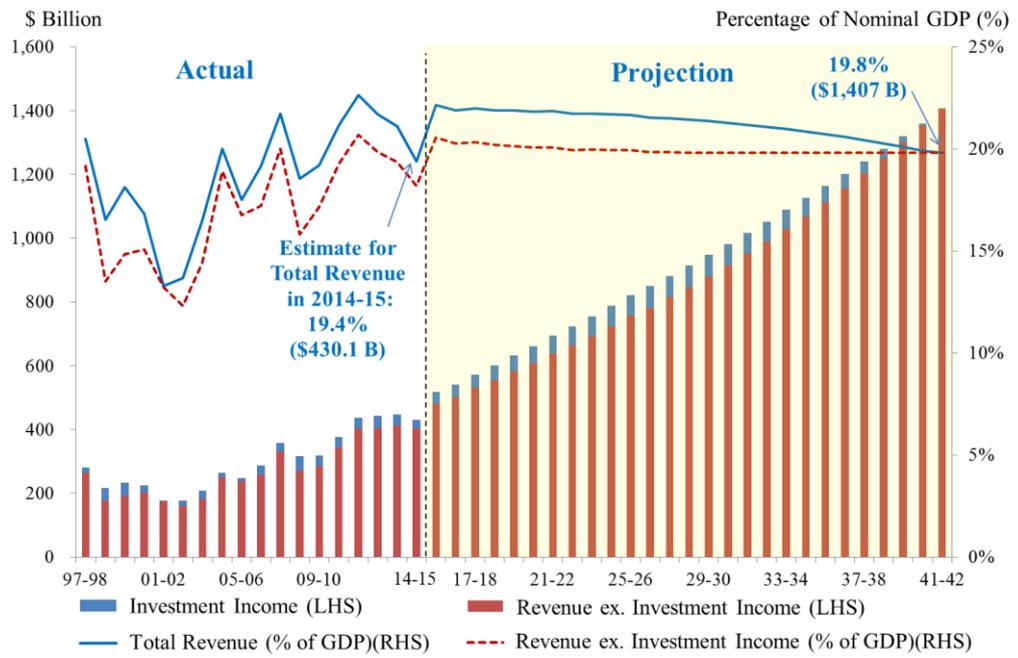


Chapter 4 – Revenue Projections

Overview

- 4.1 Expenditure aside, the Working Group has examined projections on government revenue for the upcoming three decades. The projections are based on an econometric modelling exercise analysing the historical relationship between the major revenue items and the boom-bust cycle of the macro economy, estimated on data over the period 1991-92 to 2012-13.
- 4.2 Under the **Base Case** using the macroeconomic assumptions as discussed in Chapter 2, government revenue before investment income as ratio of nominal GDP is projected to hover at around or slightly above 20% in mid 2010s up until early 2020s. From 2022 onwards, when the impact of population ageing progressively sets in to undermine economic growth potential, government revenue before investment income is projected to grow at 4.7% per annum over the period 2014-15 to 2041-42. The projected trend growth broadly aligns with the projected trend growth in nominal GDP (4.4% per annum).
- 4.3 Investment income is projected using an assumed 5% annual rate of return (which is the actual rate of return for 2013-14 and is broadly comparable to the average investment return of 5.3% on the fiscal reserves for the five-year period from 2010-11 to 2014-15) on the average fiscal reserves balance. After taking into account investment income, government revenue is projected to **grow at 4.5% per annum** under the **No Service Enhancement Scenario**. This lies roughly in the mid-range of the 17-year average growth since 1997-98 at 2.5% per annum and the five-year average growth since 2009-10 at 6.2% per annum. Government revenue as ratio of nominal GDP is projected at 19.8% in 2041-42; or in dollar terms, to rise from \$430.1 billion in 2014-15 to \$1,407 billion in 2041-42.

Chart 4.1 – Projection on government revenue

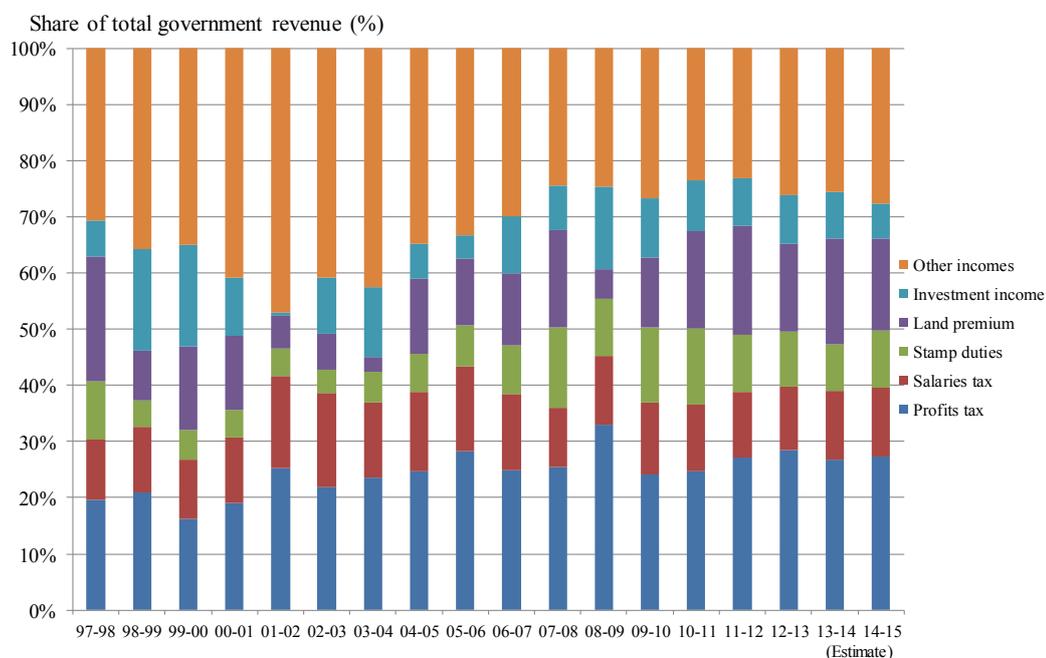


Government revenue – current profile

4.4 Total government revenue is estimated to be \$430.1 billion in 2014-15. For analytical purpose, five major revenue items can be identified as key components within the total government revenue. They are profits tax (accounting for 27% of the estimated government revenue in 2014-15), land premium (16%), salaries tax (12%), stamp duties (10%) and investment income (6%), which together account for around 72% of the estimated government revenue in 2014-15. The five major revenue items aside, other incomes include revenue items such as bets and sweeps tax, rates, motor vehicle taxes, duties on alcohol, cigarettes and hydrocarbon oil, etc. (They will be collectively referred to as “other incomes excluding investment income” in paragraphs 4.13 and 4.14 below).

4.5 The relativity of these major revenue items within the total government revenue has shown considerable changes since 1997-98, as can be seen in *Chart 4.2* below –

Chart 4.2 – Share of major revenue items since 1997-98



Government revenue is highly sensitive to economic cycles

4.6 Being a small and open economy, Hong Kong's economic performance is largely susceptible to the vicissitudes of the global economic environment. Government revenue, while being highly sensitive to economic cycles, displays an even larger volatility than the ebbs and flows of the economy, as illustrated in *Chart 4.3*. For instance, when the economy was ensnared in difficulties during the Asian Financial Crisis in 1998, IT bubble burst in 2000 and the Global Financial Crisis in 2008, government revenue plunged much more sharply than that of the nominal GDP. By contrast, government revenue picked up notably faster than nominal GDP at times when the economic conditions were favourable. By and large, in the long run when economic cycles smooth out, growth in government revenue is broadly commensurate with that of nominal GDP, as evident in *Table 4.1*.

Chart 4.3 – Government revenue and nominal GDP for the years since 1991-92

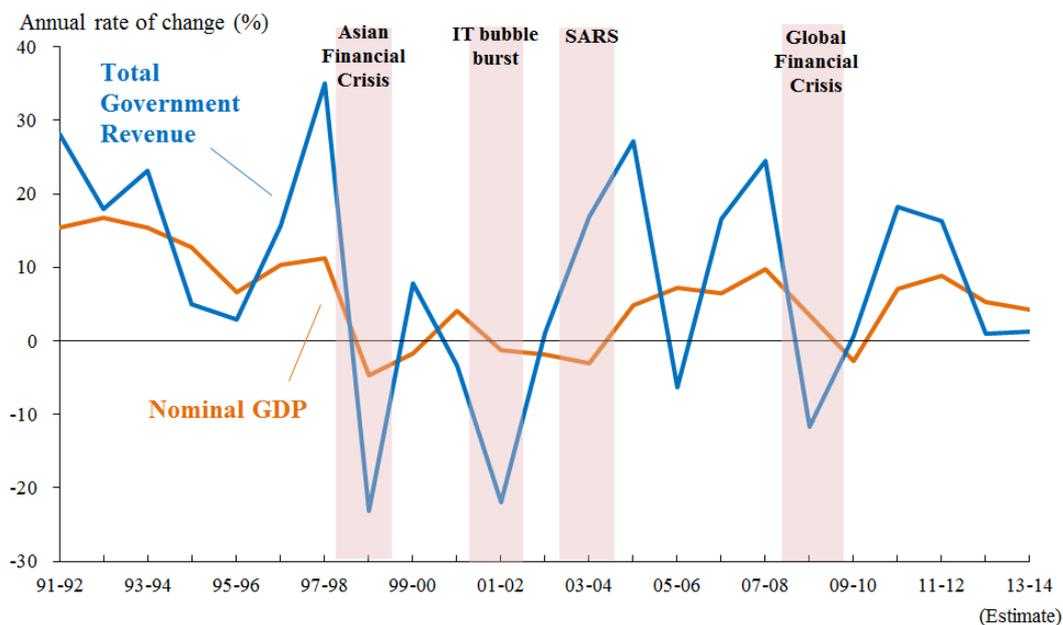


Table 4.1 – Historical growth trends of nominal GDP and government revenue

Period	Nominal GDP	Government revenue
1974-75 – 2013-14 (40 years)	10.3% p.a.	11.7% p.a. (11.7% p.a.)
1984-85 – 2013-14 (30 years)	7.9% p.a.	9.1% p.a. (9.1% p.a.)
1998-99 – 2013-14 (16 years)	2.8% p.a.	3.0% p.a. (2.8% p.a.)

Note: Figures in bracket refer to the growth rate of government revenue before investment income.

4.7 To further examine the relationships between the government revenue and the overall economy, the Working Group has analysed the historical patterns between the each of the major revenue items and the then prevailing macroeconomic conditions, as discussed below. For analytical purpose, where relevant the revenue items have been adjusted for the effects of various one-off rebates or major one-off receipts (e.g. receipts from the securitization of government toll tunnels and bridge), so as to better reflect their underlying trends.

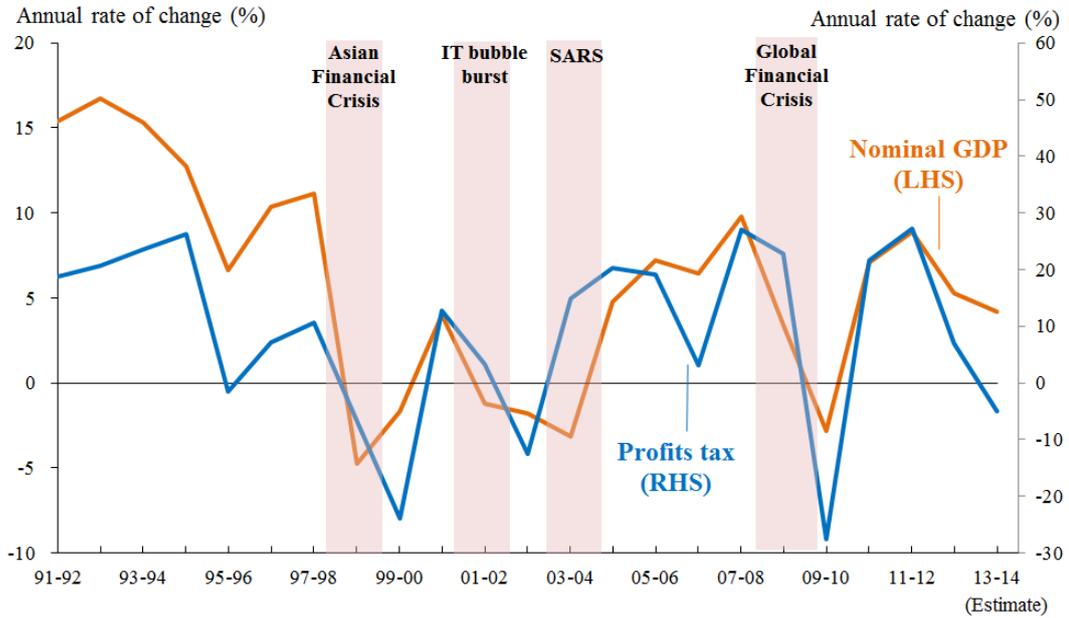
Profits tax¹

- 4.8 Profits tax is the largest single contributor within total government revenue, accounting for 27% of the estimated government revenue in 2014-15. As *Chart 4.4* shows, profits tax is highly sensitive to the economic ups and downs, understandably so because corporate's pricing power and hence profitability would generally improve during economic upswings, but they are also the first to be affected during economic downturns.
- 4.9 Specifically, the profits tax revenue plunged sharply in 1999-2000, hitting a low of 3.1% of nominal GDP, due to the negative shocks from the Asian Financial Crisis and the ensuing profit margin squeeze with the onset of deflation. As the economy turned around and rebounded swiftly after 2003, profits tax revenue as ratio of nominal GDP also rose generally, though interrupted temporarily by the recession in 2008-09. Smoothing out the economic cycles over the period 1991-92 to 2013-14, profits tax revenue as ratio of nominal GDP averaged at 4.4%.

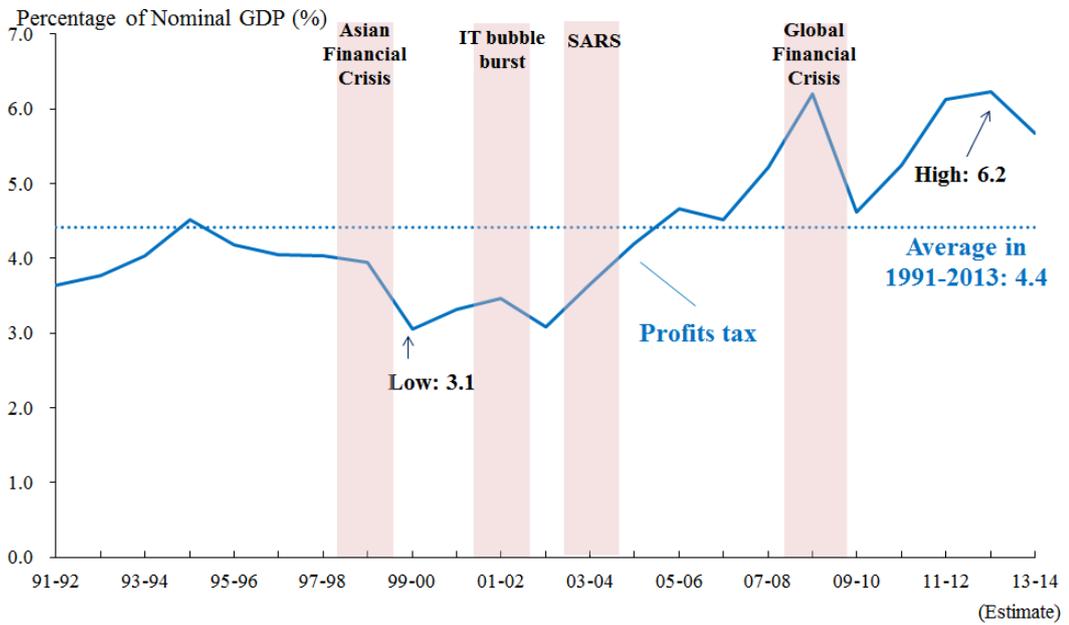
¹ Profits tax figures in paragraphs 4.8 – 4.9 have been adjusted for changes in corporate tax rate and tax rebates, and hence are different from the actual figures.

Chart 4.4 - Profits tax *

(a) Annual rate of change



(b) As ratio of nominal GDP



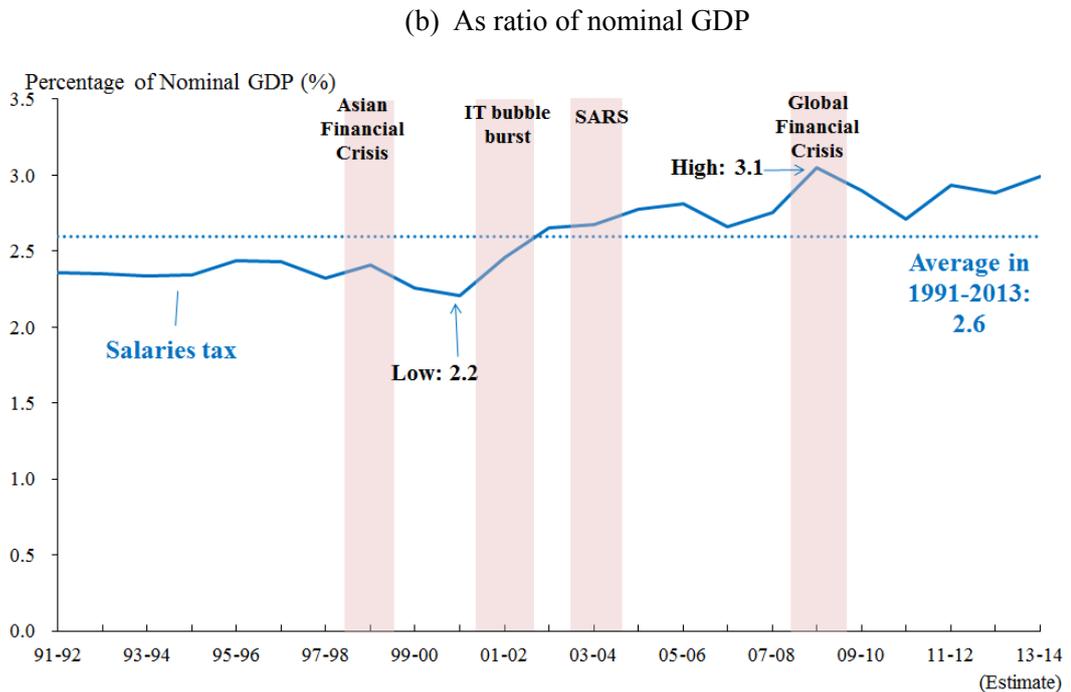
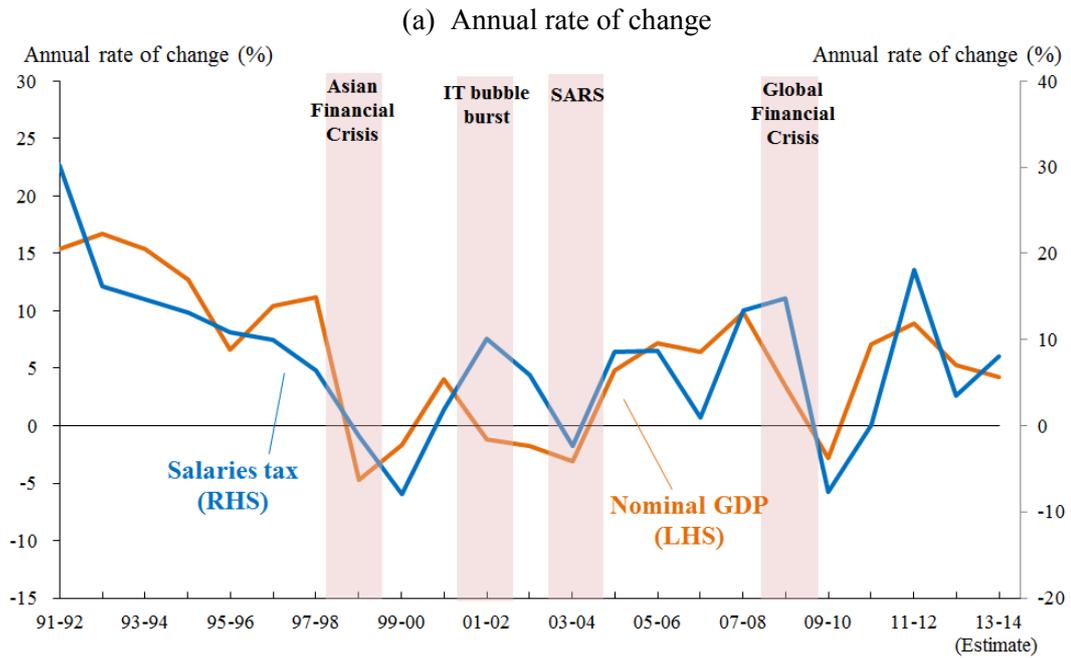
Note: * Figures have been adjusted for changes in corporate tax rate and tax rebate, and hence are different from the actual figures.

Salaries tax²

4.10 Salaries tax is another major item of direct tax, accounting for 12% of the estimated total government revenue in 2014-15. Salaries tax revenue, though also moving in sync with the macro-economic conditions over time, seems to be more stable than that of profits tax (*Chart 4.5*). As ratio of nominal GDP, salaries tax revenue moved within a narrow range of 2.2% (2000-01) to 3.1% (2008-09), the former being affected by the high unemployment and pay cut in the aftermath of the Asian Financial Crisis, and the latter reflecting the sanguine macro-economic conditions in 2007-08 and the tightness in the labour market. The average over the past two decades or so was 2.6% of nominal GDP.

² Salaries tax figures in paragraph 4.10 have been adjusted for tax rebates and the effect of changes in deductible allowance over time, and hence are different from the actual figures.

Chart 4.5 - Salaries tax *

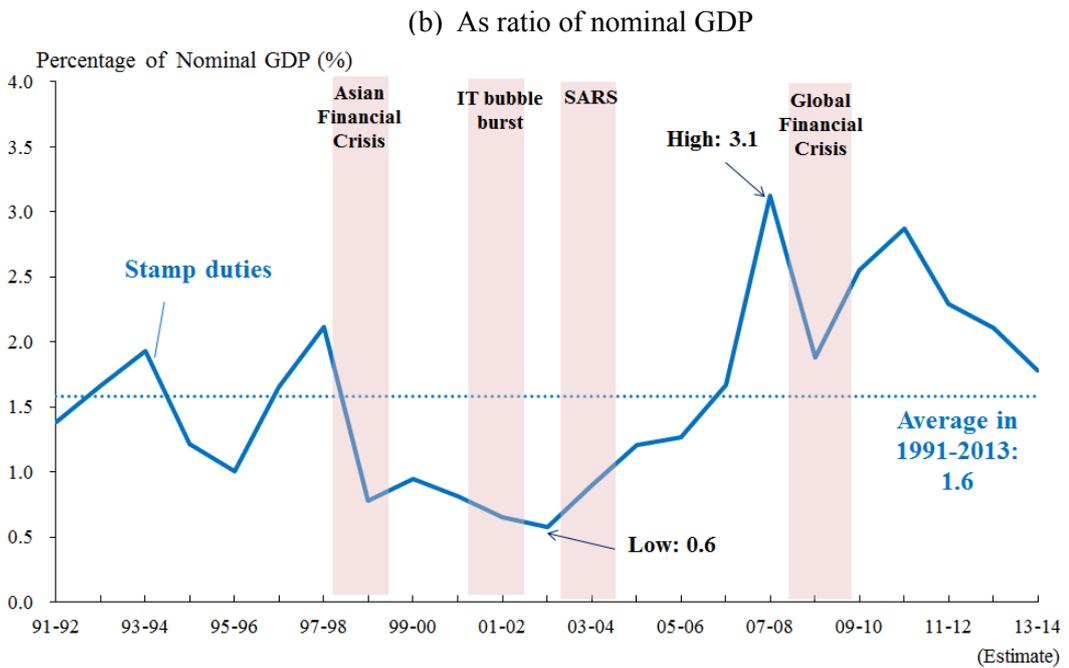
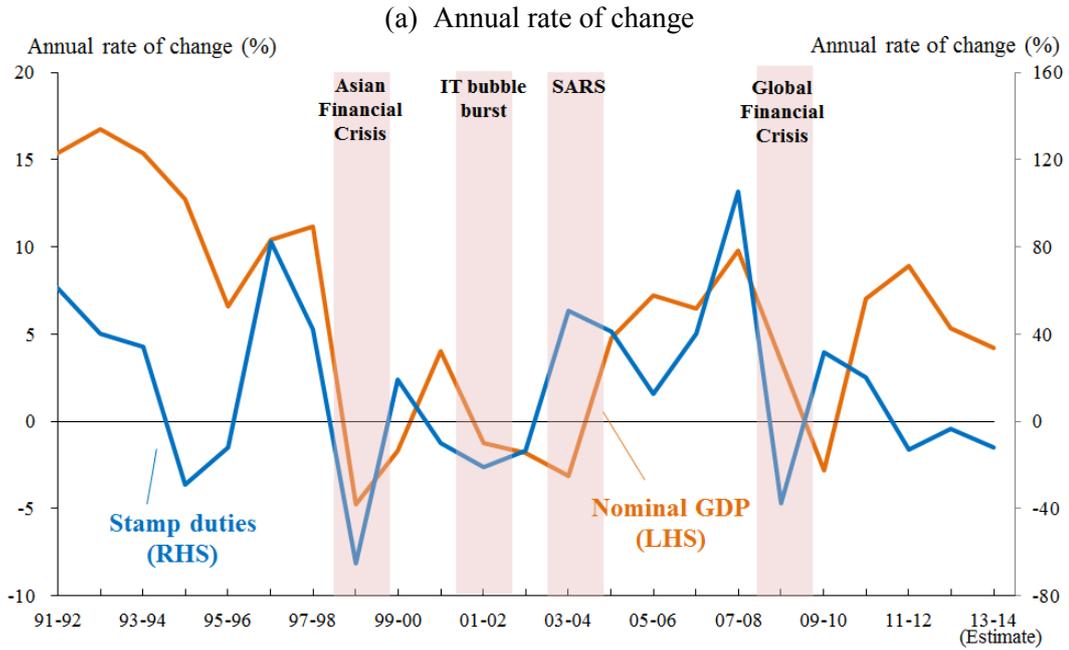


Note: * Figures have been adjusted for tax rebates and the effect of changes in deductible allowances over time, and hence are different from the actual figures.

Stamp duties

4.11 Stamp duties as a whole accounts for 10% of the estimated total government revenue in 2014-15. Stamp duties from property transactions and stock transactions each takes up around half of this revenue item. As is evident from *Chart 4.6*, stamp duties as a source of revenue is exceptionally volatile, being affected significantly by the sharp swings in asset markets through the years. For instance, when asset markets plunged during the financial crises in 1998-99 and in 2008-2009, the extent of annual rate of decline in stamp duties could range from near 40% to over 60% in an individual year. On the other hand, when asset market conditions were buoyant, stamp duties also rose sharply, much more than that of the overall macroeconomic conditions as measured by nominal GDP. As such, stamp duties as ratio of nominal GDP fluctuated markedly from a low of 0.6% in 2002-03 when the property market reached its trough, to a high of 3.1% in 2007-08 when the stock market was very vibrant, averaging at 1.6% from 1991-92 to 2013-14.

Chart 4.6 - Stamp duties



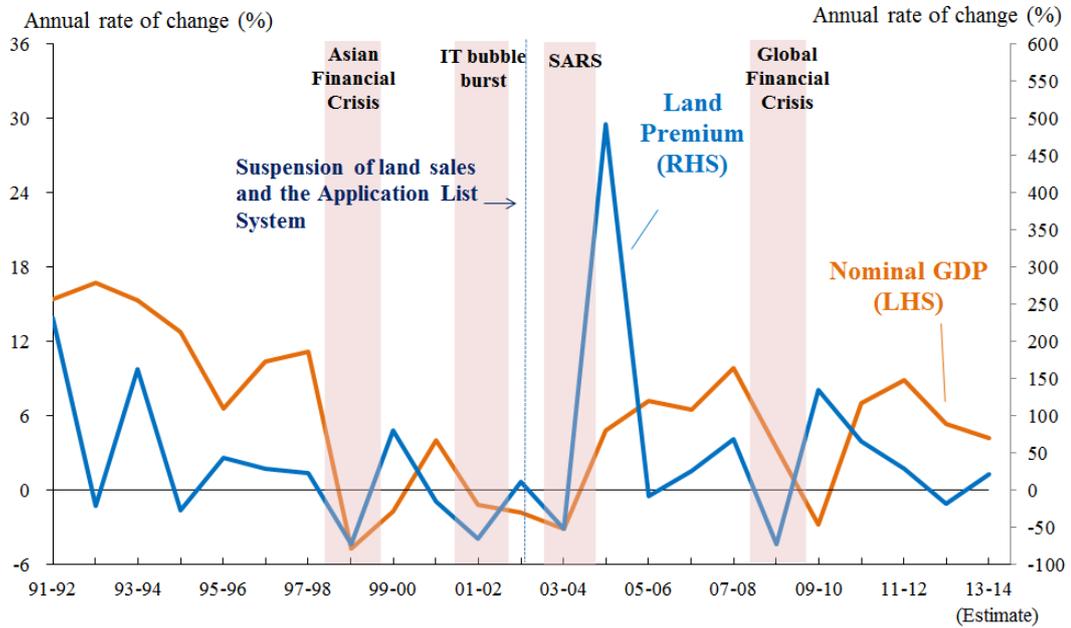
Land premium³

4.12 Land premium accounts for 16% of the estimated total government revenue in 2014-15. It is by far the most volatile revenue item among all the major revenue components. The swings over the years have been tremendous, being significantly affected by the property market developments on the one hand and also the Government's ensuing policy response on the other. As *Chart 4.7* shows, land premium as ratio of nominal GDP fluctuated sharply from a high of 5.2% in 1997-98 to a distinct low of 0.4% in 2003-04. In the more recent years, with the buoyancy of the property market and also the Government's efforts to put out more land, land premium as ratio of nominal GDP generally went higher, to 4.0% in 2013-14, higher than the average of 2.8% from 1991-92 to 2013-14.

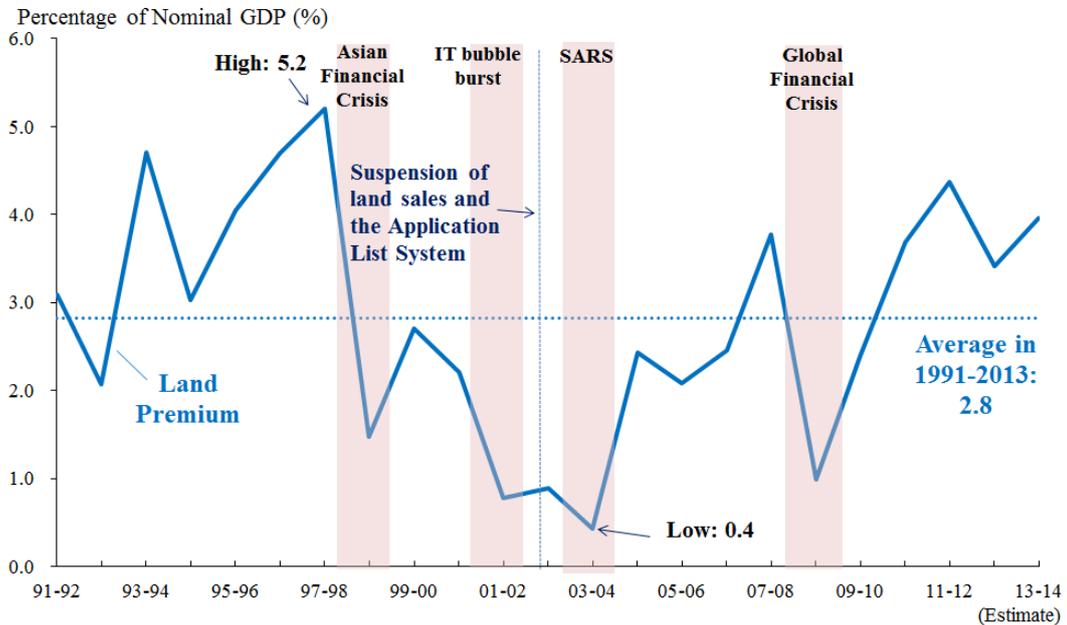
³ Land premium figures in paragraph 4.12 have been adjusted for the share of land premium allocated in the ex-HKSARG Land Fund from 1985-86 to 1997-98, and hence are different from the actual figures.

Chart 4.7 - Land premium *

(a) Annual rate of change



(b) As ratio of nominal GDP

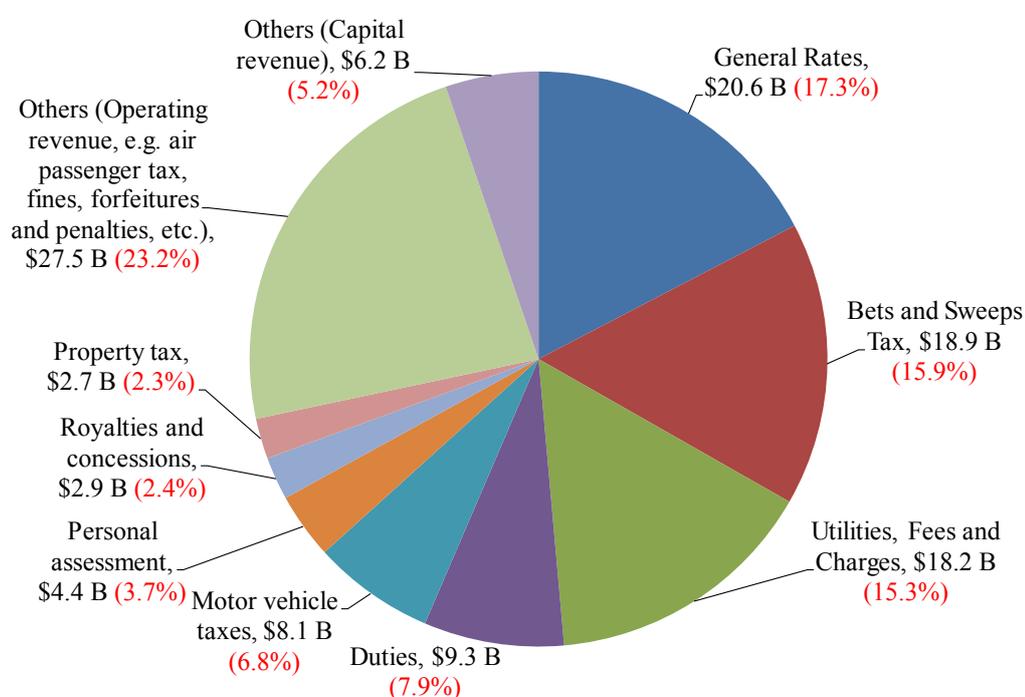


Note: * Figures have been adjusted for the share of land premium allocated in the ex-HKSARG Land Fund from 1985-86 to 1997-98, and hence are different from the actual figures.

Other incomes excluding investment income⁴

4.13 Apart from the four major components separately analysed in paragraphs 4.8 – 4.12, the remaining revenue items are much smaller in dollar terms and share, including General Rates (5% of estimated total government revenue in 2014-15); Bets and Sweeps Tax (4%); Utilities, Fees and Charges (4%); and Duties (2%). Taken together, these other revenue items account for around 28% of the estimated total government revenue in 2014-15, a detailed breakdown is given in *Chart 4.8*.

Chart 4.8 - Other incomes excluding investment income, by component in 2014-15

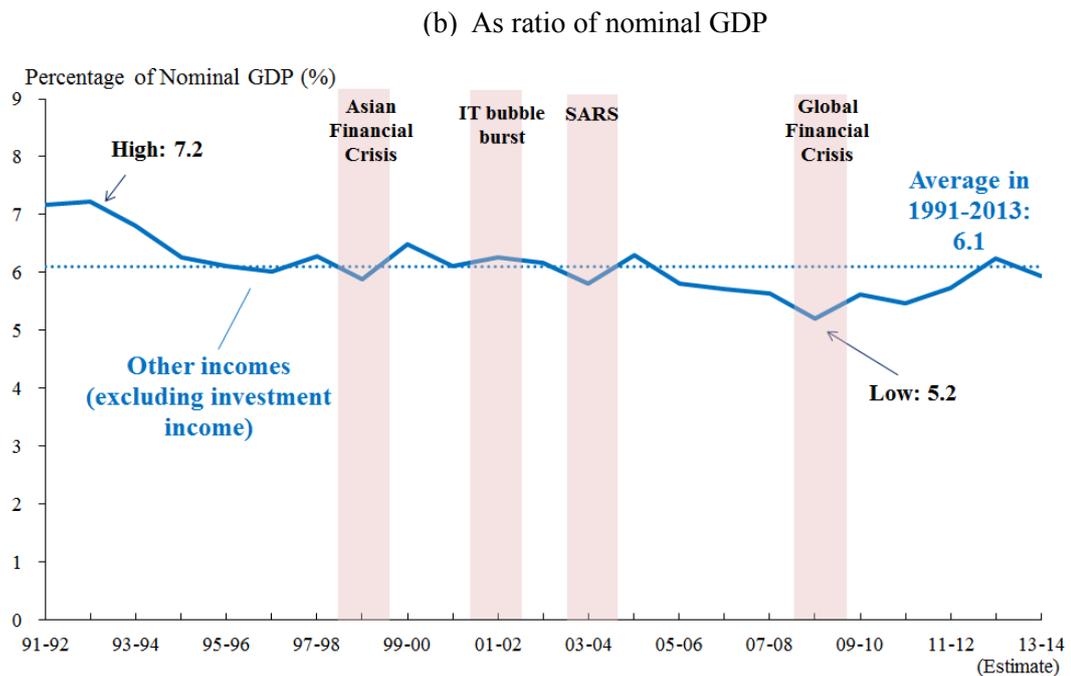
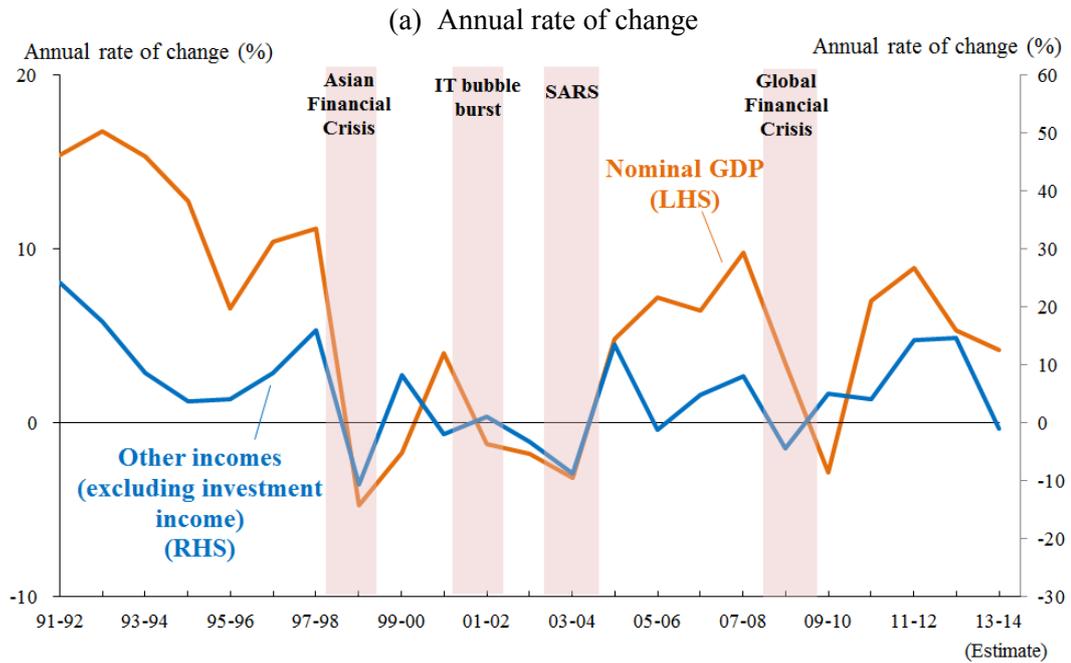


Other incomes excluding investment income, \$118.8 billion in 2014-15

4.14 This revenue item, being the summation of revenue items with diverse nature, generally moved in tandem with nominal GDP over the years (*Chart 4.9*). The ratio of other income to nominal GDP moved a range of a high in 7.2% in 1992-93 to a low of 5.2% in 2008-09, averaging at 6.1% from 1991-92 to 2013-14.

⁴ Other incomes excluding investment income in paragraph 4.14 have been adjusted for the one-off rates concession and a number of major one-off receipts, and hence are different from the actual figures.

Chart 4.9 - Other incomes excluding investment income *



Note: * Figures have been adjusted for one-off receipts, namely proceeds from the sale of loans to the Hong Kong Mortgage Corporation, the partial privatization of MTRC, and the securitization of government toll tunnels and bridge, and one-off rates concession in various years, and hence are different from the actual figures.

Projection methodology and results

4.15 Following the analysis in the foregoing paragraphs, in respect of the five major revenue items, namely profits tax, salaries tax, stamp duties, land premium and other incomes excluding investment income, an econometric modelling exercise has been undertaken to estimate the historical relationship between these revenue items with the then prevailing economic conditions (for details, please see the technical appendix in **Annex E**). Based on the estimated parameters from these econometric models and the macroeconomic assumptions⁵ under the **Base Case**, projections for the five individual revenue items are produced and then aggregated up to render the projection for the government revenue before investment income. Projections are also produced for the purpose of sensitivity analyses under the other three Cases (i.e. **High Case**, **Low Case** and **Shock Case**).

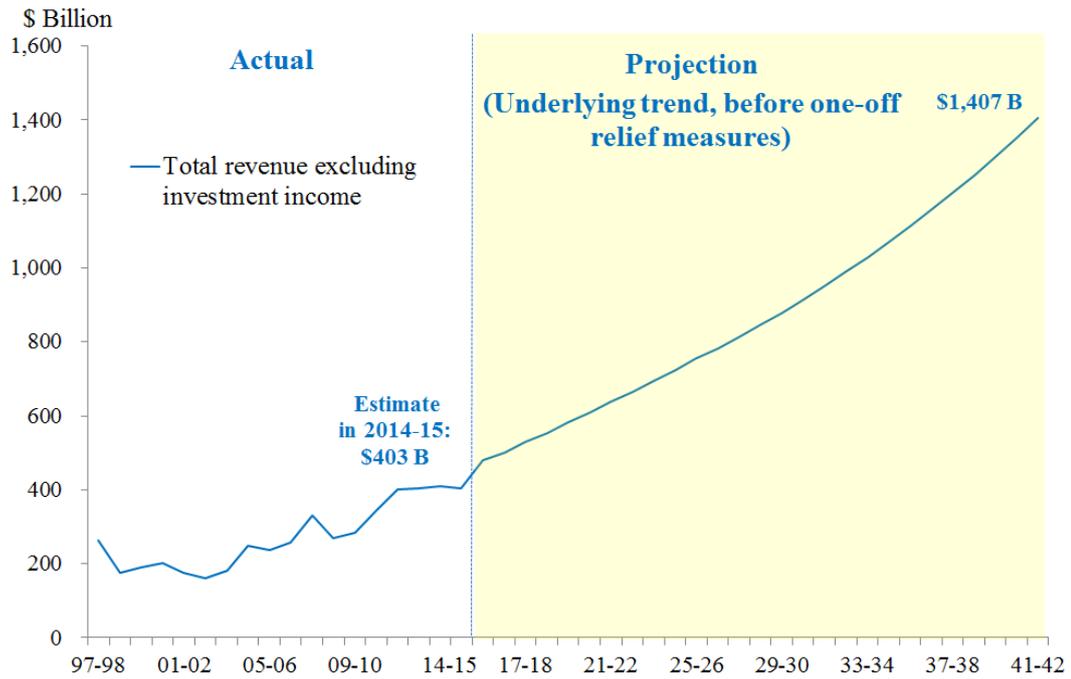
4.16 The long-term projection results for the government revenue before investment income under the growth and price assumptions of **Base Case** and the other three Cases are as follows –

- (a) **Base Case:** Government revenue before investment income is projected to increase from \$403 billion in 2014-15 to \$1,407 billion in 2041-42. As a ratio of nominal GDP, the government revenue before investment income is forecast to edge down gradually from around 20% or slightly above in mid-2010s and early 2020s to 19.8% in 2041-42. For the 27 years taken together, the projected trend growth between 2014-15 and 2041-42 is 4.7% per annum, broadly on par with the assumed trend growth of 4.4% in nominal GDP over the same period (*Charts 4.10 and 4.11*).

⁵ Please see Chapter 2 for a detailed discussion of the growth and price assumptions under the four Cases.

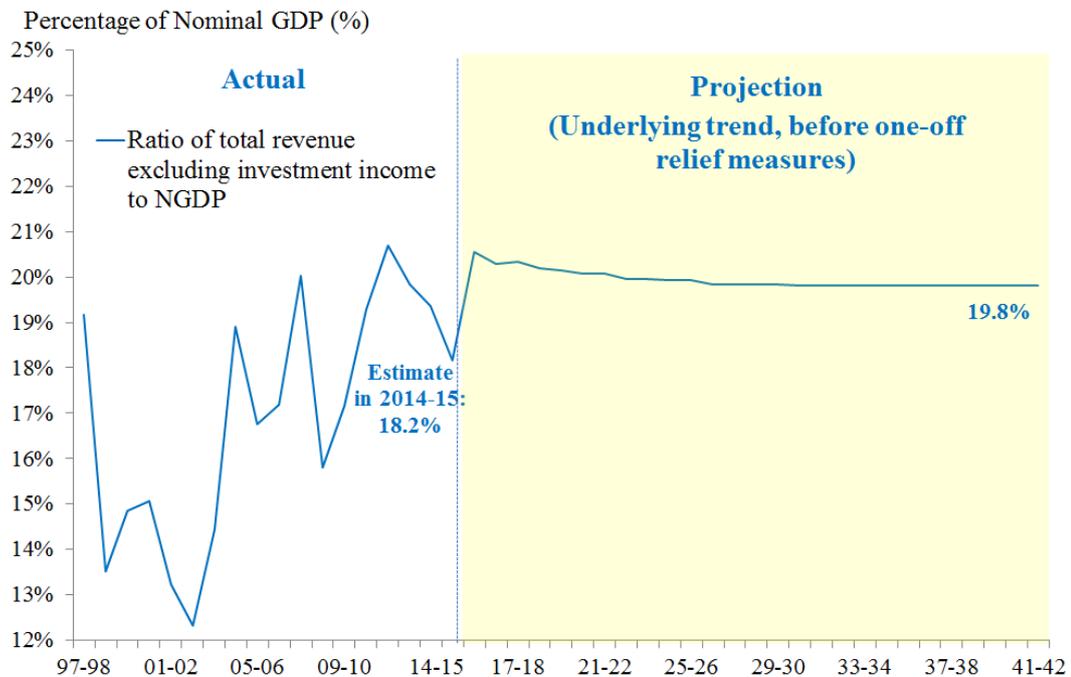
- (b) **High Case:** With higher GDP growth rate assumed after 2018, government revenue before investment income is projected to increase by 6.3% per annum between 2014-15 and 2041-42, reaching \$2,076 billion (or 23.5% of nominal GDP) in 2041-42 (*Chart 4.12*).
- (c) **Low Case:** Government revenue before investment income is projected to increase by only 3.2% per annum, rising to \$937 billion (or 16.5% of nominal GDP) in 2041-42 (*Chart 4.12*).
- (d) **Shock Case:** Government revenue before investment income is projected to plummet to a low of \$294 billion (or 15.6% of nominal GDP) in 2016-17 from \$403 billion in 2014-15, amid a severe economic downturn brought about by a hypothetical five-year shock starting in 2015-16 (for details of the Shock Case, see Para 2.16(c)). While the trend economic growth is assumed to return to normal (i.e. same as the macroeconomic assumption under the **Base Case**) from 2020-21 onwards, government revenue before investment income is projected at only \$943 billion (or 19.8% of nominal GDP) in 2041-42, which is around 33% lower than the projected level under the **Base Case**. This represents a markedly lower trend growth rate of 3.2% per annum between 2014-15 to 2041-42 (*Chart 4.12*).

Chart 4.10 - Projection of government revenue before investment income under the Base Case



Note: Figure for 2014-15 refers to the original estimate in the 2014-15 Budget.

Chart 4.11 - Projection of government revenue (before investment income) as ratio of nominal GDP under the Base Case

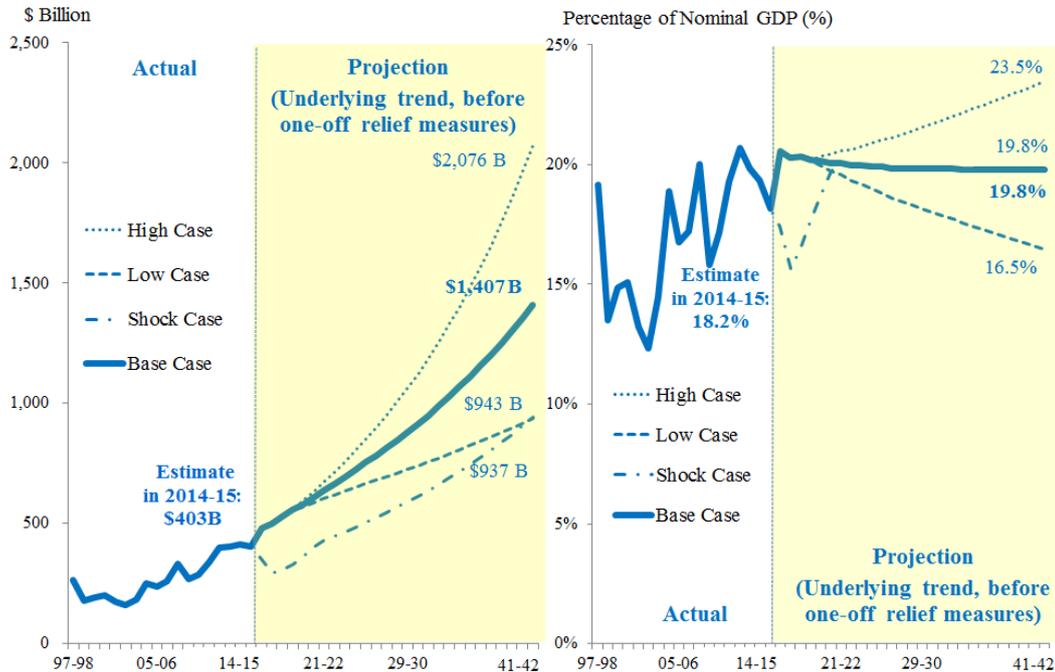


Note: Figure for 2014-15 refers to the original estimate in the 2014-15 Budget.

Chart 4.12 - Sensitivity analyses of government revenue
(before investment income)

(i) Projection of government revenue
(before investment income)

(ii) Projection of the ratio of government
revenue (before investment income)
to nominal GDP



Investment income

4.17 Investment income refers to the investment return of the Government's fiscal reserves placed with the Exchange Fund, which is managed by the Hong Kong Monetary Authority. Effective from 1 April 2007, the rate of return for the Government's fiscal reserves of a year is set at the average return of the Exchange Fund's investment portfolio over the past six years. For the purpose of this fiscal projection exercise, the rate of return is assumed at 5% per annum (which is the actual rate of return for 2013-14 and is broadly comparable to the average investment return of 5.3% on the fiscal reserves for the five-year period from 2010-11 to 2014-15).

4.18 Over the projection period 2015-16 to 2041-42, the average annual investment income as ratio of nominal GDP would range from 0.6% under the **Service Enhancement at Historical Trend Scenario**, to 1.3% under the **No Service Enhancement Scenario**. For all the four expenditure scenarios, the projection results indicate that investment income would successively fall to zero during the projection period, as persistent fiscal deficits surface and fiscal reserves are being continuously drawn down. After taking into account investment income, government revenue is projected to rise from \$430.1 billion in 2014-15 by 4.5% per annum to \$1,407 billion in 2041-42 under the **No Service Enhancement Scenario**.

Conclusion

4.19 Population ageing would have profound implications on public finances, not only on the expenditure side, but also on the revenue side. It is clear from the analysis in this Chapter that government revenue hinges crucially on whether the macro economy can stay vibrant, and as such, when the impact of population ageing increasingly sets in to undermine economic vitality and long term GDP growth potential, government revenue is bound to slow in tandem. On the expenditure side, as Chapter 3 has already discussed, population ageing would bring pressures on spending, particularly in the areas of healthcare and social welfare. In short, demographic changes would pose a drag on our revenue growth and simultaneously bring pressures on the expenditure front.