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A COMPARATIVE STUDY OF DEMOGRAPHIC DIVIDEND BETWEEN SINGAPORE AND OTHER SOUTH-EAST ASIAN NATIONS

Sambit Chatterjee

Research Scholar

Department of History,

Jadavpur University, Kolkata, India

Abstract: Singapore is one of the most important sovereign island nations in maritime South-East Asia and also a founding member of the Association of South-East Asian Nations (ASEAN). The country is also known as the Garden City or the Lion City and is composed of one main island, one islet (Pedra Branca) and 63 small islands out of which only 3 are being inhabited. The island nations of South-East Asia, along with Singapore garnered international interest through the formation of ASEAN, the intra-regional, political and economic union primarily formulated in 1967 through patronage from Singapore, Thailand, Indonesia, Malaysia and Philippines. Among other ASEAN countries, Singapore achieved and sustained a massive economical as well as societal growth, becoming one of the Four Asian Tigers. Singapore has the most robust economy in Asia with AAA sovereign rating from all major rating agencies and the country attained high ranking in primary social indicators like housing, quality of life, education and Healthcare. The demographic dividend of Singapore plays a key role in its astronomical and meteoric economic success since the plunder and carnage during World War II. It is to be noted that nearly 44% of the Singaporean workforce are non-Singaporeans with over 80% foreign workers in the construction industry and 50% in the Service industry. According to prevalent statistics, the median age of population of Singapore is 40.5 (2017) and it is coupled with the lowest total fertility rate in the World. Therefore, to sustain the prevailing economic growth, the government had to focus on the demography of Singapore and adjust the immigration policy accordingly in order to maintain its working age population. Therefore, an analysis of some of the characteristics of demography of Singapore will be beneficial for determining the various aspects of growth and development of the country. In this paper, an attempt has been made to understand the gradual evolution of demography of Singapore and that data has been closely compared to the overall demographic dividend of South-East Asia and some ASEAN countries in order to understand the trend and pattern of demographic dividend of Singapore compared to ASEAN countries during the timeline of 1950 to 2100.

Keywords: Demography, Economic growth, Development, Demographic Dividend, ASEAN

1. INTRODUCTION

Demographic Dividend has been defined by the United Nations Population Fund (UNFPA) as "the economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15 to 64) is larger than the non-working-age share of the population (14 and younger, and 65 and older)". According to UNFPA, this indicates an acceleration and growth in economic productivity when there exists larger number of people in the workforce relative to the number of dependants. This indicates that a country which has a growing number of young people as the working population along with lower fertility rate may have the potential to garner a demographic dividend.

Among the various mainland and maritime island nations of South-East Asia, Singapore has experienced a robust economic growth and reincarnated and reconstructed itself since World War II (IMF,1996). The demography of the South-East Asian region has changed dramatically over the last five decades and the median age of population in all of South-East Asia has been steadily increasing while in Singapore this rate of increase is comparatively lower. This indicates that Singapore has had a relatively younger population since its independence along with very low dependency rate which directly contributed to a higher number of working population that had fuelled the economy throughout its phases of rapid growth. Therefore, Singapore as well as the rest of the nations of South-East Asia significantly reaped the benefits of a demographic dividend since their independence and this natural advantage in turn boosted the economic growth in its early phases. Alongside, high levels of immigration and comparatively lower emigration, has always helped the country to maintain a younger working population and therefore, this paper will examine and elucidate how far

Singapore has been benefitted from their unique demography, population policies and reaped the dividend compared to the overall demographics of the South-East Asian region.

2. OBJECTIVES

This research work primarily has the following objectives:

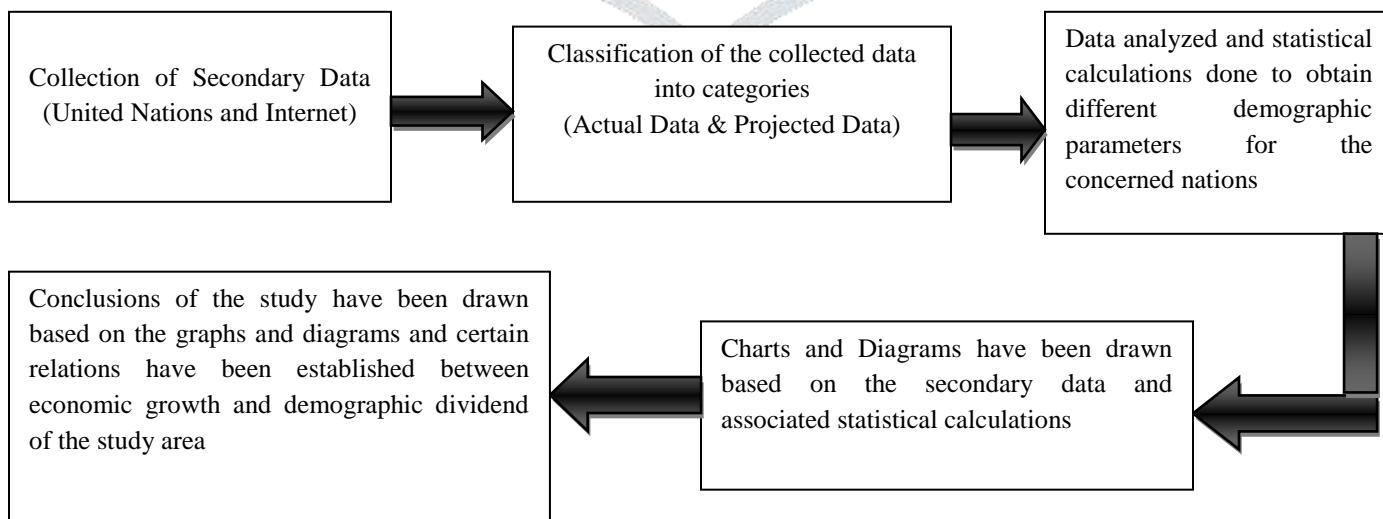
- To obtain the demographic status of Singapore among its neighbors through analysis and plotting the Fertility and mortality patterns of Singapore and then by comparing that with the South-East Asian data
- To find out the Pattern of population ageing in Singapore and to compare that with population aging in South-East Asia and to see that in which direction the median age of the overall population in Singapore has moved from the year 1950 to a projected 2100.
- To observe the dependency pattern and old age population in Singapore, the Total Dependency Ratio, along with Child Dependency and Old Age Dependency of Singapore is plotted from the data set and then compared with the data of South-East Asia during the same time.
- In this paper, the median age of population of Singapore is also compared with South-East Asian median age to find out whether the population of Singapore is relatively young or old.
- This paper attempts to learn about the immigration and emigration pattern of Singapore along with some of the other South-East Asian countries in order to find out whether Singapore had more immigration due to the massive industrialization in 1980 or like some other South-East Asian countries, it had a steady rate of emigration. The Net Migration Rate (NMR) of Singapore is plotted and compared along with some other South-East Asian countries which reflected a diverse Net Migration pattern.

3. METHODOLOGY

This study is essentially an analysis of secondary data. The data required for the analysis of different periods are collected from the following sources:

1. United Nations data (From 1950 to 2100)
2. Internet (Various Online sources and Journals)

Based on the collected data this paper is proved to be an empirical one. The Data ranges from 1950 to 2100 within which it has been demarcated as actual data and projected data. The Actual data is the one obtained from 1950 to 2022 while the projected data explains the demographic parameters from 2022 to 2100. Both actual and projected data has been taken into consideration and therefore they have been mapped on to various charts and diagrams in order to obtain a clear picture of the past, present and the future trends and patterns of the demographic dividend. The following flow chart elucidates the different methodologies adopted while working on this paper:



4. RESULTS & DISCUSSION:

4.1 Demographic Transition:

Demographic transition deals with a transition from higher birth and death rates towards lower birth and death rates as the country moves towards an industrialized economic system from pre-industrial era. Chart 1 shows the rate of population change in South-East Asia and Singapore based on actual and projected data obtained from United Nations database. The rate of natural change for Singapore will become negative between 2045 and 2050 (-0.01 in 2045-50) whereas South-East Asia will experience a negative rate of population change from 2065 (-0.02 in 2065-70), almost twenty years after Singapore.

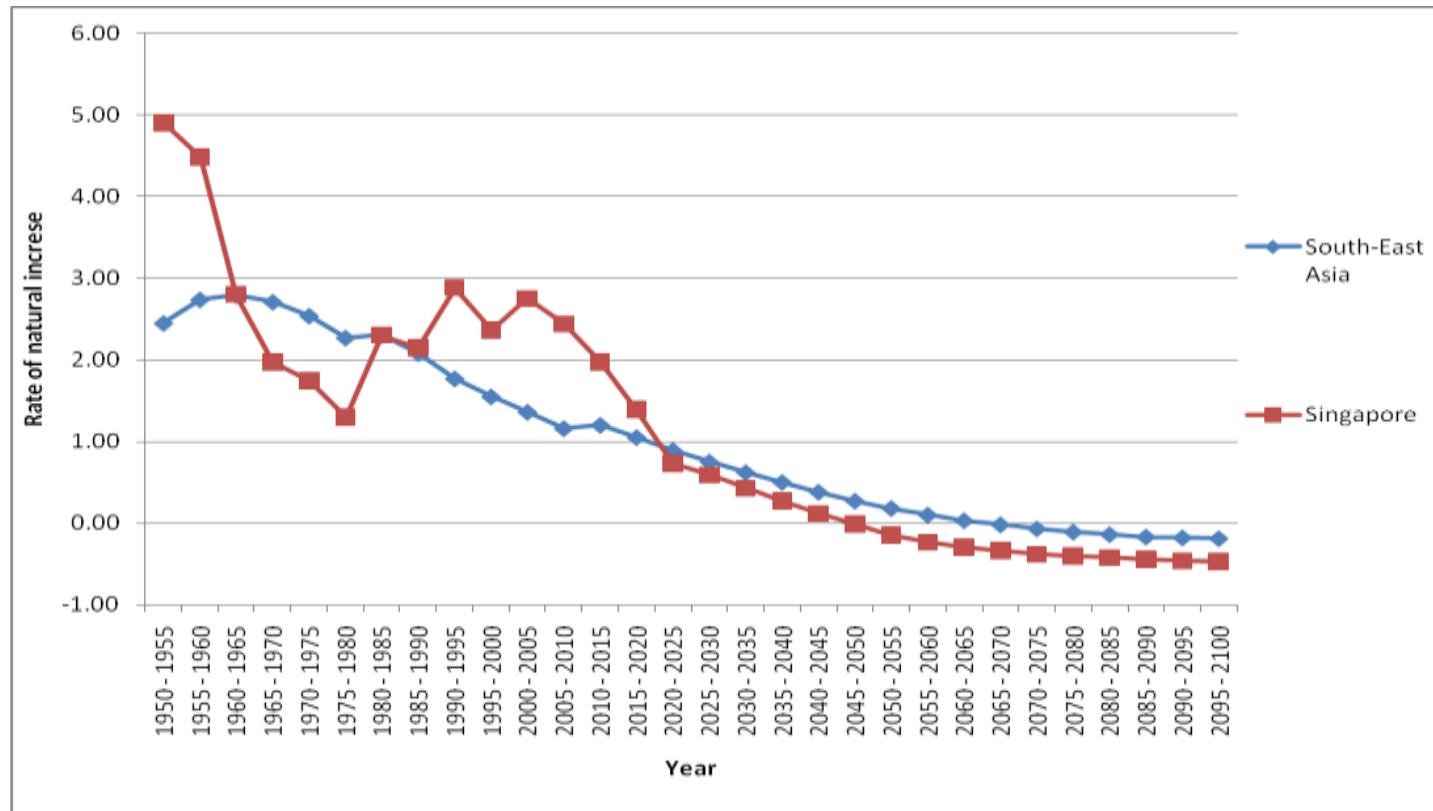


Chart 1: Annual rate of population change

The annual rate of population change indicates how the population of a country changes over time. A positive growth indicates the population is rising whereas a negative growth signifies a fall in total population. Since 1965 the total population in Singapore had an upward rising trend. The total population of Singapore will peak in 2045 (6686 thousands) due to ‘population momentum’. From 2045 onwards, the total population will gradually fall due to very low birth rate and comparatively high death rate. The rate of natural change for Singapore will become negative between 2045 and 2050 (-0.01 in 2045-50) whereas South-East Asia will experience a negative rate of population change from 2065 (-0.02 in 2065-70), almost twenty years after Singapore. Both South-East Asia and Singapore since 1950 have followed the general population change and growth pattern of the world. Singapore had a falling rate of population change from 1950 to 1980 due to adoption of family planning programme. Then the rate of population change started to rise and it peaked at a 2.88% change in population between 1990 and 1995 (Data of United Nations). As the total population of Singapore is projected to fall from 2040 onwards, the rate of population change is also projected to become negative from 2045, indicating a negative change in population, resulting in a continuous fall in the total population of Singapore.

South-East Asia, compared to Singapore, had a uniformly diminishing rate of change of population over the years, indicating the change in population to fall over time and then gradually become negative which will result into a fall of the total population. Singapore is expected to have a negative rate of population change in 2045, whereas South-East Asia will experience its first negative change in population growth in 2065, almost two decades later than Singapore which indicates that the total population of Singapore is expected to fall earlier and it will remain lower than that of South-East Asia.

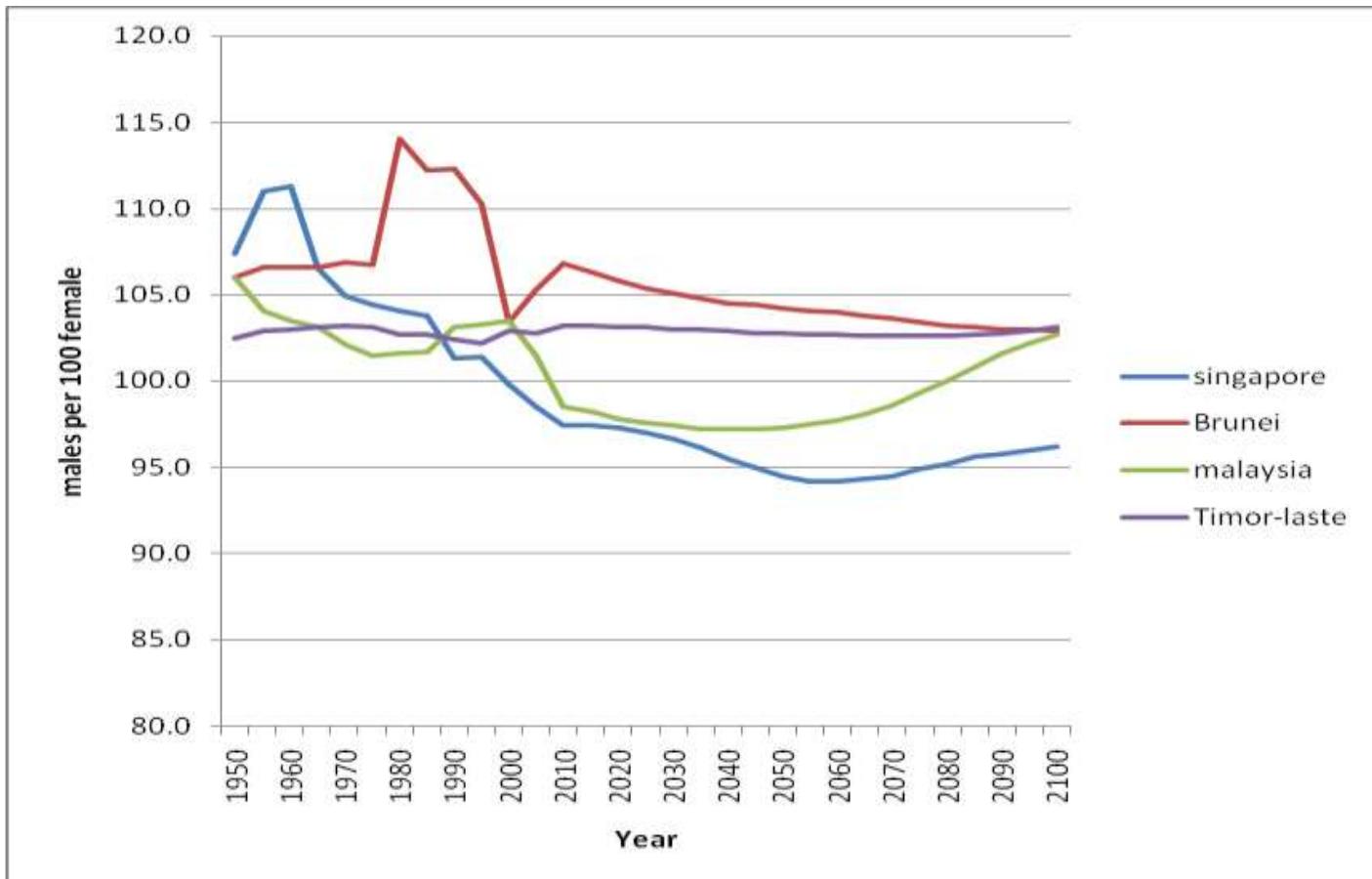


Chart 2: Sex ratio of the total population

The Singapore demography, when compared with some diverse countries like Malaysia, Brunei and East-Timor, shows a different pattern of male to female sex ratio. Unlike the other countries of South-East Asia, in Singapore the female population grew more than the male population over time and the above chart 2 elucidates the number of males per 100 female populations in Singapore and other three South-East Asian countries namely: Brunei, Malaysia and East-Timor. These three countries other than Singapore have recorded a diverse pattern of sex ratio among all the other South-East Asian countries. In chart 2, it can be seen that Brunei records a higher number of male per 100 female throughout whereas Singapore, though initially having more male per 100 female populations, but after 2000, number of males per 100 female started to decline (99.8 males per 100 female in 2000). Singapore thereafter recorded lesser male population per 100 female populations. East-Timor on the other hand has had more males per 100 female similar to Brunei whereas Malaysia, reflects a similar trend like that of Singapore, having lesser male per 100 female (98.5 males per 100 female in 2010).

Another significance of this comparison is that, by 2100, the estimated number of males per 100 female in all three countries (Malaysia, Brunei, East-Timor) will nearly merge and the number of males will be relatively higher per 100 females, (102.9 males in Brunei, 102.7 males in Malaysia, 103.1 males in East-Timor per 100 female) whereas only in Singapore, the picture will remain somehow unchanged. The male population per 100 female will be distinctly low (96.2 males per 100 female in 2100, Singapore). This male to female ratio pattern is a unique demographic feature of Singapore.

The Singapore demography, like the overall South-East Asia, follows a unique feature of higher number of female over male population. While some countries like Thailand, Brunei, Laos, Malaysia, Timor-Leste will tend to have an equal share of male and female or more male per 100 female population by 2100, Singapore on the other hand projects a higher rate of fall in male population than that of female and though the overall population will fall over time, the male population falls at a higher rate than the female population, resulting a female surplus demography. This pattern had not been significant always, during 1950 to 1995, the male population had been more than that of female. Since 2000 and till a projected 2100 for these hundred years, the number of female seems to overpower number of men in Singapore although the total population will fall significantly over time, resulting the Singapore demography a female dominated one. During 2040-2050, the population will reach maximum and eventually population will fall. Also the number of women will decrease over time.

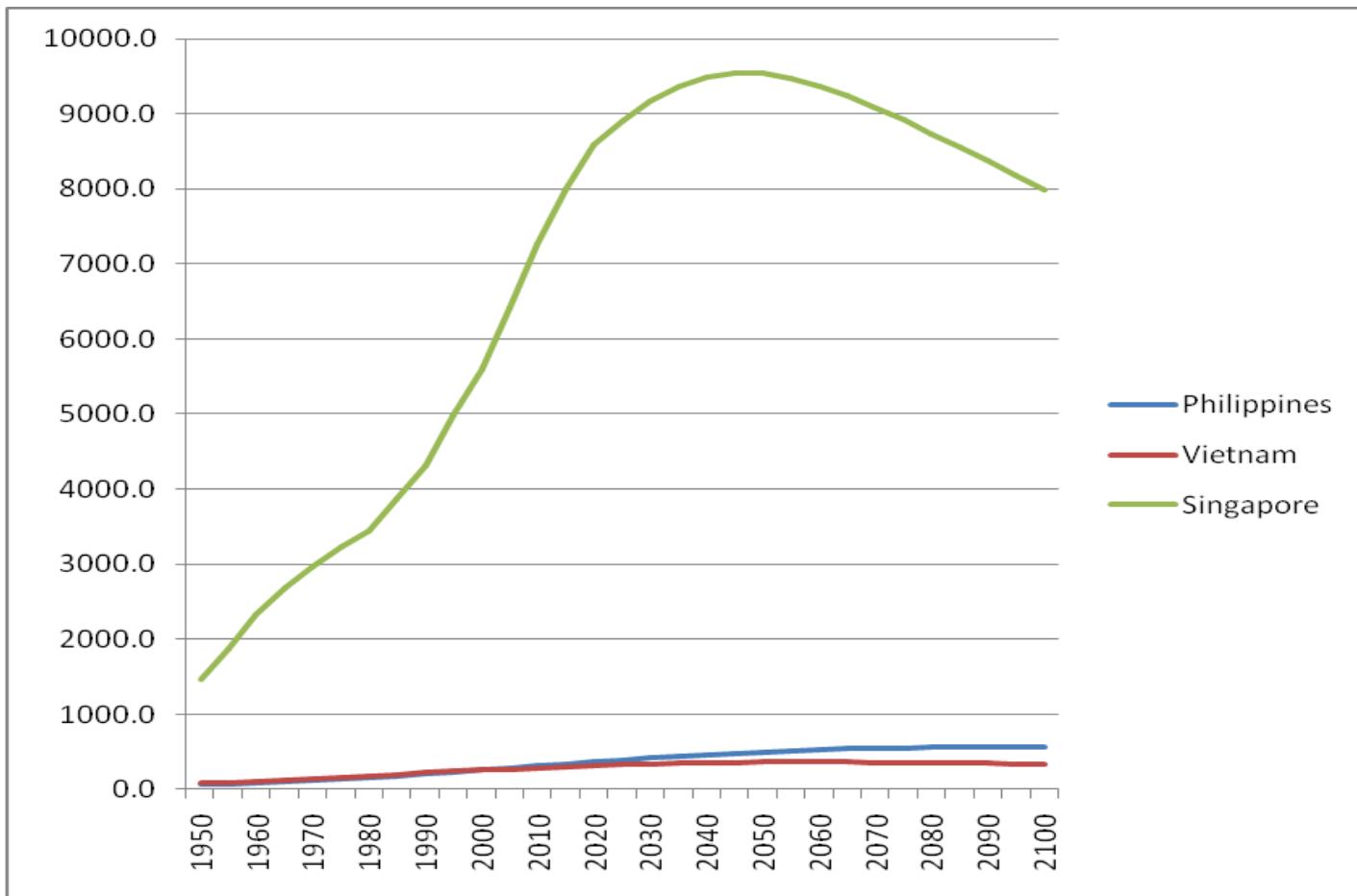


Chart 3: Population density of Singapore, Philippines and Vietnam

The population density of Singapore, compared to overall population density of the South-East Asia or some countries of South-East Asia, has been very high over the decades. Singapore has had a population boom during the post world war era and since independence in 1965 the population growth had been steady and constantly rising. The population density (People living per square kilometer) of Singapore in 1950 was 1460.1 and in 1965 it was 2685.1 whereas in 1950, the population density of Vietnam had been a mere 80 and in Philippines it was 62.3 according to the data of United Nations. The population density of Singapore was up to thirty times higher than South-East Asian countries like Philippines or Vietnam between 1950 till projected data of the year 2100.

Chart 3 shows the population density of three countries: Singapore, Vietnam and Philippines. Compared to Singapore, Vietnam and Philippines had a minor population density, 80.0 in Vietnam and 62.3 in Philippines during 1950, almost twenty times less population dense than that of the then Singapore. The above graph shows the population density pattern of Singapore, compared to the other two nations. Singapore has a very high population density and according to projected data it will peak in the year 2045 whereas, the population density in the other two nations will slowly rise despite initially being very low. Also, according to projected data till 2100, Philippines is likely to be more population dense than Vietnam.

The reason of such high level of population density rising in Singapore mostly post 1980 era is because of the massive industrialization in Singapore from 1980 and also due to high level of immigration. Singapore today, is the “2nd densest sovereign state” in the world. By 2045, according to projected data, Singapore will have the maximum population density (9550.8 persons/Sq Km) and also will maintain to be the most population dense country in South-East Asia.

4.2 Fertility Rate:

Crude Birth rate (CBR) of South-East Asia has always been higher than Singapore. CBR of Singapore is constantly falling since 1965.

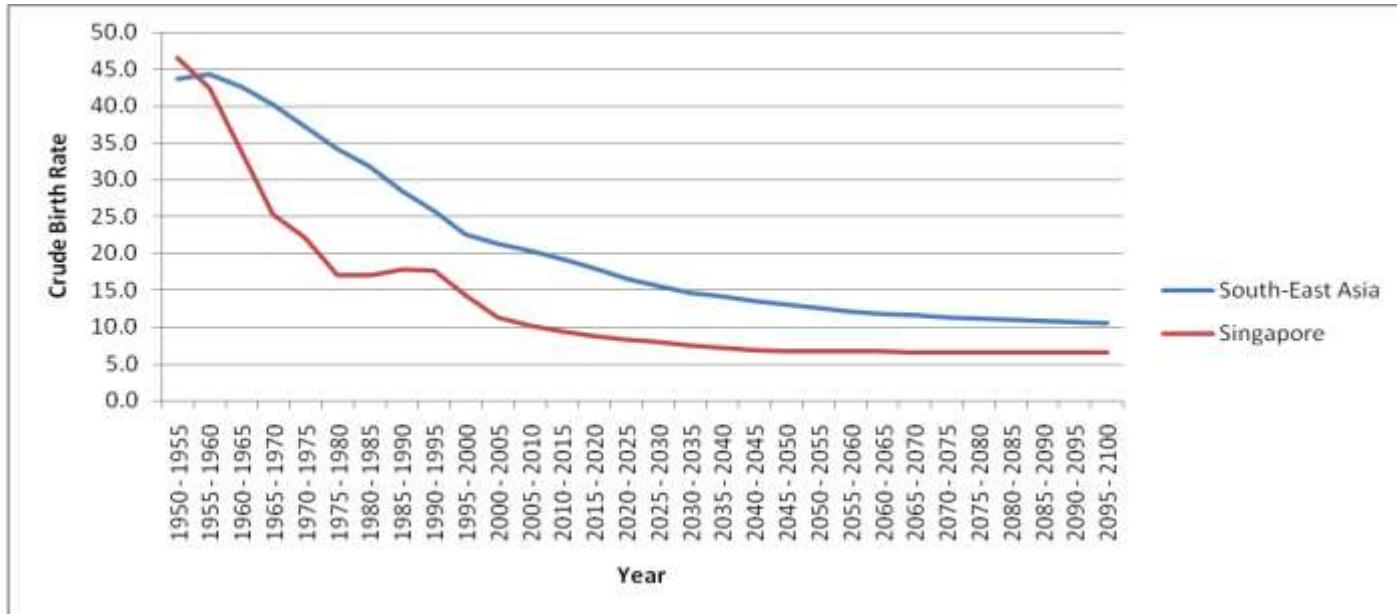


Chart 4: Crude Birth Rate (South-East Asia & Singapore):

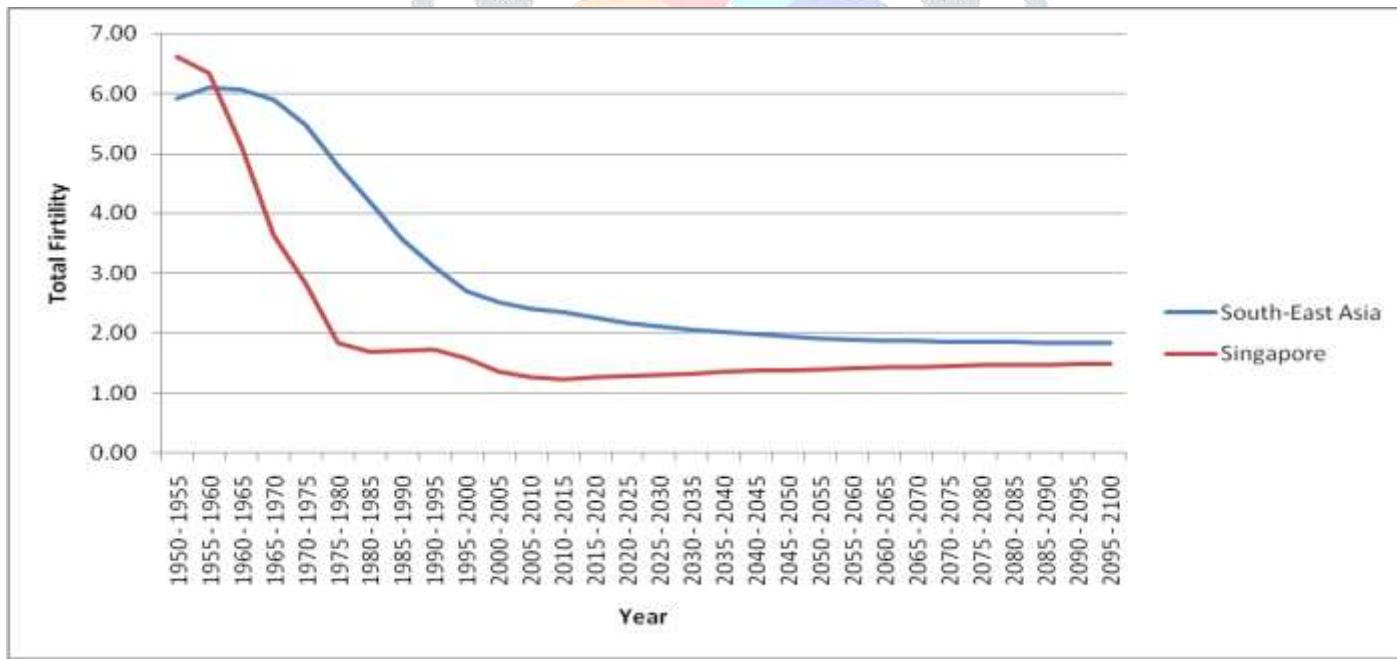


Chart 5: Total Fertility Rate, Singapore among South-East Asia

Chart 5 shows the Total Fertility Rate (Children per woman) pattern in both Singapore and the overall South-East Asia, where both have almost followed a similar pattern over the years. From 1970 onwards, the South-East Asian fertility rate dropped but still had always been higher than that of Singapore. Total fertility rate (children per woman) in Singapore during 1950 was 6.61 while in South-East Asia as a whole; it was 5.92 both well above the replacement level. The fertility rate in Singapore dropped significantly from 1960 onwards (5.12 in 1960, 3.64 in 1970, and 2.82 in 1975) due to the government initiatives, but in South-East Asia the fertility rate was growing constantly from 1950 to 1970.

The post-World War II population boom in Singapore, which was a result of very high birth rate and low death rate, also recorded a baby born in each 11 minutes. The fertility rate after independence was still very high according to the government in 1965. While

from 1965-70 the government of Singapore adopted family planning programme to reach towards the replacement level, similar trends were reflected in South-East Asian Fertility rate scenario.

By 1970-75, Singapore reached the replacement level and henceforth maintained a fertility rate well below the replacement level. South-East Asia on the other hand, has just been closer to the replacement level from 2010 and gradually the rate is dropping. It is projected that by 2025-30 the fertility rate of South-East Asia will reach the replacement level, still being well above the fertility rate of the then Singapore.

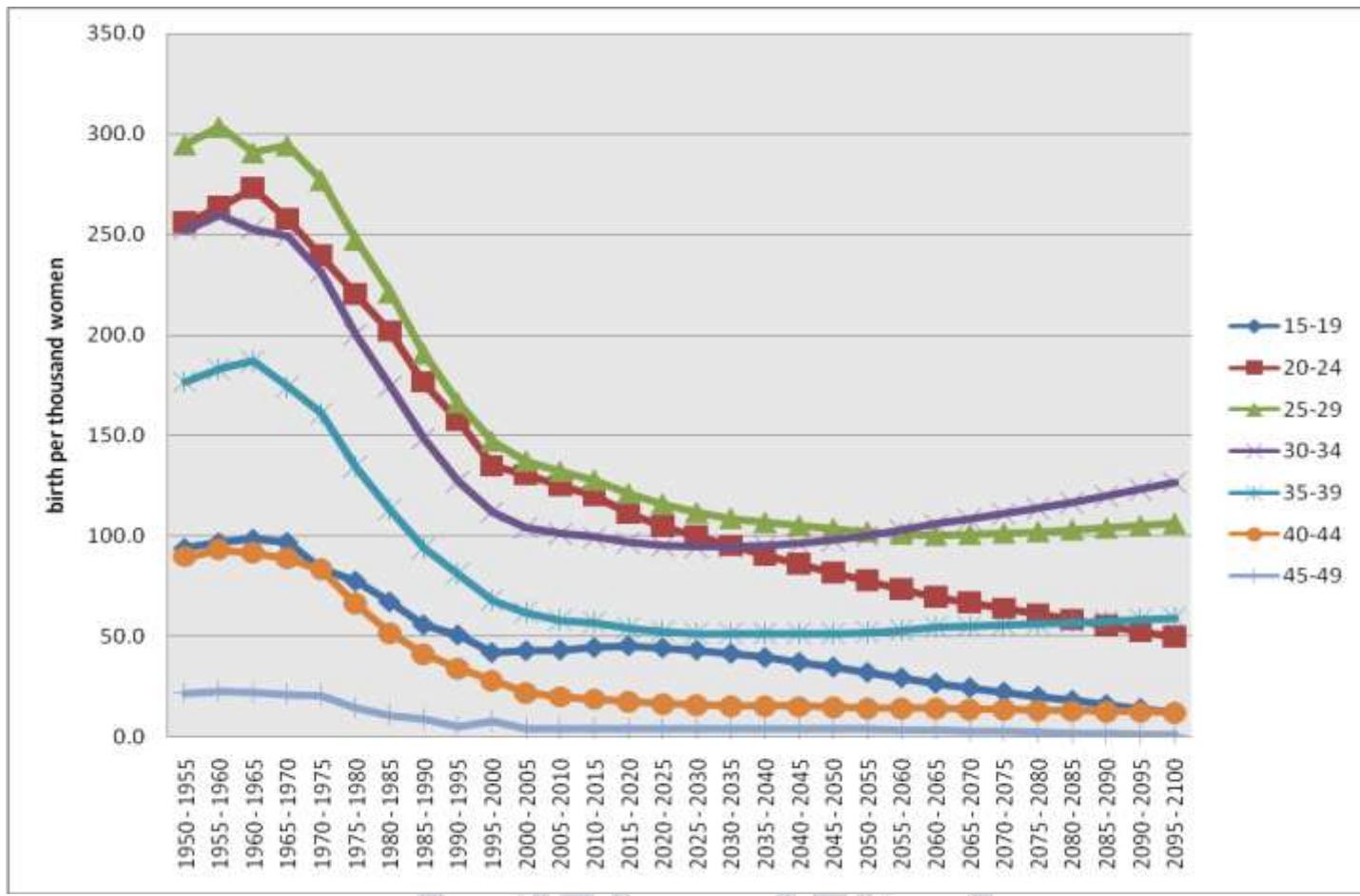
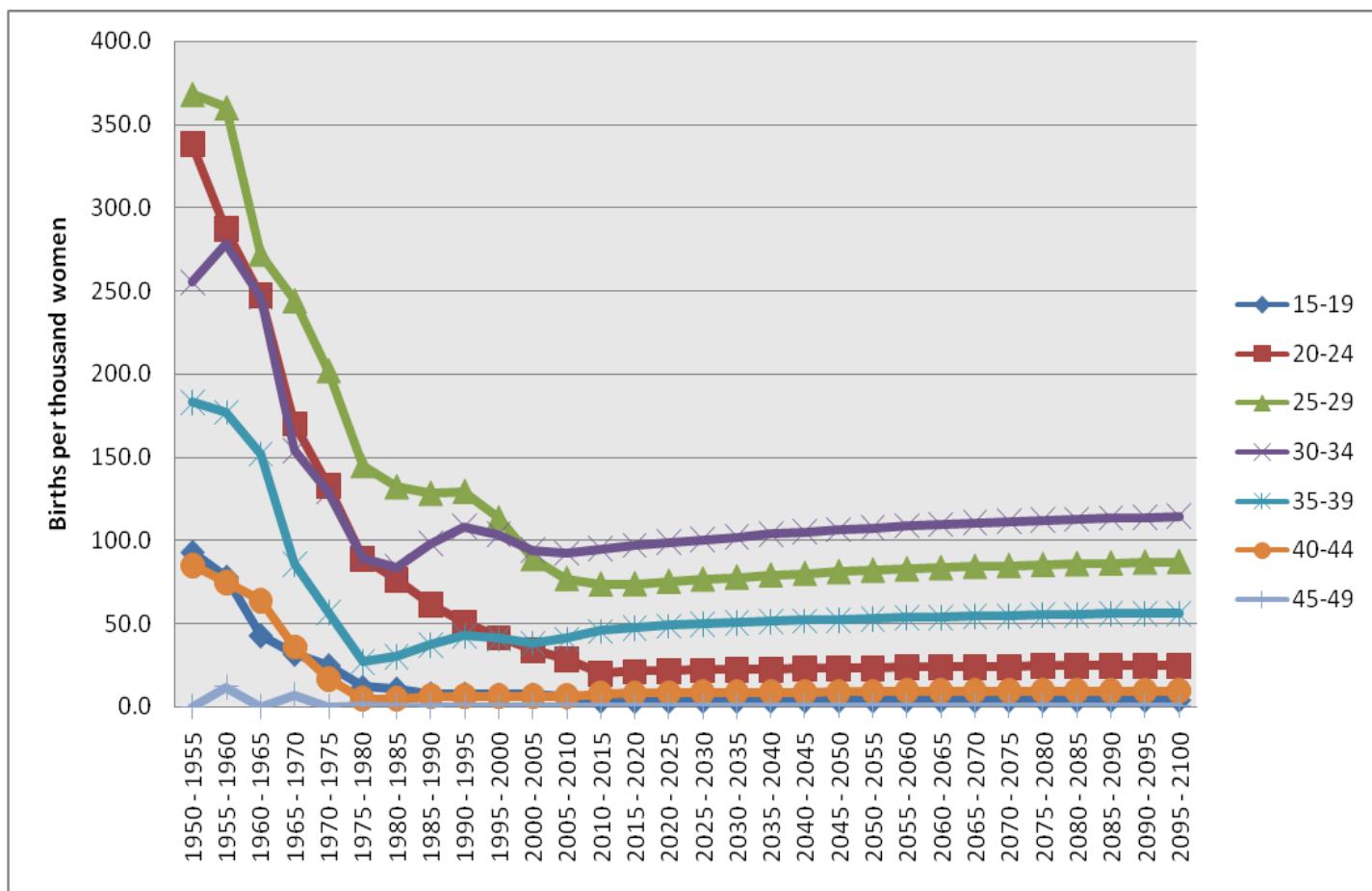


Chart 6: Age specific fertility rate (South-East Asia)

Age-Specific Fertility Rate (ASFR) is the number of birth per thousand women in given seven age groups. The ASFR in South-East Asia along with Singapore can be compared to obtain the demographic status of Singapore among South-East Asia. In chart 6 it can be seen that during 1950-55, in South-East Asia, women of the age 25-29 had been most fertile while women of 45-49 age group had been the least fertile. Gradually, the ASFR increased for all age groups but in 1960-65, fertility among age group 25-29, 30-34, 35-39 and 40-44 significantly dropped whereas the positive growth in fertility was high for age group 20-24 and 35-39.

Since 1965 onwards, the fertility rate for even the most fertile age group reflected a significant and consistent drop and this trend continued almost till 1990s and within this time the rate of change of fertility among most age group went negative. The reason for this consistent falling rate of fertility even among the most fertile age group of women can be explained through the population policy adopted by the Government, as in 1986 the initiative was to control the population boom and restrictive governmental measures were taken whereas the continuous fall in CBR since 1965 compelled the government to reverse their policies to encourage more childbirth, reflecting an immediate increase and plateauing of CBR resulting in a reducing rate of fall in ASFR among all age groups and the gradually diminishing trend of ASFR changed and even got reversed for some age groups.

Eventually, according to projected data, by 2100, the women of the age group 30-34 will be the most fertile followed by the women of the age 25-29 along with an overall fall in the ASFR. The reason for which the 30-34 age group will record most birth per thousand women, while the women of age group 25-29 will end up to a mere 106.2 births per thousand women from the initial 294.8, is because of late marriage, family planning and living in a developed economy.

**Chart 7: Age specific fertility rate of Singapore**

Age-Specific Fertility Rate (ASFR) is the number of birth per thousand women in given seven age groups. The ASFR in South-East Asia along with Singapore can be compared to obtain the demographic status of Singapore among South-East Asia. In chart 7 it can be seen that during 1950-55, in South-East Asia, women of the age 25-29 had been most fertile while women of 45-49 age group had been the least fertile. Gradually, the ASFR increased for all age groups but in 1960-65, fertility among age group 25-29, 30-34, 35-39 and 40-44 significantly dropped whereas the positive growth in fertility was high for age group 20-24 and 35-39. Eventually, according to projected data, by 2100, the women of the age group 30-34 will be the most fertile followed by the women of the age 25-29 along with overall fall in the ASFR. The reason for which the 30-34 age group will record most birth per thousand women, while the women of age group 25-29 will end up to a mere 106.2 births per thousand women from the initial 294.8 , is because of late marriage, family planning and living in a developed economy.

The ASFR of Singapore, when compared to the South-East Asian data, somehow gives a different idea. The initial age group with highest fertility in 1950 was women of age 25-29 (368 births per 1000 women) similar to the trend of the then South-East Asia. Chart 7 shows the ASFR in Singapore. The high ASFR in 1950-65 was the result of post world war II population boom. With the independence in 1965, the scenario started to change rapidly and within the next thirty years the ASFR for all age groups fell significantly. During 2010-15, while the ASFR in South-East Asia for all age groups varied widely, with one group recording high birth and the other very negligible, in Singapore, in the year 2000, even more than a decade earlier than South-East Asia, the ASFR for all age groups had been significantly stable, almost below 100 births per thousand women.

According to projected data, from 2015 to 2100, women of the age group 30-34 will have the maximum fertility rate followed by the women of the age of 25-29, similar to that of the South-East Asia. Most of the women of other age groups in Singapore, within the next fifty years, will have an ASFR of 50 or even lower due to the massive implementation of the government provided family planning programme (since 1970) and also due to the reason that by the next fifty years, Singapore demography will enter its projected phase 5 of the demographic transition (by 2035-40) when, for a developed nation, once the fertility rate falls, it does not recover to its previous trend and women choose to marry late or not marry at all in order to enjoy the fruits of development.

4.3 Population Ageing:

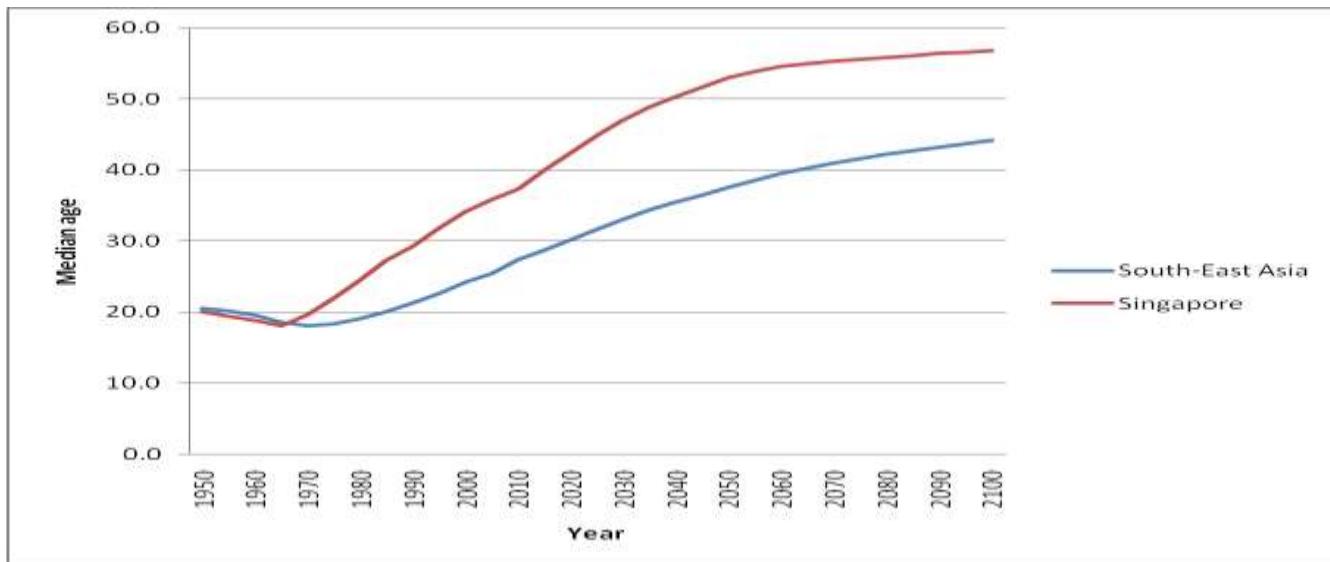


Chart 8: Median age of South East Asia & Singapore

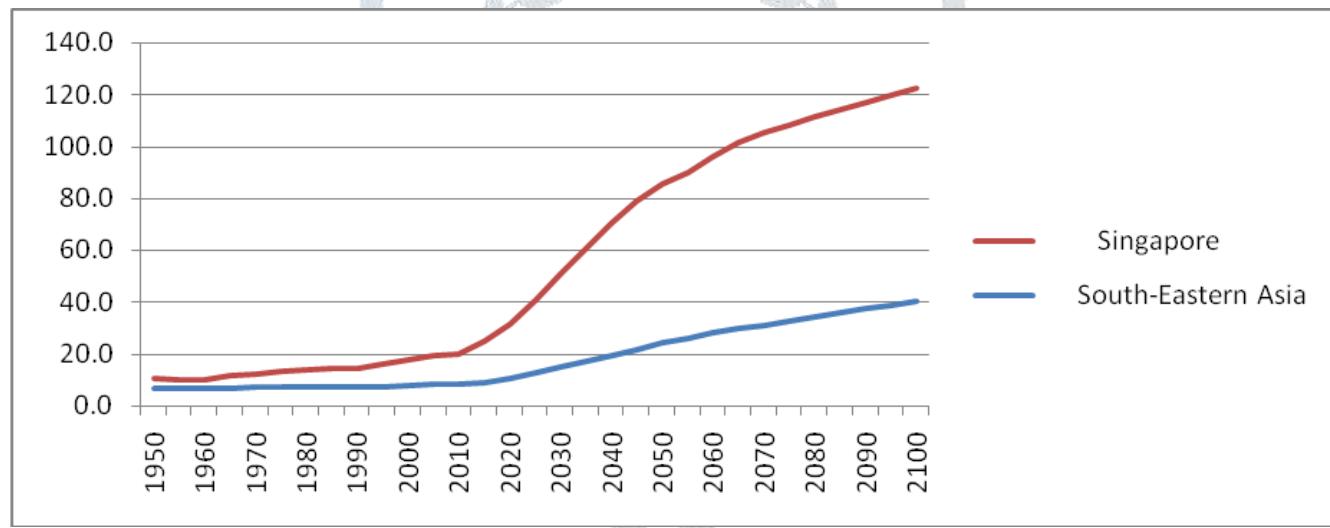


Chart 9: Old age dependency ratio (Singapore & South East Asia)

Median age is the age that divides a population into two numerically equal groups—that is, half the people are younger than this age and half are older. It is a single index that summarizes the age distribution of a population. Chart 8 shows that the median age of the population in South-East Asia in 1950 was 20.5 and in Singapore it was 20. From 1950 to 1970, the median age of Singapore population was dropping as the birth rate had been very high since World War II and the population was relatively young. Similar was the case for overall South-East Asia as from 1950 till 1980 the median age dropped, although the median age never dropped lower than the least median age of Singapore (18.1 in 1965 at the time of independence). From 1970-80 up till a projected 2100, the median age of both South-East Asia as well as Singapore had strictly been rising and it is projected that in 2100 the median age of the population in South-East Asia will be 44.2 but in Singapore, it will be 56.8 which indicates that Singapore will have more number of aged population. This explains that Singapore for almost 130 years will have a demography dominated with aged and older population and with time younger population in Singapore will erode significantly due to fewer marriages, family planning, lower birth rate and technological and medical advancement enhancing the life expectancy of each individual.

Chart 9 compares the old age dependency ratio of Singapore with South East Asia. Higher values of dependency ratio indicate a greater level of age-related dependency in the population. Singapore, having a relatively higher median age has always had more elder and aged population compared to the rest of South-East Asia. From chart 9, it can be seen that during 1950s, when the population of

both Singapore and South-East Asia had been relatively young, the dependency ratio of Singapore was 4.2 and for South-East Asia it was 6.5 and such low values of old age dependency indicates more number of working group in the population (people of age 15-64) and lesser number of old people of 65 plus. In post independence Singapore, the median age started to rise and from 1960 to 2010 the old age dependency steadily grew because of the population now having more number of old people of 65 plus and lesser people of the age group 15-64. South East Asia has a lower old age dependency compared to Singapore, due to having a lower median age of population than Singapore. In the upcoming projected years of 2020 to 2100, the old age dependency ratio in Singapore will almost be double than that of South-East Asia which will lead the Singapore demography to be the one with most number of old and aged population. South-East Asia is likely to have more youth population than that of Singapore in the upcoming five decades.

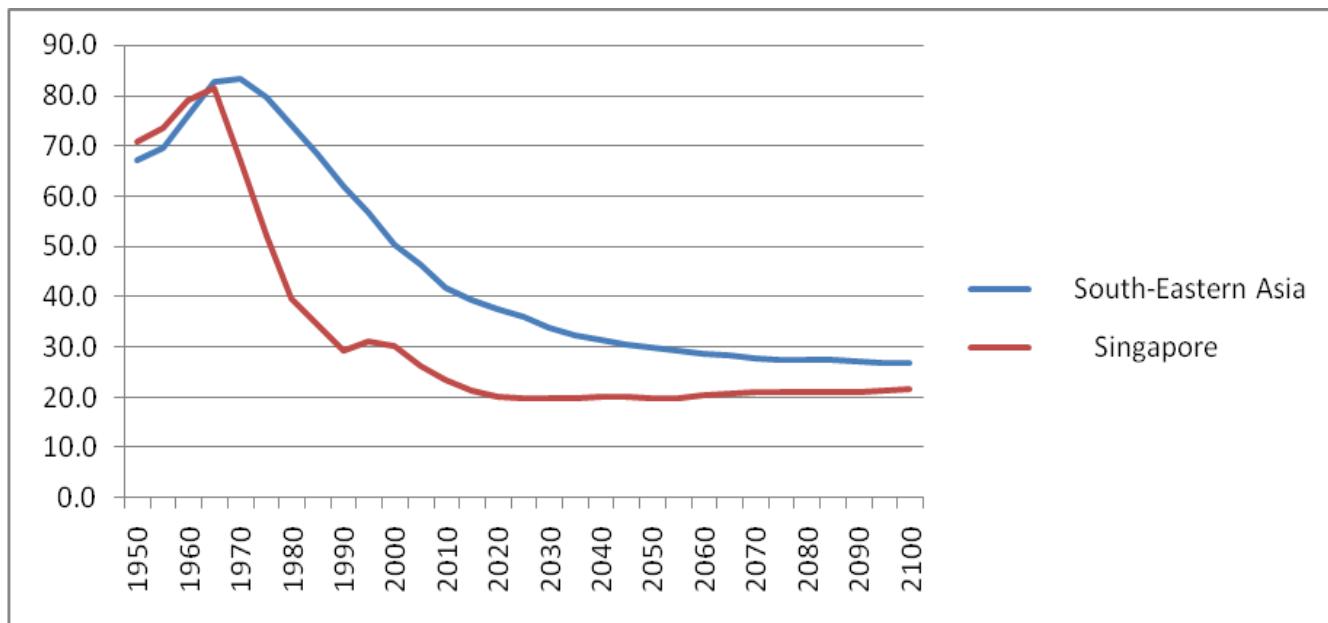


Chart 10: Child dependency ratio of Singapore & South East Asia

Chart 10 shows the comparison of child dependency ratio between Singapore and South East Asia. Singapore and South-East Asia both had a high child dependency ratio from 1950 to 1980. In these years Singapore experienced a population boom, high birth rate and low death rate accounted for more children in the population and this gave rise to the child dependency ratio. Since 1970 the dependency rate fell significantly due to government implementation of proper family planning programs. In 1970, the government of Singapore started a vigorous campaign of "stop at two" family planning policy. In the same year sterilization and abortion was legalized and women were encouraged to get sterilized after their second child. The government penalized the parents for having more than two children, raising the per-child cost for each extra child between 1969 and 1972. Hospitals were authorized to charge extra for each additional children. Even in housing assignments, large families were penalized and income tax deduction was only given for the first two children. Government widely started to provide public education for the "stop at two campaign". Government also encouraged couples to delay having the second child or late marriage through slogans and messages like: "*The second can wait*", "*Small family: Brighter future*", "*Please stop at two!*"

However, The South-East Asia always have had a higher child dependency rate than Singapore due to the reason that South-East Asia has had a lower median age and a significantly lower old age dependency rate indicating that their population is relatively younger than that of Singapore. According to projected data, by 2100, Singapore is likely to have a child dependency rate of 21.6 whereas South-East Asia will have a child age dependency rate of 26.9, relatively higher than Singapore.

The median age of Singapore is gradually rising, with a similar rise in old age dependency and fall in child dependency. These three factors of rising median age, rising old age dependency and falling child dependency indicates that the average population of Singapore is getting old and the country lacks youth population. Total dependency rate of Singapore is also observed to be high, compared to the other South-East Asian nations, due to the fact that Singapore is increasingly having an old, aged population.

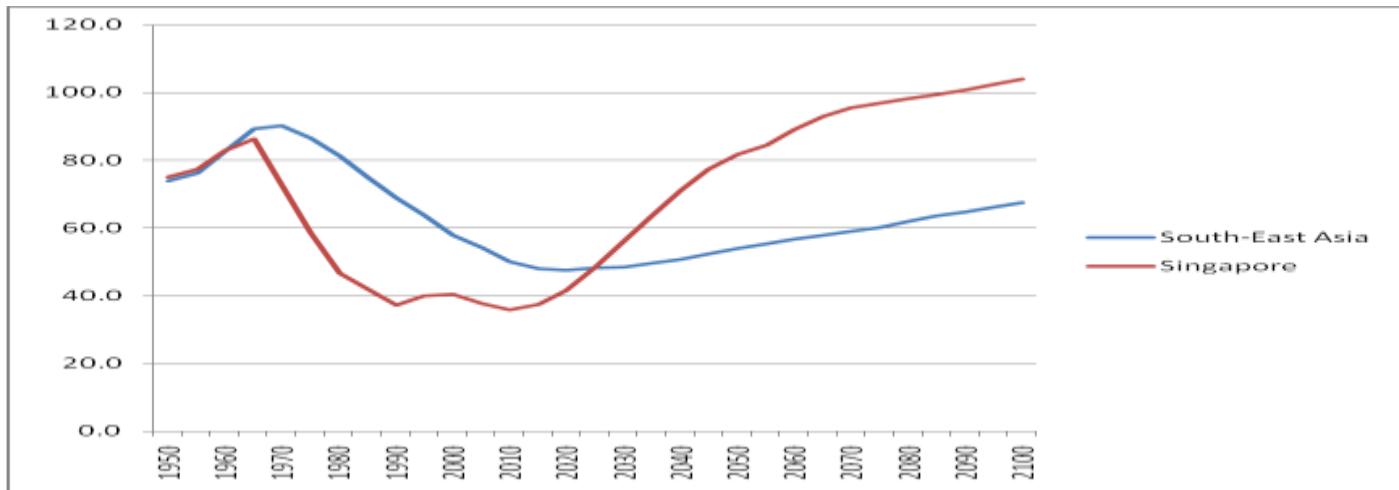
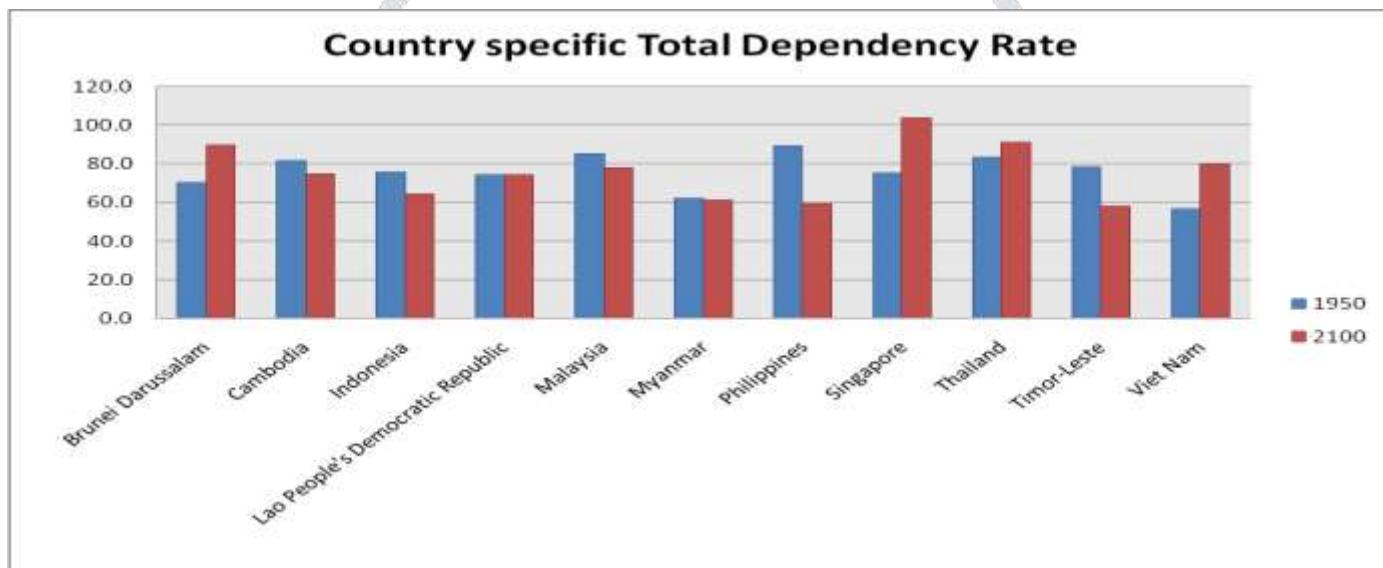
**Chart 11: Total dependency rate Of Singapore & South-East Asia****Chart 12: Total dependency in all South-East Asian countries**

Chart 11 shows the comparison of Total Dependency ratio among Singapore and South-East Asia, while chart 12 shows a comparative histogram of the Total Dependency ratio between the year 1950 and 2100 among important South-East Asian nations. The higher the total dependency ratio is for a country; more is the burden on its productive part of the population to maintain the upbringing and pensions for the economically dependent. Singapore, as observed earlier, has had an initially high child dependency from 1950 to 1965. On the other hand, from 1950-2000, Singapore had a low old age dependency rate. So, in case of the total dependency rate of Singapore during 1950-65, it followed the rising pattern of the child dependency rate due to more number of population aged 0-14 and less number of population aged 65 and above in the country.

From 1965 to 2020, the child dependency rate fell significantly, with a slow but steady rise in the old age dependency rate indicating fall in number of youth and slow rise in number of the elderly and also in this phase, the median age of the population started to raise slowly resulting population ageing in Singapore demography. Due to this the total dependency from 1965 to 2015 had a sharp and significant fall. During 1965-2025 The total dependency of South-East Asia was more than that of Singapore, due to having more number of youth populations while at the same time, the Singapore population was slowly aging. From projected data of 2025-2100, the total dependency of Singapore will be higher than that of South-East Asia as Singapore then will have very high number of old age population whereas South-East Asia will then experience slow population aging with decreasing number of youth and increase in median age and old age population.

4.4 Migration:

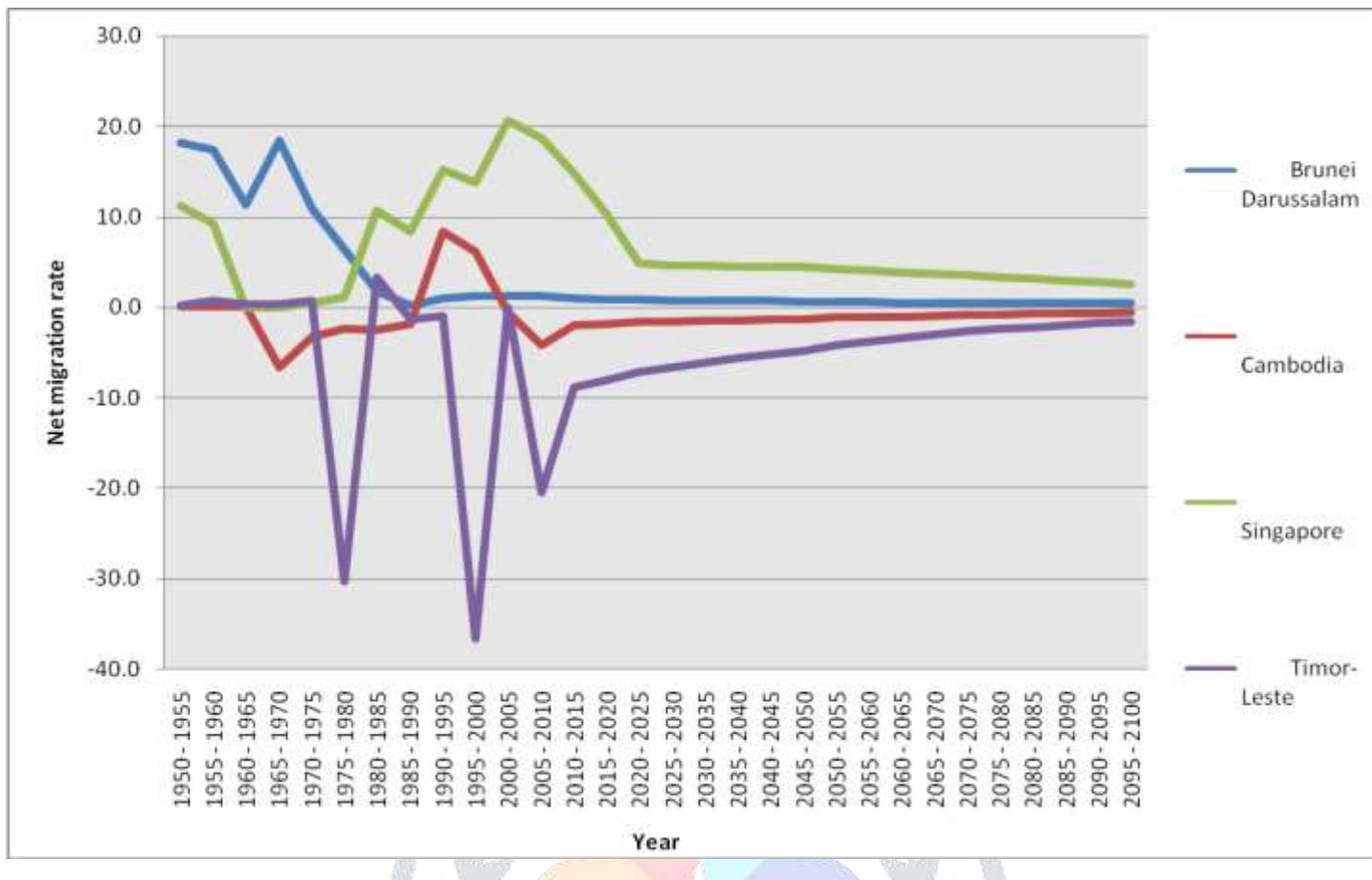


Chart 13: Net migration rate of Singapore and others

Net migration rate is the difference of immigrants and emigrants of a country during a given period of time, usually divided per 1000 inhabitants. A positive value of the net migration rate indicates that there are more immigrants (more people entering the country), whereas a negative value indicates more emigrants are there in the country (more people leaving the country). Singapore, in its net migration rate, reflects a massive immigration story. In chart 13 the net migration rate of three countries namely Brunei, Cambodia and East-Timor are compared with Singapore. The three countries other than Singapore experienced most immigration and emigration among all of South-East Asia. Brunei and Singapore has had a positive net migration rate from 1950 to 2015 whereas during the same time, East-Timor and Cambodia had mostly a negative net migration rate. This indicates that among all the other South-East Asian countries Singapore and Brunei had massive immigrants, whereas emigration happened in the case of Cambodia and East-Timor.

Immigration rate in Singapore started to rise from 1980 to 2005 and peaked in 2005 (NMR 20.7 in 2005) due to massive need of foreign laborers in new industries. It is projected that from 2000 to 2025 the net migration rate of Singapore will fall and then according to projected data, the NMR is expected to stay positive and slowly falling until the year 2100 indicating a gradual and slow fall in the rate of immigration to Singapore.

From chart 13 it can be explained that from 1950 to late 1970s, the net migration rate in Singapore had been very low, indicating a very low rate of immigration. From 1980 to 2010 due to rapid industrialization, the net migration rate started to rise, indicating a rise in immigration. Net migration rate in Singapore has always been positive when compared with the other South-East Asian countries. Singapore experienced constant immigration since industrialization in 1980 but had very few records of emigration, resulting into a positive Net Migration Rate. Immigrant workers from China, India and Malaysia come to Singapore and the country has always supported the skilled pool of foreign labour force. Still today, the non-resident population growth is more than both the total population and the resident population.

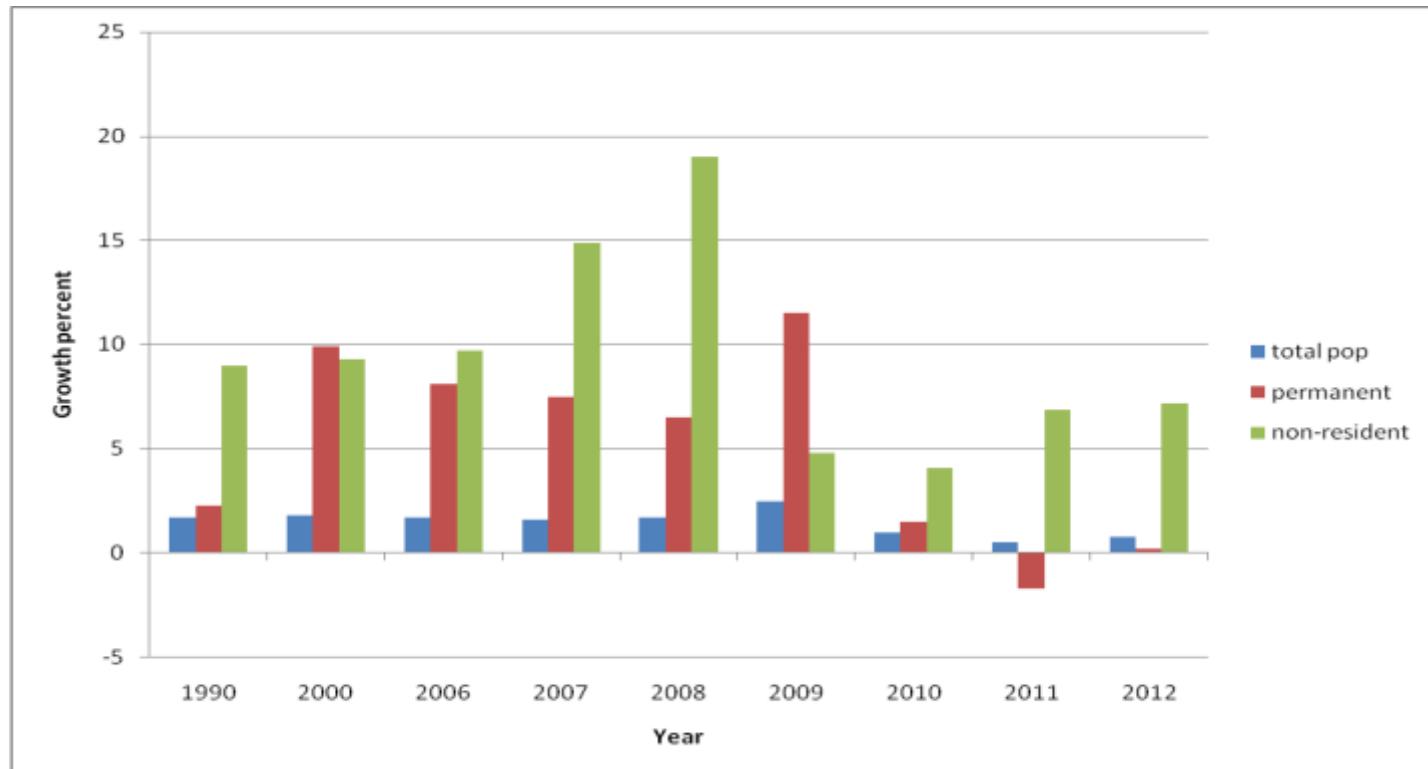


Chart 14: Growth of non-resident, permanent and total population in Singapore

Chart 14 shows the population growth in Singapore from 1990 to 2012. It is evident that the non-resident population grew more than the total population and the permanent population over the years. The annual growth of non-resident population in 2007 was 14.9% and it peaked in 2008 with a 19% growth while the total population growth had been same at a mere 1.7% as of 1990 (Data of United Nations). In 2011, while the total population growth had been least (0.5%) in the last ten years and resident population growth was negative (-1.7%) even then, the non-resident population growth was a distinct 6.9% indicating high rate of immigration and very low emigration resulting in a positive net migration rate for Singapore since 1950 to the next hundred years. The non-resident population of Singapore nearly doubled between 1970 and 1980. About 29% of the total labor force of Singapore was constituted by the foreigners which, in Asia, were the highest proportion of foreign workers (Yeoh 2007). The non-resident workforce of Singapore had a significant positive growth over the last decade and increased almost 170% (It was 248,000 in 1990 and 670,000 in 2006).

The history of Singapore, regarding its population patterns, has been intertwined with migration. Since the establishment of the British colony in 1819, most of the country's population growth had been due to immigration until World War II. The colonial economy brought in laborers from China, Malay Archipelago and India. By the 1931 census, the population of Singapore grew from a couple of hundreds to half a million. Such immigration was temporarily ceased during the Japanese occupation of 1942 to 1945. By the time of independence from Malaysia, in 1965, the new ordinance in Singapore limited immigration to only those who would contribute to the socio-economic development of the country. During post independence era, due to strict immigration laws, the non-resident population squeezed to a mere 2.9% of the total population. However, the scenario changed from 1980, as Singapore became more industrialized and need for foreign laborers arose, making immigration evident.

From chart 14 it can be seen that in 1990 at the time of industrialization, the non-resident growth in Singapore was very high compared to the total population and resident population growth (non resident population growth in 1990 was 9 %). Such immigration pattern is still present today and according to projected data up to 2100, the net migration rate in Singapore will always be positive despite having a falling trend, keeping the immigration issue alive. In 1970, the government of Singapore started a vigorous campaign of '*stop at two*' family planning policy. The government penalized the parents for having more than two children, raising the per-child cost for each extra child between 1969 and 1972. But by 1986 the government has realized that the continuous fall in birth rate has become a serious problem and reversed the policy of '*stop at two*' and started to promote a larger family with a new slogan '*have three or more (if you can afford it)*' and '*the joys of marriage and parenthood*'. The 1988 population policy of *have three or more* allowed the citizens with some benefits like, mothers with the third child would get a child relief of 750 SGD and with a fourth child she would get extra 15% income, up to \$ 10,000 SGD. The same policy allowed subsidies for child in a government run child care centre. This shift in population policy reflects the governmental effort to reverse the falling trend of permanent population of Singapore and introduce restrictions on immigration.

5. MAJOR FINDINGS:

- The demography of Singapore is presently at the third phase and is about to enter the fourth phase of demographic transition. The birth rates are constantly falling while the death rate is low and stable. Despite such low rate of natural increase (3.6 in 2015-16 according to United Nations data) the total population of Singapore is still rising and it is expected to reach its peak in 2045. This is due to the effects of ‘*population momentum*’ which is currently visible and accounts for the positive total population growth and falling rate of natural increase at the same time.
- The median age of Singapore is gradually rising, with a similar rise in old age dependency and fall in child dependency. These three factors of rising median age, rising old age dependency and falling child dependency indicates that the average population of Singapore is getting old and the country lacks youth population. Total dependency rate of Singapore is also observed to be high, compared to the other South-East Asian nations, due to the fact that Singapore is increasingly having an old, aged population.
- Net migration rate in Singapore has always been positive when compared with the other South-East Asian countries. Singapore experienced constant immigration since industrialization in 1980 but had very few records of emigration, resulting into a positive Net Migration Rate. Immigrant workers from China, India and Malaysia come to Singapore and the country has always supported the skilled pool of foreign labour force. Still today, the non-resident population growth is more than both the total population and the resident population.
- The strong population policy adoption changed the demographic pattern of Singapore within a few decades but as the government realizes the eminent danger of significant fall in birth rate, adverse policies have recently been taken up to encourage birth. Though the new policies are adopted, they are yet to be properly implemented as the projected birth rate and natural growth rate show no sign of improvement so far. The government must understand its population and approach cautiously to implement the new family planning programs soon in order to change the inevitable falling trend of birth rates and total population.

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