per month. The teacher salary turns out to be clearly higher than the salary of a basic worker in Taiwan who earns about USD 730 per month. Far from the union debates over increases, the Taiwanese government establishes a fixed scheme of annual salary increase of the order of 3% for teachers that is not discussed (Infobae, 2020).

However, Taiwan's salary equation to keep a teacher in a good economic position is not limited to the payment of salaries but to two concrete and cultural variants of this island: the percentage of national investment in education and the ancestral cultural background. Taiwan invests between 25 and 20% of its budget in education. For this year, democratically elected President Tsai Ing-wen allocated 19.5% of the national budget for education. To this we must add the budget allocated by each canton or municipality to the educational system that is completely state.

Is the decision to invest in education only limited to a monetary issue? Quite the opposite. It is a millenary and ancestral policy.

"To understand why Taiwan invests so much in education and pays its teachers well, we must know that in ancient Chinese culture teachers are like the representation of Confucius, that is, a kind of sacred souls for society in general that must be respected," explains to Infobae the biology professor and retired foreign service official, Luis Chong (Infobae, 2020).

Since 1949 when 1.2 million Chinese moved from People's China to the former island of Formosa and today Taiwan to embark on the long road to independence, the different Taiwanese governments elected in free elections chose to underpin this model "of the knowledge economy". This was done for a simple reason: in the 36,000 km2 that Taiwan has, there are scarce natural resources and, therefore, the key to its economic growth with state-of-the-art technologies was a supreme investment in education. The results are in sight: currently the literacy rate in Taiwan is 98.6%, there are 158 colleges and universities spread throughout the island and in 2014 a profound reform was established in which a compulsory education system of 12 years was imposed.

There are other keys that explain the success of this educational model. Once a year, a

committee of experts meets to review the curriculum and texts taught in schools in order to adapt or correct them according to the needs and concerns of the students. This is based on an annual survey of all secondary and primary school pupils.

The education system also has a side of unusual severity for Western societies. For example, if a schoolgirl misses three days in a row from school without any justification, the police authorities can punish the parents with jail, explains Professor Chong.

The university is also considered a central bulwark for Taiwan's economic development. Public university students only pay an annual fee of USD 50 to support the system. Of course, the State provides for a scholarship program for those who cannot afford expenses and who, once received, must pay a percentage of their labor salaries to education.

The Taiwanese education system is exported to the world. Dr. Pai-Po Lee, who is deputy secretary-general of the International Cooperation and Development Fund, told Infobae that Taiwan encourages scholarships for those students from countries that have diplomatic relations with the government of the Republic of China. In Latin America, only Nicaragua, Guatemala, Honduras, El Salvador, Ecuador and Paraguay recognize Taiwan as an independent country and enjoy the benefit of these scholarships.

The results of this model of economic development based on education are perceived in concrete numbers of the Taiwanese economy: this island was the eighteenth largest exporter of goods in the world in 2106. At the same time, Taiwan's GDP per capita reached USD 22,530 in 2106 and in recent years had a sustained growth of the economy of an average of 2.23% (En Voz Alta, 2018).

In the offices of the Taichung Industrial Science Park, located about 150 kilometers south of Taipei, they emphasize that the 45,000 skilled workers are given study facilities and scholarships to develop their skills and then turn them into the economy. There are more than 200 companies that come from all over the world to export high-tech products.

In general, the economic development of Taiwan from 1949 onwards and from 1989 – with globalization, would not have been possible without a strong economic and cultural investment in education, health and security that have given well-being to its people, consequence with the strategic vision of its political-business leaders and the organizational culture given by their race and their culture.

TAIWAN DEVELOPMENT

In the present work it has been determined how and how much its [6]GDP[6] productivity and per capita income grew until 2019 in Taiwan. Already from the so-called Age of Enlightenment, with David Hume and his famous essay Of the balance of trade, we know the importance of avoiding State interference in commercial exchanges. Similar ideas are found in prominent academics who denied the existence of the market of perfect competition, being worthy of special mention the Nobel Prize in Economics Friedrich von Hayek, a strong defender of market [freedom.7]

However, the positive effects of international trade liberalization do not only have a notorious support for academics. The historical reality is conclusive: those nations that adopt systems of free trade with other countries prosper, while those that restrict it are clearly harmed by this fact. A paradigmatic example of compliance with this principle is the Taiwan Development Model; Thus, faced with the model of development "inward" prevailing in the first half of the twentieth century, that country chose to take a 360º turn that would allow it to be among the most prosperous nations on the planet. Thus, despite being a small island with scarce natural resources and being in a deplorable situation after World War II, Taiwan managed to quintuple per capita income in less than 30 years while doubling its population. Now, what measures were taken to obtain these results? Precisely, those that sought to promote transnational trade. Until then, the Taiwanese economy was under Japanese rule and produced low value-added agricultural goods,

[6] It is the total production of final goods and services over a period of time, a final product is one that is produced and sold for consumption or investment" (Samuelson & Nordhaus, 2001).

such as sugar and rice, which it exported to Japan through trade agreements set by the corresponding governments. This prevented Taiwan from developing alternative industries that would allow it to exploit its comparative advantages In 1952, agricultural products accounted for 91.9% of the total value of its exports. It is clear that a small island with only one third of arable land and a high population density should not focus its production and export on agricultural goods. The reason this was happening is clear today: state regulation prevented Taiwan from specializing in those goods in which it could be more competitive.

F, Hayak (1974). Economic system based on the free play of market forces. Through the information provided by the price system, economic agents adjust their supply and demand. Consequently, in the years following Japan's gaining independence in 1945, the Taiwanese government was removing much of the import restrictions and decided to devalue its currency, which was artificially strong because of state interventions prior to the reforms. These simple measures were enough for Taiwanese entrepreneurs to find a much freer economic environment that would allow them to produce and export those goods in which Taiwan could be more competitive than other nations. While industrial products accounted for 8.1% of exports in 1952, they accounted for 90.8% in 1980. This fact resulted in the dollar value of exports in the 80s being 200 times higher than in the 50s, with an average growth of 29.6% per year (Tuñòn, 2015).

Taiwan's economic prosperity became the focus of attention of economists and politicians around the world, who watched in amazement at the surprising results that international trade liberalization had had on the island. The time had come to take the next step.

Taking advantage of the strong exports achieved, the Taiwanese people had to start producing industrial goods of superior value added. This was going to require an amount of investment in technology that Taiwan had never made to date, and a country's ability to invest is determined by the previous savings its citizens have made. This is where two fundamental factors come into play (Acevedo, 2018).

First, the government decided to abandon the Keynesian policy of keeping interest rates artificially low. According to this doctrine, placing rates at a lower level would stimulate investment and thus economic prosperity. Nothing could be further from the truth. Artificially low interest rates discouraged saving and generated high inflation, which would go from 10.3% per month to 0.4% after the abandonment of this policy (Rivas, 2003).

Secondly, the fact that citizens' incomes had increased considerably because they were producing goods that they could sell anywhere in the world had a notable impact. This fact, added to the thrifty culture that prevails among the Taiwanese people, gave rise to an event never seen in the country.

Domestic savings over GDP rose from 4.9% in 1955 to 35.2% in 1978, surpassing countries such as Japan (20.1%), the United Kingdom (8.3%) and the United States (6.5%). This economic miracle was what allowed to finance the investments that the country needed so much to continue its expansion (Tsiang, 2016).

The distribution of income became much more equitable. Families in the first lowest income quintile increased their share of the country's total income by 15.58% between 1964 and 1978. In that same space of time, the richest classes, that is, those in the fifth quintile, saw their share of total income decrease by 8.75%.

Thus, the gap between rich and poor in the share of total income decreased in that period of time by 16.98%, to the point that Taiwan would become one of the countries with the greatest economic equality in the world, with a Gini index in 1990 of 27.1 with better results for the same year than countries such as Switzerland (30.9) and Spain (30.3).

The explanation of this phenomenon is simple. The abandonment of agricultural production by the Taiwanese economy, which lacked comparative advantages in this area, and the displacement of labour to the industrial sector, where competitive advantages were superior, led to an unprecedented increase in productivity. This allowed production costs and, therefore, the prices of final products to decrease, thus increasing wages in real terms of the most disadvantaged families (Buendia, 2013).

Consequently, the economic policies undertaken over the past half century by Taiwan have made its people one of the most admirable on the planet and it is the results obtained by the island in terms of poverty reduction that encourage all freedom advocates to continue fighting for the opening of international markets to help, precisely, to those who need it most (Tuñòn, 2015).[7]

TAIWAN'S GDP GROWTH

As you can see in the image every year the percentage of variation GDP has been changing, as for example the annual GDP of Taiwan in 1980 was 8%, in 2018 it has grown by 2.7% compared to 2017 which was 3.3%. In addition, in 2018 the GDP figure was € 499,906 million, while in 2017 it was € 509,303 million. €.

Table 1 Evolution of Taiwan's GDP from 1989 to 2020 (Extracted from the IMF - SantanderTrade)

Evolution of GDP - TAIWAN		
Year	Annual GDP (Billions $)	Change in GDP (%)
2020	668.510	3,1
2019	612.168	3,0
2018	609.198	2,8
2017	590.733	3,3
2016	543.081	2,2
2015	534.515	1,5
2014	535.328	4,7
2013	512.943	2,5
2012	495.610	2,2
2011	483.974	3,7
2010	444.281	10,2
2009	390.829	-1,6
2008	415.901	0,8
2007	406.907	6,9
2006	386.450	5,8
2005	374.060	5,4
2004	346.924	7,0
2003	317.381	4,2
2002	307.439	5,5
2001	299.276	-1,4
2000	330.680	6,3
1999	303.830	6,7
1998	279.059	4,2
1997	303.284	6,1
1996	292.494	6,2
1995	279.059	6,5
1994	256.247	7,5
1993	236.339	6,8
1992	222.911	8,3
1991	187.140	8,4
1990	166.622	5,5

[7] Tuñón,(2015) Challenges of human development in early childhood related to the expansion and improvement of care and education systems, with particular emphasis on the most vulnerable childhoods.

1989	152.704	8,7

CHAPTER I

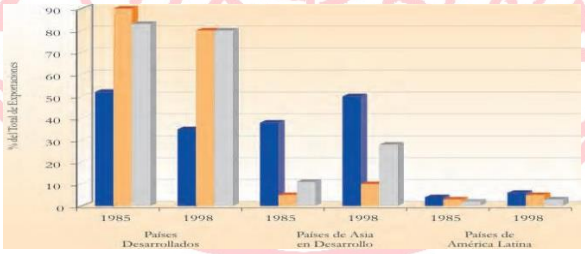
1.1. IMPORTANCE OF THE TOPIC

The global framework of the COVID 2019 pandemic has endangered the subsistence of planet earth, has abruptly broken all global economic processes. Post globalization, showing all the shortcomings of states and companies, and multinational organizations to face a biosecurity crisis unprecedented in human history and in the normal exchange of a free market economy.

The new world order emerged after the end of the Second World War-1945 giving rise to the UN. And the new world system (IMF, WB, WHO, ETC) and all the formal and non-formal bodies, which were created at the post-war period. Since 1989, with the fall of the Berlin Wall. And the beginning of globalization, states and companies had an exponential economic growth, unprecedented, where technology, research and innovation, as well as investment in science and technology education have been the causes of economic growth and business success, producing products and services with high added value. to be producers and exporters primarily of services- of intangibles, which has allowed them to reach and conquer the large global markets in more adverse scenarios, in the case of Taiwan, reaching sustainable and sustainable growth, given by its levels of investment in education (science and technology), security and health. That has resulted in the well-being of its population and be a model to follow for the design and application of successful strategies, for the control of the COVID 2019 pandemic, achieving, as a nation,[8] the best living conditions; few human and material losses to return to the new post-COVID normal.

Staying at the forefront of the world in competitiveness, with other countries of South East Asia, as well as the countries of Northern Europe (Norway, Finland, Sweden[9] and Denmark), which allows them to generate their own technology and control its application and evolution through knowledge platforms on which better and better stages of competitiveness are built. At the micro and macroeconomic level.

Figure 1 TECHNOLOGICAL CONTENT OF EXPORTS BY COUNTRY BLOCKS 1985 – 1998



1.2. PROBLEM STATEMENT

1.2.1. Problematic Situation

How to bridge the technological gap between rich and third world countries. Raising competitiveness with the production of intangibles, that is, high-tech services and innovation are the challenges of states and companies to adapt and succeed in the new post-COVID scenarios. resuming

[8] Samuelson - Norhaus (2008) economy 19 edition. The added value or added value is the additional utility that a good or service has as a result of having undergone a transformation process.
[9] According to Porter (1985) he defines competitiveness as "the ability of a company to produce and market products in better conditions of price, quality and opportunity than its rivals."

economic growth, raising GDP per capita[10,] is the way to include and improve the quality of life standards of the population in a post-COVID world. As Taiwan has achieved, globalized and its retronó to the new normal.

1.2.2. Formulation of the General Problem

¿These are the policies of investment in education (T -I-i,health and security in a global world and the PR&D Management policies which has allowed the sustained historical growth and integral development of highly industrialized countries, and Southeast Asia, case Taiwan and therefore a development strategy to be implemented in low-industrialized countries?

1.2.3. Formulation of specific problems

1.2.3.1. Can Formalized one model What explore the investment in edu, Bless you safety and Do you evaluate the management policies of the i+i+d in underdeveloped countries?

1.2.3.2. how to have sustained and sustainable growth, which increases GDP. Income precipitates, and investment in education. Bless you. And security, to face world crises, in the form of successes. Like Taiwan and South Corea in pandemic COVID 19.

1.3. JUSTIFICATION OF THE INVESTIGATION

The dynamics of growth of the economy, in a global world, to have a sustainable and sustainable growth demand of strategies of development policies and investment in health, education and security, a redistribution of income to population, that is, an increase in per capita income, in order to be societies, more inclusive, cultured developed and that are able to face successfully, the challenges and new global crises case Taiwan - pandemic Covi.

Knowledge needs to be managed. In order to create and produce technology and innovation, which are the new factors of exponential economic growth. Case companies and states with investment in research, continuous improvement and tics. That has allowed them to have a country project and a model organizational culture. Based on the efficiency of the system.[11]

The topic of science, technology and innovation (STI) is a topical issue. The knowledge economy is no longer spoken of as if it were a stage that can be accessed without any effort is necessary for increased productivity. About innovation and business, to[12] understand the behavior of the variation of GDP per capita it is important to highlight the main determinants of this, including R + R + D.

Numerous Research herself he Oriented to the I am a student of the growth economic of the countries, in order to demonstrate the channels through which different variables can affect the growth process and the HDI. In this Sense, it is necessary to review the theories and empirical evidence in the matter of growth economic y of development human Compromising a the R&D&D.

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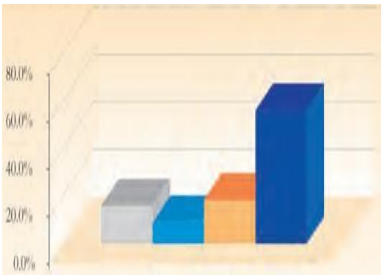
[10] Samuelson (2008) ECONOMY 18 EDITION. GDP per capita, per capita income or per capita income is the relationship between the level of income of a country and its population. GDP DIVIDED BY THE POPULATIONATOTALCION OF THE COUNTRY,

[11] (Mankiw, 2012) He pointed out that efficiency is the "characteristic of society that seeks to extract as much as possible from its scarce resources." (p.5)

[12] (Galindo & Rios, 2015) "Productivity is the way to measure ***efficiency*** with which labor and capital are used for the production of value." An increase in productivity means that a lot of economic value can be produced.

Figure 2 TYPE OF INNOVATION ACTIVITY PRIORITIZED BY COMPANIES IN 1999



Research and Development Technology Not Incorporated into Capital

Innovation of Other Processes . Technological training, organizational changes, Market Research – Marketing, Design, technology incorporated into capital

1.4. RESEARCH OBJECTIVES

1.4.1. GENERAL OBJECTIVE

Determine whether R&I&D Management Policies, and investment in education. Bless you and security, underpin sustained historical growth and development integral of the current highly industrialized countries and therefore be one strategy to use in low-industrialized countries.

1.4.2. SPECIFIC OBJECTIVE

1.4.2.1. Develop a model that explored the problems raised regardinginvestment in health, education, safety evaluated management policies of the R&D in low-income countries Industrialized.

1.4.2.2. Quantitatively develop the exploratory model on economic growth, increase in per capita income. And investment in health, education and security to address global crises. And biosecurity, case covi19.

1.4.3. BACKGROUND OF THE INVESTIGATION

There are several and varied studies on the subject. They try to explain methodologically how to achieve effectiveness and efficiency in organizations, that is, companies and the macro organization that is the state.

The forces involved in the industrial sector and the fundamental role of companies and the state in promoting research and innovation, technology[13]

with globalization. It is imperative to learn, manage and master information, technology and communications to realize customer relations and do global business [14] [14]with the arrival of the Second World War (1939) the entire world productive system collapse, were few companies that survived the post war (1945) many academics have tried to explain why? and how? survived the post war and come to the conclusion that states and states and the companies that best faced the crisis are those that had a very clear mission, vision and organizational culture, such is the case of Taiwan's recovery. South Korea, Japan, usa, that is, they identified and applied as nation-states and companies, precisely their mission; [15]what to do and how to do it? With an organizational culture of principles, ethics, values

[13] M Porter (1996) Competitive Advantage 13 edition- Mexico. Everything, what the company. the state do it involves technology. and has a major impact that affects competitive advantage and the value chain. (pg.182)

[14] Kotler.how to Create, win and dominate Markets. (1999) NY.

[15] Robbbins. C (2009) Organizational Behavior. Mexico. Pearson.

and integrity, for the economic recovery and well-being of its population, the same approach and challenge was met with globalization and now during the Covi 19 crisis. Taiwan and South Asia are the most successful countries in the management of the covi19 biosecurity crisis. And they are in a better position to face the post-crisis and future challenges

CHAPTER II

2.1. HISTORICAL FRAMEWORK

The post-crisis of the end of the Second World War (1945). The year 1949 marked a milestone in China's contemporary history: the nationalist government was forced to take refuge on the island of Taiwan. Both the government and the people of the Republic of China learned bitter lessons from their failures in mainland China, and have since worked hard to modernize Taiwan's economic and political system. During those early years, Taiwan was basically an underdeveloped third world country, almost in every way.

Politically, the island was under the one-party system of the nationalist party, or Kuomintang, whose regime was considered authoritarian by many. Freedom and democracy had their own problems and restrictions, such as the so-called national emergency code, which was in place for nearly four decades, and the government proudly proclaimed itself as the "free China," in order to differentiate itself from Communist China.

At first there was nothing to eat, the government focused on it and later on education, so much so that in 45 years (since 1949) it managed to quintuple its number of schools. Education was free and of quality; this led to quality professionals who innovated in research, development and production. All this was achieved thanks to its culture, Confucianism, which always emphasized the importance of education.

Education was free, which further boosted the desire to excel and this is how the power country, Taiwan, was born. The small Asian giant that produces technology for the world, high rates of productivity, competitiveness and standards of exercise of freedom and democratic system, with sustainable and sustainable economic growth, surprising and are a reason for admiration and world example in the midst of the Covi 19 crisis.

2.2. MARCO THEORETICAL

Economic growth began to become popular from Robert Solow's 1956 model, which provided the basis for future growth models (despite its inability to explain Nicholas Kaldor's famous stylized growth facts published in 1961).

Therefore most of the growth models are within a framework of the neoclassical school of thought, with a structure of general equilibrium based on some assumptions: a) competitive markets are presented, b) the production function that allows the passage from the market of inputs to the market of goods is usually a Cobb-Douglas function, (c) the technology is considered to have constant returns at scale and the productive factors have diminishing returns; (d) the agents own the assets and factors of production and decide the share of the income to be used for consumption and savings; (e) enterprises rent the use of productive factors in order to then sell the production to consumers; f) in some cases producer families are stipulated, that is, they act in both situations.

2.2.1. ENDOGENOUS DETERMINANTS OF ECONOMIC GROWTH

The answer then to growth was found in technology, stipulating that it improved over time, so they assumed that it could grow exogenously. Explicitly, they assumed constant the parameter "A" in a Cobb-Douglas function, meaning that when technology grows at a constant rate the rest of the

variables grow at that same rate, thus the growth rates of income, capital and consumption, in per capita terms, in the steady state are all equal to a constant, given exogenous productivity growth.

Increased productivity is necessarily considered exogenous because in a "world" in which markets are competitive and technologies with constant returns at scale, the remuneration of all factors (given by their marginal products) deplete the value of the final product.

Since technology is considered a public good (well not excludable and in assignments or non-rival)[16] there are no resources left to finance R&D activities, which is the ultimate determinant of this. In short, the relevant thing is that the growth rate of the steady state depends on decisions made by economic agents.

2.2.2. INNOVATION AS A DETERMINANT OF ECONOMIC GROWTH

For the Spanish Sala-i-Martin (1994) there are four important differences between the neoclassical model base of Solow and the endogenous model base (model AK)[17]

1. The economy lacks a steady-state transition.

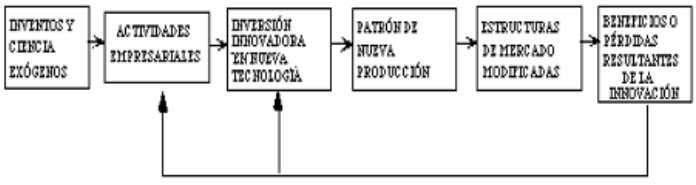
2. An exogenous growth of the savings rate causes an increase in both the short-term growth rate and the steady-state (long-term) growth rate.

3. This model does not predict convergence, so there is no relationship between the growth rate of the economy and the level reached by national income; and predicts that the effects of a temporary recession on the economy will be permanent.

2.2.3. DOCTRINAL PLANTEAMIENTOS

Shumpeter, considered one of the most important pioneers in the analysis of technological change, places innovation (technological and non-technological) and its effects at the center of his conception of the development of the capitalist economy. The theme revolves around the continuity/discontinuity of technical progress, in favor of the second. Thus, economic development arises from the application of innovations that are nothing more than the support of qualitative changes, understood as discontinuous changes, in the sense of rupture, and product of an endogenous process.[18]

Figure 3 Shumpeter and Business Innovation

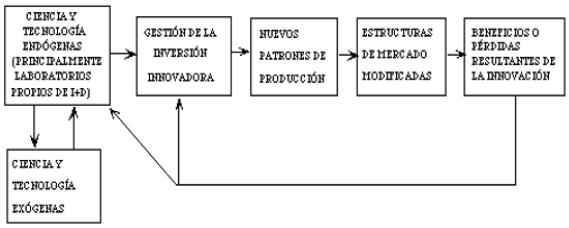


[16] ItStiglitz 2000 shows that R&D is classified as a public good. Indeed, knowledge (which is ultimately the product of R&D) complies with the ownership of a non-exclusive good since it is impossible to exclude other consumers from taking advantage of it, likewise, they comply with the second property; if information is provided to others it does not decrease the total amount of existing knowledge.

[17] Shumpeter. Desarrollados en sus obras "Theory of Economics Development" (1912) y "Capitalism, Socialism and Democracy" (1943) respectivamente

[18] Shumpeter. Desarrollados en sus obras "Theory of Economics Development" (1912) y "Capitalism, Socialism and Democracy" (1943) respectivamente

Illustration 4 MODEL II Organized in large companies



CAPÍTULO III

3.1. CONCEPTUAL FRAMEWORK

Technology – innovation
Regression
Human development

3.2. HYPOTHESES AND VARIABLES

3.2.1. GENERAL HYPOTHESIS

Políticas of investment in education (T_I_i) , Bless you y safety in a global world y the R&D Management Policies which has allowed the sustained historical growth and integral development of highly integrated countries Industrialized and From South East Asia, TAIWAN case and therefore a strategy of desarrollo to implement in low-industrialized countries.

3.2.2. SPECIFIC HYPOTHESES

3.2.2.1. One mSuit exploratory regarding investment in health, education, security, I evaluated R&D Management Policies in non-industrialized countries.

MODEL 1

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + μ (Assumption: μ = 0);

PBIpc =4055.271+0.694*TEC_INNO + 68.435*ICOMP

Being:

GDPI = Gross Domestic Product per capita.

TEC_INNO = Technology and Innovation.

ICOMP = Competitiveness Index

μ = Other variables and errors.

Bo = constant

b1= Marginal propensity of GDP with respect to Technology and Innovation Investment

b2= Marginal propensity of GDP with respect to the Competitiveness Index

3.2.2.2. Quantitatively develop the exploratory model on economic growth, increase in per capita income. And investment in health, education and security to address global crises. And biosecurity, case covi19

MODEL 2

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + b3*HEALTH+ μ (Assumption: μ = 0);

PBIpc =11007.132 + 1.928*TEC_INNO + 77.875*ICOMP - 1.406*HEALTH

Being:

GDPI = Gross Domestic Product per capita.
TEC_INNO = Technology and Innovation.
ICOMP = Competitiveness Index
μ = Other variables and errors.
Bo = constant
b1= Marginal propensity of GDP with respect to Technology and Innovation investment
b2= Marginal propensity of GDP with respect to the Competitiveness Index
b3= Marginal propensity of GDP with respect to Health

3.3. FORMULATION OF VARIABLES

3.3.1. INDEPENDENT VARIABLES

Innovación (I) - technology
Investment
Competitiveness
Productivity

3.3.2. DEPENDENT VARIABLE

Gross Domestic Product
Per capita income (GDP)
Human Development Index (HDI)

3.4. DESIGN OF THE INDICATORS TO MEASURE THE VARIABLES

3.4.1. METHODOLOGY

3.4.1.1. Type and design of Research

The study was framed in the quantitative approach, it was of an applicative type, of horizontal cut and of multivariate correlational descriptive level. The design was non-experimental and the unit of analysis was made up of results from Taiwan. The hypothetical deductive method was used, which consisted of explaining the economic growth of Taiwan in relation to the behavior of investment in Technology and Innovation, Competitiveness Index, Health during the period 1997 to 2020. To obtain the information, secondary sources were used, the gross domestic product per capita of the National Statistics Center - Republic of China (2021) and the International Institute for Business Development (2021). Likewise, the technique of bibliographic systematization was used to organize the literature according to the variables. For the processing of the data, the following softwares were used: SPSS (Statistical Package for Social Sciences) and R 4.1.0 where descriptive statistics were applied and for multiple linear regression the forward method was used.

Table 2 Taiwan, a successful development model in the midst of the covid-19 crisis

TAIWAN, A SUCCESSFUL DEVELOPMENT MODEL IN THE MIDST OF THE COVID-19 CRISIS								
YEARS	GDP (million dollars)	GDP PER CAPITA (million dollars)	DUCTIVIDAD PRO INDEX	COMPETITIVENESS INDEX		INVESTMENT (millions of dollars)		
				Score	Ranking	EDUCATION	TECHNOLOGY AND INNOVATION	BLESS YOU
2020	$669,324.00	$ 28,383	113.43	91.27	11	$19,177.84	$25,876.48	$27,799.18
2019	$611,336.00	$ 25,908	109.38	88.24	16	$18,572.85	$23,778.40	$26,279.02
2018	$609,251.00	$ 25,838	106.64	87.91	17	$18,596.41	$22,175.50	$25,088.99

2017	$590,780.00	$ 25,080	104.04	90.48	14	$18,098.40	$20,682.07	$23,793.53
2016	$543,002.00	$ 23,091	100	86.37	14	$18,327.23	$19,503.25	$22,676.75
2015	$534,474.00	$ 22,780	95.34	85.41	11	$17,913.07	$18,418.25	$21,534.93
2014	$535,332.00	$ 22,874	94.27	81.23	13	$17,844.35	$17,443.48	$20,778.33
2013	$512,957.00	$ 21,973	89.98	85.19	11	$17,389.26	$16,503.59	$20,159.71
2012	$495,536.00	$ 21,295	87.75	89.96	7	$17,478.72	$15,623.89	$19,375.04
2011	$483,957.00	$ 20,866	86.47	92.01	6	$16,559.68	$14,952.85	$18,564.43
2010	$444,245.00	$ 19,197	83.2	90.44	8	$15,627.82	$14,251.64	$18,130.76
2009	$390,788.00	$ 16,933	76.91	75.39	23	$14,832.07	$13,213.91	$17,573.16
2008	$415,824.00	$ 18,081	76.2	77.36	13	$14,211.34	$12,617.14	$16,498.76
2007	$406,940.00	$ 17,757	76.36	76.05	18	$13,820.85	$11,945.56	$15,875.05
2006	$386,492.00	$ 16,934	71.31	72.99	17	$13,254.15	$11,053.33	$15,185.07
2005	$374,042.00	$ 16,456	67.69	78.32	11	$12,805.80	$10,115.28	$14,642.81
2004	$346,881.00	$ 15,317	64.56	79.54	12	$12,307.89	$9,477.76	$13,968.38
2003	$317,374.00	$ 14,066	61.87	71.07	17	$12,137.08	$8,745.91	$13,313.74
2002	$307,429.00	$ 13,686	59.08	60.35	20	$11,938.07	$8,079.41	$12,798.43
2001	$299,303.00	$ 13,397	56.13	69.95	16	$11,439.55	$7,379.06	$11,847.66
2000	$330,725.00	$ 14,908	54.14	73.74	17	$10,818.53	$7,114.72	$11,375.25
1999	$303,827.00	$ 13,804	51.29	72.89	15	$10,067.15	$6,858.72	$11,396.99
1998	$279,926.00	$ 12,820	46.67	63.04	14	$9,391.85	$6,352.42	$10,612.39
1997	$303,315.00	$ 14,020	44.75	68.85	18	$8,848.42	$5,627.56	$9,704.88
1996	$292,473.00	$ 13,641	42.39			$8,500.23	$4,966.38	$9,213.98
1995	$279,013.00	$ 13,119	39.93			$8,369.99	$4,501.12	$8,700.62
1994	$256,213.00	$ 12,150	37.72			$7,884.93	$4,128.55	$4,826.31
1993	$234,943.00	$ 11,242	35.83			$7,575.83	$3,730.21	$4,236.23

Figure 5 Competitiveness Index

Resultados Generales del Ranking de Competitividad Mundial 2021: Puntaje y Posición

País	Ranking 2021	Puntaje 2021	Variación en posición 2020-2021	Variación en puntaje 2020-2021	País	Ranking 2021	Puntaje 2021	Variación en posición 2020-2021	Variación en puntaje 2020-2021
Suiza	1	100	2	1.6	Chipre	33	68.0	-3	-7.3
Suecia	2	96.7	4	0.8	República Checa	34	67.4	-3	-3.8
Dinamarca	3	96.7	-1	-2.8	Kazajistán	35	66.6	7	1.9
Holanda	4	96.3	0	-2.0	Portugal	36	65.3	1	-2.9
Singapur	5	94.7	-4	-5.3	Indonesia	37	64.7	3	-2.1
Noruega	6	94.5	1	-0.1	Letonia	38	64.1	3	-1.2
Hong Kong	7	93.5	-2	-3.5	España	39	63.7	-3	-4.5
Taiwán	8	92.6	3	1.3	Eslovenia	40	63.2	-5	-5.4
Emiratos Árabes Unidos	9	89.6	0	-3.9	Italia	41	63.1	3	1.2
Estados Unidos	10	89.1	0	-3.2	Hungría	42	61.7	5	1.7
Finlandia	11	88.5	2	-0.2	India	43	61.6	0	-0.5
Luxemburgo	12	88.4	3	0.7	Chile	44	61.4	-6	-5.7
Irlanda	13	87.0	-1	-3.7	Rusia	45	56.4	5	-0.1
Canadá	14	86.5	-6	-7.0	Grecia	46	56.3	3	-1.6
Alemania	15	83.9	2	-2.0	Polonia	47	55.2	-8	-11.8
China	16	83.0	4	1.0	Rumanía	48	54.7	3	-0.9
Catar	17	82.9	-3	-4.9	Jordania	49	53.5	9	4.6
Reino Unido	18	81.5	1	-2.9	Eslovaquia	50	52.5	7	3.0
Austria	19	80.6	-3	-5.7	Turquía	51	52.4	-5	-7.6
Nueva Zelanda	20	80.1	2	-0.1	Filipinas	52	52.0	-7	-8.4
Islandia	21	79.2	0	-2.2	Bulgaria	53	50.8	-5	-8.6
Australia	22	77.2	-4	-7.9	Ucrania	54	50.0	1	-1.8
Corea del Sur	23	76.8	0	-2.4	México	55	48.6	-2	-6.2
Bélgica	24	76.4	1	-1.3	Colombia	56	46.8	-2	-5.4
Malasia	25	73.9	2	-2.5	Brasil	57	45.5	-1	-4.2
Estonia	26	73.8	2	-2.5	**Perú**	**58**	**45.4**	**-6**	**-9.5**
Israel	27	73.6	-1	-4.1	Croacia	59	43.1	1	-0.8
Thailand	28	72.5	1	-2.9	Mongolia	60	40.0	1	-3.4
Francia	29	71.5	3	-0.2	Botsuana	61	38.8	-	-
Lituania	30	70.3	1	-3.3	Sudáfrica	62	38.2	-3	-8.9
Japón	31	69.1	3	-0.8	Argentina	63	32.9	-1	-5.2
Arabia Saudita	32	68.5	-8	-9.7	Venezuela	64	22.0	-1	-3.4

Dónde: Retrocede en posiciones · Avanza en posiciones · Se mantiene en la misma posición

Institute of Management Development (IMD) de Suiza

The measurement is carried out through four pillars: (a) Economic Performance, (b) Government Efficiency, (c) Business Efficiency and (d) Infrastructure

3.5. DATA ANALYSIS AND EMPIRICAL EVIDENCE

3.5.1. Model 1

Model 1

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + μ (Assumption: μ = 0);

PBIpc =4055.271+0.694*TEC_INNO + 68.435*ICOMP

Being:

GDPI = Gross Domestic Product per capita.

TEC_INNO = Technology and Innovation.

ICOMP = Competitiveness Index

μ = Other variables and errors.

Bo = constant

b1= Marginal propensity of GDP with respect to Technology and Innovation investment

b2= Marginal propensity of GDP with respect to the Competitiveness Index

For the processing of the data was used the software SPSS (Statistical Social) version 8 and R 4.1.0 where descriptive statistics, correlation and for linear regression were applied multiple forward method.

PBI_carpita = f(Productivity Index, Competitiveness Index, Education, Technology and innovation, Health)

Table 3 Normality tests

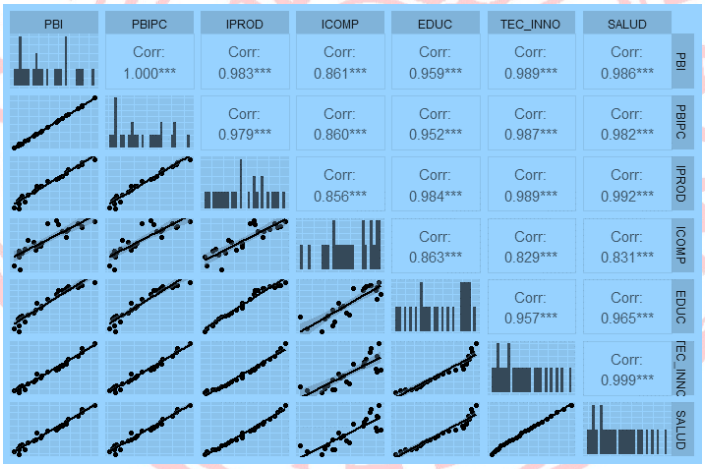
Normality Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistical	Gl	Itself.	Statistical	Gl	Itself.
GDP (in millions of dollars)	.114	24	.200*	.931	24	.102
GDP per capita(in millions of dollars)	.127	24	.200*	.930	24	.097
Productivity Index	.078	24	.200*	.962	24	.477
Competitiveness Index	.147	24	.194	.942	24	.183
Education	.172	24	.064	.923	24	.068
Technology and Innovation	.101	24	.200*	.949	24	.258
Bless you	.085	24	.200*	.960	24	.446

*. This is a lower limit of true significance.

to. Lilliefors significance correction

Figure 6 PBI Correlation



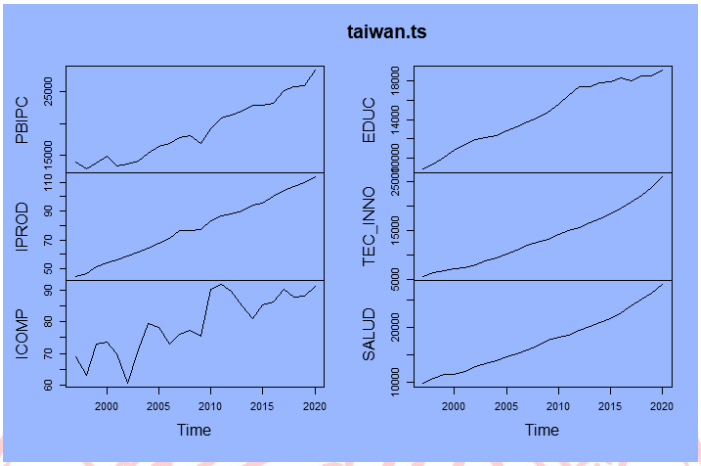
3.5.2. Model 2

Model 2

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + b3*HEALTH+ μ (Assumption: μ = 0);
PBIpc =11007.132 + 1.928*TEC_INNO + 77.875*ICOMP - 1.406*HEALTH
Being:
GDPI = Gross Domestic Product per capita.
TEC_INNO = Technology and Innovation.
ICOMP = Competitiveness Index
μ = Other variables and errors.
Bo = constant

b1= Marginal propensity of GDP with respect to Technology and Innovation investment
b2= Marginal propensity of GDP with respect to the Competitiveness Index
b3= Marginal propensity of GDP with respect to Health

Figure 7 Taiwan.ts



In the analysis of the statistical indicators of the variables, the Shapiro Wild normality test, Pearson coefficient, fisher's test and the P test and the individual test of the variables: Student's test, and Durbin-Watson statistic were used.

In Figures 1 and 2, it shows that during the period 1997 to 2020 the GDP per capita variables are correlated (P<0.05)

3.5.2.1. ANALYSIS OF DATA INTERPRETATION AND CONCLUSIONS TO THE SPSS MODEL

- The first estimated model is: PBIpc = 8279.656+0.783*TEC_INNO explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation with an adjusted coefficient of determination of 97.3%.
- The second estimated model is: PBIpc = PBIpc = 4055.271+0.694*TEC_INNO + 68.435*ICOMP explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation and positively on the competitiveness index with an adjusted coefficient of determination of 97.8%
- The estimated model t is: PBIpc = 11007,132 + 1,928*TEC_INNO + 7,875*ICOMP - 1,406*HEALTH explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation, positively on the competitiveness index and in health with an adjusted coefficient of determination of 98.4%.
- The indicator of investment in Technology and Innovation is the most significant variable influencing a change in Taiwan's gross domestic production per capita
- The competitiveness index is the significant variable that influences a change in Taiwan's gross domestic production per capita.
- The State Health Index turned out to be highly significant in influencing a change in Taiwan's gross domestic production and also the productivity index.

CONCLUSIONES

Based on epistemological, doctrinal foundations and updated, truthful, timely and relevant information on the economic evolution of Taiwan, and the efficiency of the system, facts corroborated by the statistical model. Exploratory the following conclusions are reached:

I. That despite the great difficulties that Taiwan has had as a country, particularly after the Second World War (1945), the reconstruction of Asia- post-war, and the great economic crisis 1949 through which it passed, (after the Japanese invasion); its political, business and academic leaders had a mission and a country vision. Very clear on how to lead the 'country and its population on the path of development, progress and better redistribution of income for a better and higher standard of living of its population. They followed a liberal model of free market, despite the trends of the time, they prioritized education as a path to progress and development. Consistent with the influence of Confucius. "sow education and reap all your life." They invested in technology, research and innovation. To become the world's leading producers of chips and microchips. With the highest world quality standards. Fact that allows it to stay at the forefront of global technology.

II. The approach and development of the exploratory model, allows to verify that Taiwan. Historically, it emerged from poverty with sustainable and sustainable economic growth until the covi19 crisis. And it even continues to grow in the midst of the Covi crisis, despite the economic failure in other parts of the world, as a result of the covi19 pandemic.and that its investment in education, research and technology has allowed accelerated growth, to achieve the highest levels of efficiency as a nation-state. There is a positive and statistically significant link between innovation effort and economic growth, consistent with the studies of Lederman and Maloney (2003). Taiwan demonstrates this in its. Education at all levels. Its health system, public services and high standard of living of its entire population.

III. TAIWAN AS A NATION-STATE. It achieved the path of virtuous economic growth, and had efficient and successful development policies and programs, by investing in a sustained way in education, health, technology, innovation, development infrastructure and energy reserves that allow it to enhance its long-term development.

IV. WITH the arrival of the Covi 19 crisis, reality shows that Taiwan substantially increased the per capita income of its population, demonstrating that development and well-being are not just figures, and that is demonstrated by the quality of life of its population, its great capacity for consumption, internal and external tourism. Free access to the best education and health systems. Being the health system Taiwan Health for all. The best health system in the world and the one that has best managed the Covi 19 crisis, despite its proximity to China where the virus began and despite the high number of deaths worldwide, Taiwan only registered in one year 1068 positive cases and 10 deaths, having the lowest mortality rate worldwide. LLEGEGANDO to discover its own vaccine, new biosafety control equipment and efficient methods of forecasting and control Covi 19, successfully tested throughout its territory, and are a great contribution to the world and the WHO, for future biosecurity crisis.

V. From the analysis of the research, it can be seen that Taiwan is avant-garde, top world in the production of intangibles. That is, service with high added value, state-of-the-art technologies, consequence with the policy of investing in education at all levels, sponsoring and supporting the implementation of Hsinchu case industrial parks. And others, which articulate the academic centers of technical-vocational training with the very well paid labor market

VI. The data, the evaluation of the statistical model and the current reality confirm that Taiwan is a successful development model because of the sustained policies that its governments have

maintained after the Second World War, investing in education, and technology, which has allowed a continuous improvement in innovation and production of high-end technology systems, that have accelerated their economic growth, until the covi19 crisis. Being a source of admiration for the world and an example to follow for developing countries,

VII. Finally, as crises test organizations, Taiwan and its noble people are the country that has best managed the covi19 crisis. Also that crises are an opportunity for growth and inventiveness, if the state and companies adapt to change, Taiwan has continued to grow economically in the midst of the Covi crisis. Discover your vaccine and new technologies. Despite the unjustifiable harassment of mainland China that violates all the universal right and the will of free coexistence of its noble people who decided to live in freedom democracy, unity and progress as a sentence of Dr sun yan set.

BIBLIOGRAPHY

Adams, James. (2000). Endogenous R&D Spillovers and Industrial Research Productivity, NBER Working Papers Series.

Danish Research Unit on Industrial Dynamics (DRUID) in Rebild, Denmark, 9-12 June 1999.

Axelrod, R. & Cohen, M. (1999). Harnessing Complexity; Organizational implications of a scientific frontier. New York: Free Press. pp. xi-xv.

Barlevy Gadi, (2004). On the Timing of Innovation in Stochastic Schumpeterian Growth Models, NBER Working Papers Series.

Bermúdez Garcia Javier E. Scientific research in Peru: critical success factor for the country's development. IBSS Consulting S. A.C. Lima 2012 5. Bound, Cummins, Hall, Griliches, and Jaffe (1982). "Who Does R&D and Who Patents" NBER Working Papers Series.

Bertalanffy, L. von (2001). General theory of systems. Mexico: Fondo de Cultura Económica. p. 35, 311.

Bertoglio, O. J. (1992). Anatomy of the enterprise: a general theory of social organizations. Mexico: Limusa.

IDB (2001). "Competitiveness: The Engine of Growth". Washington D.C.: Inter-American Development Bank.

. CITEs (2010). Technological Innovation Centers. Available in: http://www.produce.gob.pe/cites

De Ferranti, David, Perry Guillermo, Lederman, Daniel and Maloney, William (2002). From Natural Resources to the Knowledge Economy. World Bank studies on Latin America and the Caribbean. Washington.

De Ferranti, David, Perry, Guillermo, Gill, Indermit, Guasch, Luis, Maloney; William, Sanchez P. Carolina; Schady, Norbert. (2003). Closing the Technology Gap in Education and Technology. World Bank studies on Latin America and the Caribbean. Washington.

Edwards, S (1998). Openness, Productivity and Growth: What do we really know? Ecocomic Journal. 383-398.

Etzkowitz, Henry y Loet Leydesdorff (2000). “The dynamics of innovation: from National Systems and ‘‘Mode2’’ to a Triple Helix of university–industry–government relations”, Research Policy, vol. 29, pp. 109-123.

Feenstra Robert y Looi Kee Hiau (2006). Trade Liberalization and Export Variety: A comparison of Mexico and China. World Bank. Washington.

Funke, Michael y Ruhwedel, Ralf (2001). Product Variety and Economic Growth: Empirical Evidence for the OECD Countries. International Monetary Fund Staff Papers.

Griffith, Huergo, Mairesse y Peters (2006). “Innovation and Productivity Across Four European Countries”. NBER working papers series.

Jones, Charles (1997). Introduction to Economic Growth, Pearson Education.

Kuhn, T. (1982). The essential tension. Selected studies on tradition and change in the field of science. Mexico: Fondo de Cultura Económica. 380 p.

Latour, B. (1979). Laboratory Life: the Social Construction of Scientific Facts. Los Ángeles: Sage Publications.

Lederman y Maloney, (2003). “R&D and Development”. Policy Research Working Paper.

Lederman, Daniel y Saenz, Laura (2005). Innovation and Development Around the World, 1960-2000. World Bank Policy Research Working Paper. Washington.

, (2002). “Innovation and Growth in Resource Rich Countries”, Central Bank of Chile Working Papers.

Moreno; Patricia and Javier Verástegui (2003) "Peru". In: Verastegui, J. (ed.) "Biotechnology in Latin America: panorama to the year 2002". Ottawa: Cambiotec Canadian-Latin American Initiative in Biotechnology for Sustainable Development, pp. 200-214.

Morin, E. (1999). The method. The nature of nature. Fifth Edition. Ana Sánchez and Dora Sánchez García, translators. Madrid: Gráficas Rógar.

Morin 1994, El conocimiento del conocimiento, Mota Raúl Domingo 2000, El pilotaje de la complejidad, las redes sociales y la gobernabilidad planetaria. Documents of the Edgar Morin Itinerant Chair, UNESCO http://www.complejidad.org/iipc/pilot.doc

Mullin Consulting (2003). “Un análisis del sistema peruano de innovación”, Lima. Pavitt, Keith (1984). “Sectoral patterns of technical change: towards a taxonomy and a theory”, Research Policy, No. 13, pp. 343-373.

Nelson, R. (1993). National System of Innovation: A comparative analysis. New York: University Press

Pindyck, Robert and Rubinfeld, Daniel (2001). Econometrics, Models and Forecasts. Mc Graw Hill, Mexico.

Rallo Robert (2003), Presentation: Standards for content creation What are they? What are they for?, Universitat Rovira i Virgili, Online Educa Barcelona

Sala - i - Martin, (1994). Notes on economic growth, Antoni Bosh editor.

Schein, E. (1998). Business culture and leadership; a dynamic vision. Barcelona: Plaza & Janes Editores.

Tugores, Juan (2002). International Economics and Regional Integration, Mc Graw Hill, Spain.

UNESCO. (2010) "National Science, Technology and Innovation Systems in Latin America and the Caribbean" Regional Science Office for Latin America and the Caribbean.

UNESCO. A Global Perspective On Research And Development. París, Institute for Statistics, 200

Visser Jan, (2002); Innovation: Scientific Need and Artistic Choice, Chairs of Educational Innovation, University of Guadalajara. http://www.learndev.org

CHAPTER IV
ANNEXES: STATISTICS, MODELS, DATA AND DIAGRAMS.

CHAPTER IV
ANNEXES

RESEARCH DATA AND RESULTS OBTAINED

Table 1 Economic Growth Indicators (IMF - SantanderTrade)

Growth indicators	2018	2019	2020	2021*	2022*
GDP (billions)	608.13	612,17	668,51	759,10	810,67
GDP (growth in %)	2,7	3,0	3,1	4,7	3,0
State indebtedness (% of GDP)	34,0	32,7	33,7	32,5	31,0
Inflation Rate (%)	1,5	0,5	-0,2	0,9	1,2
Unemployment rate (% labour force)	3,7	3,7	3,9	3,8	3,8

Table 2 Evolution of Taiwan's GDP from 1989 to 2020 (Extracted from the IMF - SantanderTrade)

$$Ingreso\ per\ cápita\ = \frac{PBI}{Población}$$

Evolution of GDP - TAIWAN		
Year	Annual GDP (Billions $)	Change in GDP (%)
2020	668.510	3,1
2019	612.168	3,0
2018	609.198	2,8
2017	590.733	3,3
2016	543.081	2,2
2015	534.515	1,5
2014	535.328	4,7
2013	512.943	2,5
2012	495.610	2,2
2011	483.974	3,7
2010	444.281	10,2
2009	390.829	-1,6
2008	415.901	0,8
2007	406.907	6,9
2006	386.450	5,8
2005	374.060	5,4
2004	346.924	7,0
2003	317.381	4,2
2002	307.439	5,5
2001	299.276	-1,4
2000	330.680	6,3
1999	303.830	6,7
1998	279.059	4,2
1997	303.284	6,1
1996	292.494	6,2
1995	279.059	6,5
1994	256.247	7,5
1993	236.339	6,8
1992	222.911	8,3
1991	187.140	8,4
1990	166.622	5,5
1989	152.704	8,7

Table 3 Per capita income and its annual variation in Taiwan.

Per capita income (U.S.$)		
Year	*Value*	*Percentage change (%)*

1989	*$7,613.00*	*19.51*
1990	*$8,205.00*	*7.78*
1991	*$9,125.00*	*11.21*
1992	*$10,768.00*	*18.01*
1993	*$11,242.00*	*4.4*
1994	*$12,150.00*	*8.08*
1995	*$13,119.00*	*7.98*
1996	*$13,641.00*	*3.98*
1997	*$14,020.00*	*2.78*
1998	*$12,820.00*	*-8.56*
1999	*$13,804.00*	*7.68*
2000	*$14,908.00*	*8*
2001	*$13,397.00*	*-10.14*
2002	*$13,686.00*	*2.16*
2003	*$14,066.00*	*2.78*
2004	*$15,317.00*	*8.89*
2005	*$16,456.00*	*7.44*
2006	*$16,934.00*	*2.9*
2007	*$17,757.00*	*4.86*
2008	*$18,081.00*	*1.82*
2009	*$16,933.00*	*-6.35*
2010	*$19,197.00*	*13.37*
2011	*$20,866.00*	*8.69*
2012	*$21,295.00*	*2.06*
2013	*$21,973.00*	*3.18*
2014	*$22,874.00*	*4.1*
2015	*$22,780.00*	*-0.41*
2016	*$23,091.00*	*1.37*
2017	*$25,080.00*	*8.61*
2018	*$25,838.00*	*3.02*
2019	*$25,941.00*	*0.4*
2020	*$28,371.00*	*9.37*

Nota. Adaptado de "Per Capita Items-Annual by Period, Indicators, Pricing and Type", 2020.

As can be seen in the table, per capita income in Taiwan has grown by 9.37%, despite the current situation happening around the world.

Table 4 Investment education Taiwan.

Year	Total educational expenditure	Government education spending
1991	300965051	247488080
2001	590444164	406886944
2010	765283147	516804324
2011	784518065	537799401

2012	817856782	548815737
2013	832633478	553419602
2014	843545864	564144138
2015	856766171	575286556
2016	873281648	590263123
2017	886970355	601521134
2018	907010190	614799693
2019	899492920	602838326

Note: Public spending in Taiwan as a reference to spending on both education, health and housing.
Source: Expansion (2019) Taiwan - Public spending

Table 5 GDP investment in NHI.

Year	Growth in NHI (%)	GDP growth (%)	NHI as % of GDP
1992	17.37	11.62	4.68
1993	13.55	10.40	4.81
1994	10.74	9.42	4.87
1995	17.33	8.86	5.25
1996	10.84	8.64	5.36
1997	8.29	8.46	5.36
1998	8.87	7.34	5.43
1999	8.14	4.83	5.60
2000	4.26	5.58	5.53
2001	3.67	-2.52	5.88
2002	6.32	4.85	5.96
2003	5.98	2.73	6.15
2004	7.23	6.25	6.21
2005	4.27	3.30	6.26
2006	4.34	4.29	6.27
2007	3.79	5.45	6.17
2008	2.87	-2.25	6.49
2009	5.26	-1.10	6.91
2010	2.61	8.58	6.53
2011	2.57	1.16	6.62
2012	2.75	2.68	6.63
2013	3.21	3.43	6.61

The new national health insurance program is under the National Health Insurance Authority (NHIA), which is a division of the ministry of health and welfare, this new program has managed to reach a coverage of 99 percent, generating an increase in life in men and deaths of 76.8 and 83.4 years respectively. (Cheng & Yawen, 2016)

In 2016, health spending for the country was 6.3 percent of GDP, the administrative costs of the system were less than one percent and health care costs were lower than in countries in Europe and North America being 1,430 US dollars per capita per year. Likewise, user satisfaction reached 82.8 percent of approval in 2017. (Wu, Majeed, & Kuo, 2010)

Long before Beijing recognized the seriousness of the virus, Taiwan's health system began with measures to address this crisis, from preventing flights from Wuhan to the rapid use of masks and protective kits for its entire population. At the technological

level, collaboration with telecommunications companies was undertaken, which led to the launch of an electronic security monitoring system to identify the location of people in quarantine or home isolation by detecting the signal of the mobile phone. the research deepened until it had its (Fortuño, 2020)own covi19 vaccine. A great contribution to the world; as well as new biosecurity methods and equipment to face the crisis and continue to grow economically, with a standard of living almost in its full normality

Table 6 COMPETITIVENESS INDEX [1]

Resultados Generales del Ranking de Competitividad Mundial 2021: Puntaje y Posición

País	Ranking 2021	Puntaje 2021	Variación en posición 2020-2021	Variación en puntaje 2020-2021	País	Ranking 2021	Puntaje 2021	Variación en posición 2020-2021	Variación en puntaje 2020-2021
Suiza	1	100	2	1.6	Chipre	33	68.0	-3	-7.3
Suecia	2	96.7	4	0.8	República Checa	34	67.4	-3	-3.8
Dinamarca	3	96.7	-1	-2.8	Kazajistán	35	66.6	7	1.9
Holanda	4	96.3	0	-2.0	Portugal	36	65.3	1	-2.9
Singapur	5	94.7	-4	-5.3	Indonesia	37	64.7	3	-2.1
Noruega	6	94.5	1	-0.1	Letonia	38	64.1	3	-1.2
Hong Kong	7	93.5	-2	-3.5	España	39	63.7	-3	-4.5
Taiwán	8	92.6	3	1.3	Eslovenia	40	63.2	-5	-5.4
Emiratos Árabes Unidos	9	89.6	0	-3.9	Italia	41	63.1	3	1.2
Estados Unidos	10	89.1	0	-3.2	Hungría	42	61.7	5	1.7
Finlandia	11	88.5	2	-0.2	India	43	61.6	0	-0.5
Luxemburgo	12	88.4	3	0.7	Chile	44	61.4	-6	-5.7
Irlanda	13	87.0	-1	-3.7	Rusia	45	56.4	5	-0.1
Canadá	14	86.5	-6	-7.0	Grecia	46	56.3	3	-1.6
Alemania	15	83.9	2	-2.0	Polonia	47	55.2	-8	-11.8
China	16	83.0	4	1.0	Rumanía	48	54.7	3	-0.9
Catar	17	82.9	-3	-4.9	Jordania	49	53.5	9	4.8
Reino Unido	18	81.5	1	-2.9	Eslovaquia	50	52.5	7	3.0
Austria	19	80.6	-3	-5.7	Turquía	51	52.4	-5	-7.6
Nueva Zelanda	20	80.1	2	-0.1	Filipinas	52	52.0	-7	-8.4
Islandia	21	79.2	0	-2.2	Bulgaria	53	50.8	-5	-8.6
Australia	22	77.2	-4	-7.9	Ucrania	54	50.0	1	-1.8
Corea del Sur	23	76.8	0	-2.4	México	55	48.6	-2	-6.2
Bélgica	24	76.4	1	-1.3	Colombia	56	46.8	-2	-5.4
Malasia	25	73.9	2	-2.5	Brasil	57	45.5	-1	-4.2
Estonia	26	73.8	2	-2.5	**Perú**	**58**	**45.4**	**-6**	**-9.5**
Israel	27	73.6	-1	-4.1	Croacia	59	43.1	1	-0.8
Thailand	28	72.5	1	-2.9	Mongolia	60	40.0	1	-3.4
Francia	29	71.5	3	-0.2	Botsuana	61	38.8	-	-
Lituania	30	70.3	1	-3.3	Sudáfrica	62	38.2	-3	-6.9
Japón	31	69.1	3	-0.8	Argentina	63	32.9	-1	-5.2
Arabia Saudita	32	68.5	-8	-9.7	Venezuela	64	22.0	-1	-3.4

Dónde: Retrocede en posiciones · Avanza en posiciones · Se mantiene en la misma posición

Institute of Management Development (IMD) de Suiza

The measurement is carried out through four pillars: (a) Economic Performance, (b) Government Efficiency, (c) Business Efficiency and (d) Infrastructure

Table 7 MACROECONOMIC-PRODUCTIVITY INDICATORS20/COMPETITIVENESS[2]

[1] According to Krugman Nobel Prize 2008, competitiveness is related to the way in which one nation competes with the rest, offering better products and services. (Aguirre, 2014)

[2] According to Porter (1985) he defines competitiveness as "the ability of a company to produce and market products under better price conditions".

TAIWÁN, UN MODELO EXITOSO DE DESARROLLO EN PLENA CRISIS DE COVID-19								
AÑOS	PBI (millones de dolares)	PBI PER CÁPITA (millones	ÍNDICE DE PRODUCTIVIDAD	ÍNDICE DE		INVERSIÓN (millones de dólares)		
				Puntaje	Ranking	EDUCACIÓN	TECNOLOGÍA E INNOVACIÓN	SALUD
2020	$669,324.00	$ 28,383	113.43	91.27	11	$19,177.84	$25,876.48	$27,799.18
2019	$611,336.00	$ 25,908	109.38	88.24	16	$18,572.85	$23,778.40	$26,279.02
2018	$609,251.00	$ 25,838	106.64	87.91	17	$18,596.41	$22,175.50	$25,088.99
2017	$590,780.00	$ 25,080	104.04	90.48	14	$18,098.40	$20,682.07	$23,793.53
2016	$543,002.00	$ 23,091	100	86.37	14	$18,327.23	$19,503.25	$22,676.75
2015	$534,474.00	$ 22,780	95.34	85.41	11	$17,913.07	$18,418.25	$21,534.93
2014	$535,332.00	$ 22,874	94.27	81.23	13	$17,844.35	$17,443.48	$20,778.33
2013	$512,957.00	$ 21,973	89.98	85.19	11	$17,389.26	$16,503.59	$20,159.71
2012	$495,536.00	$ 21,295	87.75	89.96	7	$17,478.72	$15,623.89	$19,375.04
2011	$483,957.00	$ 20,866	86.47	92.01	6	$16,559.68	$14,952.85	$18,564.43
2010	$444,245.00	$ 19,197	83.2	90.44	8	$15,627.82	$14,251.64	$18,130.76
2009	$390,788.00	$ 16,933	76.91	75.39	23	$14,832.07	$13,213.91	$17,573.16
2008	$415,824.00	$ 18,081	76.2	77.36	13	$14,211.34	$12,617.14	$16,498.76
2007	$406,940.00	$ 17,757	76.36	76.05	18	$13,820.85	$11,945.56	$15,875.05
2006	$386,492.00	$ 16,934	71.31	72.99	17	$13,254.15	$11,053.33	$15,185.07
2005	$374,042.00	$ 16,456	67.69	78.32	11	$12,805.80	$10,115.28	$14,642.81
2004	$346,881.00	$ 15,317	64.56	79.54	12	$12,307.89	$9,477.76	$13,968.38
2003	$317,374.00	$ 14,066	61.87	71.07	17	$12,137.08	$8,745.91	$13,313.74
2002	$307,429.00	$ 13,686	59.08	60.35	20	$11,938.07	$8,079.41	$12,798.43
2001	$299,303.00	$ 13,397	56.13	69.95	16	$11,439.55	$7,379.06	$11,847.66
2000	$330,725.00	$ 14,908	54.14	73.74	17	$10,818.53	$7,114.72	$11,375.25
1999	$303,827.00	$ 13,804	51.29	72.89	15	$10,067.15	$6,858.72	$11,396.99
1998	$279,926.00	$ 12,820	46.67	63.04	14	$9,391.85	$6,352.42	$10,612.39
1997	$303,315.00	$ 14,020	44.75	68.85	18	$8,848.42	$5,627.56	$9,704.88
1996	$292,473.00	$ 13,641	42.39			$8,500.23	$4,966.38	$9,213.98
1995	$279,013.00	$ 13,119	39.93			$8,369.99	$4,501.12	$8,700.62
1994	$256,213.00	$ 12,150	37.72			$7,884.93	$4,128.55	$4,826.31
1993	$234,943.00	$ 11,242	35.83			$7,575.83	$3,730.21	$4,236.23

1. National Statistical Center - Republic of China (2021) https://eng.stat.gov.tw/np.asp?ctNode=1539
2. International Institute for Business Development (2021) https://www.imd.org/

DATA ANALYSIS AND EMPIRICAL EVIDENCE

Model 1

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + μ (Assumption: μ = 0);

PBIpc =4055.271+0.694*TEC_INNO + 68.435*ICOMP

Being:

GDPI = Gross Domestic Product per capita.

TEC_INNO = Technology and Innovation.

ICOMP = Competitiveness Index

μ = Other variables and errors.

Bo = constant

b1= Marginal propensity of GDP with respect to Technology and Innovation investment

b2= Marginal propensity of GDP with respect to the Competitiveness Index

For the processing of the data, the **software SPSS(Statistical Social) version 28 and R 4.1.0** was used where descriptive statistics, correlation and for the multiple linear regression forward method were applied.

PBI_carp = f(Productivity Index, Competitiveness Index, Education, Technology and Innovation, Health)

Table 8 Normality tests

Normality Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistical	Gl	Itself.	Statistical	Gl	Itself.
GDP (in millions of dollars)	.114	24	.200*	.931	24	.102
GDP percapita(in millions of dollars)	.127	24	.200*	.930	24	.097
Productivity Index	.078	24	.200*	.962	24	.477

Competitiveness Index	.147	24	.194	.942	24	.183
Education	.172	24	.064	.923	24	.068
Technology and Innovation	.101	24	.200*	.949	24	.258
Bless you	.085	24	.200*	.960	24	.446

*. This is a lower limit of true significance.

to. Lilliefors significance correction

Figure 1 PBI Correlation

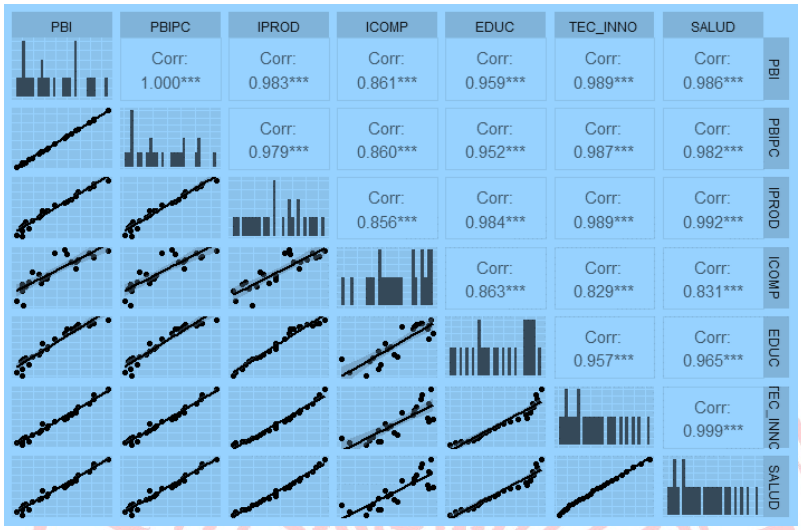


Table 9 Correlations

CORRELATIONS

		GDP percapita (in millions of dollars)	Productivity Index	Competitiveness Index	Education	Technology and Innovation	Bless you
GDP percapita(in millions of dollars)	Pearson correlation	1	.979**	.860**	.952**	.987**	.982**
	Sig. (bilateral)		<.001	<.001	<.001	<.001	<.001
	N	24	24	24	24	24	24
Productivity Index	Pearson correlation	.979**	1	.856**	.984**	.989**	.992**
	Sig. (bilateral)	<.001		<.001	<.001	<.001	<.001
	N	24	24	24	24	24	24
Competitiveness Index	Pearson correlation	.860**	.856**	1	.863**	.829**	.831**

	Sig. (bilateral)	<.001	<.001		<.001	<.001	<.001
	N	24	24	24	24	24	24
Education	Pearson correlation	.952**	.984**	.863**	1	.957**	.965**
	Sig. (bilateral)	<.001	<.001	<.001		<.001	<.001
	N	24	24	24	24	24	24
Technology and Innovation	Pearson correlation	.987**	.989**	.829**	.957**	1	.999**
	Sig. (bilateral)	<.001	<.001	<.001	<.001		<.001
	N	24	24	24	24	24	24
Bless you	Pearson correlation	.982**	.992**	.831**	.965**	.999**	1
	Sig. (bilateral)	<.001	<.001	<.001	<.001	<.001	
	N	24	24	24	24	24	24

**. The correlation is significant at level 0.01 (bilateral).

Table 10 Modelod Summary

Modelod Overview

Model	R	R square	Adjusted R square	Standard estimation error	Durbin-Watson
1	.987[a]	.974	.973	773.419	
2	.990[b]	.980	.978	698.917	
3	.993[c]	.986	.984	601.568	1.576

a. Predictors: (Constant), Technology and Innovation

b. Predictors: (Constant), Technology and Innovation, Competitiveness Index

c. Predictors: (Constant), Technology and Innovation, Competitiveness Index, Health

d. Dependent variable: GDP percapita (in millions of dollars)

Tabla 11 ANOVA[a]

ANOVA[a]

Model		Sum of squares	Gl	Quadratic mean	F	Itself.
1	Regression	491652138.316	1	491652138.316	821.918	<.001[b]
	Residue	13159885.017	22	598176.592		
	Total	504812023.333	23			
2	Regression	494553829.913	2	247276914.956	506.211	<.001[c]
	Residue	10258193.421	21	488485.401		
	Total	504812023.333	23			
3	Regression	497574347.426	3	165858115.809	458.319	<.[001d]
	Residue	7237675.908	20	361883.795		
	Total	504812023.333	23			

to. Dependent variable: GDP percapita(in millions of dollars)

b. Predictors: (Constant), Technology and Innovation
c. Predictors: (Constant), Technology and Innovation, Competitiveness Index
d. Predictors: (Constant), Technology and Innovation, Competitiveness Index, Health

Table 12 Coefficientsa

Coefficient

Model		Non-standardized coefficients		Standardized coefficients		
		B	Desv. Error	Beta	t	Itself.
1	(Constant)	8279.656	405.177		20.435	<.001
	Technology and Innovation	.783	.027	.987	28.669	<.001
2	(Constant)	4055.271	1771.512		2.289	.033
	Technology and Innovation	.694	.044	.875	15.742	<.001
	Competitiveness Index	68.435	28.079	.135	2.437	.024
3	(Constant)	11007.132	2848.694		3.864	<.001
	Technology and Innovation	1.928	.429	2.429	4.497	<.001
	Competitiveness Index	77.875	24.388	.154	3.193	.005
	Bless you	-1.406	.487	-1.571	-2.889	.009

a. Dependent variable: GDP percapita(in millions of dollars)

Model 2

PBIpc = b0 + b1*TEC_INNO + b2*ICOMP + b3*HEALTH+ μ (Assumption: μ = 0);

PBIpc =11007.132 + 1.928*TEC_INNO + 77.875*ICOMP - 1.406*HEALTH

Being:

GDPI = Gross Domestic Product per capita.

TEC_INNO = Technology and Innovation.

ICOMP = Competitiveness Index

μ = Other variables and errors.

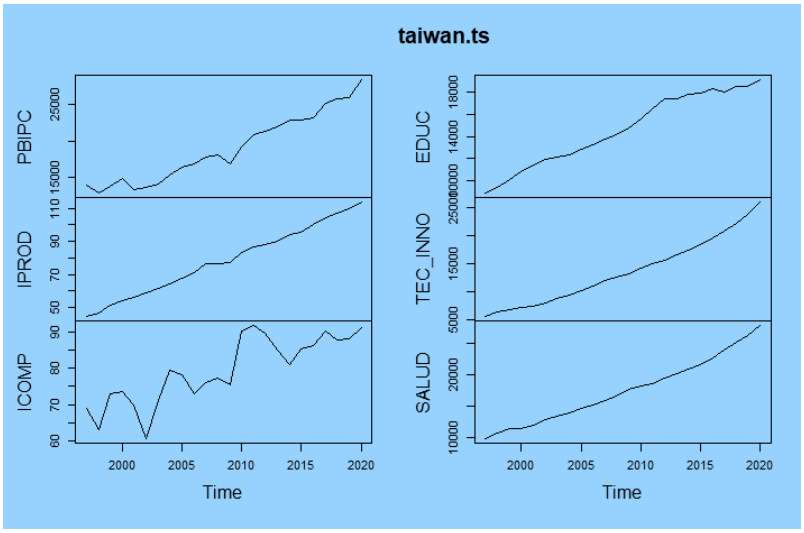
Bo = constant

b1= Marginal propensity of GDP with respect to Technology and Innovation investment

b2= Marginal propensity of GDP with respect to the Competitiveness Index

b3= Marginal propensity of GDP with respect to Health

Figure 2 Taiwan.ts



In the analysis of the statistical indicators of the variables, the Shapiro Wild normality test, Pearson coefficient, fisher's test and the P test and the individual test of the variables: Student's test, and Durbin-Watson statistic were used.

In Figures 1 and 2, it shows that during the period 1997 to 2020 the GDP per capita variables are correlated (P<0.05)

ANALYSIS OF DATA INTERPRETATION AND CONCLUSIONS TO THE SPSS MODEL

- The first estimated model is: PBIpc = 8279.656+0.783*TEC_INNO explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation with an adjusted coefficient of determination of 97.3%.
- The second estimated model is: PBIpc = PBIpc = 4055.271+0.694*TEC_INNO + 68.435*ICOMP explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation and positively on the competitiveness index with an adjusted coefficient of determination of 97.8%
- The estimated model t is: PBIpc = 11007,132 + 1,928*TEC_INNO + 7,875*ICOMP - 1,406*HEALTH explains that Taiwan's gross domestic production per capita depends positively on investment in Technology and Innovation, positively on the competitiveness index and in health with an adjusted coefficient of determination of 98.4%.
- The indicator of investment in Technology and Innovation is the most significant variable influencing a change in Taiwan's gross domestic production per capita
- The competitiveness index is the significant variable that influences a change in Taiwan's gross domestic production per capita.
- The State Health Index turned out to be highly significant in influencing a change in Taiwan's gross domestic production and also the productivity index.