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STRUCTURAL TRENDS IN GST

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Overview

Australia's goods and services tax (GST), originally promoted as a 'growth tax', has not kept up with economic growth over the last twenty years ...

Since 2000, total GST revenue has increased by 130 per cent while gross domestic product (GDP) increased by 180 per cent, with the result that the GST-to-GDP ratio has declined from 4.0 per cent in 2003–04 to 3.3 per cent in 2018–19. This represents lower revenue in the order of \$9 billion in 2018–19 had the ratio remained constant at average levels prior to the Global Financial Crisis.

...with four key trends contributing to this decline in GST relative to the size of the economy.

Specifically, these relate to unequal price growth, the way household consumption is measured when calculating economic activity, demographic trends, and the composition of the economy.

Prices of GST-free goods and services have grown stronger than prices of those that are taxed.

Trends in the prices of goods and services have had more influence on GST collections than trends in the quantities of goods and services purchased. In particular, the appreciation of the Australian dollar since the early 2000s has resulted in significantly lower (or even negative) price growth for a number of goods and services subject to GST, such as recreation, clothing and vehicles.

Household consumption—particularly rent and education—is treated differently when calculating GDP than it is for tax purposes.

Certain technical assumptions are made to capture rent and education in the National Accounts (or GDP calculation) to reflect their contribution to household spending, which is appropriate. Some of this reflects actual spending by individuals, and some relates to assumed spending (for example, the amount of 'rent' paid by an owner occupier). This is important because the share of household spending on dwelling rent has increased steadily over 50 years due to rising land values. This has inevitably resulted in the GST-taxable components of household spending falling.

Surprisingly perhaps, growth in the proportion of GST-free spending is driven by younger generations rather than an ageing population.

GST-free spending by households in the 65 years and over category is relatively high compared to other households, but this proportion has remained broadly constant since the GST was introduced. On the other hand, younger generations are allocating a growing proportion of their spending on items not subject to GST, particularly rent, health and education.

Household consumption has contributed less to economic activity in recent decades due to the mining boom and increased household savings.

Over the first decade of the GST, the value of household consumption doubled while mining exports tripled. During the second decade, mining exports remained strong and households in aggregate increased their savings rate by around 8 per cent of their income, thereby reducing their consumption.

GST is likely to continue to grow at a slower rate than GDP.

If current trends continue, the GST-to-GDP ratio is likely to continue to decline further, reaching 3.2 per cent in 2030–31, equivalent to a shortfall of up to \$24 billion compared to the early 2000s. While any falls in revenue flow directly through to state budgets, there may be an associated pressure on the Commonwealth to provide greater transfer payments to the states.

1 Considering the GST—20 years on

The goods and services tax (GST) turned 20 years old in July 2020. It was introduced as part of a broader package of tax reform, designed to provide a stable source of revenue for the state and territory governments ('states') that would grow with the economy.¹

This package was negotiated between the Commonwealth and state governments to replace the federal wholesale sales tax and a range of state taxes with a broad-based consumption tax (see Appendix A). Several significant items are largely or wholly excluded from the GST, most notably fresh food, medical goods and services, education, and rent. Items subject to GST are taxed at a rate of 10 per cent.

The GST is a significant revenue source for the states, accounting for, on average, almost a quarter of state revenue. Revenue from the GST is collected by the Commonwealth Government and paid to the states as 'general revenue assistance', to be used at the discretion of each state government. Other Commonwealth Government payments to the states are tied to particular sectors or programs—often in health, education and infrastructure—and are termed 'payments for specific purposes'.²

At the time that it was negotiated, the GST was expected to be a tax that would keep pace with the size of the economy as it grew, often referred to as a 'growth tax', giving the states a reliable ongoing source of revenue. Over the past 20 years, however, the GST has not kept pace with the economy.

Much has been written about GST design and revenue, including an earlier Parliamentary Budget Office (PBO) report.³ This report takes this analysis further by explaining the reasons for the shortfall and provides scenario projections for the GST into the future.

1.1 Trends in GST collections over the last two decades

Since 2000, overall GST revenue has increased from \$28.5 billion in 2000–01 to \$64.6 billion in 2018–19, a rise of around 130 per cent.⁴ The size of the economy (as measured by gross domestic product (GDP)) has increased by almost 180 per cent in that period. As a result, the size of GST revenue has declined from its post-introduction peak of nearly 4 per cent of GDP in 2003–04 to 3.3 per cent of GDP in 2018–19 (Figure 1–1).⁵

¹ A useful summary is found in *A Brief History of Australia's Tax System*, Economic Roundup (Winter 2006), Sam Reinhardt and Lee Steel (Australian Treasury).

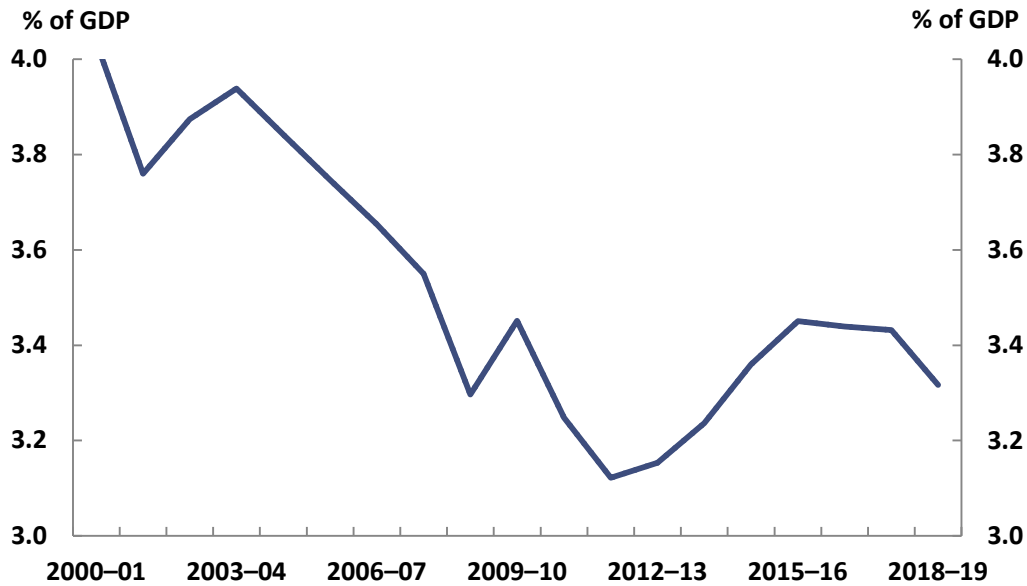
² Budget Paper 3, *Federal Financial Relations*.

³ This report builds on material published in *PBO Report no. 02/2018—Trends affecting the sustainability of Commonwealth taxes*.

⁴ Revenue amounts are sourced from the Australian Taxation Office (ATO) *Taxation statistics 2017–18*. These are presented on a conceptual basis close to that of the underlying economic activity. The different recognition methods for GST, including those used in budget documents, are discussed in Appendix B.

⁵ The highest point in the GST-to-GDP ratio was in the first year of the GST, 2000–01. This is likely to be due to a combination of three main factors: the timing of spending between 1999–2000 and 2000–01 in anticipation of the GST; the fact that being the first year of the GST there were no input tax credits to be claimed relating to previous years; and the particular circumstances in 2000–01 relating to a very low exchange rate (discussed later) and the Sydney Olympics. For this report, 2000–01 will be largely put aside as a transitional year.

Figure 1–1: GST-to-GDP ratio



Note: Data in the chart is on an Economic Transaction Method (ETM) basis. For more information see Appendix B.

Source: Australian Bureau of Statistics (ABS) cat. no. 5204.0, Australian Taxation Office (ATO) *Taxation statistics 2017–18*, PBO analysis.

Had the GST remained at around 3.8 per cent of GDP (the average for the period from 2001–02 to 2006–07), GST revenue would have been around \$10 billion higher in 2012–13 (around the low point in the GST-to-GDP ratio) and over \$9 billion higher in 2018–19.

There has been much commentary around the drivers of the decline, particularly in the context of structural trends in consumption due to the ageing population. The purpose of this report is to unpick the historical drivers of the GST-to-GDP ratio, and to consider how these factors may evolve over the medium and long term.

Four key historical trends in the GST-to-GDP ratio are discussed in this report:

1. The impact of price growth — unequal price growth has shifted the relative importance of GST applicable and GST-free goods in household spending. A key driver of price growth has been the exchange rate.
2. The measurement of household consumption — the construction of the National Accounts includes technical assumptions that have a large impact on the measurement of household spending on rent and education.
3. The impact of demographic trends on spending — a greater share of spending for older people is on health, which is not subject to GST, and this is often cited as a key driver of falling GST revenue, however growth in spending on GST-free items has been greatest in younger age groups.
4. The composition of the economy — changes in the share of total economic activity generated by household consumption and dwelling construction, particularly relative to the growth in the mining sector, affects the size of tax collections relative to the size of the economy.

The analysis focusses on the standard comparisons of GST to GDP and household consumption, as measured by the Australian Bureau of Statistics and published in the National Accounts.⁶ These benchmarks are used because the National Accounts provide a conceptually rigorous and consistent measurement of economic activity that has been published for over 60 years. The mathematical basis for the following analysis is explored in more detail in Appendix C. A summary of policy decisions with a costed impact on GST revenue is available in Appendix D.

Box 1: Impact of COVID-19

This report is based on historical analysis, and so does not account for the impact of the COVID-19 pandemic on GST.

Although the extent of the crisis is not yet clear and significant uncertainty about the future outlook persists, record falls have already been recorded for household spending indicators, particularly related to services.

What is clear is that GST collections will be affected in the short term by changes to the level and composition of household spending, as well as by the impact of the pandemic on the relative prices of products, including through the exchange rate.

Lower net overseas migration in 2019–20 and 2020–21 because of international travel restrictions is likely to permanently reduce Australia’s population compared to pre-COVID assumptions, with a flow-on decline in household consumption and therefore GST revenue.⁷ However, given a corresponding reduction in GDP is also to be expected, the impact on the GST-to-GDP ratio from these factors may be relatively small. The impact of COVID-19 on Commonwealth Government receipts is outlined further in the PBO’s *Updated medium term fiscal scenarios* report.

A high degree of uncertainty also exists regarding the long-run impact of COVID-19 on the composition of household spending, which may affect GST revenue over the medium term.

Australia has experienced only one other major economic shock since the introduction of the GST. The short-term impact of the 2008–09 Global Financial Crisis on GST collections is discussed in Appendix A.

1.2 The consumption base—to what shall we compare the GST?

Comparisons are most often made between GST and GDP, partly owing to the promotion of the GST as a tax that was expected to keep pace with the economy. Another common comparison is to household consumption.

As the GST is ultimately a tax on goods and services purchased by households, historical trends in GST revenue are frequently examined through trends in household consumption, as measured in the National Accounts. A problem with this comparison is that it omits two significant items that are subject to GST but not included in household consumption—dwelling construction (an estimated

⁶ Australian System of National Accounts (ABS cat. no. 5204.0).

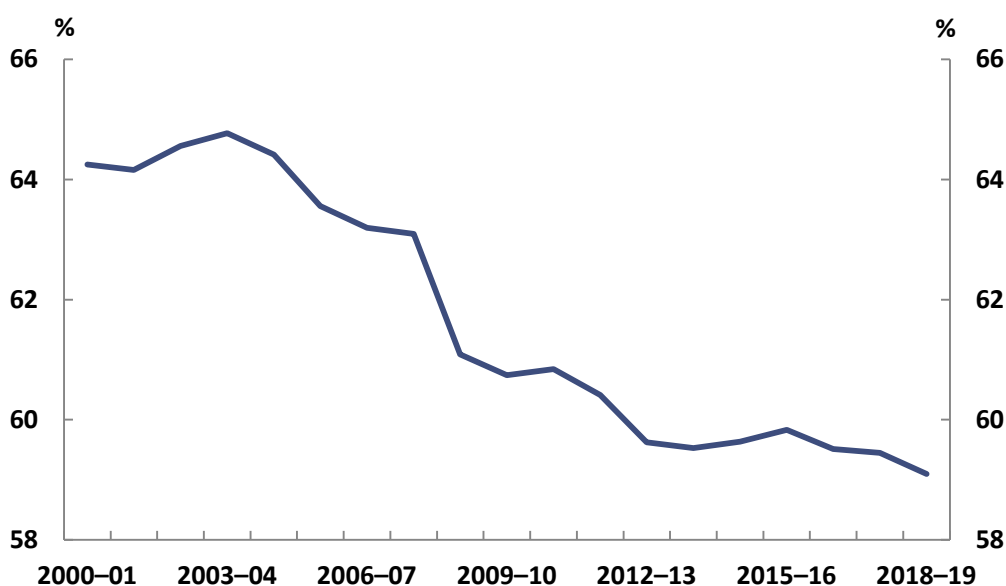
⁷ See PBO report—*Updated medium-term fiscal scenarios: impact of COVID-19 pandemic and response*, August 2020.

14 per cent of GST revenue) and ownership transfer costs (an estimated 1 per cent of GST revenue).⁸ Using this expanded definition of household spending, these items explain around a quarter of the decline in the share of GST to consumption.

This report will therefore use a base of household consumption with the addition of dwelling construction, which is more useful for explaining the important GST trends over the last 20 years, as well as projections into the future, because trends in this expanded base are better aligned with trends in GST. In this report this expanded base will be referred to as ‘household spending’, and is described in further detail in Box 2.

The share of household spending subject to GST has fallen 6 percentage points from its peak of around 65 per cent in 2003–04, to 59 per cent in 2018–19 (Figure 1–2). With the exception of a sharp fall in 2008–09, the rate of decline has been relatively steady over the last 20 years.

Figure 1–2: Household spending (consumption, dwelling construction and transfer costs)
Per cent subject to GST



Source: ABS cat. no. 5204.0, PBO analysis.

Not all household spending is subject to GST. Well-known exemptions are fresh food, health and education. The largest component of GST-free household spending is rental payments, which have more than tripled since the introduction of the GST and are discussed in more detail in Section 4.

The decline in the share of household spending subject to GST is due to gradual shifts in the composition of household consumption, away from items subject to GST and towards GST-free items. Understanding this downward trend requires analysing those components that are GST-free as well as trends in GST-applicable spending. These factors are outlined in more detail in the following four sections.

⁸ Note that exported consumption (that is, consumption by visitors while in Australia) has not been included in the expanded GST base, despite these visitors paying GST on their purchases, owing to the approximately offsetting effect of imported consumption (consumption by Australians while overseas) which is already included in household consumption but which is not subject to GST.

Box 2: A better base for comparison to GST

As GST is a consumption tax, historical trends are often illustrated by showing GST as a share of household consumption (Figure 1–3). This presentation omits two significant items that are subject to GST but not included in household consumption—dwelling construction (an estimated 14 per cent of GST revenue) and ownership transfer costs (an estimated 1 per cent of GST revenue).^{9,10} Figure 1–4 shows GST as a share of the more relevant base for the purpose of explaining historical trends.¹¹

Figure 1–3: GST as a share of household consumption

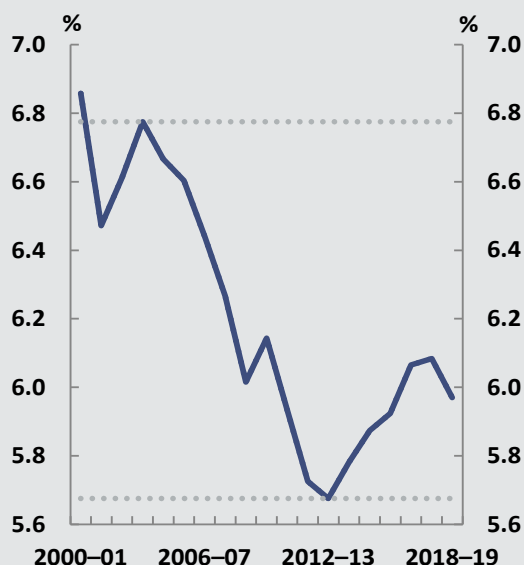
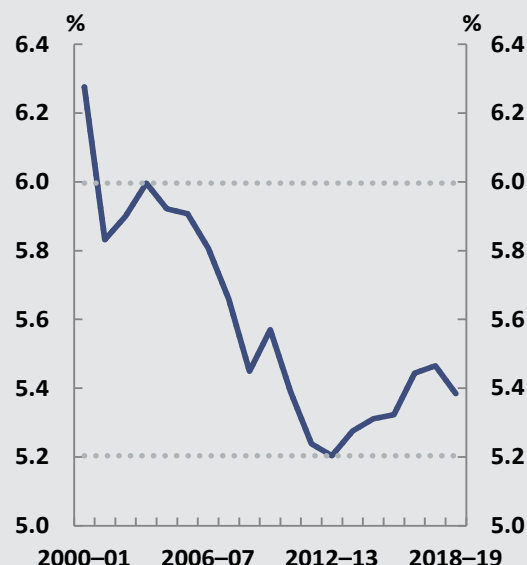


Figure 1–4: GST as a share of household spending (household consumption, dwelling construction and ownership transfer costs)



Source: ABS cat. no. 5204.0, ATO *Taxation statistics 2017–18*, PBO analysis.

As can be seen in these charts, including the household spending relating to dwelling construction and sales, thereby increasing the base by around 10 per cent, reduces the decline in the share of GST to consumption by around a quarter. That is, the ratio of GST to the base falls only 0.8 percentage points from peak to trough (excluding 2000–01), compared to a fall of 1.1 percentage points for the smaller base.

Household spending relating to dwelling construction and sales fell from 7.5 per cent of GDP in 2003–04 to 5.0 per cent of GDP in 2012–13. This relative fall in dwelling construction has impacted GST revenue but is not reflected in the measurement of household consumption. By including dwelling construction and sales, trends in this expanded base are better aligned with trends in GST and, therefore, provide a more informative picture.¹²

⁹ Ownership transfer fees include real-estate agent fees, legal fees and stamp duty. This analysis excludes stamp duties as they are not subject to GST.

¹⁰ *Australian National Accounts: National Income, Expenditure and Product* (ABS cat. no. 5206.0), Table 22.

¹¹ Note that although the two charts have different values on the vertical axes, each spans 1.4 percentage points, allowing the difference in the range of values to be compared.

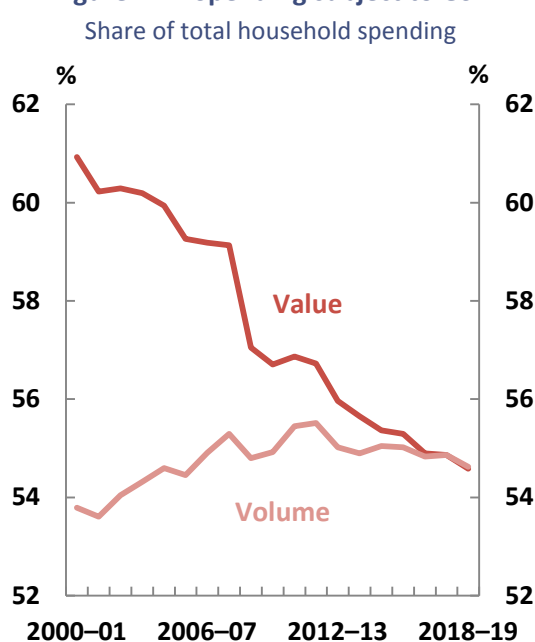
¹² A value-added tax could be levied on any economic activity, not limited to household consumption, so definitions of a 'base' are somewhat arbitrary. The expanded 'base', constructed here for analysis purposes, is different to a theoretical or conceptual base that may be used for the purpose of policy design.

2 Are we spending more on GST-free goods and services?

The value of household spending on GST-free items is now over twice what it was at the introduction of the GST.¹³ In contrast, household spending on GST applicable items has grown by just one-and-a-half times over the same period.

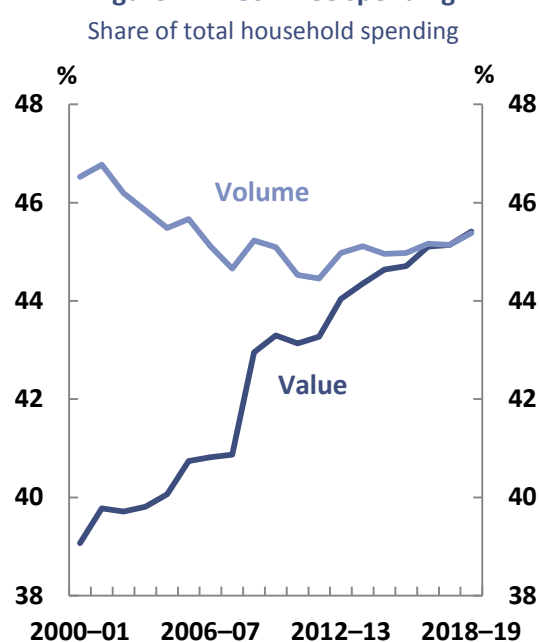
This relative decline does not, however, mean that households are purchasing fewer goods and services that are subject to GST. By looking at household spending in volume (or quantity) terms (Figures 2–1 and 2–2) we observe the opposite trend—by volume, the share of household spending on goods and services subject to GST has risen since its introduction.

Figure 2–1: Spending subject to GST



Source: ABS cat. no. 5204.0, PBO analysis.

Figure 2–2: GST-free spending



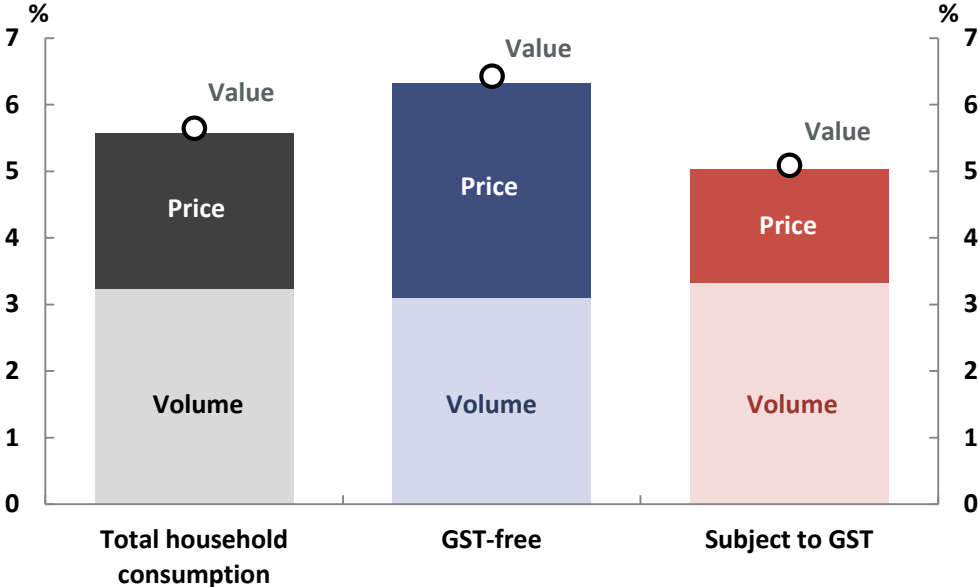
Source: ABS cat. no. 5204.0, PBO analysis.

In total, Australians are not buying more GST-free goods and services compared to those subject to GST, but we are spending more on them. This is because the price of GST-free goods and services has grown considerably faster than the price of those subject to GST.

¹³ See Figure 2–4 for a broad split of items subject to GST and GST-free. A detailed list of the GST status of food items can be found on the ATO website. Note that the price analysis in this section only does not include the expanded base referred to in section 1. Trends in property prices are discussed in Section 4.

Figure 2–3 shows that prices of goods and services that are GST-free have grown almost twice as fast as those that are subject to GST, while the volume of GST-applicable and GST-free goods and services purchased have grown by similar amounts.

Figure 2–3: Growth in spending on goods and services, by GST status
Average growth since 2000–01



Source: ABS cat. no. 5204.0, PBO analysis.

This can be explored further by looking at each category of household expenditure. As illustrated in Figure 2–4, spending on rent has been by far the largest contributor to the rise in spending on GST-free goods and services. The second largest contributor was health spending, closely followed by food and education.

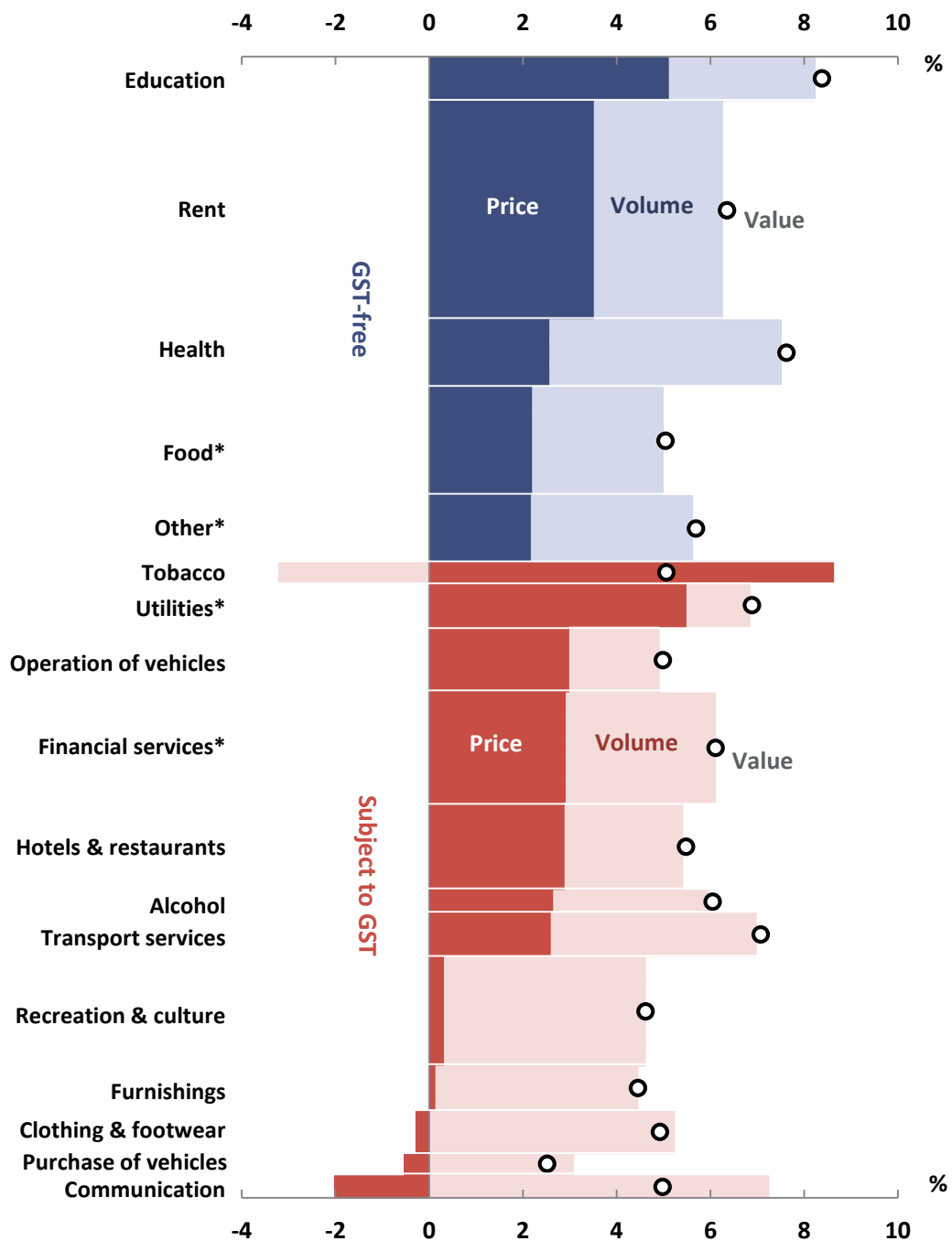
Conversely, the rise in the exchange rate since 2000 is one factor that has made a broad range of consumption categories cheaper, particularly goods subject to GST. For example vehicles, clothing and furnishings have experienced low to negative growth in prices.

Utilities and tobacco are the only two items subject to GST that have seen prices grow significantly faster than the GST-free categories. In both cases, rapid price growth has more than offset weak growth in volumes. For tobacco, prices have been driven by staged increases in tobacco excise rates, accelerating declines in smoking rates.¹⁴ Trends in the prices and volumes of utilities are discussed further in Box 3.

¹⁴ See, for example, *Tobacco excise: historical trends and forecasting methodology*, Treasury Working paper (2019), Jonathan O’Bannon and John Clark.

Figure 2–4: Growth in spending on goods and services, decomposed into price and volume growth

Average annual growth since 2000–01, bar height represents relative dollar values in 2018–19



Note: * indicates that the category includes both GST applicable and GST-free items. The items have been assigned to the category for which it has a majority.

Source: ABS cat. no. 5204.0, PBO analysis.

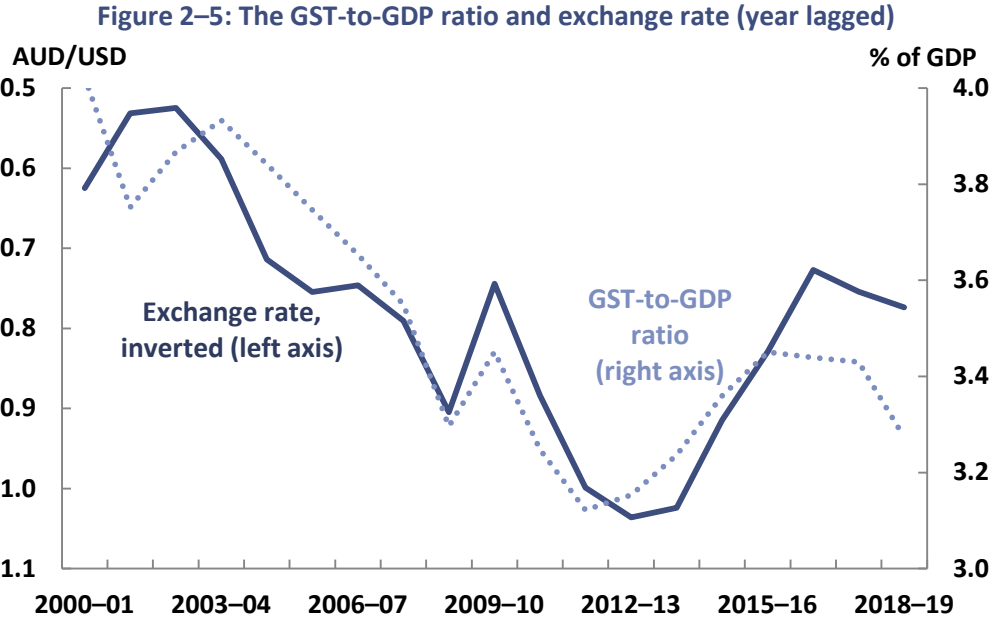
2.1 Exchange rates

The exchange rate affects the prices of a broad range of spending categories. Many goods subject to GST are imported, or produced from imported components, so the exchange rate has a pivotal relationship to the GST-to-GDP ratio.

GST on imported goods and services accounts for around half of all GST. For example, for the 2017–18 year, total GST on imports was \$32.7 billion, while the total GST generated through the value-add of domestic business was \$30.8 billion.

With half of GST revenue arising from imports, the amount of GST raised strongly depends on import prices and, therefore, the exchange rate. This means that when the Australian dollar is low, as it was during 2002 (shown in Figure 2–5), import prices increase and the sale of those items generates more GST. In turn, when the Australian dollar increased from around US\$0.50 in 2002 to nearly US\$1.10 in 2011, the price of imports fell, generating less GST from the sale of those items.

Movements in the exchange rate tend to affect import prices with a delay, for example due to existing price contracts.



Note: The exchange rate is presented in terms of AUD to USD, and is lagged by one year so that the point labelled 2000–01 actually represents data for 1999–2000. This series is also presented on an inverted axis, so a downward movement on the graph is actually a rise in the exchange rate, which makes imported goods relatively cheaper (and vice versa).

Source: ABS cat. no. 5204.0, ATO *Taxation statistics 2017–18*, PBO analysis, Reserve Bank of Australia (RBA).

The rise in the Australian dollar during the 2000s is the single most important influence on the fall in the GST-to-GDP ratio during that decade. Such large movements in exchange rates highlight the differences in activity in ‘tradables’, particularly manufactured goods, which are mostly subject to GST, compared to ‘non-tradables’, particularly rent, health and education services, which are mostly GST-free. Once the exchange rate fell back from its historical high in 2011, import prices rose, as did the GST collected. Future trajectories for the GST will also depend on movements in exchange rates.

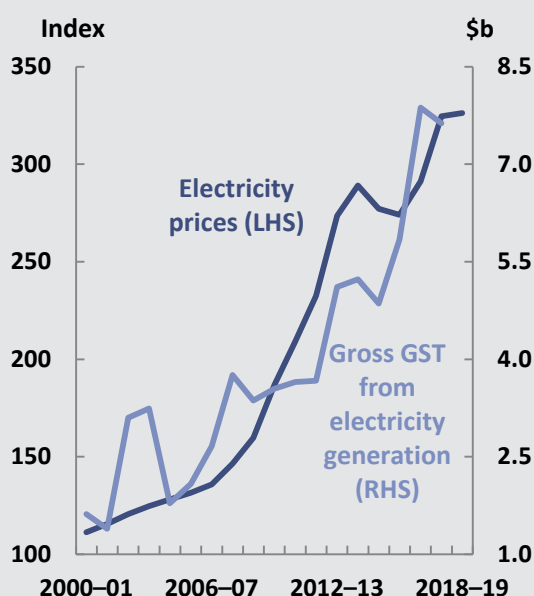
Currently, the global economic uncertainty surrounding the COVID-19 pandemic has been reflected in a highly volatile exchange rate. March 2020 saw a substantial depreciation of the Australian dollar, which has since recovered. If the exchange rate was to stabilise at a new lower level, imported goods will be relatively more expensive than before the pandemic. The rise in the price of those imported goods subject to GST would likely increase GST collections, partly offset by a decline in household spending in response to the higher prices. The converse is also true.

Box 3: Utilities and the GST

Households spent \$38 billion on utilities (electricity, gas, water and waste services) in 2018–19, more than three times their spending at the time the GST was introduced. This growth has been largely price driven, with both electricity and gas prices more than tripling since 2000–01 (Figure 2–6). Of these, electricity is currently the largest component of household spending on utilities, worth over \$17 billion in 2017–18.¹⁵

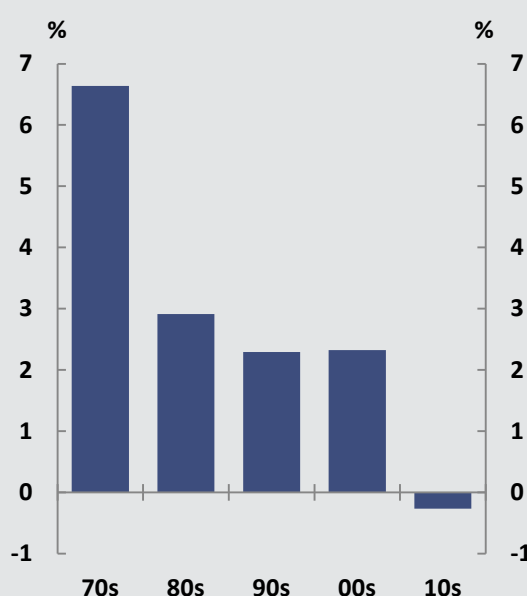
While electricity prices have supported GST revenue over the past 20 years, there are a number of long-term trends that are likely to reduce GST revenue from utilities. Firstly, reforms aimed at reducing electricity prices will, if effective, slow both the rate of price growth for electricity and the associated GST revenue.¹⁶

Figure 2–6: Utility prices



Note: 1999–2000 = 100.0
Source: ABS cat. no. 6401.0, ATO Taxation Statistics 2017–18, PBO analysis.

Figure 2–7: Growth in household electricity usage¹⁷



Source: Australian Energy Update (2019), Department of the Environment and Energy.

These reforms come at a time when household electricity consumption has been relatively flat or in decline (Figure 2–7), despite the offsetting impacts of a growing population, increasing purchases of electric vehicles, and shifting household preferences from gas to electric appliances. In addition, continued growth in household solar (which is not subject to GST), particularly in combination with battery storage, has the potential to shift a household’s consumption to being substantially or entirely self-generated, and therefore GST-free.

Combined, these trends have the potential to significantly reduce the GST take from utilities. As an extreme scenario, if all household power consumption in 2018–19 (including for the operation of motor vehicles) had been generated from rooftop solar with on-site storage, GST revenue would have been around \$5 billion (8 per cent) lower.¹⁸ The extent and timing of a shift in this direction is uncertain but it is not unreasonable to expect this trend to continue.

¹⁵ From *Australian National Accounts: Supply Use Tables, 2017–18* (ABS cat. no. 5217.0).

¹⁶ Reforms include the Default Market Offer and Victorian Default Offer which were implemented on 1 July 2019.

¹⁷ Includes the use of electricity generated from rooftop solar photovoltaic (PV) systems.

¹⁸ Calculated from ABS *Australian System of National Accounts* (ABS cat. no. 5204.0) and *ABS Survey of Motor Vehicle Use* (ABS cat. no. 9208.0).

3 What's measured matters: rent and education in GDP calculations

Household spending accounts for over 60 per cent of GDP. This section discusses two particular components of household spending, rent and education, which are large, not subject to GST and have grown faster than most other components of household spending.

Rent and education are of particular interest because their influence is mostly due to important aspects of the way in which they are measured for GDP. While appearing somewhat technical in nature, they have played a key role in the fall in GST as a share of household spending. The measurement of rent, in particular, is likely to continue to be a factor in GST growing more slowly than GDP in the future. This future impact is examined further in Section 6.

3.1 Rent

Rent is the single largest component of household spending, accounting for 17.5 per cent of total household spending in 2018–19. In the National Accounts, rent is split into two components 'actual rent' and 'imputed rent'. Neither actual nor imputed rent is subject to GST.¹⁹ The GST was designed in this way so as to not distort household decisions regarding renting or buying a dwelling.

Actual rent is money paid by a tenant to a landlord, accounting for around one quarter of total rent.

Imputed rent accounts for the remaining three quarters of total rent. Imputed rent is a measure of the 'services' that dwellings provide to their resident owners. In the same way that rent, as commonly understood, is the payment by a tenant to a landlord for the provision of a dwelling service, imputed rent is the amount that would have been paid if the dwelling were tenanted rather than occupied by the owner. The inclusion of imputed rent in the National Accounts prevents the level of home ownership from affecting measurements of the size of the economy. Without it, GDP would fall every time a renter purchased their home (and vice versa), despite there being no change in the use of dwelling services. Imputed rent is estimated by the ABS, based on actual rents paid for similar properties.

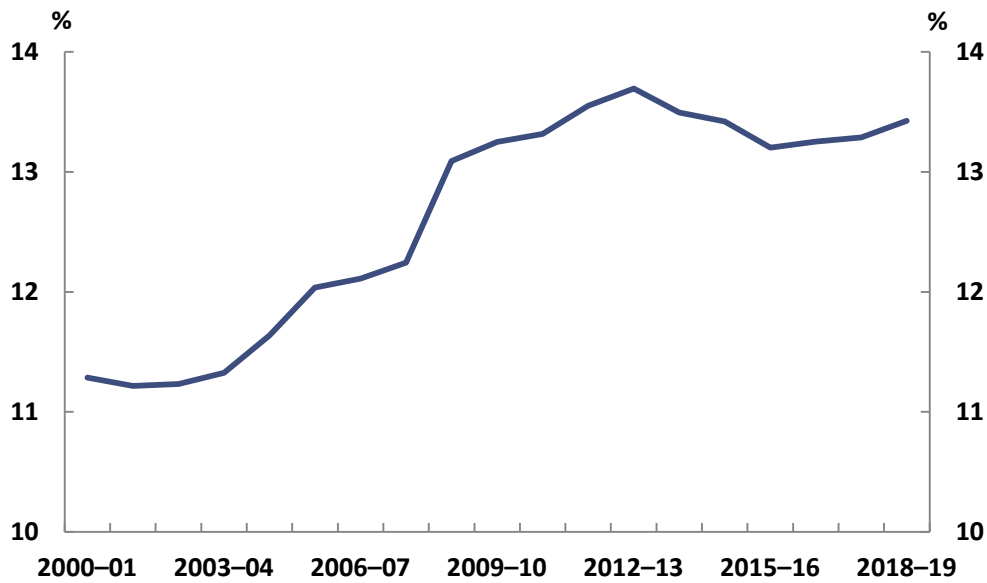
The increase in the value of imputed rent is the single largest driver of the decline in the share of household spending subject to GST over the past two decades. While the share of household spending from items subject to GST has fallen 5.2 percentage points, the share from imputed rent has increased 2.1 percentage points (Figure 3–1). The increase in imputed rent over the last two decades is therefore a major factor in the fall in the share of spending that is subject to GST.

Since the introduction of the GST, household expenditure on rent (both actual and imputed) has more than tripled. The increase in dwelling rents reflects rising property values and has been mainly driven by rising land values, rather than the value of the structures.²⁰

¹⁹ Rents will, however, implicitly include an amount of GST paid on the costs of running a rental property (such as maintenance) that are subject to GST and effectively passed on to tenants in their rent. For this reason, rents are often referred to as 'input taxed'. This report largely includes rent with other GST-free items on the basis that the implicit rate is likely to be around 1 to 2 per cent (see ABS cat. no. 5204.0, Table 49).

²⁰ Since 2000–01 the value of household land has increased by a factor of 4.2 while the value of buildings on that land (mostly dwellings) has increased by a factor of 2.8, in line with the rise in GDP over the same period.

Figure 3–1: Household spending on imputed rent
Share of total household spending

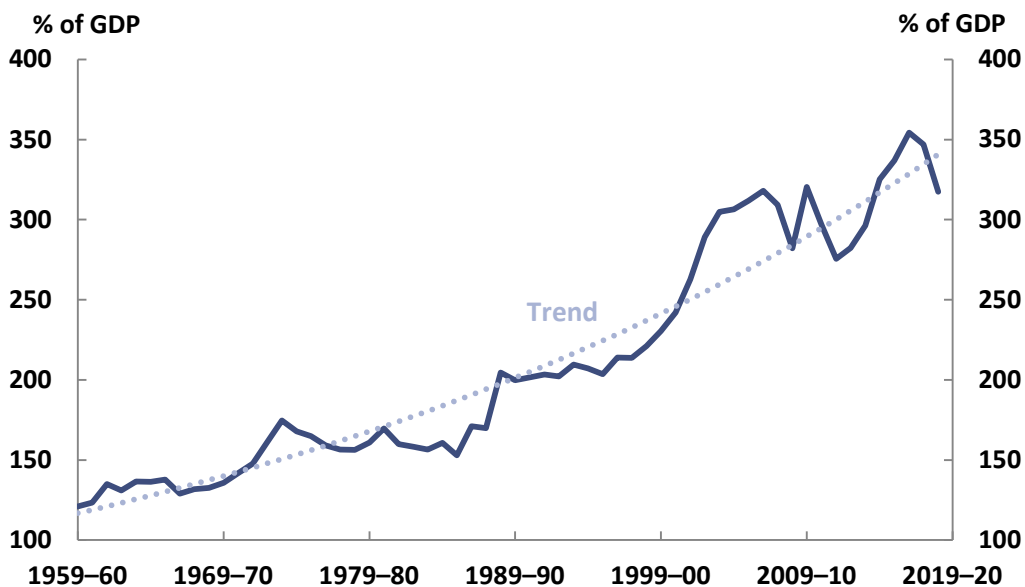


Source: ABS cat. no. 5204.0, PBO analysis.

The extent to which property values have increased is shown in Figure 3–2. This figure shows the value of Australian dwellings (land and structures) as a share of GDP. In 1960 the total value of Australian dwellings was around 120 per cent of GDP, compared to around 230 per cent of GDP in 2000, and 350 per cent of GDP in recent years.

The value of dwellings has grown considerably faster than GDP—sometimes in fits and starts—over the course of each of the last six decades. Rent (both actual and imputed), which is the value of the flow of services from dwellings, has also increased faster than GDP.

Figure 3–2: Total value of Australian dwellings



Note: Data from 1988–89 is from the *Australian System of National Accounts*, Table 41. Household Balance Sheet (ABS cat. no. 5204.0). Data has been backcast to 1959–60 in line with growth in the total value of Australian private wealth.
Source: ABS cat.no. 5204.0, Treasury and PBO analysis.

The future trajectory of the ratio of GST-to-household spending strongly depends on the trajectory for dwelling rent, the single largest component of household spending. If dwelling rent continues to grow faster than other spending then the share of spending that is subject to GST will continue to fall and GST will continue to grow more slowly than GDP.

Long-run trends suggest this is likely. Over the last 60 years, dwelling rent (actual and imputed) has increased from 8 per cent of household consumption to 18 per cent. Owing to its limited supply, the value of land, and hence the value of dwelling rent, is likely to continue to increase faster than the value of the economy assuming population growth remains in line with historical averages.

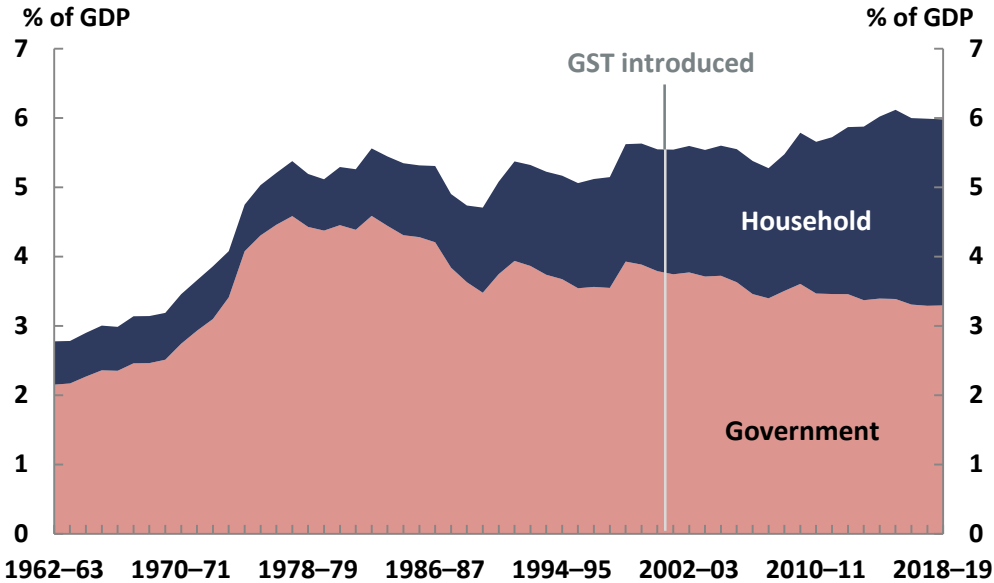
The importance of rising land values for overall national tax revenue partly depends on the effective rate of municipal rates and land taxes compared to the GST rate. At present, the two rates are broadly comparable in aggregate.²¹

3.2 Education

Spending on education services is the second component of household spending where its measurement is relevant to understanding trends in GST. Education is the fastest growing area of GST-free household spending, growing by an average of 8.4 per cent per year since the introduction of the GST, and is the second-largest contributor to the decline in the share of household spending subject to GST (after imputed rent). As a result the value of household spending on education is now four times larger than when the GST was introduced, having risen from 1.8 per cent of GDP (\$12.4 billion) in 2000–01 to 2.7 per cent of GDP (\$52.3 billion) in 2018–19 (Figure 3–3).

Some of this rise has been driven by shifts in consumer preferences, including rising tertiary educational attainment and an increasing preference for private schooling. The primary driver, however, is the way the National Accounts recognise spending on education by governments and households.

Figure 3–3: Total spending on education
Share of GDP



Source: ABS cat. no. 5204.0, PBO analysis.

²¹ Based on comparing total household dwelling rent (actual and imputed) with total land taxes and rates, adjusted for the proportion of land owned by households (rather than by government or business) and the proportion of household structures that are dwellings (rather than for business purposes). According to this calculation, the average effective rate over recent decades is around 9.5 per cent.

Education is funded in three main ways, and technical aspects relating to these funding arrangements affect the allocation of spending between the household and government sectors in the National Accounts. Funding can be allocated:

- directly by households to the provider of the education, which is counted as household consumption
- directly by governments through funding to government schools and universities, which is counted as government consumption, or
- through funding from government to schools that are not directly run by government, mainly ‘private’ schools, the most widespread being the Catholic school system. Despite being paid for by the government, these amounts are actually counted as household consumption.²²

While purely technical, the treatment of government funding of private schools is significant for our analysis as it means that changing consumer preferences towards private schools has an amplified effect on household consumption of education by increasing both the out-of-pocket costs for households as well as shifting government funding to the household sector.²³

Therefore, the decline in government spending on education, from 3.8 per cent of GDP in 2000–01 to 3.3 per cent of GDP in 2018–19, partly reflects shifts in how governments provide or fund education.

These trends emerged long before the introduction of the GST and appear to have stabilised somewhat in recent years. While the effects are important in order to understand the past, in the absence of further policy changes they are unlikely to continue. In this case, future growth in household spending on education is more likely to be in line with growth in overall education spending over the last two decades, which has increased from 5.5 per cent of GDP in 2000–01 to 6.0 per cent of GDP in 2018–19.

²² This is because the National Accounts does not separately identify consumption by the ‘household’ and ‘non-profit institution serving households’ sectors, and therefore government funding for the purpose of education services cannot be separated from household consumption. This approach also affects other sectors, such as health, but has only been a significant driver of trends for education over the past 20 years.

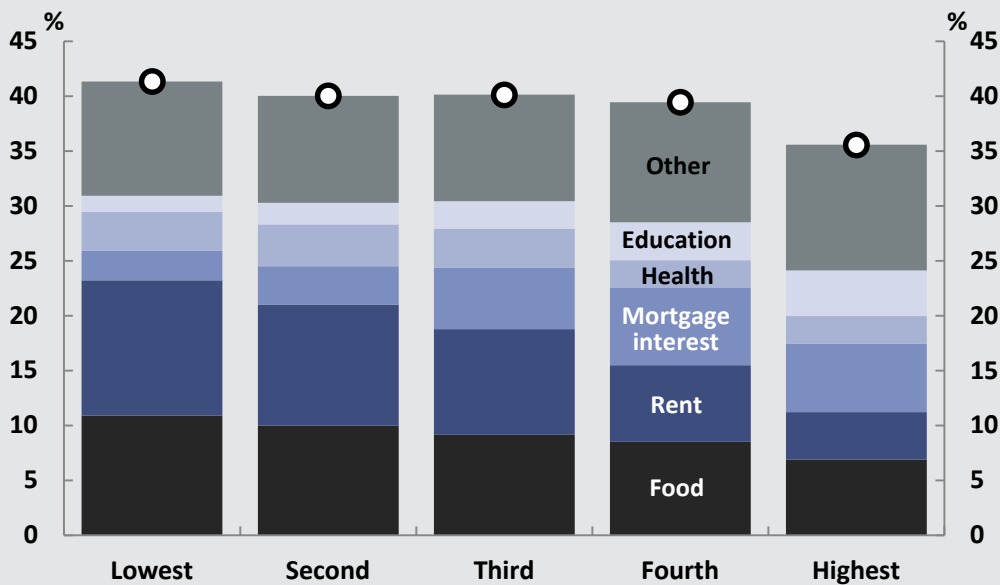
²³ According to the Household Expenditure Survey, direct spending on education by households accounts for only around half of the education consumption by households in the National Accounts, with the other half being government spending notionally attributed to households.

Box 4: Distributional effects of the GST

While distributional impacts are not the subject of this report, some of the considerations here will have implications for distributional analysis. This box, like Box 5, discusses distributional impacts on a cash-flow basis, rather than a National Accounts basis, and is therefore not comparable to the analysis in the remainder of this report.²⁴

High income households tend to spend a smaller proportion of their spending on GST-free items compared to low income households. According to *the 2015–16 Household Expenditure Survey* (HES) results, around 41 per cent of spending by households in the lowest income quintile is on GST-free goods and services, compared to around 36 per cent of spending by households in the highest income quintile (Figure 3–4).

Figure 3–4: Spending on GST-free items, by income quintile
Share of total household spending



Source: 2015–16 HES (ABS cat no. 6530.0), PBO analysis.

The difference between the quintiles is largely explained by the nature of the households.

For people in the lowest household income quintile, around 40 per cent are aged over 65 (compared to only 6 per cent in the highest quintile), which affects spending patterns and housing tenure. Although the proportion of spending on health is higher for the low-income quintile, this is more than offset by the low proportion of their spending on education.

Housing tenure is more important. For people in the lowest household income quintile, around half fully owned their home without a mortgage, 36 per cent were renting and only 13 per cent were paying off a mortgage. By comparison, in the highest quintile almost 60 per cent were paying off a mortgage and only 18 per cent were renting.

Both mortgage interest and rent are GST-free, however housing costs (dominated by rent) account for a much larger share of total household spending for low income earners than the mortgage-weighted housing costs do for those in the top earning quintile.

There are substantial differences in spending on goods and services subject to GST according to income. A greater proportion of spending by low-income households is on utilities and insurance, with a smaller proportion on transport and recreation.

High income households also have more surplus income to spend on items subject to GST, such as transport, hotels and dining, but they also dedicate a significant proportion of that income to servicing home loans and private schooling, which are not subject to GST.

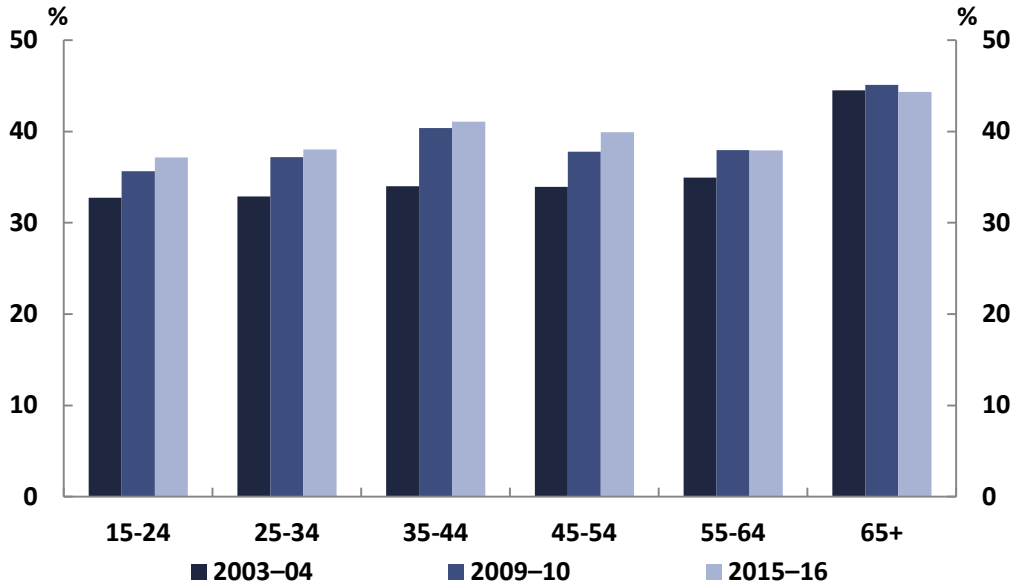
²⁴ In particular, it does not include allowances for imputed rent or the National Accounts treatment of interest flows.

4 Is the ageing population driving trends in the GST-to-GDP ratio?

The age composition of Australia’s population is changing. In 2000, at the introduction of the GST, people aged 65 and over accounted for 15.7 per cent of the population compared with 19.7 per cent 20 years later. The ageing population is often cited as a key driver of the decline in the GST-to-GDP ratio, on the basis that older people consume relatively more health-related goods and services, which are not subject to GST.²⁵ This section explores whether that is the case, and examines other age related trends in household spending.

The proportion of GST-free household spending is highest for households in the 65 years and over category,²⁶ at 44.3 per cent in 2015–16 (Figure 4–1). This is 4.1 percentage points higher than the average of all households, and 7.2 percentage points higher than households aged 15 to 24 years, who have the lowest share of spending on GST-free products (37.1 per cent in 2015–16).

Figure 4–1: GST-free spending by age
Share of total household spending



Source: HES, 2003–04, 2009–10 and 2015–16 editions (ABS cat no. 6530.0), PBO analysis.

Of particular interest, is that households in the 65 years and over category are the only age group that has not seen a significant rise in the proportion of spending on GST-free products over this period. That is, their share of total household spending has remained broadly constant over time.

²⁵ See, for example, the *NSW Review of Federal Financial Relations* discussion paper (October 2019).
²⁶ Analysis of spending split by age groups is based on data from the *Household Expenditure Survey (HES)*, which provides extensive information on types of spending for different household characteristics. The HES has been run every six years, most recently for 2003–04, 2009–10 and 2015–16. The next HES will be conducted in 2021–22. See Appendix E for more details.

On the other hand, the proportion of household spending on GST-free items has increased significantly across most household age groups except the oldest. The reason that GST-free spending by younger households has been growing largely reflects increased spending on health, rent and education.

As a result, it is the fact that the younger population are spending an increasing proportion on GST-free items that has been driving a decline in the GST-to-GDP ratio, rather than the steadily increasing share of older people in the population.

4.1 Trends in the composition of household spending

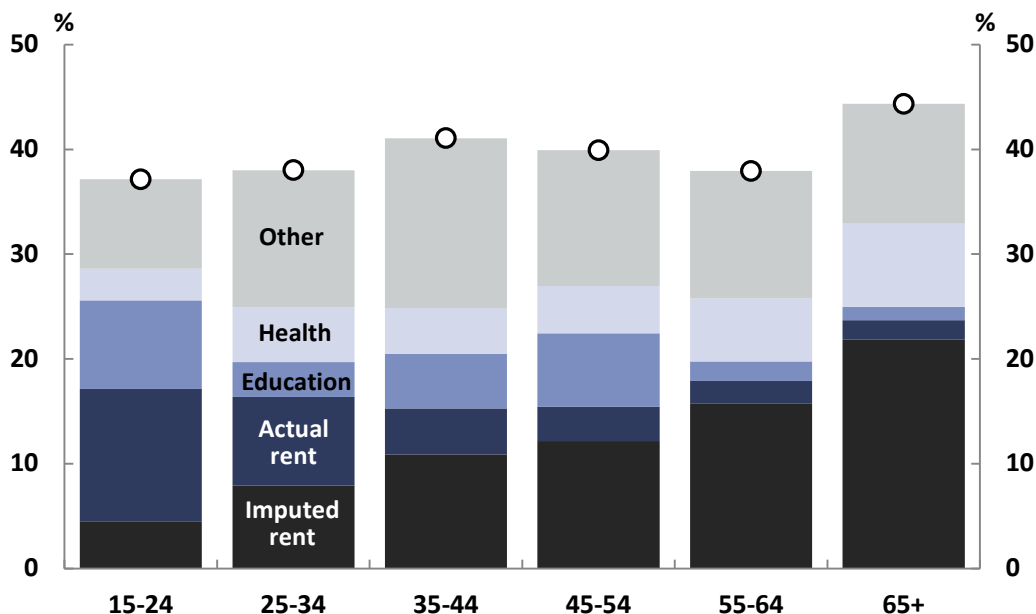
These trends are caused by the composition of GST-free spending for households of different ages.

As can be seen in Figure 4–2, although a greater share of spending for older people is on health, which is not subject to GST, this is offset by lower spending in other GST-exempt areas such as education.

On the other hand, younger age groups face more spending pressures associated with education costs. For example, education peaks as a share of spending for the youngest age group, reflecting tertiary education costs, but is also relatively high for households in the 35 to 44 and 45 to 54 year age groups, which are more likely to have school or university age children. For older age groups, spending on education is a relatively small component of total spending.

Figure 4–2: GST-free spending (2015–16)

Share of total household spending



Note: 'Other' includes GST-free spending on food and drink, utilities, communication and other.

Source: HES (ABS cat. no. 6530.0), PBO analysis.

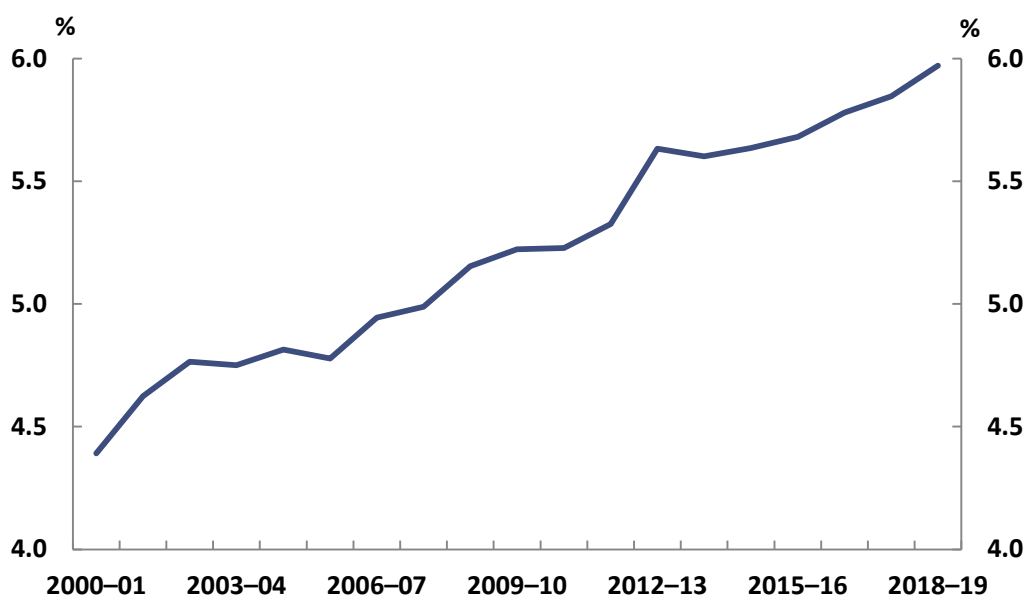
The interaction of shifting age-related spending patterns, in combination with the longer-term trends previously discussed, will drive trends in the proportion of household spending subject to GST. Two of the main areas of GST-free spending identified in this chart, health and rent, are discussed in detail below.

4.1.1 Health

The ageing population has long been associated with growing demand for health services. Household spending on health has more than tripled since the introduction of the GST, from \$19.8 billion in 2000–01 to \$71.6 billion in 2018–19. It now accounts for 6 per cent of all household spending (Figure 4–3), an increase of 1.6 percentage points over the life of the GST.²⁷

Figure 4–3: Household spending on health

Share of total household spending



Source: ABS cat. no. 5204.0, PBO analysis.

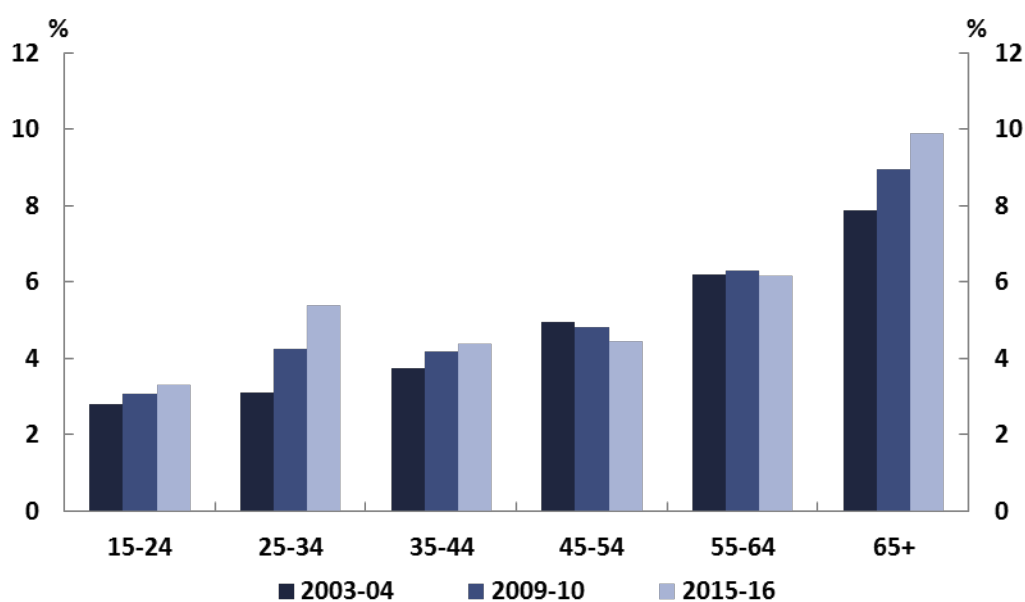
The rise is not just limited to the elderly. Spending on health as a share of overall household spending has also increased for younger households (Figure 4–4). The largest increase has come from households in the 25 to 34 year age group, who increased the share of their spending on health from 3.1 per cent in 2003–04 to 5.4 per cent in 2015–16. Most of this rise has come from spending on specialist doctor and dentist fees.

Households aged 65 years and over saw the next largest increase, from 7.9 per cent of spending in 2003–04 to 9.9 per cent in 2015–16. In contrast, for households in other age groups, health spending as a share of overall spending has remained constant (age 55 to 64 years) or declined (age 45 to 54 years).

²⁷ Household spending on health includes out of pocket expenditure, such as gap payments, private health insurance premiums and items not subsidised by the Medicare Benefits Scheme (MBS) such as dentistry. The spending amounts do not include MBS and Pharmaceutical Benefits Scheme subsidies.

Figure 4–4: Household spending on health, by age

Share of total household spending



Source: HES, 2003–04, 2009–10 and 2015–16 editions (ABS cat. no. 6530.0), PBO analysis.

There are a range of factors that have contributed to rising health care spending, both in absolute terms and as a share of total spending. These include the ageing population, but more important factors have been improvements in medical technology, which broaden the scope of diagnoses and treatments, and rising incomes, which are associated with an increased preference to consume greater or higher quality health care.²⁸

4.1.2 Rent

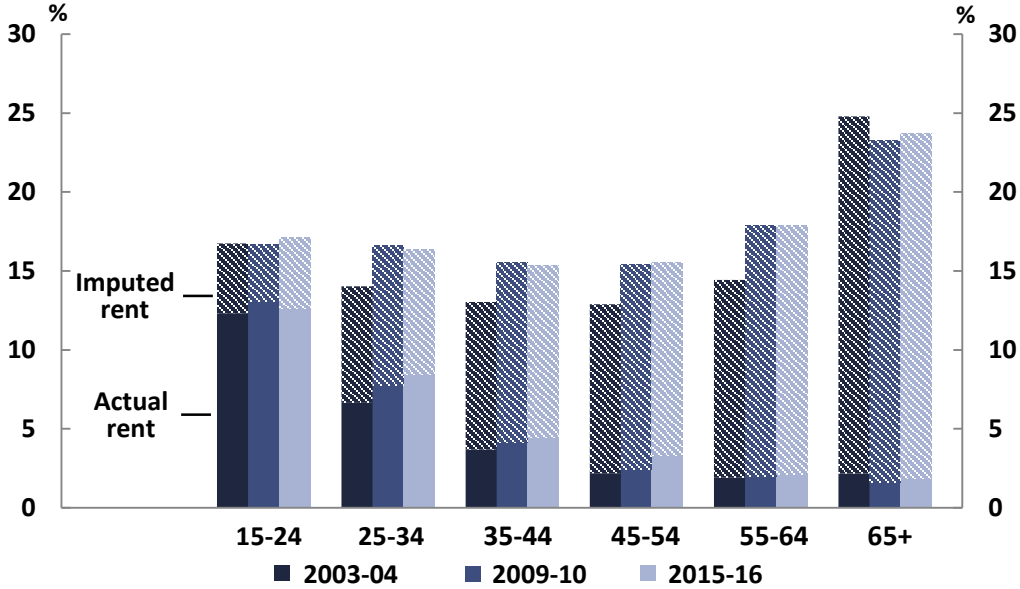
Rent, which is not subject to GST, is a significant component of household spending for all age groups, but the type of expenditure depends on the age of the household. As discussed earlier, the National Accounts include both ‘actual’ rent and ‘imputed’ rent, which is the estimated value of the dwelling services consumed by those who own their home.

Household spending on actual rent, as a share of total spending, is highest for the youngest age group and lowest for the oldest age group (Figure 4–5). With many older households owning their home, the share of household spending on imputed rent is high. This also reflects the fact that households in older age groups have, on average, fewer people and total spending is lower.

²⁸ These are discussed in more detail in *PBO report no. 02/2019—Australia’s ageing population – Understanding the fiscal impacts over the next decade*.

This high proportion of household spending for older households on imputed rent is the primary demographic factor driving the GST-to-GDP ratio down. Households in the oldest age group also spend proportionally more on health than other households, but on a National Accounts basis the impact is relatively small compared to imputed rent.

Figure 4–5: Household spending on housing, by age and type of expenditure
Share of total household spending



Source: HES, 2003–04, 2009–10 and 2015–16 editions (ABS cat. no. 6530.0), PBO analysis.

While the focus of this report is on the commonly used comparisons of GST with measures of economic activity such as GDP, Box 5 discusses dwelling spending on a cash-flow basis, which aligns more closely with the actual spending experience by households.

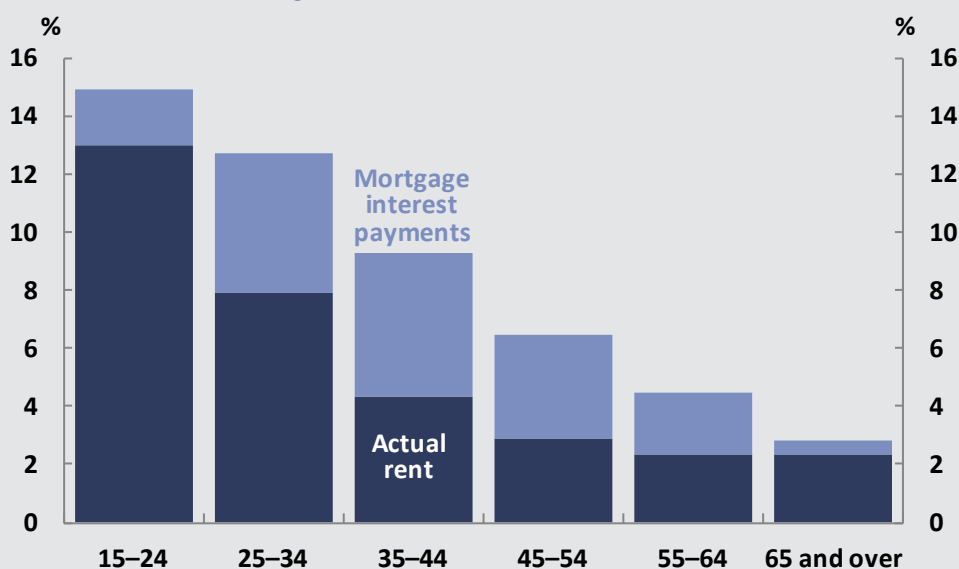
Box 5: Dwelling spending on a 'cash' basis

The focus of this report is on trends in GST compared to the size of either the economy (GDP) or to a component of the economy (household spending).

On this National Accounts (GDP) basis, economic activity related to the dwelling sector is treated differently from an intuitive 'cash flow' measure as practically experienced by households. The two major differences are the inclusion of imputed rent as 'consumption' by home owners, as discussed in Section 4, and the exclusion of a large proportion of mortgage interest payments, which are mostly not considered as generating economic activity.²⁹

Figure 4–6 shows the proportions of household spending on rent and mortgage interest payments on the basis measured by the HES, which closely matches an intuitive 'cash flow' measure.

Figure 4–6: Share of total spending on dwelling costs, by age group
Average of 2003–04, 2009–10 and 2015–16



Source: HES, 2003–04, 2009–10 and 2015–16 editions (ABS cat. no. 6530.0), PBO analysis.

By excluding imputed rent, and including mortgage interest payments, the demographic breakdown of spending is significantly changed. On a National Accounts (GDP) basis, households in the oldest age group spend relatively less on items subject to GST, owing to a large amount of imputed rent (Figure 5–5). On a cash-flow basis, the oldest age group has relatively low housing costs and spends relatively more on items subject to GST compared to younger age groups.

The measurement of spending on most other items, including the construction of dwellings, does not significantly differ between a National Accounts basis and a cash-flow basis.

²⁹ The Australian System of National Accounts, consistent with international standards, considers that the economic activity generated by financial intermediators (banks) is equal to the difference between the interest collected on loans and the interest paid on deposits, with half of this amount assigned to the loans side and the other half assigned to deposits. As a simple example, for a bank collecting \$800 million of interest on loans and paying \$700 million on deposits, the 'value-add' is equal to \$100 million, of which \$50 million is included in the National Accounts as household consumption expenditure. The National Accounts applies a similar approach to insurance.

5 The composition of the economy over the last two decades—how has the economy changed since the GST was introduced?

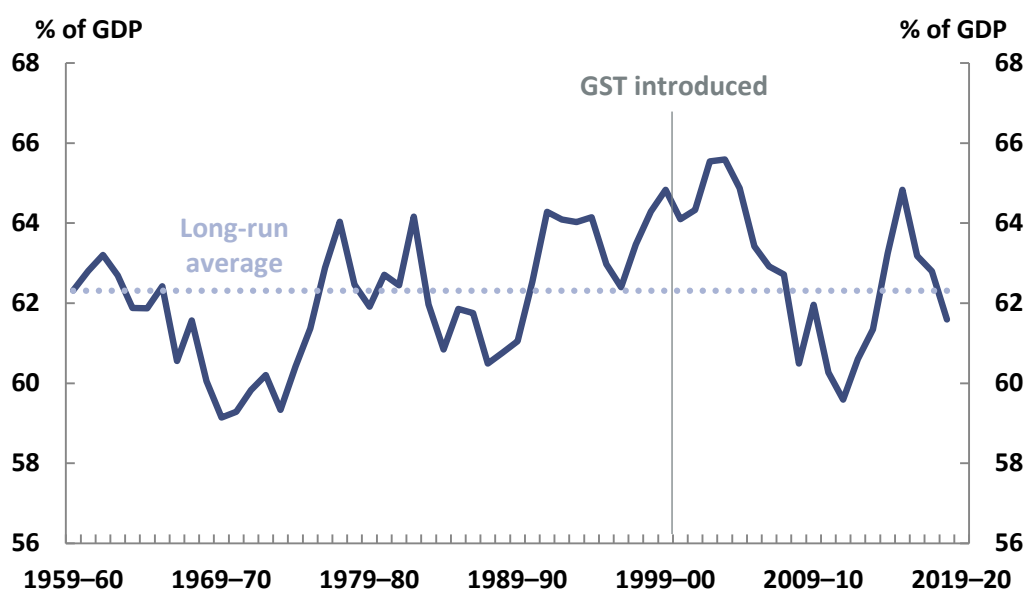
When measuring GST as a share of the overall economy, we need to consider what is going on in the economy as a whole, not just the GST base in isolation. From an expenditure perspective, GDP is the sum of household spending (consumption and dwelling construction), government consumption, private investment, government investment, and net exports. If GDP increases because one of those components not related to GST increases, such as exports, then the GST-to-GDP ratio will fall.

While household spending remains the single largest component of the economy from an expenditure perspective, the shifts in the types of products being purchased have been further exacerbated by a fall in household spending as a share of the economy.

The first few years of the GST were coincidentally at a point in time when household spending reached its all-time high as a share of the economy, contributing around 65 per cent of GDP in the early 2000s (Figure 5–1). Over subsequent years, household spending has returned to around the long-run trend share.

A decade on from the introduction of the GST the share had fallen to under 60 per cent, before recovering to around 62 per cent in the last decade. This relative fall in total household spending as a share of the overall economy accounts for almost one third of the 16 per cent decline in the GST-to-GDP ratio between 2003–04 and 2018–19.

Figure 5–1: Household spending



Source: ABS cat. no. 5204.0, PBO analysis.

To answer the question of why the GST has not grown in line with the economy it is useful to understand why household spending was such a large part of the economy in the early 2000s and what has changed. In this section we briefly discuss the significant changes in the structure of the economy that have occurred during the years just before and since the introduction of the GST, focussing on mining and household savings.

5.1 The mining boom

Much of the decline in the share of household spending through the 2000s was driven by an increase in the share of mining exports (Figure 5–2). From 2000–01 to 2010–11, household spending grew strongly, by 87 per cent. The value of mining exports, however, grew by 222 per cent over the same period.

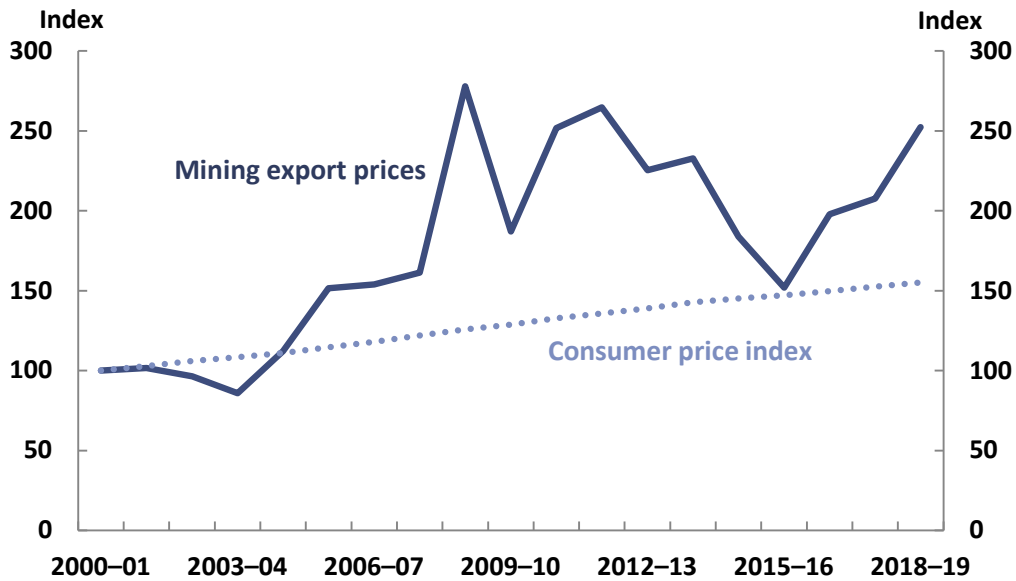
As a result, the share of GDP generated by household spending fell—not because of economic weakness, but because of the overwhelming strength in mining exports. In fact, in each year since 2005 the share of GDP generated by mining exports has been higher than in any year prior to 2005.



Source: ABS cat. no. 5204.0 and 5302.0, PBO analysis.

The strength in exports is reflected in the rising commodity prices seen since the turn of the century (Figure 5–3). From 2000–01 to 2018–19, the price of mining exports grew one-and-a-half times. The price of consumer goods grew by just over half in the same period.

Figure 5–3: Mining export prices



Note: 2000-01 = 100.0

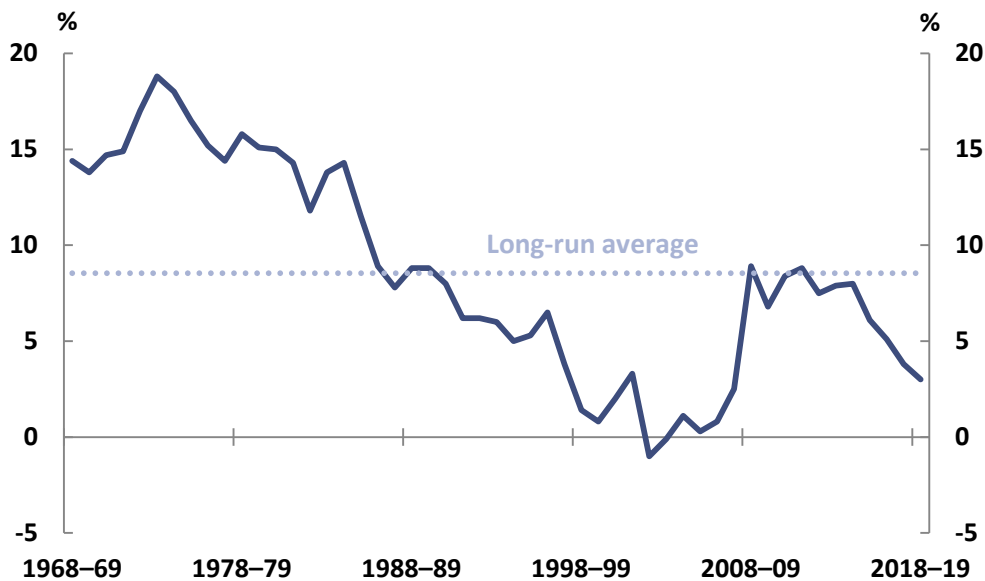
Source: ABS cat. no. 6401.0 and 6457.0, PBO analysis.

With global demand for Australian commodities expected to continue, the elevated share of GDP from exports is projected to continue well into the future. As a result, the share of GDP from household spending is unlikely to return to its level in 2000-01.

5.2 Household savings

Another important factor in the strength of household spending in the early 2000s is savings behaviour. The GST was introduced during a period of uncharacteristically low levels of household savings. As a result, GST revenue in the early years reflect an uncharacteristically high starting point, which is not representative of the spending and savings behaviour seen over the long term (Figure 5-4).

Figure 5-4: Household savings ratio



Source: ABS cat. no. 5204.0, PBO analysis.

The onset of the Global Financial Crisis in 2008 triggered a sharp increase in household savings, back towards the long-run average level. This increase in savings reduced household consumption and, accordingly, GST collections. Changes in savings behaviour helps to explain the moderation of consumption from historically high levels at the time of the GST's introduction.

More broadly, the impact of both the mining boom and the later increase in household savings illustrate the extent to which movements in the GST-to-GDP ratio can be significantly affected by factors beyond consumer spending preferences

5.3 Summary of trends in the GST-to-GDP ratio

The preceding analysis has sought to explain the evolution of the GST-to-GDP ratio in terms of four broad factors. Each of the factors are interdependent.

As discussed above, changes in the share of the economy from household spending, largely from the mining boom and savings behaviour, have largely reduced the GST-to-GDP ratio.

Second, long-run structural trends in spending, particularly on dwelling rent (actual and imputed) and health, have consistently driven the ratio down.

Third, trends in relative prices of items subject to GST compared to items exempt from GST, partly due to movements in the exchange rate, help to explain the fall in the GST-to-GDP ratio over the first decade, followed by a recovery during the 2010s.

By way of example to illustrate this interdependency, high commodity prices from the mining boom were responsible for the rapid increase in the exchange rate, resulting in lower import prices for consumption goods. Similarly, the structural increase in spending on rent, largely through rental prices, affected the relationship between prices of items subject to GST compared to items exempt from GST.

Cyclical fluctuations in savings, mining exports and the exchange rates will continue to result in short-run fluctuations in the GST-to-GDP ratio. In the long run, trends regarding rent and health (where the drivers are broader than simply the ageing population) are likely to continue, assuming the underlying structural drivers, such as population growth, persist.

Scenario analysis to support an understanding of the possible trajectories of the GST-to-GDP ratio over the next decade is described in the next section.

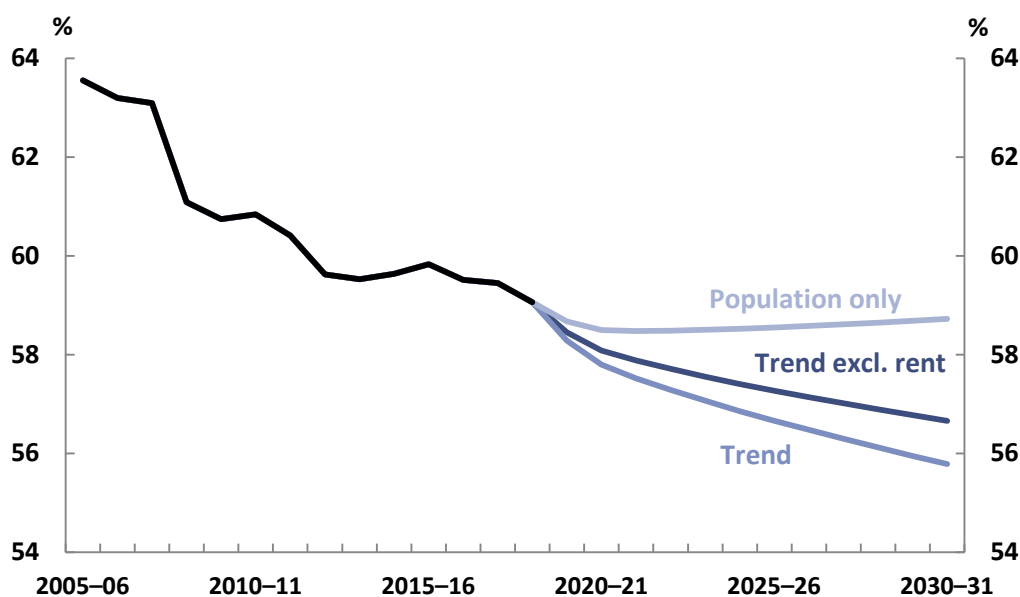
6 Medium-term scenarios

As discussed above, the share of household spending subject to GST has been falling steadily, from 62.6 per cent in 2003–04 to 56.7 per cent in 2018–19. To support an understanding of possible future GST collections, we have prepared projections under three scenarios:

- A scenario which only incorporates population growth and demographic change, including the ‘ageing population’, referred to below as the ‘population only’ scenario.
- A scenario where, in addition to population change, growth continues in line with observed trends for all categories of household spending.
- A scenario where, in addition to population change, growth continues in line with observed trends for all categories of household spending except rent, which is held steady.

The results of our projections may be surprising. Under the ‘population only’ scenario, which only incorporates demographic change, the share of household spending subject to GST actually trends upwards over the next 10 years, indicating that ageing has a comparatively small impact on the GST compared to the underlying consumer trends, as previously discussed (Figure 6–1). In contrast, the scenarios that continue general trends in the composition of household spending, largely unrelated to demographic change, see steady declines in the share of household spending subject to GST over time. Results under each scenario are discussed in further detail below.

Figure 6–1: Share of household spending subject to GST



Source: ABS cat. no. 5204.0 and 6530.0, PBO analysis.

Note: the population projections used in these projections do not include the impact of the COVID-19 pandemic, including on migration.

6.1 Detailed scenario analysis

6.1.1 Scenario 1: Population growth only

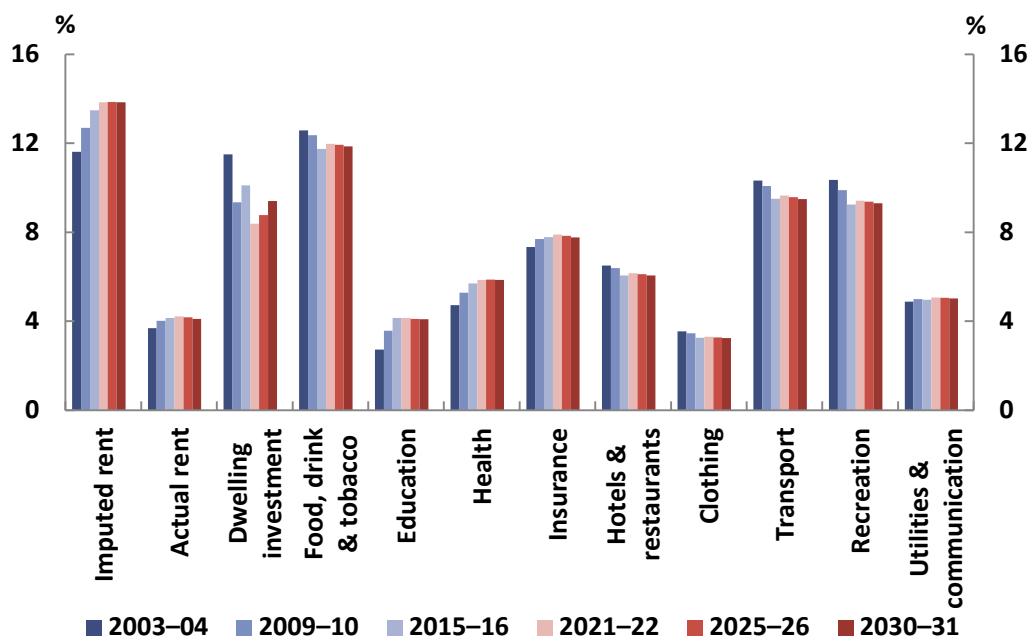
This scenario isolates the impacts of an ageing population and other demographic changes. It illustrates that differences in spending preferences across different age groups are largely neutral in total as the composition of the population changes.

It assumes that the observed trends in the composition of household spending for each age group, discussed in the previous section, come to a halt such that the composition of future spending for households of each age group is held fixed at 2015–16 levels.³⁰

The number of households in each age group is projected to grow in line with population projections.³¹

The composition of household spending at an aggregate level is reflected in Figure 6–2, demonstrating that an ageing population, by itself, has minimal effect on the overall composition of household spending over the medium term.

Figure 6–2: Share of spending by consumption category, population only scenario
Average of all households



Source: ABS cat. no. 6530.0, PBO analysis.

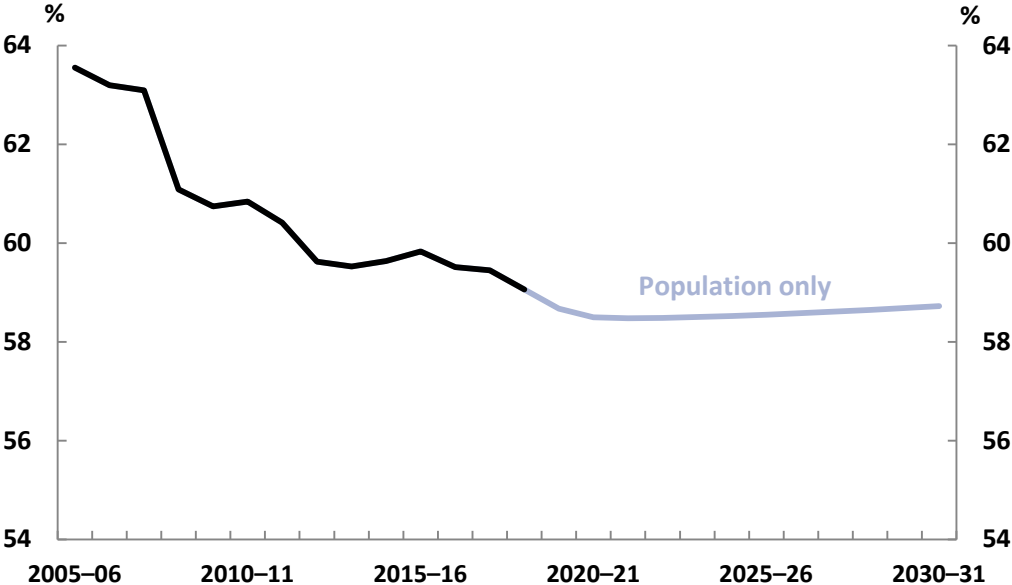
For example, if future spending on health remains at recent shares for each age group, shown in Figure 4–4 earlier, then the share of health spending overall only increases slightly, despite the ageing of the population.

³⁰ Households are assigned to an age group based on the age of the reference person, so the proportion of household within an age group does not necessarily align with the population in that age group (see Appendix E).

³¹ See Appendix E for further detail.

The little change that does occur between consumption categories is mostly offsetting. For example, imputed rent has the largest increase but this is offset by a decline in actual rent. As a result our 'population only' scenario, which includes only the impact of an ageing population, shows little change in the share of household spending subject to GST, which declines by 0.3 percentage points, from 59.1 per cent in 2018–19 to 58.7 per cent in 2030–31 (Figure 6–3).

Figure 6–3: Share of household spending subject to GST, population only scenario

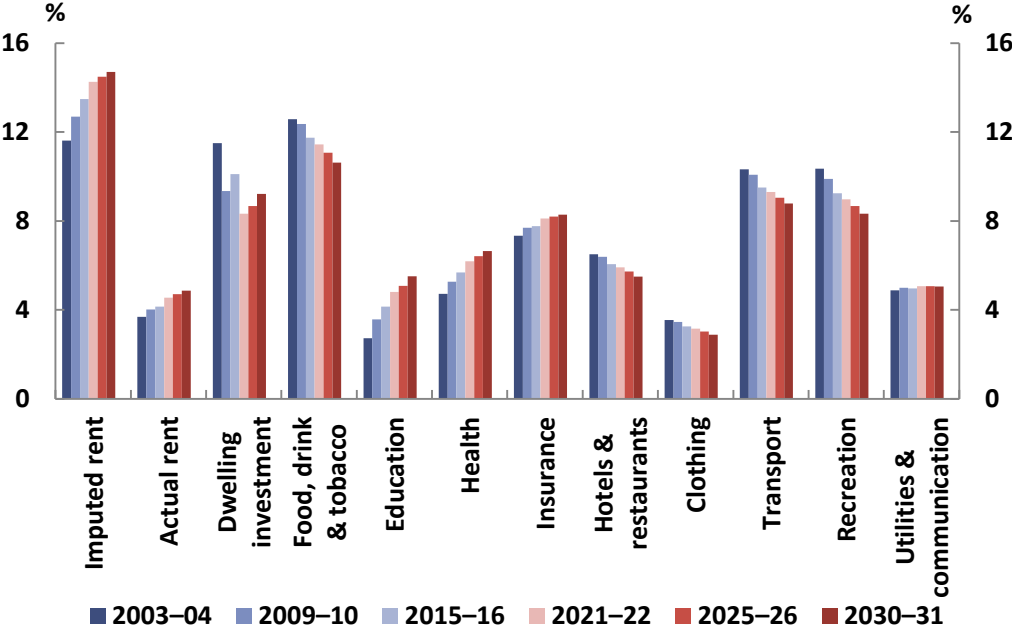


Source: ABS cat. no. 5204.0 and 6530.0, PBO analysis.

6.1.2 Scenario 2: Growth continues in line with observed trends

This scenario assumes that the trends in household spending between 2003–04 and 2015–16 continue into the future. Figure 6–4 reflects the composition of household spending at an aggregate level under this scenario. The composition of households by age is presumed to change in line with population growth, including the ageing population, in the same way as the first scenario.

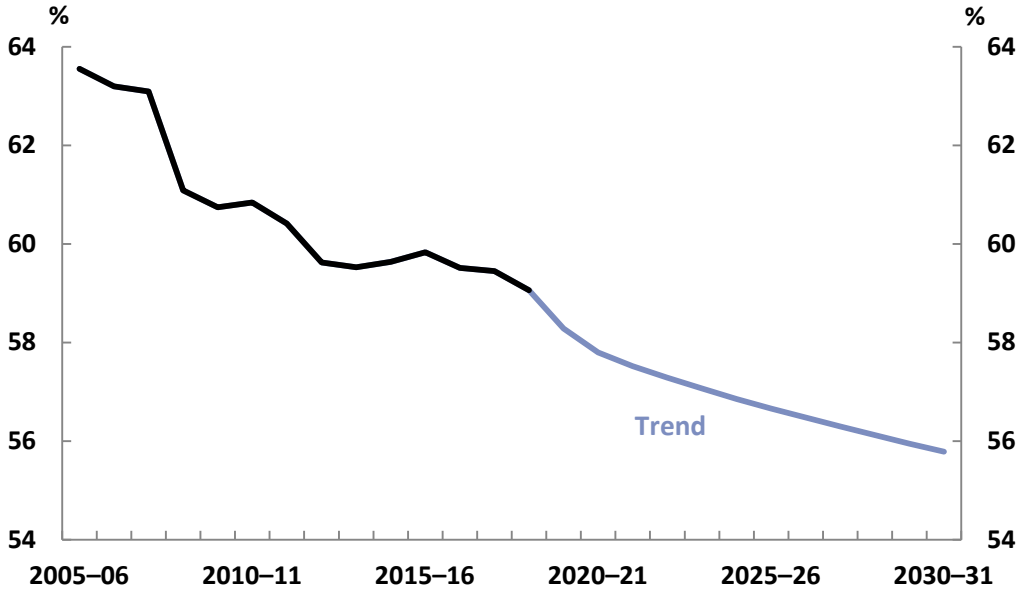
Figure 6–4: Share of spending by selected consumption categories, trend growth scenario
Average of all households



Source: ABS cat. no. 6530.0, PBO analysis.

This scenario shows a continuation of current trends would bring strong increases in spending on many GST-free items, including rent (both actual and imputed), education and health. This is offset by a reduced share of spending in areas such as food and drink, tobacco, transport, recreation, hotels and restaurants, and clothing, much of which is subject to GST. As a result, our trend growth scenario sees a strong decline of 3.3 percentage points in the share of household spending subject to GST, from 59.1 per cent in 2018–19 to 55.8 per cent in 2030–31 (Figure 6–5).

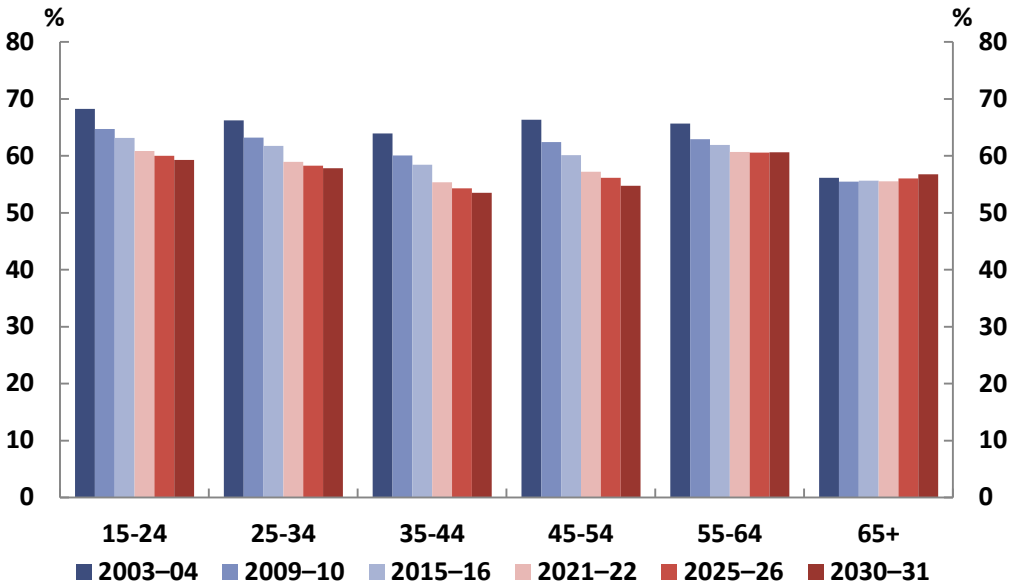
Figure 6–5: Share of household spending subject to GST, trend growth scenario



Note: This scenario makes no explicit allowance for the shift to self-generation of electricity by households, discussed in Box 3.
 Source: ABS cat. no. 5204.0 and 6530.0, PBO analysis.

The overall share of household spending subject to GST has been in decline since the introduction of the GST. However the results differ by age group, particularly for older age groups (Figure 6–6).

Figure 6–6: Proportion of household spending subject to GST by age, trend growth scenario



Source: ABS cat. no. 5204.0 and 6530.0, PBO analysis.

While the proportion of household spending subject to GST falls steadily for those under 55 years, for those in the 55 to 64 year age group the decline begins to taper, while for those aged 65 years and older the proportion of spending subject to GST increases slightly.

If current trends continue, these shares are projected to continue to decline further so that by 2030–31 around 55 per cent of household spending will be on items subject to GST. The decline will be steeper for younger households, with the greatest decline experienced by the 45 to 54 and 35 to 44 year age groups, while the share subject to GST for households in the 65 years and older age group is actually projected to rise slightly.

These results are primarily driven by trends in housing. In these projections, households in the 35 to 44 and 45 to 54 year age groups are spending proportionally more on housing costs, which are GST-free, than younger or older households.

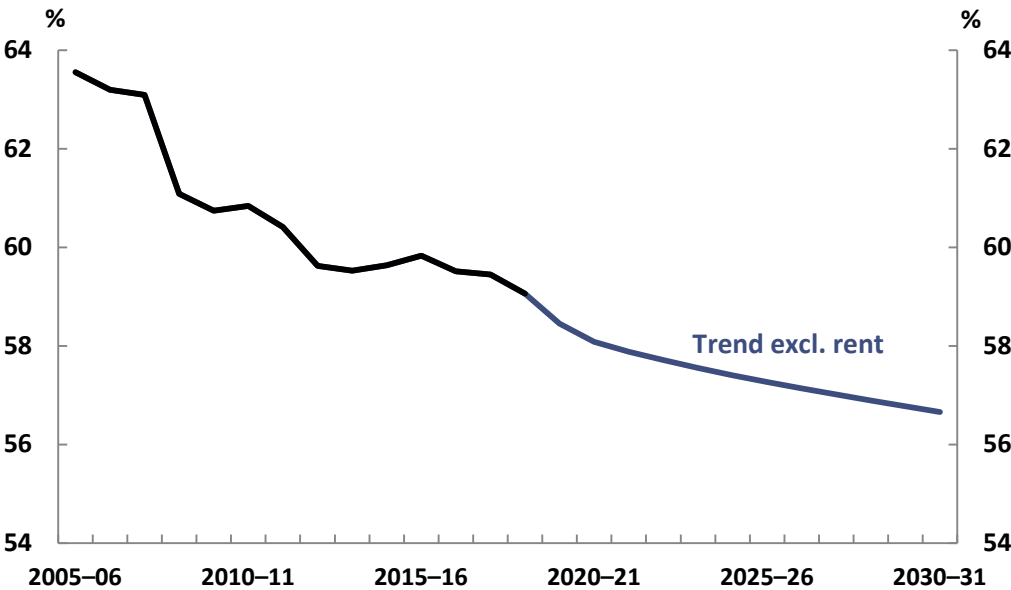
6.1.3 Scenario 3: Growth continues in line with observed trends for all categories of household spending except rent

This scenario includes the same assumptions as scenario 2, with the exception of rent, to illustrate the significant impact that trends in future growth of rental costs could have on GST collections. Rather than rent increasing at a rate reflecting long run trends in land prices, it is held constant as a share of overall household spending

The results under this scenario fall somewhere between Scenarios 1 and 2, following a more moderate but similar trajectory to the trend scenario (Scenario 2), declining 2.4 percentage points to 56.7 per cent in 2030–31 (see Figure 6–7).

When compared with Scenario 2, it can be seen that the share of household spending subject to GST would be 0.9 percentage points higher in 2030–31 if rental costs remained steady than if continued to grow in line with long run trends.

Figure 6–7: Share of household spending subject to GST, trend growth excluding rent scenario
Average of all households

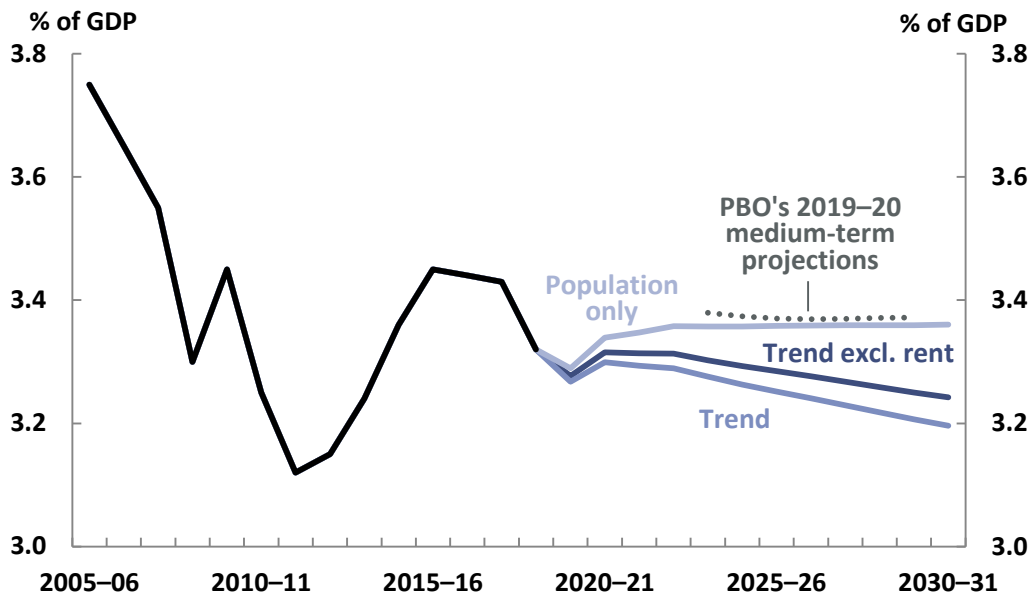


Source: ABS cat. no. 5204.0 and 6530.0, PBO analysis.

6.2 Implications for the GST-to-GDP ratio

The implications for the GST-to-GDP ratio are clear. Under the ‘population only’ scenario (Scenario 1), the GST-to-GDP ratio is projected to remain at around 3.4 per cent of GDP, while under our trend growth scenario (Scenario 2), the GST-to-GDP ratio would decline by over 0.1 percentage points, from 3.3 per cent of GDP in 2018–19 to 3.2 per cent of GDP in 2030–31 (Figure 6–8). This equates to a difference of almost \$6 billion of GST revenue by 2030–31 across the range of scenarios.

Figure 6–8: GST-to-GDP ratio



Source: ABS cat. no. 5204.0 and 6530.0, ATO *Taxation statistics 2017–18*, PBO analysis.

The PBO’s own medium-term projections of GST revenue, from our 2019–20 report,³² are similar to the projections under our ‘population only’ scenario (Scenario 1). We noted at the time that these receipts may be overstated as, due to the aggregated nature of the medium-term economic parameters, the economic parameters do not capture some of the significant trends expected to reduce revenue in the coming years, such as those captured under Scenarios 2 and 3 in this report.

The research in this report will inform explicit adjustments to GST revenue projections for the PBO’s 2020–21 medium-term projections, which will be released later this year following the release of the Commonwealth Government’s 2020–21 Budget.

Under all scenarios, GST revenue is projected to be lower than was anticipated when the GST was introduced. Had the GST remained at around 3.8 per cent of GDP (the average from 2001–02 to 2006–07), GST revenue would have been up to \$16 billion higher in 2030–31 than projected under our ‘population only’ scenario (Scenario 1), and up to \$24 billion higher than projected under our trend growth scenario (Scenario 2). This revenue shortfall is likely to be sustained over the long-term.

Although this reduced revenue does not impact on the Commonwealth budget balance directly, it could result in calls for the Commonwealth to provide greater transfer payments to the states and territories to address the shortfall.

³² PBO report no. 03/2019—2019–20 Medium-term fiscal projections.

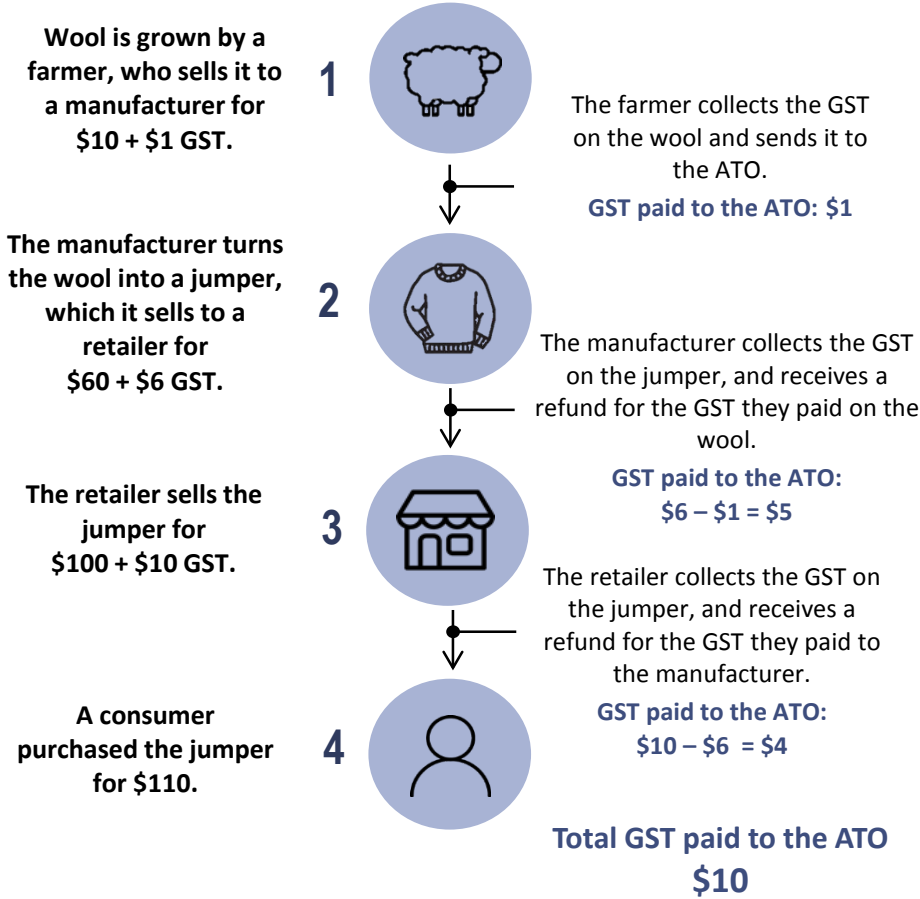
Appendix A – The concept and operation of the GST

This appendix covers two issues important for understanding the trends discussed in this report: the practical operation of the GST and the resultant impacts on the volatility of collections.

A simplified illustration of the operation of the GST

The GST is imposed at each stage of production or distribution based on the increase in value of the product or service. At the point that a product is transferred from one business to the next, the GST is added to the sale price. The selling business sends this tax to the ATO but also receives a refund for any GST paid on their purchases. This process continues along the production chain until the product is eventually sold to the final purchaser, who bears the full burden of the tax (Figure A–1).

Figure A–1: The operation of a value-added tax



The GST is therefore a form of a ‘value-added tax’, where ‘value added’ is the difference between the sale price of a good or service and the cost of the inputs used to create that good or service. In most cases the final purchaser, who bears the full burden of the tax, is an individual consumer, such that the GST is often referred to as a ‘consumption tax’.

The GST can be equally viewed as a cumulative tax along the production chain (a ‘value-added tax’) or as a tax on the value of the final consumption of goods and services.³³

This report mainly examines the trends in GST from the ‘consumption tax’ perspective.

Short-term volatility in GST collections

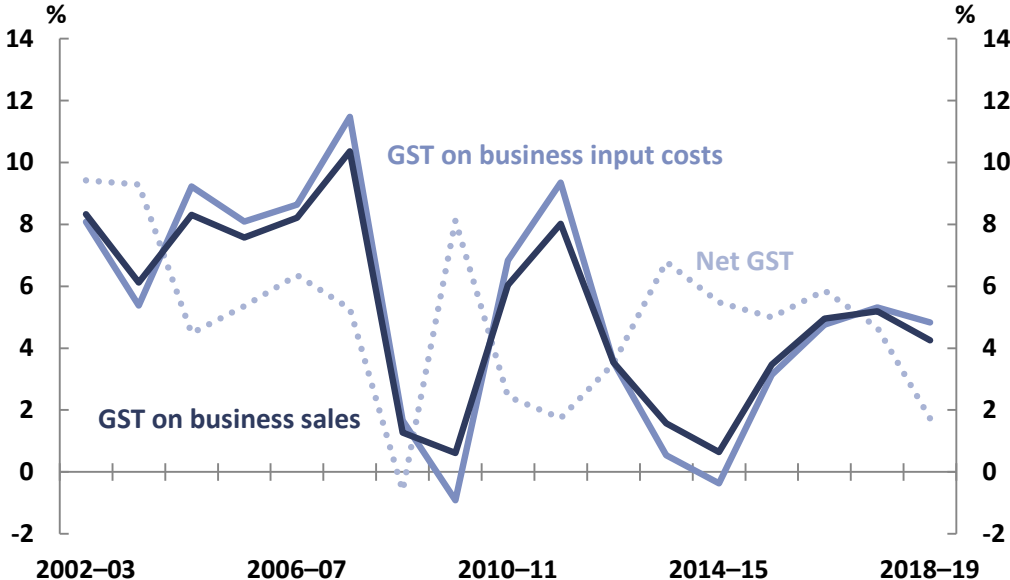
The operation of the GST across the production chain, and its inherent timing issues, can result in counter-intuitive short-run responses, with extreme swings in GST collections between years.

In 2018–19, economic activity generated \$65 billion of GST, the result of many sales from business to business along production chains. In total, these sales generated \$356 billion of GST with \$292 billion of that GST claimed back by the purchasing businesses, netting out to the \$65 billion of GST. The size of these gross amounts depends on the number of separate businesses in the production chains.

While, in theory, the operation of the GST involves a large number of small transactions between businesses and the ATO, in practice the business only reports the total amount of GST-applicable sales and input costs, and pays the resulting net amount of GST.

The operation of this system means that, in the short-run, the net amount of GST may evolve very differently to the gross amounts. This is illustrated in Figure A–2, which shows the growth rates for the gross and net amounts.

Figure A–2: Growth in GST amounts



Source: ATO Taxation statistics 2017–18, PBO analysis.

In 2009–10 there is a clear mismatch in growth rates between net GST and gross amounts of GST on sales and the GST input tax credits. This is due to differences in the timing of sales and purchases along the production chain, which are most evident during and after a sharp reduction in household demand (an economic ‘shock’, for example due to the Global Financial Crisis).

³³ In the National Accounts GST is treated as a tax on production.

In the first year of the shock, the reduction in demand will immediately generate less GST on sales from the retailer. The reduction in sales will permeate back through the production chain, reducing sales and input costs throughout, but inevitably leaving a larger-than-usual stock of inventories which have not yet generated any net GST because they are yet to be sold to the final purchaser. In the Australian System of National Accounts, a product is 'produced' once it reaches its final form, regardless of if it is actually sold during that same period of time or not. An inventory (unsold final good) therefore generates GDP but not GST.

In the second year of the shock, with demand still reduced, some of that demand will be met through the sale of the larger-than-expected stock of inventories left from the previous year, which generates the full amount of GST on the sale without the corresponding flows back through the production chain. The sale therefore generates all of the GST for the product but very little GDP from its production.

During major swings in consumer demand, net GST and GDP are expected to move differently, resulting in sharp movements in the GST-to-GDP ratio.

Appendix B – Revenue recognition methodologies

This appendix describes the concepts and methods used for determining aggregate amounts of GST, and the appropriate contexts for their use.

Aggregate GST is reported according to three different methods, which differ largely according to when the amounts are recognised and the inclusion of penalty amounts. These are the ‘statement’ basis, the ‘accrual’ basis and the ‘cash’ basis. Each concept comes with its own technical terminology. Most of the analysis in this report, which compares GST with economic trends, uses the ‘statement’ method.

GST recognised on a ‘statement’ basis

Almost all GST related amounts are lodged with the ATO via a Business Activity Statement (BAS), where a business reports the amount of GST liable from their sales (item 1A on the BAS) and the GST that was included in the business’s input costs (item 1B). The net GST for the business is then the difference between these two amounts, which may be negative if the GST included in the input costs is greater than the GST liable on the sales.

As a simplified example, consider a business that assembles chairs. The business purchases the components of the chairs with a total cost for the month of \$110,000, which includes GST of \$10,000. Having assembled the chairs, they are sold by the business for a total amount of \$165,000, which includes GST of \$15,000. The business pays \$5,000 to the ATO, being the \$15,000 of GST on the sales, less the \$10,000 of GST included in the input costs.

In addition, GST is payable on most goods imported into Australia. Businesses importing goods generally defer the payment of this GST until they lodge their BAS. Other taxable imports (e.g. those directly imported to individuals) are subject to GST before the goods are released by the Department of Home Affairs.

The ATO publishes the aggregate amounts of GST for these transactions in the annual publication *Taxation statistics*. Table B–1 shows data for recent years.

Table B–1. GST summary

Goods and services tax (\$m)	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19
Gross GST payable	267,896	271,072	272,127	281,575	297,340	310,478	324,096
<i>less</i> Input tax credits	245,413	246,734	245,822	253,527	265,579	279,698	293,210
Net amount	22,483	24,338	26,305	28,048	31,761	30,780	30,886
GST on imports							
Businesses (deferred)	22,925	24,160	24,901	25,719	25,412	28,537	29,058
Other	3,039	3,239	3,368	3,535	3,486	4,171	4,638
Net GST	48,447	51,738	54,575	57,302	60,659	63,489	64,582

Note: Components may not sum due to rounding.

Source: ATO *Taxation statistics 2017–18*.

The amounts of GST reported on a ‘statement’ basis are the closest in concept to the underlying economic activity, as measured in the National Accounts. The disadvantage of this method of reporting is that the outcomes are not finally known until every BAS is lodged and processed for the

reporting period, which may take years for disputed cases. The ‘statement’ method is not used for any formal government financial reporting obligations, owing to the delay in knowing the final result and because it makes no allowance for write-offs (see below).

GST recognised on an ‘accrual’ basis

The GST is recognised on an ‘accrual’ basis for government financial statements, including the ABS *Government Finance Statistics*, the Consolidated Financial Statements and the Final Budget Outcome. This is similar to that of the ‘statement’ basis, with two major differences.

First, provisions, penalties and interest charges related to the administration of the GST are included in the ‘accrual’ method, but not the ‘statement’ method.

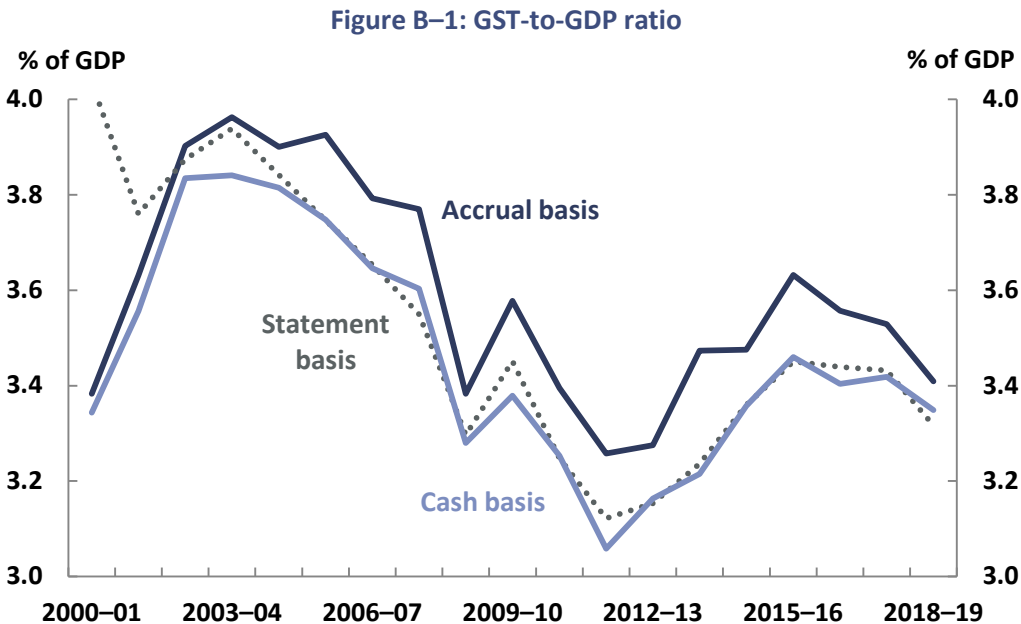
Second, in order to comply with reporting due dates, Australian accounting standards allow for an estimate for amounts on BAS forms not yet lodged with the ATO. Australian accounting standards require GST revenue to be recognised on an ‘Economic Transactions Method’ (ETM) basis which includes actual liabilities raised during the year and an estimate for amounts outstanding that relate to transactions occurring in the reporting period where BAS forms have not yet been lodged with the ATO. The following year, accrual revenue will also include a re-estimation of prior reporting periods that have not yet been lodged and an adjustment is made where the actuals differ from the original estimates.

GST recognised on a ‘cash’ basis

Some reporting of GST, particularly in budget papers, is on the basis of the cash amounts received (or paid) by the ATO and other agencies. The cash amounts include penalties and related interest paid.

An important difference between the cash amounts and the other two concepts is in the treatment of write-offs. Consider the example of a business which is declared bankrupt with a GST liability of \$1 million, such that the GST amount is unrecoverable and written off by the ATO. This GST will be zero on a ‘cash’ basis, since no amounts were received by the ATO, but will still be \$1 million on a ‘statement’ basis, reflecting the amount reported on the business’s BAS. The GST revenue will also be \$1 million on an ‘accrual’ basis. A corresponding write-off expense of \$1 million ensures that the total impact on the government’s accrual (fiscal) balance is zero.

The GST-to-GDP ratio is shown, on the three different recognition bases, in Figure B–1.



Source: ABS cat. no. 5204.0, ATO *Taxation statistics 2017–18*, 2008–09 Budget, Final Budget Outcomes (2007–08 to 2018–19) and PBO analysis.

Appendix C – Methodological approach

Analysing the GST-to-GDP ratio

This report examines the past and projected evolution of the GST-to-GDP ratio through three factors: the composition of the economy, the composition of consumption, and the effective rate of GST. This appendix explains the mathematical formulation of these factors.

This approach is motivated by a mathematical decomposition of the ratio into three component terms:

$$\frac{\text{GST}}{\text{GDP}} = \frac{\text{CON}}{\text{GDP}} \times \frac{\text{CON}_{\text{GST}}}{\text{CON}} \times \frac{\text{GST}}{\text{CON}_{\text{GST}}}$$

These terms are approximately described below.

$\frac{\text{CON}}{\text{GDP}}$ **Consumption share of GDP**

The share of economic activity generated by household spending on consumable goods and services. *(Discussed in Section 5).*

$\frac{\text{CON}_{\text{GST}}}{\text{CON}}$ **Fraction of consumption which is subject to GST**

The share of household spending on consumable goods and services which are subject to GST, as well as dwelling construction. This ratio could be used as an approximate measure of the breadth of the GST tax base. *(Discussed in Sections 2 and 3).*

$\frac{\text{GST}}{\text{CON}_{\text{GST}}}$ **Effective rate of GST**

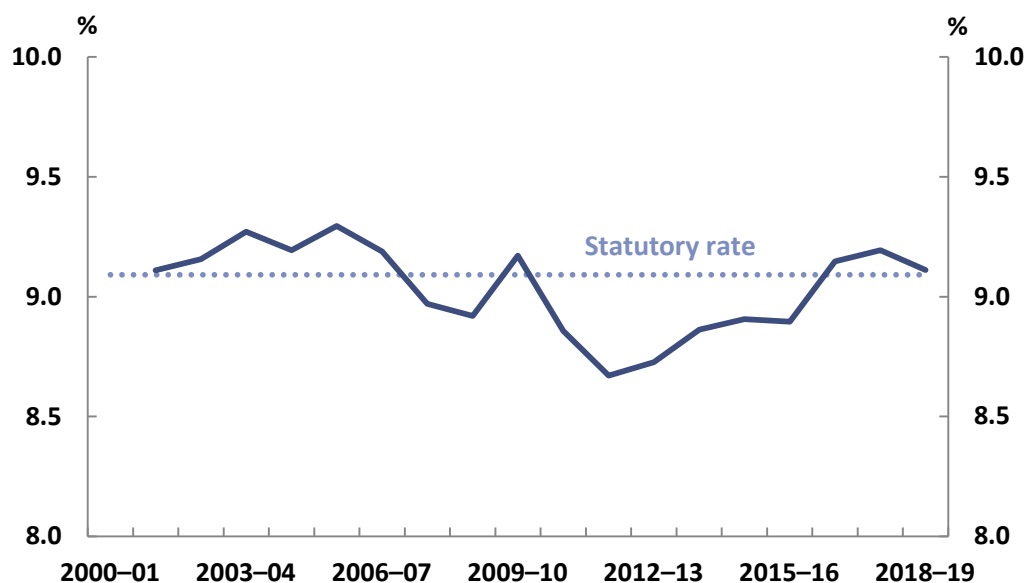
The ratio of GST collected to household spending on GST-applicable goods and services. This ratio would be expected to be around 0.9 (one-eleventh), with deviations from this amount being driven by measurement issues in the base or changes to GST compliance.

The effective rate of GST

The final factor in examining trends in GST is the ratio of GST to the relevant spending base, here termed the ‘effective rate’ of GST, shown in Figure C–1. Given a statutory rate of GST of 10 per cent, this ratio is expected to be one-eleventh (or 9.1 per cent) of total spending on goods and services subject to GST, represented by the dashed line in Figure C–1.³⁴

³⁴ For example, an item costing \$10 before GST will attract \$1 of GST, making the final purchase price \$11, so the ratio of GST to the value of the item is 1/11. The National Accounts reports the value of items at their final purchase price (including GST).

Figure C–1: The ratio of GST to household spending subject to GST



Source: ABS cat. no. 5204.0, ATO *Taxation statistics 2017–18* and PBO analysis.

In reality, however, the ratio deviates from one-eleventh. This indicates either:

- remaining definitional issues relating to the National Accounts
- mismeasurement of the base
- a shortfall in compliance.

Definitional issues or a mismeasurement of the base are the more likely of the options, for two reasons. First, the ratio is not systematically below one eleventh, but rather it is sometimes above and sometimes below. Second, the ratio is reasonably well correlated with other economic trends already discussed, such as the exchange rate.

Likely candidates for further definitional issues are in the financial sector, where the National Accounts treatment of expenditure on borrowing costs differs considerably from simple cash flows (see Box 5).

This does not mean that there are no compliance issues regarding GST, only that the degree of non-compliance equally affects the reporting of GST to the government and the reporting of economic activity to the ABS.³⁵

The measurements presented in this report assume that the GST base has remained unchanged over the last two decades. This is not completely correct since some products have been added to the GST base since its inception, although the impact is small. The next appendix will examine policy affecting the GST.

³⁵ The ATO measures GST compliance via their 'tax gap' calculation:
www.ato.gov.au/About-ATO/Research-and-statistics/In-detail/Tax-gap/Goods-and-services-tax-gap/

Appendix D – GST measures

Since 2000, successive governments have announced over 200 policy measures with a costed impact on GST. Policies affecting the GST can be divided into five broad categories

- Adding or removing items from the GST base.
- Changes to other taxes which have associated impacts on GST. For example, increases to tobacco excise rates will increase the price of related products and hence GST.
- Migration measures, which change the size of the population, and therefore GST.
- Compliance measures, where the ATO is funded to further reduce tax avoidance. These measures may target particular parts of the GST base, or may apply to the GST in general.
- Measures that make adjustments to the operation of the GST payments system, for example changing due dates or eligibility thresholds.

Changes relating to migration or other taxes will affect the value of the GST base. For example, increasing migration will increase household consumption and therefore the GST. These measures would not affect the relationship between consumption and the GST.

The cumulative impact of all of these measures on GST has not been estimated for the projections included here owing to uncertainty around extending a costed value of a measure beyond the years for which it was published. For example, the measure to apply the GST to low-value goods imported by consumers, announced at the 2016–17 Budget, was estimated³⁶ to raise \$60 million in 2018–19 and \$100 million in 2019–20. No estimates have been published for years beyond 2019–20.

For the purpose of providing an indicative estimate of the cumulative impact of ongoing measures since the introduction of the GST, it is assumed that the amount raised by these measures grew in line with GST as a whole. That is, their share of the total remained constant from the last published estimate.

On this basis, measures that have modified the GST base would be expected to add around \$300 million to GST in 2019–20. The largest of these by far is the 2015–16 measure to expand of the GST base to include digital products imported by consumers, the so-called ‘Netflix tax’, which took effect from 1 July 2017. This measure was estimated to raise around \$200 million of GST per year.³⁷

These measures will have increased the ‘effective rate’ of GST, shown in Chart C–1 above, by 0.05 per cent.

Measures that have modified GST through changes to other taxes, primarily excise, will have added over \$1 billion to GST in 2019–20. Around a half of this stems from several increases to tobacco excise. These measures will have affected both GST and the value of the GST base, so the ‘effective rate’ will be unchanged.

Measures modifying Australia’s migration intake will have cumulatively raised around \$400 million in GST in 2019–20. Similarly, these measures will have affected both GST and the value of the GST base, so the ‘effective rate’ will be unchanged.

³⁶ 2016–17 Budget Paper 2 and 2017–18 Budget Paper 2.

³⁷ 2015–16 Budget Paper 2.

Finally, measures targeting GST compliance or taxpayer compliance in general are particularly difficult to quantify owing to limited information on the duration of these programs beyond the published estimates. Measures with an explicit published estimate for revenue raised cumulatively add around \$1.4 billion to GST in 2019–20. These are listed in Table D–1. Other earlier compliance measures, announced in previous budgets, would be likely to also have had ongoing impacts in 2019–20.

Table D–1. Measures affecting GST compliance in 2019–20

Measure title (\$m)	Announced	2017–18	2018–19	2019–20	2020–21	2021–22
GST compliance program - working together to improve voluntary compliance*	2015–16 Budget	612.3	710.3	646.6	775.6	880.2
Tax Integrity Package - Improving the collection of GST on property transactions	2017–18 Budget		940	300	330	
Tax Integrity Package - Black Economy Taskforce: extension of the taxable payments reporting system to contractors in the courier and cleaning industries	2017–18 Budget		32	47	51	
Tax Integrity Package - Black Economy Taskforce: one year extension of funding for ATO audit and compliance activities	2017–18 Budget	49.6	31.6	18.4	10.2	
A firm stance on tax and superannuation debts	2018–19 Budget		116.5	119.1	122.4	125.7
Black Economy Package - Combatting illicit tobacco	2018–19 Budget		1	5.5	12	17
Black Economy Package - Further expansion of taxable payments reporting	2018–19 Budget			40	55	55
Black Economy Package - New and enhanced ATO enforcement against the Black Economy	2018–19 Budget		106.6	191.4	241.9	273.1
Levelling the playing field for online hotel bookings	2018–19 Budget			5	5	5
Reforms to combat illegal phoenixing	2018–19 Budget			5	15	20
Tax Integrity - increasing engagement and on-time payment of tax and superannuation liabilities	2019–20 Budget			8	10.9	11.4
Total		662	1,938	1,386	1,629	1,387

* First announced at the 2010–11 Budget, with extensions announced at the 2012–13 Budget, 2015–16 Budget, and 2018–19 Mid-year Economic and Fiscal Outlook.

Compliance activity by the ATO is expected to have increased GST revenue, particularly over the last decade, by around 1 to 2 per cent of total GST, equivalent to around 0.1 per cent of GDP, with an impact on the ‘effective rate’ of around 0.2 percentage points.

The full list of over 200 measures affecting GST since its inception is provided in the spreadsheet published with this report.

Appendix E – Projection methodology

The PBO projections of household spending subject to GST in this report are derived from the Household Expenditure Survey (HES) published by the ABS (cat.no. 6530.0). The HES is the most complete dataset for distributional analysis of the GST that is published by the ABS, and presents detailed estimates of household expenditure patterns and composition across the population. The survey is run around every six years. This report uses data from the three surveys run since the introduction of the GST, in 2003–04, 2009–10 and 2015–16. The next HES will be conducted in the 2021–22 financial year.

The projections are constructed using HES data by age group. Households are assigned to an age group based on the age of the head of the household (called the ‘reference person’). This person is chosen as the main contact point for the HES and is usually chosen based on factors such as length of tenure, the parent, the highest income earner, the eldest person. As a result, the proportion of households within an age group does not necessarily align with the population in that age group—for example, there are far fewer households headed by persons in the youngest age group than there are 15 to 24 year olds in the population, as persons in that age group are more likely to still live with their parents or relatives, and so are represented by their parents in the survey. For each age group, data is available at a fine level of product detail.

The PBO allocated a GST status to each product, which was concurred to the National Accounts classification of household expenditure (the ‘Classification of Individual Consumption according to Purpose’). Product level data was then aggregated, annualised and extrapolated from an average household basis to an aggregate basis to provide a measure of the proportion of household spending on goods and services subject to GST for households by age group.

The data was then benchmarked to annual estimates from the National Accounts to ensure the comparability of the projections with other analysis presented in this paper. This process incorporates both any differences in classification (such as the treatment of rent and education) and any adjustments to the HES data (such as for underreporting of alcohol and tobacco purchases). The benchmarks were assigned an age profile based on the underlying HES data. Where there were conceptual differences between the benchmarks and the HES data, they were assigned an age profile using a selected profile series, detailed in Table E–1.

The share of household spending subject to GST was projected to 2030–31 on an age basis, using ABS population projections (Series B), and assuming the ratio of households to population in each age group remains constant over time. The population projections do not include the impact of COVID-19 on international travel, expected to drastically reduce migration in 2019–20 and 2020–21.

Table E–1. Additional HES components and profile series

Additional component	Data source	Age profile source
Dwelling investment and ownership transfer costs	<p><i>Australian System of National Accounts</i> (ABS cat. no. 5204.0), Table 2, 'Private ; Gross fixed capital formation – Dwellings'</p> <p><i>Australian System of National Accounts</i> (ABS cat. no. 5204.0), Table 2, 'Private ; Gross fixed capital formation - Ownership transfer costs'</p> <p><i>Australian National Accounts: National Income, Expenditure and Product</i> (ABS cat. no. 5506.0), Table 10, 'Stamp duties on conveyances'</p>	<i>Housing Occupancy and Costs</i> (ABS cat. no. 4130.0)
Student loans	Unpublished	<p><i>Household Expenditure Survey</i> (ABS cat. no. 6530.0)</p> <p>Total of:</p> <p>'Higher education institution fees nec'</p> <p>'TAFE course fees'</p> <p>'Fees paid to other educational institutions nec'</p> <p>'Private education tuition fees'</p>
Imputed rent	<i>Australian System of National Accounts</i> (ABS cat. no. 5204.0), Table 42, 'Imputed rent for owner-occupiers'	<p><i>Household Expenditure Survey</i> (ABS cat. no. 6530.0)</p> <p>Total of:</p> <p>'Water and sewerage rates and charges (selected dwelling)'</p> <p>'Local government rates (selected dwelling)'</p> <p>'Land tax (selected dwelling)'</p> <p>'House insurance - separable (selected dwelling)'</p> <p>'House and contents insurance - inseparable (selected dwelling)'</p> <p>'Body corporate payments (selected dwelling)'</p>

Appendix F – Glossary

The PBO's [*Online budget glossary*](#) contains further explanation of key terms related to the Commonwealth Government budget, and is available on the PBO [website](#).

Compliance

In tax, compliance is the degree to which taxpayers follow (or fail to follow) the tax rules.

Gross domestic product

Gross domestic product (GDP) is the total value of all goods and services produced within an economy over a given period of time, usually three months or one year. Growth in GDP measures the change in the total value produced from one period to the next.

Household savings

Household saving is the amount of a household's disposable income remaining after deducting all of its spending on consumption. A common measure of household saving is the *household saving ratio*, which presents household saving as a share of household disposable income.

Household spending

In this report, household spending refers to household final consumption expenditure with the addition of dwelling construction and ownership transfer costs (excluding stamp duties).

Imputed rent

Imputed rent is a measure of the 'services' dwellings provide to their resident owners. In the same way as rent is the payment by a tenant to a landlord for the provision of a dwelling service, imputed rent is the amount that would have been paid if the dwelling were tenanted rather than occupied by the owner. The inclusion of imputed rent prevents the level of home ownership from affecting measurements of the size of the economy – without it, GDP would fall every time a renter purchased their home (and vice versa), despite there being no change in the need for housing. Imputed rent is estimated by the ABS, based on actual rents paid for similar properties. The data used in this report has been sourced from the ABS publication *Australian System of National Accounts* (cat. no. 5206.0), Table 42. Household Final Consumption Expenditure.

Medium term

In budget estimates, the medium term is the period that includes the current budget year and the following ten years. For the 2020–21 Budget, the medium term will include the years 2020–21 to 2030–31.

National Accounts

The National Accounts is the framework for the measurement of economic activity and income flows, including GDP and its components. The National Accounts are published annually in the ABS publication *Australian System of National Accounts* (cat. no. 5204.0).

Value add

Value add is generally measured as the difference between the market price of a good or service and the cost of the inputs (except labour and depreciation) used to produce that good or service.

Exceptions include financial intermediation services and insurance.