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Impacts of Ageing Population on Monetary and Exchange Rate Managements in Singapore

by

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Abstract

This paper finds that the ageing of the population in Singapore will cause a reversal of the current net Central Provident Fund (CPF) contribution into a substantial net CPF withdrawal from 2025, with a peak occurring at 2035. The result is qualitatively robust to changes in the underlying assumptions of the projection. The paper then highlights the implications of this change on the exchange rate and monetary managements in Singapore. First, the Monetary Authority of Singapore (MAS)'s ability to influence Singapore's exchange rate will be greatly hampered. Second, the net CPF withdrawal will mean *sustained* liquidity injection into (instead of the usual liquidity drain from) the economy. To avoid unnecessary inflation, the MAS has to find a sustainable way to mob up the excess liquidity due to the sustained liquidity injection. As a simple reversal of MAS's current foreign exchange market operation will result in substantial shrinkage of foreign reserves, the paper proposes the issuance of government bonds to achieve the dual objectives of mobbing up the excess liquidity and avoiding the shrinkage of foreign reserves. This measure will also help the bond market development in Singapore. Finally, the paper proposes two other measures that can help maintain MAS's influence on Singapore's exchange rate to a reasonable level in the longer future.

1. Introduction

This policy note first investigates whether the ageing population in Singapore will eventually reverse the current net CPF contribution into net CPF withdrawal some time in the future. It then highlights the complications of this change on the exchange rate and monetary managements in Singapore. In particular, it cautions that the MAS's current ability to influence Singapore's exchange rate may no longer hold if there is a substantial net CPF withdrawal in the longer future. It also cautions that the net CPF withdrawal could result in excess liquidity in the economy. Failure to recognize the need to mob up this sustained injection of liquidity could result in unnecessarily high inflation. Nevertheless, a simple reversal of MAS's current practice would result in substantial shrinkage of foreign reserves. An alternative measure is proposed to achieve the dual objectives of mobbing up the excess liquidity and avoiding the shrinkage of foreign reserves. Yet, there remains the need to find ways to restore MAS's influence on Singapore's exchange rate to a reasonable level in the longer future. This policy note proposes two such measures that can help restore MAS's influence. It also indicates that other measures working in the same direction could also help achieve the objective.

The plan of this paper is as follows. Section 2 explains that MAS's current ability to influence Singapore's exchange rate is mainly due to the sustained liquidity drain arising from the current net CPF contribution. It then highlights that the ageing population could reverse the current net CPF contribution into a net withdrawal in the longer future (say, twenty or thirty years from now), and discuss the implications of this change to the exchange rate and monetary managements in Singapore. Sections 3 and 4 will investigate whether there will be a substantial net CPF withdrawal due to the ageing

population in Singapore. Section 5 will suggest policy options to alleviate the complications on Singapore's exchange rate and monetary managements arising from the problem of ageing population. The conclusions are in section 6.

2. MAS's Ability to Influence Singapore's Exchange Rate: Current and the Future

According to the literature, the MAS can have a strong influence on Singapore's exchange rate, mainly because of the net CPF contribution inherent in the CPF system and partly because of the persistent budget surplus run by the city state. As explained in MAS (1982/83), Teh and Shanmagaratnum (1992) and Yip (1996), Singapore has adopted the CPF system in which employees and employers are required to contribute a total of 30-40%[1] of the employees' basic salary into the fund. The net CPF contribution,[2] plus the persistent budget surplus, has caused a substantial liquidity drain from the economy to the government sector. In order to avoid economic transactions being constrained by the liquidity drain and the Singapore dollar from appreciating too much, the MAS routinely re-injects liquidity back into the economy by selling Singapore dollar (and purchasing US dollar) in the foreign exchange market. By doing so, the MAS has been able to attain the dual objectives of accumulating foreign reserves for the

[1] Before the Asian Financial Crisis, employers and employees in Singapore were each required to contribute 20% of the employees' basic salary to the CPF. During the crisis, the government had reduced the employer contribution rate to 10% as part of the package to mitigate the adverse impact of the crisis. With the economy recovering, the rate was then revised up (to 12% and then 16%). Thereafter, there were reductions in the employer (and employee) CPF contribution rates due to reform in the CPF system to improve the competitiveness of Singapore and to alleviate the structural unemployment of the elder workers. From 2006 onwards, the (employer + employee) contribution rate will be (13+20)% for those aged below 50, (9+18)% for those aged between 50 and 55, (6+12.5)% for those aged between 55 and 60, (3.5+7.5)% for those aged between 60 and 65, and (3.5+5)% for those aged above 65. In addition, there will be an income ceiling of S$4500 per month for CPF contribution.

[2] As explained in subsequent sections, there are withdrawals for various purposes. However, the current net contribution is substantial when compared with the monetary base.

government and re-injecting liquidity back to the economy. Yip (2003) went a step further by highlighting that the liquidity drain due to the net CPF contribution[3] (and persistent budget surplus) has endowed the MAS significant influence on Singapore's equilibrium exchange rate:

> *With the substantial size of the liquidity drain, the MAS is effectively able to achieve a wide range of appreciations and depreciations by varying the amount of liquidity re-injection. For example, the MAS can achieve a higher appreciation rate by re-injecting less liquidity back to the economy. On the other hand, the MAS can achieve a lower appreciation, or even a depreciation, of the Singapore dollar by re-injecting more liquidity back to the economy.*
>
> *In addition, the liquidity drain is not only large but also a* ***flow*** *variable.*[4] *Thus, the MAS could engineer, if it feels desirable, a sustained change in exchange rate (every year) within the wide limits allowed by the relatively large liquidity drain and the MAS's capacity to print money. Such ability to change the equilibrium exchange rate has in turn increased the viability and hence credibility of the exchange rate system. In fact, it is likely to be more credible than a standard fixed exchange rate system that relies mainly on the* ***stock*** *of foreign reserves held by the government.*

[3] Yip (2005) further elaborated that Singapore's persistent and huge current account surplus was closely related to the net CPF contribution which will ensure Singapore residents consuming less than what they are earning. As the budget surplus was small when compared with the net CPF contribution, the latter is the more important reason behind's MAS's ability to influence Singapore's exchange rate.

[4] Consider an economy without such a flow "support" of liquidity drain but only a certain stock of foreign reserves. Attempts to appreciate its currency (by using its foreign reserves to buy domestic currency) every year would mean a sustained decline of foreign reserves. It is thus questionable whether such an economy could afford a sustained appreciation (through depletion of foreign reserves) forever.

Nevertheless, it should be noted that with the ageing population in Singapore, the net CPF contribution could be reversed to a substantial net CPF withdrawal in the longer future (say, twenty or thirty years from now). In fact, as reported in the website of the CPF Board, Singapore is having "*a rapidly ageing population*". "*Today, 10 economically active persons are supporting one elderly. By 2030, only 3.5 persons will be supporting one elderly*". If this official projection is not too far away from what is going to happen, there is a high chance that the current net CPF contribution will be reversed to a substantial net withdrawal some time in the future. By then, the MAS's ability to influence Singapore's exchange rate could be greatly hampered. Worse still, the net CPF withdrawal would mean sustained liquidity injection into the economy. Failure to mob up this excess liquidity could result in unnecessarily high inflation. To see these, first note that we have already assumed that the CPF Board will have sufficient money or assets to meet the CPF withdrawal. Nevertheless, having sufficient money to meet the withdrawal does not mean that there is no other problem. In particular, we would like to emphasize below that there could be macroeconomic management problems which have to be properly taken care of.

First, the net CPF withdrawal will mean a *sustained* liquidity injection into (instead of the usual liquidity drain from) the economy. For example, when a retired person spends his CPF withdrawal for normal consumption or medical need, the money will be left in the economy. If left unattended, these sustained injections of liquidity would result in excessive inflation. To avoid the unnecessary inflation, the MAS has to find a sustainable way to mob up the excess liquidity due to the sustained injections. In other words, while there is definitely a problem if there is insufficient money to meet the

withdrawal, there will still be macroeconomic management problems if there is too much money circulating in the economy. One good example of the latter is the case of Hong Kong in 1986-97. As documented in Yip (2005), Hong Kong had made substantial earnings in the 1980s and 1990s due to the opening up of China. However, the substantial earnings had also caused excessive liquidity in the economy which had resulted in the building up of a relatively huge asset bubble in 1986-97. The latter had in turn pushed Hong Kong's price and wage into highly uncompetitive levels and contributed to a long and severe post-crisis recession (i.e., more than seven years of high unemployment and underemployment rates between 1998 and 2005). Thus, avoiding the building up of excessive liquidity in Singapore arising from the sustained and substantial net CPF withdrawal is important.

Second, the net CPF withdrawal will also hamper MAS's influence on Singapore's exchange rate. With the net CPF withdrawal, MAS will no longer be able to engineer an appreciation in the Singapore dollar by just reducing the amount of liquidity re-injection. Instead, it has to mob up the sustained and substantial amount of liquidity injection to the economy (arising from the net CPF withdrawal) before it can keep the Singapore dollar stable. If it wants to engineer a moderate appreciation (i.e., maintain a strong Singapore dollar policy such as that in 1980-97), it has to make extra effort in mobbing up the liquidity in the economy. Without the help of the liquidity drain due to the net CPF contribution, this will no longer be easy, not to mention the extra burden of liquidity absorption due to the substantial net CPF withdrawal.[5]

[5] As noted by Yip (2005), the more difficult part in the monetary authority's influence is on the appreciation side. There is usually no limit on the extent of depreciation the authority can achieve. If the authority wants its currency to depreciate a lot, it can do so by keep printing money and spending it. Thus, the limit is usually the rate of appreciation it can achieve.

Thus, it is important to investigate whether the current composition and trend of the population in Singapore will lead to substantial net CPF withdrawal some time in the future. In the next two sections, we will make appropriate projections that will provide insights to this important question.

3. Assumptions, Sensitivity Analysis and Robustness of the Projection

Our projection starts with the benchmark population projection conducted in Wong et al. (2005). In this benchmark case, reasonable assumptions on the fertility rate and mortality rate were made with information from the latest population statistics (see the appendix for details). Following the usual practice of population projection, it also assumes a zero net immigration rate. As reported by the authors, the projection result is qualitatively robust to reasonable changes in the fertility rate and the mortality rates. For our projections of the CPF contribution and withdrawal, we intentionally choose the case of zero net immigration rate, mainly because we want to investigate what will happen if there is no assistance from the immigration policies. We then propose in section 5 that Singapore need substantial support in the immigration policies to alleviate the problem. With these assumptions, table 1 reproduces the benchmark population projection reported in Wong et al (2005).[6] As we can see, the projection shows that the resident population will reach a peak of 3.6 million in the year 2025 before declining to 3.3 million by 2050. Thus not only is the resident population rapidly ageing, it will also face the daunting prospect of a shrinking population size in about twenty years time.

[6] We have also used other cases of population projection in our projection of the CPF contribution and withdrawals. Again, the severity of the ageing population in Singapore has made the qualitative result highly robust to reasonable variations in these underlying assumptions.

With the benchmark population projection, we then made projections on the gross CPF contribution and major components of the CPF withdrawals with appropriate assumptions (see further details in the appendix). We have also varied some of these assumptions and check whether the result is robust to changes in these assumptions. We find that the qualitative result of a substantial net CPF withdrawal in the longer future is extremely robust to changes in these assumptions. The main reason for this is that the problem of ageing population in Singapore is rather severe so that reasonable variations in these assumptions will not change the qualitative result. As a long list of scenarios with various combinations of assumptions will unnecessarily complicate the discussion with little value-added, we have chosen the following concise presentation of results. Out of the various probable and reasonable sets of assumptions, we first report the most conservative scenario (i.e., the one with the lowest projection of net CPF withdrawals over the years). To illustrate the impacts of changes in some underlying assumptions, we also report two probable scenarios (with higher projected net CPF withdrawals). As said, the qualitative result is robust to these three and many other scenarios.

The projections for the three scenarios are reported in tables 2-4. To avoid unnecessary complications due to assumptions on the inflation rate, all the projected figures are in 2004 dollar value. As explained in the appendix, the projected gross CPF contribution has taken into account the reductions in (a) the CPF contribution rates and (b) the CPF monthly salary ceiling in the recent CPF reform. Because of the heterogeneous nature of the various major categories of CPF withdrawals, we have also made separate projections for each of these categories. The five categories are: (1) lump sum withdrawals upon retirement, W1; (2) withdrawals under the CPF Minimum Sum

Scheme, W2; (3) withdrawals for health care, W3; (4) withdrawals for housing, W4; and (5) withdrawals for other purposes, W5.

4. The Projection Results

The conservative scenario is reported in table 2. As we can see, Singapore's projected net CPF contribution is rather substantial in the recent future (e.g., 2005). However, with an ageing population, the net contribution is projected to fall in an accelerating pace in the next twenty years. By 2025, the net contribution will be reversed to a net withdrawal. Thereafter, the net withdrawal will grow and reach its peak in 2035. Thus, the projected result suggests that there will be exchange rate and monetary management problems at least between 2025 and 2050. Furthermore, when compared with the monetary base (= 13324 millions Singapore dollar in 2004), the size of the constant dollar net CPF withdrawal over the various years will be substantial, suggesting the scale of the exchange rate and monetary management problems will be large.[7]

In the conservative scenario, the projection is made with the assumption that health cost will rise at the same rate as overall inflation. To check how the projection could be affected by variations in the assumption, we have also reported scenario 2 in which health cost is assumed to rise faster than general inflation by 2% for the next 5 years before it rises at the same rate as overall inflation.[8] As we can see, the projected net

[7] As the net CPF withdrawal will result in a rise in monetary base which will in turn cause a multiple expansion of money supply, the scale of the implied exchange rate and monetary management problems will be rather large. For example, the constant dollar net CPF withdrawal in 2035 could result in up to 15.5% injection of monetary base in the economy. [Note, the percentage will be smaller when there is economic growth.] More importantly, this type of injections will happen *every year* at least between 2025 and 2050.

[8] Note that it will be debatable, if not unreasonable, to assume that health cost will always rise faster than the overall inflation. Besides, the projected figures in the longer future will be highly sensitive to this type of assumption. In fact, we have tried that assumption and find that the projected net CPF withdrawal in the

CPF withdrawals over the various years are bigger than those reported in the conservative scenario. Nevertheless, the qualitative result of a reversal to net CPF withdrawal from 2025, with a peak in 2035 is robust to the change in the underlying assumption. In fact, we have tried other assumptions (e.g., health cost rises faster than overall inflation by 1, 2 or 3% over the next 10 years before it rises at the same rate as overall inflation). The qualitative result on the net CPF withdrawal remains robust to these alternative assumptions.

In the conservative scenario and scenario 2, instead of making the assumption that all retiring CPF members will make their first lump sum withdrawal at 55 (which will result in a higher projected net CPF withdrawal), we have chosen the conservative assumption that the withdrawal will be uniformly distributed between the age range of 55 and 59. To see how the projected figures could be affected by variations in this assumption, we also report scenario 3 with the less conservative assumption that all retiring CPF members will make their first lump sum withdrawal at age 55. As we can see, this has resulted in higher projected net CPF withdrawal over the years. Nevertheless, the qualitative result of a reversal to net CPF withdrawal from 2025, with a peak in 2035 remains robust. Along with this, we have also made other distributional assumption on the age of the first lump sum withdrawal (e.g., the amount of withdrawals decline linearly from age 55 to age 59). Again, the qualitative result is robust to variations in this type of assumption.[9]

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longer future is unreasonably high. Therefore, we prefer to report scenario 2 in which the assumption seems to be more reasonable.

[9] We have also made some variations in the underlying assumption on the withdrawals for housing. Again, the result is robust to variations in this assumption. Meanwhile, assumption used in the three reported scenarios also sounds reasonable. Thus, for simplicity of presentation, we choose not to report results with variations in this type of assumptions. Finally, as the size of the withdrawals from the minimum sum and the withdrawals for other purposes are small when compared to other categories, reasonable variations in

Thus, our projection results have unanimously suggested that the current net CPF contribution will be reversed to a sustained and substantial net CPF withdrawal in the longer future.

5. Policy Options

As explained in sections 2 and 4, the substantial net CPF withdrawal will result in substantial increase in monetary base in the economy when the CPF withdrawers **spend or save** the withdrawn money.[10] This will in turn create multiple expansion of money supply. If left unattended, the *substantial* size of the monetary injection *every year* will lead to extremely high inflation in Singapore. Thus, the MAS will have no choice but to mob up the excess liquidity. One simple way to achieve this is to have a reversal of MAS's current foreign exchange operation (i.e., buys Singapore dollars and sells US dollars in the foreign exchange market). However, this would mean that the government at that time needs to have the required amount of foreign reserves, and be ready to accept substantial shrinkage of foreign reserves for a prolonged period (i.e., at least between 2025 and 2050). While the authorities will have more than enough foreign reserves to meet the above need, we do not recommend this as the shrinkage of foreign reserves for such a prolonged period could lead to undesirable psychological and expectation effects. Instead, we recommend substantial issuance of government bonds to mob up the excess liquidity. That is, we can avoid the reduction of foreign currency assets (i.e., the foreign

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the underlying assumptions on these categories have even less effect on the projection. Again, we choose not to report scenarios on this for simplicity of presentation.

[10] Even if the CPF withdrawers save the money in the bank account, the withdrawal will still increase the money base. With this injection of high power money, the bank can lend it out and hence create multiple expansion of money supply.

reserves) by increasing the Singapore dollar liabilities (i.e., government bonds). In addition to the advantage of avoiding the above shrinkage of foreign reserves, the measures can also stimulate bond market development in Singapore [see Greenspan (2000) and Jiang et al. (2001) for the benefits of a well developed bond market in reducing the chance (and mitigating the effect) of a banking crisis or stock market crash; and Yip (2004) for the benefits of bond market development on output and employment].

Nevertheless, as highlighted in section 2, the substantial net CPF withdrawal will still hamper MAS's ability in influencing Singapore's exchange rate. One natural direction of solutions is to find measures that can reduce the CPF withdrawals and increase the CPF contributions. For example, an extension of the retirement age to, say, 65 can (a) avoid the reduction in CPF contribution; and (b) avoid (or delay) the increase in CPF withdrawal. As the extension of retirement age to 65 could result in substantial changes in the CPF contribution and withdrawal, measures along this line will be quite effective. In addition to restoring MAS's influence on Singapore's exchange rate, the measure can also substantially reduce the excess liquidity (implied by the net CPF withdrawal) and hence the required issuance of government bonds.

Another possible measure is to increase the number of migrants at the working age and increase the (tax and non-tax) incentives for foreign workers to join the CPF scheme. This will alleviate the severity of the ageing population as well as the reduction in CPF contribution. Again, this can help restore MAS's influence on Singapore's exchange rate to reasonable levels and reduce the monetary management requirement of mobbing up the excess liquidity through, say, the issuance of government bonds. In

general, policy measures that can increase the CPF contribution and reduce the CPF withdrawal will help alleviate the exchange rate and monetary management problems.[11]

6. Conclusions

Given the rapidly ageing of population in Singapore, it is important to have thorough studies on the potential implications of this important factor to various aspects of Singapore. This will include not just preparing sufficient money to meet the future CPF withdrawals. For example, there should be well prepared plans on the projected needs for more health care, changes in demand for school places and teachers, and changes in demand for housing due to changes in the size and structure of the population. In this paper, we highlight the potential complications of an ageing population on macroeconomic managements in Singapore. We have illustrated that having sufficient money or assets to meet the net CPF withdrawal is not yet the end of the story. The *substantial* amount of projected net CPF withdrawal *every year* will result in excess liquidity in the economy. As the projected amount is substantial relative to the monetary base in Singapore, failure to recognize the need to mob up this excess liquidity will result in very high inflation in Singapore.[12] Thus, there has to be appropriate and sufficiently effective measure (such as substantial issuance of government bonds) to mob up the excess liquidity.

[11] Although encouraging higher birth rate now could also mitigate the problem, it is not advisable to just rely on this policy. This is because the decision of having a child involves costs and considerations that will be far much greater than any possible tax incentives provided by the government. As result, the impact of the encouragement policies is likely to be small although effort along this line should be encouraged.

[12] If this ever happens and is not offset by sufficient downward movements in Singapore's exchange rate, Singapore's price and wage will be pushed to highly uncompetitive levels which could in turn create even more and greater problems in the longer future. Thus, the first best solution is to mob up the excess liquidity and avoid the possibility of subsequent series of complications or problems.

We have also explained that MAS's current ability to influence Singapore's exchange rate could be seriously hampered if there is substantial net CPF withdrawal in the longer future. We have also suggested two measures that can help maintain MAS's future influence on Singapore's exchange rate to reasonable levels, and at the same time reduce the required issuance of new government bonds. Along with these, we have also indicated the natural but important direction of policies that can achieve these two objectives: In general, measures that can increase CPF contribution and reduce CPF withdrawal can alleviate the problem. Nevertheless, as the amount of liquidity injection due to the projected net CPF withdrawal is substantial and is going to occur every year, there might not be sufficient number of effective enough policies along this direction. In such case, we may still need the help from substantial issuance of government bonds.

Appendix: Further Details on the Projection Procedures of the CPF Contribution and Withdrawals

Our projection starts with the population projections conducted in Wong et al. (2005). The population projection method is based on Lotka's discrete-time population growth model (Rogers, 1975). The procedure is based on matrix operations where the population age distribution is multiplied by a projection matrix forward through time. The method takes into account the main determinants of demographic growth. The population projection of Singapore residents (i.e. Singaporeans and permanent residents) is based on data from the most current 2000 Census of Population. The projection allows for age specific rates of mortality. The benchmark population projection assumes the fertility and mortality rates are the same as those in 2000 (see Wong et al., 2005 for further details). However, the authors also find that the projection results are qualitatively robust to reasonable changes in the assumptions of the fertility and mortality rates.

Based on the population projection, we made projections on the gross CPF contribution and the major components of the CPF withdrawals with appropriate assumptions. As highlighted in the main text, we have also conducted sensitivity analyses to check whether the projected results are sensitive to the assumptions. To avoid unnecessary complications due to assumptions on the inflation rate, all the projected figures are in 2004 dollar value. We have also taken into account the effects of the following CPF reforms on the gross contribution:

(a) The CPF monthly ceiling was reduced from $5500 in year 2004 to $5000 in year 2005 and to $4500 from year 2006 onwards; and

(b) The CPF contribution rates for various age groups were reduced (see footnote 1 for the details on the long term targets on the CPF contribution rates).

Because of the heterogeneous nature of the various major categories of CPF withdrawals, we have chosen to make separate projections for each of these categories. The five categories are: (1) lump sum withdrawals upon retirement, W1; (2) withdrawals under the CPF Minimum Sum Scheme, W2; (3) withdrawals for health care, W3; (4) withdrawals for housing, W4; and (5) withdrawals for other purposes, W5. For the first two categories, CPF holders upon age 55 can withdraw their CPF savings, after setting aside their CPF Minimum Sum. They can also used their CPF Minimum Sum to buy life annuity from a participating insurance company *placed as a fixed deposit with a participating bank* or left in their Retirement Account with the CPF Board. From age 62, they will receive monthly payment from their CPF Minimum Sum to help meet their basic needs in retirement. If they have placed a fixed deposit with a participating bank, the associated money (i.e., the deposit) will be withdrawn from the CPF Board and hence increase the monetary base in the economy. Thus, we have categorized this as part of the lump sum withdrawals in our projection. Meanwhile, retirees' receipts from the life annuity scheme with the insurance companies should not and will not be included in the second category (i.e., withdrawals from Minimum Sum). For the third category (i.e., withdrawals for health care), we have incorporated the effects of an ageing population on the projected withdrawals. We have also done the projections with different assumptions on the rise in health cost (see the main text for details). For the fourth category (i.e., withdrawals for purchase of properties), we assume CPF members will on average make such withdrawals in the age range of 30-44. We have also varied this assumption by

extending the age range, for example, 30-49. Again, the qualitative result is not sensitive to variations in this type of assumptions. As the last category (i.e., withdrawals for other purposes) is rather erratic, we make the conservative assumption that it is the same as that in 2004.[13]

[13] With the previous reform in allowing part of the CPF money be used for purchase of shares, there was substantial amount of withdrawals for other purposes at the initial years of the reform. As this has stabilized to a lower value of withdrawal, we have made the conservative assumption that there will not be further relaxation on this category. It there is, the projected CPF withdrawal will be even bigger (at least at the early stage of the reform).

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Table 1: Projected Resident Population in Singapore

(in thousands)

Year	Total number of Residents	Number of residents in the age group of 20-54	Number of residents in the age group of 55-64	Number of residents in the age group of 65 or above	Number of residents in the age group of 30-44
2005	3400	1868	322	289	877
2010	3502	1831	445	341	764
2015	3571	1764	539	446	682
2020	3612	1651	589	570	648
2025	3629	1579	564	710	685
2030	3613	1509	512	822	686
2035	3583	1484	438	894	671
2040	3509	1463	385	902	618
2045	3418	1422	404	847	595
2050	3316	1364	440	778	567

Table 2: Projected CPF contributions and withdrawals: Conservative Scenario

(millions S$ in 2004 dollar value)

Year	Net CPF Contributions	Gross CPF Contributions	Gross CPF Withdrawals	Lump Sum Withdrawals: Retirement (W1)	Withdrawals from CPF Minimum Sum (W2)	Withdrawals for health care (W3)	Withdrawals for housing (W4)	Withdrawals for other purposes (W5)
2005	4321	14327	10006	2396	359	794	6069	388
2010	3818	13970	10153	3021	454	1005	5285	388
2015	2985	13763	10779	3783	587	1300	4721	388
2020	1428	13118	11690	4452	736	1629	4486	388
2025	-336	12551	12887	4931	879	1946	4743	388
2030	-1576	11920	13497	5237	973	2154	4745	388
2035	-2067	11538	13605	5262	1031	2282	4641	388
2040	-1820	11246	13067	5158	1009	2234	4277	388
2045	-1559	11015	12575	5008	952	2109	4117	388
2050	-1324	10706	12030	4834	897	1986	3925	388

Table 3: Projected CPF contributions and withdrawals: Scenario 2

(millions S$ in 2004 dollar value)

Year	Net CPF Contributions	Gross CPF Contributions	Gross CPF Withdrawals	Lump Sum Withdrawals: Retirement (W1)	Withdrawals from CPF Minimum Sum (W2)	Withdrawals for health care (W3)	Withdrawals for housing (W4)	Withdrawals for other purposes (W5)
2005	4321	14327	10006	2396	359	794	6069	388
2010	3713	13970	10258	3021	454	1110	5285	388
2015	2850	13763	10914	3783	587	1435	4721	388
2020	1259	13118	11860	4452	736	1799	4486	388
2025	-539	12551	13089	4931	879	2149	4743	388
2030	-1801	11920	13721	5237	973	2378	4745	388
2035	-2304	11538	13842	5262	1031	2520	4641	388
2040	-2053	11246	13299	5158	1009	2466	4277	388
2045	-1779	11015	12794	5008	952	2328	4117	388
2050	-1531	10706	12237	4834	897	2192	3925	388

Table 4: Projected CPF contributions and withdrawals: Scenario 3

(millions S$ in 2004 dollar value)

Year	Net CPF Contributions	Gross CPF Contributions	Gross CPF Withdrawals	Lump Sum Withdrawals: Retirement (W1)	Withdrawals from CPF Minimum Sum (W2)	Withdrawals for health care (W3)	Withdrawals for housing (W4)	Withdrawals for other purposes (W5)
2005	4380	14327	9946	2336	359	794	6069	388
2010	3778	13970	10192	2955	454	1110	5285	388
2015	2845	13763	10918	3787	587	1435	4721	388
2020	1043	13118	12076	4667	736	1799	4486	388
2025	-1078	12551	13628	5469	879	2149	4743	388
2030	-2557	11920	14477	5993	973	2378	4745	388
2035	-3314	11538	14852	6272	1031	2520	4641	388
2040	-3036	11246	14283	6142	1009	2466	4277	388
2045	-2606	11015	13621	5836	952	2328	4117	388
2050	-2224	10706	12930	5527	897	2192	3925	388