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Discretionary tax changes and the macroeconomic activity: New narrative evidence from Australia

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Changchen Ge

Monash University

& Centre for Applied Macroeconomics Analysis, ANU

Abstract

This paper examines the impact of discretionary tax changes on economic activity in Australia. I use written records such as the Budget Report and Election Speeches to identify the revenue effect, timing and motivation of all major Commonwealth tax policy actions from 1983Q4 to 2018Q4. This approach allows me to isolate legislated tax changes that are not taken for reasons related to prospective economic conditions. I then examine the effects on output by treating the unanticipated exogenous tax changes as an instrument for tax revenue. The resulting estimates indicate that tax cuts are expansionary but much less persistent. The large effects stems in considerable part from a strong positive effect of tax cuts on consumption.

Keywords: Narrative approach, tax multiplier, Australia

JEL codes: E32, E62, H20, N17

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Author contact details: changchen.ge@monash.edu*

Tax and Transfer Policy Institute
Crawford School of Public Policy
College of **Asia and the Pacific**
+61 2 6125 9318
tax.policy@anu.edu.au

The Australian National University
Canberra ACT 0200 Australia
www.anu.edu.au

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1 Introduction

While many have attempted to estimate the effects of discretionary tax policies across different countries, there has been a dearth of research focusing on this important yet long-neglected topic within commodity exporting economies such as Australia.

The recent literature has tackled the identification problem in two ways. One popular method follows [Blanchard and Perotti \(2002\)](#)¹ who use external information on the elasticity of revenue to output to estimate cyclically adjusted tax revenues. For Australia, [Perotti \(2005\)](#) finds that a shock to net taxes equal to -1 percentage point of GDP decrease the output by 0.55 per cent after one year and a maximum effect on GDP for Australia of around -0.89 percent.

The second method, following [Romer and Romer \(2010\)](#), utilises written records from official budget sources to construct a narrative measure of exogenous policy changes, which are uncorrelated with other macroeconomic shocks. This approach has been employed for identifying exogenous tax policy shocks in various countries.² [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#) find large and persistent effects on GDP in the UK and the US. Following a cut in tax revenues corresponding to one percent of GDP, GDP rises by around three percent over three years. Despite its widespread application, there remains a lack of consensus regarding the magnitude of tax policy effects. However, this methodology has not yet been applied to the Australian context.

This paper contributes new empirical evidence to this debate. I construct a narrative time series dataset of legislated tax changes in Australia from 1983Q4 to 2018Q4, an exercise that is particularly suitable for Australia. The main conclusion is that one percent decrease in tax revenue will increase the output by 0.76% at peak after three quarters, which is approximately 2.7 in dollar to dollar terms after scaling the elasticity estimates by average tax revenue to GDP ratio.³ Compared to [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#), the effects on GDP is large but transitory, providing a clear divergence from the established results. In doing so, I provide some of the first estimates for Australia. This paper also provides a detailed new dataset for further study.

The suitability of the narrative approach for Australia can be attributed to two primary factors. First, the country's extensive history with tax policy is marked by a comprehensive range of amendments, encompassing changes in superannuation, oil excise rates, and personal income tax rates. This historical depth provides a rich basis

¹See [Corsetti et al. \(2012b\)](#), [Monacelli and Perotti \(2010\)](#) and [Ilzetzi et al. \(2013\)](#) for the effects of government spending shocks in Australia. See [Ramey \(2019\)](#) and [Ramey \(2016\)](#) for a detailed survey.

²Examples include Canada by [Hussain and Liu \(2019\)](#), Germany by [Christofzik et al. \(2022\)](#), Spain by [Gil et al. \(2019\)](#), the UK by [Cloyne \(2013\)](#), and the US by [Romer and Romer \(2010\)](#).

³[Ramey \(2019\)](#) reported that converting elasticities to multipliers using sample averages can make the multipliers excessively counter-cyclical. Additionally, the cumulative multipliers introduced by [Mountford and Uhlig \(2009\)](#) do not fully account for the impact of the government budget, which complicates the computation of the tax multiplier. Therefore, in this paper, I focus primarily on estimating the elasticities between tax revenue and macroeconomic variables.

for narrative analysis. Second, the adoption of a budgeting framework in Australia that mirrors the practices of the UK provides additional support for this approach. In this system, tax policy is centralised within the Commonwealth government, with key announcements typically made on Budget night.⁴ This process is augmented by detailed revenue forecasts accompanying each tax amendment, coupled with political debate for the motivations behind each legislative change. These components collectively underscore the suitability of a narrative approach in the Australian context, enabling a detailed and nuanced analysis of fiscal policy dynamics.

I adopt the identification strategy outlined by Cloyne (2013) to isolate tax policy changes in Australia from 1983Q4 to 2018Q4 that are not reactive to other macroeconomic shocks. Following the frameworks of Romer and Romer (2010) and Cloyne (2013), these tax changes are classified as ‘exogenous’, in contrast to those considered ‘endogenous’ to broader economic dynamics. The detail can be found in a companion paper, Ge (2024).⁵

In categorising 752 discretionary tax changes, I primarily use the stated motivation of policymakers, which generates comparable categories to those in Cloyne (2013). The ‘exogenous’ category contains tax acts intended to improve long-run economic growth, ideological changes aimed at improving social outcomes, and tax administration measures to enhance the fairness of the tax system. The ‘endogenous’ changes are actions taken to reduce budget deficits, finance government spending programs, and mitigate the negative effects of other macroeconomic shocks.

Having constructed a quarterly series of ‘exogenous’ tax changes, I follow Mertens and Ravn (2014) to treat the unanticipated exogenous tax changes as external instruments for structural tax shocks to estimate the effects of tax changes in Australia. In line with existing literature, my results should be interpreted as the average effects of exogenous tax changes.

2 Constructing the Narrative Time Series Dataset for Australia

2.1 Sources of Data

The foundation of the narrative analysis lies in an extensive examination of budgetary documents from both the executive and legislative branches of the Australian government.

From the executive side, the primary focus is on documents provided by the Australian

⁴In the Australian economic calendar, prior to 1993, the fiscal pronouncement, commonly referred to as the Budget, was traditionally delivered on the first Tuesday night of August. Post-1993, this convention has been modified, with the Treasurer presenting the budgetary overview on the second Tuesday of May.

⁵The companion paper is available at <https://www.dropbox.com/scl/fi/dff24zi7bm419ike0dphb/Narrativepaper.pdf?rlkey=oxi28ixtrfti6863ah7r5a6cf&st=2jhg1gy1&dl=0>.

Treasury. Key sources include the annual *Budget Economic and Fiscal Outlook Report*, the *Mid-Year Economic and Fiscal Outlook Report*, and the *Final Outcome Budget Report*.⁶ These documents are instrumental in revealing the motivations driving significant tax policy changes at the time of their announcement.

On the legislative front, two pivotal sources are utilised. The *Hansard*, a transcript of parliamentary debates, is critical for understanding the underlying rationales and justifications for major tax reforms.⁷ Additionally, the *Explanatory Memorandum* accompanying each government bill provides a detailed chronology, projected revenue implications, and fiscal impacts of proposed tax changes.⁸

Supplementary sources, including Australian Federal Election Speeches⁹ and Media Releases from the Treasury are consulted to capture the political intent and offer additional insights into the factors shaping legislated tax changes.¹⁰

2.2 Identification of Legislated Tax Changes

The initial task involves pinpointing all legislated tax amendments spanning 1983-2018. This process requires thorough examination of bills archived in the Federal Register of Legislation.¹¹ In the Australian legislative process, each Bill is presented in the House of Representatives, accompanied by an *Explanatory Memoranda* that clarify the Bill's provisions for Parliament members. Following the 1984 amendments to the Acts Interpretation Act 1901, these memoranda are required to outline the Bill's primary objectives and fiscal impacts (Australia Parliament. House of Representatives et al., 2018). Once a Bill receives approval from both the Senate and the House of Representatives and is granted Royal Assent by the Governor-General, it becomes an Act of Parliament.¹²

2.3 Classification of Exogenous Tax Changes

The next phase involves discerning the motivations behind each tax change. Drawing inspiration from Cloyne (2013) and Romer and Romer (2010), I analyze policymakers' explicit statements to deduce their stated intentions. Principal sources for this analysis include the Budget Speech, the *Explanatory Memorandum*, and *Budget Paper No.2 Budget Measures*. Further insights are gleaned from Australian Federal Election Speeches,

⁶An archive of these budget-related documents is available at <https://archive.budget.gov.au>.

⁷A comprehensive record is housed at https://www.aph.gov.au/Parliamentary_Business/Hansard.

⁸The collection can be accessed at <https://www.legislation.gov.au>.

⁹The Election speeches are archived at <https://electionspeeches.moadoph.gov.au>.

¹⁰These Media Releases from the Treasury are available at <https://treasury.gov.au/media-release>.

¹¹Details on legislated tax amendments are available at <https://www.legislation.gov.au>.

¹²A detailed explanation of the legislative process is available in the House of Representatives Practice at https://www.aph.gov.au/About_Parliament/House_of_Representatives/Powers_practice_and_procedure/Practice7/HTML/Chapter10/Billsthe_parliamentary_process.

discussions recorded in the *Hansard*, and Treasury media releases.

This paper focuses on the identification of exogenous tax changes, which are enacted for reasons unrelated to current or anticipated economic conditions. In the online Appendix A, a detailed explanation of the identification strategies and an in-depth discussion of the characteristics of endogenous tax changes are provided.

2.3.1 Exogenous Tax Changes

According to [Romer and Romer \(2010\)](#), exogenous tax changes are those not motivated by past or anticipated macroeconomic conditions. They are typically enacted for reasons unrelated to immediate economic circumstances and do not correlate predictably with factors likely to influence output in the near future.

Exogenous tax changes are further divided into three categories:

1. **Long-run Growth-oriented Changes:** These changes aim to enhance long-term economic growth. An example is the Tax Laws Amendment (Personal Income Tax Deduction) Act 2005, which targeted long-term economic expansion without addressing immediate economic conditions.
2. **Ideological Changes:** These are motivated by philosophical or societal goals, such as the Excise Tariff Amendment (Tobacco) Bill 2016, which increased tobacco excise for public health objectives.
3. **Tax Integrity Measures:** Focused on improving the fairness of the tax system, these amendments often target tax compliance by large entities. The Treasury Laws Amendment (GST Integrity) Bill 2017, aiming to enhance tax system transparency, is an example.

This study’s classification system draws parallels and distinctions from the frameworks of [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#), aligning the “spending-driven” and “counter-cyclical” categories with [Romer and Romer \(2010\)](#), while the “deficit-driven” category mirrors [Cloyne \(2013\)](#). The exogenous categorizations of long-run growth and ideological changes correspond with [Cloyne \(2013\)](#), and our tax integrity measures align with “ideological” category.

2.4 Measuring the Size and Timing of Tax Changes

When formulating the dataset, it is critical to distinguish between the announcement and implementation dates of tax changes. These dates, sourced from the *Explanatory Memorandum*, serve distinct functions: the announcement date marks the policy’s public introduction, while the implementation date indicates when the tax change becomes effective. The interval between these events is termed the ‘implementation lag’.

Following [Mertens and Ravn \(2012\)](#), tax actions are categorised as either anticipated or unanticipated based on this lag. Changes with a lag shorter than 90 days are considered unanticipated, while those with a longer duration are categorized as anticipated.

For assessing the magnitude of tax changes, the 'full year' revenue estimate method, inspired by [Cloyne \(2013\)](#), is employed. Since the enactment of the *Charter of Budget Honesty Act 1998*, the Australian Treasury has provided revenue projections for four fiscal years. The stability of these forward estimates for most tax changes allows the use of the farthest year's projection as a representative 'full year' measure.

In determining the timing of revenue impacts, a methodology aligned with [Romer and Romer \(2010\)](#) is used. It assumes that tax changes are effective in the latter half of a quarter. If a change is legislated before a quarter's midpoint, its revenue effects are attributed to the current quarter. If legislated after the midpoint, the effects are allocated to the subsequent quarter.

3 Properties of Exogenous Tax Changes

This section describes the property of narratively identified exogenous and unanticipated tax changes, which is later used in the empirical analysis.

3.1 Properties of Exogenous Tax Changes

Drawing from narrative sources, I identified 752 legislated tax actions, of which 631 qualify as 'exogenous'. Adapting the methodology of [Romer and Romer \(2010\)](#), I express the estimated revenue effects as a fraction of the annualized nominal GDP for the quarter of their respective implementation, as presented in Figure 1.

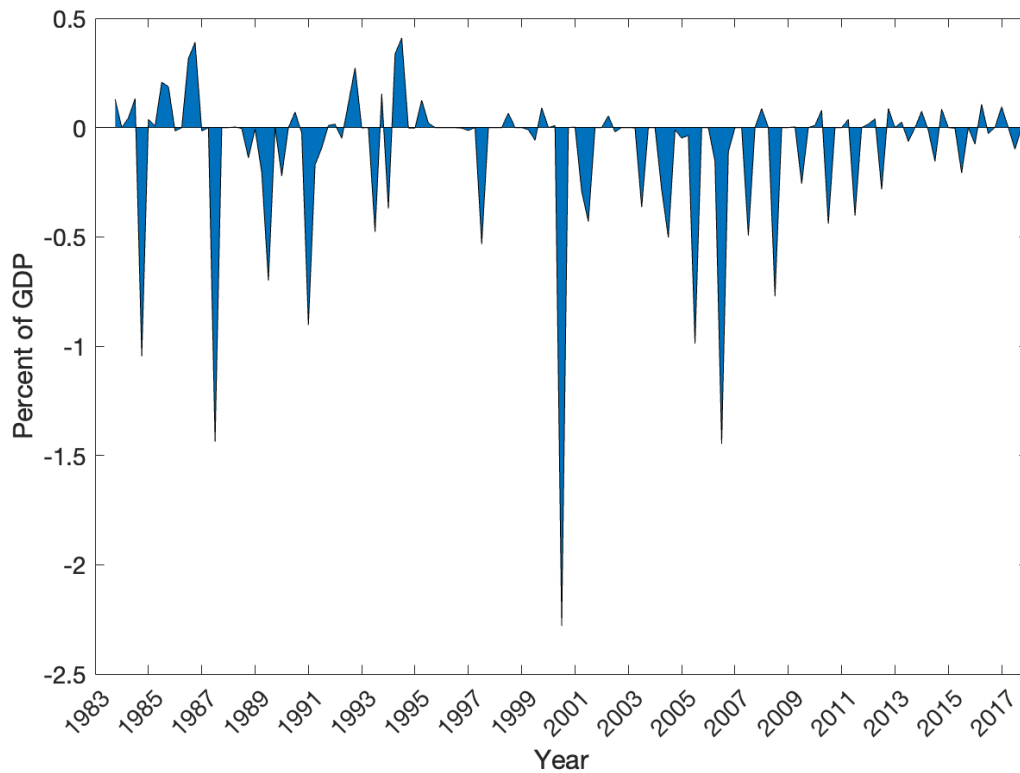


Figure 1: Exogenous Tax Policy Changes in Australia from 1983Q4 to 2018Q4

The nature of exogenous tax changes is evident, akin to patterns observed in [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#). A majority of the quarterly observations in the series register as zero, underscoring the discrete nature of legislated tax reforms. The series spans from 1983 to 2018 and displays exogenous tax actions distributed throughout this period. As seen in prior studies, tax reductions are more frequent, with the series averaging a change of -0.0917%. Notably, the most pronounced reduction corresponding to the A New Tax System (Goods and Services Tax) Act 1999.

Figure 2 organises the exogenous tax changes into three categories. Foremost among these are measures targeting Australia’s long-term economic growth. Notable initiatives in this grouping encompass the Personal Income Tax Cuts Act of 1999, integral facets of the 1985 Tax System Reform, and a series of five personal income tax cuts spanning the commodity price surge from 2003 to 2007.

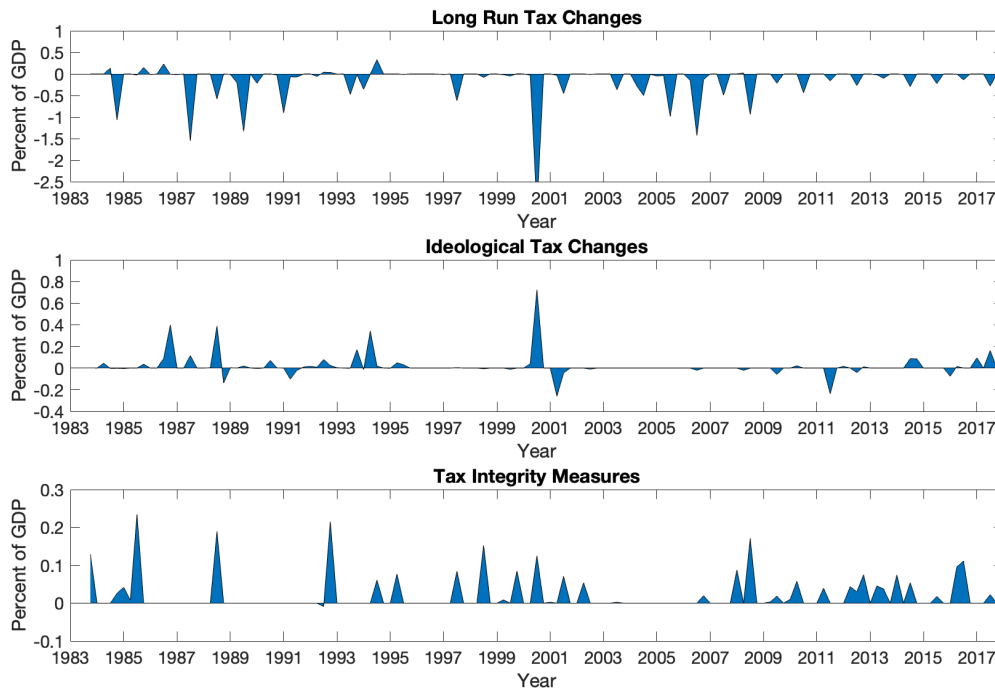


Figure 2: Components of Exogenous Tax Changes from 1983Q4 to 2018Q4

Second, the 1980s witnessed a surge in ideological tax changes, predominantly in the form of increase in oil excises. This period was characterised by heightened concerns over energy security, which led to the introduction of tax measures like the Excise Tariff Amendment Bills of 1987 and 1988. Furthermore, public health considerations also drove the imposition of excises on alcohol and tobacco products through out the sample period. These fiscal measures reflect a broader governmental objective to improve societal health outcomes.

Lastly, to enhance the integrity of the tax system and reduce tax evasion and avoidance practices, various legislative measures were instituted. The most significant among these were the Tax Integrity Act of 2018 and the Multinational Tax Avoidance Bill of 2017, both of which sought to ensure a fair and transparent taxation system.

3.2 Properties of Unanticipated Tax Changes

Figure 3 delineates narrative estimates of unanticipated tax modifications in Australia spanning from 1983 to 2018. Constituting a specialized subset of a broader array of exogenous tax variations, this quarterly series specifically focuses on tax policies characterized by an implementation lag of fewer than 90 days. Adhering to the framework established by [Mertens and Ravn \(2014\)](#), these unanticipated tax alterations serve as external instruments for isolating structural tax shocks in the context of the Australian economy for the ensuing empirical investigation.

Based on the narrative analysis, 359 out of a total of 752 legislated tax changes qualify as unanticipated. On average, these unanticipated tax changes represent -0.04% of Australia’s GDP, with a standard deviation of 0.29%. Among these, the two most significant unanticipated tax modifications are the personal income tax cuts of 1984 and 2007, introduced by the Hawke and Rudd-Gillard governments, respectively.

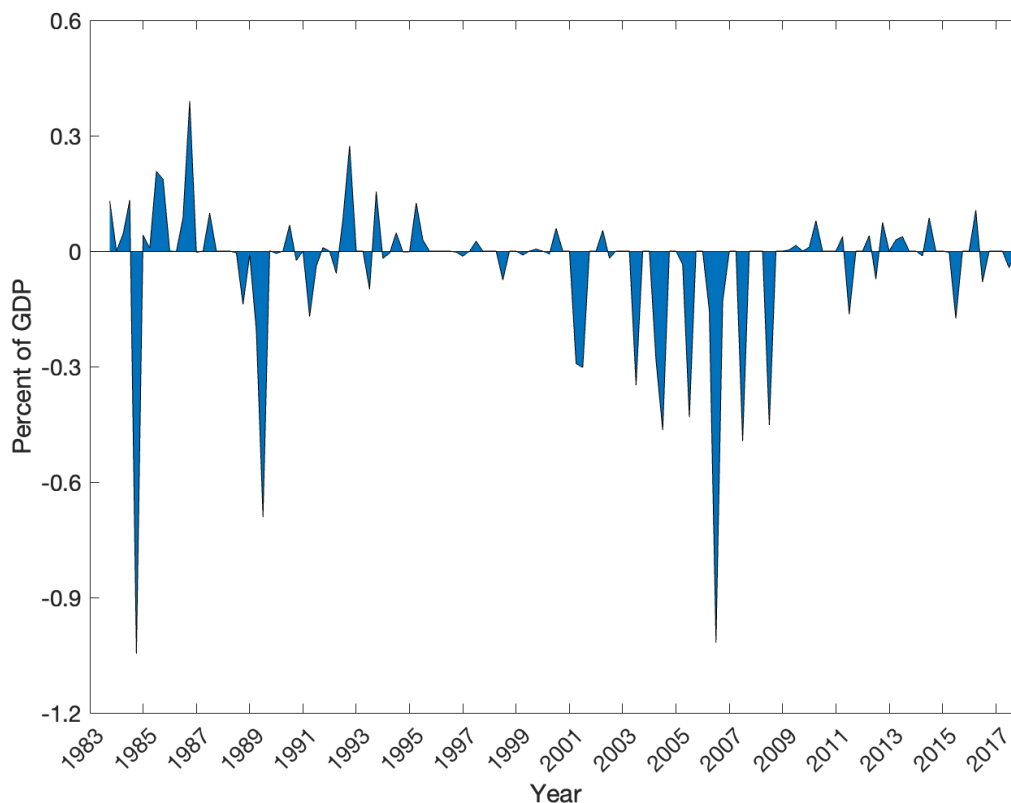


Figure 3: Narrative Measure of Unanticipated Tax Changes in Australia from 1983 to 2018

3.3 Testing the Exogeneity and Relevance of the “Exogenous” Tax Changes

I test the exogeneity of the tax instruments by conducting a Granger causality test using a seven-variable vector autoregression (VAR) model following [Toda and Yamamoto \(1995\)](#) with the narrative tax changes, tax revenue, government spending, output, the inflation rate, interest rates and the real exchange rate. The model includes a constant and five lags of each variable. The details of the Granger Causality tests are discussed in the online Appendix B.

The Granger causality test results in [Table 1](#) show that the exogenous and unanticipated tax changes exhibit p-values of 0.2612 and 0.2496, respectively, implying that these “exogenous” tax series are not predictable from past values of the other macroeconomic

variables, thus enhancing the exogeneity of the narrative tax measures. The endogenous series have a p-value of 0.0217, indicating that the "endogenous" tax changes are predictable from past values of the macroeconomic variables.

Table 1: Granger Causality Results - Seven Variable VAR

	F-Statistic	p-Value
Exogenous Series	1.2148	0.2612
Unanticipated Series	1.2300	0.2496
Endogenous Series	1.9074	0.0217

Consequently, I conduct a regression of the real commodity prices against unanticipated tax changes, incorporating four lags and a constant. The findings, shown in Table 2, reveal that the null hypothesis—stating the real commodity price does not Granger-cause the exogenous tax series—is not rejected at a 5% significance level. This result further affirms the tax series' exogeneity.

Table 2: Granger Causality Results - Real Commodity Prices

	F-Statistic	p-Value
Exogenous Series	1.7963	0.1336
Unanticipated Series	0.6026	0.6615

4 LP-IV Methodology

4.1 Methodology

The estimation of dynamic causal effects of Australian tax changes is achieved by using the local projections-IV (LP-IV) method of [Stock and Watson \(2018\)](#), who combine the local projections proposed by [Jordà \(2005\)](#) with the use of instrument variables. Following [Mertens and Ravn \(2014\)](#), I treat the narrative measure of unanticipated exogenous tax changes as an external instrument for structural tax shocks. The causal effect of exogenous tax changes is estimated by a linear regression of

$$Y_{i,t+h} = \Theta_{h,i1}Y_{1,t} + \gamma'_h W_t + u_{i,t+h}^{h\perp} \quad (1)$$

where $Y_{i,t+h}$ represents the forecasted value of the macroeconomic variable of interest for h periods into the future, $\Theta_{h,i1}$ quantifies the dynamic causal impact of changes in tax policy on the variable i . W_t comprises a vector of control variables that includes the lagged values of Y . $u_{i,t+h}^{h\perp}$ encapsulates a series of orthogonal residuals, such as

$\varepsilon_{t+h}^\perp, \dots, \varepsilon_{t+1}^\perp, \varepsilon_{2:n,t}^\perp, \varepsilon_{t-1}^\perp, \varepsilon_{t-2}^\perp, \dots$, where n denotes the total number of variables and $\varepsilon_{1,t}$ is identified as the exogenously determined structural tax shock. The notation ' \perp ' indicates the orthogonal residual resulting from the projection of population data onto W_t ; for example, $x_t^\perp = x_t - \text{Proj}(x_t|W_t)$ adjusts variable x_t with respect to the controls in W_t . The constant term is omitted for brevity.

Let Z_t be a vector of tax proxies. The assumptions for instrument validity are

Assumption 1. *LP-IV $^\perp$*

- (i) $E(\varepsilon_{1,t}^\perp Z_t^{\perp'}) = \alpha' \neq 0$ (*relevance*)
- (ii) $E(\varepsilon_{2:n,t}^\perp Z_t^{\perp'}) = 0$ (*contemporaneous exogeneity*)
- (iii) $E(\varepsilon_{t+j}^\perp Z_t^{\perp'}) = 0$ for $j \neq 0$ (*lead-lag exogeneity*)

Assumption (i) implies that the proxy z_t is correlated with the shocks to tax revenue. Assumption (ii) requires z_t to be systematically uncorrelated with other concurrent macroeconomic events. Assumption (iii) implies that z_t is systematically uncorrelated with past or future shocks other than the tax shock $\varepsilon_{1,t}$. With the scale normalisation $\Theta_{0,11} = 1$, I assume that a unit decrease in $\varepsilon_{1,t}$ decreases $Y_{1,t}$ by one percentage points.

Then $\Theta_{h,i1}$ can be estimated from equation (1) following [Stock and Watson \(2018\)](#):

$$\Theta_{h,i1} = \frac{E(Y_{i,t+h}^\perp Z_t^{\perp'}) \text{HE}(Z_t^\perp Y_{1,t}^\perp)}{E(Y_{1,t}^\perp Z_t^{\perp'}) \text{HE}(Z_t^\perp Y_{1,t}^\perp)} \quad (2)$$

where H is any positive semi-definite matrix.

Hence, the policy effect of a one unit intervention in ε_t , h periods ahead is

$$\Theta_{h,i1} = E_t(Y_{i,t+h} | \varepsilon_{1,t} = 1) - E_t(Y_{i,t+h} | \varepsilon_{1,t} = 0) \quad (3)$$

4.2 Data and Specification

The benchmark local projection includes the following variables:

- (i) the log of real tax revenue,
- (ii) the log of real government spending (sum of government consumption and investment),
- (iii) the log of real GDP,
- (iv) Inflation (the percentage change of GDP Implicit Price Deflator compared to the same period one year earlier),
- (v) the 90-Day Treasury Bill Rate and
- (vi) the log of the real exchange rate (an increase is an appreciation).

The first three terms are expressed in per capita terms. The controls W_t includes three lags of each variable and a constant term. Tax Revenue, government spending

and GDP are from Australian National Accounts, and are seasonally adjusted by the original sources.¹³ Tax revenue is deflated using the GDP deflator and the government spending is defined as the sum of public gross fixed capital formation and government final consumption expenditure. Government spending and GDP per capita are chain volume measures.

The inflation and 90-Day Treasury Bill Rate are expressed in levels and are from the Reserve Bank of Australia. The real exchange rate is the Australian dollar trade-weighted exchange rate index adjusted for relative consumer price levels: see [Ellis \(2001\)](#) for details. My sample runs from 1983Q4 to 2018Q4.

My benchmark specification is an extension of [Blanchard and Perotti \(2002\)](#) and [Perotti \(2005\)](#). [Monacelli and Perotti \(2010\)](#) and [Corsetti et al. \(2012a\)](#) also apply a similar specification to study the effects of fiscal policy on output and the trade balance in the United States.

5 Empirical Results

In this section, I report the response of key macroeconomic variables to a shock corresponding to a 1% decrease in tax revenue with a 68% confidence interval. The impulse responses with 90% and 95% confidence intervals are reported in the Online Appendix E.

5.1 Benchmark Results

Before turning to the main results, I provide formal statistical tests to verify the relevance assumption in Assumption 1. Verifying these assumptions is important to assess whether weak instrument problems may bias our conclusions.

The relevance condition in the LP-IV framework is standard for linear IV models. Using the baseline LP-IV specification, the value for the first stage F-statistics (using a [Newey and West \(1987\)](#) HAC-robust residual covariance matrix with 13 lags) is 1.37 for the unanticipated exogenous tax changes. The values are well below the threshold value of 10 proposed by [Stock and Yogo \(2002\)](#), indicating that the narrative measure of unanticipated tax changes is weakly relevant for tax revenue.¹⁴

[Olea et al. \(2021\)](#) and [Stock and Watson \(2012\)](#) reported that standard inference might be invalid when the instrument is weak. To this end, I report the Anderson-Rubin confidence interval in my robustness checks showing that the weak instrument has

¹³The details of the data source are reported in Online Appendix F.

¹⁴As reported in [Ramey \(2019\)](#) and [Ramey \(2016\)](#), most narrative measure of fiscal policies are weak instruments. For example, [Ramey \(2016\)](#) reports that the first stage regression on tax revenue for [Romer and Romer \(2010\)](#) tax shocks is only 1.4. Further, some popular measure of government spending shocks that exclude the Korean War - [Ramey \(2011\)](#) and [Ben Zeev and Pappa \(2017\)](#)- are well below 10.

minimal impact on the statistical significance of the point estimates.

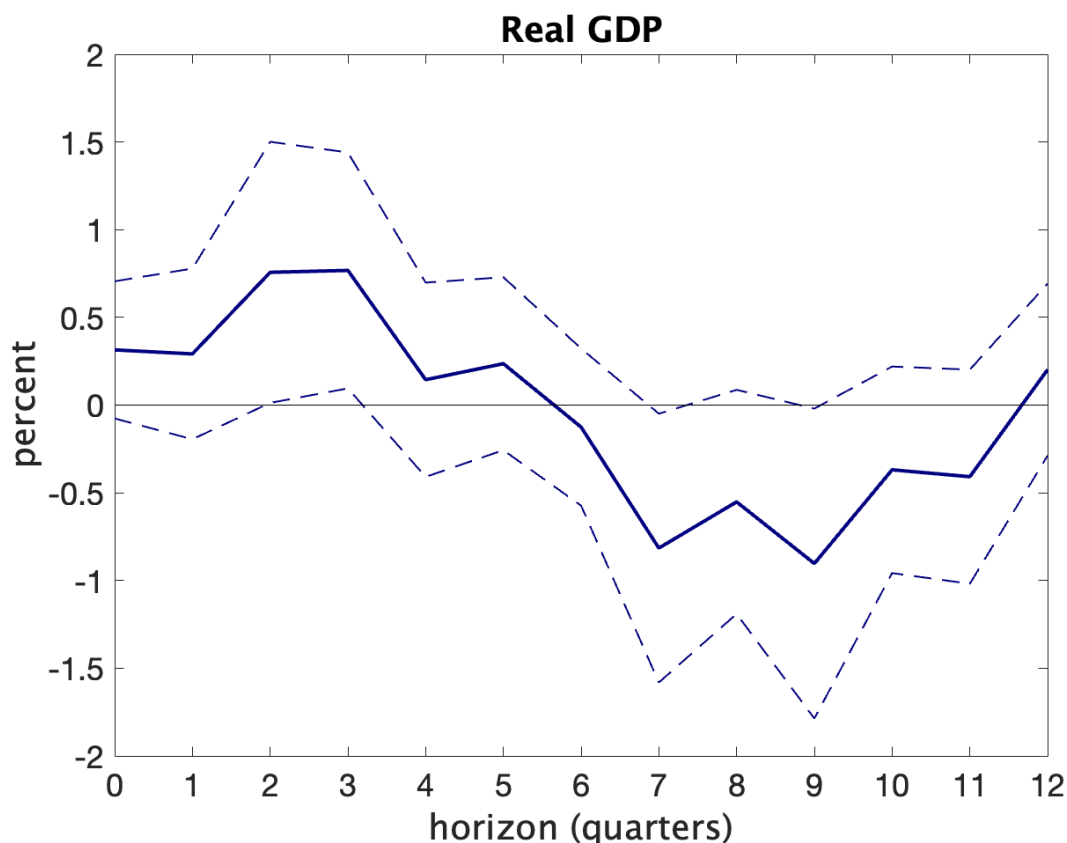


Figure 4: Response of real output per capita to a one percent decrease in tax revenue
 Note: The impulse response function is estimated based on a six-variable local projection (LP) $y_t = (T, G, Y, \pi, i, E)_t$ with 3 lags and an intercept. The estimated impulse response function is represented by the solid line, and the dashed line represents the 68% standard confidence interval based on the [Newey and West \(1987\)](#) HAC-robust residual covariance matrix.

Figure 4 presents the output response to a tax revenue shock under the benchmark specifications, where the shock corresponds to a 1% decrease in tax revenue. The figure shows the impulse response function alongside 68% confidence bands, constructed using the standard 2SLS inference procedures with the [Newey and West \(1987\)](#) HAC-robust standard errors.

The response of GDP is both positive and statistically significant at the 10% significance level, peaking at approximately 0.76% after three quarters, before quickly returning to its trend. This result contrasts with the findings of [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#), who document positive and persistent effects of tax cuts on output. In the Australian context, however, the evidence suggests that the effects of tax changes are transitory, with no permanent effects on output.

The transitory nature of output responses to tax changes in Australia can be attributed to the specific characteristics of both corporate and personal income tax policies. First, unlike UK and the US, Australia has relied heavily on indirect mechanisms

such as bracket creep, with infrequent direct reductions in statutory tax rates. Bracket creep occurs when inflation pushes taxpayers into higher marginal tax brackets without a corresponding increase in real income, effectively raising the average tax burden without explicit policy changes. This phenomenon limits the expansionary effects on aggregate demand, as taxpayers' disposable income does not increase proportionally. Consequently, Australia's infrequent personal income tax cuts, such as the 1989 reforms under the Hawke Government, have had limited success in generating sustained increases in consumption or investment. In contrast, direct tax rate reductions in the United States and the United Kingdom—such as the *Tax Reform Act of 1986*, which lowered the top U.S. marginal income tax rate from 50% to 28%, and the Thatcher government's reforms, which reduced the top U.K. marginal rate from 83% to 40%—provided more substantial and persistent fiscal stimulus. As [Dabla-Norris and Lima \(2023\)](#) highlight, changes in the tax base often lead to smaller and less significant effects on economic activity compared to cuts in tax rates.

Second, corporate tax reforms in Australia have likewise been infrequent, contributing to muted and temporary effects on investment and output. The reduction of the corporate tax rate from 36% to 30% in 2001 represents the most recent significant adjustment. In contrast, the United States and the United Kingdom have pursued more proactive corporate tax policies aimed at fostering long-term economic growth. The U.S. *Tax Reform Act of 1986* reduced the corporate tax rate from 46% to 34%, followed by the *Omnibus Budget Reconciliation Act of 1993*, which introduced targeted incentives such as extended investment tax credits and accelerated depreciation allowances. Similarly, the U.K. reduced corporate tax rates from 52% in 1982 to 33% by 1986, and further to 30% by 1999. These more aggressive tax cuts, combined with fiscal incentives designed to stimulate capital formation, have consistently supported higher levels of private investment and financial inflows. In contrast, the limited scope of corporate tax reforms in Australia has constrained its ability to attract long-term capital, thereby dampening prospects for sustained improvements in productivity, investment, and economic growth.

Figure 5 illustrates the output responses to a tax policy shock, specifically a decrease in tax revenue equivalent to 1% of GDP. The estimated tax multipliers for Australia are derived by multiplying the impulse response from Figure 4, expressed in log terms, by the sample average GDP-to-tax revenue ratio following [Blanchard and Perotti \(2002\)](#), which is approximately 3.59. Figure 5 indicates that tax multipliers in Australia are slightly above 2.7 after three quarters.

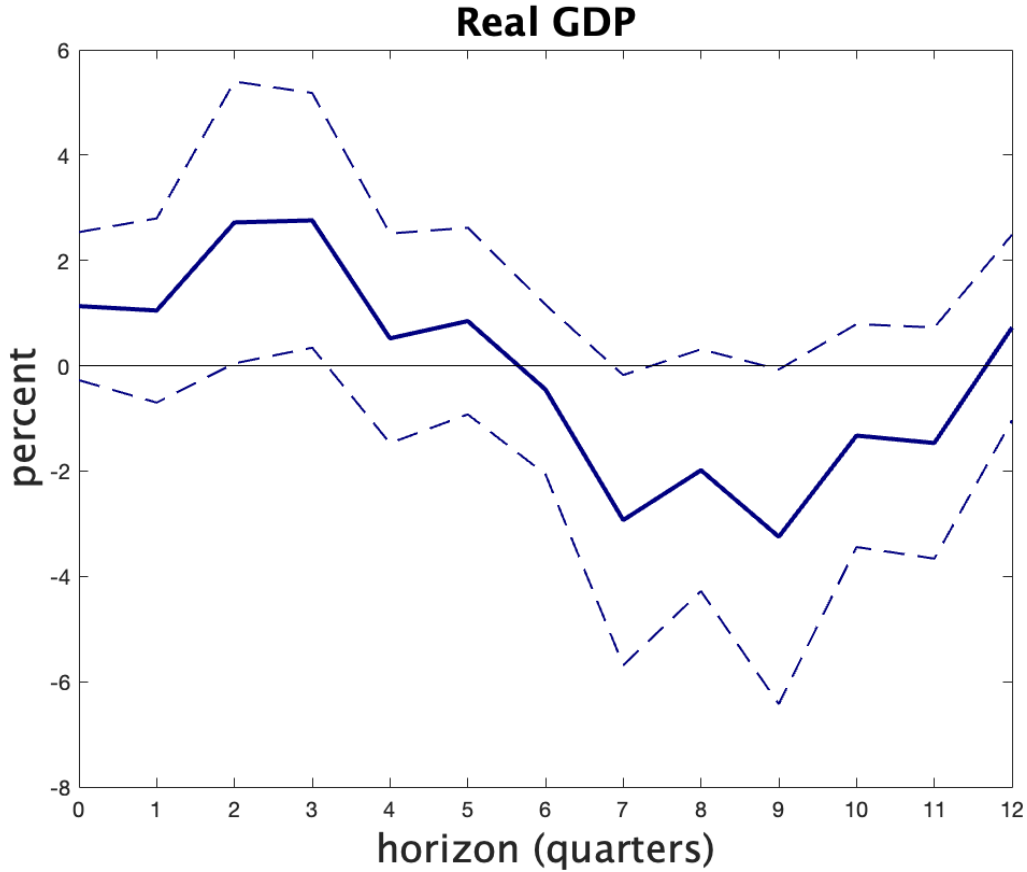


Figure 5: Response of real output per capita to one dollar decreases in taxes
 Note: The impulse response function is estimated based on a six variable local projections $y_t = (T, G, Y, \pi, i, E)^t$ with three lags and an intercept. The estimated impulse response function is represented by the solid line and the dashed line represents the 68% standard confidence interval based on a [Newey and West \(1987\)](#) HAC-robust residual covariance matrix.

5.2 Results for Key Variables

Figure 6 displays the response of key variables of the benchmark specification to a tax revenue shock corresponding to a one percent decrease in tax revenue. For each variable, the figure displays the impulse response and the 68% confidence bands constructed using the HAC-robust residual covariance matrix as proposed by [Newey and West \(1987\)](#).

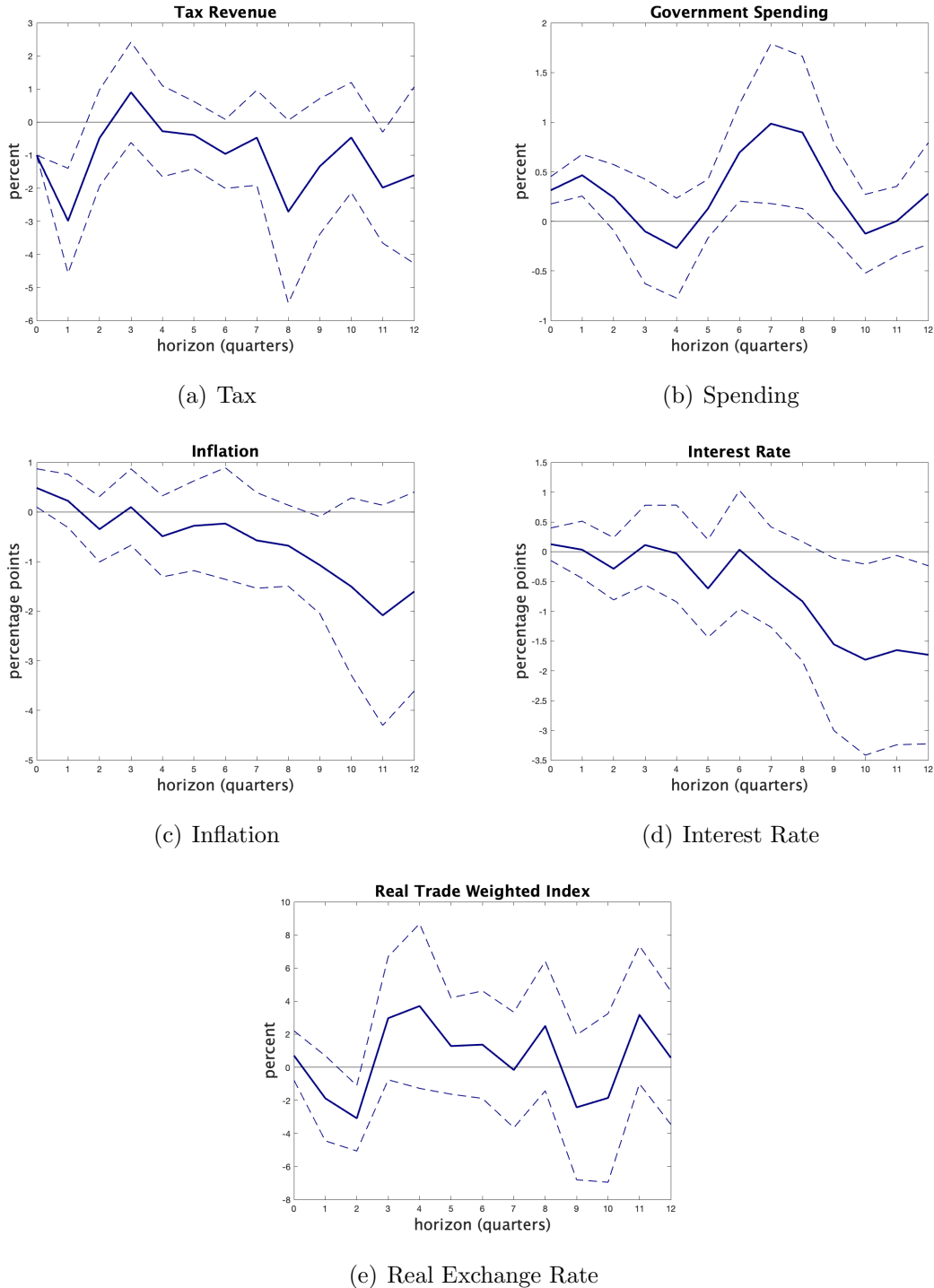


Figure 6: Responses of key economic variables to a one percent decrease in tax revenue. Note: All impulse response functions are estimated based on a six-variable local projection (LP) $y_t = (T, G, Y, \pi, i, E)_t$ with 3 lags and an intercept. The estimated impulse response functions are represented by the solid line, and the dashed line represents the 68% standard confidence interval based on [Newey and West \(1987\)](#) HAC-robust residual covariance matrix.

The empirical analysis reveals a transitory decline in tax revenues, with a decrease of approximately three percent observed after one quarter, followed by a rapid reversion to the trend. In contrast, government spending exhibits an immediate positive response,

initially increasing by 0.3 percent and reaching a peak of approximately one percent after seven quarters. Inflation experiences a notable surge, rising by 0.48 percentage points shortly after the tax cut, before reverting to its trend level within one quarter. Meanwhile, the interest rate remains unchanged throughout the first year, suggesting that monetary policy remains accommodative in the short run. This stance reflects a strategic decision to allow the tax cuts to exert their full influence on the economy without the countervailing effects of monetary tightening. Additionally, the real exchange rate depreciates temporarily, declining by about three percent after two quarters.

It is important to note that the response of most key macroeconomic variables becomes statistically insignificant after one year. Therefore, the evidence from Australia does not support the hypothesis that tax cuts have a significant and positive long-term impact on macroeconomic equilibrium.

Following [Plagborg-Møller and Wolf \(2021\)](#), I also compare the benchmark results to the estimates from the SVAR using the same set of variables with three lags. The results are discussed in the online Appendix C and D. The main finding from this comparison is that the SVAR estimates are comparable with those in the LP-IV in the short term.

6 Robustness

In this section, I test the sensitivity of my main finding that change in taxes have large and transitory effects on output. I investigate the sensitivity to various specifications. I also examine the sensitivity of the statistical significance by using the weak instrument robust inference method.

6.1 Control for Global Economic Activity

For commodity-exporting economies like Australia, global economic conditions can have a powerful impact on output. By construction, my narrative tax measure should not be correlated with other determinants of output, and the LP-IV should yield unbiased estimates of the effects of tax changes. As [Céspedes and Velasco \(2014\)](#) and [Bjørnland and Thorsrud \(2016\)](#) explicitly state that there is a positive correlation between global economic activity and tax revenue in commodity-exporting economies, it is crucial to test the robustness of my findings by including an indicator of global economic conditions.

To do so, I control for global economic activity by using the Global Economic Conditions Indicator provided by [Baumeister et al. \(2022\)](#) and estimate a seven-variable local projection. The global economic activity data also starts from 1983Q4. As before, I include three lags.

Figure 7 shows that controlling for global economic conditions has minimal impact on the estimated effects of tax changes. The maximum output effect of a tax decrease

of one percent is around 0.73 percent, which is slightly smaller than the estimate from the baseline LP-IV. Moreover the Granger causality shows that there is no evidence of the measure of the narrative tax changes responding to the global economic activity: the p-value for the test of the null hypothesis that global economic activity does not enter the equation for the narrative tax changes is 0.4342.

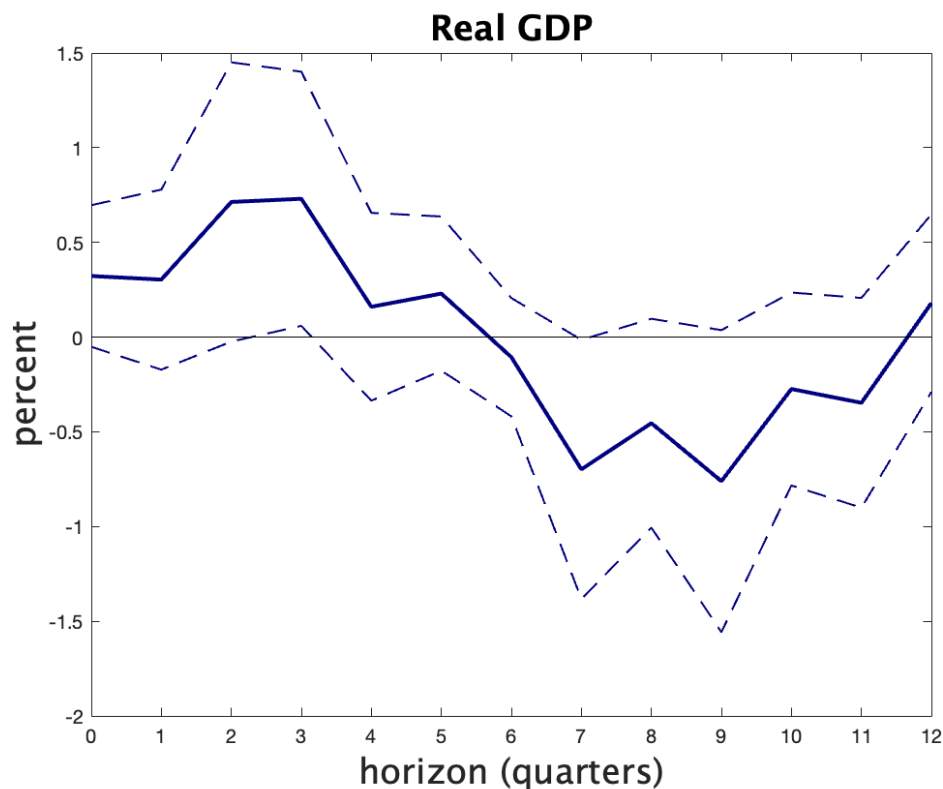


Figure 7: Response of real output per capita to a one percent decrease in tax revenue
 Note: The impulse response function is estimated based on a seven-variable local projection (LP) $y_t = (T, G, Y, \pi, i, E, GEN)_t$ with 3 lags and an intercept. The estimated impulse response function is represented by the solid line, and the dashed line represents the 68% standard confidence interval based on [Newey and West \(1987\)](#) HAC-robust residual covariance matrix.

6.2 Controlling for Other Variables

While global economic activity is a prominent omitted variable, it is not the only factor that may influence output and correlate with changes in tax revenue. Other variables, which may coincidentally affect output in small samples, also warrant consideration. To address this, I extend the LP-IV model by sequentially incorporating a set of three additional variables. This expanded specification allows for the inclusion of three lags, providing a more comprehensive analysis.

The additional variables include the logarithm of working hours, which captures business cycle fluctuations and their interaction with fiscal policies; the trade balance as a percentage of GDP, which accounts for the influence of international trade; and a measure

of oil supply shocks, as provided by [Baumeister and Hamilton \(2019\)](#).¹⁵

When controlling for working hours, the GDP response is positive, peaking at approximately 0.68% after three quarters. The maximum output effect of a one percent tax decrease is 0.81% and 0.84% when controlling for the trade balance and oil supply shocks, respectively. In all cases, the impact of tax changes on output remains positive and significant after three quarters.

These results underscore the robustness of the finding that tax cuts have positive and transitory effects on output. The fact that including controls for variables well-known to impact output has little effect on the estimated impact of tax changes provides important indirect evidence that our new measure of fiscal shocks is not correlated with other factors affecting output.

6.3 Weak Instrument Robust Inference

As highlighted by [Olea et al. \(2021\)](#) and [Stock and Watson \(2012\)](#), weak instruments can undermine the reliability of standard inference in local projections instrumental variables (LP-IV) models. When instruments are weak, estimates may be biased, and the associated confidence intervals can be misleading, potentially leading to incorrect conclusions regarding the effects of fiscal policy. Consequently, it is crucial to assess whether the weak instrument issue introduces bias into the baseline results. Addressing this concern is essential to ensure that the inferences drawn from the model accurately reflect the underlying economic relationships. To this end, I construct 68 percent Anderson-Rubin confidence intervals for the impulse response function, as recommended by [Olea et al. \(2021\)](#), to secure valid inference. The Anderson-Rubin approach is particularly valuable because it provides valid inference even in the presence of weak instruments, thereby serving as a critical robustness check.

Figure 8 presents the impulse response function alongside 68 percent standard confidence bands (depicted with blue dashed lines) and the Anderson-Rubin confidence intervals (depicted with red dashed lines). Notably, the standard confidence intervals are entirely bounded by the weak-instrument-robust confidence intervals. This alignment is highly informative, as it suggests that the conclusions derived from the standard LP-IV approach are consistent with those obtained using the more conservative Anderson-Rubin method. This consistency implies that the potential weak instrument problem does not bias the estimated output effect of tax changes, providing reassurance that the standard LP-IV estimates are not compromised by weak identification.

The fact that the standard confidence intervals are bounded within the Anderson-Rubin intervals is significant for several reasons. First, it indicates that the standard

¹⁵The oil supply shock series was converted from monthly to quarterly by summing the corresponding monthly observations.

inference procedures employed in the LP-IV model are reliable, as the results are corroborated by the more conservative Anderson-Rubin approach. This consistency also implies that the estimated impulse responses are robust to potential weaknesses in instrument strength, which is crucial for the credibility of the empirical findings. The robustness of these results is particularly important for policy implications, as it ensures that the estimated effects of tax changes on output are not due to weak instruments.

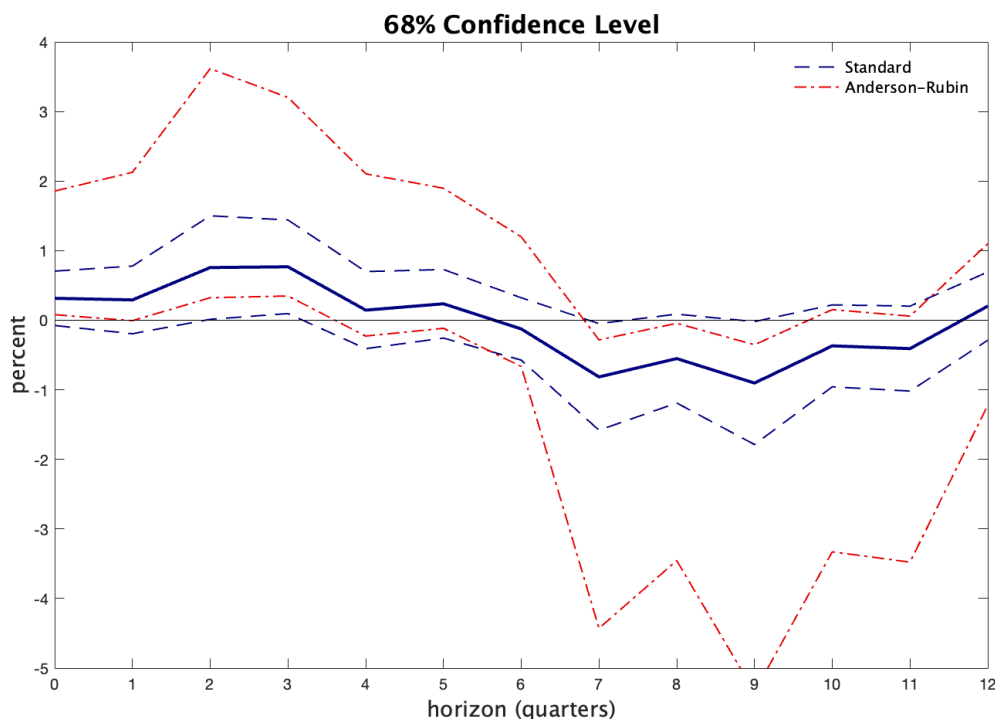


Figure 8: Response of real output per capita to a one percent decrease in tax revenue

Note: The impulse response function is estimated based on a six-variable local projection (LP) $y_t = (T, G, Y, \pi, i, E)_t$ with 3 lags and an intercept. The estimated impulse response function is represented by the solid line, and the dashed line represents the 68% standard confidence interval based on [Newey and West \(1987\)](#) HAC-robust residual covariance matrix and the red dashed line represents the 68% Anderson-Rubin confidence interval.

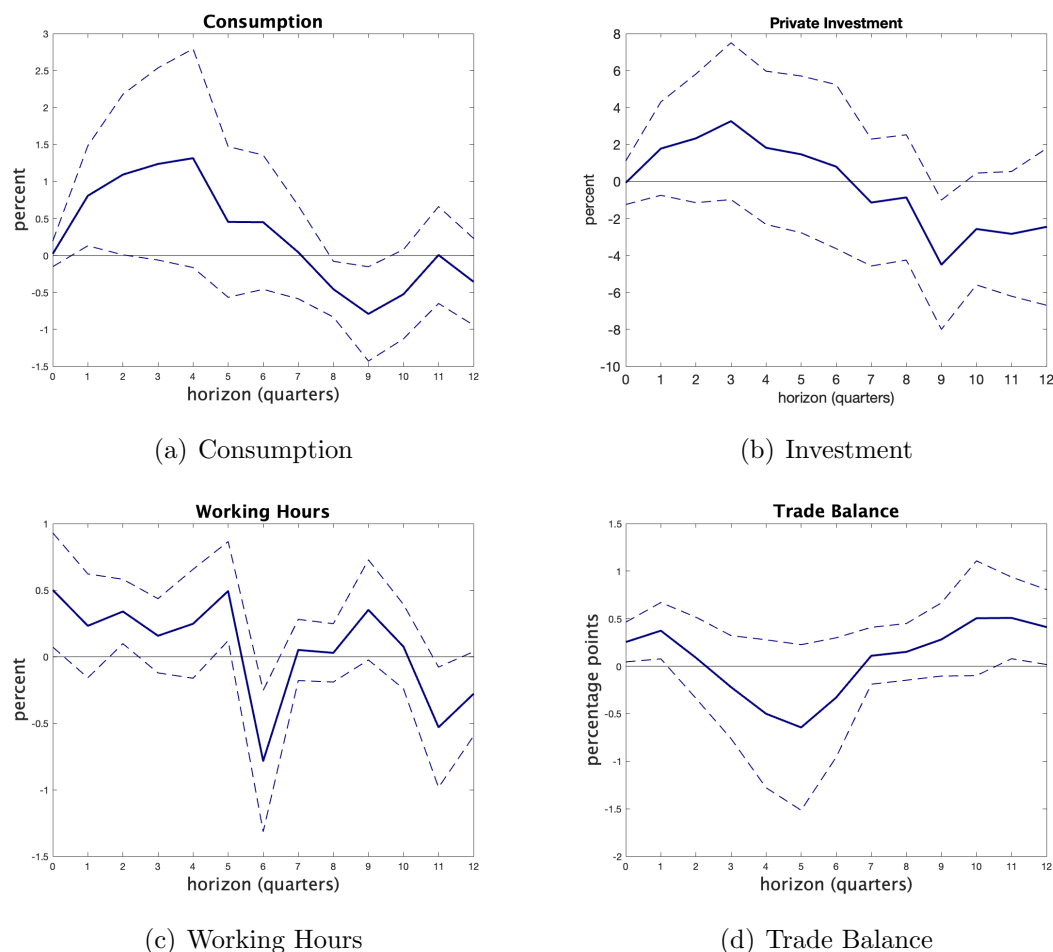
In conclusion, the concordance between the standard and Anderson-Rubin confidence intervals provides compelling evidence that the estimated impulse responses are not significantly affected by the potential weak instrument problem. This robustness check enhances the overall reliability and validity of the results, reinforcing confidence in the empirical findings and their implications for understanding the effects of fiscal policy.

7 The Transmission Mechanism

Recall that I find that tax cuts lead to transitory and positive effects on output. An obvious question arises as to why tax policies have such profound effects. To investigate

this, I examined various components of GDP, including consumption, investment, and working hours and trade balance.¹⁶

The specification follows the seven-variable local projection model, incorporating tax revenue, government spending, output, inflation, interest rate, and the logarithm of the GDP component. Consistent with previous specifications, I included three lags as control variables and focused on the sample period from 1983Q4 to 2018Q4.



Note: The impulse response function is estimated based on a seven-variable local projection (LP) $y_t = (T, G, Y, \pi, i, E, \text{components of GDP})_t$ with 3 lags and an intercept. The estimated impulse response function is represented by the solid line, and the dashed line represents the 68% standard confidence interval based on [Newey and West \(1987\)](#) HAC-robust residual covariance matrix.

Figure 9: Responses of consumption, investment, trade balance and working hours to a one percent decrease in revenue.

Results are shown in Figure 9. Figure 9(a) and Figure 9(b) show the response of consumption and investment to an exogenous decrease in tax revenue. The key result is that tax cuts leads to a positive and significant increase in household consumption, but there is no real effects on investment. In response to a tax decrease of one percent,

¹⁶Consumption and Investment are sourced from the Australian National Accounts, measured in chain volume and seasonally adjusted by the original sources.

consumption increases by 0.8 percent after one quarter and the maximum increase in consumption is approximately 1.3 percent after one year.

Different from the findings in [Romer and Romer \(2010\)](#) and [Cloyne \(2013\)](#), I do not find that tax cuts leads to a substantial increase in investment. One explanation is that tax cuts in Australia do not improve the cash flow and overall economic condition, so the effects on investment remains insignificant for all forecast horizons. Another candidate explanation is that my exogenous tax changes barely include features that affect the monetary incentives for investment. ¹⁷

The strong negative relationship between consumption and tax changes also helps explain the size and persistence of the overall estimated effect on output. Recall that I find a one percent decrease in tax revenue increases GDP by approximately 0.76% after three quarters. A significant portion of this effect appears to be driven by the procyclical behaviour of consumption. The negative correlation between consumption and tax changes further addresses the magnitude and persistence of the overall estimated impact on output. This result underscores that the procyclical behaviour of consumption plays a pivotal role in driving the observed effects on output, thereby highlighting the significance of household behavior in the transmission of tax policy shocks.

Figure 9(c) depicts the response of working hours to an exogenous tax cut. The data reveal an immediate and significant increase of 0.5 percent in working hours following the tax cut, with the effect reaching its maximum at 0.55 percent after five quarters. This response further reinforces the conclusion that the effects on output are primarily attributable to the behaviour of households.

Figure 9(d) illustrates the response of the trade balance to an exogenous tax cut. Initially, the trade balance improves by 0.37 percentage points of GDP, indicating short-run crowding-in of net exports due to the budget deficit in Australia. This improvement can be attributed to the positive wealth effect of personal income tax cuts, consistent with the predictions of recent open economy New Keynesian models.¹⁸ However, after three quarters, the trade deficit worsens, accompanied by a pronounced depreciation of the real exchange rate. As [Monacelli and Perotti \(2010\)](#) explain, this outcome arises because the positive wealth effect from the tax cuts stimulates private consumption, necessitating a depreciation of the exchange rate under the international risk-sharing condition.

My model predicts a negative correlation between the real exchange rate and private consumption in response to a tax policy shock.¹⁹ This may be driven by a bias

¹⁷Unanticipated exogenous actions include adjustments to investment incentives, such as the immediate expensing provisions introduced in the 2017-18 Budget, the modification of the research and development concession in the 1994-95 Budget, and the corporate tax rate reduction in the 1988-89 Budget, although the latter's magnitude was relatively small. Other changes, like the corporate tax cuts introduced in 2000 and 2016, are classified as anticipated due to the extended implementation lags associated with these measures.

¹⁸See [Monacelli and Perotti \(2010\)](#) and [Gali and Monacelli \(2005\)](#) for a detailed discussion.

¹⁹This result aligns with [Monacelli and Perotti \(2010\)](#), who observe a similar depreciation in the real

towards home consumption. When a tax cut occurs, the relative increase in domestic consumption compared to the rest of the world leads to a higher demand for domestically produced tradable goods over imports. Consequently, an appreciation in the terms of trade deteriorates the trade balance and depreciates the exchange rate in the short run.

8 Conclusion

This paper investigates the motivation and macroeconomic effects of tax changes following the floating of the Australian dollar. Despite the complexity of the Budget process, I find that most significant tax changes can be categorized into two main groups: those driven by relative economic conditions and those motivated by factors unrelated to output. The latter, which are more exogenous in nature, provide a suitable basis for estimating the effects of tax changes on output.

The results indicate that tax changes have substantial but transitory effects on output. The baseline specification suggests that a 1% decrease in tax revenue leads to a 0.76% increase in real GDP after three quarters, equivalent to a 2.7% increase following an exogenous tax decrease of one percent of GDP. Robustness checks yield elasticity estimates between taxes and output ranging from 0.64% to 0.84%.

Consistent with the findings of [Cloyne \(2013\)](#) and [Romer and Romer \(2010\)](#), these results should be interpreted as the average effect of a one percent decrease in tax revenue. It is important to note that different types of taxes may have varying impacts on output and other macroeconomic aggregates, presenting an interesting avenue for future research.

However, the precision of my estimates is limited by the weak instrument problem and the broad confidence intervals. When examining more specific questions, such as the response of output to corporate tax changes or the behaviour of the exchange rate following a tax change on tariffs, the estimated effects are essentially zero, with wide confidence intervals.

An important direction for extending this analysis is to explore the role of exchange rate regimes and monetary policy regimes in shaping the macroeconomic effects of tax changes (see, for example, [Ramey and Zubairy \(2018\)](#); [Caggiano et al. \(2015\)](#); [Fazzari et al. \(2021\)](#)). There are compelling reasons to expect that the output response to tax changes may depend on the institutional framework governing monetary policy. Investigating this aspect could provide valuable insights into both the transmission mechanisms of tax changes and the broader properties of the macroeconomy.

exchange rate following an increase in private consumption.

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