

# Synopsis of Healthcare Financing Studies

## Social Health Insurance

### **Introduction**

An Income-based Contributory Scheme (ICS) is essentially a social health insurance scheme, which requires both employers and employees to contribute a certain percentage of the employees' salary into the scheme, and the contributions are pooled together to supplement the funding of public health services for the whole population. The pooling of contributions distinguishes the scheme from an individual based Medical Savings Accounts scheme. The Food and Health Bureau commissioned the Department of Economics, The Chinese University of Hong Kong to conduct a study on the ICS.

### *Scheme Features*

2. This study is premised on the assumption that the ICS is compulsory for the whole working population. Contribution rate is at 3% or 4% of monthly income, shared equally between employees and employers. With reference to the arrangement of the Mandatory Provident Fund, only employees with monthly income above \$5,000 are required to contribute and the contribution is capped at \$20,000. The contributions are pooled together in a centralized account to fund public health services for the whole population. However, it has been assumed in the study that funding from the ICS account will only be expended when the public health expenditure exceeds the government spending on health (funded by government revenues), which is assumed to be about 15% of the total government budget currently and will be increased to 17%. If there are no funding shortfalls for the public health expenditure, savings in the ICS account will accumulate and attract an annual real investment return of 3%.

### **Objective**

3. The objectives of the study are (i) to estimate how much funding an ICS can generate with different contribution rates, (ii) to explore the sufficiency of the scheme in meeting the future public health expenditure and (iii) to assess the likely long term impact of such a scheme on Hong Kong's economy in terms of macroeconomic indicators such as Gross Domestic Product (GDP), private

consumption expenditure, employment, prices, and wage bills for the period of 2006 to 2030.

## **Methodology**

4. The study is an economic illustration that follows the econometric model used by the Project LINK of the United Nations. Project LINK was headed by Prof. Lawrence Robert Klein, Nobel laureate for Economics in 1980. It is an on-going large scale research project that collects annual economic forecasts from countries worldwide to track the development of the world economy.

5. The Hong Kong version of the LINK Model makes projections on economic indicators pertaining to GDP, wage rate, unemployment rate, price deflators, etc. It contains a set of simultaneous-equations, which determine the values of a set of variables of interest (i.e. the endogenous variables) by a set of predetermined variables (i.e. the exogenous or lagged endogenous variables). The model is divided into four parts: aggregate demand (for components of GDP); labour market (for wage rate, and labour force); prices (for price deflators for GDP components); and monetary market. The projected economic indicators are submitted to the United Nations on a regular basis. For the purpose of this study, additional variables and equations have been included to facilitate economic analysis of the ICS.

6. Key assumptions employed in the Hong Kong LINK Model include:

- (a) contributable wage bill (CWB) at 73% of the total wage bill;
- (b) the real rate of return from investment is 3%;
- (c) GDP growth assumptions follow those obtained by the 2004 consultancy study on development of employment projection model for strategic land use planning, commissioned by the Planning Department; and
- (d) ageing of the population is approximated by the elderly dependency ratios (EDRs) for 65+, which are 164/1000 persons aged 15 to 64 in 2005 and 428/1000 persons in 2033 respectively.

7. Apart from the data maintained by the Hong Kong LINK Model, additional data are obtained, which include:

- (a) public account data from the Financial Services and the Treasury Bureau and published in various issues of Hong Kong Annual Digest of Statistics and Census and Statistics Department (C&SD) website;
- (b) Hong Kong Population Projection 2004 - 2033 from C&SD; and
- (c) wage bill (1984-2005) and income distribution data (2005 and 2006) from C&SD.

## Fund Generated

8. If the ICS came into force in 2006, it would have generated about \$10 billion in that year if the contribution rate were 3%, or \$13 billion if the contribution rate were at 4% (Table 1). The projected amounts under the two contribution rates are \$12 billion and \$16 billion respectively in year 2010, and \$31 billion and \$42 billion respectively in year 2030.

Table 1. Annual ICS contribution

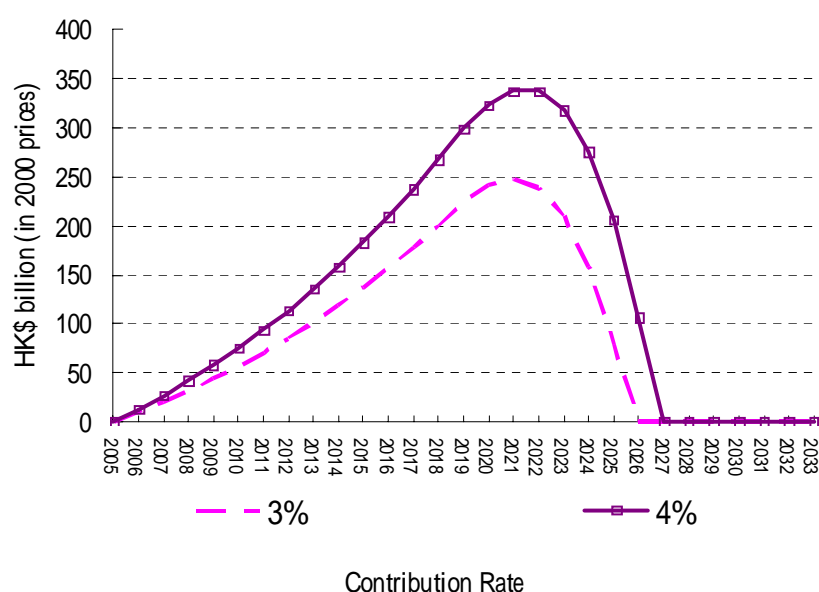
HK\$ billion in 2000 prices		
Year	Contribution Rate	
	3%	4%
2006	9.7	12.9
2010	11.7	15.6
2015	14.9	19.8
2020	19.0	25.3
2025	24.3	32.4
2030	31.2	41.6

## Sufficiency

9. The sufficiency or otherwise of the scheme in meeting the funding shortfalls of public health expenditure is illustrated by the ICS account balances over time. Positive account balance indicates that there are sufficient funds to meet the public health expenditure that exceeds the government spending on health. The model simulation exercise shows that a 3% or 4% contribution rate can generate funds for covering the shortfall by building up reserve to meet later expenditures for a period of time. Figure 1 illustrates that the ICS account balance will grow

until about 2021 and then begin to fall. The scheme will be able to meet the funding shortfalls of public health expenditure up to 2025 and 2026 at 3% and 4% contribution rate respectively. If we apply a variation of the contribution rate which begins at 3% and later increases to 5%, the ICS account will be sufficient up to 2026. On the other hand, if the ICS contribution just matches the funding shortfall on a yearly basis, the contribution rate may initially be lower but will have to be adjusted upward, possibly above 5% in the long run.

**Figure 1. ICS account balance at different contribution rates**



### Economic Impact

10. Possible impacts of the ICS on Hong Kong’s economy are mainly due to a fall in disposable income after the working population has made their ICS contributions. Table 2 illustrates the impacts on selected economic indicators. In terms of GDP, it is shown that the annual real GDP level would have gone down by 0.18% and 0.23% in 2006 if ICS were implemented that year at 3% and 4% contribution rate respectively. The impact will decrease gradually to 0.06% and 0.08% respectively in 2030. The negative impact of ICS on real GDP growth rate is generally negligible over time but the immediate effect in the implementation year of 2006 is a drop of 0.19 percentage point at 3% contribution rate and 0.25 percentage point at 4% contribution rate.

11. Implementation of the ICS at 3% contribution rate reduces private consumption by less than 0.6% from 2006 to 2030. For an additional percentage

point increase in contribution rate, private consumption will drop an additional 0.2 percentage point on average. The impact on government expenditure is positive and increasing over time, but the impact of a marginal increase in contribution rate is negligible.

Table 2. Impacts of ICS on selected economic indicators

Year	Contribution rate		Contribution rate	
	3%	4%	3%	4%
	<b>Real GDP level (change in %)</b>		<b>Real GDP growth rate (change in % point)</b>	
2006	-0.18%	-0.23%	-0.19	-0.25
2010	-0.16%	-0.21%	0.01	0.01
2015	-0.12%	-0.16%	0.01	0.01
2020	-0.09%	-0.12%	0.00	0.01
2025	-0.07%	-0.10%	0.00	0.01
2030	-0.06%	-0.08%	0.00	0.00
	<b>Private consumption (change in %)</b>		<b>Government expenditure (change in %)</b>	
2006	-0.55%	-0.73%	0.0%	0.0%
2010	-0.59%	-0.78%	1.5%	1.5%
2015	-0.58%	-0.77%	1.9%	1.9%
2020	-0.56%	-0.75%	1.9%	1.9%
2025	-0.55%	-0.73%	2.0%	2.0%
2030	-0.54%	-0.72%	2.0%	2.0%

12. The impacts of the ICS on other economic indicators such as annual GDP deflators, unemployment rate, fixed capital formation and wage bills are negligible.

## Conclusion

13. The economic illustration shows that if the ICS contribution rate is 3% and the government spending on health is fixed at 17% of total government budget, then ICS will on average –

- a) generate about \$12 billion in 2010 and \$31 billion in 2030;
- b) provide sufficient supplementary public health funding until 2025;

- c) reduce annual real GDP level by less than 0.18%, and
  - d) have insignificant impact on other economic indicators.
14. If the contribution is 4%, then ICS will on average –
- a) generate about \$16 billion in 2010 and \$42 billion in 2030;
  - b) provide sufficient supplementary public health funding until 2026;
  - c) reduce annual real GDP level by less than 0.23%, and
  - d) have insignificant impact on other economic indicators.

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