



Analysis of Singapore's Economy

By : Tiffany Wu

How does the monetary policy affect inflation? Should the country increase savings?



Background Information



Background Information

- One of the richest countries in the world
- High political stability
- Little foreign debt



Source : <https://www.vecteezy.com/photo/2010691-merlion-statue-fountain-in-merlion-park-in-singapore-2018>



Source : CNN Travel

<https://www.cnn.com/travel/article/singapore-travel-covid-19/index.html>

- High savings rate from the government and from households
- Very stable, and low inflation rate, within 0.5%



Fiscal Policy

1

“Ensure Fiscal Sustainability”

- Singapore values long-term economic growth. Government spending is planned far in advance to deliver the most affordable and efficient long-term outcomes.
- Spending priorities include :
 - Healthcare
 - Education
 - Sustainability (Climate Change)
 - Infrastructure

2

“Support Growth”

- Singapore supports development and investing. They believe that a successful and flourishing economy is achieved through inclusion within a society and bringing businesses together to move forward.
- They also start investing in people early on, to create opportunities for people and “standard of living”.

3

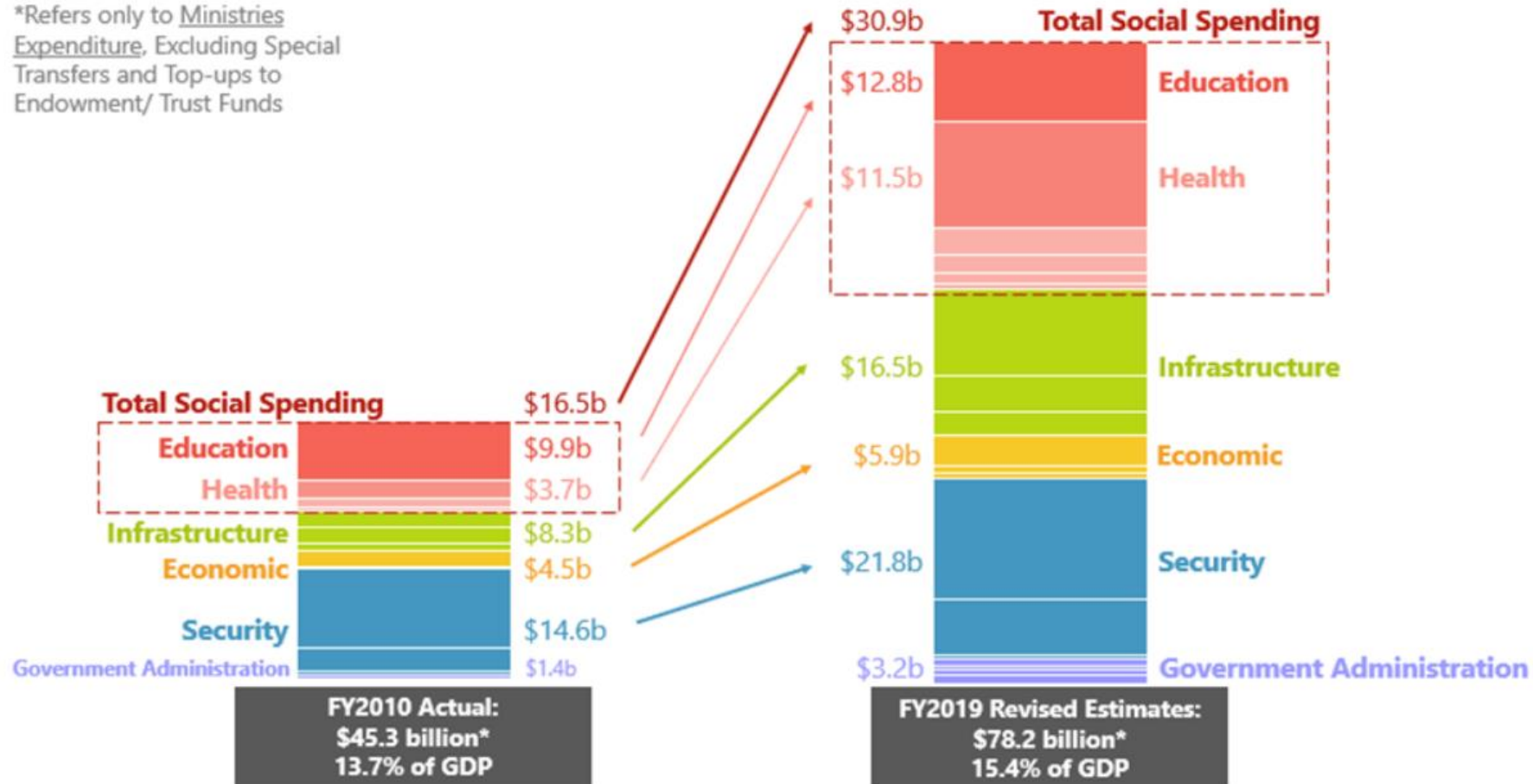
“Promote Equity”

- Singapore has a fair system for their taxes and transfers. Higher income individuals contribute more with less benefits, and lower-income or middle-class individuals receive more benefits than the taxes that they pay.
- Benefits include :
 - Government transfer payments
 - Government subsidies
 - Government rebates



Government Expenditures

*Refers only to Ministries Expenditure, Excluding Special Transfers and Top-ups to Endowment/ Trust Funds



Source : Ministry of Finance Singapore

(<https://www.mof.gov.sg/policies/fiscal#:~:text=Singapore's%20fiscal%20policy%20seeks%20to,build%20a%20better%20Singapore%20together.>)



Singapore's Monetary Policy

- Also known as the “Exchange Rate Policy”
- Targets the exchange rate
- Let's their currency rise or fall with respect to their trading partners' currencies
- Formally adopted in 1981



Source : The Telegram

(<https://www.thetelegram.com/business/singapore-central-bank-stands-pat-on-monetary-policy-as-growth-slows-300885/>)

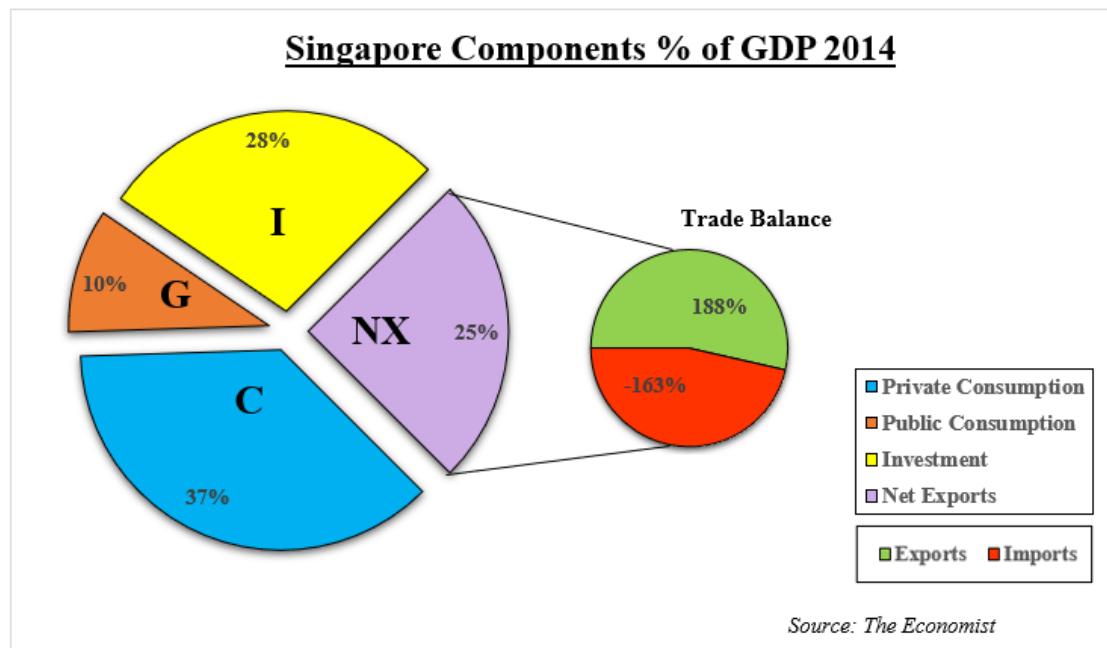


History

- In 1971, there was a global oil crisis, which affected Singapore
- Inflation rose to 20% post-oil shock in 1973
- In 1979, there was a second oil shock
- Singapore targeted the exchange rate during this oil shock and found success with this strategy
- Inflation was 8.5% (global inflation was 10% even in developed countries)
- Formally adopted the new exchange-rate policy in 1981, that is still used today



How does the monetary policy affect inflation?



Source : daily fx

https://www.dailyfx.com/forex/fundamental/article/special_report/2019/09/03/The-Singapore-Dollar-and-MAS-What-is-SGD-and-How-to-Trade-it.html

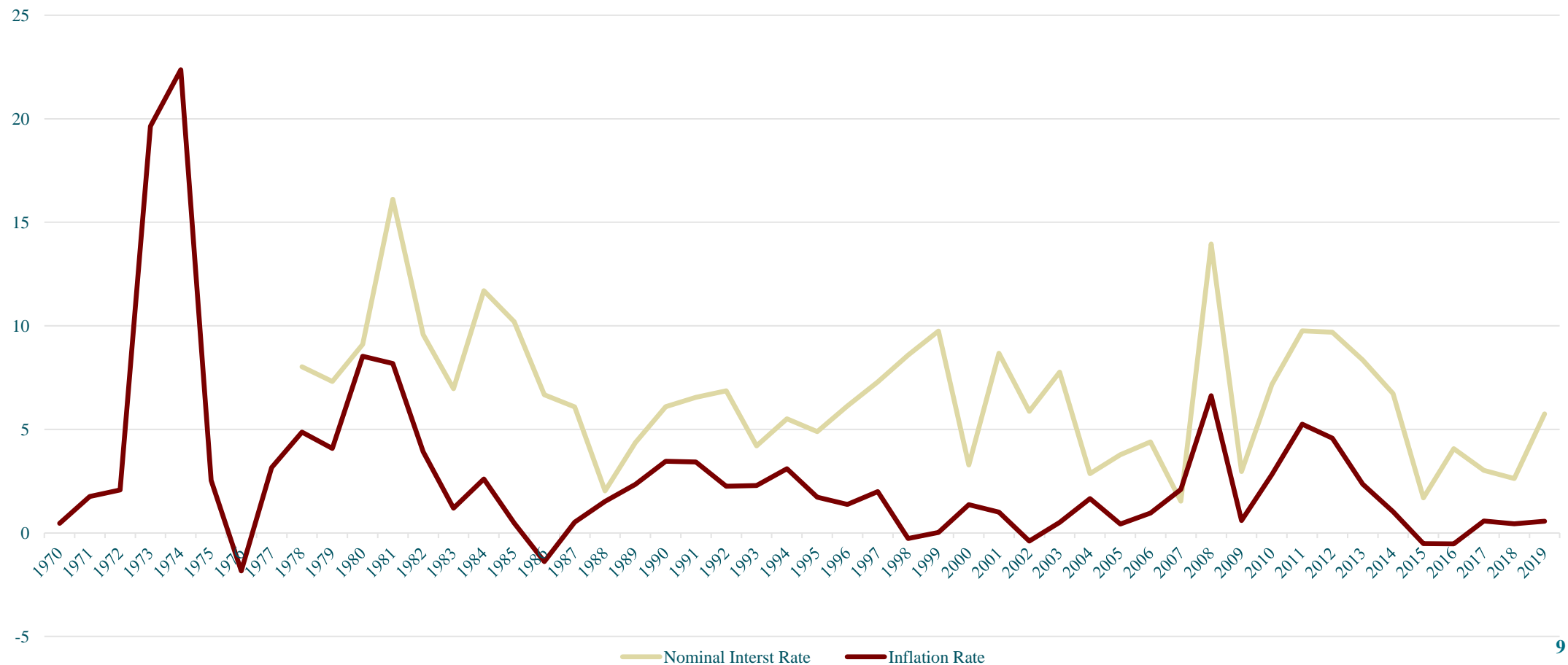
Singapore can match the international interest rate

- A strong Singapore dollar brings down prices of imported goods, slow down exports
- Relieves pressure on costs for domestic production
- Keeps domestic inflation low
- Exchange rate is easily manageable
- Government can control CPI inflation



Inflation Trend

Inflation Rate and Nominal Interest Rate in Percentage from 1970-2019



How the monetary policy influences inflation

- Nominal interest rate and inflation move together
- Stable inflation means stable change in nominal interest rates
- Stable change in nominal interest rates leads to predictable demand for money
- Stable prices creates a predictable environment for consumption
- Consumption should be stable overtime due to stable economic conditions (Random Walk Hypothesis)
- In reality, the exchange rate policy was effective in keeping inflation lower during the second oil shock



Good strategy?

- Singapore has very little resources
- They are dependent and imports and exports
- Exchange-rate based monetary policy creates predictable price target
- Stable inflation and stable economy
- Easily manageable by the government



Should Singapore Increase Savings?



| Year | Share of labour compensation | Delta | Capital Stock | Real GDP | GDP growth | MPK | MPK-delta |
|------|------------------------------|--------|---------------|-------------|------------|--------|-----------|
| 1960 | 0.4021 | 0.0269 | 33458.7656 | 8490.9629 | | 0.1517 | 0.1249 |
| 1961 | 0.4021 | 0.0269 | 34720.2344 | 9168.7676 | 0.0798 | 0.1579 | 0.1310 |
| 1962 | 0.4021 | 0.0269 | 36107.6992 | 9807.6006 | 0.0697 | 0.1624 | 0.1356 |
| 1963 | 0.4021 | 0.0269 | 38855.8672 | 10782.2363 | 0.0994 | 0.1659 | 0.1390 |
| 1964 | 0.4021 | 0.0270 | 40991.8867 | 10367.8623 | -0.0384 | 0.1512 | 0.1242 |
| 1965 | 0.4021 | 0.0270 | 43826.7773 | 11143.8506 | 0.0748 | 0.1520 | 0.1250 |
| 1966 | 0.4021 | 0.0271 | 47011.5625 | 12343.7041 | 0.1077 | 0.1570 | 0.1299 |
| 1967 | 0.4021 | 0.0273 | 51273.4688 | 13852.5352 | 0.1222 | 0.1615 | 0.1343 |
| 1968 | 0.4021 | 0.0280 | 56221.8906 | 15730.8271 | 0.1356 | 0.1673 | 0.1393 |
| 1969 | 0.4021 | 0.0296 | 63288.2227 | 17866.8535 | 0.1358 | 0.1688 | 0.1392 |
| 1970 | 0.4021 | 0.0315 | 73192.4297 | 20317.0449 | 0.1371 | 0.1660 | 0.1345 |
| 1971 | 0.4021 | 0.0341 | 85163.0859 | 22839.1543 | 0.1241 | 0.1604 | 0.1263 |
| 1972 | 0.4021 | 0.0367 | 98052.2188 | 25880.3105 | 0.1332 | 0.1578 | 0.1212 |
| 1973 | 0.4021 | 0.0391 | 110741.4688 | 28624.3047 | 0.1060 | 0.1546 | 0.1155 |
| 1974 | 0.4021 | 0.0417 | 123930.7188 | 30375.4238 | 0.0612 | 0.1466 | 0.1049 |
| 1975 | 0.4021 | 0.0430 | 135873.6250 | 31584.8770 | 0.0398 | 0.1390 | 0.0960 |
| 1976 | 0.4021 | 0.0436 | 147986.4063 | 33933.9023 | 0.0744 | 0.1371 | 0.0936 |
| 1977 | 0.4021 | 0.0443 | 159497.4688 | 36259.2891 | 0.0685 | 0.1359 | 0.0917 |
| 1978 | 0.4021 | 0.0453 | 172754.6406 | 39079.2813 | 0.0778 | 0.1353 | 0.0900 |
| 1979 | 0.4021 | 0.0467 | 187899.4688 | 42812.9844 | 0.0955 | 0.1362 | 0.0895 |
| 1980 | 0.4021 | 0.0483 | 206845.8438 | 47142.7500 | 0.1011 | 0.1363 | 0.0880 |
| 1981 | 0.4141 | 0.0492 | 228817.9219 | 52241.7734 | 0.1082 | 0.1338 | 0.0845 |
| 1982 | 0.4517 | 0.0491 | 256696.7813 | 55952.0469 | 0.0710 | 0.1195 | 0.0704 |
| 1983 | 0.4659 | 0.0475 | 287848.8750 | 60738.5234 | 0.0855 | 0.1127 | 0.0652 |
| 1984 | 0.4779 | 0.0450 | 322272.7188 | 66078.8906 | 0.0879 | 0.1071 | 0.0620 |
| 1985 | 0.4910 | 0.0430 | 349173.3438 | 65667.3203 | -0.0062 | 0.0957 | 0.0527 |
| 1986 | 0.4484 | 0.0415 | 369341.7813 | 66549.1406 | 0.0134 | 0.0994 | 0.0579 |
| 1987 | 0.4242 | 0.0407 | 388690.7188 | 73734.9688 | 0.1080 | 0.1092 | 0.0685 |
| 1988 | 0.4159 | 0.0405 | 409009.6875 | 82040.2969 | 0.1126 | 0.1172 | 0.0767 |
| 1989 | 0.4257 | 0.0410 | 434183.3438 | 90374.4375 | 0.1016 | 0.1195 | 0.0785 |
| 1990 | 0.4293 | 0.0422 | 461847.3438 | 99250.1563 | 0.0982 | 0.1226 | 0.0804 |
| 1991 | 0.4382 | 0.0436 | 493390.7813 | 105888.5156 | 0.0669 | 0.1206 | 0.0770 |
| 1992 | 0.4471 | 0.0447 | 529151.1875 | 112919.1719 | 0.0664 | 0.1180 | 0.0733 |
| 1993 | 0.4359 | 0.0456 | 568371.7500 | 125862.8516 | 0.1146 | 0.1249 | 0.0794 |
| 1994 | 0.4393 | 0.0460 | 611563.2500 | 139830.6563 | 0.1110 | 0.1282 | 0.0822 |
| 1995 | 0.4402 | 0.0463 | 661025.2500 | 149899.7344 | 0.0720 | 0.1269 | 0.0807 |
| 1996 | 0.4417 | 0.0470 | 726722.8750 | 161099.3125 | 0.0747 | 0.1238 | 0.0767 |
| 1997 | 0.4373 | 0.0477 | 798316.8750 | 174502.6563 | 0.0832 | 0.1230 | 0.0754 |
| 1998 | 0.4620 | 0.0475 | 859764.8125 | 170671.6563 | -0.0220 | 0.1068 | 0.0593 |
| 1999 | 0.4558 | 0.0470 | 912462.6875 | 180440.9063 | 0.0572 | 0.1076 | 0.0606 |

Increase Savings? Or increase spending?

| | | | | | | | |
|------|--------|--------|--------------|-------------|---------|--------|--------|
| 2000 | 0.4576 | 0.0467 | 973203.0625 | 196751.2344 | 0.0904 | 0.1097 | 0.0630 |
| 2001 | 0.4893 | 0.0464 | 1023760.1250 | 194647.9219 | -0.0107 | 0.0971 | 0.0507 |
| 2002 | 0.4731 | 0.0461 | 1060822.1250 | 202267.6563 | 0.0391 | 0.1005 | 0.0544 |
| 2003 | 0.4645 | 0.0457 | 1090466.6250 | 211442.0625 | 0.0454 | 0.1038 | 0.0581 |
| 2004 | 0.4263 | 0.0458 | 1127256.5000 | 232204.7813 | 0.0982 | 0.1182 | 0.0724 |
| 2005 | 0.4218 | 0.0462 | 1164091.7500 | 249292.8281 | 0.0736 | 0.1238 | 0.0776 |
| 2006 | 0.4198 | 0.0470 | 1206594.8750 | 271742.0000 | 0.0901 | 0.1307 | 0.0837 |
| 2007 | 0.4238 | 0.0479 | 1260674.3750 | 296258.9375 | 0.0902 | 0.1354 | 0.0876 |
| 2008 | 0.4476 | 0.0486 | 1322366.1250 | 301793.7813 | 0.0187 | 0.1261 | 0.0775 |
| 2009 | 0.4574 | 0.0490 | 1387394.1250 | 302158.8750 | 0.0012 | 0.1182 | 0.0692 |
| 2010 | 0.4395 | 0.0495 | 1456960.8750 | 346049.4063 | 0.1453 | 0.1331 | 0.0837 |
| 2011 | 0.4395 | 0.0503 | 1529518.2500 | 367981.5625 | 0.0634 | 0.1349 | 0.0845 |
| 2012 | 0.4395 | 0.0510 | 1609567.3750 | 384399.4688 | 0.0446 | 0.1339 | 0.0829 |
| 2013 | 0.4395 | 0.0515 | 1694113.7500 | 402994.0313 | 0.0484 | 0.1333 | 0.0818 |
| 2014 | 0.4395 | 0.0521 | 1780328.6250 | 418863.9063 | 0.0394 | 0.1319 | 0.0797 |
| 2015 | 0.4395 | 0.0526 | 1864497.0000 | 431381.7813 | 0.0299 | 0.1297 | 0.0770 |
| 2016 | 0.4395 | 0.0533 | 1945892.8750 | 445373.5000 | 0.0324 | 0.1283 | 0.0750 |
| 2017 | 0.4395 | 0.0548 | 2027497.7500 | 464687.6250 | 0.0434 | 0.1285 | 0.0737 |
| 2018 | 0.4395 | 0.0564 | 2094537.6250 | 480664.0625 | 0.0344 | 0.1286 | 0.0722 |
| 2019 | 0.4395 | 0.0574 | 2155262.2500 | 484188.8125 | 0.0073 | 0.1259 | 0.0685 |



Formulas used

■ GDP growth

$$GDP_{growth} = \frac{GDP_{year2} - GDP_{year1}}{GDP_{year1}}$$

■ MPK

$$\begin{aligned} MPK &= \frac{\alpha Y}{K} \\ &= \frac{(1 - \text{share of labour compensation})GDP}{\text{Capital Stock}} \end{aligned}$$



| Year | Share of labour compensation | Delta | Capital Stock | Real GDP | GDP growth | MPK | MPK-delta |
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| 1960 | 0.4021 | 0.0269 | 33458.7656 | 8490.962 | | 0.151 | 0.1249 |
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| 1997 | 0.4373 | 0.0477 | 798316.8750 | 174502.6563 | 0.0832 | 0.1230 | 0.0754 |
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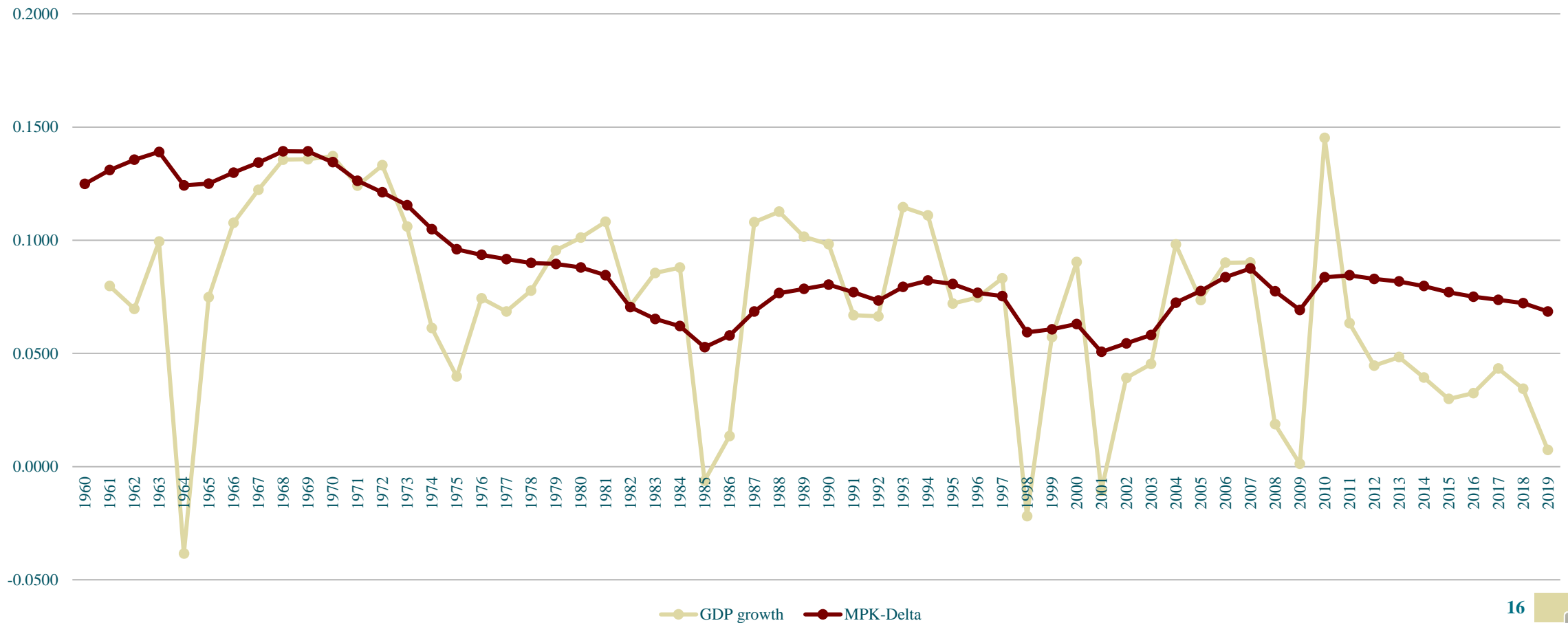
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Increase Savings? Or increase spending?

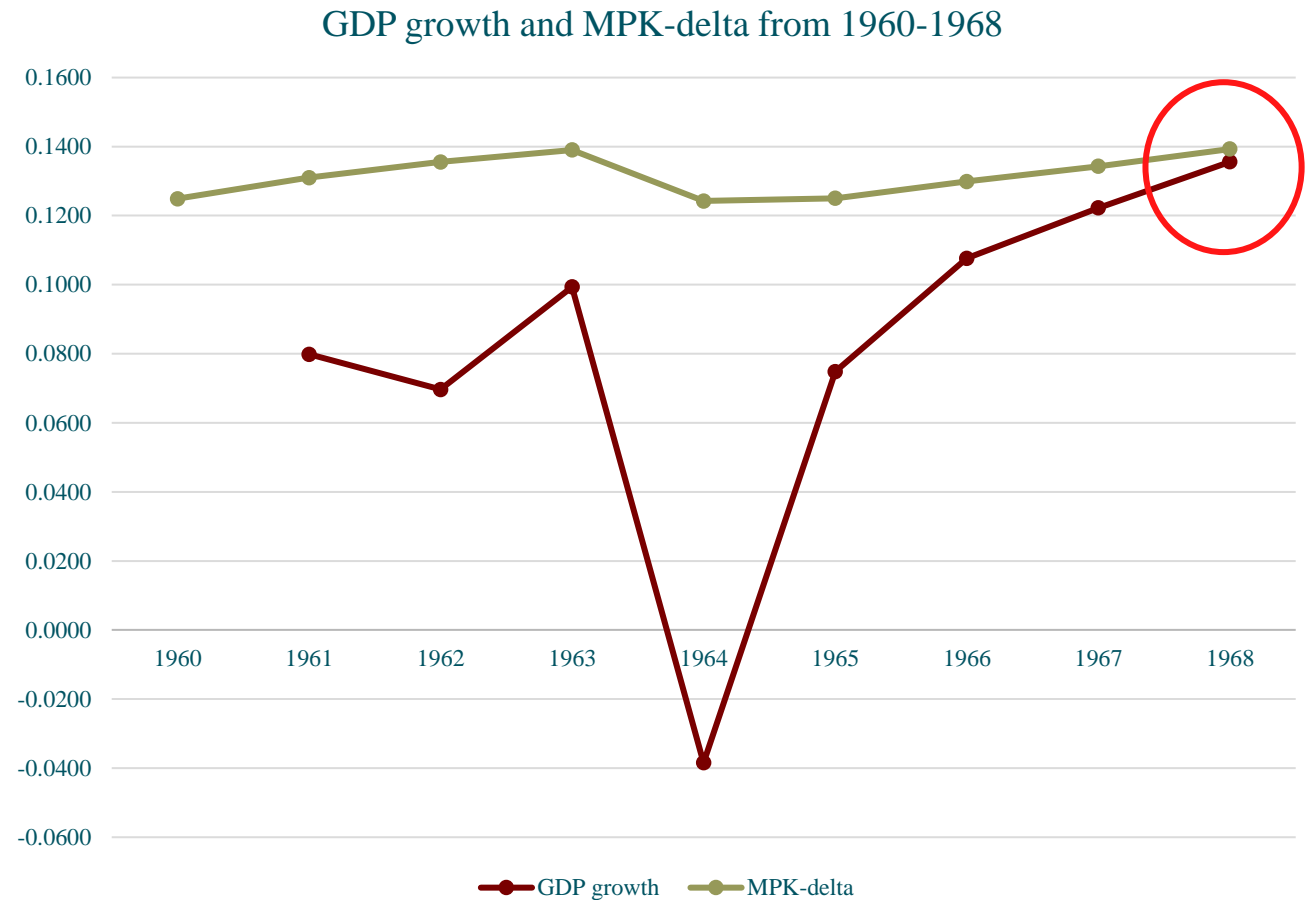
GDP growth rate and MPK-delta over time



Increase savings? Or Spend more?

1960-1968

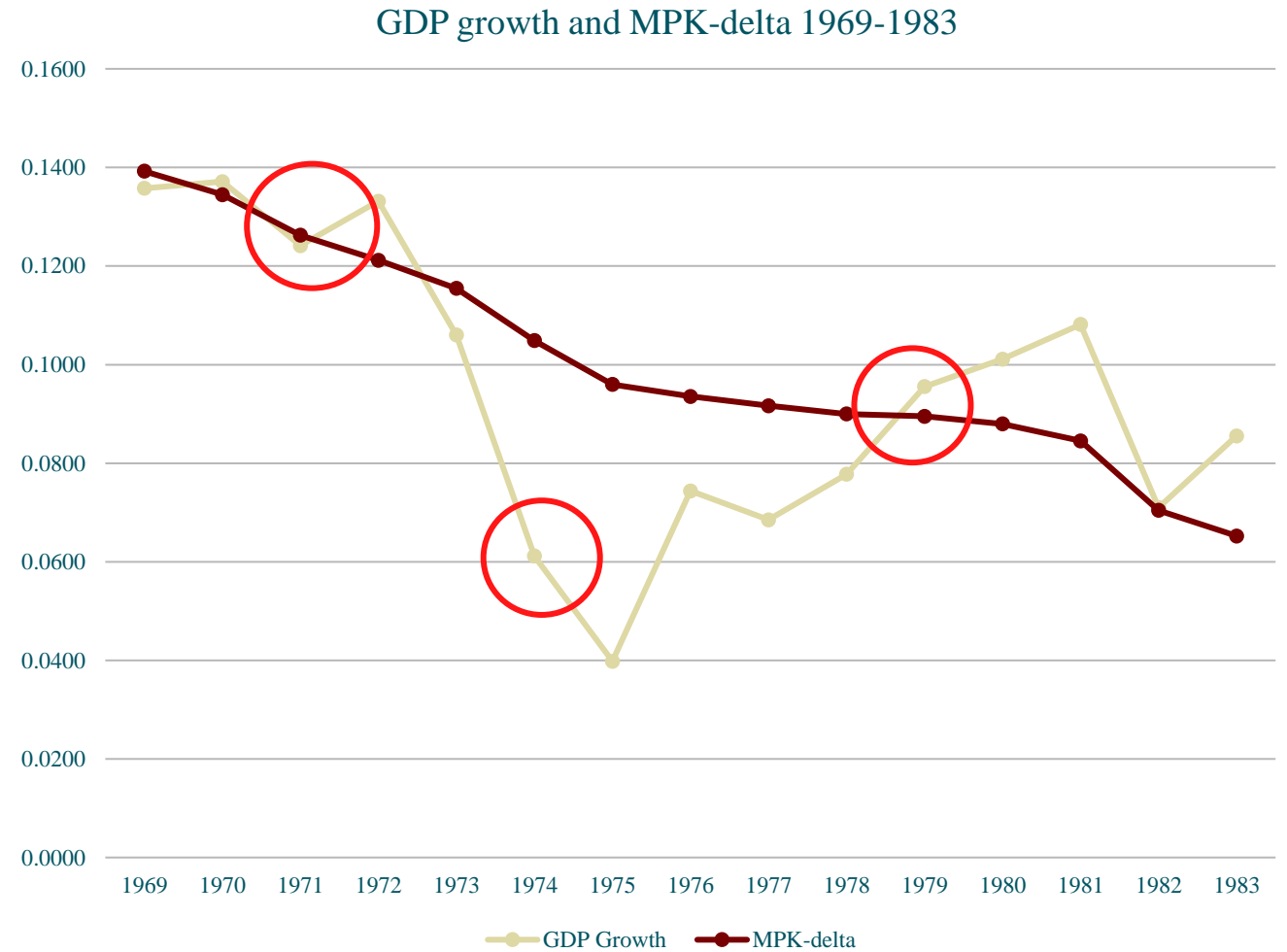
- Singapore must increase savings
- Singapore adopted their own currency and broke linkage with the Malaysian Federation in 1968
- Country's savings rate started moving closer to the equilibrium rate



Increase savings? Or Spend more?

1969-1983

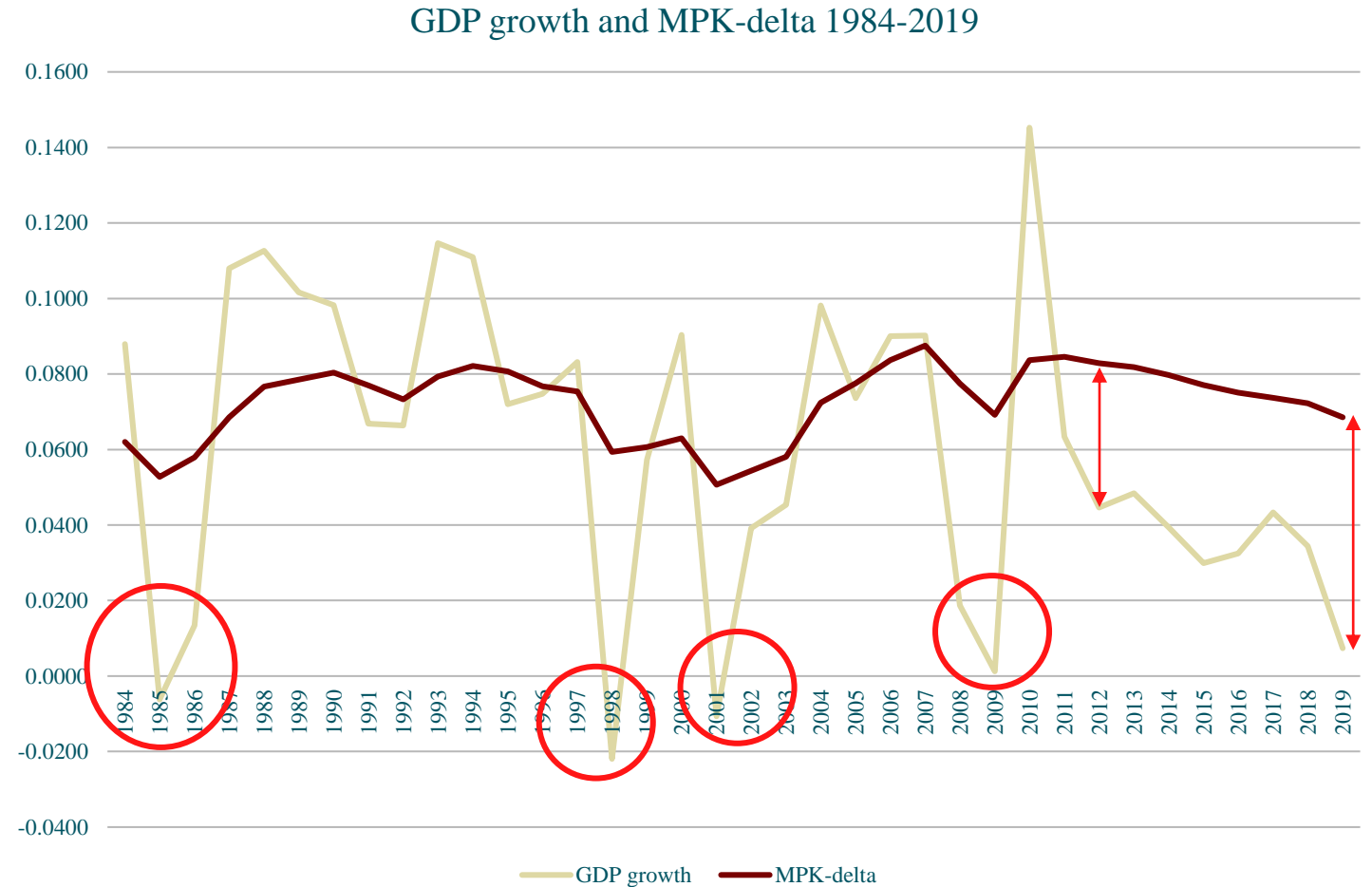
- Savings rate had been optimal, until the oil shock in 1971, and post-oil shock effects seen from 1973
- Savings rate returned closer to the equilibrium rate even during the second oil shock, which was around the time the exchange-rate policy was introduced



Increase savings? Or Spend more?

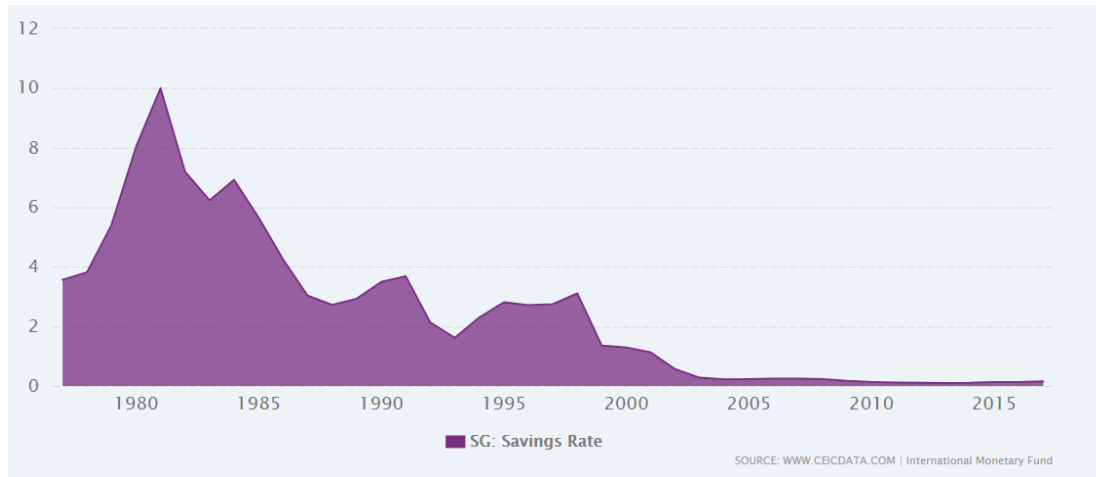
1984-2019

- 1985-1986, 2001 : were years of recession
- 1997-1998 : worst period during the financial crisis in Asia
- 2008-2009 : were the years of a global recession
- 2011 and further, Singapore has been consuming more than saving → should increase savings



What can we gather from this information?

Singapore should increase savings, based on recent trends



- Overall, the savings rate for Singapore has been high, on average, if we ignore global financial events
- From 2011 and further, there has been a large gap between GDP growth and MPK – delta
- GDP growth has also been slower
- If the trend does continue, Singapore should increase savings
- The results are accurate with data from the Monetary Authority of Singapore. It is true that Singapore's Savings rate has dropped



Conclusion



Sources

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