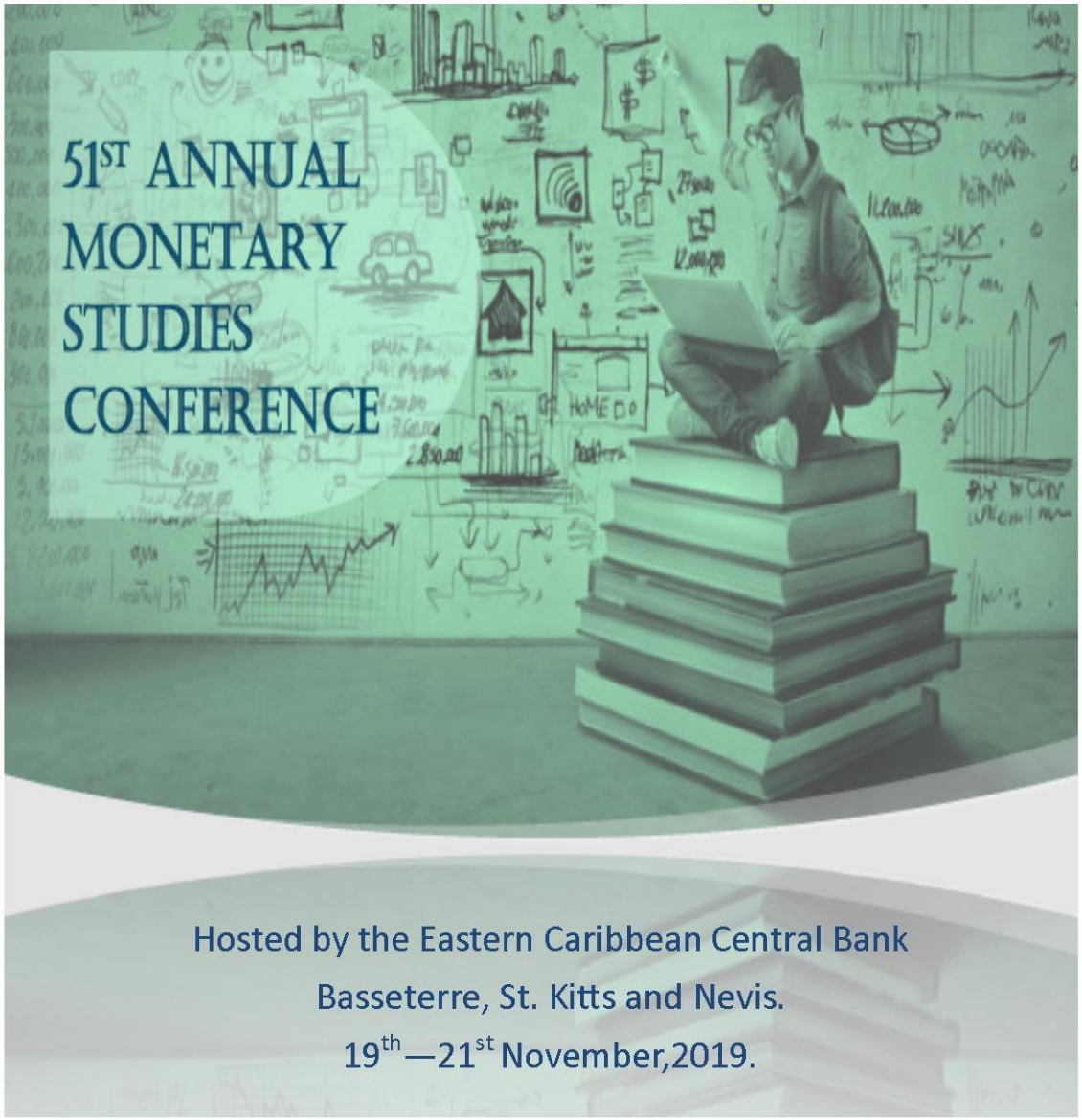
Caribbean Economic Research Team



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The Impact of Government Spending on Unemployment in Trinidad and Tobago

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This paper studies the impact of Government spending, particularly, investment and consumption spending on unemployment in Trinidad and Tobago. In Trinidad and Tobago, a small open economy, unemployment is thought to be significantly influenced by public spending (particularly capital or investment spending) which is presumed to provide a strong fiscal impulse. Using Vector Autoregression (VAR), this paper finds that after an increase in public investment spending the unemployment rate falls in the first quarter. Also, public investment shocks induce an immediate increase in the labour force. Similarly, following a shock to public consumption the unemployment rate declines in the first quarter. However, the decline in the unemployment rate is small relative to the decline from the public investment shock. The paper also reveals that an increase in public investment is more likely to encourage private investment than crowd it out. The paper suggests several policy implications for Trinidad and Tobago, including further fiscal consolidation and the use of the MILES Framework (World Bank) to support labour market performance. While the model does not consider job separation and job finding rates, it captures the empirical pattern of responses of the unemployment rate to fiscal impulses.

JEL Classification Numbers: E24, E62, J64

[1] The author is an economist in the Central Bank of Trinidad and Tobago. The views expressed in this paper are those of the author and not necessarily those of the Central Bank.

Keywords: Fiscal Policy, Public Investment, Public Consumption, Unemployment Rate, Labour Market

I. Introduction

The years of the financial crisis and beyond have been crucial in terms of policy making as, globally, labour market conditions worsened tilting fiscal policy toward supporting jobs by stimulating aggregate demand (IMF 2012). The increase in unemployment in countries around the world induced a number of studies to (i) investigate whether or not an increase in Government spending improves unemployment, and, if so (ii) examine how fiscal stimuli influences unemployment. The employment effects of fiscal policy were advanced by the Keynesian school of thought which argued that fiscal policy influences aggregate demand which in turn affects unemployment. This is premised on the notion that higher levels of Government spending increase the demand for goods and services which results in increased labour demand.

In Trinidad and Tobago, growth and employment outcomes are heavily influenced by Government spending, particularly capital spending[2and3]. This may be due to the strong fiscal impulse created through the fiscal multiplier channel. In 2015, the Central Government embarked on a fiscal consolidation programme in light of the decline in energy commodity prices in late 2014. The Government's fiscal consolidation efforts resulted in a reduction in both capital and recurrent spending but of different magnitudes. The decline in Central Government's capital spending has been significant over the last four years relative to expenditure on transfers and subsidies **(Appendix 1)**. Over the period fiscal year (FY) 2015/16 to FY2018/19 Central Government aggregate expenditure amounted to $202.0 billion. A total of $15.0 billion was spent on capital projects while $106.6 billion was spent on transfers and subsidies[4]. This implies that less than 8.0 per cent of aggregate expenditure was exhausted on the construction of hospitals, and roadways/highways and more than 50.0 per cent was expended on subsidising public transport, fuel and other forms of household

[2] Throughout the paper, capital expenditure is used interchangeably with public investment.

[3]According to Okun's Law, there exists a negative short run relation between unemployment and output. Mahabir et al. (2013) and Nelson (2014) provides statistical evidence of Okun's Law for Trinidad and Tobago, corroborating that the relationship between unemployment and GDP exist.

consumption. Additionally, approximately 8.9 per cent of aggregate expenditure was disbursed on interest payments.

The composition of Government spending can affect the performance of the public sector (Mandl et al. (2008)). A high share of non-discretionary expenditures can limit the amount of resources available for other areas that can be growth enhancing. The proportion of total Government expenditure dedicated to productive areas matters if Trinidad and Tobago wish to further economic growth and development. It is essential that public expenditures are used to improve long-term growth perspectives and take equity considerations into account. Therefore, understanding the impact of capital and consumption spending on growth and employment outcomes not only ensures resources are allocated in the most efficient way but it is instrumental in planning the reform agenda necessary to further economic growth and development.

In the Caribbean, a number of studies focus on the effects of fiscal policy on output (aggregate demand) while controlling for unemployment. However, very little attention is directed to the impact of Government spending on the labour market. This paper is expected to add to the literature by examining the empirical pattern of responses of labour market variables to fiscal shocks (public investment and public consumption) in the short-run. The empirical results show that public investment expenditure reduces the unemployment rate in the first quarter. In the same way, a one standard deviation shock to public consumption results in the unemployment rate declining in the first quarter. However, the decline in the unemployment rate on account of a shock to public consumption is small relative to the shock to public investment. It is also found that public investment is more likely to encourage private investment rather than crowd it out. The remainder of the paper is structured as follows: Section two provides a review of the literature; Section three discusses the trends in types of Government spending and unemployment. Section four details the methodology; Section five discusses the results and its policy implications and the paper concludes in Section six.

II. Literature Review

The empirical literature discusses the employment effects of fiscal policy from two main veins. These include: (i) the macroeconomic impact of Government spending (usually spending on goods and services) on employment, estimated as a derivate of the impact on output which stems from the fiscal multiplier literature and (ii) the effects of specific tax changes and Government benefits on labour demand and supply dynamics. From either perspective, the literature documents a positive impact of public spending on employment. This effect operates mainly through the aggregate demand channel: spending on goods and services (consumption) and capital spending (investment) directly affecting aggregate demand and through this labour demand.

Monacelli et al. (2010) provided evidence that a fiscal stimuli lower unemployment. The paper provides an empirical estimate of the unemployment multipliers of Government spending, focusing in more detail on the transmission of fiscal policy to the labour market. They showed that an increase in Government expenditure boosts total hours, employment and the job finding probability. Kato and Mayamoto (2013) studied the effects of fiscal expansion on the Japanese labour market. First, using a structural VAR model, they found that the unemployment rate fell and employment rose following an increase in Government spending. The authors also found that fiscal expansion affected flows in and out of unemployment. They noted that an increase in Government spending increased the job-finding rate, but reduced the job separation rate. The paper also incorporated search and matching frictions into a standard dynamic general equilibrium (DSGE) model. The model revealed that an increase in Government consumption expenditures led to a significant fall in unemployment and increased employment and vacancies. The unemployment rate fell and reached its lowest level after eight quarters and then gradually returned to the steady-state value.

Hasumi and Matsumae (2016) examined the effect of Government spending on unemployment in the Japanese economy. The authors utilised a medium-scale DSGE model with assumptions that Government consumption stimulates private consumption and Government investment improve temporarily, productivity of private firms through the accumulation of public capital. Their study found that both Government consumption and investment improve unemployment through the aggregate demand channel. On the other hand, the effect of Government consumption to induce private consumption is small. The paper also found

that the temporary effect of Government investment on productivity of private firms raises real wage but does not have much influence on unemployment.

The empirical literature also documents a negative relationship between fiscal expansion and labour market variables. Brückner and Pappa (2012) using a structural VAR analysis and constructing a new Keynesian model with matching friction found that a fiscal expansion can lead to a significant increase in unemployment for many OECD countries. Their seemingly paradoxical result led to reconsideration of the impact of Government spending on the labour market in the real business cycle (RBC) and the New Keynesian models. Lane and Perotti (2003) and Alesina et al. (2002) also found evidence of the opposite impact. Both studies found that an increase in Government purchases and the wage bill translates into higher wages in the private sector, which lowers firm profitability and ultimately lower employment and business investment in current and future periods. As a result, output, income and private consumption expenditure contracted. Factors such as social assistance can reduce work incentives, especially if benefits are withdrawn when earnings rise.

Krueger and Meyer (2002) concluded that a 10.0 percent increase in unemployment benefits raises the average duration of unemployment by around 5.0 per cent. Though this impact is likely to be higher for countries with relatively weak eligibility conditions, pension benefits, usually the largest share of social benefits, affect pension decisions and, when it increases, it reduces the labour force, and employment. Empirical evidence also suggests that strengthening the link between contributions and benefits improved labour market outcomes.

In the Caribbean literature, there is a plethora of studies that analyses the impact of fiscal policy on output (aggregate demand), while controlling for unemployment. However, the discussion is limited in terms of their analysis of the labour market. Downes (2009) is a key study that focuses on the impact of fiscal policy on the labour market of Caribbean economies. He examined the impact of the global economic crisis on the labour markets of small developing states of the Caribbean namely; Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St Kitts and Nevis (SKN), St Lucia, St Vincent and the Grenadines (SVG), Suriname and Trinidad and Tobago (T&T). The study found that the demand for labour (employment) is derived from the production and demand for goods and services; therefore, any shock in the commodity market (for example, a reduction in the level of export of goods and services) will have both direct and indirect effects on the labour market. However, he noted that the magnitude of the impact depends on the initial level of unemployment, the size of the informal sector, the presence of a social protection system,

the ability to engage in social dialogue and the adoption of creative labour market strategies and measures. He recommended that for small developing countries which are constantly exposed to external shocks, it is important to develop flexible labour markets.

III. Stylised Facts

Several studies have established that Government spending is procyclical in Trinidad and Tobago[5]. **Chart 1** below plots the cyclical and structural fiscal impulses[6] caused from Government spending and the output gap for the period 2002 to 2018. The graph reveals that the fiscal impulses were much stronger in the five years prior to the financial crisis (2003-2008) than the five years after the crisis (2008-2013) period. During the pre-crisis period the positive fiscal impulses would have added to aggregate demand resulting in a positive output gap while the negative fiscal impulses during the post crisis period would have taken away from aggregate demand leading to a fall in the output gap. Similarly, in the post 2014 period- when energy commodity prices declined, the negative fiscal impulses would have taken away from aggregate demand resulting in a decline in the output gap. The combination of a positive output gap and positive fiscal impulses (and a negative output gap and negative fiscal impulses) implies that fiscal policy in Trinidad and Tobago is largely pro-cyclical. That is, fiscal policy contributes to higher aggregate demand during upturns and withdraws from aggregate demand during downturns (Cotton et al, 2013)[7].

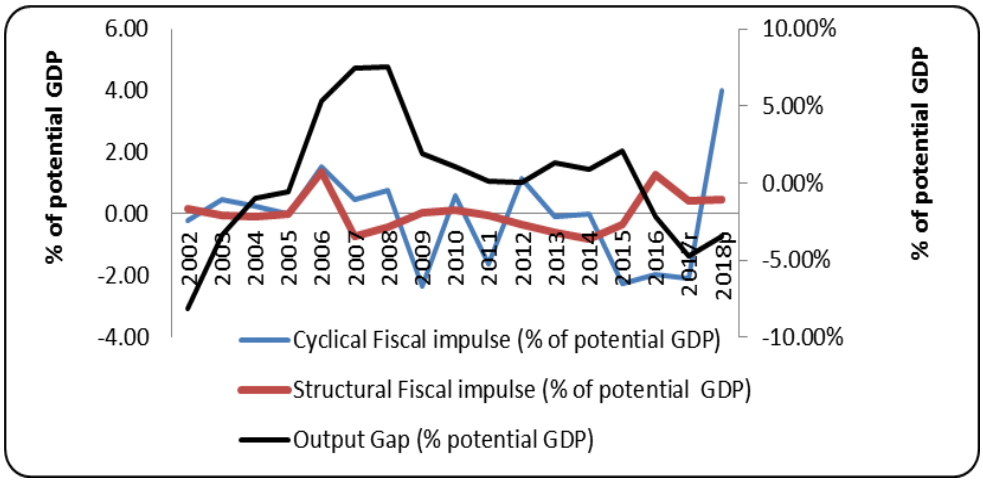
[5] Cotton et al. (2013), Nelson (2017), Sookram and Ramlogan (2018), Nelson and Ramlogan (2018) among others.

[6] The fiscal impulse measures the change in the discretionary policy of the Government on aggregate demand. Discretionary policy involves changes in the tax rates, coverage, exemptions or deductions which can add to or subtract from aggregate demand pressures in a given year. The cyclically adjusted balance (CAB) and the structural fiscal balance (SFB) are used to calculate the cyclical and structural fiscal impulses. Both measures adjust the conventional fiscal balance for business and commodity price cycle effects. These balances can only be calculated from 2002, the year for which data is available.

[7] Villafuerte et al. (2010) also noted that fiscal policy in the Latin America and Caribbean (LAC) region was predominantly pro-cyclical during 2003 to 2008 and the degree of pro-cyclicality was substantial in Ecuador and Trinidad and Tobago. The average degree of pro-cyclicality in the LAC region was 0.5 per cent.

Chart 1

Cyclical and Structural Fiscal Impulses and the Output Gap

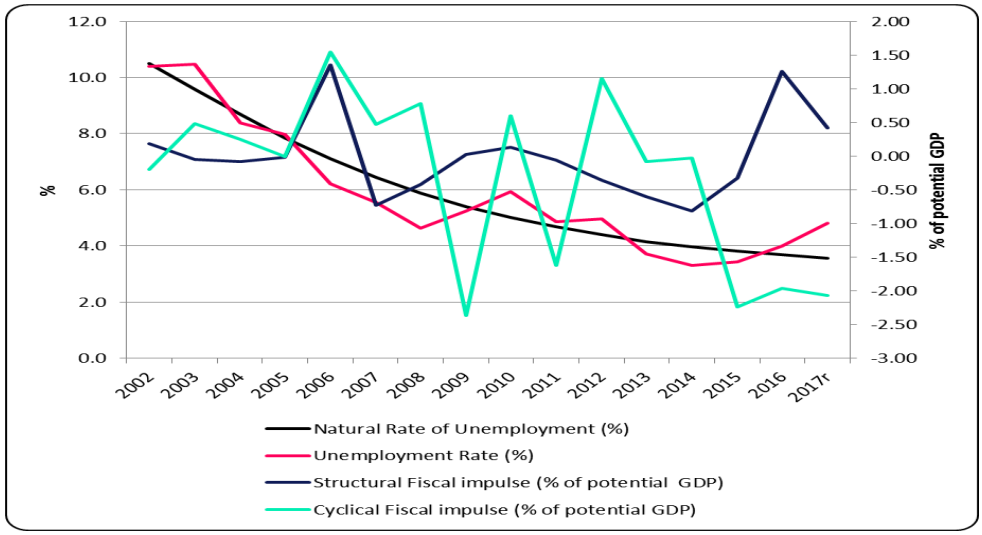


Source: The Central Bank of Trinidad and Tobago.

The cyclical and structural fiscal impulses caused by Government spending also affects the level of unemployment through the fiscal multiplier channel. **Chart 2** below displays the structural fiscal impulse, cyclical fiscal impulse, the unemployment rate and the trend in unemployment over the period 2002 to 2018. The graph reveals that fluctuations in the unemployment rate have been largely affected by cyclical factors. The positive or increasing fiscal impulses observed in the pre-crisis period (2003-2008) were found to be partly responsible for unemployment falling below its trend while the negative fiscal impulse in the post-crisis period (2009-2011) resulted in unemployment levels rising above the trend **(Chart 2)**. Similarly, in the post 2014 period the negative or decreasing fiscal impulses would have resulted in the unemployment rate rising above its trend.

Chart 2

Fiscal Impulse and Unemployment



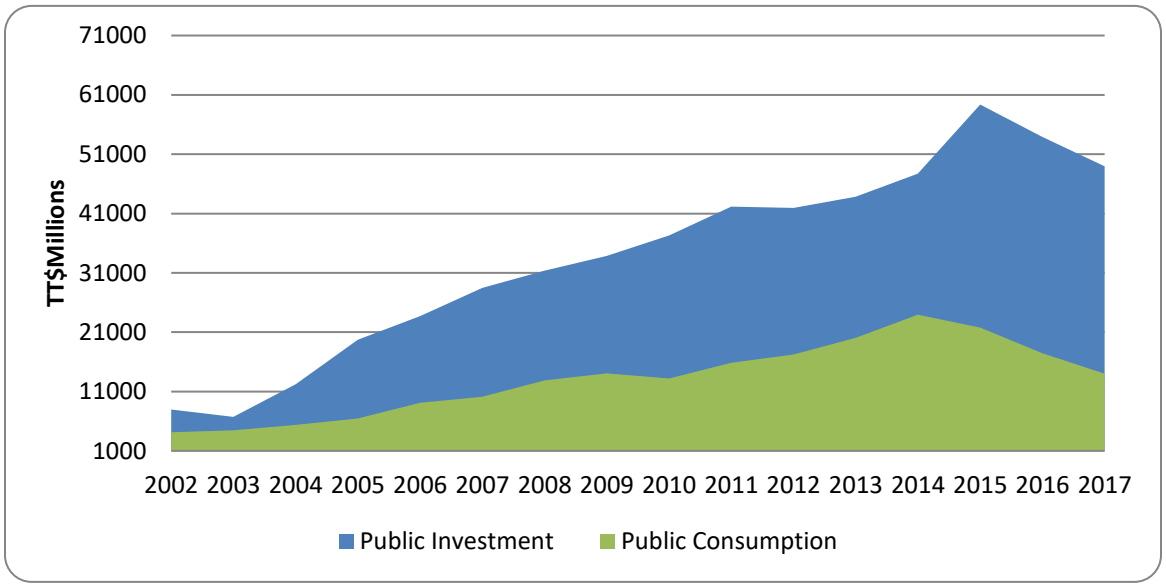
Source: The Central Bank of Trinidad and Tobago.

The composition of Government spending influences the output of the public sector. An increase in public investment, similar to other types of Government spending, boosts aggregate demand (through the short-term fiscal multiplier). However, the magnitude of the effect of Government spending on the labour market may vary with the state of the economy and from resultant, employment increase (Auerbach and Gorodnichenko, 2013a, 2013b). Similarly, public consumption boosts aggregate demand, but the magnitude will vary with the type of consumption spending. **Chart 3** below plots public investment and consumption over the period 2002 to 2017. Examination of the plot reveals a persistent upward trend up until 2015. The rate of increases in investment and consumption spending intensified in the early 2000s possibly relating to the construction boom- which resulted in an increase in construction projects, along with climbing energy commodity prices which resulted in increased spending on transfers and subsidies. However, at the end of 2015, the introduction of the Government's fiscal consolidation program[8] resulted in a reversal in public investment and consumption spending.

[8] In December 2015, the Prime Mister announced a 7.0 per cent cut in expenditure across all Ministries. Since then, the Government's attempt at streamlining expenditure has been a re-prioritizing of capital projects (implementation of projects considered shower ready) under the Public Sector Investment Program (PSIP) and cutbacks in releases in discretionary areas such as spending on goods and services.

Chart 3

Public Investment and Consumption



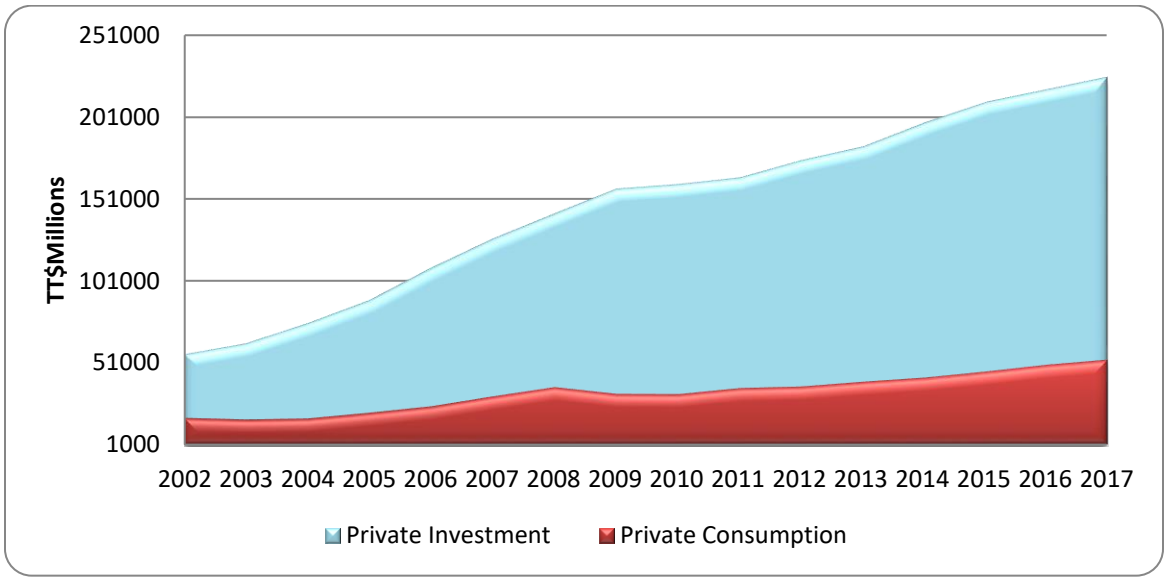
Source: Author's Calculation

Investment and consumption spending decisions by the private sector (firms and household) also affect aggregate demand and employment**. Chart 4** below shows increasing private investment and consumption[9]. While the growth in private consumption has been significantly low relative to investments, both appear to have been impacted by business cycle developments. The slowing of the rate of change in private consumption and investment over the period 2008 to 2011 suggest that the financial crisis may have dampened business and consumer confidence and slow investment and consumption spending by households and firms over the period. Both private investment and consumption peaked in the pre-crisis period then tapered off before increasing again in 2011.

[9] Private consumption spending refers to outlays on goods and services that produce benefits for firms and households today, such as vacation. Private investment is spending that will provide benefits in the future, such as building a house or investing in education.

Chart 4

Private Investment and Consumption



Source: Authors Calculation

IV. Methodology

To examine the effects of Government spending on unemployment VAR is employed using quarterly data for the period QI:1995 to QIV:2017. Following Blanchard and Perotti (2002), Government spending shock is identified by assuming it is predetermined relative to other variables and does not react contemporaneously to output and other shocks. This identification scheme is implemented by ordering Government spending first in a VAR model and using Choleski decomposition as undertaken in Kato and Mayamoto (2013). The vector of endogenous variables specified in the model includes: public investment (I), public consumption (C), expenditure on wages and salaries (WS), private investment (PI), private consumption (PC), the output gap (OG) and the inflation rate (IR).

Following Monacelli et al. (2010) and Kato and Mayamoto (2013) labour market variables are added to the fixed set of variables. These include: the labour force (L) and the unemployment rate (UR). To compute the output gap, GDP data was decomposed into its trend and cyclical components using the Hodrick–Prescott (HP) filter. The output gap estimated as the percentage deviation of actual output from potential captures the

impact of the business cycle on unemployment. Therefore, a positive value indicates a boom period and a negative value indicates a recession. The inflation rate also adjusts the model for cyclicality. Inflation and unemployment are said to have negative trade-offs as per Phillips curve[10].

Data Sources and Limitations of Estimated Variables

Quarterly data on Central Government expenditure was collected from the Ministry of Finance (MoF). The inflation rate, gross domestic product (GDP) and labour force statistics were sourced from the Central Statistical Office (CSO). Information on trade and public and private sector credit were sourced in-house at the Central Bank. To inform the estimation of the model various categories of Government expenditure were utilised to estimate public investment and consumption spending. Similarly, various subcomponents of private and public sector credit were utilised to approximate private investments and consumption expenditure of households and firms.

Public investment is estimated by aggregating capital expenditure, investment in human capital (expenditure on the Government Assistance for Tuition Expense (GATE)) and public sector credit[11 and 12]. Public investment is defined as any expenditure whose productive life extends into the future. Thus, it can take the form of infrastructural outlays – for example; road and rail networks, ports, bridges, energy-generating plants, telecommunications structures, water and sanitation networks and Government buildings. These can have a productive life of several decades. Other types of outlays, some of a more current form that can also contribute to capital formation is also considered[13].

Public consumption on the other hand, is defined as the value of goods and services individuals receive through the public sector that produce benefits today [14]. It includes expenditure on goods and services. It is important to note that some of the expenditure items included in public consumption have a direct impact on

[10] The Phillips curve is an economic construct developed by Alban William Phillips stating that inflation and unemployment have a stable and inverse relationship. The theory claims that with economic growth comes inflation, which in turn should lead to an increase in the demand for labour, resulting in less unemployment.
[11] Data includes investment in nonfinancial assets by the Central Government and state enterprises.
[12] Expenditure on GATE is included in transfers to household. Information before 2013 must be sourced from the Ministry of Finance Draft Estimates of Revenue and Expenditure which is in manuscript form and expressed in terms of fiscal years.
[13] See background paper for a Seminar on the Role of Public Investment in Social and Economic Development, 13–14 July 2009 in Rio de Janeiro, Brazil. The seminar was organized by the United Nations Conference on Trade and Development (UNCTAD) and the Brazilian Government. https://unctad.org/en/Docs/webdiae20091_en.pdf
[14] See the National Transfer Accounts website for a detail discussion on public consumption: https://www.ntaccounts.org/web/nta/show/Methodology/2.2.2%20Public%20Consumption

employment. For example, Central Government expenditure on goods and services includes salaries of contract workers.

Private investment which is defined in the literature as productive spending by households and firms that provide benefits in the future is proxied using some components of private sector credit. Private sector credit comprises three categories; (i) credit to consumers, (ii) credit to businesses and (iii) real estate lending. Private investment is proxied using private sector credit to businesses, real estate lending and some components of consumer credit, chiefly; bridging finance, mortgage lending for land and real estate, home improvement/renovation, motor vehicles and commercial vehicles purchase, purchase of financial assets, purchase of new shares, purchase of other financial assets, and education.

Similarly, **private consumption,** defined as the value of goods and services acquired and consumed by households that produce benefits today, is also proxied using some elements of consumer credit namely; lending for medical purposes, travel, electrical and non-electrical appliances, radios, musical instruments, refinancing, debt consolidation, other furniture and furnishings, professional services (legal, funeral) and private motor vehicles.

It should be noted that data on investment and consumption produced by the CSO ends in 2008 as the expenditure approach to calculate GDP was discontinued. As a result, this study attempts to estimate public investment and consumption using data from the central Government fiscal accounts. This implies that the indicators of public investment and consumption may be limited in scope (definition and coverage)[15] relative to the CSO standards. Nevertheless, cross analysis of the estimates with actual data suggest convergence. Similarly, private investment and consumption data is estimated using credit data and does not reflect income that consumers and businesses earn. While the estimates of private investment and consumption are limited in this regard, they seem to capture the underlying consumption and investment patterns of households and firms.

[15] The CSO discontinued the expenditure approach to calculate GDP in 2008. As a result, public investment and consumption data is unavailable from 2009.

Discussion of Results

The results of the unit root exercise are discussed in part A. Part B outlines the results of the impulse responses (IRFs). The model considers five impulses: a shock to (i) public investment; (ii) public consumption; (iii) wages and salaries; (iv) private investment and (v) private consumption. The shocks are one standard error shocks and the impulse responses are shown with 95.0 per cent confidence bands constructed using Monte Carlo simulations.

A. Unit Root Test

To estimate the unrestricted VAR, unit root testing (using the Augmented Dickey Fuller (ADF) test) were employed to make non-stationary variables stationary. Results of the ADF tests are presented in Table 1 below which reveals all variables are non-stationary with the exception of the output gap. Non-stationary variables were found to be integrated of order one I (1), implying that they were made stationary after first differencing **(Table 1 and Appendix 2)**.

Table 1

Unit Root Test Results[16]

Variables	Stationary	Non-Stationary	Order of Integration
I_t		√	1
C_t		√	1
PC_t		√	1
PI_t		√	1
WS_t		√	1
OG_t	√		0
IR_t		√	1
LF_t		√	1
UR_t		√	1

Source: Author's Construction

[16] Variables were made stationary I (0) after differencing.

B. Estimation Results

The results of the VAR estimation revealed that there is a positive association between Government spending and employment or an inverse relationship between Government spending (investment and consumption spending) and unemployment similar to Monacelli et al. (2010), Kato and Mayamoto (2013) and Hasumi and Matsumae (2016) among others[17] **(Exhibit 1)**. The unemployment rate fell in the first quarter following a shock to public investment. The shock to public investment also induced an immediate increase in the labour force. The result validates the positive effect public spending have on labour market outcomes which operates through the fiscal multiplier channel[18].

A one standard deviation shock to public consumption also results in a decline in the unemployment rate in the first quarter. However, the decline is small relative to the fiscal impulse from public investment. This result may be reflective of the fact that some categories of recurrent expenditure supports public sector employment, for example, contract employment. The model estimation also indicates that a one standard deviation shock to public sector wages and salaries results in an increase in unemployment consistent with Lane and Perotti (2003) and Alesina et al. (2002). It is important to note that increases in wages and salaries in the public sector translates into higher wages and salaries in the private sector through the collective bargaining process[19].The profit maximization motive of firms in the private sector suggest that private companies are more likely to reduce their workforce with increased labour cost. However, as for the public sector, it is less likely that the Government will shed employment[20]. Another finding is that a shock to public sector wages and salaries results in a decline in the labour force. A decline in the labour force from a shock to public sector wages can occur overtime after persons classified as unemployed have actively searched for work for some time and have become discouraged withdrawing themselves from the labour force.

Another finding is that a shock to private investment results in an increase in the unemployment rate. This seems somewhat counter-intuitive but can be supported by the fact that some private sector investments, by

[17] Model authenticity checks such as the VAR stability and the lag length criterion tests were undertaken (Appendix 2).

[18] A large body of literature underscores the positive relationship between public investment and national productivity. The IMF found, that for a sample of advanced economies, a 1 percentage point of GDP increase in investment spending raises output by 0.5 per cent in the same year and 1.5 per cent four years after (IMF, 2014).

[19] Trade unions negotiating wages and salaries for its member utilise current market rates (wage increases).

[20]For reasons of political expediency as well as considering the social and economic impacts of job loss. In contrast, the main goal of the private sector is profit maximization; therefore, factor inputs are allocated optimally.

firms in particular, involves automation and usually results in workforce reductions as some positions become redundant. A shock to private consumption results in a decline in unemployment. This may be reflective of the fact that the demand for labour is derived from the demand for goods and services (Downes, 2009). Therefore through the fiscal multiplier channel employment is expected to increase.

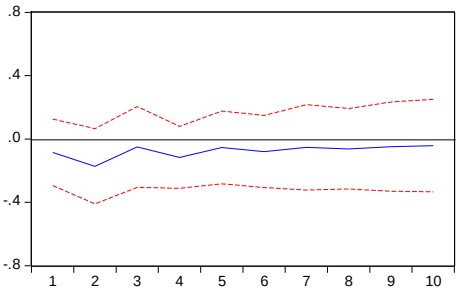
While the focus of the paper is on the response of unemployment to fiscal shocks, the impact of public investment and consumption on private investment and consumption are also explored. It is found that an increase in public investment raises private investment and consumption spending consistent with Marattin and Salotti (2011). The fact that capital investments in Trinidad and Tobago generally require the involvement of the private sector could be responsible for this result. The positive impact on private investment may also be due in part to the incentives provided by the Government to the private sector (in the form of Private Public Partnership (PPPs))[21]. The evidence suggests that an increase in public investment is more likely to encourage private investment rather than crowd out private investment, similar to Hunt (2011). The response of private investment and consumption to a public consumption shock is homogenous. An increase in public consumption has a positive effect on private investment and private consumption. The positive relationship between public consumption and private consumption could be as a result of higher spending on transfers and subsidies to households. Therefore, higher transfers to households or subsidies to firms, implies greater welfare which can translate into higher consumption spending.

[21]As revenue increases, greater outlays are spent on capital projects and recurrent expenditure. Some sectors (e.g. construction (housing programme) are provided with incentives that can boost private investment. Additionally, employment generation through capital spending can follow through to private consumption.

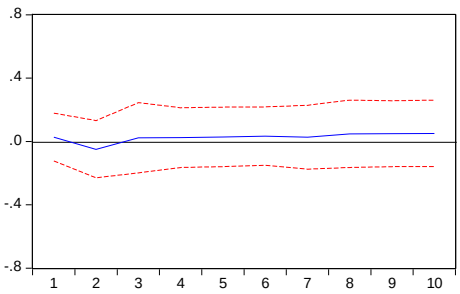
Exhibit 1

Short-run Impulse Response

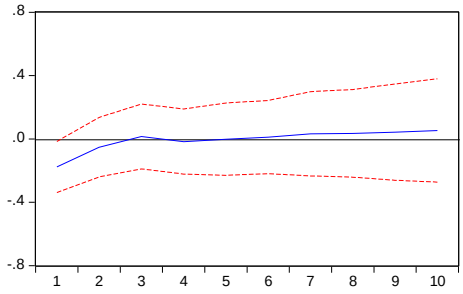
Accumulated Response of DUR to DC01



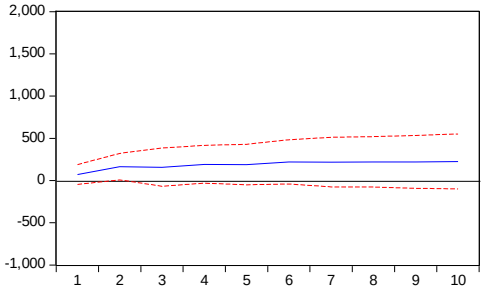
Accumulated Response of DUR to DI



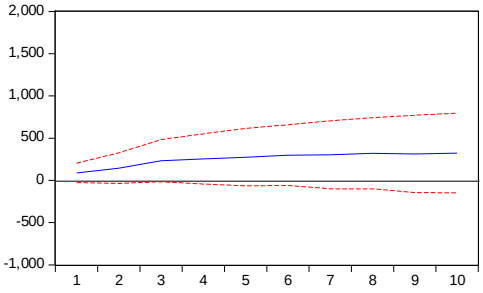
Accumulated Response of DUR to DPI



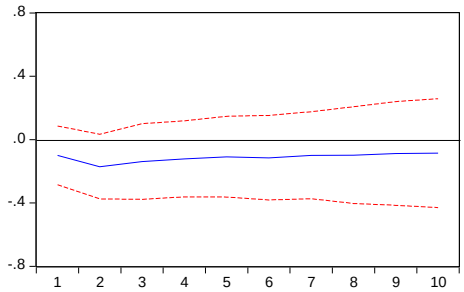
Accumulated Response of DPI to DI



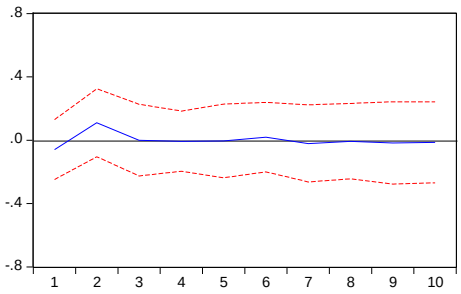
Accumulated Response of DPI to DC01



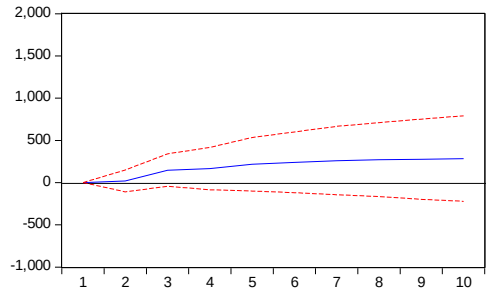
Accumulated Response of DUR to DPC



Accumulated Response of DUR to DWS



Accumulated Response of DPI to DPC



V. Conclusion and Policy Implications

The results of the model estimation revealed that there is a positive relationship between Government spending and employment or an inverse relationship between Government spending and unemployment. The study finds that the unemployment rate falls following an increase in public investment. Similarly, following a shock to public consumption the unemployment rate declines in the first quarter. The results show that when considering fiscal support for job creation through growth enhancing activities, the positive impact of both public and private consumption on employment should be considered.

The paper suggests several policy implications for Trinidad and Tobago, which faces fiscal challenges[22] and thus needs to further consolidate spending going forward. Trinidad and Tobago should embark on a fiscal consolidation path in favor of streamlining public consumption and expanding public investment spending to improve long-term sustainable growth. Efficient distribution of capital and consumption spending not only helps maintain the fiscal discipline required by the Government, but also is instrumental in shaping the reform agenda necessary to further growth and development.

To further growth and employment in Trinidad and Tobago, policies should strike a balance between expansionary fiscal policy and fiscal consolidation measures. A combination of fiscal expansions in public investment and consolidation of consumption spending in unproductive areas can help put the fiscal accounts on a sustainable path. A recent IMF study involving Caribbean countries, including Trinidad and Tobago, found that expansionary multipliers are generally smaller than consolidation multipliers, especially for small developing states with high public debt[23]. This is particularly important for Trinidad and Tobago given its rising debt to GDP level and declining revenue base.

The economic and social impact of public investment depends on its efficiency. While capital spending is just one part of public investment, it should be noted that the success of the Government's capital programme in stimulating growth and employment will depend on its efficient implementation. In recent years, implementation has been a problem because of administrative delays. More recently, the programme slowed,

[22] Declining options for non-debt financing, rising public debt and relatively low energy commodity prices.
[23] High public debt results in increased risk premia (e.g., on interest rates) which in turn dampen the multipliers. Fiscal Policy Multipliers in Small States, WP/19/72, March 2019 – IMF.

as resources were allocated for the settlement of arrears to contractors. Another recommendation is the efficient implementation of the Government's Public Sector Investment Programme (PSIP) to reduce spare capacity in the construction sector and create jobs. A recently published IMF paper examines different approaches to measuring public investment efficiency. The study finds that around 30.0 per cent of the potential benefits of public investment are lost due to inefficiencies in the investment process on average[24]. In 2015 the IMF introduced a public investment management assessment framework to help member countries strengthen the efficiency and effectiveness of public investment (IMF, 2018). It may be worthwhile to explore this framework to assist with the management of the country's PSIP.

The MILES framework (World Bank, 2007), which is advocated to keep employment levels up and promote job creation, is also recommended to improve labour market outcomes in Trinidad and Tobago especially during times of economic downturns (Downes, 2009). At the macro level the MILES framework proposes the following:

- **M**acroeconomic Policies - (monetary, fiscal and structural policies)
- **I**nvestment Climate improvement - (ease of doing business, infrastructure, incentives)
- **L**abour Market policies and institutions - (social dialogue, wage setting, labour legislation)
- **E**ducation and skills training – (to address skills mismatch)
- **S**ocial Protection – (to protect vulnerable groups)

[24] See International Monetary Fund (2015). Making Public Investment more Efficient. Policy Paper Fiscal Affairs Department

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Appendix 1: Introduction Tables

Table 1

Labour Force Statistics (Thousands)

Year	Employed	Labour Force	Unemployed	Unemployment Rate (%)	Participation Rate (%)
2011	585.3	616.4	31.1	5.1	61.3
2012	614.1	646.0	31.9	4.9	61.9
2013	626.3	650.1	23.9	3.7	61.4
2014	636.8	658.6	21.8	3.3	61.9
2015	623.3	645.3	22.0	3.4	60.6
2016	613.0	638.3	25.2	3.9	59.7
2017	603.1	633.7	30.6	4.8	59.2

Source: Central Statistical Office of Trinidad and Tobago

Table 2

Central Government Expenditure (Per Cent Change)

Year	Transfers and Subsidies	Transfers to Households	Capital Expenditure
2011	17.6	38.0	16.6
2012	10.5	0.6	2.9
2013	7.6	34.5	13.3
2014	16.5	21.5	10.5
2015	-12.7	-7.5	-20.5
2016	-13.6	-28.8	-41.7
2017	-3.3	-2.6	-18.3
2018	0.3	-1.5	6.6

Source: Ministry of Finance of Trinidad and Tobago

Appendix 2: EViews Estimation Outputs

Table 1

Unit Root Test Results

Variable	ADF		
	Trend	Trend and Intercept	None
I	0.902	0.514	0.930
D(I)	0.000*	0.000*	0.000*
C	0.815	0.826	0.825
D(C)	0.000*	0.000*	0.000*
U	0.310	0.737	0.001
D(U)	0.000*	0.000*	0.000*
PC	0.994	0.775	1.000
D(PC)	0.000*	0.000*	0.0227
WS	0.860	0.000*	0.9643
D(WS)	0.000*	0.000*	0.000*
OG	0.002	0.013	0.000*
IR_t	0.331	0.997	0.984
D(IR)	0.000*	0.000*	0.000*
PI	0.100	0.243	0.999
D(PI)	0.000	0.001	0.176
E	0.221	0.823	0.975
D(E)	0.000*	0.000*	0.000*

UR	0.0729	0.993	0.000*
D(UR)	0.000*	0.000*	0.000*

*** Significant at the 1%, 5% and 10% level of significance**

VAR Model

Vector Autoregression Estimates
Date: 03/29/19 Time: 15:41
Sample (adjusted): 12/01/1995 12/01/2017
Included observations: 89 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DC01	DI	DPI	DPC	DWS	DIR	DLF	DUR	OG
DC01(-1)	-0.476078	0.476210	-0.030989	0.007576	0.129796	0.000101	-0.001742	-0.000168	0.000233
	(0.13579)	(0.20217)	(0.08081)	(0.04892)	(0.03841)	(0.00030)	(0.00132)	(0.00013)	(0.00033)
	[-3.50607]	[2.35546]	[-0.38346]	[0.15486]	[3.37958]	[0.33689]	[-1.31617]	[-1.34014]	[0.70434]
DC01(-2)	0.036826	0.928021	0.081261	0.022286	0.119055	0.000260	-0.000775	-8.92E-05	0.000331
	(0.12014)	(0.17887)	(0.07150)	(0.04328)	(0.03398)	(0.00027)	(0.00117)	(0.00011)	(0.00029)
	[0.30654]	[5.18818]	[1.13652]	[0.51489]	[3.50372]	[0.97726]	[-0.66223]	[-0.80272]	[1.13101]
DI(-1)	-0.338450	-0.844612	0.139197	0.075548	-0.050556	0.000111	0.001234	-9.53E-05	0.000113
	(0.08663)	(0.12899)	(0.05156)	(0.03121)	(0.02450)	(0.00019)	(0.00084)	(8.0E-05)	(0.00021)
	[-3.90678]	[-6.54810]	[2.69976]	[2.42048]	[-2.06326]	[0.58186]	[1.46165]	[-1.18857]	[0.53533]
DI(-2)	-0.123546	-0.543060	0.021698	-0.005485	-0.060783	-0.000104	-0.000287	-4.97E-05	-2.13E-05
	(0.10093)	(0.15028)	(0.06007)	(0.03636)	(0.02855)	(0.00022)	(0.00098)	(9.3E-05)	(0.00025)
	[-1.22403]	[-3.61363]	[0.36120]	[-0.15084]	[-2.12912]	[-0.46800]	[-0.29146]	[-0.53226]	[-0.08647]
DPI(-1)	0.147546	-0.062426	-0.001519	0.110664	0.005600	0.000413	0.000125	-3.11E-06	0.000410
	(0.19966)	(0.29728)	(0.11883)	(0.07194)	(0.05647)	(0.00044)	(0.00195)	(0.00018)	(0.00049)
	[0.73897]	[-0.20999]	[-0.01279]	[1.53838]	[0.09917]	[0.93584]	[0.06431]	[-0.01685]	[0.84196]
DPI(-2)	-0.047901	-0.121334	0.379923	-0.079106	-0.031608	0.000301	-0.000768	0.000366	0.000364

	(0.18465)	(0.27493)	(0.10990)	(0.06653)	(0.05223)	(0.00041)	(0.00180)	(0.00017)	(0.00045)
	[-0.25941]	[-0.44133]	[3.45710]	[-1.18908]	[-0.60521]	[0.73797]	[-0.42674]	[2.14347]	[0.80822]
DPC(-1)	-0.212953	-0.372040	-0.037407	0.189047	0.067804	4.72E-05	0.000226	-0.000486	0.000165
	(0.34518)	(0.51394)	(0.20544)	(0.12436)	(0.09763)	(0.00076)	(0.00336)	(0.00032)	(0.00084)
	[-0.61693]	[-0.72390]	[-0.18209]	[1.52013]	[0.69449]	[0.06184]	[0.06731]	[-1.52097]	[0.19636]
DPC(-2)	-0.153628	-0.508484	0.529902	0.021706	-0.052351	0.000415	-0.001317	7.21E-05	0.000801
	(0.33337)	(0.49636)	(0.19841)	(0.12011)	(0.09429)	(0.00074)	(0.00325)	(0.00031)	(0.00081)
	[-0.46083]	[-1.02443]	[2.67078]	[0.18072]	[-0.55521]	[0.56270]	[-0.40530]	[0.23375]	[0.98510]
DWS(-1)	0.033214	0.583482	-0.438405	0.042805	-0.632459	-0.000365	-0.004197	0.000777	-0.000394
	(0.45443)	(0.67661)	(0.27046)	(0.16373)	(0.12853)	(0.00100)	(0.00443)	(0.00042)	(0.00111)
	[0.07309]	[0.86236]	[-1.62097]	[0.26144]	[-4.92061]	[-0.36312]	[-0.94757]	[1.84875]	[-0.35531]
DWS(-2)	-0.785286	0.042102	-0.238382	0.023986	-0.276167	0.000237	-0.001978	0.000564	-5.79E-05
	(0.42400)	(0.63130)	(0.25235)	(0.15276)	(0.11992)	(0.00094)	(0.00413)	(0.00039)	(0.00103)
	[-1.85209]	[0.06669]	[-0.94466]	[0.15702]	[-2.30284]	[0.25279]	[-0.47856]	[1.43774]	[-0.05604]
DIR(-1)	168.2619	351.0274	41.81342	-15.31387	11.40946	0.802378	1.280049	-0.206918	0.222067
	(130.266)	(193.953)	(77.5280)	(46.9325)	(36.8445)	(0.28801)	(1.26964)	(0.12052)	(0.31761)
	[1.29168]	[1.80986]	[0.53933]	[-0.32630]	[0.30967]	[2.78598]	[1.00820]	[-1.71687]	[0.69918]
DIR(-2)	-18.15152	-74.68593	1.093601	-17.81660	1.355425	0.062954	-0.048011	-0.063790	-0.014535
	(56.8317)	(84.6169)	(33.8236)	(20.4755)	(16.0743)	(0.12565)	(0.55391)	(0.05258)	(0.13857)
	[-0.31939]	[-0.88264]	[0.03233]	[-0.87014]	[0.08432]	[0.50102]	[-0.08668]	[-1.21319]	[-0.10490]
DLF(-1)	11.25347	0.989327	-12.02722	5.526160	-2.448389	0.028014	-0.135087	0.011132	0.021064
	(12.3208)	(18.3444)	(7.33274)	(4.43896)	(3.48482)	(0.02724)	(0.12008)	(0.01140)	(0.03004)
	[0.91337]	[0.05393]	[-1.64021]	[1.24492]	[-0.70259]	[1.02841]	[-1.12493]	[0.97658]	[0.70120]

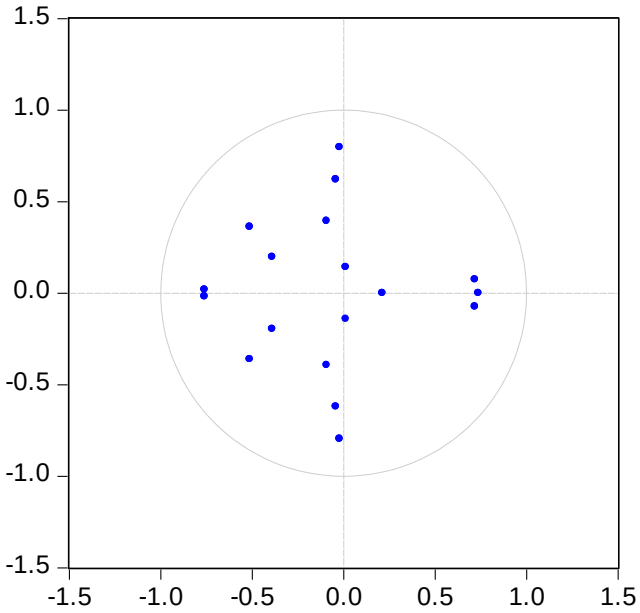
DLF(-2)	-0.052288	-54.36251	-9.956477	-2.492859	-5.437522	-0.028949	-0.107928	0.017608	-0.041743
	(12.5908)	(18.7464)	(7.49343)	(4.53624)	(3.56118)	(0.02784)	(0.12272)	(0.01165)	(0.03070)
	[-0.00415]	[-2.89989]	[-1.32869]	[-0.54954]	[-1.52689]	[-1.03993]	[-0.87949]	[1.51155]	[-1.35978]
DUR(-1)	96.70477	242.2691	-92.31237	42.25959	-30.86249	-0.122822	-1.776803	-0.550258	-0.011121
	(121.719)	(181.228)	(72.4415)	(43.8534)	(34.4272)	(0.26911)	(1.18634)	(0.11261)	(0.29677)
	[0.79449]	[1.33682]	[-1.27430]	[0.96366]	[-0.89646]	[-0.45640]	[-1.49772]	[-4.88625]	[-0.03747]
DUR(-2)	129.6399	328.1609	36.67697	25.23585	-52.09158	-0.062922	-1.031806	-0.091479	-0.068534
	(120.860)	(179.949)	(71.9302)	(43.5438)	(34.1842)	(0.26721)	(1.17797)	(0.11182)	(0.29468)
	[1.07265]	[1.82363]	[0.50990]	[0.57955]	[-1.52385]	[-0.23548]	[-0.87592]	[-0.81810]	[-0.23257]
OG(-1)	-115.3877	-206.1091	11.52238	4.365015	9.813372	-1.003907	-1.578599	0.231934	0.426880
	(121.783)	(181.323)	(72.4794)	(43.8763)	(34.4452)	(0.26925)	(1.18696)	(0.11267)	(0.29693)
	[-0.94749]	[-1.13670]	[0.15897]	[0.09948]	[0.28490]	[-3.72852]	[-1.32995]	[2.05849]	[1.43765]
OG(-2)	138.5592	335.4566	-5.216959	2.016521	-3.066636	0.670097	1.227025	-0.258459	0.223290
	(126.874)	(188.903)	(75.5095)	(45.7106)	(35.8852)	(0.28051)	(1.23658)	(0.11738)	(0.30934)
	[1.09210]	[1.77581]	[-0.06909]	[0.04411]	[-0.08546]	[2.38887]	[0.99227]	[-2.20185]	[0.72182]
C	41.02514	460.2906	281.6916	105.0260	45.51421	-0.486175	0.909972	-0.267711	-0.726752
	(182.850)	(272.245)	(108.823)	(65.8776)	(51.7174)	(0.40426)	(1.78215)	(0.16917)	(0.44582)
	[0.22437]	[1.69072]	[2.58852]	[1.59426]	[0.88006]	[-1.20262]	[0.51060]	[-1.58249]	[-1.63014]
R-squared	0.623751	0.588206	0.371179	0.281235	0.489966	0.329316	0.151505	0.465214	0.564029
Adj. R-squared	0.527001	0.482315	0.209482	0.096409	0.358814	0.156854	-0.066679	0.327698	0.451922
Sum sq. resids	49942120	1.11E+08	17689863	6482687.	3995324.	244.1237	4744.249	42.74941	296.8937
S.E. equation	844.6649	1257.624	502.7050	304.3186	238.9060	1.867480	8.232557	0.781477	2.059451
F-statistic	6.447058	5.554872	2.295521	1.521624	3.735873	1.909500	0.694390	3.382976	5.031176

Log likelihood	-715.3649	-750.7904	-669.1796	-624.5079	-602.9695	-171.1877	-303.2198	-93.65452	-179.8964
Akaike AIC	16.50258	17.29866	15.46471	14.46085	13.97684	4.273882	7.240895	2.531562	4.469581
Schwarz SC	17.03386	17.82994	15.99599	14.99213	14.50812	4.805164	7.772177	3.062844	5.000863
Mean dependent	24.89326	123.0742	557.0134	138.0191	17.38764	0.509469	1.125843	-0.150562	-0.151458
S.D. dependent	1228.159	1747.907	565.4019	320.1420	298.3562	2.033782	7.971092	0.953090	2.781829

Determinant resid covariance (dof adj.)	2.82E+28
Determinant resid covariance	3.25E+27
Log likelihood	-3955.583
Akaike information criterion	92.73221
Schwarz criterion	97.51374

AR Roots Graph

Inverse Roots of AR Characteristic Polynomial



Lag Length Criteria Test

VAR Lag Order Selection Criteria

Endogenous variables: DC01 DI DPI DPC DWS DIR DLF DUR OG

Exogenous variables: C

Date: 03/29/19 Time: 15:43

Sample: 3/01/1995 12/01/2017

Included observations: 83

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-4011.035	NA	9.49e+30	96.86832	97.13060	96.97369
1	-3798.295	374.2186	4.01e+29	93.69385	96.31669*	94.74756
2	-3698.656	153.6597	2.73e+29	93.24472	98.22811	95.24677
3	-3613.920	112.3004	2.96e+29	93.15470	100.4987	96.10509
4	-3522.780	101.0225	3.32e+29	92.91037	102.6149	96.80909
5	-3418.836	92.67327	3.69e+29	92.35749	104.4226	97.20456
6	-3268.581	101.3765	2.23e+29	90.68871	105.1143	96.48412
7	-3120.797	67.66029	3.66e+29	89.07945	105.8656	95.82319
8	-2678.701	106.5291*	4.77e+27*	80.37835*	99.52507	88.07043*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion