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ANALYTIC STUDY OF FACTORS INFLUENCING TWIN DEFICIT IN PAKISTAN: USING THE ARDL APPROACH

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Abstract

This research evaluates presence of twin deficit in Pakistan, as well as the relationship between twin deficit and key macroeconomic indicators such as GDP, interest rate, and money supply in the short and long run. The twin-deficit theory indicates a condition in which an economy's budget and current account deficits are both present simultaneously. On time-series quarterly secondary data from Pakistan during 1990 to 2023, the Autoregressive lag distribution (ARDL) model is used. The Augmented Dickey-Fuller (ADF) test was used to ensure the stationarity of variables at the level and 1st difference. According to the findings, Pakistan has a twin deficit in short run as well as in long run. The data also point to a significant link between twin deficit with GDP and IR, as well as negative association among twin deficit and M2. The conclusions may be useful to Pakistan's and developing countries economic management in implementing their strategies. This research examines the long and short-term associations between the Twin deficit and Gross domestic product and as well as to ascertain the causal relationship between the twin deficit, money supply, and Interest rate through the ARDL approach.

Keywords: Twin Deficit, Factors Affecting, ARDL Approach.

Introduction

The association between budget deficit (BD) and current account deficits (CAD) began to attract researchers' attention in the early 1980s, and it has received some serious study from academics and policymakers in both developing and developed countries. There is a lot of empirical and theoretical work on two deficits, and a developing country like Pakistan isn't immune to it because it's always had the

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budget and current account deficits (Safdar, 2014). The link between twin deficits is widely noticed due to their significant impact on a country's long and consistent economic growth, and their imbalance could impede economic activity, harm wealth creation, and lower the country's well-being (Eregha, Aworinde, & Vo, 2022).

Mundell, (1962) and Fleming (1963), agreed with the theoretical explanation of TD. They said, raising in BD causes interest rates to increase, resulting in capital inflows and rise in rate of exchange. Interest rates rise because of a wide debt-financed budgetary plan. Because most nations have a capital-free policy, an expansion in interest rates makes investing in this country's financial sector more tempting to stockholders. It increases currency demand, raising the cost of low-cost exports and imports far above cost of external goods. As a result, the depreciation of national currency will result in an increase in intensity of imports and, eventually, become CAD (Salvatore, 2006, Lahiani, Mtibaa, & Gabsi, 2022).

Similarly, growth in BD promotes output, while a high level of imports causes an imbalance in the CAD, causing the exchange rate to rise (Hsing, 2017). The rate of exchange is generally influenced through a country's current account or trade balance in floating rate of exchange structure. As a result, currency fluctuations impact trade stability to some level (Lee and Brahmasrene, 2018). While both CAD and BD are significant, the likelihood of a link between them becomes significantly.

Other macroeconomic variables may be influenced by the TD scenario in the economy, such as rate of growth, demand and supply of production, imbalance of current account, currency, and interest rates (Rehman, et, al., 2020). Even though money supply (M2) is an important component of any economy's growth, exchange rate fluctuations have a detrimental long-term impact on money supply inflow (Abbasi, et, al., 2021).

Based on these notions, this research explores the influence of TD on economic growth and other macroeconomic variables based on these concepts. The significance of rate at which gross domestic product (GDP) grows for a country's economic development cannot be overlooked, macroeconomic variables such as inflation rate, money supply, investment trade openness, and so on are significant determinants of GDP. So, through this research examines long and short-term association between the TD and GDP and as well as to ascertain the causal relationship between all observed variables.

Research Rationale

The cyclical nature of Pakistan's economics and growth is brought about by diverse macroeconomic aspects. It is of paramount importance to decipher the relationship among these factors in order to implement proper economic policies. The purpose of this research is to investigate the significant links between Budget Deficit (BD), Current Account Deficit (CAD), Trade Deficit (TD), Gross Domestic Product (GDP), Interest Rates (IR), and Money Supply (M2) in Pakistan. Investigating these relationships can be a source of enlightenment on the way these variables are interlinked and their contribution to the general economic state of the country. This comprehension is a prerequisite to the authority to prepare programs that ensure the enhancement of economic growth and stability.

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Problem Statement

Although much research has been done regarding macroeconomic variables, there is a scarcity of research strictly aimed at the interrelation of Budget Deficit, Current Account Deficit, Trade Deficit, Gross Domestic Product, Interest Rates, and Money Supply in Pakistan. A lack of thorough analysis in this area is a major obstacle to the proper economic policy formulation by the people in charge of economic matters. In this study, the author fills this gap by analyzing the significant relationship between these variables in Pakistan.

Research Questions

1. What is the relationship between Budget Deficit (BD) and Current Account Deficit (CAD) in Pakistan?
2. How does Trade Deficit (TD) influence Gross Domestic Product (GDP) in Pakistan?
3. What is the impact of Trade Deficit (TD) on Interest Rates (IR) in Pakistan?
4. How does Trade Deficit (TD) affect Money Supply (M2) in Pakistan?

Research Objective

The primary objective of this research is to analyze the significant relationships between key macroeconomic variables in Pakistan. Specifically, the study aims to:

- Examine the link between Budget Deficit (BD) and Current Account Deficit (CAD).
- Investigate the impact of Trade Deficit (TD) on Gross Domestic Product (GDP).
- Analyze the effect of Trade Deficit (TD) on Interest Rates (IR).
- Determine the influence of Trade Deficit (TD) on Money Supply (M2).

Literature Review

TD in Pakistan

Burney & Yasmeen, (1989), and Khalid & Guan, (1999) evidenced that, from 1980 until the present, the "twin deficits," particularly in emerging countries, have been abnormally high.

The work of Chaudhary and Shabbir, (2005), supported the positive of BD and CAD in Pakistan economy. Mukhtar, Zakaria, and Ahmed (2007) identified a bidirectional link between CAD and BD in Pakistan from 1975 towards 2005. On the observed time, they used the Granger causality and co-integration test to establish this association.

Moreover, TD was discovered in Pakistan between 1972 and 2008 using ARDL and ECM models by Iram, et al; (2011). During the period of 1972- 2008, Pakistan faced the TD situation through positive relationship of BD and CAD (Saeed & Khan, 2012). Similarly, Jawaid & Raza's (2013) analysis of the Pakistan economy from 1976 to 2010 and from study of Hassan, et, al; (2015) on Pakistan economy during 1972-2012 revealed a confirmatory link between CAD and BD that constituted TD in Pakistan throughout these perceived eras.

From 1990 to 2010, one more scholar, Yasmin, (2015), stated comparable outcomes in Pakistan. She demonstrated the existence of TD by establishing a positive connection between BD and CAD. The investigation were discovered using Granger causality and the Johansen co-integration tests. Rehman & Saeed (2017) verified the validity of the TD hypothesis, they concluded that TD is one of the causes of BD and might cause it in Pakistan from 1972 toward 2015. The research of Rehman et, al. (2020) and Awan et, al. (2020), also established the association of CAD and BD in Pakistan that produced TD in Pakistan for period of 1992 towards 2018.

H_1: There is a significant link between BD and CAD in Pakistan.

TD and GDP

According to Barro (1989), an increase in BD has an impact on the economy's growth rate and savings, both of which are lower in this condition; also, BD has begun to boost the country's CAD.

Miller and Russek (1989) used annual economic data from the US economy to claim and establish the direct association between BD, and CAD, as well other observed macroeconomic variables.

In Pakistan, Aqeel et al. (2000) discovered that CAD and BD had a long-term positive relation and that economic growth, currency rates, and M2 had a direct impact on CAD. This conclusion was reached by using the Granger causality test and the VECM model using Pakistan's annual GDP data from 1973 to 1998.

In Pakistan, it was discovered that BD and GDP have a negative relationship, that encouraged TD in economy, Rauf, and Khan (2011) confirmed this between 1980 to 2009. The Granger causality test and the OLS model were utilized in this investigation. Although BD had a negative impact on Pakistan's GDP, resulting in a twin deficit in the economy. Fatima et al. (2012) employed regression analysis to confirm this assertion, using time series data from the Pakistani economy during 1978 toward 2009. Between 1972 and 2011, Tufail et al. (2014) asserted and demonstrated a short as well as long-term relation between CAD, BD, GDP, currency exchange rate, and economical sector development in Pakistan. They discovered this connection using Johansen's co-integration test.

Ghaderi, et, al. (2016) also utilized the VAR approach on Iranian economic data from 1990:1 to 2011:4. The study's findings demonstrated the existence of the TD condition, along with negative relationship between GDP and TD. Rehman et, al. (2020) initiated the positive relationship of TD and GDP in Pakistan during 1992 to 2018 through Johnsen Cointegration test.

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H_2: There is a significant link between TD and GDP in Pakistan.

TD and IR

According to Vyshnyak, (2000), in a fluctuating exchange rate economy, extensive external borrowing and capital flexibility enhance imports while reducing exports. As a result, the stable interest rate increased imports, resulting in a CAD scenario in the economy. This condition reflected all established and developing economies with insufficient external debt, which resulted in expansion in government spending, producing BD, and rise in the country's exchange rate, producing CAD. According to Salvatore (2006), BD has led in an increase in interest rate, which is based on imports and foreign investment in connection to CAD-encouraged. Baharumshah & Lau (2007) initiated similar outcomes in their assessment of TD influence on emerging economies.

They used this logic to analyzed Thailand's economic statistics and found that CAD, BD, IR, and exchange rate all had a long-term relationship.

According to Payesteh (2008), BD resulted in capital inflows, a trade deficit, and an increase in interest rates in the US economy. Hakro (2009) demonstrated the link between CAD, BD, and other macroeconomic parameters in his research because BD affects the price, which is linked to the real rate of Interest, that rate is connected to the money flow, which is linked to the exchange rate, and this rate is closely associated to trading imbalances. Another study Rehman et, al, (2020), also confirmed that during TD, IR has a negatively relation in Pakistan during the period 1992 to 2018.

H_3: There is a significant link between TD and IR in Pakistan.

Twin Deficit and M2

Corresponding to Chaudhary and Shabbir (2005), an expansion in the country's BD has a direct impact on the country's money supply, fiscal reserves, and current price, all of which were affected during TD. Similarly, Aqeel et al. (2000), found that CAD and BD have a positive long-term relationship in Pakistan, and that M2 affect CAD during the TD in economy. This conclusion was reached using the Granger causality test and the VECM model using Pakistan's annual data from 1973 to 1998. Hassan, et, al., (2015), found the presence of TD within Pakistan's economy from 1972 to 2012. They discussed the long-term interactions between macroeconomic variables unemployment, M2, and FDI during the TD situation. They employed VECM and ARDL approaches to get these results. The conclusions of Rehman et al. (2020), and Abbasi et, al. (2021), also confirmed the positive significant relationship among M2 and TD.

H_4: There is a significant link between TD and M2 in Pakistan.

Methodology

The current study relied on a quantitative approach to examine data results and attain study objectives. The research pattern is positivism; it is an important part of the research philosophy because it allows the investigator to address social issues; as a

result, it also conveys the true scenario and natural surroundings of the inquiry (Hughes & Sharrock, 2016).

In this study, a deductive technique is employed to analyze the presence of TD in addition to initiate relationship between the variables TD, GDP, M2, and IR. For this objective, statistics from the quarterly periods of the Pakistani economy from 1990 to 2023 were used. The IFS statistics, World Data Bank, and economic annual report of Pakistan, all contribute to the collecting of data for macroeconomic variables i.e., CAD, BD, GDP, M2, and IR.

Model Structure

The theory of TD was first proposed in 1980, while the US economic system was suffering from both CAD and BD deficits at same period. Essentially, the TD hypothetical framework begins with an examination of the association of CAD and BD, this can be recognized as national income accounting characteristics (N.I). N.I can be phrased as follows in an open economy:

$$Y = C + I + G + X - M \qquad \text{---------- (1)}$$

Where

Y = N.I. or GDP of the economy

C = Consumption by the Government

I = Government Investment

G = expenses by Government

X = exports in economy

in addition, M = Economy's Import

In an economy, the difference of export and import is referred to as the capital account CA., and equation (1) becomes:

$$CA = Y - (C + I + G) \qquad \text{---------- (2)}$$

National absorption is represented in this equation by the C + I + G. When Investment (I) and Saving (S) are identical in a closed economy, the equation becomes,

$$Y - C = S \qquad \text{---------- (3)}$$

$$S = I + CA \qquad \text{---------- (4)}$$

The equation (4) shows that investment in the open economy promotes NI.

$$S = S_{pvt} + S_{govt} \qquad \text{---------- (5)}$$

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Private and public saving are accumulated in the economy, Private saving, on the other hand, is calculated using the Yd quantity of disposable income, that is laid away as substitute used for consumption.

So,

$$S_{pvt} = Y^d - C = (Y - T) - C \quad \text{---------- (6)}$$

The difference in economy between Transfers (Rt), Expenses (G), and Government Taxes (T), is used to compute Government Savings Sgovt. We've got,

$$S_{govt} = T - G - R_t \quad \text{---------- (7)}$$

Equations (5), (6), and (7) were used to get a conclusion (7)

$$S = (Y - T - C) + (T - G - R_t) = I + CA \quad \text{---------- (8)}$$

$$S_{pvt} = I + CA - S_{govt} = I + CA - (T - G - T_r) \quad \text{---------- (9)}$$

The three aspects of saving are effectively stated in Equation 9: investment in economy, current account, and government saving.

therefore

$$CA = S_{pvt} - I + (T - G - T_r) \quad \text{---------- (10)}$$

or

$$CA = S_{pvt} - I + BB \quad \text{---------- (11)}$$

The budget balance, is represented by BB in equation (11). Two possibilities may emerge from this equation.

1. If the transformation of Spvt and I is detected after a period of time, then variation in BB has a direct effect on CA.
2. 2. Another alternative is that as BB rises, the economy's saving rises as well; in this scenario, BB has no influence on the CA. (Osoro, et, al., 2014).

The research model of open economy for this study explained through the work of Rehman et, al; 2020.

CAD = f (BD, GDP, IR, M2)

Wherever

CAD = As a percentage of GDP, the current account deficit is calculated quarterly.

BD = The fiscal deficit in percentage on a quarterly basis.

GDP = Gross Domestic Product in percent on a quarterly basis.

M_2 = Money Supply in percent on a quarterly basis.

ER = Exchange rate in percent on a quarterly basis.

Then the research model is,

$$CAD = \beta_0 + \beta_1 BD + \beta_2 GDP + \beta_3 M2 + \beta_4 IR + u_t$$

Examination of Unit Root

This technique is applied to period data to ensure data stability. In time series data, stationarity described mean, autocorrelation, and variance as constants (Shamshir, et, al., 2019). Since subsequent data analysis tests are dependent on this test, the data's stationarity was assessed using Augmented Dickey-Fuller (ADF) test. This test's mathematical equation is,

$$\Delta Y_t = \alpha + \beta_t + \gamma\, Y_{t-1} + \delta_1 \Delta Y_{t-1} + \text{-------} + \delta_{p-1} \Delta Y_{t-p+1} + \varepsilon_t$$

The ARDL (Autoregressive Distributed- Lagged) model

The ARDL testing methodology of Pesaran et al. (2001) is a more intuitive method to series estimation using a mix of stationary at level and at first difference, resulting in improved short and long run results.

$$\Delta CAD = C + \sum_{i=1}^{n} \gamma_1 \Delta CAD_{t-i} + \sum_{i=0}^{n} \gamma_2 \Delta BD_{t-1} + \sum_{i=0}^{n} \gamma_3 \Delta GDP_{t-1} + \sum_{i=0}^{n} \gamma_4 \Delta M2_{t-1} +$$

$$\sum_{i=0}^{n} \gamma_5 \Delta ER_{t-1} + \varphi_1 BD_{t-1} + \varphi_2 GDP_{t-1} + \varphi_3 M_{2\,t-1} + \varphi_4 ER_{t-1} + \varepsilon_t.$$

where,

$\gamma 1$, $\gamma 2$, $\gamma 3$, $\gamma 4$, and $\gamma 5$ are the short-term dynamics estimations of ARDL test

and

$\varphi 1$, $\varphi 2$, $\varphi 3$, & $\varphi 4$ are long-term dynamics estimations of ARDL test

The hypotheses of ARDL test are

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$$H_0: \varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5 = 0$$

$$H_1: \varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \neq \varphi_5 \neq 0$$

The bound test is applied to examine if there are any long run links among orders of smaller than I(2) of series integrated. The bound test also supports the assumption of long-run stable equilibrium cointegration with variables (Omoniyi & Olawale, 2015). The null hypothesis is rejected when the F-statistics falls below the lower bound, while the existence of cointegration is concluded when the F-statistics exceeds the upper constraint. If the F-statistic falls between the borders, however, the test is inconclusive.

Results of Investigation

Results of Unit Root Test

The ADF technique was used to test the data's stability. Table 1 shows ADF results for macroeconomic indicators CAD, BD, GDP, M2, and IR, which reveal GDP and M2 are stationary at level while CAD, BD, and IR have the first difference stationarity at 5%.

Table 01: Unit Root Test

Variables	Augmented Dickey-Fuller test statistic (At Level)	Augmented Dickey-Fuller test statistic (At First Difference)	Integration
CAD	-2.442	-3.730	I(1)
BD	-2.127	-4.489	I(1)
GDP	-3.019		I(0)
M2	-5.423		I(0)
IR	-2.846	-7.675	I(1)

Model of ARDL for Short Run

Table 2 displays the short-run dynamics of Twin deficit and macroeconomic factors. The coefficient of error correction term (ECM) represents the speed adjustment for long run equilibrium. The ECM value determines how quickly the variables will adjust during the convergence process (Rehman et, al. 2019). The consistent long-run relationship is reflected by a highly significant error correction term with a negative sign. Depending on the economy's adjustability and flexibility capacity, a value of the ECM coefficient in the middle of 0 and -2 is sufficient (Samargandi et al., 2013). The ECM -0.2521 coefficient indicates that the speed of convergence will be 25% percent in the following year.

Table 02: ARDL Short Run Result

Selected Model: ARDL (1,0,2,01,0) Dependent Variable: CAD Included Observation: 114			
Variable	Coefficient	Standard Error	Prob.
D(CAD (-1))	0.560	0.083	0.000
D(BD)	0.048	0.027	0.048
D(GDP)	0.460	0.083	0.000
D(GDP(-1))	-0.292	0.090	0.001
D(IR)	0.005	0.012	0.060
D(M2)	-0.002	0.007	0.004
Coint: Eq(-1)	-0.252	0.019	0.000

Table 3 demonstrates that the variables are co-integrated because F- Statistics value (4.418568) is higher above the 10% of upper bound.

Table 03: Bound Test

Equation	F-Statistics Calculated	Upper Bound Critical Value	Conclusion
CAD, BD, GDP, IR, M2	4.418	3.52 (10%)	Co-integration exists

ARDL Results for Long Run

The ARDL model investigates the long-term relationship between TD and macroeconomic variables. Table 4 shows the ARDL results for Pakistan's economic data throughout time. The TD scenario in Pakistan from 1990 to 2023 is confirmed by the considerable positive link between BD and CAD. The Mundell-Fleming and Keynesian ideas that the BD caused CAD in the economy are supported by this finding (Rehman et, al., 2020). The long-run ARDL test results also revealed that CAD, GDP, and M2 have a substantial relationship, IR, on the other hand, has an insignificant association with CAD. The findings indicated that macroeconomic variables GDP, and M2 were all affected by the TD situation in Pakistan from 1990 to 2023. The results of the ARDL test show that a 1% increase in Pakistan's GDP leads a 4.83 percent increase in TD, whereas a 1% increase in M2 causes a 29.26% drop in Pakistan's TD during that period of time.

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Table 04: ARDL Model for Long Run			
Selected Model: ARDL (1,0,2,01,0) Dependent Variable: CAD Included Observation: 114			
Variable	Coefficient	Standard Error	Prob.
BD	0.560	0.083	0.000
GDP	0.048	0.027	0.048
IR	0.460	0.083	0.064
M2	-0.292	0.090	0.016
C	0.005	0.012	0.000

Conclusion

The goal of the research is to be investigated and examined the association between CAD and BD, as well as to analyze the short & long term associations of TD and GDP, IR, and M2. In this analysis, time series quarterly data from Pakistan from 1990 to 2023 is used. The ADF test was performed to verify the data's stability in order to ascertain the short and long-term relationship between the variables. The test revealed that not all of study's variables were stationary at same degree, GDP and M2 were integrated at level while CAD, BD and IR have a significance level of 5% in the first difference. Several macroeconomic factors were influenced during TD, according to studies by Hakro (2009), Soomro et al., (2021), Rehman et al. (2020), Soomro et al., (2021), and Shah, Jadoon, & Afridi,. (2022). Therefore, the ARDL results of this research indicated that GDP & IR have a positive long run link with TD in Pakistan from 1990 to 2023, whereas M2 has a negative relationship with TD.

Recommendations

According to the findings of the study, the presence of both BD and CAD in a country at the same time is the main cause of TD. Hence the solution to TD is to develop robust and comprehensive fiscal and monetary policies inside the country. Furthermore, structural taxation systems, controlled trade restrictions, and money supply introduce new opportunities for investors to help the economy's budget and trade balance. The state should do a better job of achieving political consistency through the government, which is a key aspect in attracting both domestic and foreign investment.

References

Abbasi, M. A., Amran, A., Rehman, N. A., & Ali, A. (2021). Twin deficit and macroeconomic indicators in emerging economies: A comparative study of Iran and Turkey. *The Journal of Asian Finance, Economics and Business*, *8*(5), 617-626.

Aqeel, A., Nishat, M., & Qayyum, A. (2000). The twin deficits phenomenon: Evidence from Pakistan. *The Pakistan Development Review*, 535-550.

Awan, A., Nasim, I., & Raza, K. (2020). Examining twin deficit hypothesis using simultaneous model in Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, *40*(4).

Baharumshah, A. Z., & Lau, E. (2007). Dynamics of fiscal and current account deficits in Thailand: An empirical investigation. *Journal of Economic Studies*.

Barro, R. J. (1989). The Ricardian approach to budget deficits. *Journal of Economic Perspectives*, *3*(2), 37-54. https://doi.org/10.1257/jep.3.2.37

Burney, N. A., Yasmeen, A., & Niazi, M. K. (1989). Government budget deficits and interest rates: An empirical analysis for Pakistan. *The Pakistan Development Review*, *28*(4), 971-980.

Chaudhary, M. A., & Shabbir, G. (2005). Macroeconomic impacts of budget deficit on Pakistan's foreign sector. *Pakistan Economic and Social Review*, 185-198.

Eregha, P. B., Aworinde, O. B., & Vo, X. V. (2022). Modeling twin deficit hypothesis with oil price volatility in African oil-producing countries. *Resources Policy*, *75*, 102512.

Fatima, G., Ahmed, M., & Rehman, W. (2012). Consequential effects of budget deficit on economic growth of Pakistan. *International Journal of Business and Social Science*, *3*(7).

Fleming, M. J. (1962). Domestic financial policies under fixed and under floating exchange rates. *International Monetary Fund Staff Papers*, *9*(3), 369-380.

Ghaderi, J., Samadi, A. H., & Ghaderi, S. B. (2016). The effect of budget deficit shock on the current account deficit in the presence of output shocks: The twin divergence phenomenon in Iran (1990:1-2011:4). *Majlis & Rahbord*, *23*, 223-246.

Hakro, A. N. (2009). Twin deficits causality link-evidence from Pakistan. *International Research Journal of Finance and Economics*, *24*, 54-70.

Hassan, M. S., Wajid, A., Mahmood, H., & Shahbaz, M. (2015). Testing relevance of twin deficit for a transition economy like Pakistan. *Transylvanian Review of Administrative Sciences*, *11*(46), 91-106.

Hsing, Y. (2017). Impacts of the real effective exchange rate and the government deficit on aggregate output in Australia. *Journal of Asian Finance, Economics and Business*, *4*(1), 19–23.

Hughes, J. A., & Sharrock, W. W. (2016). *The philosophy of social research*. London, UK: Routledge.

ISSN (Print): 2959-099X ISSN (Online): 2959-1007
Volume 4, Issue 1, Page 137-150, June 30, 2024

Iram, M. P. S., Shadid, A., Mahpara, S., & Fazli, R. (2011). Old wine in new bottles: Testing the Keynesian preposition of twin deficit in case of Pakistan. *International Journal of Business and Social Science, 2*(5), 209.

Jawaid, S. T., & Raza, A. S. (2013). Dynamics of current account deficit: A lesson from Pakistan. *Transition Studies Review, 19*(3), 357-366.

Khalid, A. M., & Guan, T. W. (1999). Causality tests of budget & current account deficits: Cross-country comparisons. *Empirical Economics, 24*(3), 389-402. http://dx.doi.org/10.1007/s001810050062

Lee, J. W., & Brahmasrene, T. (2018). An exploration of dynamical relationships between macroeconomic variables and stock prices in Korea. *Journal of Asian Finance, Economics and Business, 5*(3), 7–17.

Lahiani, A., Mtibaa, A., & Gabsi, F. (2022). Fiscal consolidation, social sector expenditures and twin deficit hypothesis: Evidence from emerging and middle-income countries. *Comparative Economic Studies*, 1-38.

Miller, S. M., & Russek, F. S. (1989). Are the twin deficits really related? *Contemporary Economic Policy, 7*(4), 91-115.

Mukhtar, T., Zakaria, M., & Ahmed, M. (2007). An empirical investigation for the twin deficit hypothesis in Pakistan. *Journal of Economic Cooperation Among Islamic Countries, 28*(4).

Mundell, R. A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *The Canadian Journal of Economics and Political Science, 29*(4), 475-485.

Omoniyi, L. G., & Olawale, A. N. (2015). An application of ARDL bounds testing procedure to the estimation of level relationship between exchange rate, crude oil price, and inflation rate in Nigeria. *International Journal of Statistics and Applications*.

Osoro, K. O., Gor, S. O., & Mbithi, M. L. (2014). The twin deficit and the macroeconomic variables in Kenya. *International Journal for Innovation Education and Research, 2*(9), 64–84.

Payesteh, S. (2008). Do the federal deficit matter? *International Business & Economics Research Journal, 7*(1).

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. In: *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. Cambridge: Cambridge University Press.

Rehman, A. U., & Saeed, S. (2017). Validity of twin deficit hypothesis in case of Pakistan: Using different co-integration techniques. *Economics, Commerce and Trade Management: An International Journal, 1*(1), 45-57.

Rehman, N. A., Shamshir, M., & Shakir, K. (2020). Correlation of macroeconomic variables with twin deficit in Pakistan. *IBT Journal of Business Studies (IBTJBS), 16*(1). https://doi.org/10.46745/ilma.jbs.2020.16.01.01

Rehman, N. A., Shamshir, M., Hussain, A., & Sabir, S. (2019). Relationship between major macroeconomic variables and economic growth: A case of Pakistan during 1976-2016.

Rauf, A., & Khan, A. Q. (2011). An empirical study to find the relationship between trade deficit and budget deficit in Pakistan. *Academic Research International, 1*(3), 36.

Saeed, S., & Khan, M. A. (2012). Twin deficits hypothesis: The case of Pakistan 1972-2008. *Academic Research International, 3*(2), 155.

Safdar, L. (2014). The relationship between twin deficit and stock market: An ARDL approach from Pakistan. *Euro Economica, 1*(33).

Salvatore, D. (2006). Twin deficits in the G-7 countries and global structural imbalances. *Journal of Policy Modeling, 28*(6), 701-712.

Samargandi, N., Fidrmuc, J., & Ghosh, S. (2015). Is the relationship between financial development and economic growth monotonic? Evidence from a sample of middle income countries. *World Development, 68*, 66–81. https://doi.org/10.1016/j.worlddev.2014.11.010

Shah, S. S. A., Jadoon, S., & Afridi, M. A. (2022). Relevance of twin deficit hypothesis in the presence of structural breaks: An evidence from Pakistan. *Quality & Quantity*, 1-16.

Shamshir, M., Rehman, N. A., Hussain, A., & Sabir, S. (2019). Relationship among economic growth and other macroeconomic variables: A study of Pakistan. *Journal of Resources Development and Management, 54*, 60-68.

Soomro, J. A., Sultana, N., Chavara, J., & Shakir, K. (2021). Twin deficit hypothesis validation.

Tufail, M. K., Anwar, S., Raza, S. H., & Abbas, K. (2014). Effect of budget deficit on trade deficit in Pakistan (a time series analysis). *Journal of Finance and Economics, 2*(5), 145-148.

Vyshnyak, O. (2000). Twin deficit hypothesis: The case of Ukraine. Kyiv: National University Kyiv, Mohyla Academy.

Yasmin, F. (2015). Twin deficit hypothesis: A case of Pakistan. *Sukkur IBA Journal of Management and Business, 2*(1), 71-84.