Inovbiz: Jurnal Inovasi Bisnis 12 (2024) 166-170
INOVBIZ
Website: www.ejournal.polbeng.ac.id/index.php/IBP
Email: inovbiz@polbeng.ac.id

Demographic Bonus Situation as a Solution Economic Growth Using the Cobb-Douglass Productivity Approach Method in Medan Labuhan District

Mei Yusmansyah Permadi [1], Lastri Putri BR Sijabat[2], Dede Ruslan[3] ,Raina Linda Sari[4]

[1,2,3,4] Economics and Business Faculty, Universitas Sumatera Utara, Jl. Dr. T. Mansyur No. 9, Kel. Padang Bulan, Kec. Medan Baru, Kota Medan, Prov. Sumatera Utara, Indonesia.
mppermadi772@gmail.com, Sijabat.lastriputri@gmail.com, drasruslan@unimed.ac.id, raina.linda@usu.ac.id

ARTICLE INFO

Received: (June 23, 2024)
Received in revised: (June 28, 2024)
Accepted: (December 16, 2024)
Published: (December 30, 2024)

Open Access

ABSTRACT

The high population is not the reason, a factor causing the increased burden on the government to provide subsidies in various formal and non-formal sectors. In fact, the high population can be used as an opportunity for the government to carry out various positive economic activities, such as increasing the standard of living. Community life through growing training for productive workers in the field of entrepreneurship, training to become an entrepreneur both in cities and in rural areas, so, in this case, government activities to continue to race to improve the standard of living of the community which in the end can increase per capita income need to be supported. The Medan Labuhan community has activities in the coastal area that are the center of their economic activities. The reason the research focuses on this sub-district is that according to statistical data for the city of Medan, the productive age in this sub-district is very high, which is above 60% of the total population of Medan city. The method used in the research is the descriptive exploration approach, and the population in this research is people of productive age who live in the Medan Labuhan sub-district. The sampling technique used is nonprobability sampling, namely a sampling technique where not all members/elements of the population have the same chance of being sampled. The sampling location itself was the Medan Labuhan District.

Keywords: Population, productive age, population, labor

1. Introduction

The demographic bonus is a bonus or window of opportunity that a country enjoys due to the large proportion of the productive population (age range 15-64 years) in the population evolution it experiences. This phenomenon in Indonesia occurs because the demographic transition process that has been developing several years ago was accelerated by our success in reducing fertility rates, improving the quality of health, and ensuring the success of development programs from the New Order era until now. The success of programs such as family planning over the previous ten years has shifted the population under 15 years, which was initially large at the bottom of the Indonesian population pyramid, to an older population (productive 15-64 years). A pyramid structure that "bulges in the middle" is somewhat advantageous because, in this way, the burden of dependency or economic support that must be provided by the productive age population to the child and elderly population becomes lighter.

The demographic bonus, which various economists believe later becomes a reference for this country's income, can be seen from the national income, which is supported by the majority of high levels of public consumption, investment, government spending, and net exports. The government should support the utilization of this level of public consumption.

Improving various quality public infrastructures makes foreign investors compete to invest their funds in the country so that people can enjoy public facilities well. This high public purchasing power encourages the domestic economy to overcome economic problems such as inflation, unemployment, etc. Talking about unemployment in some population science literature, people who are looking for work are included in the population group called the labor force, based on the productive age category in Indonesia, but not all people of productive age are of labor force age because some are working and some are looking for work. Apart from the

* Mei Yusmansyah Permadi
E-mail addresses: mppermadi772@gmail.com (Universitas Sumatera Utara)

description above, the quality of productive human beings must be further improved, such as by providing entrepreneurial competency training in remote areas. Because the majority of the productive age group in Indonesia is in rural areas, Sumatra is a province rich in natural resources. Sumatra also has a reasonably extensive water area, so many large ports are located in the North Sumatra area.

One of the significant ports that transit export and import goods is the Belawan area, which is included in the Medan Labuhan sub-district. Some researchers say that areas near the water have high population growth rates, but this is untrue. Accompanied by economic growth. This rapid population growth creates a problem where there are many productive ages compared to non-productive ages, but their performance is separate from not accompanying this productive age. Many aquatic communities have variable income levels because their income depends on the wealth in these waters; in other words, many work as fishermen. Fishermen do not have a fixed income because they depend on the weather and the richness of aquatic biota. So there are many people who, if they do not get the results of their arrest, will not get any income. This also impacts economic development; the government should warmly welcome the high number of productive people and be empowered to use it. However, this is not the case in this country; they even stated that the large population in the productive age is currently a threat to the country and the development of the country. This makes researchers want to research the Belawan area, which is located in the Medan Labuhan sub-district.

This research aims to determine how significant the role of the productive age, which consists of young people, plays in several formal and non-formal sectors. By increasing returns to scale, returns to scale increase with a fixed number of workers (Cobb-Douglas Function). To achieve this goal, researchers carried out stages including 1. Classify the productive age in the sub-district. 2. As well as analyzing production factors in the form of (capital and labor) which contribute to economic growth in Indonesia based on classical theory by Cobb-Douglass.

The Cobb–Douglas Production Function was first introduced by the CW. Cobb and PH. Douglas and published in the journal American Economic Review in 1928. The Cobb-Douglas function is a function or equation that involves two or more variables, where one variable is called the dependent variable, and the other is called the independent variable [18]. The Cobb-Douglas production function with a multiplicative error term is formulated as $Qt = \beta 1Lt + \beta 2Kt + \beta 3et$ where Qt is the output; Lt is labor input; Kt is input capital; $\beta 1$ is a technological parameter; $\beta 2$ is the elasticity of labor input; $\beta 3$ is the input capital elasticity; et is the random error term. The Cobb-Douglas function with an additive error term is formulated as $Qt = \beta 1Lt + \beta 2Kt + \beta 3 + et$ where Qt is the output; Lt is labor input; Kt is input capital; $\beta 1$ is a technological parameter; $\beta 2$ is the elasticity of labor input; $\beta 3$ is the input capital elasticity; et is the random error term.

Therefore, in this research, researchers want to determine how significant the role of the demographic bonus, which has the value of opportunity moments, is on economic growth.

Economic activity in the form of achieving the economic growth target in 2013 of 6.5% is considered reasonable by the government, even though economists think it has yet to be entirely successful behind this percentage figure. Data from Bank Indonesia states that public consumption fully supports economic growth. The level of investment, government expenditure, and net export supports the rest. This means that this growth is also called low-quality economic growth. Therefore, there are steps and efforts that our government must take to achieve adequate and quality economic growth so that it can bring a positive impact on society and achieve welfare capacity targets (community welfare capacity).

Economic growth is an increase in production results (output) at the actual economic level, measured and quantified through the number of changes in production results each year Michel P. Todaro: 1997. at the same time, the characteristics of a country's economic growth are Population growth rate and per capita product, through an increase in per capita, high rate of structural change, urbanization, expansion of developed countries, and flow of capital goods and people between nations.

Professor Simon Kuznets, one of the great economists who won the Nobel Prize in economics in 1971 for pioneering the measurement and analysis of the history of national income growth in developed countries, has provided a relatively detailed definition of economic growth. Country. According to Kuznets, economic growth is an increase in the country's long-term capacity to provide various economic goods to its population. The increase in capacity itself is determined or made possible by progress or adjustments in institutional and ideological technology.

As for calculating the economic growth formula:

$$\frac{PNBt - PNBt\text{-}1 \times 100\%}{PNBt\text{-}1}$$

Information:
PNBt: National Income for the current year.
PNBt-1: National Income of the previous year.

In contrast to the modern theory put forward by the economist above, classical economic growth put forward by Cobb-Douglas stated that production output and economic growth can be influenced by 3 factors of production, capital which is symbolized by K, technology, which is symbolized by the letter A, while labor symbolized by L.

So Q=f(K,A,L) or,
$Q=A.K^{\alpha}.L^{\beta}$

If the production output above is converted into econometric form, the function can be formed via natural logarithm (Ln) and converted into a non-linear to linear model.

$$Q = A.K\alpha.L\beta$$
$$Ln = LogA + \alpha logK + \beta log\ L + \varepsilon$$

Information:
LogA: Technology that is constant/fixed.
αlogK : Parameter/capital estimator.
βlogL: Labor parameter/estimator.

Through these three production factors, Cobb-Douglas believes that economic growth can be increased by maximizing MPK and MPL, especially in the case of developing countries. The case above is calculating economic growth. The estimator value is increasingly elastic if MPK and MPL are >0. The elasticity of the two estimators allows the relationship to economic growth to be better (or close to >0), but if the MPK and MPL values are <0, then the estimator values are inelastic, meaning that the relationship between the two estimators to economic growth is negative, which is different from the isoquant/isocost assumption. (Production behavior) on production output in a non-linear production function, which the researchers did not find in this study.

According to Michel. P Todaro: 1997, there are 3 main factors or components in the economic growth of every nation and the three are: 1. Capital accumulation, which includes all forms or types of new investment invested in land, physical equipment, physical equipment, and capital or human resources; 2. Population growth, which in the next few years will increase the number of the workforce; 3. Technology advances.

A portion of income is saved and reinvested to increase it in the future. Procurement of new factories, machines, and raw material equipment increases the physical capital stock of a country (i.e., the real "net" value of all productive capital goods physically), which allows for an increase in output in the future. These direct productive investments must be complemented by various supporting investments called economic and social infrastructure. Examples include the construction of highways, the provision of electricity, the provision of clean water, the improvement of clean water and sanitation improvements, the construction of communication facilities, and so on. All of this is necessary to support and integrate all productive economic activities.

Apart from direct investments like that, indirect investments can also be made, such as developing human resources, through improving the quality of human capital, so that in the end, it will have the same positive impact on the number

production will be even more significant considering the continuing increase in population. Quality formal education, educational programs, on-the-job training or internships, courses, and other informal education must be more effective. M.P. Todaro: 1992. Population and labor force growth (several years after population growth) is traditionally considered a positive factor that spurs economic growth. A more significant number of workers means an increase in productive workers, while population growth is more significant.

Like other big cities in Indonesia, Medan is a city that has a large number of people of productive age. The number of female and male residents has increased from year to year, and the high fertility rate in the city of Medan gives the city of Medan make this city a birth rate value. >death, as a result, the number of productive age continues to increase (BPS BKKBN SUMUT, 2012).

Table 1. Medan City Residents

Medan City residents aged 15 years and over who are included in the labor force age group and gender 2008-2012			
Age Group)	*male*	*female*	Total
(1)	(2)	(3)	(4)
15-19	41985	26375	68360
20-24	81171	54860	136031
25-29	82147	54831	136978
30-34	93717	40284	134001
35-39	67000	31815	98815
40-44	74000	37269	111269
45-49	47560	34750	82310
50-54	55760	30580	86340
55-59	27922	12478	40400
60+	26053	15586	41639
Jumlah /*Total*	597315	338828	936143

Source : National Labour Force Survey 2012

Based on the data above, the productive age from 2008-2012 for the last 4 years, accumulated from year to year, has increased. According to BPS, the productive age is 15-59 in Medan. Women number 41985 men, 26375. The total population of productive-age women and the number of males is 68,360. This shows that the growth of the productive age population above can be used as an opportunity by the city and central government to create an economic policy guided by society's welfare.

The time has come to discuss the third component, namely technological progress, which is the most important economic growth source for most economists, especially technocrats. In the simplest sense, technological progress occurs due to the discovery of new ways or improvements to old ways of doing things. Handle traditional jobs such as planting corn, making clothes, or building houses. Post-Keynesian experts are those who try to formulate an expansion of Keynesian theory. Post-Keynesian expands the system into a theory of output and employment opportunities in the long term, which analyzes short-term fluctuations to determine long-term economic developments.

In this analysis, the critical issues are:
Conditions are necessary to maintain steady growth at the total employment income level without experiencing deflation or inflation. Is that revenue increasing at such a rate that it can prevent long or continuous traffic jams?

Harrod and Domar emphasize the critical role of capital accumulation in the growth process. The difference is that they emphasize that capital accumulation has a double value, namely generating income and increasing production capacity by increasing the capital stock. In contrast, the

classicists emphasize the capacity of capital accumulation but assume that there is sufficient demand. Keynes emphasizes the issue of sufficient demand but ignores capacity problems. Harrod and Domar analyze the capacity and demand that must be considered because of investment. The effect of forming new capital tools: New capital will still not be able to be used because if it is used, the results cannot occur because income is fixed; new capital will be used at the cost of the tools previously existing capital, and new capital will replace labor.

Because of the above effects, capital formation must be accompanied by increased income and the unemployment of capital and labor. An increase in income is necessary to avoid excess capital equipment and unemployment of the workforce. Social media can be defined as a channel that provides facilities for collaboration and activities where users can represent themselves and collaborate.

Because investment increases production capacity and income, the level of increase in investment equals the increase in income and production capacity requires the following theoretical assumptions: The economy is already at total employment income, there is no government and foreign trade, there is no delay in adjustment (lag of adjustment), and the marginal desire to save and the average desire to save are the same. Marginal propensity to save and the Capital coefficient is fixed.

From this theory, it is stated that an increase in investment will increase production capacity and income. The economy faces a problem, namely that if more than today's investment is needed, unemployment will occur. If there is investment today, more investment will be needed tomorrow to increase demand so that production capacity increases.

2. Method

This research used a descriptive exploration approach and was carried out for 16 (sixteen) weeks in 4 (four) stages. The research in question is a literature study, then the population and sample are determined, data is collected, and data is finally analyzed. At this stage, a literature review is carried out by examining relevant literature titled PKM-P program. The sources used include books, journals, and the help of internet search engines. The population in this study is people of productive age who live in the Medan Labuhan sub-district. The sampling technique used is a nonprobability sampling technique, namely a sampling technique where not all members/elements of the population have the same chance of being sampled. The sampling location itself was the Medan Labuhan District location.

Data collection in this research was carried out using documentation studies, namely how to collect data by looking directly at the area being studied and collecting data from related agencies, starting from sub-district, sub-district data, and BPS data. Then, this data is analyzed and reprocessed. Data analysis itself is carried out by collecting all the data that has been carried out. Later, we will re-examine theoretical studies and evidence in the field, measuring the output produced by each production factor and how significant the role of energy is productive, which can contribute to the economic growth of GRDP and national GDP.

3. Result and Discussion

Table 2. Result Test

	Lahan	TK (Tenaga Kerja)	TP (Total Produk)	MP (Marginal Produk)
	(1)	(2)	(3)	(4)
1	Tetap	4	120 pcs	30
2	Tetap	12	360 pcs	40
3	Tetap	15	480 pcs	64
4	Tetap	20	800 pcs	70
5	Tetap	25	1150 pcs	80
6	Tetap	30	1550 pcs	100
7	Tetap	35	2050 pcs	120
8	Tetap	40	2650 pcs	

MP 1 = ∂TP/∂TK = (TP2-TP1)/(TK2-TK1) = (360-120)/(12-4) =240/8 = 30

Likewise, with the value of MP2, MP3, and so on, From the MP value of the product above, the increase in TK also affects the MP value. The MP value increases return to scale (returns to scale that continue to increase), which is caused by the increase in productive young TK and increases efficiency in achieving goals. An effort.

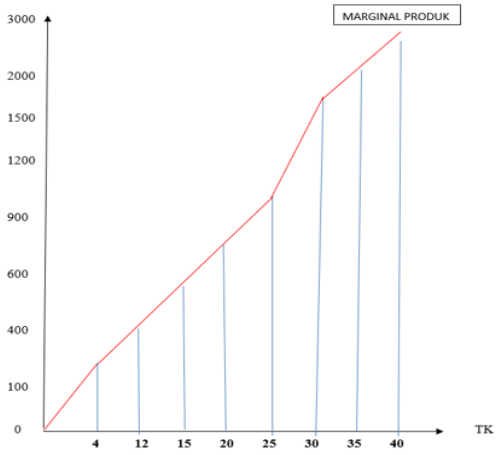

Figure 1. MP Value

Based on the curve above, it can be concluded that the increase in labor is positively related to the output produced so that the MP (Marginal Product) line goes straight up. So this is called Increasing Return To Scale (scale of results that continues to increase) for Pekan Labuhan and Nelayan Indah sub-districts. We cannot present it in this research due to the limited data we obtained from research objects in the field.

The productive age who become workers in MSMEs triggers the increase in output in these MSMEs. There are several reasons the increase in labor also increases production output in these MSMEs, including: 1. Psychologically, the spirit/motivation of the productive young age is

perfect, from in old age, it is not surprising that many developed countries recruit young people to become skilled, competent workers.2. The desire to meet their daily needs, primarily when young people are known as consumptive humans, encourages them to work freely, without any pressure, so that they are moved to get the results targeted by the MSMEs.3. Young people have better intelligence or grasping power than those aged 30 years and above. Moreover, many other factors enable young people to increase their production output.

4. Conclusion

For a better understanding of the public, responsiveness in a productive age helps or makes it easier to manage daily life.

The Medan Labuhan District government should carry out outreach and training for the productive age so that in the future, the people in the Medan Labuhan District can realize the demographic bonus.

It is expected that the government can maximize the increase in the productive age level so that local communities can support a better life in the future. The research aims to provide industrial work practices and entrepreneurial internships for those in their productive age. This will increase labor intensity and help absorb the productive age group into the world of work and MSMEs (Micro, Small, and Medium Enterprises). Ultimately, this will lead to an increase in people's income and purchasing power, which in turn increases consumption. This correlation is positively associated with economic growth. Providing industrial work practices and entrepreneurial internships for the productive age to increase labor intensity so that the productive age can be well absorbed in the world of work and MSMEs, thereby increasing people's income and purchasing power which ultimately increases consumption which is positively correlated with economic growth

Apart from that, there must also be special policy efforts by the government to maximize talented and trained personnel to be trained to become entrepreneurs and professionals, such as Japan, South and North Korea, these three countries have succeeded in increasing their productive age to advance their own countries, even Many scientists were born from these three cities who succeeded in creating superior technology and human resources. The government must take quick action towards this productive age to be encouraged to advance the nation and state, lest the productive age become a burden on the state if it does not immediately make a special policy that supports this productive age

References

Aplikasi Statistika 2021 Yogyakarta Media Pressindo

Kotler, Philip Dan Gary Amstrong 2002. Dasar-dasar Pemasaran. Jilid 1 Jakarta: PT Indeks

Kotler, Philip Dan Kevin Lane Keller 2009. Manajemen Pemasaran. Jilid 2 Jakarta: PT. Indeks

Kuncoro, Prof. Mudrajad Ph. D 2013. Metode Riset.Edisi ke 4 Jakarta: Erlangga

Makroekonomi:Pertumbuhan Dan Pembangunan Ekonomi 2021 JakartaPers PT.Raja Grafindo Persada 2020 Menyongsong Bonus Demografi

Manurung, Mandala Dan Prathama Rahardja 2008. Pengantar Ilmu Ekonomi Edisi ke 3 Jakarta: Fakultas Ekonomi Universitas Indonesia

Metode Numerik Untuk Teknik. Penerapan pada Komputer Pribadi 2020 Universitas Indonesia

Metodologi Penelitian Kuantitatif:Makna Populasi dan Sampel 2020 Medan Citapustaka Media Perintis

Pembangunan Ekonomi Dunia Ketiga 2020 New York University of New York

Pengantar Ilmu Ekonomi (MIKROEKONOMI & MAKROEKONOMI 2020 Jakarta Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.

Pengembangan Ekonomi Kreatif: Mengubah Sampah Jadi Berkah 2020 Parahita: Jurnal Pengabdian Kepada Masyarakat19-24

Peran Media Sosial Bagi Humas Pemerintah 2023 Jurnal Komunikasi 92-101

Phindyck, Robert S. dan Daniel L. Rubinfiels 2012. Mikroekonomi. Edisi Kesembilan. Jakarta: Erlangga

PT. Hutchison 3 Indonesia, 2022, http://tri.co.id. (Diakes pada tanggal 20 Oktober 2023)

Republik Indonesia. 2016. Undang-undang No. 19 Tahun 2016 Tentang Undang-undang Informasi Teknologi dan Elektronik.

Teori Ekonomi Mikro : Suatu Analisis Produksi Terrapan 2021 JakartaPT. Raja Grafindo Persada

Tjiptono, Fandy Ph. D & Gregorius Chandra 2012. Pemasaran Strategik. Yogyakarta: Andi.