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Boosting confidence:  
is there a role for fiscal policy?

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# **BOOSTING CONFIDENCE: IS THERE A ROLE FOR FISCAL POLICY?**

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## **ABSTRACT**

This paper investigates the widely held view that expansionary fiscal policy can boost consumer and business confidence, which will stimulate private spending and sustain economic activity. We find evidence in favor of this conjecture, i.e., cuts in direct taxes generate a positive effect on consumer and business confidence, while the same applies in cases of higher non-wage government consumption. However, higher government wage bills and government investment reduce confidence, possibly because they entail a permanent increase in the size of the public sector, which would have to be financed by higher future taxes.

*Keywords:* Fiscal Policy, Consumer Confidence, Business Confidence, Fiscal Stimulus of Confidence

*JEL Classification:* E62, H31, H32

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## 1. Introduction

In view of the rapidly evolving downturn in economic activity back in 2008-9, several international organizations, like the IMF (IMF, 2009), government officials, press commentators and labor union member expressed the view that fiscal policy action was urgently needed in order to fend off the risk of a protracted recession (Blanchard and Cottarelli, 2008; Corsetti, 2008; Freedman *et al.*, 2009; Krugman, 2008; Trichet, 2009). Along the same lines, the Economist in an article headed “The next front is fiscal” on October 30<sup>th</sup> 2008 clearly stated that “Interest rate cuts are welcome; but as a global recession looms the case for fiscal stimulus grows”.

Several governments around the globe decided to undertake decisive actions by means of tax cuts and spending increases with two main goals. The first was to alleviate the effects of the economic crisis on low income households, who are the most affected by economic crisis, because, since they face binding credit constraints, they are unable to sustain their consumption levels. In addition to the Keynesian multiplier effects in situations with prevailing frictions – either nominal or real – the main thesis is that expansionary fiscal policy in bad times can lead to increases in consumption by relaxing binding constraints credit constraints (Aghion et al., 2009; Galí, López-Salido and Vallés, 2007; Tagkalakis, 2008).

The second goal was to boost both consumer and business confidence, aiming at sustaining economic activity and stabilizing the financial system. It is a widely held view that the positive effect on consumer confidence is expected to reduce the risk of increasing precautionary saving, thereby leading to higher consumer spending, which in turn will sustain domestic demand and safeguard or boost near-term economic growth.<sup>1</sup> In the same vein, improvements in business confidence are likely to lead to higher or at least sustained investment spending, while also affecting the decisions of firms regarding employment.

The present paper sheds light on the effects of fiscal policy on consumer and business confidence, regardless of whether or not it exerts an independent effect on the

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<sup>1</sup> However, according to the Ricardian view, in a world without frictions, higher spending or lower taxes will have to be matched by higher taxes in the future, so consumer spending will not be affected and all additional income will be saved.

macroeconomy. We build on earlier work by Fuhrer (1993) on the determinants of consumer confidence, and on work by Carrol et. al (1994), Howrey (2001), Ludvigson (2004) and Easaw et al (2005) on the predictive content of consumer confidence, and assess the effects of different components of taxes and government spending on economy-wide confidence indicators. In particular, after controlling for relevant factors, we investigate whether higher government spending and/or tax cuts can affect consumer and business prospects. That is we examine whether government actions can indeed create a “confidence effect”, namely whether an increase in government spending or tax cuts can boost confidence, which may then have an indirect effect on private demand (i.e. independent of the direct effect of government spending on economic activity).

We study the effect of fiscal policy on confidence indices rather than on the relevant macroeconomic aggregates (consumption and investment) because these survey indicators are used to forecast future business cycle movements. Moreover, these confidence indices are taken on board by policy makers when designing future policies. On top of that, the exact composition of a fiscal consolidation or a fiscal stimulus package can have significant confidence effects which can then have important implications for the impact of fiscal policy actions on macroeconomic aggregates. For example, in the context of a fiscal consolidation program, widespread tax hikes might not be perceived well by the general population and the business community, impacting negatively on confidence and consequently on economic activity. On the other hand, targeted spending cuts, e.g. the governments’ wage bill, might boost confidence because they reduce the current and future tax burden of economic agents. In addition, business confidence might improve if these spending cuts on the government’s wage bill generate competitiveness gains. This will be the case if these developments influence private sector wage developments and reduce unit labor costs in the economy at large (Alesina and Perotti, 1997).

Our findings verify the widely-held view that tax cuts and some government spending components can boost consumer and business confidence. Reductions in total direct and personal direct taxes improve consumer confidence; similarly lower total direct and business direct taxes lead to improved business confidence. However, we also find that a higher government wage bill and higher government investment reduce consumer

confidence, possibly because they entail a permanent increase in the size of the public sector, which would have to be financed by future taxes. Surprisingly, we also find that increases in indirect taxation improve business confidence, while having an insignificant impact on consumer confidence.

The remainder of the paper is organized as follows. The next section reviews the recent literature on the predictive ability of business and consumer confidence indicators. Section 3 details the data employed in our analysis and summarizes our empirical findings. The last section contains some concluding remarks.

## **2. Consumer/ business confidence and fiscal policy**

Sentiment indices are widely believed to have predictive content for the performance of the macroeconomy. Some empirical support for this belief is provided by research findings which indicate that sentiment measures contain information about future changes in the economy beyond what is contained in past values of other available indicators (Fuhrer, 1993; Carroll *et al.* 1994; Ludvigson, 2004). Potential explanations of the predictive content of sentiment indicators are that (i) they represent independent determinants of key macroeconomic variables, in line with the *traditional* Keynesian logic (Keynes, 1936); and/or (ii) that they reflect the overall state of the economy, without exerting a causal impact on it.

Starting with consumer confidence, conventional wisdom holds that households, in allocating their disposable income and wealth, observe and take into account macroeconomic fluctuations. In particular, sentiments of optimism (pessimism) are the result of the way future household income and GDP performance is perceived, signifying that a higher (lower) fraction of income is directed towards consumption. Various studies have shown that this is in fact the case (Bram and Ludvigson, 1998; Carroll *et al.*, 1994; Doms and Morin, 2004; Ludvigson, 2004; Easaw et al, 2005; Howrey, 2001; McNabb and Taylor, 2007). These authors establish that there are in fact two links: *first*, that business cycle fluctuations influence consumer sentiment; and *second*, that changes in consumer sentiment lead to changes in households' savings rates. In particular, the precautionary motive for saving depends on the prospects (sentiment) for short term

economic growth<sup>2</sup>. Therefore, at least on empirical grounds, the marginal propensity to consume rises during expansions and falls during contractions, since agents form sentiments based on the behavior of national income and, subsequently, these sentiments are reflected in their consumption-savings decisions.

Although business sentiment indices have a similarly long history to that of consumer sentiment measures, most empirical work on the predictive content of sentiment indices focuses on the latter. However, recent empirical research suggests that business sentiment measures may outperform consumer sentiment induces in predicting business cycle fluctuations (Bodo, Golinelli, and Parigi, 2000; McNabb and Taylor, 2007), thereby indicating that both types of confidence measures should be taken into account as predictors of future economic activity. Furthermore, recent research has also stressed that confidence might turn out to be important, to the extent that it is an independence factor affecting cyclical fluctuations along the lines of Keynes' (1936) 'animal spirits'. For instance, Matsusaka and Sbordone (1995) present evidence that consumer confidence is important in accounting for GNP variability.

As far as fiscal policy is concerned, conventional wisdom holds counter-cyclical fiscal policy is appropriate, since governments may use their budget to stabilize the macroeconomy. During recessions, the government raises the rate of growth of spending to stimulate economic activity, while in expansions the growth rate of government consumption is contained. Empirical evidence seems to support this view. For instance, Gali and Perotti (2003) find evidence of that fiscal policy is becoming increasingly counter-cyclical over time for countries in the EMU, while similar results seem to hold for other developed countries (see also Mackiewicz (2006)).

However, Gordon and Leeper (2005) suggest that during a recession, a counter-cyclical policy may change agents' expectations, since it increases public indebtedness (raising future debt service payments); as agents foresee that taxes must rise in the future, they adjust their savings rates accordingly. In this context, the response to expected future policies may lead to recessions that are deeper and lengthier. Gordon and Leeper (2005)

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<sup>2</sup> Souleles (2004) found that consumer sentiment data (Michigan Index of Consumer Sentiment) help predict household expenditure. Higher confidence was correlated with less saving, consistent with precautionary motives and increases in expected future resources. This finding of excess sensitivity runs counter to the permanent income hypothesis.



also highlight that this expectations channel may create business cycles that would simply not exist if a counter-cyclical policy was not adopted. Furthermore, recent research by Mertens and Ravn (2009) makes a clear distinction between the anticipated and the unanticipated effects of fiscal policy, highlighting that the impact of anticipation could actually be to depress the economy until the fiscal changes are implemented.

Our aim in the following section is to estimate the effects of fiscal policy changes on consumer and business confidence, therefore bridging the above two strands of the literature, regardless of whether confidence indicators are merely good predictors of future economic activity or independent sources of business cycle fluctuations.

### **3. Empirical findings**

#### **3.1 Data and background analysis**

In our work we aim at quantifying the effects of fiscal policy on consumer and business confidence, building on prior work that examines the determinants of consumer confidence (e.g. Fuhrer (1993)). To this end we employ quarterly data for 9 OECD countries for the period running from the first quarter of 1970 to the fourth quarter of 2007. Our dataset includes data for Australia, Canada, Finland, Ireland, Japan, Netherlands, Sweden, UK, and US. The choice of these countries is based on the availability of consumer and business confidence indicators and government spending variables at a quarterly frequency.

Our dataset also includes various measures of fiscal policy, including government consumption (wage and non-wage consumption) and investment, as well as various measures of direct and indirect taxes. In addition, we have also included a set of control variables to account for business cycle conditions in each country (the unemployment rate, inflation, real GDP growth per capita and asset price movements). This will also pick up any automatic response of tax revenues to changing economic conditions. A detailed description of the dataset is included in the Appendix. Some descriptive statistics of the variables included in the analysis is presented in Table A.1 in the Appendix.

*[Insert Table A.1 about here]*

### 3.2 Empirical specification and results

In order to obtain estimates of the effects of fiscal policy changes both on consumer and business confidence, we employ empirical specifications of the form:

$$\phi_c(L) \Delta \ln \text{conf}_{it} = \mu_i + \lambda_t + \sum_{i=1}^{n_g} \phi_{i,g}(L) x_{j,it} + \sum_{l=1}^{n_z} \phi_{l,z}(L) z_{l,it} + v_{it} \quad (1)$$

where  $\text{conf}$  denotes the confidence indicator under scrutiny,  $\phi_s(L) = 1 - \sum_{k=1}^4 \phi_{s,k} L^k$  are fourth-order polynomials in the lag operator,  $x_{j,it}$  denotes fiscal policy variable  $j$  (with a total number of  $n_g$ ),  $z_{l,it}$  denotes control variable  $l$  (the total number of which is  $n_z$ ),  $\mu_i$  are country fixed-effects,  $\lambda_t$  denote time-effects, and  $v_{it}$  is a well-behaved error term. In particular our control variables include factors that might have an impact on consumer and business confidence (Fuhrer, 1993). These are the change in the unemployment rate, the growth rate of real GDP per capita, inflation (based on the GDP deflator), the quarterly change in aggregate asset prices, and the real long-term interest rate. The fiscal policy variables considered are (quarterly changes in) government consumption, non-wage government consumption and government wage bill, government investment, total direct taxes, personal and business direct taxes, and total indirect taxes.

Our empirical results for consumer confidence are summarized in Tables 1 and 2, the results regarding business confidence are presented in Tables 3 and 4. In particular, the tables report the estimated short-run and long-run effects of the variables of interest as well as those of some control variables – common across specifications regarding both consumer and business confidence.<sup>3</sup>

Let us start the discussion of our results, by first inspecting our findings regarding consumer confidence. In particular, Table 1 reports results using some baseline specifications, whereas Table 2 reports results breaking down government consumption into wage and non-wage components.

*[Insert Tables 1 and 2 about here.]*

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<sup>3</sup> The short-run effects are estimated as the total short-run impact of the variable of interest, namely for each variable  $s$  as  $\phi_s(1) = 1 - \sum_{k=1}^4 \phi_{s,k}$ , whereas the long-run effects are estimated as the total long-run impact of the variable of interest, namely  $\phi_s(1) / \phi_c(1) = (1 - \sum_{k=1}^4 \phi_{s,k}) / (1 - \sum_{k=1}^4 \phi_{c,k})$ .

When examining the effects of changes in government consumption on consumer confidence, we note that these are positive, but invariably insignificant (Table 1). However, decomposing this component into wage and non-wage government consumption, we get more informative results (Table 2). Increases in the government wage bill (increasing wages and/or public sector employment) have a negative and at times significant effect. This clearly indicates that consumers perceive additional spending on the public wage-bill as an additional unproductive burden, which will have to be repaid by means of higher future taxes or reduced productive spending. Conversely, additional non-wage related government spending has a positive effect on consumer sentiment. This may be so for two reasons: on the one hand it boosts demand (by directly increasing government spending), i.e. kick-starting economic activity at times of recession (whereas public investment might have a much more delayed effect due to implementation lags); on the other hand, it is probably perceived as being reversible or implying only a temporary increase in the size of the public sector (contrary to permanently higher public employment or wages), thus generating a positive effect on consumer sentiment.

An increase in government investment has an invariably significant, negative effect on consumer confidence. At a first glance, this finding might seem counterintuitive, since an increase in public investment enhances the productive capacity of the economy and leads to higher productivity growth, which should have a positive effect on consumer welfare. However, the counterpart of increased public investment is increased funding needs which need to be financed by higher current, but especially future taxes. This probably generates a negative effect on consumer sentiment. Alternatively, this effect might reflect the fact that the wider population is not benefiting immediately from a pick up in government investment, in contrast to the case of a tax cut. It is worth noting that the negative effect of government investment on consumer confidence is much less pronounced than the positive (negative) impact of non-wage (wage) government consumption.

Turning next to the effects of taxation on consumer confidence, we find that the impact of higher total direct and personal direct taxes is negative and highly significant as one would expect: Raising the tax burden faced by consumers reduces their disposable

income, thereby generating negative welfare effects and impacting negatively on their sentiment. On the other hand, we find that the effect of higher indirect taxes is, in general, insignificant.<sup>4</sup> Note that the effect of total direct taxes is much more pronounced than that of personal direct taxes, government investment and consumption (see Table 1), but is weaker than that of non wage (and wage) government consumption (see Table 2). These findings highlight the important role that tax policy changes have on consumer confidence, while at the same time indicate that changes in specific spending categories e.g. cuts in public spending (such as the government wage bill) can improve confidence, possibly by rendering the consolidation effort sustainable.

In Tables 3 and 4 we report our results regarding the effects of key fiscal variables on business confidence. To start with, we note that an increase in government consumption has no particular effect on business confidence. Similar to our findings regarding consumer confidence, we find the effect of non-wage government consumption positive while that of the government wage bill negative. However, in both cases the estimated coefficients are insignificant. In addition, we find that government investment exerts a negative but insignificant effect on business confidence. Note here that one could have expected that the initiation of public investment projects, involving the private sector, would have a positive effect on business confidence to the extent that these public investment projects raise economic growth. Nevertheless, a contrarian view is that public investment projects do not have a direct effect on manufacturing (hence on business confidence), since they either do not involve specific products in the manufacturing sector or the “receipt of payments” might be delayed. Alternatively, according to the standard Keynesian view, an increase in government investment crowds out private investment, which will be reflected in lower business confidence. In line with the Keynesian argument we do find a negative effect, but the coefficient estimate of government investment is not significant.

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<sup>4</sup> As far as the control variables are concerned, higher real GDP per capita (higher income) and an increase in asset prices (higher wealth) are linked with a rise of consumer confidence. The effect of the real interest rate and inflation are insignificant, whereas an increase in unemployment, contrary to what one would expect, has a positive effect on consumer confidence. We should highlight here though the effects on unemployment are at least one order of magnitude smaller than the other effects documented.

Regarding the effects of taxation, we find that higher total direct and direct business taxes lead to significant reductions of business confidence. However, the effect of total direct taxes is much more pronounced. Taken together with the government spending estimates, one could interpret these findings as evidence that the overall business prospects are negatively influenced by both higher spending and higher direct taxes, as they imply an increased tax burden for the business sector (including the cases where this is done in order to finance productive public investments). On the contrary, we find that higher indirect taxes have a positive effect on business confidence, possibly because in most cases these are eventually passed on to consumers via higher consumer prices, and hence are preferred relative to higher income taxes.<sup>5,6</sup>

#### **4. Conclusions**

Building on earlier work on the predictive ability of confidence indicators as well as on their effect on the economy, and driven by recent economic developments, this paper investigates the effect of fiscal policy on consumer and business confidence. In the midst of the ongoing economic and financial crisis several policy makers, international institutions and serious policy commentaries have expressed strong views in favor of fiscal stimulus measures to boost economic activity. Putting aside the direct effect on economic activity from increased government spending, a widely held view is that fiscal stimulus will also boost consumer and business confidence, generating a positive effect on private demand, which will sustain economic activity and raise the economy out of the recession.

Our findings confirm that view that tax cuts in the form of reductions in personal and business direct taxes have a positive effect on consumer and business sentiment,

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<sup>5</sup> Alternatively, since statutory burden of indirect taxes lies with firms, to the extent that indirect taxes are paid only periodically and with significant time lag, firms may take advantage of this “cash-at-hand” for the (short) time period before they actually transfer these funds to the government.

<sup>6</sup> Turning to the control variables, higher real GDP per capita (i.e. higher demand), lower inflation and higher asset prices have a positive effect on business confidence. The effect of the real interest rate is insignificant. Higher unemployment raises business confidence. However, one could expect that increased unemployment implies reduced private consumption and reduces the prospect for additional profits. Nevertheless, it is likely that increased unemployment implies increased market power in the labor market, which translates into reduced labor costs improving business prospects.

which is likely to result in increased spending. This is probably the case either because these tax cuts are perceived as being temporary support; or because they affect more those facing binding liquidity constraints.<sup>7</sup> The same applies when considering increased non-wage government consumption, in particular in the case of consumer confidence. However, the government wage bill and government investment have negative effects on consumer and business confidence, implying that apart from their direct positive stimulus on private demand, they may have negative (long-run) indirect effects on private demand, as they reduce both consumer and business confidence. A possible explanation is that both are perceived as permanent, i.e., reflecting a larger public sector in the future. This would consequently have to be financed by means of increased taxes generating negative effects on consumer and business sentiments, as expectations about future disposable income become worse.

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<sup>7</sup> This refers both to consumers (Tagkalakis, 2008; Mertens and Ravn, 2009) and firms (Aghion et al, 2009).

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## **Appendix**

### **Data**

We use quarterly data over the period 1970 Q1 -2007 Q4 for nine OECD countries: Australia, Canada, Finland, Ireland, Japan, Netherlands, Sweden, UK, and US. These countries are chosen because of the availability of consumer and (mostly manufacturing) business confidence data. The dependent variables used are the change in the log of consumer and business confidence. The consumer and business confidence indicators are seasonally adjusted and are taken from the Key Economic Indicators of the OECD. Both consumer and business confidence indicators (which are a balance of positive over negative results-qualitative responses, e.g. better or worse economic conditions, and increased or decreased orders and production) have been standardized by the OECD, i.e. they are also adjusted to be comparable across countries (see OECD, 2009a). Comparability has been achieved by careful selection of national indicators, and by smoothing, centring, and amplitude adjusting these series.

Business and consumer confidence surveys are typically based on a sample of enterprises or households and respondents that are asked about their assessments of the current situation and expectations for the immediate future. For enterprise surveys, this concerns topics such as production, orders, finished goods stocks, exports raw material, rate of capacity utilization, employment etc. In the case of consumer surveys their intentions concerning major purchases, the economic situation now compared with the recent past and expectations for the immediate future (household's financial situation and savings, general economic situation, unemployment).

The control variables used are: the change in the unemployment rate, the change in the log of the real GDP per capita, the change in the log of the GDP deflator (inflation rate) and the change in the log of the aggregate asset prices. With the exception of the asset price variable all variables are taken from the OECD (2009b). The asset prices indices were kindly provided by the Bank of International Settlements (BIS). The main indicator is a measure at the change in the log of the quarterly aggregate real asset prices and combines price indices for three asset classes - equities, residential property and commercial property – by weighting the components using shares of the asset classes in

private sector wealth. The private consumption deflator is used to convert nominal to real asset prices.

The fiscal variables used were also taken from the OECD (2009b). The definitions used are: change in the log of government consumption, change in the log of government wage bill, change in the log of non-wage government consumption, change in the log of government investment, change in the log of total direct taxes, change in the log of personal direct taxes, change in the log of direct business taxes, change in the log of total indirect taxes. The decomposition of government consumption into wage and non wage components does not involve Australia, so Tables 2 and 4 present estimates based on the other eight OECD countries.

## Tables

**Table 1 Dependent Variable is Change in Consumer Confidence**

	[1]		[2]		[3]		[4]		[5]		[6]	
<b>Regressors</b>	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
Change in unemployment rate	0.004* [1.87]	0.004* [1.82]	0.003* [1.68]	0.003 [1.64]	0.003* [1.66]	0.003 [1.61]	0.004* [1.91]	0.004* [1.85]	0.003 [1.45]	0.003 [1.42]	0.004* [1.73]	0.006*** [3.13]
Change in real GDP per capita	0.139 [1.34]	0.135 [1.35]	0.168 [1.61]	0.161 [1.61]	0.191* [1.85]	0.187* [1.85]	0.193* [1.72]	0.186* [1.73]	0.230** [2.18]	0.221** [2.18]	0.224* [1.95]	0.083 [0.86]
Inflation rate [GDP deflator]	-0.113 [-1.50]	-0.111 [-1.52]	-0.111 [-1.24]	-0.107 [-1.25]	-0.089 [-0.97]	-0.087 [-0.98]	-0.104 [-1.13]	0.033 [0.31]	-0.067 [-0.67]	-0.065 [-0.67]	-0.094 [-0.94]	-0.040 [-0.47]
Change in real aggr. asset prices	0.035* [1.67]	0.034* [1.68]	0.035* [1.70]	0.034* [1.71]	0.045** [2.29]	0.044** [2.30]	0.040** [1.97]	0.038** [2.00]	0.046** [2.30]	0.044** [2.32]	0.041** [1.99]	0.007 [0.48]
Real long term interest rate	0.015 [0.48]	0.014 [0.48]	0.010 [0.31]	0.009 [0.31]	0.038 [1.18]	0.038 [1.21]	0.033 [0.87]	0.031 [0.89]	0.031 [0.95]	0.030 [0.97]	0.023 [0.61]	0.001 [0.01]
Change in gov. consumption			0.034 [0.50]	0.033 [0.50]					0.037 [0.52]	0.035 [0.52]	0.049 [0.69]	0.045 [0.75]
Change in gov. investment			-0.034** [-2.05]	-0.033** [-2.05]					-0.036** [-2.13]	-0.035** [-2.14]	-0.037** [-2.18]	-0.028* [-1.96]
Change in total direct taxes					-0.100*** [-3.41]	-0.098*** [-3.34]			-0.100*** [-3.40]	-0.096*** [-3.35]		
Change in personal direct taxes							-0.075*** [-2.96]	-0.073*** [-3.00]			-0.074*** [-2.94]	-0.051*** [-2.51]
Change in total indirect taxes					0.038 [0.81]	0.037 [0.81]	0.031 [0.66]	0.030 [0.66]	0.024 [0.50]	0.0231 [0.50]	0.018 [0.38]	0.057 [1.39]
<i>R-squared</i>	0.4272		0.434		0.448		0.446		0.456		0.453	
<i>Nobs</i>	926		920		926		914		920		908	

The specification of the model estimated is of the form  $\phi_c(L)\Delta \ln conf_{it} = \mu_i + \lambda_t + \sum_{j=1}^{n_s} \phi_{j,g}(L)x_{j,it} + \sum_{l=1}^{n_z} \phi_{l,z}(L)z_{l,it} + v_{it}$ , where  $x_{j,it}$  is fiscal policy variable  $j$  and  $z_{l,it}$  is control variable  $l$  for country  $i$  at time  $t$ , the polynomials in the lag operator for each variable are of the form  $\phi_s(L) = 1 - \sum_{k=1}^4 \phi_{s,k}L^k$ ,  $\mu_i$  denotes country fixed-effects,  $\lambda_t$  denotes time effects,  $v_{it}$  is an error term, and the dependent variable is the change in consumer confidence.. The short-run effects are estimated as  $\phi_s(1)$ , whereas the long-run effects are obtained as  $\phi_s(1)/\phi_c(1)$ . The table reports the estimated parameters (estimated by OLS) with robust  $t$ -statistics in square brackets. One, two, and three asterisks indicate statistical significance at 10%, 5% and 1% level of significance.

**Table 2 Dependent Variable is the Change in Consumer Confidence**

	[1]		[2]		[3]	
<b>Regressors</b>	SR	LR	SR	LR	SR	LR
Change in Unemployment rate	0.002 [0.92]	0.002 [0.90]	0.001 [0.71]	0.001 [0.70]	0.003 [1.15]	0.004* [1.81]
Change in real GDP per capita	0.073 [0.69]	0.071 [0.69]	0.123 [1.15]	0.119 [1.15]	0.115 [0.99]	0.029 [0.29]
Inflation rate [GDP deflator]	-0.095 [-1.06]	-0.093 [-1.06]	-0.0298 [-0.30]	-0.029 [-0.30]	-0.058 [-0.59]	-0.024 [-0.27]
Change in real aggr. asset prices	0.032 [1.63]	0.032 [1.63]	0.043** [2.13]	0.042** [2.13]	0.037* [1.76]	0.013 [0.76]
Real long term interest rate	0.021 [0.68]	0.021 [0.68]	0.035 [1.06]	0.034 [1.07]	0.029 [0.78]	-0.077 [-1.46]
Change in non wage gov. consumption	0.114** [2.31]	0.112** [2.31]	0.114** [2.28]	0.110** [2.27]	0.121** [2.37]	0.119** [2.57]
Change in wage gov. consumption	-0.112 [-1.60]	-0.110 [-1.60]	-0.099 [-1.38]	-0.095 [-1.38]	-0.106 [-1.46]	-0.143** [-2.27]
Change in gov. investment	-0.039** [-2.32]	-0.038** [-2.35]	-0.042** [-2.49]	-0.041** [-2.52]	-0.040** [-2.34]	-0.027* [-1.82]
Change in total direct taxes			-0.071** [-2.33]	-0.068** [-2.31]		
Change in personal direct taxes					-0.040 [-1.50]	-0.035 [-1.61]
Change in total indirect taxes			-0.015 [-0.30]	-0.014 [-0.30]	-0.013 [-0.27]	-0.011 [-0.27]
<i>R-squared</i>	0.490		0.499		0.497	
<i>Nobs</i>	791		791		779	

See notes for **Table 1**.

**Table 3 Dependent Variable is the Change in Business Confidence**

	[1]		[2]		[3]		[4]		[5]		[6]	
<b>Regressors</b>	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
Change in Unemployment rate	0.013*** [3.03]	0.011*** [3.21]	0.013*** [2.95]	0.010*** [3.12]	0.012*** [2.87]	0.010*** [3.02]	0.013*** [2.91]	0.010*** [3.08]	0.012*** [2.77]	0.010*** [2.92]	0.012*** [2.81]	0.010*** [2.96]
Change in real GDP per capita	0.321* [1.78]	0.255* [1.83]	0.339* [1.81]	0.271* [1.87]	0.338* [1.77]	0.266 [1.82]*	0.271 [1.43]	0.217 [1.45]	0.372* [1.89]	0.294* [1.94]	0.317 [1.61]	0.254 [1.64]
Inflation rate [GDP deflator]	-0.257* [-1.87]	-0.204* [-1.90]	-0.280* [-1.85]	-0.224* [-1.84]	-0.352** [-2.32]	-0.277** [-2.35]	-0.340** [-2.22]	-0.272** [-2.26]	-0.346 [-2.15]**	-0.274** [-2.15]	-0.318** [-1.98]	-0.255** [-1.99]
Change in real aggr. asset prices	0.037 [1.54]	0.029 [1.53]	0.039* [1.67]	0.031 [1.65]	0.055** [2.23]	0.043** [2.20]	0.053** [2.15]	0.042** [2.09]	0.056** [2.31]	0.044** [2.27]	0.054** [2.23]	0.043** [2.16]
Real long term interest rate	-0.058 [-1.09]	-0.046 [-1.10]	-0.058 [-1.12]	-0.047 [-1.14]	-0.024 [-0.45]	-0.019 [-0.45]	-0.039 [-0.75]	-0.032 [-0.75]	-0.029 [-0.56]	-0.023 [-0.57]	-0.047 [-0.90]	-0.037 [-0.91]
Change in gov. consumption			0.090 [0.72]	0.072 [0.71]					0.059 [0.51]	0.047 [0.50]	0.047 [0.40]	0.038 [0.40]
Change in gov. investment			-0.032 [-1.18]	-0.026 [-1.17]					-0.032 [-1.16]	-0.025 [-1.14]	-0.035 [-1.26]	-0.028 [-1.24]
Change in total direct taxes					-0.111*** [-2.70]	-0.087*** [-2.73]			-0.109*** [-2.63]	-0.086*** [-2.67]		
Change in direct business taxes							-0.028 [-1.86]*	-0.022* [-1.80]			-0.028* [-1.82]	-0.022* [-1.76]
Change in total indirect taxes					0.153** [2.20]	0.120** [2.19]	0.119* [1.70]	0.095* [1.70]	0.147** [2.07]	0.116** [2.07]	0.115 [1.62]	0.093 [1.63]

<i>R-squared</i>	0.507	0.514	0.527	0.526	0.537	0.536
<i>Nobs</i>	842	836	842	842	836	836

The specification of the model estimated is of the form  $\phi_c(L)\Delta \ln conf_{it} = \mu_i + \lambda_t + \sum_{j=1}^{n_g} \phi_{i,g}(L)x_{j,it} + \sum_{l=1}^{n_z} \phi_{i,z}(L)z_{l,it} + v_{it}$ , where  $x_{j,it}$  is fiscal policy variable  $j$  and  $z_{l,it}$  is control variable  $l$  for country  $i$  at time  $t$ , the polynomials in the lag operator for each variable are of the form  $\phi_s(L) = 1 - \sum_{k=1}^4 \phi_{s,k} L^k$ ,  $\mu_i$  denotes country fixed-effects,  $\lambda_t$  denotes time effects,  $v_{it}$  is an error term, and the dependent variable is the change in consumer confidence. See also notes for **Table 1**.

**Table 4 Dependent Variable is the Change in Business Confidence**

	[1]		[2]		[3]	
<b>Regressors</b>	SR	LR	SR	LR	SR	LR
Change in Unemployment rate	0.011*** [2.62]	0.009*** [2.68]	0.010** [2.51]	0.009** [2.57]	0.010** [2.48]	0.009** [2.53]
Change in real GDP per capita	0.311* [1.65]	0.259* [1.70]	0.320* [1.62]	0.261* [1.67]	0.296 [1.49]	0.247 [1.52]
Inflation rate [GDP deflator]	-0.280** [-2.05]	-0.233 [-1.99]**	-0.338** [-2.28]	-0.275** [-2.20]	-0.292** [-1.99]	-0.243* [-1.94]
Change in real aggr. asset prices	0.023 [1.07]	0.019 [1.07]	0.0468* [1.93]	0.038* [1.94]	0.041* [1.82]	0.034* [1.83]
Real long term interest rate	-0.088* [-1.66]	-0.074* [-1.69]	-0.061 [-1.16]	-0.050 [-1.17]	-0.085 [-1.59]	-0.071 [-1.62]
Change in non wage gov. consumption	0.044 [0.65]	0.037 [0.65]	0.019 [0.27]	0.015 [0.27]	0.023 [0.32]	0.019 [0.32]
Change in wage gov. consumption	-0.117 [-1.14]	-0.097 [-1.15]	-0.146 [-1.41]	-0.119 [-1.43]	-0.134 [-1.30]	-0.111 [-1.31]
Change in gov. investment	-0.014 [-0.56]	-0.012 [-0.56]	-0.008 [-0.32]	-0.006 [-0.32]	-0.012 [-0.49]	-0.010 [-0.49]
Change in total direct taxes			-0.086** [-2.10]	-0.070** [-2.13]**		
Change in direct business taxes					-0.026* [-1.83]	-0.024** [-2.22]
Change in total indirect taxes			0.118* [1.65]*	0.096* [1.66]*	0.086 [1.21]	0.072 [1.21]
<i>R-squared</i>	0.661		0.673		0.672	
<i>Nobs</i>	689		689		689	

See notes for **Table 3**.

## Appendix A. Tables

**Table A.1: Summary Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Consumer Confidence	962	0.0002	0.0115	-0.0392	0.0397
Business Confidence	878	0.0004	0.0162	-0.0794	0.0555
Unemployment Rate	962	-0.0010	0.3614	-1.9160	1.7773
GDP per capita	962	0.0057	0.0095	-0.0520	0.0595
Inflation Rate	962	0.0096	0.0121	-0.0406	0.0737
Aggregate Asset Prices	962	0.0083	0.0468	-0.2214	0.8159
Long-Term Real Interest rate	962	0.0640	0.0322	0.0024	0.1666
Government Consumption	962	0.0176	0.0180	-0.0441	0.1320
Government Consumption (Wage)	829	0.0151	0.0170	-0.0281	0.1617
Government Consumption (non Wage)	829	0.0190	0.0249	-0.1094	0.1300
Government Investment	960	0.0141	0.0521	-0.4235	0.3550
Total Direct Taxes	962	0.0174	0.0313	-0.2498	0.1752
Direct Personal Taxes	950	0.0159	0.0396	-0.3153	0.2324
Direct Business Taxes	944	0.0169	0.1426	-1.8241	1.3821
Indirect taxes	962	0.0172	0.0193	-0.0996	0.1173

**Notes for Table A.1** The table reports summary statistics of the variables involved in the analysis, in particular their quarterly (log) change, apart from inflation and the long-term real interest rate, which are in levels, and unemployment rate which is the quarterly change.

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