May 2023

AUSTRALIA'S SPENDING CRISIS

ESTIMATING THE EFFECT OF FEDERAL GOVERNMENT SPENDING ON HOUSEHOLD MORTGAGE REPAYMENTS

Morgan Begg, Director of Research
Dr Kevin You, Research Fellow

Institute of Public Affairs

Contents

Executive summary 1

Introduction 3

The relationship between government spending, inflation, and interest rates 5

Trends in government spending, inflation, and interest rates in Australia 7

Estimating the effect of government spending on inflation and mortgage repayments 9

Research findings 10

Conclusion 15

Appendix A: Regression summary – government spending and inflation 16

Appendix B: Regression summary – inflation and mortgage rates 17

Executive summary

Australian families are facing acute and immediate cost of living pressures, caused by rapidly rising inflation, energy costs, and rising mortgage repayment rates. One of the key causes of rising inflation is debt and deficit-financed government spending.

This report examines the relationship between government spending, inflation, and mortgage rates, and its key findings are:

- A one percentage increase in government spending causes a 0.35 percentage point increase in annual inflation, and that a one percentage point increase in annual inflation causes average household mortgage rates to increase by 0.42 percentage points.
- According to the 2022-23 federal budget, average annual federal government spending is expected to increase by 4.6 per cent to 2025-26. This will cause an additional estimated 1.62 percentage point increase in annual inflation from June 2022 levels, all other things being equal, from 6.1 per cent to 7.7 per cent by June 2023, and 12.6 per cent by June 2026.
- The RBA will respond to this inflationary pressure by raising the cash rate target, which will have the combined effect of putting downward pressure on inflation and significantly increasing the cost of household mortgage repayments. A 1.62 percentage point annual increase of inflation will have the estimated impact of increasing household variable mortgage rates by 0.67 percentage points.
- For households, a 0.67 percentage point increase in the household mortgage repayment rate per annum over the next three years will have an estimated effect of pushing up typical monthly mortgage repayments by $257, which is$3,088 per year.
- The projected increases to spending will mean Australians as a whole will pay an estimated $10 billion per year in additional interest on their home loans as a consequence of increased federal government spending between 2023 and 2026

In addition, government spending increased by 28.9 per cent, or 9.6 per cent per year, over the Covid era of 2020-2023, which has caused the typical monthly mortgage repayment to rise by $554, or $6,643 per year. In aggregate terms, Australians with a home loan have been paying an estimated $21.5 billion per year more in interest annually, as a result of rising levels of government spending between 2020 and 2022.

Introduction

Australia has entered an economic era of high inflation, higher and rising interest rates, intense cost of living pressures, and government budgets beset with high and growing debt levels.

As of the December quarter of 2022, Consumer Price Index inflation reached 7.8 per cent – the highest level since 1990.[1] Research by the Institute of Public Affairs, *Australia's Rising Cost of Living Challenge*, found the cost of housing to have undergone the highest increase among all the categories of goods and services included in the CPI consumption basket (i.e., compared to clothing and footwear, healthcare, communication, transport, etc.). Across the nation, the annual increase in the cost of housing was approximately 10.5 per cent.

Federal government spending over the last three years, between the financial years ending 2019 and 2022, increased by 28.9 per cent, from $478.1 billion to $616.3 billion.[2] This amounts to an annual growth rate of approximately 9.6 per cent.

Over the forward estimates presented in the most recent federal budget, Commonwealth spending is forecast to increase by a further 18.2 per cent, to $728.6 billion by 2026.

IPA research released in July 2022, *Australia's Debt Disaster: Estimating interest repayments on federal government debt by 2030*, estimates that, as a consequence of the government's propensity to engage in unrestrained spending, gross government debt will continue to increase, from $1 trillion this year to $1.455 trillion by 2030.

This report studies the effect of government spending and inflation on one facet of the family budget. Specifically, it estimates the effect of increases in government spending on mortgage rates and repayments. This is done by way of regression analysis to find the relationship between increases in government spending and inflation, and the relationship between inflation and owner-occupied mortgage rates. Combined, these analyses derive a cross-correlation coefficient that approximates the relationship between increases in government spending and increases in mortgage rates for families.

The formula is then used to extrapolate the dollar-value increase in mortgage interest repayments associated with each percentage increase in federal government spending on a typical, 30-year variable rate, $600,000 loan – which is approximately the average loan size for owner-occupier homes.[3]

1 ABS (2023), Consumer Price Index, Australia, *Australian Bureau of Statistics*, Available from: https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release

2 Commonwealth Government (2022, October) *Budget Strategy and Outlook: Budget Paper No.1*, Commonwealth Government: Canberra

3 ABS (2023, January) Lending Indicators, *Australian Bureau of Statistics*, Available from: https://www.abs.gov.au/statistics/economy/finance/lending-indicators/latest-release

The report finds that every percentage increase in government spending increases mortgage rates by approximately 0.15 percentage points. In other words, if government spending increases by 1 per cent, then it can be estimated that the mortgage repayment rate will increase by 0.15 percentage points. For households, this means:

- Every percentage increase in government spending causes an increase in mortgage repayments of approximately $670 per annum.
- Over the last three years, federal government spending has increased by approximately 9.6 per cent per annum, with the consequence of increasing the typical monthly mortgage repayment by $554, or $6,643 per annum.
- Australians with a home loan are today paying an estimated $21.5 billion more in interest annually, as a result of increased government spending between 2019 and 2022.
- Federal government spending is set to increase by a further 4.6 per cent per annum between 2022-23 and 2025-26, with the estimated effect of pushing up typical monthly mortgage repayments by $257 (or $3,088 per annum).
- In aggregate terms, this will mean Australians will pay an estimated $10 billion per annum in additional interest on their home loans each year as a consequence of increased federal government spending to 2026.

The relationship between government spending, inflation, and interest rates

The relationship between government spending and interest rates is comprised of two separate relationships: the relationship between government spending and inflation; and the relationship between inflation and interest rates.

The relationship between government spending and inflation

The direct relationship between government spending and inflation is explained by the fiscal theory of the price level.[4] This theory explains how government fiscal policy, including government debt, is the primary determinant of inflation.

According to the theory, inflation occurs when a government runs persistently high deficits, and the public does not expect the debt to be repaid through ordinary means (for instance through reserves or budget surpluses). Price levels will adjust (through inflation) to accommodate what the market expects the government is able to pay back. For instance, if nominal government debt is at $100 and the entirety of the amount is due to be paid the following year, but the market expects that the budget surplus will only be $95, then price levels will increase by five per cent. By the end of the period the government will have the $100 it needs to repay the debt, but the real value of the debt is reduced.

According to Hoover Institution economist John Cochrane, a public that expects the government to not pay back its debts will act in ways that drive inflation up now, not in the future. This is because, at a fundamental level, investors perceive government debt securities as assets similar to shares in a company. If the value of that asset declines, then investors are incentivised to place their money elsewhere, increasing the volume of money in circulation and therefore adding to inflationary pressure.

The relationship between inflation and interest rates

Central banks respond to inflation by exerting control over the money supply by means of monetary policy. All else remaining constant, implementing a contractionary monetary policy in an economy will contribute to increasing the value and purchasing power of the money in circulation and helping to address inflation.

The Reserve Bank of Australia (RBA) has a statutory obligation to meet an inflation target, which is to keep consumer price inflation between two to three per cent on average, over time.[5] To meet this objective, the RBA seeks to influence the money base

4 John Cochrane, *The Fiscal Theory of the Price Level* (Princeton University Press, 2023).

5 Section 10 of the *Reserve Bank of Australia Act 1959* defines the function of the RBA to contribute to the 'stability of the current of Australia'. This function has been interpreted as maintaining the annual inflation rate at between '2-3 per cent, on average, over the cycle' since 1993 and as a formal objective since 1996: Glenn Stevens, 'Six Years of Inflation Targeting' (1999) *Reserve Bank of Australia Bulletin* 46-61.

by adjusting its cash rate target, or the targeted rate at which banks borrow money in the overnight money market. When the RBA wishes to increase the cash rate, it sells government bonds to the banks, which decreases exchange settlement funds held by the banks, and in turn decreases the broader money supply.

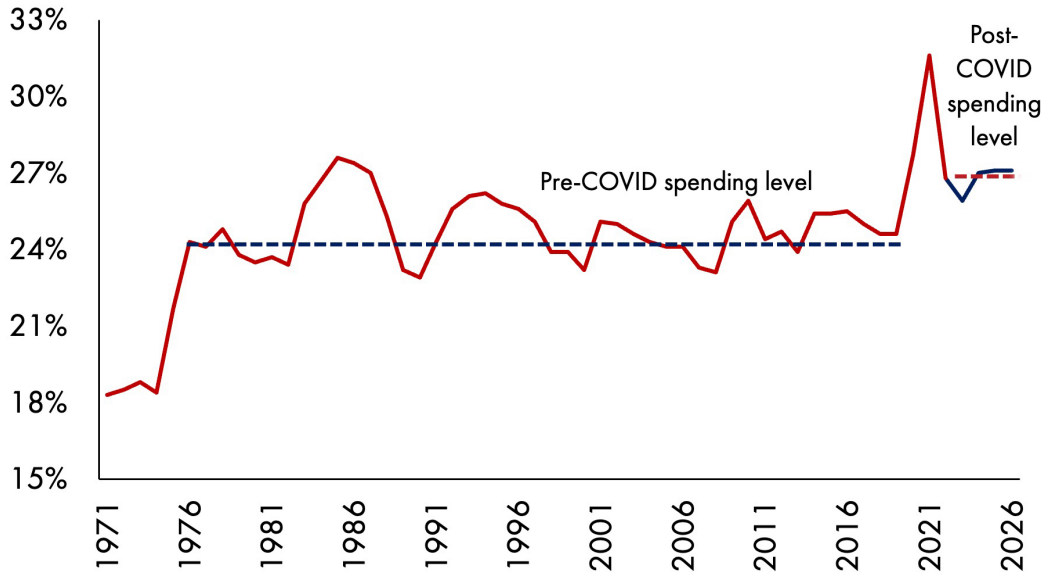
The RBA's cash rate target decision has a significant influence on the market interest rates: an increase in the cash rate will increase a bank's cost of borrowing as excess liquidity dries up, which will then be passed on to their borrowers, including in the form of mortgage repayment rates.

Trends in government spending, inflation, and interest rates in Australia

Federal government spending is currently close to a record high in nominal terms and as a percentage of the economy, as measured by the nation's gross domestic product (GDP). Government spending will be locked-in at 27 per cent of GDP into the foreseeable future, as shown in Chart 1.

Spending as a percentage of GDP had gone through cycles, including through the recession of the 1990s and the global financial crisis of the early 2000s. The response to the covid-19 pandemic, however, is different: Federal government spending over the last three years, between the financial years ending 2019 and 2022, has increased by 28.9 per cent, from $478.1 billion to $616.3 billion.[6]

Chart 1: Federal government spending as a percentage of GDP



Source: Federal Budget, October 2022

Inflation in Australia had been at its highest since the inflation target band of 2 per cent to 3 per cent was established in 1993. As of the end of 2022, inflation was at 7.8 per cent.[7]

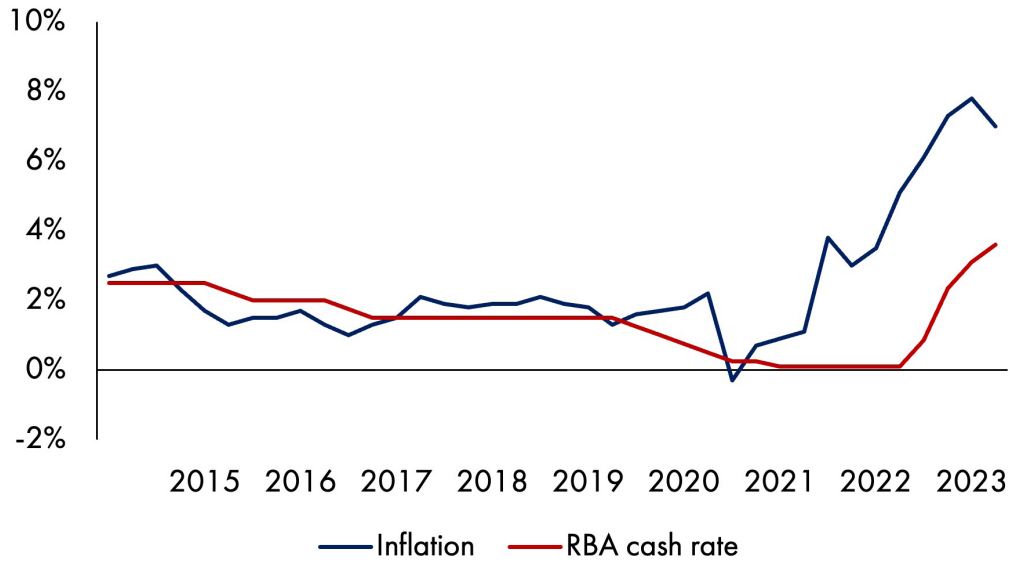
In the 1970s, a drastic reduction in the supply of crude oil caused the price of goods to escalate and inflation to spike. Today, inflation is largely driven by government actions including economic over-stimulation during the course of the pandemic, the rapid switch to renewables which stems from the policy of net zero by 2050, and the red and green tape placed around Australia's key industries such as mining, heavy manufacturing, and agriculture.

6 Commonwealth Government (2022, October) *Budget Strategy and Outlook: Budget Paper No.1*, Commonwealth Government: Canberra

7 ABS (2023), Consumer Price Index, Australia, *Australian Bureau of Statistics*, Available from: https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release

Since inflation has been currently well above the RBA's target band, its board raised the cash rate target on ten consecutive occasions between May 2022 and March 2023. Chart 2 demonstrates that the RBA's cash rate, until the pandemic, had largely followed Australia's CPI inflation rate. As the chart also shows, the RBA reacted late to address the inflationary effects of the government stimulus spending and net zero policies, causing inflation to climb to record heights. In the March quarter of 2023, inflation finally eased - albeit only slightly - to 7 per cent per annum.

Chart 2: Inflation and RBA cash rate from 2015



Source: RBA, ABS

The RBA's increases to the cash rate target have pushed up market interest rates, including interest rates on overdraft facilities, credit cards and home loans, all of which have a real impact on the family budget.

The focus of the present study is on the relationship between government spending, inflation and mortgage interest rates.

The methodology is presented in the next section of the report.

Estimating the effect of government spending on inflation and mortgage repayments

Estimating the association between the growth in annual government spending and the relative level of mortgage interest rates requires statistical analysis to examine how the relevant variables change together over time. Accordingly, in order to estimate the relationship between government spending and mortgage repayments, this report examines the following sequence of relationships:

- How changes in government spending are associated with inflation;
- How changes in inflation are associated with mortgage rates; and
- How, in turn, changes in government spending are associated with mortgage rates and mortgage repayments on a typical home loan.

The data utilised in this study were derived from the latest federal government budget, the Australian Bureau of Statistics, and the RBA website. It covers the 50-year period between 1972-73 and 2021-22, during which nominal general government spending has increased from approximately 18 per cent to 27 per cent of nominal GDP.

In this report, inflation is defined as the CPI all groups annual price change. The mortgage interest rate is based on the RBA's housing lending indicator rates for the standard, variable, owner-occupier loan. The changes in government spending are based on the year-on-year percentage change of federal government general cash expenditure.

Regression analyses were performed to estimate:

- The relationship between year on year percentage changes in federal government spending and the level of annual CPI inflation; and
- The relationship between the level of annual CPI inflation and year-on-year changes in mortgage interest rates.

A cross-correlation coefficient was then derived to estimate the relationship between government spending and mortgage rates.

Additional monthly mortgage repayment for each percentage increase in government spending was then estimated based on a $600,000 standard variable rate mortgage with a 30-year term. The amount of $600,000 is approximately the average loan size for new owner-occupier homes, as of the start of 2023 according to the ABS.

Research findings

Federal government spending and inflation

A regression analysis performed on the relationship between the annual growth in federal government spending and inflation over the 50 years between 1972-73 and 2021-22 arrived at the following linear model:

$$y = 0.3514x + 0.0184 + e$$

The dependent variable ***y*** is the annual rate of inflation, the independent variable ***x*** is the percentage increase in annual government spending, 0.0184 is the ***y*** intercept – signifying the expected level of annual inflation associated with a 0 per cent increase in annual government spending – and ***e*** is the error term.[8]

The coefficient of the model is 0.3514***x***. This indicates that a 1 per cent increase in annual government spending is associated with a 0.3514 percentage point increase in annual inflation and this estimate is statistically significant at the 99 per cent confidence level (p value = 0.000).[9]

The summary output of our regression analysis is presented in Appendix A.

Inflation and mortgage repayment rates

A regression analysis performed on the relationship between inflation and mortgage rates over the 50 years between 1972-73 and 2021-22 arrived at the following linear model:

$$y = 0.4157x + 0.0675 + e$$

The dependent variable ***y*** is the mortgage rate for owner occupiers, the independent variable ***x*** is the rate of inflation, 0.0675 is the ***y*** intercept – signifying the expected level of annual inflation associated with an environment of zero inflation – and ***e*** is the error term.

The coefficient of the model is 0.4157***x***. This indicates that a 1 percentage point increase in annual inflation is associated with a 0.4157 percentage point increase in mortgage rates and this estimate is statistically significant at the 99 per cent confidence level (p value = 0.0001).

The summary output of our regression analysis is presented in Appendix B.

8 The error term accounts for the difference between the model and observed data. This means that it will reflect nonlinearities, unpredictable effects, measurement errors and omitted variables.

9 For comparison, we also ran a regression with a one-period lag in spending growth. We find that there is negligible difference between the results.

The impact of rising government spending on mortgage rates

This section estimates the relationship between rising government spending and mortgage rates based on the coefficients derived from the abovementioned analyses.

The relationship between federal government spending and inflation is such that every percentage increase in government spending is associated with a 0.3514 percentage point increase in annual inflation.

Each percentage point increase in inflation, in turn, is associated with a 0.4157 percentage point in variable mortgage rates.

The estimated cross-relationship between federal government spending and mortgage rates, derived from the above coefficients, therefore, is such that every percentage increase in government spending is associated with a 0.1461 percentage point increase in variable mortgage lending rates since:

$$0.1461 = 0.3514 \times 0.4157$$

This cross-coefficient is then applied to the following loan payment calculator formula:

$$P = \frac{(P_v R)}{[1 - (1+R)^{-n}]}$$

Where P represents monthly repayment; P_v represents the initial principal value of the loan; R represents the monthly interest rate, calculated by dividing the annual rate by 12; and n represents the total number of interest periods calculated by multiplying the number of years remaining in the mortgage by 12.

The following table presents dollar estimates of the impact of annual increases in government spending on monthly and annual repayments on a $600,000 variable rate 30-year term mortgage.

Table 1: Effect on typical mortgage repayment of increases in federal government spending

Increase in federal government spending	Estimated effect on interest rate	Estimated loan rate*	Monthly repayment	Monthly increase in repayment	Annual increase in repayment
0%	0.00 p.p.	5.73%	$3,493	$0	$0
1%	0.15 p.p.	5.87%	$3,549	$56	$670
2%	0.29 p.p.	6.02%	$3,605	$112	$1,344
3%	0.44 p.p.	6.17%	$3,662	$169	$2,024
4%	0.58 p.p.	6.31%	$3,719	$226	$2,707
4.6%	0.67 p.p.	6.40%	$3,751	$257	$3,088
5%	0.73 p.p.	6.46%	$3,776	$283	$3,396
6%	0.88 p.p.	6.60%	$3,834	$341	$4,088
7%	1.02 p.p.	6.75%	$3,892	$399	$4,785
8%	1.17 p.p.	6.90%	$3,950	$457	$5,487
9%	1.31 p.p.	7.04%	$4,009	$516	$6,192
9.6%	1.41 p.p.	7.14%	$4,047	$554	$6,643
10%	1.46 p.p.	7.19%	$4,068	$575	$6,902
20%	2.92 p.p.	8.65%	$4,677	$1,184	$14,211
30%	4.38 p.p.	10.11%	$5,315	$1,821	$21,858

*Repayment calculation is based on the average home loan indicator rate in the 12 months between January 2022 and December 2022; presentation of final figures may be affected by rounding

Over the three years leading up to last financial year, ending June 2022, federal government spending increased on average by approximately 9.6 per cent per annum. The results of the modelling indicate that this level of spending growth is associated with an increase in the typical monthly variable mortgage repayment of $554, or $6,643 per annum on a $600,000 principal loan.

Federal government spending is set to increase by a further 4.6 per cent per annum on average over the next three years. The modelling estimates this will have the effect of increasing variable mortgage rates by 0.67 percentage points and the typical monthly mortgage repayment by $257 (or $3,088 per annum) each year.

Aggregate effect of government spending on mortgage repayments

This section estimates the aggregate effect of the federal government's 9.6 per cent per annum spending increase over the past three years and the expected 4.6 per cent per annum increase over the next three years.

According to the 2021 Census, there were a total of 3,242,449 dwellings in Australia which were owned with a mortgage,[10] meaning that these dwellings were owner-occupied and constrained by a bank loan (they were neither owned outright nor rented).

Multiplying the $6,643 per annum increase in variable mortgage repayments associated with a 9.6 per cent per annum increase in government spending by the total number of mortgaged homes in Australia provides an estimate of the increase in annual repayments associated with increased federal government spending, namely:

$$\$6,643 \times 3,242,449 = \$21.54 \text{ billion per annum.}$$

This is the estimated additional annual interest spending incurred by Australian homeowners over the last three years as a result of increases in federal government spending.

Federal government spending is set to increase by a further 4.6 per cent per annum on average over the next three years. The modelling estimates that this will have the effect of increasing variable mortgage rates by 0.67 per centage points and the typical monthly mortgage repayment by $257 (or $3,088 per annum) each year.

In aggregate terms, this will amount to an annual increase of:

$$\$3,088 \times 3,242,449 = \$10.01 \text{ billion per annum.}$$

10 ABS (2021) Australia: Census All Persons QuickStats, *Australian Bureau of Statistics*, Available: https://abs.gov.au/census/find-census-data/quickstats/2021/AUS

Conclusion

This report studies the effect of government spending and inflation on mortgage rates for Australian families. Specifically, it estimates the effect of increases in government spending on mortgage rates and repayments on a typical $600,000 standard variable rate mortgage with a 30-year term.

The study finds that:

- Every percentage increase in government spending increases mortgage rates by approximately 0.15 percentage points, or $670 per year.
- Over the last three years, federal government spending has increased by approximately 9.6 per cent per annum, with the result of increasing the typical monthly mortgage repayment by $554 or $6,643 per annum.
- We estimate that today Australians are paying $21.5 billion more annually, in interest, as a result of the reckless spending committed over the last three years.
- Federal government spending is set to increase by a further 4.6 per cent per annum between 2022-23 and 2025-26, with the estimated effect of increasing the typical monthly mortgage repayment by $257 (or $3,088 per annum).
- In aggregate terms, this will increase mortgage repayments by a further $10 billion per annum.

Australian governments must exercise responsible economic leadership by means of a renewed commitment to fiscal discipline. The federal government must tackle inflation and address the cost of living crisis by cutting spending, eliminating deficits, and reducing debt. This should be done with a view to returning to the zero net government debt level that Australia achieved between the financial years ending 2006 and 2009.

Appendix A: Regression summary – government spending and inflation

The following linear model describes the relationship between the annual growth in federal government spending and inflation over the 50 years between 1972-73 and 2021-22:

$$y = 0.3514x + 0.0184 + e$$

Where the dependent variable ***y*** is the annual rate of inflation, the independent variable ***x*** is the percentage increase in annual government spending, 0.0184 is the ***y*** intercept, signifying the expected level of annual inflation associated with a 0 per cent increase in annual government spending, and **e** is the error term.

The summary output is as follows:

Regression Statistics	
Multiple R	0.6518
R Squared	0.4249
Adjusted R Squared	0.4129
Standard Error	0.0315
Observations	50.000

Analysis of variance

	df	*SS*	*MS*	*F*	*Sign. F*
Regression	1.0000	0.0352	0.0352	35.4597	0.0000
Residual	48.0000	0.0477	0.0010		
Total	49.0000	0.0829			

	Coeffi-cients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.0184	0.0070	2.6145	0.0119	0.0043	0.0326
Government spending	0.3514	0.0590	5.9548	0.0000	0.2327	0.4700

Appendix B: Regression summary – inflation and mortgage rates

The following linear model describes the relationship between the annual growth in inflation and mortgage rates over the 50 years between 1972-73 and 2021-22:

$$y = 0.4157x + 0.0675 + e$$

Where the dependent variable ***y*** is the mortgage rate for owner occupiers, the independent variable ***x*** is the rate of inflation, 0.0675 is the ***y*** intercept, signifying the expected level of annual inflation associated with an environment of zero inflation, and **e** is the error term.

The summary output is as follows:

Regression Statistics	
Multiple R	0.5283
R Squared	0.2791
Adjusted R Squared	0.2641
Standard Error	0.0278
Observations	50.000

Analysis of variance

	df	*SS*	*MS*	*F*	*Sign. F*
Regression	1.0000	0.0143	0.0143	18.5811	0.0001
Residual	48.0000	0.0370	0.0008		
Total	49.0000	0.0513			

	Coeffi-cients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.0675	0.0063	10.7337	0.0000	0.0549	0.0802
CPI Inflation	0.4157	0.0964	4.3106	0.0001	0.2218	0.6096

AUSTRALIA'S SPENDING CRISIS: ESTIMATING THE EFFECT OF FEDERAL GOVERNMENT SPENDING ON HOUSEHOLD MORTGAGE REPAYMENTS

About the Institute of Public Affairs

The Institute of Public Affairs is an independent, non-profit public policy think tank, dedicated to preserving and strengthening the foundations of economic and political freedom. Since 1943, the IPA has been at the forefront of the political and policy debate, defining the contemporary political landscape. The IPA is funded by individual memberships, as well as individual and corporate donors.

The IPA supports the free market of ideas, the free flow of capital, a limited and efficient government, evidence-based public policy, the rule of law, and representative democracy. Throughout human history, these ideas have proven themselves to be the most dynamic, liberating and exciting. Our researchers apply these ideas to the public policy questions which matter today.

About the authors

Morgan Begg is the Director of Research at the Institute of Public Affairs. Morgan joined the IPA in 2014 to advance the IPAs work on legal rights, the rule of law, and extending the rights and freedoms of Australians. Since joining the IPA Morgan has been published on a variety of topics, from judicial appointments, public health restrictions and emergency powers, and the preservation of constitutional government.

Dr Kevin You is a Research Fellow at the IPA. His background is in the fields of political economy, industrial relations and organisational studies. Prior to joining the IPA, Kevin worked in academia - both as a teacher and research associate. His articles have been published in such periodicals as the Review of Social Economy, Journal of Industrial Relations, Journal of Global Responsibility, Labour and Industry, and International Journal of Employment Studies.

Institute of
Public Affairs