ISSN: 3049-7159

Research Article

Journal of Business and Econometrics Studies

The Effects of the Twin-Deficit Hypothesis: A Study Case for Romania

Alexandru I. Chirilus* **and Catalina Pricope**

The Bucharest University of Economic Studies, Romania

***Corresponding author**
Alexandru I Chirilus. The Bucharest University of Economic Studies, Romania.

Received: April 30, 2024; **Accepted:** May 09, 2024; **Published:** May 15, 2024

ABSTRACT

The purpose of the paper is to explore the broader economic implications of the twin-deficit hypothesis, specifically the crowding-out effect and the deterioration of the domestic manufacturing sector. The hypothesis posits that government borrowing can inhibit private investments and growth. Such a case has been observed empirically in other countries, where high government borrowing suppressed private sector borrowing and investments. Additionally, the paper investigates how sustained deficits can erode the manufacturing sector by increasing reliance on imports, leading to the contraction of local industries and affecting employment and domestic expertise.

Keywords: E27, C01, H50

Introduction

The transition period of Romania from a centrally planned communist market to a capitalist market economy in the 1990s was a tumultuous and challenging era that began in December 1989, following the fall of Nicolae Ceaușescu's regime. This transition was characterized by economic liberalization, widespread privatization of state-owned enterprises, and gradual integration into European and global economic structures. The 1990s in Romania started with a general euphoria following the fall of communism, but this quickly gave way to the stark reality of transition challenges. The initial phase was marked by political and economic uncertainty, with a rapid succession of governments trying to manage the aftermath of the collapse of the former economic system. Initially, a gradual transition was attempted, but the harsh economic conditions, runaway inflation, and dramatic decline in industrial output called for more drastic measures.

Price liberalization was one of the first and most difficult steps, leading to increased inflation and a decrease in purchasing power. This measure was necessary to correct the economic distortions caused by artificially fixed prices of the communist state. Concurrently, the government began to remove massive subsidies for enterprises, which led to rising unemployment as many of these enterprises were not viable without state support. The structural transformation of the economy was slow and often painful for the population. Agriculture shifted from state farms and cooperatives to private ownership, but land fragmentation and lack of investment impacted productivity. The financial sector was also reformed, with the establishment of new financial institutions and the attraction of foreign banks, which improved access to capital and financial services.

During this tumultuous transition period of the 1990s, Romania's government budget was a barometer of the nation's economic health and policy direction. The transition from communism to capitalism brought with it a host of fiscal challenges. With the old central planning system dismantled, the government grappled with how to finance its operations in the face of shrinking revenue streams. In the immediate aftermath of the fall of communism, Romania's government revenues plummeted. The state-owned enterprises that had previously filled government coffers were no longer reliable sources of income. Many were operating inefficiently or were simply unprofitable in a market without subsidies. Tax collection was inefficient, and the new private sector was still too nascent to make up the shortfall. The government budgets in the early 1990s reflected this reality, with high deficits as a common feature. More so, to finance these deficits, Romania resorted to borrowing, both domestically and internationally, leading to a growing public debt. Inflation soared as a result of both the economic instability and the financing of the budget deficit through monetary creation, undermining the value of the Romanian Leu and the purchasing power of its citizens.

Embarking on a journey of profound transformation after the tumultuous 1990s, Romania's pursuit of economic stability

Citation: Alexandru I Chirilus, Catalina Pricope. The Effects of the Twin-Deficit Hypothesis: A Study Case for Romania. J Bus Econo Stud. 2024. 1(3): 1-8.
DOI: doi.org/10.61440/JBES.2024.v1.26

and alignment with European standards marked the narrative of its fiscal policy into the 2000s and 2010s. This period was characterized by efforts to join and subsequently integrate into the European Union, a goal which came to fruition in 2007. As a new member state, Romania was ushered into a complex economic landscape, one that demanded adherence to the fiscal discipline prescribed by European norms and the broader global financial architecture.

The Romanian government budget during these decades can be viewed through the lens of the twin-deficit hypothesis. This economic theory posits that there is often a symbiotic relationship between a country's fiscal balance and its current account balance. In Romania's case, the pursuit of growth and modernization was often matched with fiscal policies that, while expansionary in nature, risked inflating the budget deficit.

In the euphoria that characterized the early 2000s, Romania experienced substantial growth. This growth, however, was accompanied by increasing fiscal deficits as the government invested in infrastructure, public services, and sought to raise the standard of living for its citizens. The optimism of this era was tangible, with foreign capital flowing into the country, and Romania's strategic position in Europe offering newfound opportunities for trade and investment. Yet, the inherent dangers of an expanding fiscal deficit were laid bare as Romania's current account also fell into deficit. The country was importing more than it was exporting, and the inflow of foreign capital led to a consumption boom that the productive sectors of the economy could not sustain. This phenomenon exemplified the twin-deficit hypothesis, with the fiscal and current account deficits seemingly moving in tandem.

The hypothesis appeared to be further validated in the wake of the 2008 global financial crisis. The crisis revealed the fragility of the Romanian economy, with foreign capital rapidly retracting and the current account deficit reaching unsustainable levels. The government, faced with dwindling revenues and a contracting economy, saw the budget deficit balloon. This scenario necessitated an intervention by the International Monetary Fund and the European Union, which provided financial assistance contingent on strict fiscal reforms. In the aftermath of the crisis, Romania implemented austerity measures aimed at fiscal consolidation. The painful but necessary process of reducing the fiscal deficit also resulted in a reduction of the current account deficit. Government spending was reined in, taxes were restructured, and public sector wages were slashed. As painful as these measures were, they were effective in restoring fiscal balance and reducing external imbalances, bringing Romania closer to the fiscal norms of the European Union.

As the economy started to recover, the government shifted its focus toward sustainable growth. Fiscal policies were aimed at maintaining a delicate balance between stimulating the economy and preventing the re-emergence of twin deficits. In the pursuit of Eurozone membership, Romania adopted stricter fiscal measures, embraced structural reforms, and worked towards meeting the convergence criteria, including maintaining a low budget deficit.

Throughout the 2000s and 2010s, the Romanian economy's dance with the twin-deficit hypothesis has been a tale of caution and learning. The correlation between the fiscal deficit and the current account deficit has shaped the country's economic policies and influenced its trajectory towards European integration. Romania's experience has underscored the complexity of managing fiscal policy in an interconnected world where domestic economic decisions are often reflected in international economic relationships.

The purpose of our paper is to elucidate the broader economic implications that arise from the twin-deficit hypothesis, extending beyond the direct relationship between fiscal imbalances and current account deficits. Specifically, we aim to demonstrate that the existence of dual deficits can precipitate a range of adverse outcomes for an economy, among which the crowding-out effect and a deterioration in the domestic manufacturing sector are of particular concern.

Our analysis will delve into how the twin-deficit condition, when present within a national economy like Romania's, can lead to the crowding-out effect. This phenomenon occurs when government borrowing to finance a fiscal deficit leads to higher interest rates, which in turn makes it more expensive for the private sector to borrow and invest. This can stifle private investment, particularly in the realms of entrepreneurship and capital expansion, thereby impeding economic growth. Moreover, we will explore how sustained fiscal and current account deficits can undermine domestic manufacturing. A persistent current account deficit often indicates a nation's increased reliance on imports versus exports. For Romania, which has been transitioning to a market-based economy, such an imbalance can have a pronounced impact on local industries. The influx of cheaper foreign goods can outcompete domestic products, leading to a contraction in the manufacturing sector. This not only affects the industrial base but also has potential ramifications for employment and the development of domestic expertise.

The interplay between fiscal profligacy and external imbalances can thus create a feedback loop that diminishes the competitiveness of domestic industries and leads to long-term structural weaknesses within the economy. Our paper will dissect these dynamics, offering empirical evidence from Romania's economic journey post-1990s and providing a theoretical framework to understand the implications of the twin-deficit hypothesis beyond its immediate fiscal and external manifestations.

Literature Review

Government Expenditure and Investment

A plethora of research has been carried out to examine the effects of government spending on various economic factors, such as consumption, investment and output variables. A widely employed method in this field of study is the application of vector autoregression (VAR) on macroeconomic datasets. This facilitates the identification and analysis of the effects of alterations in government expenditure on the economy [1-3].

Gaining insight into the relationship between public expenditure and private sector investment is essential for jurisdictions seeking to strategically navigate their paths towards economic development. Investment, especially from private companies, plays a significant role in driving economic development. In this

context, it is important to have a detailed understanding of how investment interacts with public spending.

There are two opposing paradigms in the existing literature that discuss the relationship between government spending and private investment. The initial paradigm, referred to as the "crowding-out effect," suggests that an escalation in government expenditure results in the displacement of private investment. Proponents of this perspective contend that increased government spending unintentionally diminishes the accessibility of financial and physical resources for private investment, thus impeding the private sector's ability to effectively contribute to economic development [4,5].

In contrast, the second paradigm supports the idea that increased government spending has a positive impact on private investment, known as the "crowding-in effect". This viewpoint posits that increased government spending can serve as a catalyst, stimulating the private sector. This is accomplished by infusing liquidity into the economy and fostering a conducive atmosphere for investment and economic growth.

Empirical analyses available in the literature provide evidence in favour of both paradigms. One body of research highlights the conventional perspective that government spending hampers private sector activity. Conversely, a more modern collection of work emphasizes situations in which augmented government expenditure can effectively encourage private investment, adjusting to particular economic conditions.

Bahal et al. examined the relationship between public and private investment in India, and concluded that public spending crowded out private investment from 1950–2012 [6]. However, a shift is observed post-1980, with public investment complementing private investment, likely due to impactful policy reforms.

Biza et al. explored the impact of South Africa's budget deficit on private investment, using quarterly data from 1994 to 2009 [7]. Their findings revealed a significant long-term relationship between the budget deficits and a reduction in private investment, confirming that budget deficits substantially crowd out private investment in the long-run.

Abiad et al. conducted a study on the macroeconomic effects of public investment in 17 OECD economies from 1985 onwards. Their findings indicate that increased public investment has a positive impact on both short-term and long-term output, stimulates private investment and reduces unemployment. The study, which utilizes public investment forecast errors and model simulations to evaluate causality, determines that the effectiveness of public investment depends on various factors. In particular, the impact of public investment on demand is amplified in situations where there is excess capacity in the economy and accommodative monetary policies are in place, which could potentially result in a decrease in the ratio of public debt to GDP. Moreover, nations that have effective public investment strategies and rely on borrowing money through issuing debt experience a more significant and noticeable increase in economic output.

Similarly, research conducted in Turkey examines the impact of the composition of public sector debt on private sector investments from 1975 to 2020, using the ARDL method [8]. The results revealed that public investment, domestic debt stock and external debt service have a negative impact on private investments, leading to a decrease in their level. On the other hand, evidence seems to suggest that the accumulation of public external debt encourages the crowding-in effect.

The influence of public sector expenditure on private sector operations can fluctuate depending on the circumstances. A study conducted in Japan discovered that government spending has both crowding-out and crowding-in effects on the private sector. The spatial distribution of spending also influences these effects, as revealed by Funashima and Ohtsuka [9].

Moreover, the quality of public services and the drive of public servants can also affect the influence of public sector expenditure on private sector activity. Inadequate public services and lack of motivation among public servants can weaken public investments and diminish their worth, potentially impacting private sector expenditure [10].

International Trade and Domestic Manufacturing

The academic debate on the impact of trade balance on economic growth is extensive and complex. The core of this discussion revolves around comprehending the mechanisms by which trade, irrespective of whether it runs on a surplus or deficit, influences economies. Trade improves the effective distribution of resources, promoting technological advancement and encouraging competition and innovation in both domestic and international markets [11,12]. It serves as a channel for the spread of knowledge and technologies, allowing economies to achieve high levels of efficiency and productivity. Additionally, trade promotes the creation of new products and industries [13,14].

The Balance of Payments (BOP) constrained growth model highlights the importance of maintaining trade equilibrium for sustainable economic growth. According to this model, long-term economic well-being is closely connected to an economy's trade dynamics. According to the Thirlwall Law, the sustainable funding of imports, which is influenced by domestic economic activity, is achieved by the income generated from exports [15].

Trade surpluses and deficits have distinct economic implications. A positive trade balance, where a country's exports surpass its imports, can enhance its economic strength. The accumulation of foreign exchange reserves can enable economies to stabilize their currencies and effectively navigate economic adversities [16]. Additionally, these surpluses can be used to support investments in important economic sectors, promoting advancements in technology and improvements in productivity. This, in turn, can stimulate employment by revitalizing domestic industries [17,18].

Nevertheless, maintaining a consistent trade surplus presents its own set of difficulties. It has the ability to apply upward force on the value of a nation's currency, which may reduce the competitiveness of its exports [19]. In addition, it can lead to economic disparities and render an economy susceptible to external disturbances as a result of excessive dependence on exports [20].

Conversely, a trade deficit, resulting from imports exceeding exports, has diverse economic ramifications. Although trade deficits have historically been regarded with scepticism because they can devalue currencies and negatively affect employment in specific industries, a modern viewpoint suggests that trade deficits can indicate strong consumer confidence and purchasing power [21]. Furthermore, trade deficits may also be correlated with foreign direct investments inflows, which can bring in new capital that contributes to economic growth [22].

Kaldor analysed the correlation between industrial advancement and economic expansion and, drawing from empirical evidence, identified the manufacturing sector as the primary catalyst for rapid growth [23]. In light of the various economic outcomes that trade imbalances can generate, it becomes important to assess the impact that trade deficit can exert on a country's manufacturing sector.

A large body of literature focuses on the relationship between international trade dynamics its impact on the domestic manufacturing sector. A study conducted by Autor et al. investigates the impact of import competition on the local labour market in the United States [24]. The authors find that import competition from China explains a significant portion of the decline in U.S. manufacturing employment. More precisely, their estimation indicates that the decline in U.S. manufacturing employment can be attributed to import competition from China, which accounts for 25% of the overall decrease. Cooke et al. examine the impact of international trade, specifically imports from countries with low wages, on the occurrence of job losses in U.S. manufacturing sectors [25]. The authors ascertain that inexpensive imports, particularly from countries with low wages, are a contributing factor to the decline in manufacturing employment in the United States. Kučera & Milberg examine the transformations in manufacturing trade and the process of deindustrialization [26]. Over half of the actual manufacturing employment losses in ten countries are attributed to the expansion of non-OECD manufacturing trade, according to estimates. Berry analyses the decrease in manufacturing activities in Northern England and its consequences on the UK's current account balance [27]. The author ascribes the trade deficit to a decrease in exports of manufactured goods. This may suggest a connection between the trade deficit and the contraction of the domestic manufacturing sector within this particular context [28]. However, it is important to note that the academic debate mostly focused on the impact of trade deficit on employment, leaving a gap in terms of its effect on the manufacturing sector output.

A significant trade deficit can increase competition for domestic manufacturers. Imported goods, which are often priced more competitively, force domestic manufacturers to adjust their pricing strategies, potentially resulting in lower revenues and narrower profit margins [29]. In light of this, the present study aims to investigate the extent to which Romania's trade deficit in goods exerts an impact over its domestic manufacturing sector output.

Methodology

Data

The research hypotheses were tested by operationalizing six variables with quarterly frequencies. These variables were employed in two distinct models to address the research objectives. Data for these variables were collected over the time frame spanning from 1995 Q1 to 2023 Q2 (for I, G, NX and M) and from 2005 Q1 to 2023 Q1 for TM and NXG.

Our models include the following variables:

- Gross capital formation (I): the total value of investments in fixed assets measured in million euros at current prices. Data source: Eurostat database.
- Final consumption expenditure of general government (G): the total expenditure by the government on final consumption goods and services measured in million euros at current prices. Data source: Eurostat database.
- Trade balance (NX): the difference between the value of imports and exports measured in million euros at current prices. Data source: NBR database.
- Gross value added by manufacturing (GVM): reflects the total value generated by manufacturing activities. Its measurement unit is million euros at current prices. Data source: Eurostat database
- Turnover in manufacturing (TM): the total volume of production output within the manufacturing sector. A Laspeyres type index is employed as the primary measurement unit. This methodological approach allows for the isolation of price fluctuation effects on the overall turnover. Data source: Eurostat database
- Trade in goods balance (NXG): the difference between the value of imports and exports measured in million euros at current prices. Data source: NBR database.

The accuracy of data extracted from the Eurostat database was verified by cross-referencing it with data available at the National Institute of Statistics (NIS) database. The validation process revealed no disparities, ensuring the robustness of the dataset for analysis.

Given the time series nature of our dataset, establishing stationarity becomes essential during the initial data preparation stage. Unfortunately, our analysis revealed that all the variables in our dataset were non-stationary at their base levels. To rectify this, we adopted the differencing technique, a standard approach in time series studies. By applying the first difference to each variable, we converted the series into an integrated series of order 1, commonly represented as I (1). This process computes the difference between consecutive data points. The chief aim of this transformation is to eliminate inherent trends or recurring patterns that challenge the data's stationarity.

To verify the success of our differencing strategy, we utilized the Augmented Dickey-Fuller (ADF) test, a widely-adopted tool in econometrics for evaluating the stationarity of time series datasets. By subjecting our differenced series to the ADF test, we were able to evaluate the stationarity of the transformed data. If the test yielded a statistically significant result, it would suggest that our differenced variables were now stationary and suitable for further analysis. Conversely, if non-stationarity persisted, it would necessitate additional modifications to achieve stationarity. We further cross-referenced our findings with the critical values from the ADF test (as seen in Table 1).

Table 1: Values of ADF Test

Variable	At level	P-value	First difference	No. of obs.
I	-3.98	0.0015	-11.702	112
G	-1.336	0.6127	-20.672	112
NX	-2.992	0.0428	-16.461	112
GVM	-1.474	0.5463	-15.812	112
TM	0.206	0.9726	-12.087	72
NXG	-1.733	0.4140	-10.319	72

Source: Authors

Building Our Model(s)

The National Accounts provide a comprehensive statistical framework that allows for a detailed analysis of the economic activities of a country. One of the key measures within the National Accounts is the Gross Domestic Product (GDP). GDP can be calculated using three different approaches: the production approach, the expenditure approach, and the income approach. In our case, we'll focus on the expenditure and income approaches.

The expenditure approach method calculates GDP by summing up all the expenditures or what is spent on the final output produced in an economy. The formula is:

$$GDP = C + I + G + (X - M) \quad (1)$$

Where, C = Consumption expenditure (total value of all goods and services consumed by households); I = Investment expenditure (total spending on capital goods that will be used for future production, like machinery, infrastructure, etc.); G = Government expenditure (total government spending on public services); X = Exports (value of goods and services produced domestically and sold abroad); M = Imports (value of goods and services produced abroad and bought domestically).

For the income approach, the method calculates GDP by summing up all the incomes earned in the process of producing goods and services within an economy. Essentially, it's the sum of the factor incomes. The formula is:

$$GDP = COE + GOS + GMI + (Taxes – Subsidies) \quad (2)$$

Where, COE = Compensation of Employees (total compensation to employees for work done. It includes salaries, wages, and other benefits.); GOS = Gross Operating Surplus (roughly equates to earnings before interest, tax, depreciation, and amortization (EBITDA) in the business accounting context. It's essentially the returns to capital.); GMI = Gross Mixed Income (reflects the income of unincorporated businesses and can be thought of as a combination of labor and capital income); (Taxes - Subsidies) = Taxes less subsidies on production and imports (this adjusts for any government interventions in specific sectors).

By summing up these incomes, we get the total income earned by factors of production in the economy, which should equate to the value of the final goods and services produced, as per the expenditure approach.

For the purpose of answering our research question and getting new insight into how the Romanian economy behaves on a macro level, manipulation of these formulas is necessary. For the sake of simplicity, we propose to condense the terms of equation (2) as follows:

$$GDP = Wages + Profits + Taxes \quad (3)$$

What follows from this formula is the creation of a new macroeconomic variable, DI (Disposable Income). The goal for its creation is it's substitution with other variables. Since we define Disposable Income as the remains of the households after they have paid taxes and received transfer payments, from equation (3) we get DI as:

$$GDP – Taxes = DI \quad (4)$$

Households can do two primary things with their DI:
a) Consume it = C
b) Save it = S

therefore, we can represent DI as follows:

$$DI = C + S \quad (5)$$

Substituting for DI in equation (4) we get:

$$GDP – Taxes = C + S$$
$$GDP = C + S + T \quad (6)$$

where T represents Taxes.

Using this new insight from equation (6), we can further manipulate the formulas to get to the final point of our research question. If we substitute equation (1) and (6) we get the following:

$$C + S + T = C + I + G + (X – M)$$
$$S + T – I – G = (X – M), \text{ rewritten as}$$
$$(S – I) + (T – G) = (X – M) \quad (7)$$

In economic terms, the implication from this equation in the context of the twin deficit hypothesis is that a fiscal deficit (T < G) could lead to a trade deficit (negative X−M), assuming other variables remain constant. When the government runs a deficit, it typically finances this deficit by either borrowing domestically or printing money.

If the government borrows domestically, it increases the demand for loanable funds. With higher demand for these funds and assuming a fixed supply, the interest rates in the economy are likely to rise. Higher interest rates make borrowing more expensive for private investors. This is where the crowding-out effect comes into play: as government borrowing increases (to finance its deficit), it can "crowd out" or reduce private investment because of the rising interest rates.

The crowding-out effect postulates that an increase government spending (G) might lead to a decrease in spending by the private sector. This can happen for various reasons, but a common rationale is that government spending can lead to higher interest rates, which, in turn, reduce private investments (I). In the

context of a linear regression model, if we aim to prove the crowding out effect using the variables we have, the model can be specified as:

$$I_t=\beta_0+\beta_1 G_t+\beta_2 (X\left|\right| t\text{-}M_t)+\beta_3 GVM_t+\varepsilon_{1t} \quad (8)$$

Were,

- (I) is the private investment.
- (G) is the government spending.
- (X - M) = NX represents net exports (exports minus imports).
- (GVM) represents some measure of manufacturing output or activity.
- (ε_{1t}) is the error term.
- (β_0) is the intercept.
- (β_1, β_2) and (β_3) are the coefficients to be estimated.

If the crowding out effect is indeed a prevailing phenomenon, our anticipation would be for the coefficient b1 to manifest a negative value. This negative relationship posits that any surge in government expenditure could be inversely proportional to the level of private investment. In more tangible terms, as the government augments its fiscal outlays, it may inadvertently limit or "crowds out" the capital that private sectors might otherwise have invested.

Expanding on our main study, we're looking into how net exports might affect manufacturing, as part of our deeper dive into the twin-deficit hypothesis. One challenge we face is picking the right measure to show how the manufacturing sector is doing. We think that looking at the quarterly turnover can give us a good idea about this. Now, when thinking about net exports, it makes sense to focus on goods because that's mainly what the manufacturing industry produces. By zeroing in on the net exports of goods, we aim to get a clearer picture of how manufacturing is impacted without getting distracted by other factors. This approach should give our study a solid base and help us better understand the link between net exports and manufacturing. Our simple linear regression model is:

$$TM_t=\alpha_0+\alpha_1 NXG_t+\varepsilon_{2t} \quad (9)$$

Similar to what we anticipate in our model (8), we expect the coefficient to be negative.

This would demonstrate that a trade deficit for goods has an opposite relationship with the domestic industry.

Results

The ADF test was performed at both level and first difference. The p-values derived from this test offer insights into the likelihood that a unit root is present, which under the null hypothesis, would indicate non-stationarity.

Variables I, G, NX and GVM were observed over 112 time periods, while TM and NXG, were observed over 72 periods. The results indicate that most of the economic indicators require differencing to achieve stationarity.

The time series data for variables I and NX exhibited ADF statistics of -3.98 and -2.992, respectively with p-values below the 0.05 threshold, these statistics are considered statistically significant, suggesting stationarity of the series at their respective levels. The enhanced negativity of the ADF statistics upon first differencing (-11.702 for I and -16.461 for NX) further reinforces the conclusion that unit roots are not present in these series.

In contrast, the remaining variables included in our analysis exhibited initial ADF results that were not statistically significant at the level, which does not allow for the rejection of the null hypothesis of a unit root. However, the transformation of data through first differencing resulted in negative ADF statistics for these variables, reaching -20.672 for G, -15.812 for GVM, -12.087 for TM, and -10.319 for NXG, indicating the attainment of stationarity post-differencing.

Table 2: Correlation Matrix

	I	G	NX	GVM	NXG	TM
I	1.0000					
G	0.3148	1.0000				
NX	-0.5077	-0.4468	1.0000			
GVM	0.6493	0.6683	-0.4533	1.0000		
NXG	-0.6262	-0.6070	0.9327	-0.6757	1.0000	
TM	0.4754	0.2581	-0.4080	0.6133	-0.4863	1.0000

Source: Authors

The correlation matrix provided in Table 2 shows that 'I' is positively correlated with GVM at 0.6493 and with G at 0.3148. In contrast, it is inversely related to NX with a correlation of -0.5077. GVM also shows a strong positive correlation with G at 0.6683. Conversely, NX is negatively correlated with both G and GVM, at -0.4468 and -0.4533, respectively, indicating inverse relationships. NXG and TM show a negative correlation at -0.4863. These figures indicate interconnectedness among the variables but remain within a range that should not pose interpretative issues for our models results.

Table 3: Regression Modal Output(s)

Y(t)	X(t)	Coeff.	Std. err	t	P-value	R-squared
I	G	-1.1878	0.3607	-3.29	0.001	0.5260
	NX	-1.7710	0.4158	-4.26	0.000	
	GVM	2.4747	0.3209	7.71	0.000	
	cons	-33.7466	280.2226	-0.12	0.904	
TM	NXG	-0.0046	0.0009	-4.69	0.000	0.2365
	cons	1.8041	0.8246	2.19	0.032	

Source: Authors

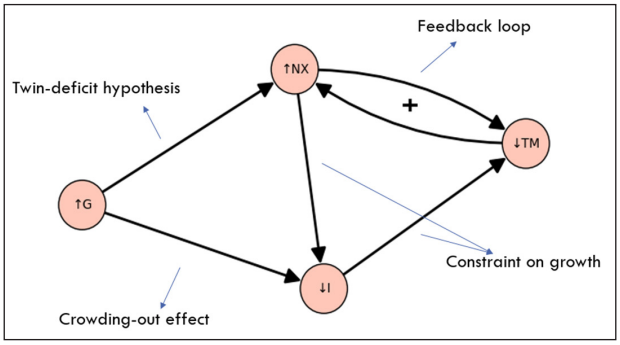
Table 3 presents the statistical output of models 8 and 9.

In model 8, the negative coefficient of -1.1878 for G suggests that each unit increase in this variable leads to a decrease of approximately 1.1878 units in I, holding all else constant. The negative coefficient for NX at -1.7710 indicates a more pronounced decrease in I than that caused by G.

Contrastingly, the coefficient of GVM shows a positive relationship with I and implies that a unit increase in the gross

value added by manufacturing is expected to increase I by roughly 2.4747 units. All relationships are statistically significant at the 95% confidence level.

Model 9 specifies TM as the dependent variable with NXG as the explanatory variable. The coefficient for NXG is -0.0046 (i.e., as NXG increases, TM is expected to decrease by 0.0046 units). The standard error of 0.0009 confirms the precision of this estimate, and the statistical significance is underscored by a very low p-value.



Graph 1: Romania's Economic Model

Conclusions

Since the fall of communism Romania has embarked on a long and tedious road towards a reformed capitalist economic model. This path was not only hard, but it was met with a lot of resistance from within. As consequence, Romania's economy had to go through prolonged periods of stagnation and economic decline, especially in the 1990s. This period was plagued by very high inflation, unemployment and a rise in fiscal deficit. Because of this, investments were practically non-existent. More so, Romania was forced to finance those deficits through direct money printing by its National Bank. This desperate measure only added fuel to the fire, inflation soared as a direct consequence and the economy crashed.

After that period Romania started to slowly but surely open its economy more towards foreign investors. Such a decision practically saved it from a total collapse. During the 2000s Romania started to have a first-hand experience with an economic boom and learned for the first time what an asset bubble is. Because old habits die hard, it's fiscal deficit started to soar once again, reaching its peak in 2009 (-9.1% of GDP). Concomitantly its trade balance followed the same path. It was in this time frame that signs of the twin-deficit hypothesis first started to be observed.

After the years of the Great Recession, Romania has basically followed the same economic model (shown in Graph 1). Its fiscal deficit leads its trade balance, the import of goods exceeds its exports. This government spending however when stretched for too long will also lead to a fall in private investments, confirming the "crowding-out" effect. The reasons behind this phenomenon happening are many, from high interest rates to creating a vacuum in loan demand for the private sector. This effect in turn has its own consequence, one of it being the lack of growth in domestic manufacturing. Lack of private investments combined with a negative trade balance for goods are the main driver behind Romania's industrial capacity. Of course, of the two the most important variable is the trade balance. More so, we consider it as a mistake for the competent authorities to look at the relationship between trade and domestic manufacturing as unidirectional, that one causes the other. In our model the link between them is bisectional, imports of goods affect domestic manufacturing which in turn further stimulates the imports of even more goods further depressing the expansion of manufacturing and so on. By studying our model (Graph 1) authorities can find solutions to these problems that plague the Romanian economy for so long, such as decreasing government spending to surplus territory and taxation of certain imported goods.

References

1. Blanchard O, Perotti R. An empirical characterization of the dynamic effects of changes in government spending and taxes on output. the Quarterly Journal of economics. 2002. 117: 1329-1368.
2. Kamps C, Caldara D. What do we know about Fiscal Policy Shocks Effects? A Comparative Analysis. European Central Banks and International Institute for Economic Studies. 2006.
3. Galí J, López-Salido JD, Vallés J. Understanding the effects of government spending on consumption. Journal of the european economic association. 2007. 5: 227-270.
4. Cohen L, Coval J, Malloy C. Do powerful politicians cause corporate downsizing? Journal of political Economy. 2011. 119: 1015-1060.
5. Dash P. The impact of public investment on private investment: Evidence from India. Vikalpa. 2016. 41: 288-307.
6. Bahal G, Raissi M, Tulin V. Crowding-out or crowding-in? Public and private investment in India. World Development. 2018. 109: 323-333.
7. Biza RA, Kapingura FM, Tsegaye A. Do budget deficits crowd out private investment? An analysis of the South African economy. International Journal of Economic Policy in Emerging Economies. 2015. 8: 52-76.
8. Serin Ş, Demir M. Does public debt and investments create crowding-out effect in turkey? evidence from ardl approach. Sosyoekonomi. 2023. 31: 151-172.
9. Funashima Y, Ohtsuka Y. Spatial crowding-out and crowding-in effects of government spending on the private sector in Japan. Regional Science and Urban Economics. 2019. 75: 35-48.
10. Lewis M. Informal payments and the financing of health care in developing and transition countries. Health Affairs. 2007. 26: 984-997.
11. Blavasciunaite D, Garsviene L, Matuzeviciute K. Trade balance effects on economic growth: Evidence from European Union Countries. Economies. 2020. 8: 54.
12. Andersen L, Babula R. The link between openness and long-run economic growth. J. Int'l Com. & Econ. 2009. 2: 31.
13. Blalock G, Veloso F. Trade, technology transfer and productivity growth: The neglected role of imports. Cornell University unpublished paper. 2005.
14. Hu P. The influence of international trade on Chinese technology innovation capacity of hi-tech industry. In International Conference on Humanities and Social Science 2016. Atlantis Press. 2016. 627-635.
15. Thirlwall AP. The balance of payments constraint as an explanation of international growth rate differences. BNL Quarterly Review. 1979. 32: 45-53.

16. Dakhlallah K. Reserve Adequacies and the Determinants of Foreign Exchange Reserves–Empirical Analysis through the Vector Error Correction Model: The Case of Lebanon. Review of Middle East Economics and Finance. 2019. 15: 1-17.
17. Feenstra RC, Ma H, Xu Y. US exports and employment. Journal of International Economics. 2019. 120: 46-58.
18. Feenstra RC, Hong C. China's exports and employment. NBER working paper series. 2007.
19. Heerman K. What Does Exchange Rate Appreciation Mean for Export Competitiveness? United States Department of Agriculture (USDA). 2015.
20. Fischer A. Is China turning Latin? China's balancing act between power and dependence on the wave of global imbalances. ISS working papers. General series. 2010. 496: 1-27.
21. Kyambalesa H. Trade Deficits: Causes, Effects and Remedies. Effects and Remedies. 2019.
22. Tran TAD, Dinh TTB. FDI inflows and trade imbalances: evidence from developing Asia. The European Journal of Comparative Economics. 2014. 11: 147.
23. Kaldor N. Strategic Factors in Economic Development. Ithaca: New York State School of Industrial and Labor Relations, Cornell University. 1967.
24. Autor DH, Dorn D, Hanson GH. The China syndrome: Local labor market effects of import competition in the United States. American economic review. 2013. 103: 2121-2168.
25. Cooke A, Kemney T, Rigby DL. Cheap imports and the loss of US manufacturing jobs. US Census Bureau Center for Economic Studies Paper No. CES-WP-16-05. 2016.
26. Kucera D, Milberg W. Deindustrialization and changes in manufacturing trade: factor content calculations for 1978–1995. Review of World Economics. 2003. 139: 601-624.
27. Berry C. 'D is for dangerous': devolution and the ongoing decline of manufacturing in Northern England. Developing England's North: The political economy of the Northern powerhouse. 2018. 85-119.
28. ADB AA, Furceri D, IMF PT. The macroeconomic effects of public investment: Evidence from advanced economies. Journal of Macroeconomics. 2016. 50: 224-240.
29. Gitonga M. Government Sector Spending and Private Investment: Evidence from Kenya. Journal of Economics and Sustainable Development. 2022. 13: 41-47.