Estimating government receipts and expenditure for Jersey households

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Introduction

This report provides estimates of the level of government receipts and expenditure to and from individual Jersey households. These estimates are based on very broad household information consisting of the household type (number of adults and children) and the level of household income[1]. We are specifically considering households that contain at least one working adult.

These estimates represent anticipated average levels of government receipts and expenditure from model households and will not reflect a household's specific circumstances.

For the purposes of receipts, we are considering:
- Personal income tax
- Goods and Services Tax (GST)
- Impôts (excise duty)

Excluded from the receipts calculations are:
- Company income tax
- GST payable by companies which includes International Service Entities (ISE)
- Stamp duty
- Island-wide rates
- "Other income"

Stamp duty and Island-wide rates collectively total approximately £50 million of tax revenue received per year and the majority of this revenue is likely to be derived from Jersey households. At this stage, due to the nature of how these receipts occur (particularly in respect of stamp duty) we have not attempted to provide estimates for these items, however they could be the subject of subsequent work. These receipts equate on average to approximately £1,100 per Jersey household per year.

In respect of government expenditure, specific consideration is given to that which provides the main areas of tax-funded services directly to an individual or household. These are:
- Health
- Education
- Income support

An allowance for "other" States expenditure is also included, to reflect, on some level, services not included above but which could still be considered as being directly funded from individual households.

In addition to the above items, which focus on general States of Jersey revenue and expenditure, consideration is also given to the receipts received in respect of the main ring-fenced funds, namely:
- Social security
- Health insurance
- Long-term care

These items represent a significant level of receipts from Jersey households and estimates for receipts into these funds have been included to assist in the presentation of the overall context and also to

facilitate additional future work. We have not considered estimated expenditure from these funds at this time, but again this could be the subject of future work.

The current commitment of the States to make an annual contribution into the Social Security Fund (often referred to as "supplementation") is also considered. While this does not represent either government receipts or expenditure to / from a household, it does have an important impact as to the balance of funds that are ultimately available either as general tax revenue, or within a ring-fenced fund.

The combination of receipts and expenditure allows for the estimate of a net tax balance at an individual household level which is the primary measure presented in the outputs, both before and after the impact of supplementation. This measure should however be viewed as a starting point for further analysis and policy discussion as it is intended that the findings of this report and associated modelling serve as a useful tool for future exploratory work, rather than being viewed as a final outcome.

General assumptions and limitations

The intention of this report is to consider government receipts and expenditure from a very broad category of Jersey households based on a limited set of criteria / inputs. The only inputs considered in this initial report are as follows:

- Number of working age adults in the household
- Number of (school age) children in the household
- Total household earned income
- Income split (if more than one adult is working)
- If the household is entitled to receive income support

The key advantage of restricting the number of inputs in this way is that it allows for relatively easy interpretation of the final estimates and measures which are broadly reflective of a large number of households. However, restricting the inputs in this way does introduce a number of limitations into the estimates. By necessity, the outputs of the completed modelling will be very broad averages and therefore not reflective of any particular household's individual circumstances.

For example, the approach used to model if a child attends a fee-paying or non-fee-paying school is based on a probability, where the probability of that child attending a fee-paying school is estimated based on the level of household income. This results in a gradual change in education expenditure as household income changes. In reality that child will either be in fee-paying education or not, and therefore these modelled intervening states do not reflect actual expenditure for a particular child, but instead an average estimate of expenditure across all households that meet those criteria.

More complex models can also be produced, which, through the use of additional inputs, can better reflect household's individual circumstances. Additional areas that could be explored in future include:

- Tenure, such as owner occupier, private rental, social rental
- A more granular age breakdown of both children and adults
- Specific inputs, e.g. if a child attends a fee-paying school, or if a household pays into a pension

These more complex models can provide better quality overall estimates and also areas for further exploration, but are reliant on having more detailed information available if considering these estimates on a wider population level.

In order to estimate many of the components that are required for subsequent calculations, additional analysis has been conducted on the results of the 2014/15 Jersey Household Expenditure Survey (HES)[2]. This analysis has primarily been conducted using regression analysis[3] techniques and based around the above inputs being used as independent variables. Regression techniques are subject to limitations, especially around the final choice of functional form, which can result in erroneous estimates around the extreme tails of a distribution (where there is usually limited data available in order to provide such estimates). Estimates in this report therefore do not consider extremely low (below £5,000) or extremely high levels of income, and care should be taken with any subsequent analysis in these areas.

Finally, the estimates produced have been based on households which contain at least one adult working for an employer. These estimates have not been designed to represent unemployed, self-employed or pensioner households, although these could be the subject of future work.
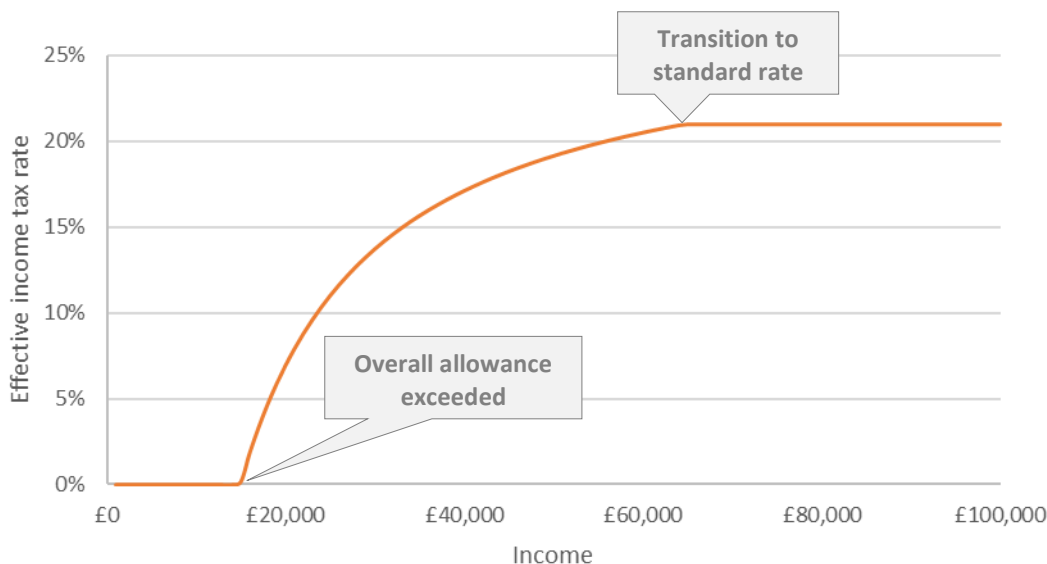
Personal income tax

Personal income tax represents the single largest element of revenue received by the States of Jersey, equating to over £400 million in revenue in 2017. This represents over half of the total general revenue received by the government.

The amount of personal income tax payable by a household in Jersey is the lower of two distinct calculations, the first being the 20% or "standard" rate of tax and the second being the 26% or "marginal" rate of tax. The marginal rate allows for a number of exemptions which results in those households with the lowest income paying no tax, and a progressive rate of tax applying as levels of income increase. The standard rate of tax has much fewer allowances (this was reduced significantly as a result of the "20 means 20" policy) and therefore generally is applied to those households receiving a higher income.

In addition to the personal income tax system, Jersey also has a Long Term Care (LTC) scheme which is collected via the same system as income tax. The contribution for this scheme is based on the household's total income, but takes into account the allowances and reliefs that are available under the income tax system. There is also a cap on the maximum amount payable under this contribution scheme. For the purposes of this report the calculation of the LTC amounts has been incorporated into the calculations for personal income tax but the resulting receipts are shown separately in the outputs.

The figure below illustrates the effective rate of personal income tax for an example (single person) household.

Figure 1 Effective personal income tax rate (including LTC)

As illustrated above, the nature of the Jersey personal tax system is that a household will generally pay no personal income tax up to the level of their overall allowance, and then a progressively higher rate of tax until it transfers from the marginal to the standard rate.

In respect of modelling estimated tax receipts from individual households, the nature of the system means that provided household characteristics and income is known, estimated tax receipts can be calculated directly from this information. Levels of personal income tax (including LTC) have therefore

been calculated based on information supplied by the income tax policy department and are based on the 2018 allowances.

Assumptions

For the purposes of this report the following assumptions have been used in order to provide estimates of expected income tax receipts from example households:

- expenses allowance (ignoring pensions, see below) are assumed to be zero
- all couples are assumed to be married
- all children are assumed to fall within the "lower" children group in respect of allowances
- single parents are assumed to claim Additional Personal Allowance (APA)
- Child Care Tax Relief (CCTR) is assumed to be £590 per child (this is the average amount claimed per child obtained from tax data)
- where the household structure includes a couple, different assumptions can be made on the split of income and these are detailed in the individual scenarios (for reference purposes, the average split of income as recorded by the tax office is approximately 70%/30% overall or alternatively 60%/40% if only looking at married couples where both parties are working)

It is important to note that changes to these assumptions can have a substantial impact on the estimates of personal income tax revenue. In particular the Jersey income tax system treats unmarried couples very differently to married ones, with unmarried couples assessed separately for tax purposes, while married couples are generally treated as a single tax entity. In addition individual household circumstances can have a significant impact on reliefs such as CCTR.

Private pension tax relief

Under the Jersey tax system there is a relief available in respect of payments into an approved private pension fund. A large number of Jersey taxpayers receive this relief (just over 15,000 in 2016, equating to around £11 million of relief), often via payments through an employer organised pension scheme. This relief is an available deductible for both standard and marginal rate tax payers.

In order to provide an input across all households, pension payments has been estimated from analysis of HES data using a mixed model[4] approach, with the resultant final model being as follows:

$$Pension = exp(-1.950 + 0.875 Log_e(Income)) * \frac{exp(-17.398 + 1.571 Log_e(Income))}{1 + exp(-17.398 + 1.571 Log_e(Income))}$$

These estimates are illustrated in the figures below, with the first figure showing the probability of a household making payments into a private pension and the second, the overall resultant estimate.

Figure 2 Probability of paying into pension scheme
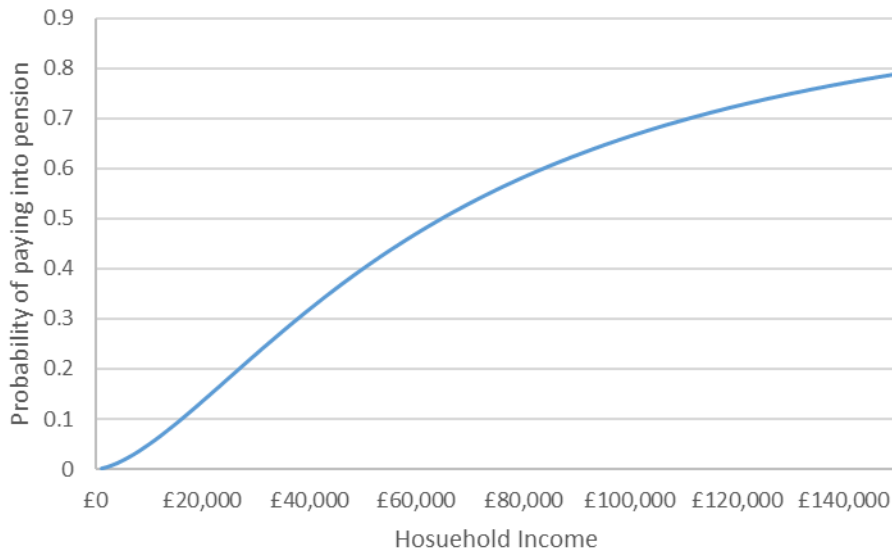
Figure 3 Estimated pension payments
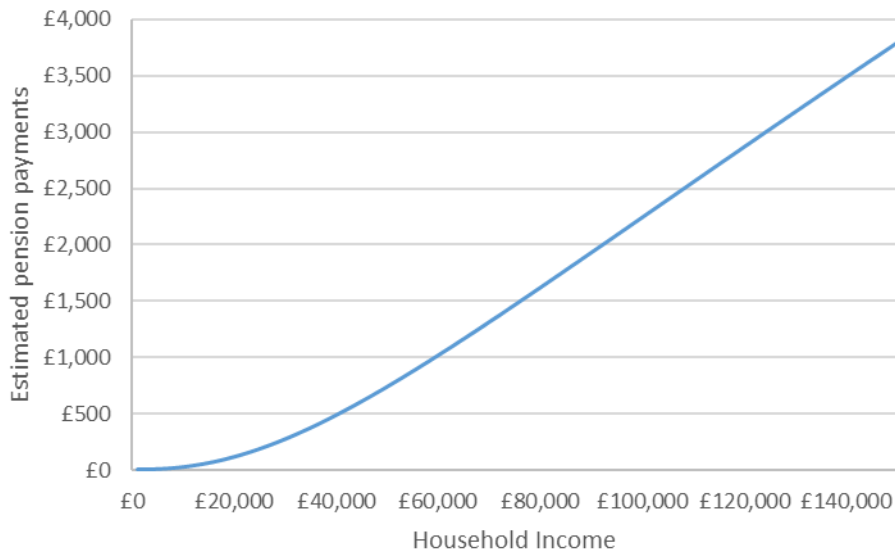
Interest tax relief

An additional relief available under the Jersey tax system is for loan interest payments payable for the:

- purchase / extension of a main residence
- purchase / extension of a commercially let property
- purchase of machinery and plant
- acquisition of a trade, partnership share or trading company

For the majority of households, this relief is typically claimed on the mortgage interest for their main residence. This relief is gradually being phased out and will be completely abolished by 2026. At present it still however represents a substantive factor in estimating tax receipts from households (in 2016 some 9,000 tax payers claimed this relief, equating to around £11 million of total relief). The relief works as a deduction against income for those households subject to the marginal rate, and is capped at a maximum limit.

In order to provide an input across all households, mortgage interest has been estimated from analysis of HES data using a mixed model approach, with the resultant final model being as follows:

$$Interest = (4{,}436 + 0.03702(Income)) * \frac{\exp(-19.697 + 1.717(Income))}{1 + \exp(-19.697 + 1.717(Income))}$$

These estimates are illustrated in the figures below, with the first figure showing the probability of a household making mortgage interest payments and the second the overall resultant estimate.

Figure 4 Probability of making mortgage interest payments

Figure 5 Estimated mortgage interest payments

As expected, lower income levels households have a very low probability of being owner occupiers and thus generally do not benefit materially from the presence of this relief. At higher incomes, where both the probability and expectant payments increase, this becomes a more substantive relief (where the household is still subject to the marginal rate of tax).

It is important to note that this approach does not reflect the reality experienced by individual households, but rather that experienced as aggregated across the population. In reality, a household will either be paying a mortgage and subject to this relief, or not. An alternative approach would be to include a factor such as tenure, or explicit mortgage payments within the inputs, which would provide a more granular breakdown and reflect those specific household's circumstances better.

Allowances and rates

The table below details the allowances and rates used for the purposes of the estimates produced in this report, which are based on the values used in 2018:

Table 1: Personal income tax allowances and rates

Standard rate	
Lower child allowance	0
Higher child allowance	£6,000
Additional personal allowance	0
Tax rate	20%
LTC rate	1%
Marginal rate	
Single threshold	£14,900
Married threshold	£23,950
Second earner	£5,850
Marginal lower child allowance	£3,000
Marginal higher child allowance	£9,000
Marginal additional personal allowance	£4,500
Marginal child care tax relief	£16,000
Maximum interest paid	£12,000
Marginal tax rate	26%
Marginal LTC Rate	1.3%
LTC threshold	£170,256

Goods and services tax

Jersey introduced a Goods and Services Tax (GST) in 2008, initially at a rate of 3% and subsequently increased to 5%. GST is an indirect consumption tax placed on goods and services and based on the value of the product sold. In 2017 total GST receipts totalled around £88 million (although not all of this will have been collected from Jersey households).

In order to analyse this tax, and to provide a mechanism of modelling expected GST receipts from households, we have conducted an analysis on data from the 2014/15 HES.

Assumptions

In order to model the amount of GST collected from households we have made assumptions about the proportion of household expenditure that would be subject to GST. These assumptions are based around the classification system used in the HES[1].

For the purposes of estimating GST expenditure, each category of expenditure (to a 3-digit level) was further classified into expenditure that would be expected to be subject to GST and those that would not. Full details of this breakdown are shown in the table below:

Table 2: Classification of expenditure for GST purposes

HES classification group	Subject to GST	Not subject to GST
1. Food & non-alcoholic drinks	X	
2. Alcoholic drinks & tobacco	X	
3. Clothing & footwear	X	
4.1 Net rent paid		X
4.2 - 4.6 Household fuel & power	X	
4.7 House purchase costs		X
4.8 Rates		X
4. Mortgage endowment payments		X
5. Household goods & services	X	
6.1 Pharmacy & other medical products	X	
6.2 – 6.4 Doctors, dentists & opticians		X
6.5 Other medical related services	X	
7.1 – 7.2 Transport	X	
7.3.1 – 7.3.2 Bus, coach and taxi fares	X	
7.3.3 Travel by air		X
7.3.4 – 7.3.5 Travel by sea & other travel & transport	X	
8.1 Postal services		X
8.2 – 8.3 Communication	X	
9.1 - 9.5 Recreation & culture	X	
9.6 Package holidays (including cruises)		X
10.1 – 10.2 School and higher education fees		X
10.3 Other education costs	X	

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[1] This broadly follows the Classification of Individual Consumption by Purpose (COICOP) used internationally, and expanded to include some additional household-related expenditure items. See Appendix A of the HES report for full details of this classification system.

11. Restaurants & hotels	X	
12.1 – 12.2 Personal care & personal effects	X	
12.3 Home care		X
12.4 Nursery, crèche & childcare		X
12.5 Insurance		X
12.6.1 Bank, building society, post office & credit card charges		X
12.6.2 Other services & professional fees	X	
13.1 Capital improvements, main dwelling	X	
13.2 Licenses fine and other non-consumption expenditure		X
13.3 Charitable donations and subscriptions		X

Based on this breakdown, for an average Jersey household it is estimated that expenditure on GST will comprise 3.2% of their total expenditure (£25.48 of £806.20) or 2.4% of their gross cash income (£25.48 of £1,053).

GST model

Following some exploratory analysis, for the purposes of estimating household payments of GST, a linear modelling approach utilising natural logarithmic transforms has been preferred. This has been fitted using data from the 2014/15 HES with the final model being:

$$Log_e(GST\ Expenditure) = 0.28346 + 0.61828 Log_e(Gross\ Cash\ Income)$$

This model uses gross cash income[5] as the input rather than earned income.

The figures below illustrate this model, plotting both GST expenditure by income, and the effective GST rate (GST paid / gross cash income).

Figure 6: Estimated GST paid against household income
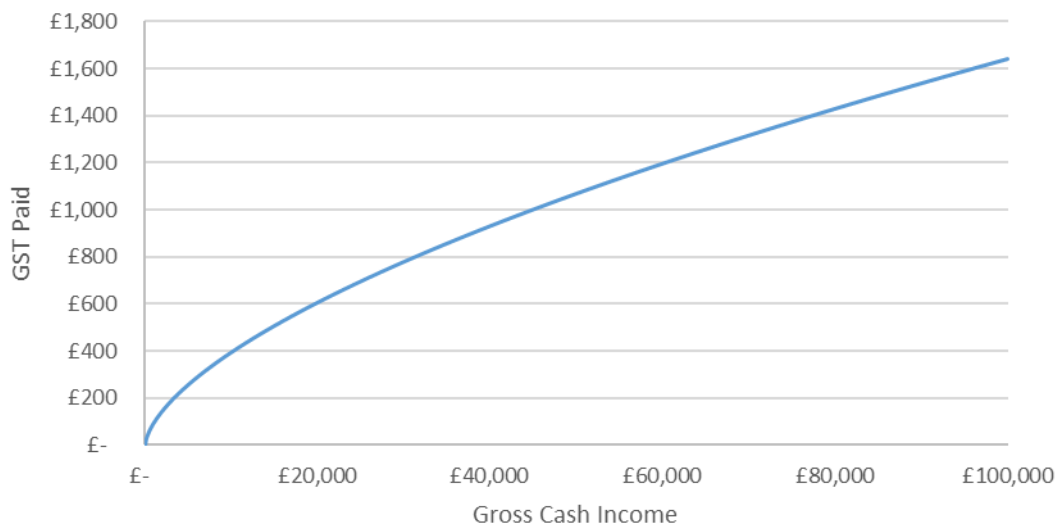
Figure 7: Estimated effective tax rate of GST
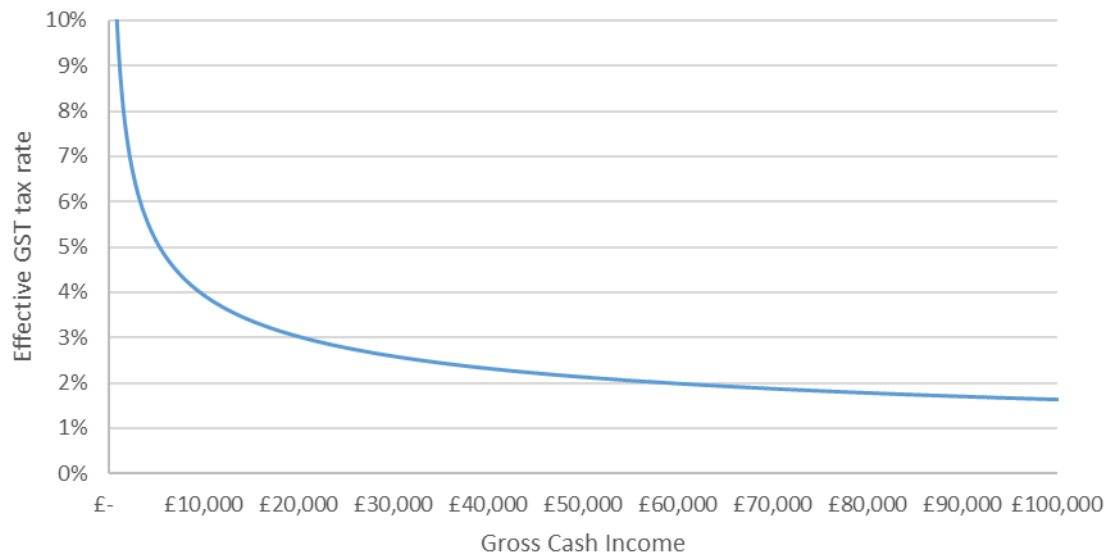
It is worthy of comment that at relatively low income levels, the effective GST rate exceeds 5% (the actual current GST rate). As observed in the HES, within these low-income households groups are a number where household expenditure exceeds household income. It is assumed that these households will be utilising funds derived not from current income (i.e. savings) in order to fund this expenditure. The focus of this report is, however, on households that contain at least one full time worker, and therefore this lower part of the distribution is not considered.

Impôts (excise) duty

The States of Jersey receive almost £60 million a year in Impôts (or excise duty). Impôts consists of indirect taxation on the following specified goods:

- alcoholic beverages
- tobacco
- hydrocarbon oil (principally road fuel)

In each case, the charge is applied based on specified volumes, rather than price, which creates some additional complications when attempting to estimate tax receipts from these items.

In respect of duty collected from tobacco and hydrocarbon oils we have conducted an analysis on data from the 2014/15 HES combined with data collected as part of the production of the Jersey Retail Price Index in order to provide estimates of household expenditure on these taxes based on household income.

In respect of alcohol a different approach has been preferred.

Alcohol

Alcohol provides a challenge in estimating excise duty receipts from expenditure related data. This is largely due to excise duty being charged based on volumes rather than being related to price. A £5 bottle of wine would attract the same duty charge as a £50 bottle of wine, and there are substantial variations in price between products compared to the amount of excise duty they would attract.

There is quite a substantial volume of literature concerning the potential relationship between household income and volume of alcohol consumed, and the conclusions on this subject are far from definitive. What is clear is that if such a relationship does exist, the impact on average household consumption from changes in income will be comparatively small. Other factors will have a much greater impact than household income, and therefore for the purposes of this study it will be assumed that the volume of alcohol consumed will be solely dependent on the number of adults in the household (i.e. fixed alcohol consumption per adult population).

On a per-unit of alcohol basis, the charging of Impôts in Jersey is independent of where that alcohol is served (whether sold from off-licence shops or on licenced premises). In addition whilst there is some variation between the types of alcohol that are consumed by differing income groups, this can largely be ignored when considered on an overall basis. This is primarily due to only minor differences occurring between the amount charged per unit of alcohol on beer and wine (where consumption does vary between income groups). Whilst the amount charged per unit of spirits is substantially higher than other types of alcohol, this particular item of expenditure has the smallest variation between different income groups.

Based on the above assumptions and data from Customs concerning the levels of different alcohol duty collected (wines, spirits and beer etc.) it is assumed that receipts in respect of alcohol will be estimated at a fixed amount of £230 per adult in the household.

Tobacco and road fuel

Tobacco and road fuel do not have the same challenges as alcohol in respect of estimating consumption based on expenditure data. This is because the differentials in price between items is substantially smaller than is the case with alcohol. As a result, in order to estimate Impôts receipts from these items an analysis of spending data from the 2014/15 HES survey has been conducted. Due to the specific nature of these items and the way Impôts are charged this does however require certain specific treatments / adjustments.

Under-reporting and Impôts changes adjustments

It is acknowledged within the HES survey that spending on tobacco (and certain other items) is typically under-reported and therefore the raw HES data understates the level of expenditure on these items. This is a known issue and this is already adjusted for in respect of certain other Statistics Jersey publications (such as the weights used in the Jersey RPI). To accomplish this, the level of expenditure for households is adjusted upwards based on the known quantity of tobacco actually sold in the Island (from Impôts data).

In addition, the actual rates of Impôts have increased since the time of the 2014/2015 and a further adjustment is required in order to account for that change. These adjustments have been made to the original dataset prior to any analysis being conducted.

Tobacco model

In respect of tobacco products a mixed model approach has been preferred and the resultant fitted coefficients are detailed in the table below:

Table 3 Coefficients for regression models

	Logistical regression model		Linear regression model	
	Intercept	**Slope**	**Intercept**	**Slope**
Cigarettes	0.17391	-0.06161	10.4093	-0.3364
Cigars and other tobacco products	-0.947	-0.2096	7.9766	-0.1952

In a similar way to the model for GST, these models uses gross cash income rather than household earned income. These models are illustrated in the charts shown below.

Figure 8 Impôts receipts from cigarettes
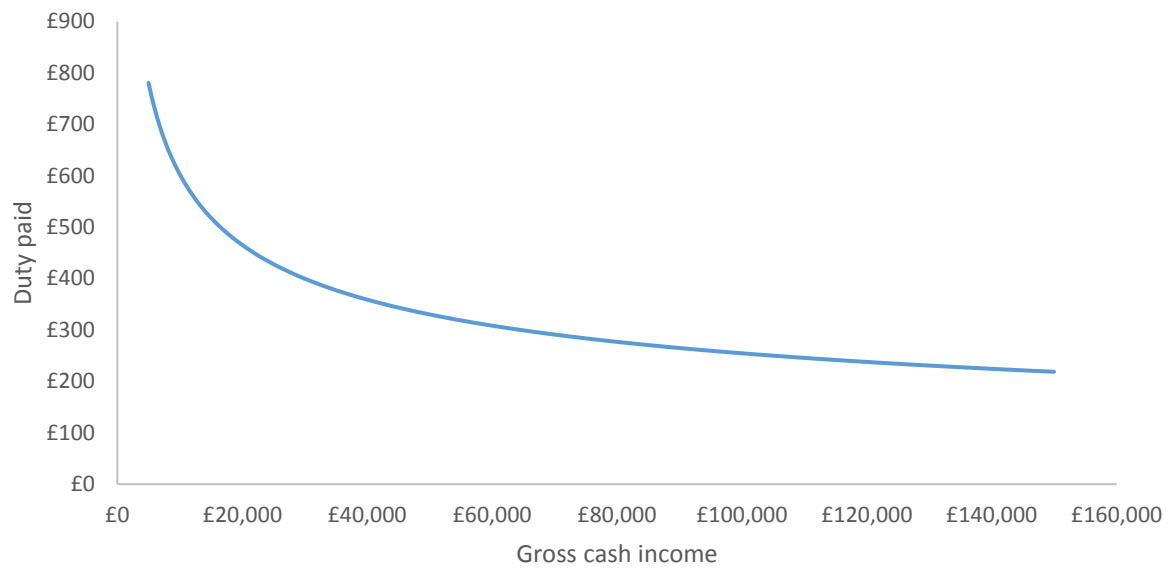
Figure 9 Impôts receipts from cigars and other tobacco products
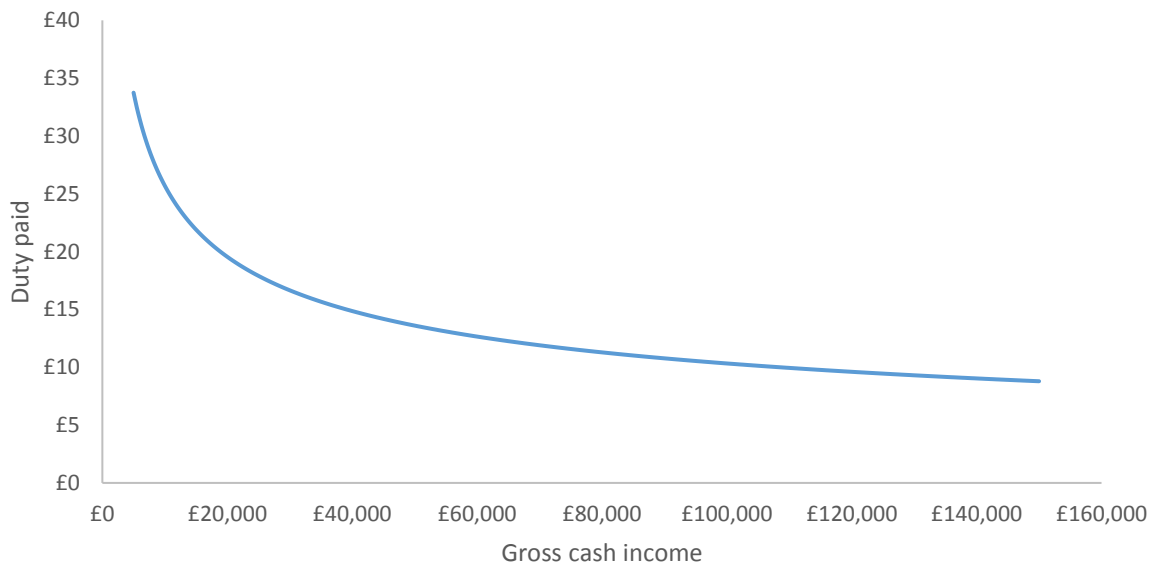
As reported in the HES, lower income households, on average, spend more on tobacco products than those on higher incomes and this is reflected in the estimates of receipts from those households shown above.

Road fuel model

The road fuel model again uses a mixed model approach based on gross cash income. The resultant coefficients and a chart illustrating the results are shown below:

Table 4 Coefficients for regression models

	Logistical regression model		Linear regression model	
	Intercept	**Slope**	**Intercept**	**Slope**
Road Fuel	-4.824	0.528	3.18444	0.27478

Figure 10 Impôts receipts from road fuels
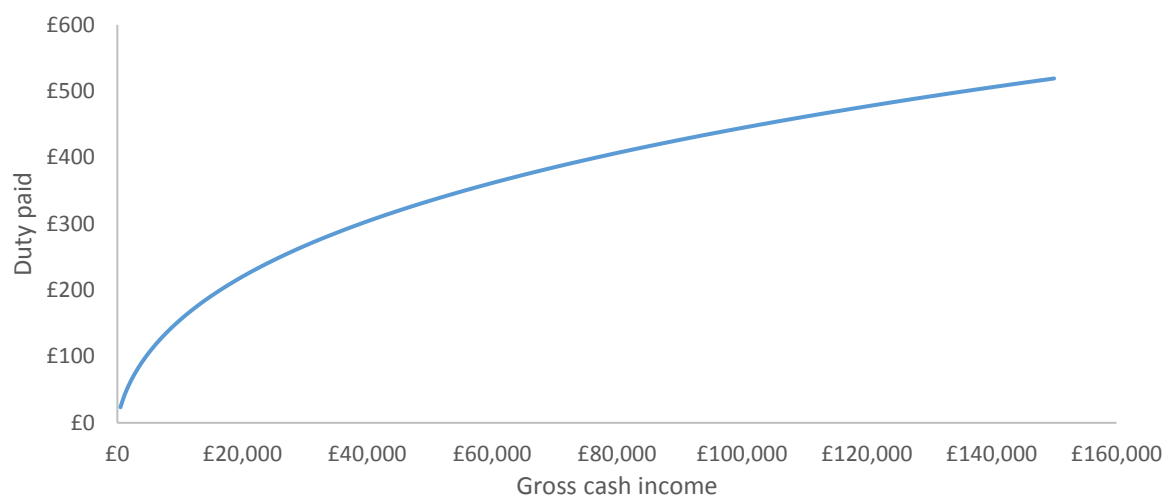
Combined Impôts model

Combining the above models results in an estimate for total receipts from Impôts based on a combination of household income and number of adults in the household. These estimates are illustrated below:

Table 5 Estimated Impôts receipts
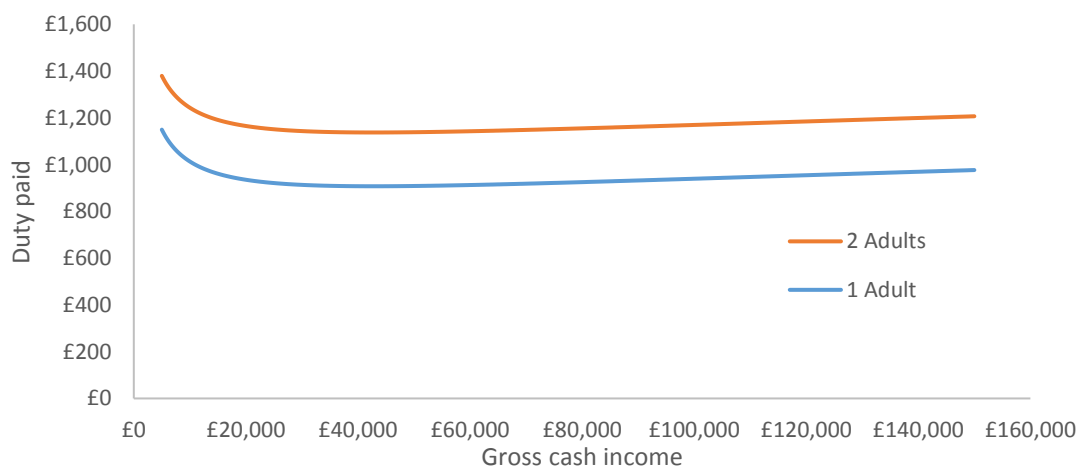
The final model is broadly independent of income, due to the combination of tobacco (higher receipts from low-income households) and road fuel (higher receipts from high-income households).

Social security / health insurance contributions and supplementation

Jersey operates a social security contribution system, which provides a range of social benefits to Islanders. These primarily include the provision of old age pensions, incapacity allowances and contributions to primary costs, but also includes a number of other benefits. These are primarily administered by way of two ring-fenced funds, the Social Security Fund and the Health Insurance Fund.

These funds derive the majority of their income via the social security contribution system, with the majority of working adults paying class 1 social security contributions. Class 1 social security contributions consists of two distinct elements:

- employee contributions – which are paid by the employee and based on and paid out of their gross earnings
- employer contributions – which are paid by the employer and based on the employee's gross earnings

There is a further class 2 contribution mechanism, which is payable if the individual is:

- self-employed
- unemployed
- earning below the lower earnings limit
- working less than eight hours per week
- studying
- bringing up a family

Many such individuals are however able to access low-income contribution relief, which excuses that individual from paying class 2 contributions (at the expense of some future benefit provisions). There are also a number of contribution credit options available for those in particular circumstances (such as being unable to work due to sickness or injury, students in full time education and stay at home parents). As a result, the majority of class 2 contributions comes from self-employed individuals. Approximately 9% of all social security contributions comes from class 2 contributions.

As well as social security contributions, the Social Security Fund (but not the Health Insurance Fund) receives income from general tax revenue through an annual grant ("supplementation").

For the purposes of this report, the primary interest is in respect of households that will be contributing class 1 contributions and also any supplementation that may apply.

Employee contributions

Employee contributions are calculated based on a percentage (the employee contribution rate, currently 6%) of gross earnings. The total amount of gross earnings that this applies to is capped with reference to the standard earnings limit. Any earnings that exceed this limit are ignored in this calculation (effectively capping the total contributions at 6% of this limit).

Employer contributions

Employer contributions are calculated based on two different rates:
- For gross earnings up to a maximum of the standard earnings limit the employer standard contribution rate applies (6.5%).
- For gross earnings above the standard earnings limit and below the upper earnings limit the employer upper contribution rate applies (2%).

Any earnings that exceed the upper earnings limit are ignored in respect of this calculation, effectively providing an upper cap to the employer contributions.

Supplementation

Class 1 and class 2 contributors with earnings below the standard earnings limit in a given month, but above the lower earnings limit receive a full contribution record for that month. For this group, the Social Security Fund receives a monthly contribution from employee and employer that is below the maximum amount. To maintain income into the Fund at an agreed level, historically the States has provided a "top-up" supplement to bring the total income received to the maximum as set by the Standard earnings limit. This process is often referred to as "supplementation" and it protects the total income paid into the Fund each year. This process applies only to the Social Security Fund, which receives a contribution of 10.5%. The remaining 2% is paid into the Health Insurance Fund which does not receive any direct States funding.

Historically the value of the States grant was based on the exact cost of supplementation for the year in question.   The introduction of an additional 2% upper contribution rate from 2012 reduced the size of the grant needed from the States as extra income is now paid into the Fund from the employers of higher-earning workers. Since 2012, the value of the grant has been reduced in line with these extra contributions received.

Since 2015 the actual grant provided by the States has been fixed over the course of the most recent Medium Term Financial Plan (MTFP). This has resulted in a reduction in overall income to the Social Security Fund when measured against the theoretical income that would be derived from the principle of collecting a standard contribution from each insured person.

For the purposes of this report, we treat supplementation as follows:
- For an individual whose combined social security employer and employee contributions (excluding contributions to the health insurance fund) fall below the 10.5% level of the standard earnings limit, supplementation is assumed to address the shortfall of this balance. This results in a debit showing for the balance of tax income, and a corresponding credit would be noted for the total Social Security Fund income.
- For an individual who earns above the standard earnings limit, a credit is shown at the upper contribution rate for tax income, and a corresponding debit for the Social Security Fund. This reflects the fact that while the money is collected via the social security contribution scheme, this does not increase the overall value of the social security fund but rather reduces the amount of money the States needs to contribute to it by way of the grant.

The above approach reflects the historical principle within the Social Security Fund that the Fund receives a standard amount per contributing worker. This approach overstates the actual current

monetary flows between tax revenue and the Social Security Fund, and should be viewed as modelling the flows sufficient to maintain social security income at the level commensurate with the standard earnings limit.

Limits and rates

Social security contributions and supplementation are calculated based on the 2018 Social Security rates and limits:

Table 6 Social Security rates and limits

Standard earnings limit (monthly)	£4,290
Upper earnings limit (monthly)	£14,188
Lower earnings limit (monthly)	£908
Maximum rate class 2 contribution (monthly)	£734.21
Total employee contribution rate	6%
Total employer standard contribution rate	6.5%
Employer upper contribution rate	2%

In respect of the split between the social security and health insurance funds the following breakdown has been used:

Table 7 Split between Social Security and Health Insurance funds

	Social Security Fund	Health Insurance Fund
Employee rate	5.2%	0.8%
Employer rate	5.3%	1.2%

It is assumed that for working adults they fall within the class 1 contributions regime, and as with income tax, different scenarios for the split of income between adults occupying the same household are considered.

It is assumed that if an individual earns less than the lower earnings limit, then they will not be subject to social security contributions or supplementation.

States of Jersey expenditure

Government expenditure in Jersey includes a number of services provided directly to Islanders, together with other items of expenditure. The items specifically considered here represent the largest groups of expenditure and also those which can be well determined as services provided directly to households / individuals.

Health

The largest single broad area of government expenditure in Jersey is the provision of health. This accounts for around £220 million of expenditure a year, or approximately £2,100 per capita. Average costs per person do however vary quite substantially by age group, with older members of the population typically requiring more care than the younger groups.

For the purposes of this report therefore, estimates of per capita consumption by broad age group have been obtained using data from the Patient Level Information and Costing System (PLICS) for 2017 and then inflation adjusted to 2018[2]. The broad groups are shown below:

Table 8 Health costs per capita

Age group	Cost per capita (2017 values)	Cost per capita (Inflation adjusted to 2018)
Child (0-17)	£1,462	£1,519
Working age adult (18-65)	£1,649	£1,713
Over 65	£3,578	£3,718
Over 85	£4,521	£4,697

It is important to note that the above figures represent broad population averages and will not be reflective of the costs associated with any particular household. For the majority households the costs associated will be significantly lower than the above with the bulk of the costs associated with those individuals / households that may be suffering from a particular health-related issue at that point in time.

These costs do not include the provision of primary care (primarily GP and prescription costs) which are administrated via the Health Insurance Fund.

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[2] It is noted that, at present, the age attribute is missing on a part of the PLICS model so these costs may be slightly understated.

Education

The second largest broad area of government expenditure in Jersey is the provision of education. This accounts for around £100 million of expenditure a year.

Unlike health, which broadly speaking provides services for the entire of the population, the Education Department budget is largely directed towards funding education for children and young adults. With the provision of primary and secondary education representing the bulk of the costs incurred. As a result, for the purposes of this report we will consider that this cost is effectively a cost per child, rather than a cost per capita expense.

Fee-paying and non-fee-paying schools

Due to the nature of Jersey's education system, a relatively high proportion of children in Jersey attend a fee-paying school, which is also funded partially by government expenditure. There is a significant difference in the cost to the States if a child attends a non-fee-paying school than a fee-paying one. This is as a result of a difference in the funding provided via the Age Weighted Pupil Unit (AWPU), which is currently set at 50% of the full rate for the majority of fee-payable schools.

Based on the above, the assumption used is that the cost per pupil is based upon if they attend a non-fee-paying or fee-paying school, with the following values used:

Table 9 Assumed costs fee and non-fee paying

School type	Cost per pupil
Non-fee-paying	£6,100
Fee-paying	£3,400

Note, that within these figures is a fixed per pupil allowance for additional shared costs of education that are not part of the AWPU (and therefore the fee paying amount is not simply 50% of the non-fee paying value).

Analysis of the 2014/15 HES data has allowed us to estimate the probability of a household sending their children to a fee-paying school by income. This was done using a logistic regression model, looking at households with children, and whether that household had expenditure in the school fees category of spending. Further breakdowns were then conducted to estimate the number of children within that household that were in fee-paying education. The final model is as follows:

$$P(Fee\ paying\ educ|Children\ in\ HH) = \frac{\exp(-25.539 + 2.193 Log_e(Household\ Income))}{1 + \exp(-25.539 + 2.193 Log_e(Household\ Income))}$$

This probability model is illustrated below:

Figure 11 Probability in fee-paying education
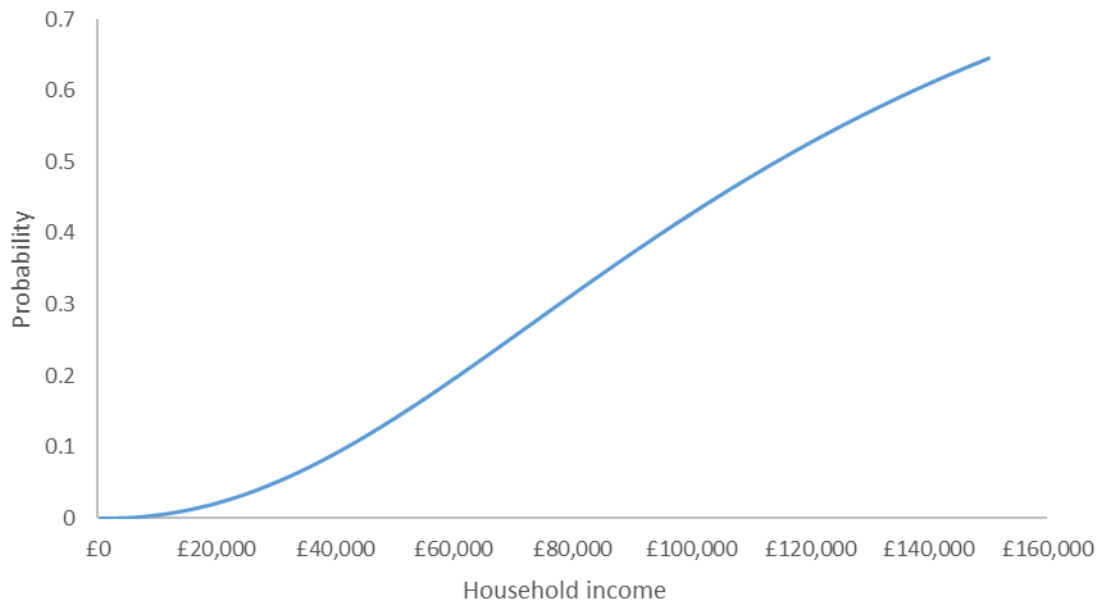
As expected the probability of a child attending a fee-based school increases with household income. Based on this probability model and the assumptions on States expenditure per child, this can then be combined into an overall cost per child model which is illustrated below:

Figure 12 Cost per child
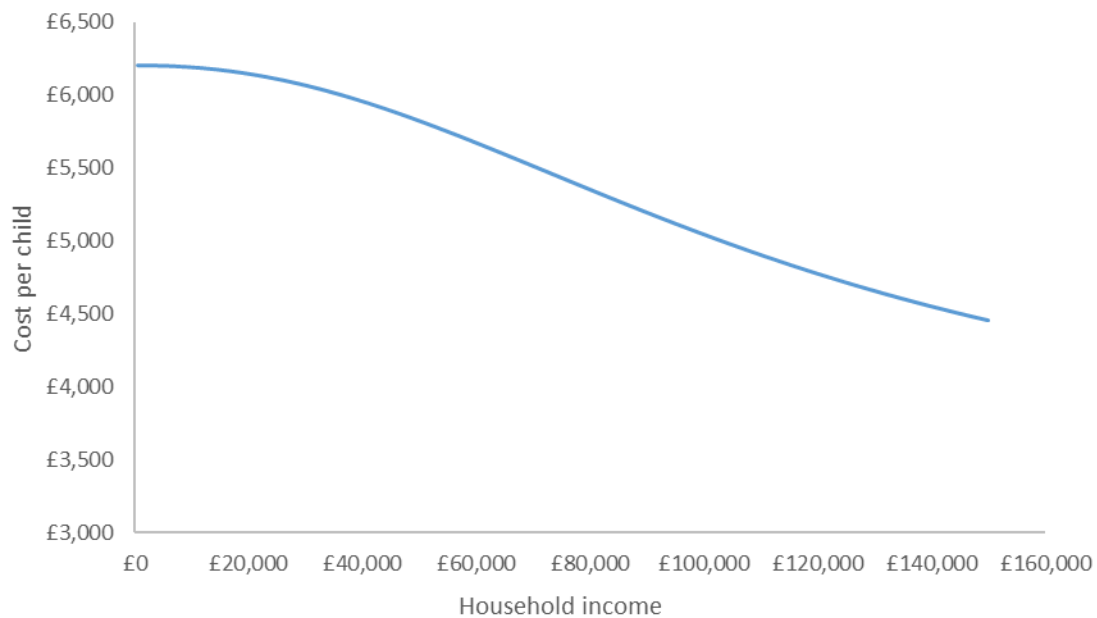
Jersey Premium

In addition to the general education spending discussed above, Jersey operates a targeted funding program for schools that directs additional funding based on set eligibility criteria. Whilst the overall expenditure on this program is relatively small (approximately £2.5 million in 2018), it results in an

average level of funding per eligible child of around £900. This therefore does have a substantive impact in respect of the overall expenditure on these families and therefore this has been included in the estimates of education spending on households.

The eligibility criteria for the Jersey Premium are:
- all pupils who have ever been "Looked After Children" (LAC)
- children from households which have recently claimed income support
- children from households with "registered" status that would qualify to claim income support if they had lived in Jersey for five years

The majority of payments are made in respect of the latter two criteria and for the purposes of this report we have not attempted to model whether a household is likely to contain any LACs. Instead, a fixed amount of £900 per child has been included in education expenditure if the household would be subject to a positive rate on income support (ignoring any residency restrictions).

Income support

Income support is the largest tax-funded benefit provided by the States of Jersey, totalling just under £69 million in 2017. Income support provides support primarily by way of a weekly benefit payable to eligible households. It is therefore particularly relevant when assessing net receipts to and from households as it is one of the main mechanisms where money is transferred directly from tax revenue back to households, rather than through a provision of a service.

Income support is a household benefit, with the amount payable depending on the number of people in the household, where they live, their specific needs and the income and capital assets they have available. Income support is subject to a residency test, where at least one adult in the household must have been resident in Jersey for at least 5 years. There are also requirements for working age adults to be in employment, actively seeking work or subject to a specific work exemption.

Components

The amount payable under income support consists of a number of different components which are designed to provide support to specific family circumstances. These cover basic living costs, accommodation, childcare and other costs. Generally speaking each household will be in receipt of a fixed household component, an accommodation component based on the type of accommodation they require and individual components for each individual that makes up the household.

The intention of income support is to "top up" other household income. Therefore as household income from other sources increases the income support benefit decreases, until the household reaches a level of income where they are deemed to be self-sufficient. In order to provide a monetary incentive to increased employment income there is also an earnings disregard, which allows a percentage of other income to be disregarded from the income support calculation.

Calculations have been based on the "income support calculator" supplied by the Social Security Department and using the 2018 components.

Accommodation component

For the accommodation component, this has been calculated based on the following assumptions:
* the household occupies a private rental property
* the full accommodation component is paid
* the household is occupying a property that is deemed to be suitable for their needs, based on the household structure and the income support guidelines
* for a single adult (who can occupy either a bedsit or flat depending on their historic circumstances) this has been estimated based on the average split between the two possible components

It is important to note that a large number of households in receipt of income support will in fact be accommodated in social housing, with around half of all income support households residing in accommodation provided by Andium Homes. If an income support household rents a property from a social housing landlord then the accommodation component will represent the actual full cost of the rent charged (provided the household is occupying a suitably-sized property). This rent can vary

considerably depending on the historic circumstances of the household in question, with some households subject to the current 90% of market rents policy, and others still subject to older rental agreements.

The private rental component is therefore used as a reasonable proxy to estimate government expenditure on that particular household. The actual cost of income support is subject to variation depending on the choice of social sector rent policy, with Andium currently making a significant return to the States each year in line with the agreed rent policy.

Other components not included

As well as the core living costs and accommodation components, there are a number of other components potentially available to households. These include specific health components, carer's and child care components. These have not been included in this analysis as they reflect very specific household and individual circumstances. These components represent around 9% of total income support spending (or approximately £1,000 per income support household).

Components used

The table below lists the 2018 income support components that are used in the estimates.

Table 10 Income support components

Individual components	Weekly component	Annual equivalent
Adult	£ 94.85	£ 4,932.20
Single parent	£ 40.39	£ 2,100.28
Child	£ 65.87	£ 3,425.24
Household component	£ 52.85	£ 2,748.20
Accommodation components		
Hostel	£ 103.04	£ 5,358.08
Bedsit / lodgings (private rental)	£ 135.73	£ 7,057.96
One bedroom flat (private rental)	£ 200.13	£ 10,406.76
Two bedroom flat (private rental)	£ 256.27	£ 13,326.04
Three (or more) bedroom flat (private rental)	£ 275.03	£ 14,301.56
One bedroom house (private rental)	£ 229.39	£ 11,928.28
Two bedroom house (private rental)	£ 291.27	£ 15,146.04
Three bedroom house (private rental)	£ 340.13	£ 17,686.76
Four bedroom house (private rental)	£ 370.79	£ 19,281.08
Five (or more) bedroom house (private rental)	£ 410.48	£ 21,344.96
Income disregard	**25%**	

Other States of Jersey expenditure

The above three expenditure groups, combined with the tax-funded elements of social security supplementation represents over three-fifths of tax-funded government expenditure (ignoring expenditure funded by way of ring-fenced funds). This leaves approximately £250 million of departmental expenditure and £40 million of capital expenditure, which are not included in the expenditure assumptions so far detailed.

These remaining costs are generally not directly dependent on individual household activity but largely consist of services provided to the Island as a whole. These include things such as the provision of law enforcement, maintenance and supply of Island infrastructure and the general machinery of government. How these costs are apportioned to households is somewhat subjective as whilst it is assumed the majority of these costs will increase in line with the Island's population, there are other "fixed" costs which will largely remain constant regardless of how the Island's population changes.

In addition, there are elements of tax receipts that are not represented in the modelling of households, and which are also used to fund expenditure. These include items such as corporate income tax, stamp duty and elements covered under "other income" sources. This equates to approximately £180 million of revenue not considered as part of the household modelling.

Based on a rough 1/3 to 2/3 split of fixed to non-fixed costs for the purposes of this initial report, the following assumptions have been made:

Total "other costs"	£290 million
Less expenditure funded from non-household sources	(-£180 million)
Remaining "other costs"	£110 million
Assumed "fixed costs"	£40 million
Assumed linked to population	£70 million

This equates to a cost to proportion to households of £660 per capita. However, these assumptions can be varied to look at different methods of proportioning these costs and this report should be considered a starting point for further work in this area.

Estimates for illustrative households

The following pages detail the resultant estimates for a number of illustrative households for a range of different income levels. These illustrative households are as follows:

Table 11 Illustrative household types

Label	Description	Number of Adults	Number of Children	5 Year resident?	Income split
HH1	Single Adult, 5 year resident	1	0	Yes	N/A
HH2	Single Adult, recent arrival	1	0	No	N/A
HH3	Single Parent, 1 child, 5 year resident	1	1	Yes	N/A
HH4	Single Parent, 1 child, recent arrival	1	1	No	N/A
HH5	Couple, both working, 5 year resident	2	0	Yes	50%
HH6	Couple, both working, recent arrival	2	0	No	50%
HH7	Couple, one working, 5 year resident	2	0	Yes	100%
HH8	Couple, one working, recent arrival	2	0	No	100%
HH9	Couple, one child	2	1	Yes	50%
HH10	Couple, two children	2	2	Yes	50%
HH11	Couple, three children	2	3	Yes	50%

Estimates of receipts and expenditure, £, annual

HH1

Household Composition / Type

Adults	1
Children	-
Income Split	100% <- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No <- For less than 5-year residency

Single adult, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	628	931	1,559	520	80	0	0	1,519	11,187	660	-11,807	0	-11,807
15,000	0	900	656	926	1,582	780	120	0	0	1,519	7,737	660	-8,334	3,830	-12,164
20,000	1,272	1,200	683	923	2,817	1,040	160	61	0	1,519	4,287	660	-3,649	3,305	-6,954
25,000	2,575	1,500	710	919	4,081	1,300	200	123	0	1,519	837	660	1,065	2,780	-1,715
30,000	3,867	1,800	778	913	5,375	1,560	240	184	0	1,519	0	660	3,196	2,255	940
35,000	5,150	2,100	856	909	6,671	1,820	280	245	0	1,519	0	660	4,492	1,730	2,761
40,000	6,426	2,400	930	908	7,958	2,080	320	306	0	1,519	0	660	5,779	1,205	4,573
45,000	7,695	2,700	1,000	908	9,236	2,340	360	366	0	1,519	0	660	7,057	680	6,377
50,000	8,959	3,000	1,068	909	10,508	2,600	400	427	0	1,519	0	660	8,329	155	8,174
55,000	10,218	3,089	1,132	910	11,774	2,677	412	487	0	1,519	0	660	9,595	-70	9,666
60,000	11,474	3,089	1,195	913	13,035	2,677	412	546	0	1,519	0	660	10,856	-170	11,027
65,000	12,727	3,089	1,256	915	14,292	2,677	412	606	0	1,519	0	660	12,113	-270	12,384
70,000	13,979	3,089	1,314	918	15,546	2,677	412	666	0	1,519	0	660	13,367	-370	13,737
75,000	15,229	3,089	1,372	922	16,797	2,677	412	725	0	1,519	0	660	14,618	-470	15,088
80,000	16,460	3,089	1,428	925	18,029	2,677	412	784	0	1,519	0	660	15,850	-570	16,421
85,000	17,478	3,089	1,482	929	19,056	2,677	412	832	0	1,519	0	660	16,877	-670	17,548
90,000	18,495	3,089	1,535	932	20,082	2,677	412	881	0	1,519	0	660	17,903	-770	18,673
95,000	19,512	3,089	1,588	936	21,106	2,677	412	929	0	1,519	0	660	18,927	-870	19,798
100,000	20,529	3,089	1,639	940	22,130	2,677	412	978	0	1,519	0	660	19,951	-970	20,921
105,000	21,546	3,089	1,689	943	23,152	2,677	412	1,026	0	1,519	0	660	20,973	-1,070	22,044
110,000	22,563	3,089	1,738	947	24,174	2,677	412	1,074	0	1,519	0	660	21,995	-1,170	23,166
115,000	23,580	3,089	1,787	951	25,195	2,677	412	1,123	0	1,519	0	660	23,016	-1,270	24,286
120,000	24,598	3,089	1,834	955	26,215	2,677	412	1,171	0	1,519	0	660	24,036	-1,370	25,407
125,000	25,615	3,089	1,881	958	27,235	2,677	412	1,220	0	1,519	0	660	25,056	-1,470	26,526
130,000	26,632	3,089	1,927	962	28,254	2,677	412	1,268	0	1,519	0	660	26,075	-1,570	27,645
135,000	27,650	3,089	1,973	966	29,272	2,677	412	1,317	0	1,519	0	660	27,093	-1,670	28,763
140,000	28,668	3,089	2,018	969	30,290	2,677	412	1,365	0	1,519	0	660	28,111	-1,770	29,881
145,000	29,685	3,089	2,062	973	31,307	2,677	412	1,414	0	1,519	0	660	29,128	-1,870	30,998
150,000	30,703	3,089	2,106	977	32,324	2,677	412	1,462	0	1,519	0	660	30,145	-1,970	32,115

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: **£24,000**
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: **£27,000**
(Minimum earned income required for receipts to exceed expenditure)

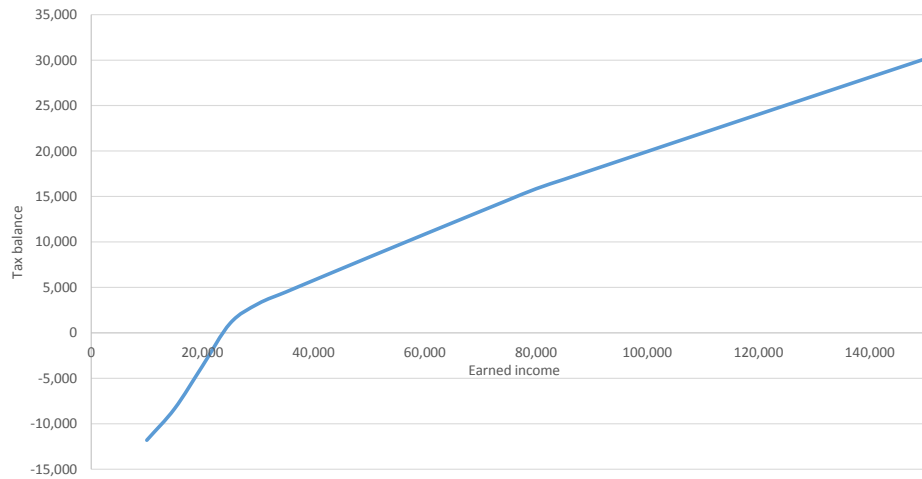# Estimates of receipts and expenditure, £, annual

Household Composition / Type

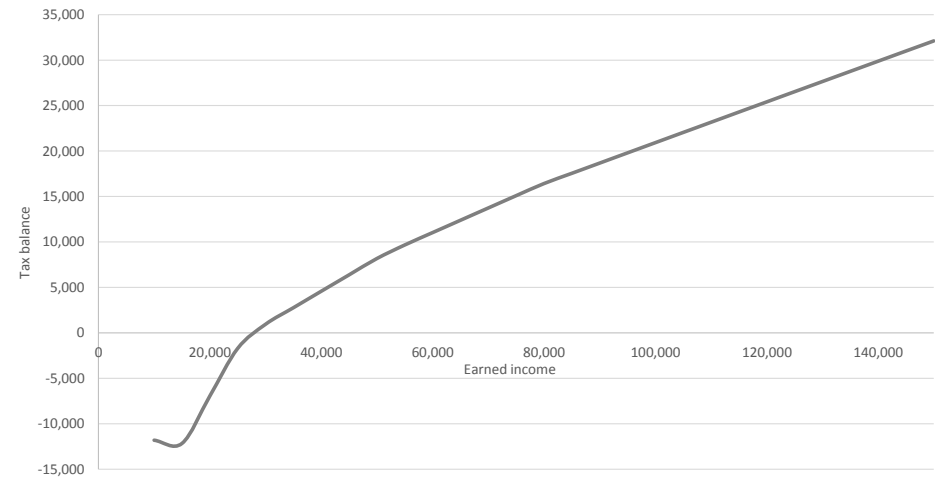| Adults | 1 |
Children	-
Income Split	100%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	Yes	<- For less than 5-year residency

Single adult, recent arrival

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	395	1,013	1,408	520	80	0	0	1,519	0	660	-771	0	-771
15,000	0	900	507	961	1,468	780	120	0	0	1,519	0	660	-711	3,830	-4,541
20,000	1,272	1,200	606	935	2,752	1,040	160	61	0	1,519	0	660	573	3,305	-2,732
25,000	2,575	1,500	695	921	4,069	1,300	200	123	0	1,519	0	660	1,890	2,780	-891
30,000	3,867	1,800	778	913	5,375	1,560	240	184	0	1,519	0	660	3,196	2,255	940
35,000	5,150	2,100	856	909	6,671	1,820	280	245	0	1,519	0	660	4,492	1,730	2,761
40,000	6,426	2,400	930	908	7,958	2,080	320	306	0	1,519	0	660	5,779	1,205	4,573
45,000	7,695	2,700	1,000	908	9,236	2,340	360	366	0	1,519	0	660	7,057	680	6,377
50,000	8,959	3,000	1,068	909	10,508	2,600	400	427	0	1,519	0	660	8,329	155	8,174
55,000	10,218	3,089	1,132	910	11,774	2,677	412	487	0	1,519	0	660	9,595	-70	9,666
60,000	11,474	3,089	1,195	913	13,035	2,677	412	546	0	1,519	0	660	10,856	-170	11,027
65,000	12,727	3,089	1,256	915	14,292	2,677	412	606	0	1,519	0	660	12,113	-270	12,384
70,000	13,979	3,089	1,314	918	15,546	2,677	412	666	0	1,519	0	660	13,367	-370	13,737
75,000	15,229	3,089	1,372	922	16,797	2,677	412	725	0	1,519	0	660	14,618	-470	15,088
80,000	16,460	3,089	1,428	925	18,029	2,677	412	784	0	1,519	0	660	15,850	-570	16,421
85,000	17,478	3,089	1,482	929	19,056	2,677	412	832	0	1,519	0	660	16,877	-670	17,548
90,000	18,495	3,089	1,535	932	20,082	2,677	412	881	0	1,519	0	660	17,903	-770	18,673
95,000	19,512	3,089	1,588	936	21,106	2,677	412	929	0	1,519	0	660	18,927	-870	19,798
100,000	20,529	3,089	1,639	940	22,130	2,677	412	978	0	1,519	0	660	19,951	-970	20,921
105,000	21,546	3,089	1,689	943	23,152	2,677	412	1,026	0	1,519	0	660	20,973	-1,070	22,044
110,000	22,563	3,089	1,738	947	24,174	2,677	412	1,074	0	1,519	0	660	21,995	-1,170	23,166
115,000	23,580	3,089	1,787	951	25,195	2,677	412	1,123	0	1,519	0	660	23,016	-1,270	24,286
120,000	24,598	3,089	1,834	955	26,215	2,677	412	1,171	0	1,519	0	660	24,036	-1,370	25,407
125,000	25,615	3,089	1,881	958	27,235	2,677	412	1,220	0	1,519	0	660	25,056	-1,470	26,526
130,000	26,632	3,089	1,927	962	28,254	2,677	412	1,268	0	1,519	0	660	26,075	-1,570	27,645
135,000	27,650	3,089	1,973	966	29,272	2,677	412	1,317	0	1,519	0	660	27,093	-1,670	28,763
140,000	28,668	3,089	2,018	969	30,290	2,677	412	1,365	0	1,519	0	660	28,111	-1,770	29,881
145,000	29,685	3,089	2,062	973	31,307	2,677	412	1,414	0	1,519	0	660	29,128	-1,870	30,998
150,000	30,703	3,089	2,106	977	32,324	2,677	412	1,462	0	1,519	0	660	30,145	-1,970	32,115

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £18,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £27,000
(Minimum earned income required for receipts to exceed expenditure)

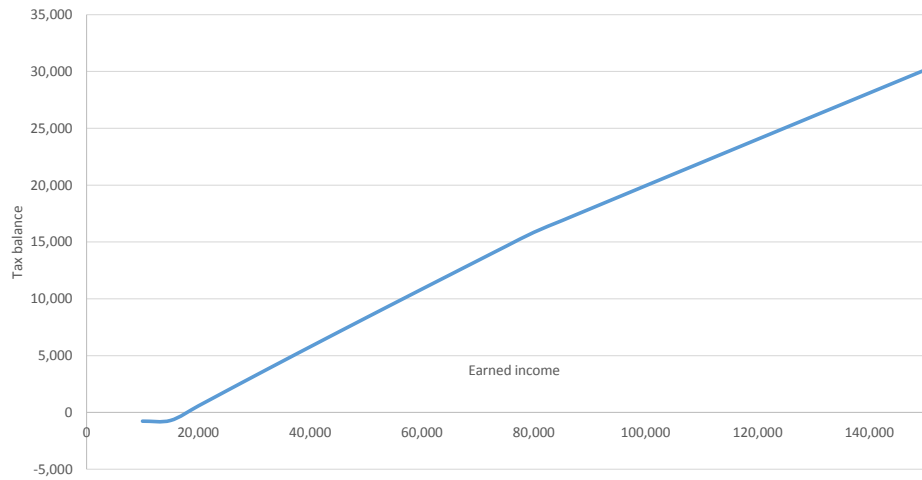# Estimates of receipts and expenditure, £, annual

Household Composition / Type

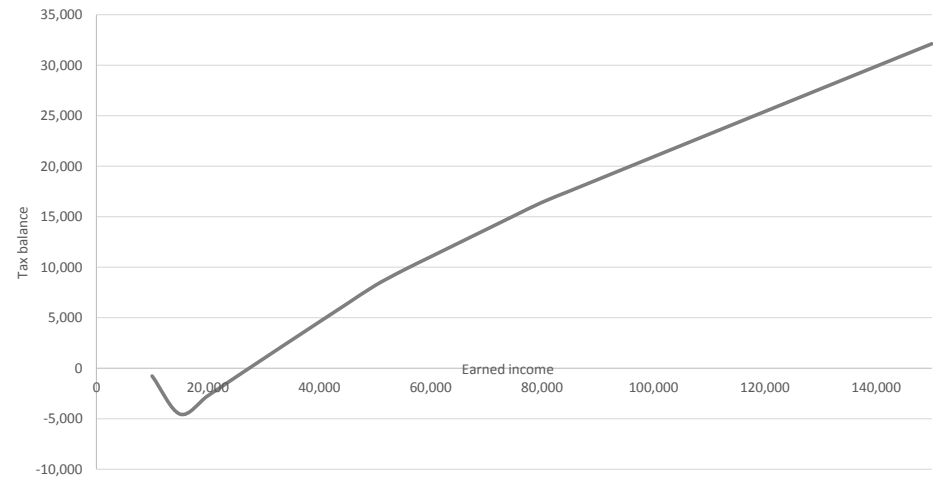|	
Adults	1
Children	1
Income Split	100%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No	<- For less than 5-year residency

Single adult, 1 child, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	773	914	1,686	520	80	0	6,987	3,232	19,632	1,320	-29,485	0	-29,485
15,000	0	900	797	912	1,709	780	120	0	6,969	3,232	16,182	1,320	-25,993	3,830	-29,824
20,000	0	1,200	822	911	1,732	1,040	160	0	6,942	3,232	12,732	1,320	-22,494	3,305	-25,799
25,000	366	1,500	845	910	2,104	1,300	200	17	6,907	3,232	9,282	1,320	-18,637	2,780	-21,417
30,000	1,659	1,800	869	909	3,357	1,560	240	79	6,863	3,232	5,832	1,320	-13,890	2,255	-16,145
35,000	2,942	2,100	892	908	4,602	1,820	280	140	6,812	3,232	2,382	1,320	-9,144	1,730	-10,875
40,000	4,217	2,400	930	908	5,854	2,080	320	201	5,854	3,232	0	1,320	-4,552	1,205	-5,757
45,000	5,486	2,700	1,000	908	7,133	2,340	360	261	5,790	3,232	0	1,320	-3,209	680	-3,889
50,000	6,750	3,000	1,068	909	8,405	2,600	400	321	5,721	3,232	0	1,320	-1,868	155	-2,023
55,000	8,009	3,089	1,132	910	9,671	2,677	412	381	5,647	3,232	0	1,320	-529	-70	-458
60,000	9,265	3,089	1,195	913	10,932	2,677	412	441	5,571	3,232	0	1,320	809	-170	979
65,000	10,519	3,089	1,256	915	12,189	2,677	412	501	5,492	3,232	0	1,320	2,145	-270	2,415
70,000	11,770	3,089	1,314	918	13,442	2,677	412	560	5,412	3,232	0	1,320	3,478	-370	3,849
75,000	13,020	3,089	1,372	922	14,693	2,677	412	620	5,332	3,232	0	1,320	4,810	-470	5,280
80,000	14,269	3,089	1,428	925	15,942	2,677	412	679	5,252	3,232	0	1,320	6,138	-570	6,709
85,000	15,517	3,089	1,482	929	17,189	2,677	412	739	5,172	3,232	0	1,320	7,465	-670	8,135
90,000	16,765	3,089	1,535	932	18,435	2,677	412	798	5,095	3,232	0	1,320	8,788	-770	9,558
95,000	18,013	3,089	1,588	936	19,679	2,677	412	858	5,019	3,232	0	1,320	10,108	-870	10,979
100,000	19,262	3,089	1,639	940	20,923	2,677	412	917	4,945	3,232	0	1,320	11,426	-970	12,396
105,000	20,510	3,089	1,689	943	22,166	2,677	412	977	4,874	3,232	0	1,320	12,740	-1,070	13,810
110,000	21,759	3,089	1,738	947	23,408	2,677	412	1,036	4,805	3,232	0	1,320	14,051	-1,170	15,221
115,000	23,009	3,089	1,787	951	24,651	2,677	412	1,096	4,740	3,232	0	1,320	15,359	-1,270	16,629
120,000	24,259	3,089	1,834	955	25,893	2,677	412	1,155	4,677	3,232	0	1,320	16,664	-1,370	18,034
125,000	25,510	3,089	1,881	958	27,135	2,677	412	1,215	4,617	3,232	0	1,320	17,966	-1,470	19,436
130,000	26,632	3,089	1,927	962	28,254	2,677	412	1,268	4,559	3,232	0	1,320	19,142	-1,570	20,712
135,000	27,650	3,089	1,973	966	29,272	2,677	412	1,317	4,505	3,232	0	1,320	20,215	-1,670	21,885
140,000	28,668	3,089	2,018	969	30,290	2,677	412	1,365	4,453	3,232	0	1,320	21,284	-1,770	23,055
145,000	29,685	3,089	2,062	973	31,307	2,677	412	1,414	4,404	3,232	0	1,320	22,350	-1,870	24,221
150,000	30,703	3,089	2,106	977	32,324	2,677	412	1,462	4,358	3,232	0	1,320	23,414	-1,970	25,384

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £57,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £57,000
(Minimum earned income required for receipts to exceed expenditure)

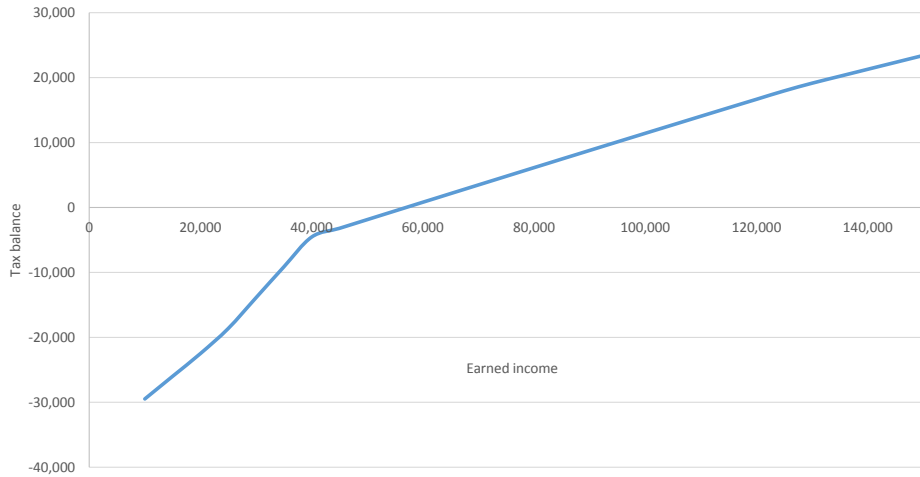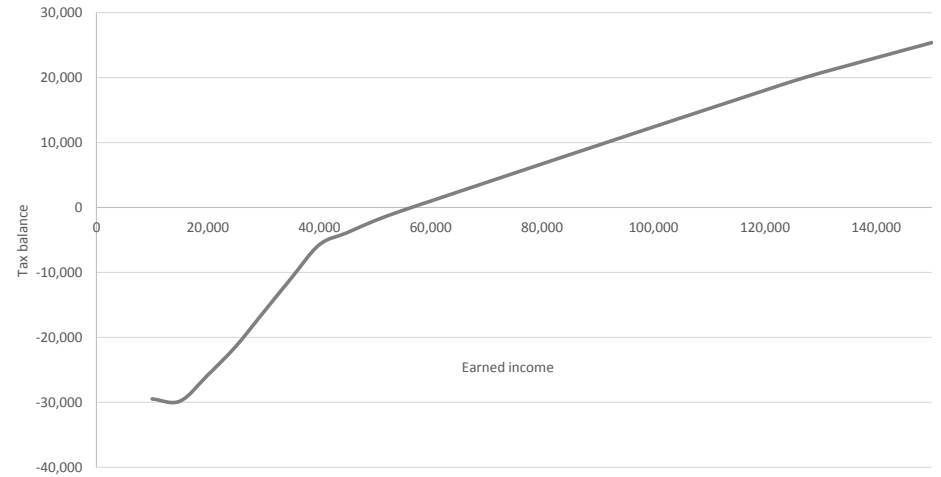# Estimates of receipts and expenditure, £, annual

Household Composition / Type

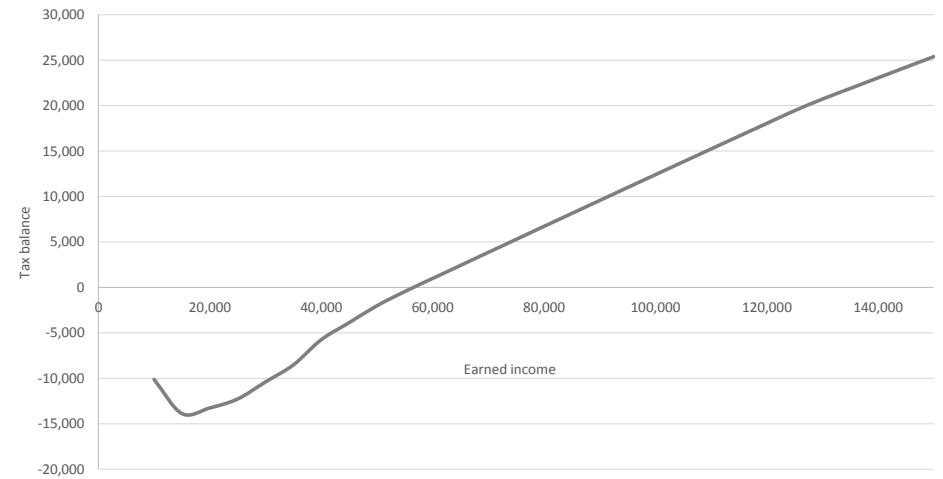|	
Adults	1
Children	1
Income Split	100%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	Yes	<- For less than 5-year residency

Single adult, 1 child, recent arrival

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	395	1,013	1,408	520	80	0	6,987	3,232	0	1,320	-10,131	0	-10,131
15,000	0	900	507	961	1,468	780	120	0	6,969	3,232	0	1,320	-10,053	3,830	-13,883
20,000	0	1,200	606	935	1,541	1,040	160	0	6,942	3,232	0	1,320	-9,953	3,305	-13,258
25,000	366	1,500	695	921	1,965	1,300	200	17	6,907	3,232	0	1,320	-9,494	2,780	-12,274
30,000	1,659	1,800	778	913	3,271	1,560	240	79	6,863	3,232	0	1,320	-8,144	2,255	-10,399
35,000	2,942	2,100	856	909	4,567	1,820	280	140	6,812	3,232	0	1,320	-6,797	1,730	-8,527
40,000	4,217	2,400	930	908	5,854	2,080	320	201	5,854	3,232	0	1,320	-4,552	1,205	-5,757
45,000	5,486	2,700	1,000	908	7,133	2,340	360	261	5,790	3,232	0	1,320	-3,209	680	-3,889
50,000	6,750	3,000	1,068	909	8,405	2,600	400	321	5,721	3,232	0	1,320	-1,868	155	-2,023
55,000	8,009	3,089	1,132	910	9,671	2,677	412	381	5,647	3,232	0	1,320	-529	-70	-458
60,000	9,265	3,089	1,195	913	10,932	2,677	412	441	5,571	3,232	0	1,320	809	-170	979
65,000	10,519	3,089	1,256	915	12,189	2,677	412	501	5,492	3,232	0	1,320	2,145	-270	2,415
70,000	11,770	3,089	1,314	918	13,442	2,677	412	560	5,412	3,232	0	1,320	3,478	-370	3,849
75,000	13,020	3,089	1,372	922	14,693	2,677	412	620	5,332	3,232	0	1,320	4,810	-470	5,280
80,000	14,269	3,089	1,428	925	15,942	2,677	412	679	5,252	3,232	0	1,320	6,138	-570	6,709
85,000	15,517	3,089	1,482	929	17,189	2,677	412	739	5,172	3,232	0	1,320	7,465	-670	8,135
90,000	16,765	3,089	1,535	932	18,435	2,677	412	798	5,095	3,232	0	1,320	8,788	-770	9,558
95,000	18,013	3,089	1,588	936	19,679	2,677	412	858	5,019	3,232	0	1,320	10,108	-870	10,979
100,000	19,262	3,089	1,639	940	20,923	2,677	412	917	4,945	3,232	0	1,320	11,426	-970	12,396
105,000	20,510	3,089	1,689	943	22,166	2,677	412	977	4,874	3,232	0	1,320	12,740	-1,070	13,810
110,000	21,759	3,089	1,738	947	23,408	2,677	412	1,036	4,805	3,232	0	1,320	14,051	-1,170	15,221
115,000	23,009	3,089	1,787	951	24,651	2,677	412	1,096	4,740	3,232	0	1,320	15,359	-1,270	16,629
120,000	24,259	3,089	1,834	955	25,893	2,677	412	1,155	4,677	3,232	0	1,320	16,664	-1,370	18,034
125,000	25,510	3,089	1,881	958	27,135	2,677	412	1,215	4,617	3,232	0	1,320	17,966	-1,470	19,436
130,000	26,632	3,089	1,927	962	28,254	2,677	412	1,268	4,559	3,232	0	1,320	19,142	-1,570	20,712
135,000	27,650	3,089	1,973	966	29,272	2,677	412	1,317	4,505	3,232	0	1,320	20,215	-1,670	21,885
140,000	28,668	3,089	2,018	969	30,290	2,677	412	1,365	4,453	3,232	0	1,320	21,284	-1,770	23,055
145,000	29,685	3,089	2,062	973	31,307	2,677	412	1,414	4,404	3,232	0	1,320	22,350	-1,870	24,221
150,000	30,703	3,089	2,106	977	32,324	2,677	412	1,462	4,358	3,232	0	1,320	23,414	-1,970	25,384

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £57,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £57,000
(Minimum earned income required for receipts to exceed expenditure)

Estimates of receipts and expenditure, £, annual

Household Composition / Type

Adults	2
Children	-
Income Split	50%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No	<- For less than 5-year residency

Couple, both working, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	715	1,149	1,863	520	80	0	0	3,038	16,119	1,320	-18,614	0	-18,614
15,000	0	900	740	1,146	1,887	780	120	0	0	3,038	12,669	1,320	-15,141	0	-15,141
20,000	0	1,200	766	1,144	1,910	1,040	160	0	0	3,038	9,219	1,320	-11,667	0	-11,667
25,000	0	1,500	791	1,143	1,933	1,300	200	0	0	3,038	5,769	1,320	-8,194	8,186	-16,380
30,000	0	1,800	815	1,141	1,956	1,560	240	0	0	3,038	2,319	1,320	-4,721	7,661	-12,382
35,000	1,083	2,100	856	1,139	3,027	1,820	280	52	0	3,038	0	1,320	-1,331	7,136	-8,467
40,000	2,358	2,400	930	1,138	4,314	2,080	320	112	0	3,038	0	1,320	-44	6,611	-6,655
45,000	3,627	2,700	1,000	1,138	5,592	2,340	360	173	0	3,038	0	1,320	1,234	6,086	-4,851
50,000	4,891	3,000	1,068	1,139	6,864	2,600	400	233	0	3,038	0	1,320	2,506	5,561	-3,055
55,000	6,150	3,300	1,132	1,140	8,130	2,860	440	293	0	3,038	0	1,320	3,772	5,036	-1,264
60,000	7,406	3,600	1,195	1,143	9,391	3,120	480	353	0	3,038	0	1,320	5,033	4,511	522
65,000	8,660	3,900	1,256	1,145	10,648	3,380	520	412	0	3,038	0	1,320	6,290	3,986	2,304
70,000	9,911	4,200	1,314	1,148	11,902	3,640	560	472	0	3,038	0	1,320	7,544	3,461	4,083
75,000	11,161	4,500	1,372	1,152	13,153	3,900	600	531	0	3,038	0	1,320	8,795	2,936	5,859
80,000	12,410	4,800	1,428	1,155	14,401	4,160	640	591	0	3,038	0	1,320	10,043	2,411	7,633
85,000	13,658	5,100	1,482	1,159	15,648	4,420	680	650	0	3,038	0	1,320	11,290	1,886	9,405
90,000	14,906	5,400	1,535	1,162	16,894	4,680	720	710	0	3,038	0	1,320	12,536	1,361	11,175
95,000	16,154	5,700	1,588	1,166	18,138	4,940	760	769	0	3,038	0	1,320	13,780	836	12,945
100,000	17,402	6,000	1,639	1,170	19,382	5,200	800	829	0	3,038	0	1,320	15,024	311	14,713
105,000	18,651	6,178	1,689	1,173	20,625	5,354	824	888	0	3,038	0	1,320	16,267	-41	16,308
110,000	19,900	6,178	1,738	1,177	21,868	5,354	824	948	0	3,038	0	1,320	17,510	-141	17,651
115,000	21,150	6,178	1,787	1,181	23,110	5,354	824	1,007	0	3,038	0	1,320	18,752	-241	18,993
120,000	22,400	6,178	1,834	1,185	24,352	5,354	824	1,067	0	3,038	0	1,320	19,994	-341	20,335
125,000	23,651	6,178	1,881	1,188	25,594	5,354	824	1,126	0	3,038	0	1,320	21,236	-441	21,677
130,000	24,903	6,178	1,927	1,192	26,836	5,354	824	1,186	0	3,038	0	1,320	22,478	-541	23,019
135,000	26,155	6,178	1,973	1,196	28,078	5,354	824	1,245	0	3,038	0	1,320	23,720	-641	24,361
140,000	27,408	6,178	2,018	1,199	29,320	5,354	824	1,305	0	3,038	0	1,320	24,962	-741	25,703
145,000	28,662	6,178	2,062	1,203	30,562	5,354	824	1,365	0	3,038	0	1,320	26,204	-841	27,045
150,000	29,917	6,178	2,106	1,207	31,804	5,354	824	1,425	0	3,038	0	1,320	27,446	-941	28,387

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £40,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £59,000
(Minimum earned income required for receipts to exceed expenditure)

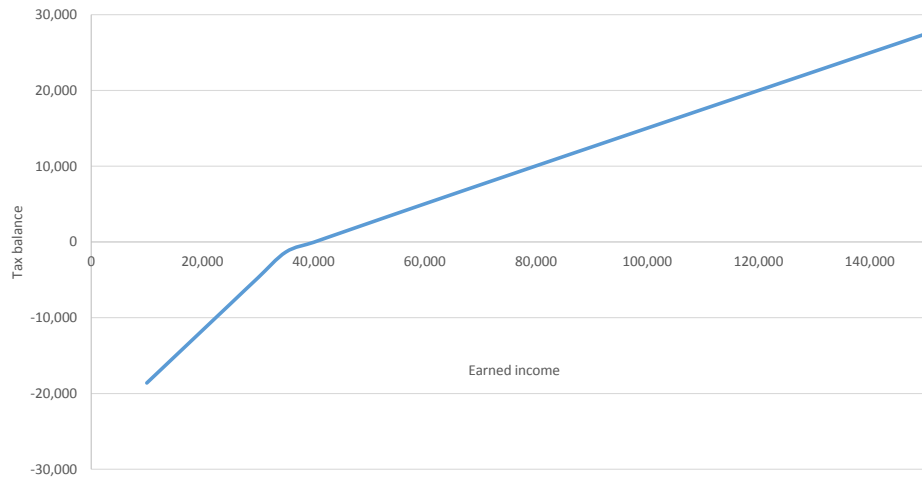# Estimates of receipts and expenditure, £, annual

Household Composition / Type

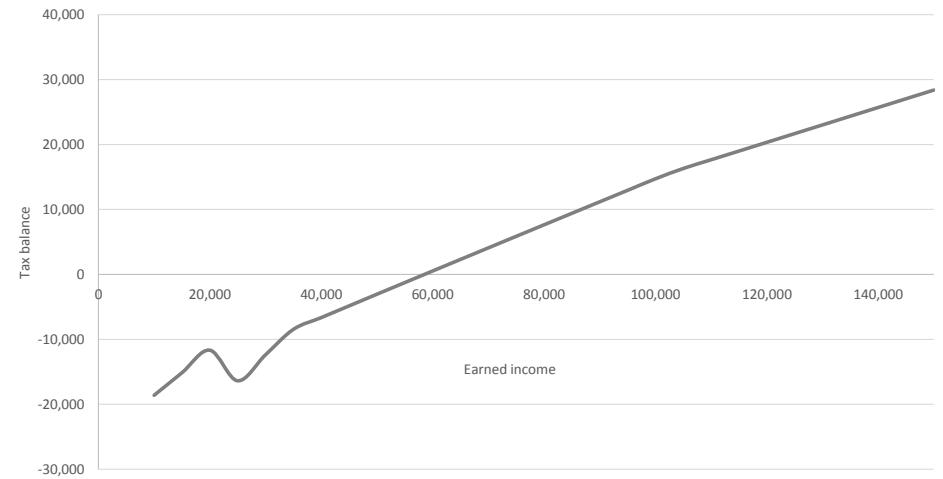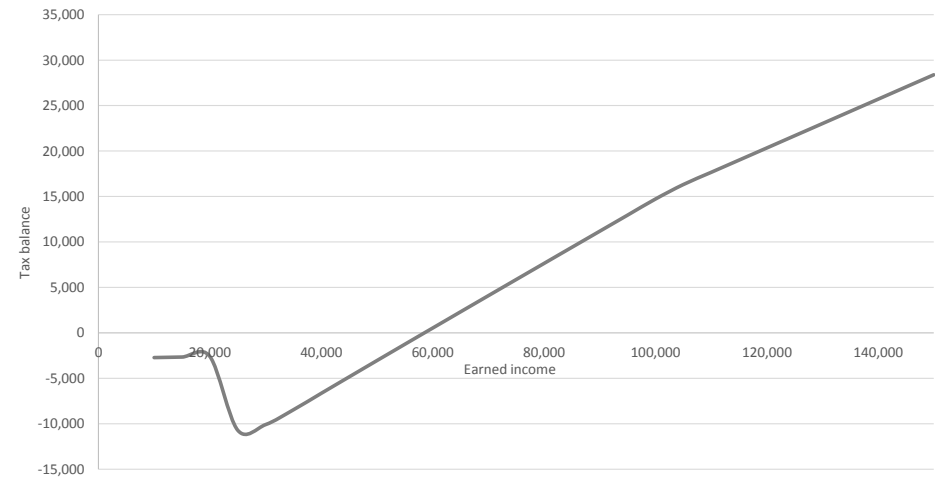|	
Adults	2
Children	-
Income Split	50%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	Yes	<- For less than 5-year residency

Couple, both working, recent arrival

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	395	1,243	1,638	520	80	0	0	3,038	0	1,320	-2,720	0	-2,720
15,000	0	900	507	1,191	1,698	780	120	0	0	3,038	0	1,320	-2,660	0	-2,660
20,000	0	1,200	606	1,165	1,771	1,040	160	0	0	3,038	0	1,320	-2,587	0	-2,587
25,000	0	1,500	695	1,151	1,847	1,300	200	0	0	3,038	0	1,320	-2,511	8,186	-10,697
30,000	0	1,800	778	1,143	1,922	1,560	240	0	0	3,038	0	1,320	-2,436	7,661	-10,097
35,000	1,083	2,100	856	1,139	3,027	1,820	280	52	0	3,038	0	1,320	-1,331	7,136	-8,467
40,000	2,358	2,400	930	1,138	4,314	2,080	320	112	0	3,038	0	1,320	-44	6,611	-6,655
45,000	3,627	2,700	1,000	1,138	5,592	2,340	360	173	0	3,038	0	1,320	1,234	6,086	-4,851
50,000	4,891	3,000	1,068	1,139	6,864	2,600	400	233	0	3,038	0	1,320	2,506	5,561	-3,055
55,000	6,150	3,300	1,132	1,140	8,130	2,860	440	293	0	3,038	0	1,320	3,772	5,036	-1,264
60,000	7,406	3,600	1,195	1,143	9,391	3,120	480	353	0	3,038	0	1,320	5,033	4,511	522
65,000	8,660	3,900	1,256	1,145	10,648	3,380	520	412	0	3,038	0	1,320	6,290	3,986	2,304
70,000	9,911	4,200	1,314	1,148	11,902	3,640	560	472	0	3,038	0	1,320	7,544	3,461	4,083
75,000	11,161	4,500	1,372	1,152	13,153	3,900	600	531	0	3,038	0	1,320	8,795	2,936	5,859
80,000	12,410	4,800	1,428	1,155	14,401	4,160	640	591	0	3,038	0	1,320	10,043	2,411	7,633
85,000	13,658	5,100	1,482	1,159	15,648	4,420	680	650	0	3,038	0	1,320	11,290	1,886	9,405
90,000	14,906	5,400	1,535	1,162	16,894	4,680	720	710	0	3,038	0	1,320	12,536	1,361	11,175
95,000	16,154	5,700	1,588	1,166	18,138	4,940	760	769	0	3,038	0	1,320	13,780	836	12,945
100,000	17,402	6,000	1,639	1,170	19,382	5,200	800	829	0	3,038	0	1,320	15,024	311	14,713
105,000	18,651	6,178	1,689	1,173	20,625	5,354	824	888	0	3,038	0	1,320	16,267	-41	16,308
110,000	19,900	6,178	1,738	1,177	21,868	5,354	824	948	0	3,038	0	1,320	17,510	-141	17,651
115,000	21,150	6,178	1,787	1,181	23,110	5,354	824	1,007	0	3,038	0	1,320	18,752	-241	18,993
120,000	22,400	6,178	1,834	1,185	24,352	5,354	824	1,067	0	3,038	0	1,320	19,994	-341	20,335
125,000	23,651	6,178	1,881	1,188	25,594	5,354	824	1,126	0	3,038	0	1,320	21,236	-441	21,677
130,000	24,903	6,178	1,927	1,192	26,836	5,354	824	1,186	0	3,038	0	1,320	22,478	-541	23,019
135,000	26,155	6,178	1,973	1,196	28,078	5,354	824	1,245	0	3,038	0	1,320	23,720	-641	24,361
140,000	27,408	6,178	2,018	1,199	29,320	5,354	824	1,305	0	3,038	0	1,320	24,962	-741	25,703
145,000	28,662	6,178	2,062	1,203	30,562	5,354	824	1,365	0	3,038	0	1,320	26,204	-841	27,045
150,000	29,917	6,178	2,106	1,207	31,804	5,354	824	1,425	0	3,038	0	1,320	27,446	-941	28,387

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £40,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £59,000
(Minimum earned income required for receipts to exceed expenditure)

Estimates of receipts and expenditure, £, annual

Household Composition / Type

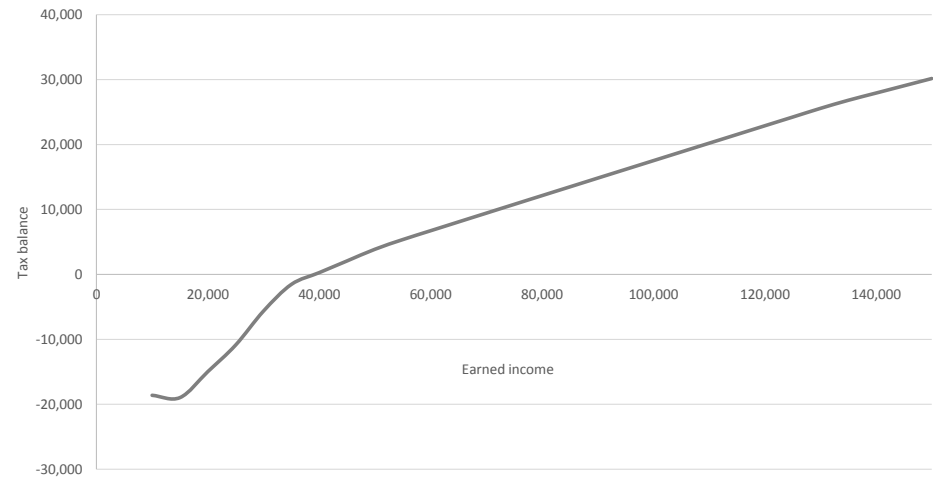|	
Adults	2
Children	-
Income Split	100% <- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No <- For less than 5-year residency

Couple, single worker, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	715	1,149	1,863	520	80	0	0	3,038	16,119	1,320	-18,614	0	-18,614
15,000	0	900	740	1,146	1,887	780	120	0	0	3,038	12,669	1,320	-15,141	3,830	-18,971
20,000	0	1,200	766	1,144	1,910	1,040	160	0	0	3,038	9,219	1,320	-11,667	3,305	-14,973
25,000	104	1,500	791	1,143	2,032	1,300	200	5	0	3,038	5,769	1,320	-8,095	2,780	-10,875
30,000	1,397	1,800	815	1,141	3,286	1,560	240	67	0	3,038	2,319	1,320	-3,391	2,255	-5,647
35,000	2,680	2,100	856	1,139	4,548	1,820	280	128	0	3,038	0	1,320	190	1,730	-1,541
40,000	3,955	2,400	930	1,138	5,835	2,080	320	188	0	3,038	0	1,320	1,477	1,205	271
45,000	5,224	2,700	1,000	1,138	7,113	2,340	360	249	0	3,038	0	1,320	2,755	680	2,075
50,000	6,488	3,000	1,068	1,139	8,385	2,600	400	309	0	3,038	0	1,320	4,027	155	3,872
55,000	7,747	3,089	1,132	1,140	9,651	2,677	412	369	0	3,038	0	1,320	5,293	-70	5,364
60,000	9,003	3,089	1,195	1,143	10,912	2,677	412	429	0	3,038	0	1,320	6,554	-170	6,725
65,000	10,257	3,089	1,256	1,145	12,169	2,677	412	488	0	3,038	0	1,320	7,811	-270	8,082
70,000	11,508	3,089	1,314	1,148	13,423	2,677	412	548	0	3,038	0	1,320	9,065	-370	9,435
75,000	12,758	3,089	1,372	1,152	14,674	2,677	412	608	0	3,038	0	1,320	10,316	-470	10,786
80,000	14,007	3,089	1,428	1,155	15,922	2,677	412	667	0	3,038	0	1,320	11,564	-570	12,135
85,000	15,255	3,089	1,482	1,159	17,169	2,677	412	726	0	3,038	0	1,320	12,811	-670	13,482
90,000	16,503	3,089	1,535	1,162	18,415	2,677	412	786	0	3,038	0	1,320	14,057	-770	14,827
95,000	17,751	3,089	1,588	1,166	19,659	2,677	412	845	0	3,038	0	1,320	15,301	-870	16,172
100,000	19,000	3,089	1,639	1,170	20,903	2,677	412	905	0	3,038	0	1,320	16,545	-970	17,516
105,000	20,248	3,089	1,689	1,173	22,146	2,677	412	964	0	3,038	0	1,320	17,788	-1,070	18,859
110,000	21,497	3,089	1,738	1,177	23,389	2,677	412	1,024	0	3,038	0	1,320	19,031	-1,170	20,201
115,000	22,747	3,089	1,787	1,181	24,631	2,677	412	1,083	0	3,038	0	1,320	20,273	-1,270	21,543
120,000	23,997	3,089	1,834	1,185	25,873	2,677	412	1,143	0	3,038	0	1,320	21,515	-1,370	22,886
125,000	25,248	3,089	1,881	1,188	27,115	2,677	412	1,202	0	3,038	0	1,320	22,757	-1,470	24,227
130,000	26,500	3,089	1,927	1,192	28,357	2,677	412	1,262	0	3,038	0	1,320	23,999	-1,570	25,569
135,000	27,650	3,089	1,973	1,196	29,502	2,677	412	1,317	0	3,038	0	1,320	25,144	-1,670	26,814
140,000	28,668	3,089	2,018	1,199	30,520	2,677	412	1,365	0	3,038	0	1,320	26,162	-1,770	27,932
145,000	29,685	3,089	2,062	1,203	31,537	2,677	412	1,414	0	3,038	0	1,320	27,179	-1,870	29,049
150,000	30,703	3,089	2,106	1,207	32,554	2,677	412	1,462	0	3,038	0	1,320	28,196	-1,970	30,166

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: **£34,000**
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: **£39,000**
(Minimum earned income required for receipts to exceed expenditure)
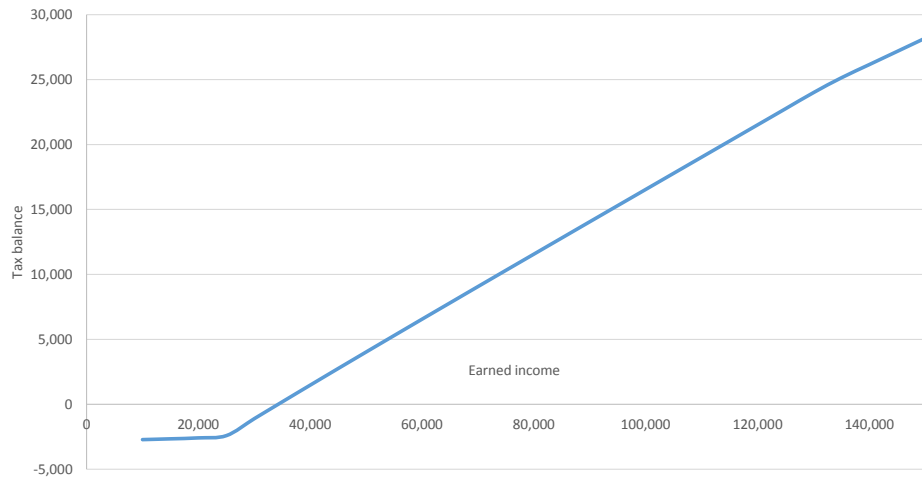
Estimates of receipts and expenditure, £, annual

Household Composition / Type

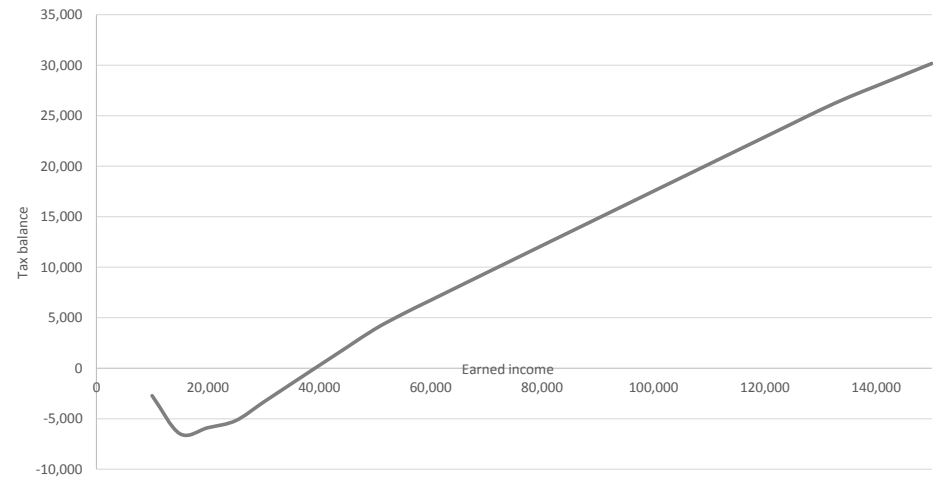|	
Adults	2
Children	-
Income Split	100%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	Yes	<- For less than 5-year residency

Couple, single worker, recent arrival

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	395	1,243	1,638	520	80	0	0	3,038	0	1,320	-2,720	0	-2,720
15,000	0	900	507	1,191	1,698	780	120	0	0	3,038	0	1,320	-2,660	3,830	-6,490
20,000	0	1,200	606	1,165	1,771	1,040	160	0	0	3,038	0	1,320	-2,587	3,305	-5,892
25,000	104	1,500	695	1,151	1,946	1,300	200	5	0	3,038	0	1,320	-2,412	2,780	-5,193
30,000	1,397	1,800	778	1,143	3,252	1,560	240	67	0	3,038	0	1,320	-1,106	2,255	-3,362
35,000	2,680	2,100	856	1,139	4,548	1,820	280	128	0	3,038	0	1,320	190	1,730	-1,541
40,000	3,955	2,400	930	1,138	5,835	2,080	320	188	0	3,038	0	1,320	1,477	1,205	271
45,000	5,224	2,700	1,000	1,138	7,113	2,340	360	249	0	3,038	0	1,320	2,755	680	2,075
50,000	6,488	3,000	1,068	1,139	8,385	2,600	400	309	0	3,038	0	1,320	4,027	155	3,872
55,000	7,747	3,089	1,132	1,140	9,651	2,677	412	369	0	3,038	0	1,320	5,293	-70	5,364
60,000	9,003	3,089	1,195	1,143	10,912	2,677	412	429	0	3,038	0	1,320	6,554	-170	6,725
65,000	10,257	3,089	1,256	1,145	12,169	2,677	412	488	0	3,038	0	1,320	7,811	-270	8,082
70,000	11,508	3,089	1,314	1,148	13,423	2,677	412	548	0	3,038	0	1,320	9,065	-370	9,435
75,000	12,758	3,089	1,372	1,152	14,674	2,677	412	608	0	3,038	0	1,320	10,316	-470	10,786
80,000	14,007	3,089	1,428	1,155	15,922	2,677	412	667	0	3,038	0	1,320	11,564	-570	12,135
85,000	15,255	3,089	1,482	1,159	17,169	2,677	412	726	0	3,038	0	1,320	12,811	-670	13,482
90,000	16,503	3,089	1,535	1,162	18,415	2,677	412	786	0	3,038	0	1,320	14,057	-770	14,827
95,000	17,751	3,089	1,588	1,166	19,659	2,677	412	845	0	3,038	0	1,320	15,301	-870	16,172
100,000	19,000	3,089	1,639	1,170	20,903	2,677	412	905	0	3,038	0	1,320	16,545	-970	17,516
105,000	20,248	3,089	1,689	1,173	22,146	2,677	412	964	0	3,038	0	1,320	17,788	-1,070	18,859
110,000	21,497	3,089	1,738	1,177	23,389	2,677	412	1,024	0	3,038	0	1,320	19,031	-1,170	20,201
115,000	22,747	3,089	1,787	1,181	24,631	2,677	412	1,083	0	3,038	0	1,320	20,273	-1,270	21,543
120,000	23,997	3,089	1,834	1,185	25,873	2,677	412	1,143	0	3,038	0	1,320	21,515	-1,370	22,886
125,000	25,248	3,089	1,881	1,188	27,115	2,677	412	1,202	0	3,038	0	1,320	22,757	-1,470	24,227
130,000	26,500	3,089	1,927	1,192	28,357	2,677	412	1,262	0	3,038	0	1,320	23,999	-1,570	25,569
135,000	27,650	3,089	1,973	1,196	29,502	2,677	412	1,317	0	3,038	0	1,320	25,144	-1,670	26,814
140,000	28,668	3,089	2,018	1,199	30,520	2,677	412	1,365	0	3,038	0	1,320	26,162	-1,770	27,932
145,000	29,685	3,089	2,062	1,203	31,537	2,677	412	1,414	0	3,038	0	1,320	27,179	-1,870	29,049
150,000	30,703	3,089	2,106	1,207	32,554	2,677	412	1,462	0	3,038	0	1,320	28,196	-1,970	30,166

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: **£34,000**
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: **£39,000**
(Minimum earned income required for receipts to exceed expenditure)

Estimates of receipts and expenditure, £, annual

Household Composition / Type

Adults	2
Children	1
Income Split	50%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No	<- For less than 5-year residency

Couple, both working, 1 child, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	817	1,141	1,958	520	80	0	6,987	4,751	22,464	1,980	-34,224	0	-34,224
15,000	0	900	841	1,140	1,981	780	120	0	6,969	4,751	19,014	1,980	-30,733	0	-30,733
20,000	0	1,200	865	1,139	2,004	1,040	160	0	6,942	4,751	15,564	1,980	-27,233	0	-27,233
25,000	0	1,500	888	1,138	2,026	1,300	200	0	6,907	4,751	12,114	1,980	-23,725	8,186	-31,911
30,000	0	1,800	911	1,138	2,049	1,560	240	0	6,863	4,751	8,664	1,980	-20,210	7,661	-27,870
35,000	103	2,100	933	1,138	2,168	1,820	280	5	6,812	4,751	5,214	1,980	-16,589	7,136	-23,724
40,000	1,378	2,400	955	1,137	3,405	2,080	320	66	6,754	4,751	1,764	1,980	-11,844	6,611	-18,455
45,000	2,647	2,700	1,000	1,138	4,659	2,340	360	126	5,790	4,751	0	1,980	-7,862	6,086	-13,948
50,000	3,911	3,000	1,068	1,139	5,931	2,600	400	186	5,721	4,751	0	1,980	-6,521	5,561	-12,082
55,000	5,170	3,300	1,132	1,140	7,197	2,860	440	246	5,647	4,751	0	1,980	-5,182	5,036	-10,217
60,000	6,426	3,600	1,195	1,143	8,458	3,120	480	306	5,571	4,751	0	1,980	-3,844	4,511	-8,355
65,000	7,680	3,900	1,256	1,145	9,715	3,380	520	366	5,492	4,751	0	1,980	-2,508	3,986	-6,494
70,000	8,931	4,200	1,314	1,148	10,968	3,640	560	425	5,412	4,751	0	1,980	-1,175	3,461	-4,635
75,000	10,181	4,500	1,372	1,152	12,219	3,900	600	485	5,332	4,751	0	1,980	157	2,936	-2,779
80,000	11,430	4,800	1,428	1,155	13,468	4,160	640	544	5,252	4,751	0	1,980	1,485	2,411	-925
85,000	12,678	5,100	1,482	1,159	14,715	4,420	680	604	5,172	4,751	0	1,980	2,812	1,886	926
90,000	13,926	5,400	1,535	1,162	15,961	4,680	720	663	5,095	4,751	0	1,980	4,135	1,361	2,774
95,000	15,174	5,700	1,588	1,166	17,205	4,940	760	723	5,019	4,751	0	1,980	5,455	836	4,619
100,000	16,422	6,000	1,639	1,170	18,449	5,200	800	782	4,945	4,751	0	1,980	6,773	311	6,462
105,000	17,671	6,178	1,689	1,173	19,692	5,354	824	841	4,874	4,751	0	1,980	8,087	-41	8,128
110,000	18,920	6,178	1,738	1,177	20,934	5,354	824	901	4,805	4,751	0	1,980	9,398	-141	9,539
115,000	20,170	6,178	1,787	1,181	22,177	5,354	824	960	4,740	4,751	0	1,980	10,706	-241	10,947
120,000	21,420	6,178	1,834	1,185	23,419	5,354	824	1,020	4,677	4,751	0	1,980	12,011	-341	12,352
125,000	22,671	6,178	1,881	1,188	24,661	5,354	824	1,080	4,617	4,751	0	1,980	13,313	-441	13,754
130,000	23,922	6,178	1,927	1,192	25,903	5,354	824	1,139	4,559	4,751	0	1,980	14,612	-541	15,153
135,000	25,175	6,178	1,973	1,196	27,145	5,354	824	1,199	4,505	4,751	0	1,980	15,909	-641	16,549
140,000	26,428	6,178	2,018	1,199	28,387	5,354	824	1,258	4,453	4,751	0	1,980	17,202	-741	17,943
145,000	27,682	6,178	2,062	1,203	29,629	5,354	824	1,318	4,404	4,751	0	1,980	18,493	-841	19,334
150,000	28,937	6,178	2,106	1,207	30,871	5,354	824	1,378	4,358	4,751	0	1,980	19,782	-941	20,723

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point: £74,000
(Minimum earned income required for receipts to exceed expenditure)

Tax break-even point: £82,000
(Minimum earned income required for receipts to exceed expenditure)

Estimates of receipts and expenditure, £, annual

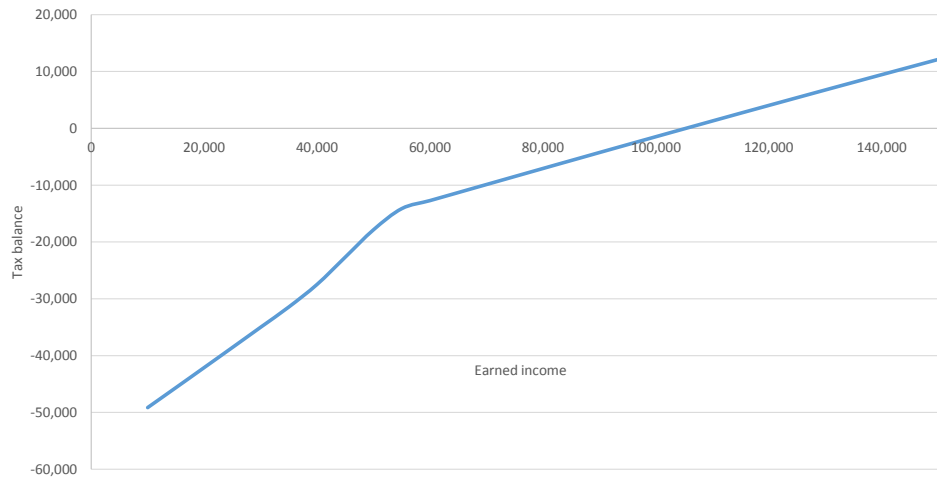**Household Composition / Type**

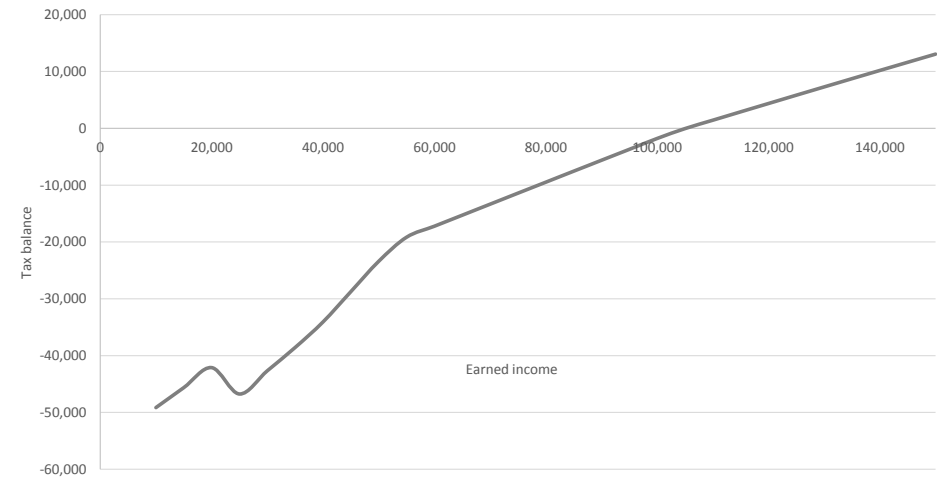|	
Adults	2
Children	2
Income Split	50%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No	<- For less than 5-year residency

Couple, both working, 2 children, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	903	1,138	2,041	520	80	0	13,974	6,464	28,113	2,640	-49,151	0	-49,151
15,000	0	900	925	1,138	2,063	780	120	0	13,938	6,464	24,663	2,640	-45,642	0	-45,642
20,000	0	1,200	947	1,137	2,085	1,040	160	0	13,884	6,464	21,213	2,640	-42,116	0	-42,116
25,000	0	1,500	969	1,137	2,107	1,300	200	0	13,814	6,464	17,763	2,640	-38,574	8,186	-46,760
30,000	0	1,800	991	1,137	2,128	1,560	240	0	13,727	6,464	14,313	2,640	-35,015	7,661	-42,676
35,000	0	2,100	1,012	1,138	2,150	1,820	280	0	13,624	6,464	10,863	2,640	-31,442	7,136	-38,578
40,000	398	2,400	1,033	1,138	2,550	2,080	320	19	13,508	6,464	7,413	2,640	-27,475	6,611	-34,086
45,000	1,667	2,700	1,054	1,138	3,780	2,340	360	79	13,380	6,464	3,963	2,640	-22,667	6,086	-28,753
50,000	2,931	3,000	1,074	1,139	5,004	2,600	400	140	13,241	6,464	513	2,640	-17,854	5,561	-23,415
55,000	4,190	3,300	1,132	1,140	6,263	2,860	440	200	11,295	6,464	0	2,640	-14,135	5,036	-19,171
60,000	5,446	3,600	1,195	1,143	7,524	3,120	480	259	11,142	6,464	0	2,640	-12,721	4,511	-17,232
65,000	6,699	3,900	1,256	1,145	8,781	3,380	520	319	10,984	6,464	0	2,640	-11,307	3,986	-15,293
70,000	7,951	4,200	1,314	1,148	10,035	3,640	560	379	10,824	6,464	0	2,640	-9,893	3,461	-13,354
75,000	9,201	4,500	1,372	1,152	11,286	3,900	600	438	10,663	6,464	0	2,640	-8,482	2,936	-11,417
80,000	10,450	4,800	1,428	1,155	12,535	4,160	640	498	10,503	6,464	0	2,640	-7,073	2,411	-9,483
85,000	11,698	5,100	1,482	1,159	13,782	4,420	680	557	10,345	6,464	0	2,640	-5,667	1,886	-7,553
90,000	12,946	5,400	1,535	1,162	15,027	4,680	720	616	10,189	6,464	0	2,640	-4,266	1,361	-5,627
95,000	14,194	5,700	1,588	1,166	16,272	4,940	760	676	10,038	6,464	0	2,640	-2,870	836	-3,706
100,000	15,442	6,000	1,639	1,170	17,515	5,200	800	735	9,890	6,464	0	2,640	-1,479	311	-1,790
105,000	16,691	6,178	1,689	1,173	18,758	5,354	824	795	9,748	6,464	0	2,640	-94	-41	-53
110,000	17,940	6,178	1,738	1,177	20,001	5,354	824	854	9,611	6,464	0	2,640	1,286	-141	1,427
115,000	19,190	6,178	1,787	1,181	21,243	5,354	824	914	9,479	6,464	0	2,640	2,660	-241	2,901
120,000	20,440	6,178	1,834	1,185	22,485	5,354	824	973	9,353	6,464	0	2,640	4,028	-341	4,369
125,000	21,691	6,178	1,881	1,188	23,727	5,354	824	1,033	9,233	6,464	0	2,640	5,390	-441	5,831
130,000	22,942	6,178	1,927	1,192	24,969	5,354	824	1,092	9,119	6,464	0	2,640	6,746	-541	7,287
135,000	24,195	6,178	1,973	1,196	26,211	5,354	824	1,152	9,010	6,464	0	2,640	8,097	-641	8,738
140,000	25,448	6,178	2,018	1,199	27,453	5,354	824	1,212	8,907	6,464	0	2,640	9,442	-741	10,183
145,000	26,702	6,178	2,062	1,203	28,695	5,354	824	1,272	8,809	6,464	0	2,640	10,783	-841	11,623
150,000	27,957	6,178	2,106	1,207	29,938	5,354	824	1,331	8,716	6,464	0	2,640	12,118	-941	13,059

Tax balance pre-supplementation

Tax balance post-suplementation

Tax break-even point:	£105,000
(Minimum earned income required for receipts to exceed expenditure)	

Tax break-even point:	£105,000
(Minimum earned income required for receipts to exceed expenditure)	

Household Composition / Type

Adults	2
Children	3
Income Split	50%	<- How much of household income is assigned to "primary" adult (0-100%)
Exc. Inc. Support?	No	<- For less than 5-year residency

## Couple, both working, 3 children, 5 year resident

Income	Household expenditure				Estimated receipts from household				Estimated tax-funded expenditure on household				Tax balance	Supplementation	Tax balance
Earned income	Income tax + LTC	SS & HIF contributions	GST	Impôts	Tax receipts	SS fund	Health fund	LTC fund	Education	Health	Income support	Other costs	Pre-supplementation	Social Security	Post-supplementation
10,000	0	600	985	1,137	2,122	520	80	0	20,961	8,177	33,870	3,300	-64,186	0	-64,186
15,000	0	900	1,006	1,138	2,144	780	120	0	20,907	8,177	30,420	3,300	-60,660	0	-60,660
20,000	0	1,200	1,027	1,138	2,165	1,040	160	0	20,826	8,177	26,970	3,300	-57,108	0	-57,108
25,000	0	1,500	1,048	1,138	2,186	1,300	200	0	20,720	8,177	23,520	3,300	-53,531	8,186	-61,717
30,000	0	1,800	1,068	1,139	2,207	1,560	240	0	20,590	8,177	20,070	3,300	-49,930	7,661	-57,590
35,000	0	2,100	1,089	1,139	2,228	1,820	280	0	20,437	8,177	16,620	3,300	-46,305	7,136	-53,441
40,000	0	2,400	1,109	1,140	2,248	2,080	320	0	20,262	8,177	13,170	3,300	-42,660	6,611	-49,271
45,000	687	2,700	1,129	1,140	2,923	2,340	360	33	20,070	8,177	9,720	3,300	-38,343	6,086	-44,429
50,000	1,951	3,000	1,148	1,141	4,147	2,600	400	93	19,862	8,177	6,270	3,300	-33,461	5,561	-39,022
55,000	3,210	3,300	1,168	1,142	5,367	2,860	440	153	19,642	8,177	2,820	3,300	-28,572	5,036	-33,607
60,000	4,466	3,600	1,195	1,143	6,591	3,120	480	213	16,712	8,177	0	3,300	-21,598	4,511	-26,109
65,000	5,719	3,900	1,256	1,145	7,848	3,380	520	272	16,476	8,177	0	3,300	-20,105	3,986	-24,091
70,000	6,971	4,200	1,314	1,148	9,102	3,640	560	332	16,236	8,177	0	3,300	-18,612	3,461	-22,073
75,000	8,221	4,500	1,372	1,152	10,353	3,900	600	391	15,995	8,177	0	3,300	-17,120	2,936	-20,055
80,000	9,470	4,800	1,428	1,155	11,601	4,160	640	451	15,755	8,177	0	3,300	-15,631	2,411	-18,041
85,000	10,718	5,100	1,482	1,159	12,848	4,420	680	510	15,517	8,177	0	3,300	-14,146	1,886	-16,032
90,000	11,966	5,400	1,535	1,162	14,094	4,680	720	570	15,284	8,177	0	3,300	-12,667	1,361	-14,028
95,000	13,214	5,700	1,588	1,166	15,338	4,940	760	629	15,056	8,177	0	3,300	-11,195	836	-12,031
100,000	14,462	6,000	1,639	1,170	16,582	5,200	800	689	14,835	8,177	0	3,300	-9,731	311	-10,041
105,000	15,711	6,178	1,689	1,173	17,825	5,354	824	748	14,622	8,177	0	3,300	-8,274	-41	-8,233
110,000	16,960	6,178	1,738	1,177	19,068	5,354	824	808	14,416	8,177	0	3,300	-6,826	-141	-6,685
115,000	18,209	6,178	1,787	1,181	20,310	5,354	824	867	14,219	8,177	0	3,300	-5,386	-241	-5,145
120,000	19,460	6,178	1,834	1,185	21,552	5,354	824	927	14,030	8,177	0	3,300	-3,955	-341	-3,614
125,000	20,711	6,178	1,881	1,188	22,794	5,354	824	986	13,850	8,177	0	3,300	-2,533	-441	-2,092
130,000	21,962	6,178	1,927	1,192	24,036	5,354	824	1,046	13,678	8,177	0	3,300	-1,119	-541	-579
135,000	23,215	6,178	1,973	1,196	25,278	5,354	824	1,105	13,515	8,177	0	3,300	286	-641	926
140,000	24,468	6,178	2,018	1,199	26,520	5,354	824	1,165	13,360	8,177	0	3,300	1,683	-741	2,424
145,000	25,722	6,178	2,062	1,203	27,762	5,354	824	1,225	13,213	8,177	0	3,300	3,072	-841	3,913
150,000	26,977	6,178	2,106	1,207	29,004	5,354	824	1,285	13,074	8,177	0	3,300	4,453	-941	5,394

Tax balance pre-supplementation

Tax balance post-suplementation
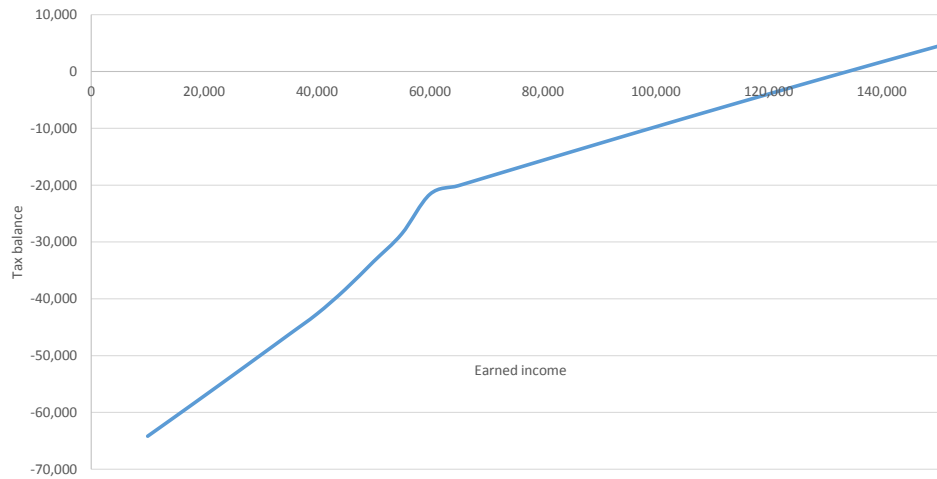
Tax break-even point: **£134,000**
(Minimum earned income required for receipts to exceed expenditure)
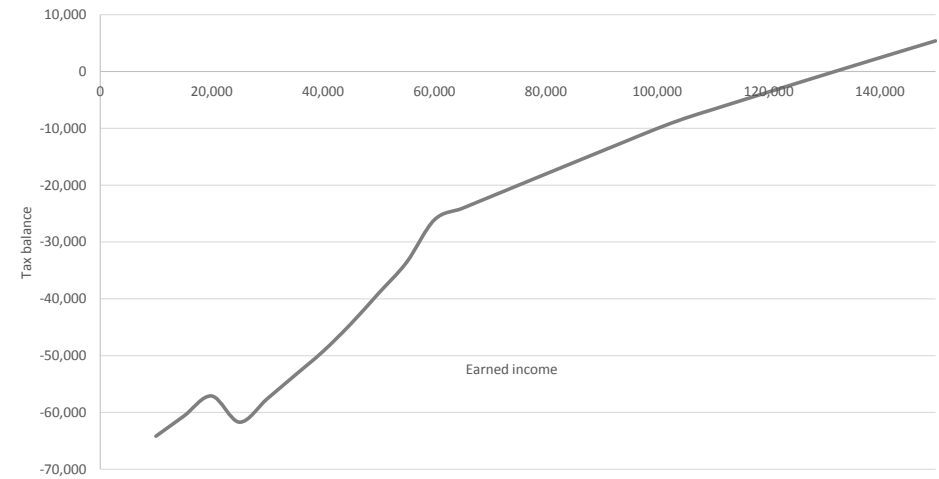
Tax break-even point: **£132,000**
(Minimum earned income required for receipts to exceed expenditure)

Potential applications / future development

Whilst the primary purpose of this initial report has been the estimation of receipts and expenditure from the above illustrative households, these estimates should be considered as a starting point for further analysis and discussion. Presented below are some illustrations of additional analysis that could be conducted / potential uses of these estimates, which could assist in policy discussion and formulation.

These examples are in no way intended to be exhaustive, but simply represent some avenues of exploration that were evident from the production of this report.

Estimates from model income distributions

The basis of this report is looking at estimates for households of specific types and income; however this can of course be extended to groups of households. One such extension of this is to look at specific household structures and applying the estimates to a defined income distribution. This income distribution can either be drawn from empirical data, or alternatively a model distribution can be used in order to provide estimates for specific scenarios.

Full time worker models

One policy matter that has been subject to recent discussion is the potential introduction of a work permit system into Jersey. Such a system could be developed in a number of ways; however one potential system under discussion is based around the concept of a mechanism that permits adult workers to migrate to the Island for a fixed period of time with restrictions that ensure they leave after that set period has expired. It is anticipated that this could result in a proportion of total migration that is restricted to single adult workers, with limited (or no) associated dependents.

There are a number of potential model distributions available, however for the purposes of this example the Pareto distribution has been preferred. The Pareto distribution provides a suitable way of modelling an income distribution for full-time workers where there is a known minimum value of income (as a result of the application of a minimum wage). Applying such a distribution to the single adult household type provides a way of estimating government receipts and expenditure from this theoretical group.

It should be stressed, that this is looking at a hypothetical scenario, and the estimates are dependent on both the choice of distribution selected and that this group conforms to the various assumptions. The intention of this modelling is to provide a tool for policy exploration, with the various parameters and assumptions modified in order to model different possible scenarios and their potential outcomes.

The Pareto Cumulative Distribution Function (CDF) is defined as:

$$F_x(x) = \begin{cases} 1 - \left(\dfrac{x_m}{x}\right)^\alpha & x \geq x_m \\ 0 & x < x_m \end{cases}$$

And therefore is defined by two parameters, x_m being the minimum possible value of X (the expected minimum level of income in this scenario) and α which is a shape parameter (essentially indicating how "stretched" the resultant distribution is).

To give examples of how this can be used in practice, a Pareto distribution with the parameters x_m = 15,000 (representing the approximate level of income anticipated for a full time worker receiving the Jersey minimum wage) and α = 2.5, has the form illustrated in the figure below. As an additional control, the "tail" of the distribution has been deliberately truncated at the 90th percentile in order to avoid the undue influence of a few higher earners that would not be expected in this scenario.

Figure 13 Example Pareto Distribution for 1,000 single adult households
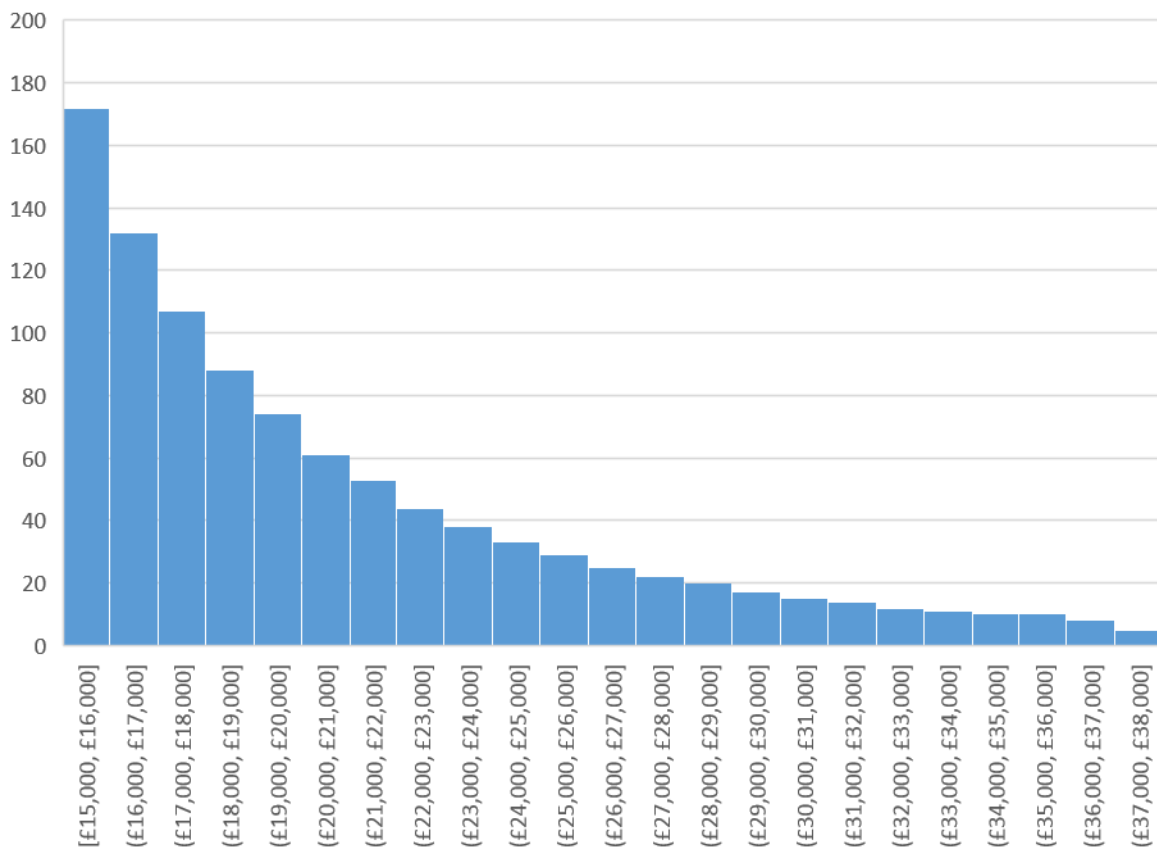
The above distribution has an overall mean income of approximately £21,000 (or roughly £10.00 an hour based on a full time worker).

Based on the above theoretical distribution applied to 1,000 households (all with less than 5 year residency) this produces aggregate estimates as follows:

Table 12 Aggregate results from example Pareto model

Income tax receipts	£1,408,000
GST	£616,000
Impôts	£937,000
Total tax receipts	**£2,962,000**
Education expenditure	Zero
Health expenditure *	£1,215,000
"Other" expenditure	£660,000
Total expenditure	**£1,875,000**
Net tax balance pre supplementation	**£1,087,000**
Supplementation	£3,220,000
Net tax balance post supplementation	**-(£2,133,000)**

* For the estimate on health expenditure an additional factor of 0.8 has been applied to the overall spend (lowering the expenditure amount by a fifth) in order to reflect the fact that new arrivals are not immediately entitled to free health care in the Island.

To provide an alternative scenario, based on x_m = 18,000 (equating to a roughly £1 increase in the minimum wage) and α = 2 (indicating a more positively "stretched" distribution), please see the illustration below:

Figure 14 Example Pareto Distribution for 1,000 single adult households
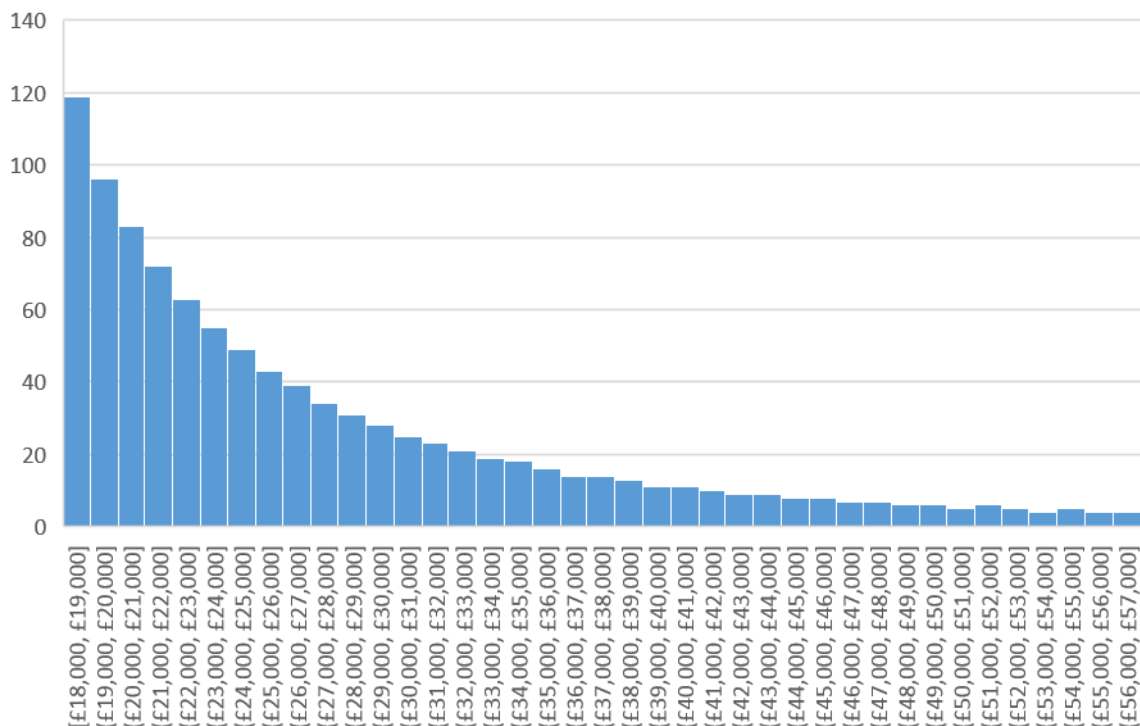
The above distribution has an overall mean income of approximately £27,000 (or roughly £13.00 an hour based on a full time worker).

Based on the above theoretical distribution applied to 1,000 households (all with less than 5 year residency) this produces aggregate estimates as follows:

Table 13 Aggregate results from example Pareto model

Income tax receipts	£3,023,000
GST	£727,000
Impôts	£923,000
Total tax receipts	**£4,673,000**
Education expenditure	Zero
Health expenditure *	£1,215,000
"Other" expenditure	£660,000
Total expenditure	**£1,875,000**
Net tax balance pre supplementation	**£2,798,000**
Supplementation	£2,537,000
Net tax balance post supplementation	**£261,000**

* See note above

The above two scenarios are purely illustrative, but demonstrate the impact that different income distributions have on the estimates of receipts and expenditure and as an illustration of how this type of modelling can be used to explore such scenarios.

General population models

Whilst the Pareto distribution is suitable for modelling the income distribution for full time workers, it is not the best choice to serve as a proxy for the more general population, where there is not a defined lower limit of income (due to some households not containing a full time worker). For these type of households we have preferred a log-normal distribution.

The log-normal distribution is defined based on two parameters μ and σ, with μ broadly equating to the resultant median of the distribution and σ operating as a shape parameter defining the level of skew in the distribution (values close to 1 approximate to a normal distribution, while increased values result in greater levels of positive skew).

A log-normal distribution with the parameters of μ= 60,000 and σ = 2 (which is an approximation of the shape parameter found in the overall Jersey population obtained from the most recent income distribution survey) has a shape illustrated in the figure below (based on 1,000 households). As an additional control, the "tail" of the distribution has been deliberately truncated at the 99th percentile in order to avoid the undue influence of a few higher earners.

Figure 15 Example log-normal distribution based on 1,000 households
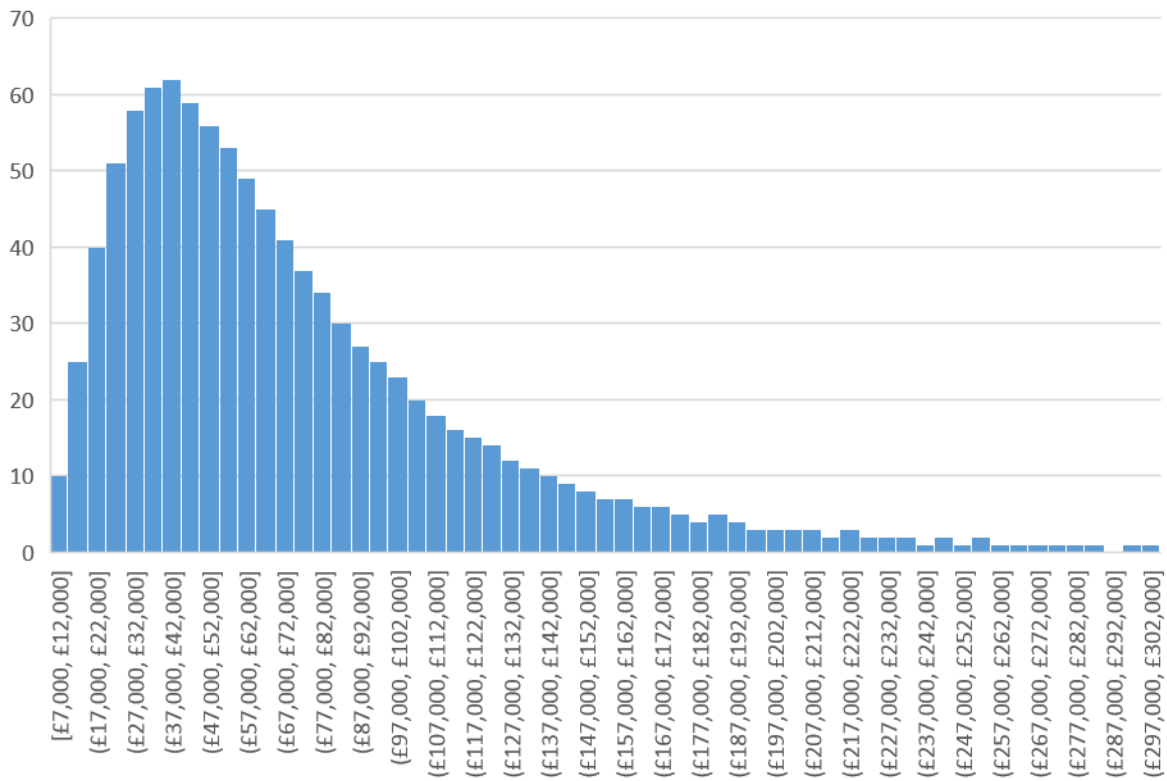
The above distribution has a median income of £60,000 and a mean of £73,000 (note that these are combined household incomes).

Taking the above distribution, we can combine this with our model household scenarios. For illustrative purposes we have used below a scenario based around a couple with a single child. The assumptions are therefore:

- Two married adults, both working (70% / 30% income split)
- Assumed to be 5 year resident

Using the above distribution for this household type results in aggregate (based on 1,000 such households) estimates as follows:

Table 14 Aggregate results from example log-normal model

Income tax receipts	£9,702,000
GST	£1,286,000
Impôts	£1,162,000
Total tax receipts	**£12,150,000**
Education expenditure	£5,675,000
Health expenditure	£4,751,000
Income support	£2,949,000
"Other" expenditure	£1,980,000
Total expenditure	**£15,354,000**
Net tax balance pre supplementation	**-(£3,161,000)**
Supplementation	£3,090,000
Net tax balance post supplementation	**-(£6,251,000)**

Once again our assumptions can be adjusted and a change to the median household income, making μ= 80,000, and an adjustment to our shape parameter of σ = 1.8, results in the following revised distribution:

Figure 16 Example log-normal distribution based on 1,000 households
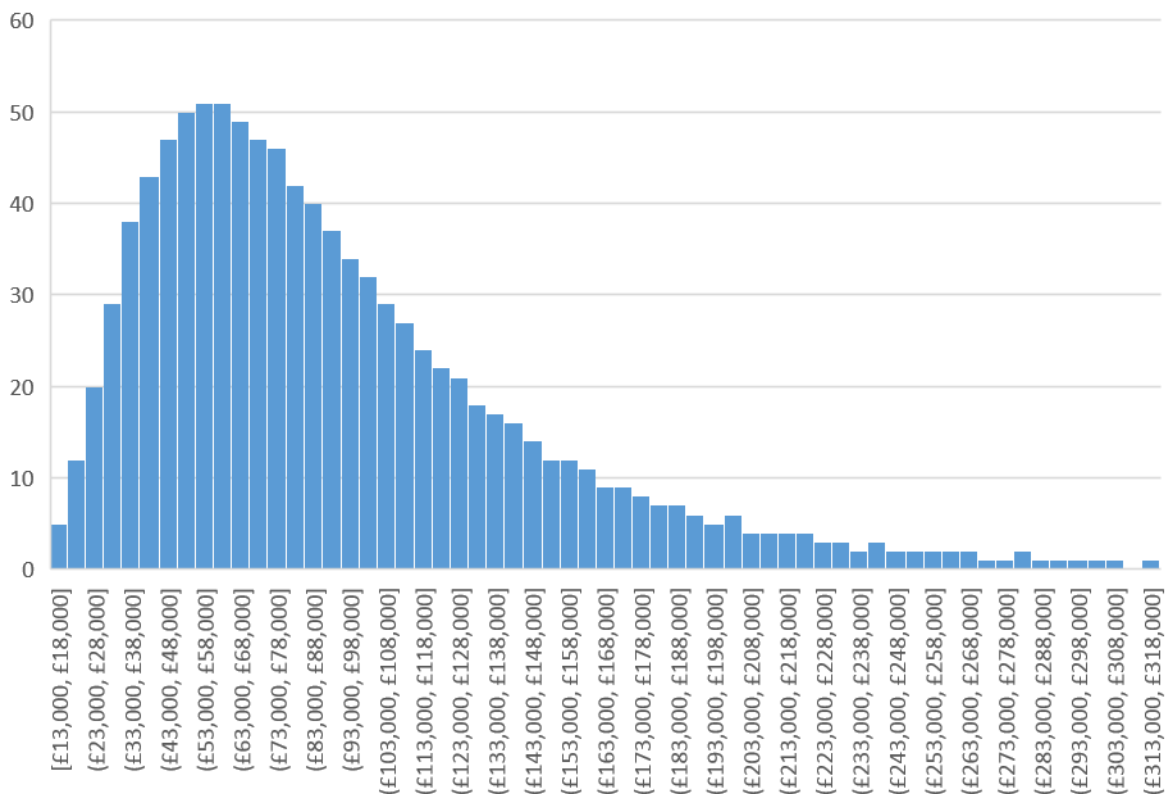
The above distribution has a median income of £80,000 and a mean of £92,000 (note that these are combined household incomes).

Using the same example household type above, with the same assumptions results in revised aggregate (1,000 such households) estimates as follows:

Table 15 Aggregate results from example log-normal model

Income tax receipts	£13,807,000
GST	£1,519,000
Impôts	£1,167,000
Total tax receipts	**£16,493,000**
Education expenditure	£5,281,000
Health expenditure	£4,751,000
Income support	£983,000
"Other" expenditure	£1,980,000
Total expenditure	**£12,995,000**
Net tax balance pre supplementation	**£3,498,000**
Supplementation	£2,540,000
Net tax balance post supplementation	**£958,000**

The above two scenarios are purely illustrative, but demonstrate the impact that different levels of income have on the estimates of receipts and expenditure. Income distributions can either be modelled based on set forecasting assumptions, or derived from empirical data if available and the focus is on a more current scenario. Multiple models could also be combined to provide a more complete picture of an anticipated scenario.

Overall tax / contribution rates

Whilst not the primary purpose of this exercise there are a number of areas where the estimates of government receipts in particular can be used to provide some useful measures to aid in policy decisions. One such area is the concept of a total effective tax / contribution rate experienced by an example household. This is broadly defined as the average rate at which the household's earned income is subject to either a tax or some other form of government charge. We present here some examples of this type of measure.

For the purpose of these examples we are looking specifically at the following government receipts:

- Personal income tax
- Goods and Services Tax (GST)
- Impôts
- Social security and health insurance employee contributions
- Long Term Care (LTC) contributions

Depending on the purpose of the exercise, some of the elements above could be chosen to be excluded (such as contributions to the funds if this was not to be considered), and likewise additional elements could also be included (such as employer total contributions if considering payroll related contributions rather than pure household earned income).

The assumptions associated with the above receipts can of course be varied, and it is envisaged that these measures could be used to explore the impact of changes to these revenue measures on different households (such as a change to a tax rate, and allowance, or other criteria changes).

These estimates for overall contribution rates (total contributions / income) are illustrated below. Please note that each of these examples are assumed to have 5-year residency, and therefore at lower incomes the household may be in receipt of income support (which impacts their Gross Cash Income and therefore contributions in respect of GST and Impôts):
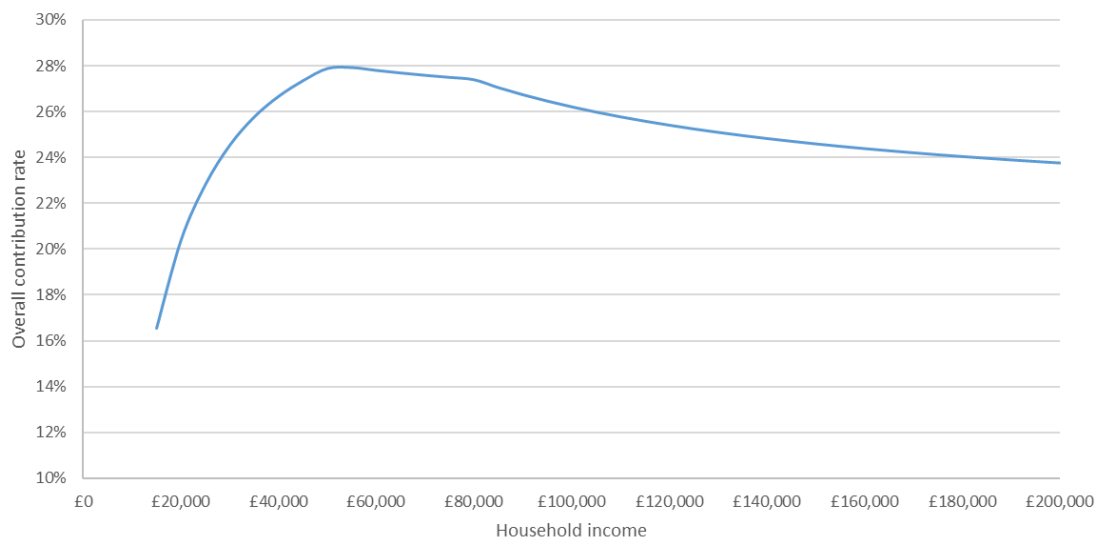
Figure 17 Overall contribution rate - single adult

Figure 18 Overall contribution rate - single parent, one child

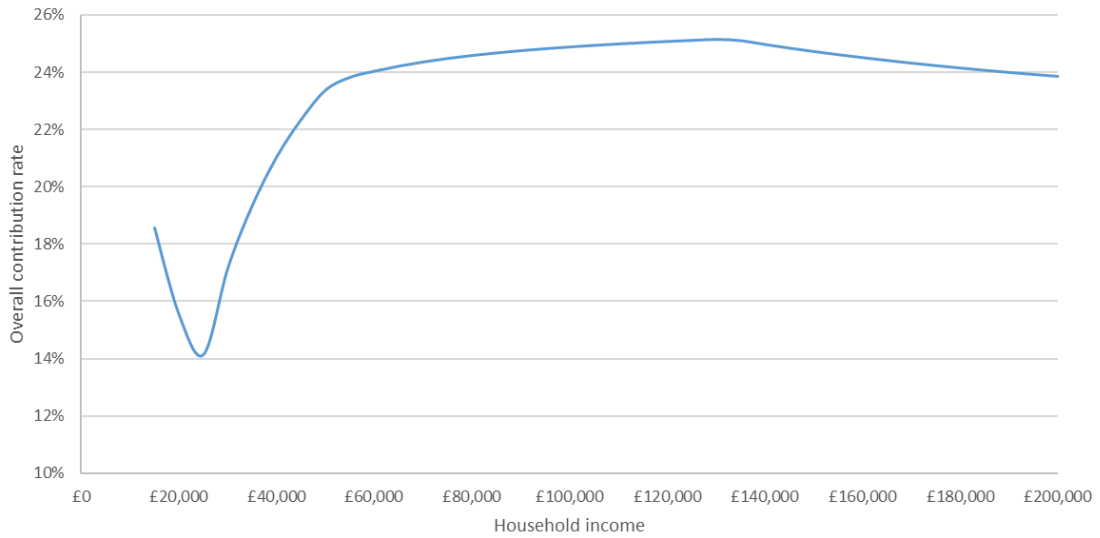*Figure 19 Overall contribution rate – married couple, one working, no children*

Each of these example rates all follow the same general pattern as a result of the differing influences each of the individual components have at different income levels. Broadly speaking this consists of:

- At low incomes the effective contributions initially decrease in line with increased income – these households will be paying a fixed rate (6%) of social security contributions, whilst the overall effective rate of GST and Impôts reduces as their level of income rises.
- Once the household exceeds their overall income tax allowance they begin paying personal income tax at a progressively higher effective rate, resulting in the overall rate increasing.
- When the individual workers within the household reach a level of earnings in excess of the Social Security standard earnings limit, then their effective contribution rate for this element begins to reduce – where this occurs is dependent on the number of workers and their individual income levels.
- When the household changes from the marginal to the standard rate of personal income tax then the effective contribution rate for this element becomes essentially fixed at the 20% rate – for many households this represents the point where they would be subject to the highest effective overall rate.
- Finally, the upper threshold in respect of the LTC charge means that the effective rate for this element, and the effective contribution rate for this element declines once households exceed that level of income.

Estimates of "take home" pay

To give a final illustrative example of potential future policy discussion / exploration, the estimates produced in this report can be used to explore the interaction between the different elements of government receipts and expenditure. One such example is looking at the overall effects of the interaction between the overall tax / contribution system and the main direct benefit system of income support and how this equates to the concept of "take-home" pay.

For the purposes of these examples we are defining take home pay as the sum of earned income and income support, less direct taxes / charges incurred (income tax, social security employee contributions and long term care charge). This is broadly similar to the concept of the "Before Housing Costs" (BHC) measure used in the report on income distribution by Statistics Jersey (2015) and reflects a household's income received after the application of the tax and benefit system, but before any living costs (including housing) are taken into account.

The assumptions associated with the above elements can of course be varied, and it is envisaged that these measures could be used to explore the impact of changes to these elements on different households (such as a change to a tax rate, or income support criteria / components).

These estimates for "take-home" pay (BHC) for example households are illustrated below:

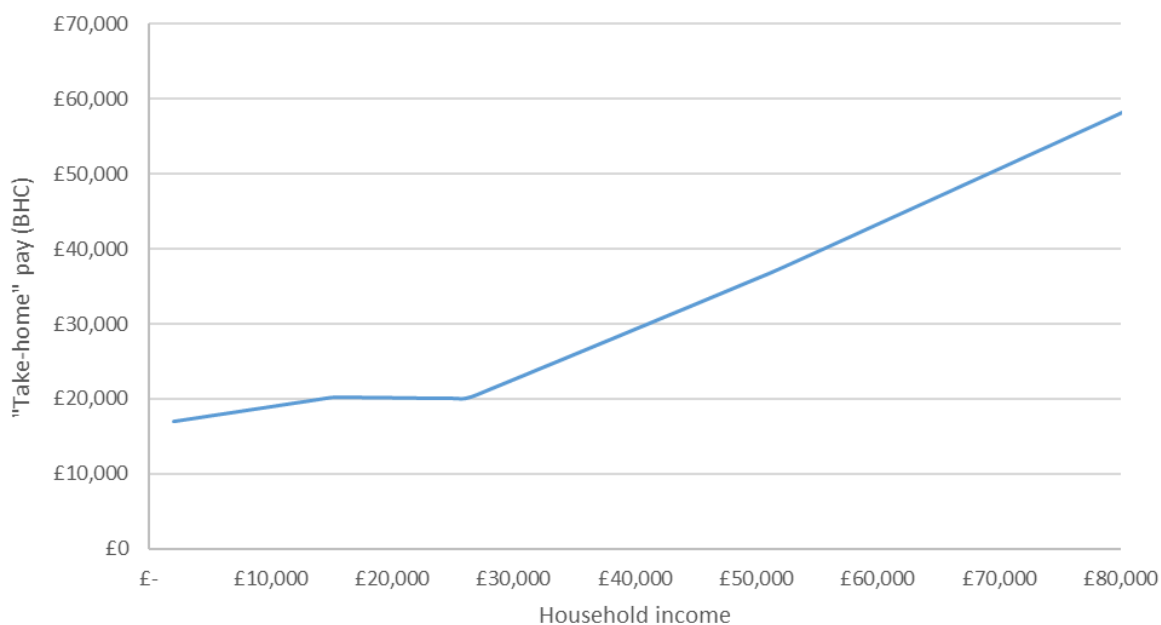*Figure 21 "Take-home" pay (BHC) - single adult*

Figure 22 "Take home" pay (BHC) - single parent, one child

Figure 23 "Take home" pay (BHC) – married couple, both working (50/50 income split), no children

Figure 24 "Take home" pay (BHC) – married couple, both working (50/50 income split), two children

In each of the examples above there are three distinct areas of behaviour:

- At lower incomes, "take-home" pay increases from a base level of the sum of all the Income Support components that household is able to receive, at a rate of around 25p in every £1 (reflective of the application of the income support disregard)
- At a certain level (dependent on household circumstances) the household will become subject to income tax at the marginal rate, and above his point the level of "take-home" pay is essentially flat irrespective of increases in earned income
- Finally, once the household is no longer eligible for income support, "take-home" pay increases at a rate of around 70p in every pound (although this can vary depending on the household's specific circumstances) as the income disregard no longer applies and the household is no longer in receipt of any income support payments.

Where these different elements occur is largely a function of the individual household circumstances and at what stage in the income distribution they become subject to income tax charges, and when they are no longer eligible for income support.

Notes

[1] **Household Income**: For the purposes of this report household income refers specifically to earned income before the effect of taxes or benefits. This is the total earned income received by the household, regardless of the number of workers.

[2] **2014/2015 Household Expenditure Survey**: For full details on this survey please see:
https://www.gov.je/Government/Pages/StatesReports.aspx?ReportID=2084

[3] **Regression analysis**: Is a set of techniques / processes used for estimating the relationships between variables. This allows for the estimation of a dependent variable, based on one or more independent variables. The analysis of the HES data was largely conducted using a combination of linear and logistical regression modelling and performed using the software package R.

[4] **Mixed model**: This procedure involves the creation of two datasets from the overall HES data. The first was one which indicated (by way of a binary response variable) if that household has made a payment in respect of that item or items of expenditure or not. The other containing the log-transformed total expenditure amounts on these items, for those households that had incurred some such expenditure (so excluding all zero values).

The first dataset is modelled using logistic regression and the result transformed to produce an estimate of probabilities, i.e.:

$$\Pr(Z = 1) = \frac{\exp(x'\hat{\beta}_1)}{1 + \exp(x'\hat{\beta}_1)}$$

The second dataset is modelled using ordinary linear regression in order to produce an estimate of expenditure, given that the household had incurred some expenditure on Impôts:

$$E(Y|Z = 1) = \exp(x'\hat{\beta}_2)$$

These two models can then be combined in order to produce an estimate for Impôt expenditure for all households via:

$$E(Y) = \Pr(Z = 1)\, E(Y|Z = 1) + \Pr(Z = 0)\, E(Y|Z = 0)$$

Which given $E(Y|Z = 0) = 0$ simplifies to:

$$E(Y) = \Pr(Z = 1)\, E(Y|Z = 1)$$

Producing a final model of the form:

$$\text{Estimated Expenditure} = \frac{\exp(x'\hat{\beta}_1)}{1 + \exp(x'\hat{\beta}_1)} \cdot \exp(x'\hat{\beta}_2)$$

[5] **Gross Cash Income**: This is the sum of all gross household earned income plus any direct benefits received (for the purpose of this report this solely includes income support).