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Boundaries on Turkish export-oriented industrialization

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Abstract

This study examines the Turkish experience of export-oriented industrialization by emphasizing its linkage to previous capital accumulation model and developments and by the evolution of political and economic institutions. The study emphasizes that the structural drawbacks in Turkish economy that emerged in the economic development process aggravated in post-1980 period and aims to uncover the political and economic mechanisms leading to its aggravation. The VAR methodology is used to model Turkish economy's experience of export-oriented industrialization by using the data for the period 2007: Q1–2017: Q4. The impulse response analysis results show that export is responsive to investment and capacity utilization and responsive to interest rate and import in the negative direction. Import is responsive to export, investment and capacity utilization in a positive direction and decreases with interest rate. Investment increases with export, but decreases with imports. Additionally, the debt level increases with export and investment, but decreases with import and import increases the interest rate and export decreases the interest rate.

Keywords: Export-oriented industrialization, Import substitution industrialization, Structural drawbacks, Public sphere, VAR

JEL Classification: F14, F34, F43

1 Introduction

Turkey has been promoting export-oriented industrialization since the early years of the 1980s. Under the export-oriented industrialization strategy, Turkish economy passed through different economic restructuring phases. The very reason why the Turkish economy became restructured under export-oriented industrialization strategy is the bottlenecks experienced in previous capitalist accumulation strategy, import substitution industrialization.

The import substitution industrialization strategy adapted between 1960 and 1980 was aiming to render the economy self-sufficient with its internal dynamics. However, the policies implemented for this goal were multifaceted and distorted certain social and economic dynamics, curtailing bottom-up civil efforts and leading to malfunctioning party system in the absence of strong civil society and institutions enabling checks and balances on the populist politics. The paper aims to uncover and relate these distortions

which occurred in the social, economic and political realms with economic outcomes faced after adapting the export-oriented industrialization.

The policies adopted in the period 1960–1980 in Turkey were mostly projections of the conflict between civil bureaucracy and bourgeoisie, core and periphery, modern and traditional onto the modes of capital accumulation shaped in the Turkish, newborn, multiparty politics. The labor's achievement in the period can be attributed to the conflict between bureaucracy and bourgeoisie, statism and market liberalism while it was contributing to the expansion of internal markets. However, labor's achievement did not arise from its class consciousness and was not institutionalized so that it was more given than achieved (Keyder 1987). Most of the material (and status based) achievements labor received were abolished in the post-1980 period.

The core–periphery conflict against the backdrop of the multiparty politics and bourgeoisie's power in mobilizing periphery against center led to the prioritization of the bourgeoisie's needs which was contributing to capital accumulation, de-agriculturalization. However, providing certain privileges such as easy access to foreign exchange, protection from competition led to the high markups, unproductive and uncompetitive industry sector and high import dependency.

The core–periphery conflict that resulted in the backlash of the periphery from 1950 onwards through multiparty politics led to the unproductive, agricultural income supports that prevented the labor to be detached from to the rural areas. The policy resulted in high urban wages served for capital's needs by enabling expanded internal markets. However, it led to de-agriculturalization, late industrialization, and due to core–periphery difference in accessing formal education and human capital accumulation technologies led to the spatial human capital inequalities.

Turkey was hit by the economic crisis based on foreign exchange scarcity in the late 1970s followed by military intervention. The social, economic and political extensions of the previous model of capital accumulation were constituting the initial configurations of the next mode of capital accumulation. In Turkey, each episode of capital accumulation began with the dissolution of interrelation between major actors in the economic and political society that was active in previous mode of capital accumulation. This particular discontinuity was exacerbated by dynamics in global capitalism, populism, and multifaceted social, economic and political polarization. The export sector was supported through export credits, subsidies, devaluations, and tax exemptions while labor's achievements in the previous period were abolished and the internal market was contracted through certain measures on the size of government including privatizations and agricultural income supports.

Turkey was not embodying technological infrastructure at the time and productivity-enhancing technologies and investment in human capital were limited and spatially condensed. Turkey's export at the beginning of the 1980s was based on agricultural exports, 57%, which dropped down to 18% at late-1980s while the industrial exports grew drastically in the same period, 24% real per annum (Aslan and van Wijnbergen 1993), which was argued as mostly result of real depreciation of T.L. rather than export promotion or due to productivity growth (Celasun and Rodrik 1989). Productivity gained mostly occurred in import-competing sectors rather than export-oriented sectors, from 1984 to 2000 (Özler and Yılmaz 2001; Taymaz and Yılmaz 2006).

Productivity gains in import-competing sectors in the process mostly due to the unproductive incentive scheme (or rents) introduced in the previous capital accumulation strategy, thus were not indicating the decline in import dependency or self-sufficient economy. Moreover, low productivity growth in export sectors implies the unsustainability of the export-oriented industrialization as there are social and political limits for the suppression of wages and depreciation of T.L.

Populist backlashes in the late-1980s and 1990s generated a high financial burden on the government which was mostly financed through Turkish private banks borrowing from global financial markets aggravating financial vulnerability. The short-term capital inflows financing current account deficit were performing sudden stops with particularly political risks were leading to collapse of T.L. On the other hand, appreciation of T.L. resulting from high short-term capital inflows increased import dependency and shrunk of import-competing sectors over time and increased importance of non-tradeable in the economy.

The gradual loss of control over fiscal discipline and the rise in import dependency over time particularly after the 1980s and liberalization of financial accounts in the late 1980s render the Turkish economy prone to the financial crisis. Short-term capital flows and external debt became to constitute the core of the problematic in the crisis-prone Turkish economy. Banks that were supposed to provide the credit for the economy became institutions mostly financing the government deficit in the way that increases the economy's exposure to the currency and liquidity risk, which also beclouded the access to foreign-denominated debt. In other words, as the production became more dependent on imported intermediaries and the way current account deficit and debts were financed put credible currency risks, the conflict between incentives for financial investment and investment for the real economy emerged and aggravated over time.

As the Turkish financial sector became the arena of seeking arbitrage opportunities, import-competing sectors shrunk and constrained to certain sectors, the share of non-tradeable in GDP increases, the technology production did not emerge as a promising area in Turkey. However, technology production or improvement in one sector generates economy-wide externalities including improvements in labor productivity. Moreover, because exporting sectors interacting with other sectors in the economy through backward linkages and labor mobility, the competitiveness of Turkish economy is affected by under-investment in technology in overall sectors. Additionally, appreciated T.L., wage rise induced by the rise in non-tradeable production, import dependency in intermediated capital goods and banks' failure to carry out their roles in providing capital constrained the performance of export-oriented industrialization in Turkey.

The International Monetary Fund (IMF) after economic crisis in the year of 2001 provided bailout packages and stabilization program stressing fiscal transparency, privatization and good governance policies in both private and public sectors (Ertürk 2003). Turkish economy experienced a decline in the inflation rate, budget deficit, and public debt to GDP rate, and high economic growth with the average rate of 5.5% in the period 2002–2007 (İzmen and Yılmaz 2009; Özatay 2016). Foreign direct investment and the private sector's external debt with long-term maturity increased (İzmen and Yılmaz 2009). However, the Turkish economy contracted significantly following the global financial crisis from a 5.5% average growth rate to 1.9% and became more volatile which

was three times the average volatility observed in the emerging market economies during the 2008–2012 period (Özatay 2016).

Turkish state in the early post-2002 period emerged as the regulatory state with the supervision of International Financial Institutions (Bakir and Öniş 2010). In the early post-2002 period, the Turkish state did not orchestrate the capitalist accumulation. The independence of regulatory institutions and the development of independent central bank and regulation of financial institutions, in particular the banking sector, are the key developments explaining the well-performing Turkish economy from 2002 to 2007. Additionally, the incumbent party's liberal pluralist approach to civil liberties and enabling of the active use of the public sphere by the civil society improved the democracy and also resulted in lower political risks. The economic stability, rise in short-term capital inflows, healthier financial institutions and boom in global demand at the time contributed to the export performance in the period of 2002–2007. Additionally, the Turkish state played an active role in increasing economic interdependency between Turkey and Arab countries resulted in a rapid increase in exports. Habibi and Walker (2011, p. 4–5) state that "... (Turkish) official visits have played a key role in promoting economic cooperation agreements and facilitating trade relations between the two sides (Middle East and North Africa and Turkey) ".

In the late post-2011 period the public expenditure and inflation rate increased dramatically (Öniş 2019) and in comparison with the previous period, the Turkish state orchestrated capital accumulation via supporting construction activities and promoting credit expansion (Nagy and Yildirim 2018). The share of non-tradeable, in particular the construction sector, in GDP increased while the manufacturing sector's share fell (Rodrik 2016). The credit expansion aggravated the current account deficit (Toraganli and Ertugrul 2016) and increasing external debt and a decrease in global liquidity put high pressure on the national currency. The depreciated T.L. in recent years put significant upward pressure on the current account deficit and output by affecting the firms with dollarized liabilities (Çalışkan and Karimova 2017).

The export intensity declined for low-level technology, labor-intensive firms and increased for medium and high-technology firms. However, the exported share of Turkey's value-added which lags behind the comparable OECD countries was at 18% in 2011 which had been 17% in 2001 (Atabek et al. 2017). A similar structural change, moving from traditional sectors to high-technology sectors was observed in other emerging economies where vertical specialization in production and trade increased. However, the structural transformation of these economies led to an increase in the use of the imported intermediate goods and import dependency (Aydın et al. 2007; Saygılı and Saygılı 2011). Saygılı et al. (2010) show that intermediate goods import increased 2.5 times more than the increase in manufacturing output in the period of 1994–2008.

FDI inflows as another vehicle for technology spillover even though effective are limited in Turkey. Therefore, technologic sophistication in the Turkish economy boils down mostly to the availability of imported intermediate goods which increases with the foreign exchange and appreciation of the Turkish Lira. The shortcoming of this particular technology transfer is its dependence on the foreign exchange which is limited by export earnings and by capital inflows which often stops suddenly. Additionally, credit expansions and demand-led economic growth leading to import of consumption goods limit

the availability of foreign exchange to be used for import of intermediate goods. There are two main implications of discontinuous improvements in the technology level in the country due to up and downs in foreign exchange. First, discontinuity in the technology transfer affects positively the distance to the world technology frontier and slows the income convergence process. Second, it would affect the scale of production, investment for the risky large-scale technological investments to which imported intermediate inputs would be complementary.

The study examines empirically the implication of export-oriented industrialization on the capital accumulation in Turkey which implemented stabilization policies under the guidance of International Financial institutions of IMF and World Bank. Turkey as one of the emerging economy provides a good example to explore the implications of the export-oriented industrialization adapted in the country with strong state and weak civil society having certain economic structural drawbacks such as low saving rate, financial fragilities and heavy import dependency in production and technology adaption. The study argues that because Turkey did not establish robust economic and political institutions before switch from import substitution industrialization to export-oriented industrialization, the economic and financial liberalization it enacted right after the switch, economic structural drawbacks aggravated in the process.

The current study brings further evidence on the body of evidence in the literature on export-oriented industrialization strategy adapted in Turkey which also provides several implications for the comparable emerging market economies. The next section presents the literature review about Turkish export-oriented industrialization followed by the data analysis and estimation results. The final section is the conclusion section.

2 Literature review

The section reviews the empirical studies in the literature discussing and reporting the implications of export-oriented industrialization in the context of Turkey. Filiztekin (2002) using data for the period 1970–1996 show that trade openness contributes to productivity growth and economic growth. Taymaz (1999) using annual surveys of Manufacturing Industry and Censuses of Manufacturing Industry for the period of 1980–1993, at the inception of export-oriented industrialization, showed a decrease in tariff rate, appreciation of the T.L. and increase in interest rates generated employment losses. Onaran and Stockhammer (2005) using data for the period of 1965–1997 and employing Keynesian arguments of demand-led growth, wage-led and profit-led accumulation and employment generation, they report that Turkey's export-led economic growth strategy depends on the low wages, and did not stimulate economic growth for the study period. Onaran and Stockhammer (2005), Onaran and Yentürk (2001) argue that the export boom in the post-1980 period in Turkey depends on the utilization of existing capacity rather than new investments.

There are theoretical studies arguing about the policies implemented or policies that should have implemented in the context of export-oriented industrialization in Turkey leading to immature industrialization and low technology content export. Taymaz and Voyvoda (2012), Öniş and Şenses (2007) and Şenses (2012) argue that absence of a comprehensive industrial policy, proactive state the lack of productivity investments led to immature industrialization and low and medium technology-intensive export. Celasun

(1994) argues that export-led growth in the post-1980 period depends on the use of capacity built in earlier periods and argues that investments in particular productivity-enhancing ones should be taken to sustain export-led growth.

Taymaz and Voyvoda (2012) argue that Korea compared to Turkey more intensively undertook long-term investments, expanded its industry towards more complicated and technologically sophisticated products, and invested in R&D at the time. As a result, Korea transformed its industrial base and the mode of articulation with the world economy. Ege and Ege (2017) argue that Turkey's trade deficit was structural and R&D expenditures and the number of qualified researchers should be increased to increase technological capacity and overcome structural problems.

Saygılı and Saygılı (2011) report that income and import elasticities of exports increased and exchange rate elasticities decreased in the recent decade. Özmen and Yolcu-Karadam (2014) report that real exchange rate depreciation policies are ineffective given low trade elasticity and argue that Turkey should decrease backward participation in Global Value Chains. Kizilca and Özcan (2008) using data for 1979–2000 report that there was a negative relationship between export and value-added categories. They also report that import led to lower demand for labor which in turn resulted in lower real wages while export did not affect the real wage. Srour et al. (2013) using data for 17,462 firms for the period of 1980–2001 showed that Turkey experienced learning by export and skill-enhancing technology import leading to a discrepancy in demand between skilled and unskilled labor.

This study distinguishes itself from studies on the Turkish experience of export-oriented industrialization by linking the empirical analyzes on structural drawbacks with the pre-conditions including lack of economic and political institutions and past economic and political developments affecting the current performance of the economy through path dependency.

3 Empirical analysis

3.1 Data

The quarterly data from the Central Bank of the Turkish Republic for the period 2007: Q1–2017: Q4 is used. There are four variables used in the analysis. Gross fixed capital formation at current prices, export at current prices, import at current prices, the capacity utilization rate of manufacturing industry (seasonally adjusted), foreign debt for private sector (short and long), commercial interest rate at current prices.

3.2 Empirical methodology

The variables introduced into the model as described above are according to their dynamic interrelationship in the way that is explained in the introduction section. We claim that export-oriented industrialization in Turkey did not produce the desired result in terms of productivity and value-added due to structural drawbacks arose in previous capitalist accumulation periods. The lower than the required level of investment and absence of robust political and economic institutions linked to the absence of proactive state policies in Turkey resulted in import dependency, external debt, and high-interest rate.

Because financial variables and variables related to capital accumulation are dynamically interrelated the VAR (vector autoregression) methodology is used. The VAR methodology is used to estimate dynamic relationships among jointly endogenous variables where we do not impose any prior conditions such as exogeneity of some variables into the system of equations. The VAR analysis modeling the dynamic interrelation between variables provides very practical policy solutions through shock analysis, impulse response analysis. The VAR representation is represented below:

$$y_t = A_1 y_{t-1} + \dots + A_n y_{t-n} + \varepsilon_t, \tag{1}$$

where

$$y_t = \begin{bmatrix} \text{Log Gross Fixed Capital Formation}_t \\ \text{Log Export}_t \\ \text{Log Import}_t \\ \text{Log Capacity Utilization Rate}_t \\ \text{Log Private Sector Foreign Debt}_t \\ \text{Log Commercial Interest Rate}_t \end{bmatrix} \quad A_1 = \begin{bmatrix} a_{11,1} & \dots & \dots & \dots & \dots & a_{16,1} \\ & & & & & \cdot \\ & & & & & \cdot \\ & & & & & \cdot \\ & & & & & \cdot \\ & & & & & \cdot \\ a_{61,1} & \dots & \dots & \dots & \dots & a_{66,1} \end{bmatrix}$$

First, we control the stationarity of the variables to avoid spurious relations. The unit root tests are used to select the appropriate model between the VAR model using stationary variables and the VEC (vector error-correction) model using non-stationary variables with the same order of integration. Augmented Dickey–Fuller (ADF) unit root test statistic is used to check whether the variables contain a unit root. The equation below is fit to the data to calculate the test statistic:

$$y_t = \alpha + \rho y_{t-1} + \delta t + u_t. \tag{2}$$

The null hypothesis for the augmented Dickey–Fuller (ADF) unit root test is that the variable contains a unit root. To test the null hypothesis the Dickey–Fuller *t*-statistic is calculated and compared with critical values for the Dickey–Fuller distribution. The time trend is added to test against both deterministic and stochastic trend processes.

The ADF unit root test results indicate that the series are unit root processes. Therefore, the stationarity of series is enabled through the first difference. Table 1 below shows that the series became stationary after first-difference.

In the next step, we determine the number of lags be used in (1) followed by the implementation of the Johansen co-integration test to check the presence of a co-integration

Table 1 Augmented Dickey–Fuller unit root test

Variables	t-Statistic	Prob.	Order of integration
Log gross fixed capital formation (at current prices-thousand TL) (GFI)	− 3.84	.0057*	I (1)
Log export (at current prices-million \$)	− 7.7	.0000*	I (1)
Log import (at current prices-million \$)	− 3.80	.0061*	I (1)
Log capacity utilization rate (%-seasonally adjusted) (CU)	− 3.47	.0141*	I (1)
Log private sector foreign debt (million \$) (PSFD)	− 3.9	.0039*	I (1)
Log commercial interest rate (CIR)	− 4.24	.0017*	I (1)

* The series are stationary at according to ADF Unit root test at 5% significance level

vector and the number of co-integration vectors. The lag order selection criteria at Table 2 indicate that an optimal number of lags is 5 which are essential to eliminate the autocorrelation in VAR models. The minimization of the lag order selection criterion gives the optimal number of lags. These criteria consist of two parts, one part representing the sum of squared residuals decreasing with the number of lags and the second part increasing with the number of lags.

The presence of co-integration vectors indicates the long-run equilibrium relations among variables. The null hypothesis for the Johansen co-integration test is that the number of co-integration vectors should be at most certain (hypothesized) numbers. Johansen co-integration test result is displayed in Table 3. Two likelihood test statistics are reported, trace statistic and Maximum Eigen-value test statistics. Trace test results indicate that there are four co-integration vectors while Maximum Eigen-value test statistics report that there are three co-integration vectors. Lütkepohl (2001), argue that in the case of contradicting results for the co-integration test results, the trace test statistics should be preferred.

Engle and Granger (1987) show that if variables are co-integrated, there is a long-term relation and a corresponding short-term relation among variables. VEC is used to examine it. The representation of VEC is the following

$$\Delta y_t = \sum_{j=1}^{k-1} \Gamma_j \Delta y_{t-j} + \alpha \beta' y_{t-k} + \gamma + \varepsilon_t. \tag{3}$$

The first term in the model is the vector autoregressive component in the first differences and the second term is the error-correction component. The α is the speed of adjustment parameters representing the speed of the error correction mechanism. In

Table 2 Lag order selection criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	208.3	NA	1.25e−12	− 10.37	− 10.37	− 10.28
1	399.8	314.13	4.43e−16	− 18.34	− 16.55	− 17.70
2	432.4	43.47	6.03e−16	− 18.17	− 14.84	− 16.98
3	472.8	41.44	7.06e−16	− 18.40	− 13.53	− 16.65
4	602.03	92.76 ^a	1.44e−17	− 23.18	− 16.78	− 20.88
5	686.7	34.73	9.19e−18 ^a	− 25.67 ^a	− 17.74 ^a	− 22.83 ^a

^a The optimal number of lag indicated by the Aikaiké's Information Criterion (AIC), Schwarz Information Criterion (SIC), Hannan–Quinn Criterion (HQC), Final Prediction Error (FPE) and Bayesian Information Criterion (BIC). Likelihood ratio (LR) and log-likelihood (Log L) criterion

Table 3 Johansen co-integration test results

Hypothesized no. of co-integration vectors	Trace statistics	Probability	Maximum eigen-value statistics	Probability
None	239.14	.0000*	40.07	.0000*
At most 1	132.81	.0000*	33.87	.0000*
At most 2	70.64	.0001*	27.5	.0012*
At most 3	31.79	.0291*	21.13	.0647
At most 4	13.75	.0898	14.26	.6454

* Null hypothesis is rejected at 5% significance level

Table 4 Granger causality test results

Dependent variable	Log (capacity utilization)	Log (export)	Log (investment)	Log (import)	Log (interest rate)	Log (debt)
Log (capacity utilization)		.7305	.0004 ^a	.4672	.3766	.8401
Log (export)	.7504		.4761	.6128	.7530	.6004
Log (import)	.1234	.9573	.0867 ^b		.7336	.0187 ^a
Log (investment)	.0665 ^b	.3147		.7857	.0134 ^a	.0187 ^a
Log (interest rate)	.2459	.0608 ^b	.1126	.0935 ^b		.0027 ^a
Log (debt)	.0000 ^a	.0024 ^a	.0000 ^a	.0269 ^a	.0298 ^a	

Null hypothesis of Granger causality states that test is there is no Granger causality running from one variable to another

^a Numbers in the cells are probability values for Granger causality test

^b The italic characters imply the weak causality as probability value is in the range of (.05-.1)

other words, it represents the speed of convergence to long-run equilibrium in the case of short-run deviations from the long-run equilibrium.

3.3 Estimation results

3.3.1 Granger causality results

The Granger causality test is estimated and displayed in Table 4. The Granger causality test is conducted on the lagged explanatory variables. The causality test is a short-run causality test. Granger causality test introduced by Granger (1969) is centered around the argument that the variable Granger causing another variable should precede it. If a variable does not Granger cause another variable, its past and current information does not improve the forecast of another variable in a mean square sense (Droumaguet et al. Droumagueta et al. 2015) (Table 4).

The Granger causality tests displayed in Table 4 below shows that log Investment Granger causes Log Capacity Utilization Rate and Log Capacity Utilization Rate Granger causes (weakly, at %7) Log Investment. Log Debt and Log Interest Rate Granger cause Log Investment. Log Investment Granger causes (weakly, % 9) Log Import, and Log Debt. Log Debt Granger causes log investment, Log Import and Log Interest Rate. Log Export Granger causes Log Debt and Log Interest Rate (weakly, % 6). Log Import Granger causes log debt and long interest rate (weakly, %10).

3.3.2 Cholesky variance decomposition results

Cholesky variance decomposition decomposes the forecast error variance of variables into percentages attributable to various system shocks. In other words, it gives them what fraction of error variance in forecasting one variable is due to shocks to itself and shocks by other variables in the system (Diebold and Yilmaz 2010). The Cholesky factorization is sensitive to the ordering of the variables and the exogenous variables are ordered first (Sims 2013). The Granger causality test results, as well as economic theory, are used to the order variables in the VAR model.

The variance decomposition results are displayed in Table 5 for the short run and in Table 6 for the long run. According to variance decomposition results displayed log export shocks explain 3% in the short run and 23.8% in the long run of variation in Log Capacity Utilization. Variation in log export is mostly explained, 10.44%, by shocks to

Table 5 Cholesky variance decomposition matrix—short run (Lag 4)

Variance decomposition variable	Log (capacity utilization), %	Log (export), %	Log (import), %	Log (investment), %	Log (interest rate), %	Log (debt), %
Log (capacity utilization)	57.7	3.0	13.8	5.17	20.01	.18
Log (export)	10.44	78.7	1.7	6.4	1.8	.9
Log (import)	23.1	67.09	4.6	2.47	2.26	.43
Log (investment)	6.3	20.1	17.1	28.2	27.5	.71
Log (interest rate)	40.4	18.5	5.06	23.5	12.18	.13
Log (Debt)	9.32	63.4	9.6	12.0	3.7	1.8

log capacity utilization and mostly shocks to itself, 78.7%. One striking fact is that the log import is explained mostly by shocks to log export in both the short run, 67%, and in the long run, 59.6%. Shocks to log capacity utilization explain 23% of the variation in log import. Shocks to log interest rate explain almost 20% of the variation in log investment and shocks to log import explains 17% of the variation in log investment. Shocks to Log Capacity Utilization Rate explains 40% in the short run and 17.24% in the long run of variation in the Log Interest Rate, and shocks to Log Export explains 18.5% of the variation in the short run and 25.5% in the long run of variation in the Log Interest Rate. Shocks to log export explains 63.4% in the short run and 76.65% in the long run of variation in the Log Debt. Shocks to Log Investment explains 12% of the variation in the short run and 4.7% in the long run of variation in the Log Debt.

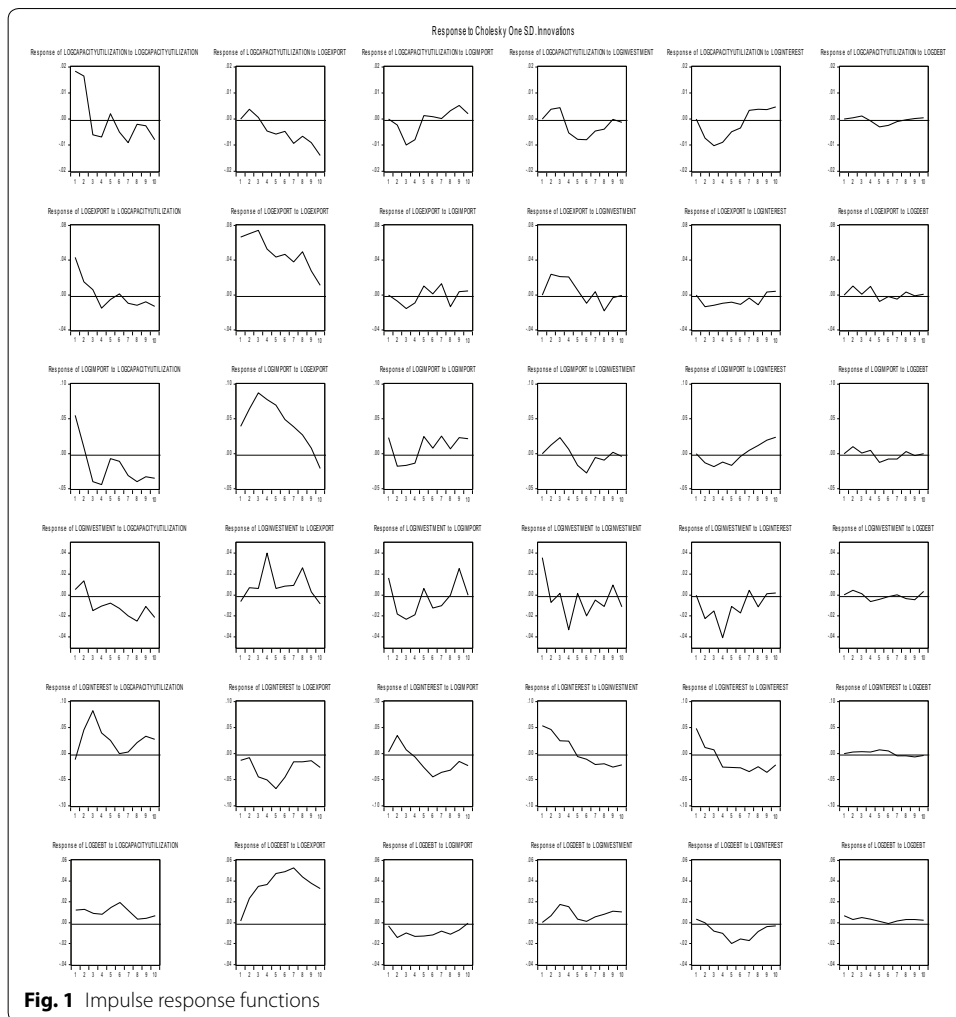
3.3.3 Impulse response analysis results

Impulse response analysis traces out the effect of a one-time shock to the current value of one of the VAR errors on current and future values of each of the variables in the VAR system. Impulse response functions are displayed in Fig. 1. The response of Log Capacity Utilization to a one standard deviation shock in error terms of Log Export and Log Investment is initially positive which becomes negative in the third period and accelerates over time. The response of Log Capacity Utilization to a shock of one standard deviation in the error terms of Log Interest Rate and Log Import is negative.

The response of Log Export to a shock of one standard deviation in the error terms of Log Investment and Log Capacity Utilization is positive, and of Log Interest Rate and Of

Table 6 Cholesky variance decomposition matrix—long run (lag 10)

Variance decomposition variable, %	Log (capacity utilization), %	Log (export), %	Log (import), %	Log (investment), %	Log (interest rate), %	Log (debt), %
Log (capacity utilization)	40.4	23.18	9.66	10.32	15.49	.87
Log (export)	8.5	79.9	2.61	5.77	2.28	.88
Log (import)	23.8	59.78	7.8	3.88	4.13	.83
Log (investment)	17.24	19.5	17.5	23.3	21.5	.90
Log (interest rate)	26.9	25.5	14.15	16.4	16.5	.40
Log (debt)	6.46	76.65	5.17	4.7	6.2	.62



Log Import is negative. The response of Log Import to a shock of one standard deviation in the error terms of Log Export, Log Capacity Utilization, and Log Investment is positive, and of Log Interest Rate is negative. The response of Log Investment to a shock of one standard deviation in the error terms of Log Export is positive, and of Log Import is positive first period and then flips to negative, and of Log Interest Rate is negative.

The response of Log Interest Rate to a shock of one standard deviation in the error terms of Log Capacity Utilization, Log Investment, and Log Import is positive, and Log Export is negative. Additionally, the response of Log Debt to a shock of one standard deviation in the error terms of Log Capacity Utilization, Log Export, Log Investment is positive, and of Log Import, Log Interest Rate is negative.

The results indicate that export is responsive to investment and capacity utilization, therefore capital accumulation enhances the export earnings and export-oriented industrialization as argued by Taymaz and Voyvoda (2012), Öniş and Şenses (2007) and Celasun (1994). On the other hand, export is responsive to interest rate and import in the negative direction implying that interest rate is a significant cost factor for the exporting sector. Because in Turkey, the cost of imported intermediate goods constitutes a significant proportion of the total cost, the exporting sector might face decreasing mark-ups mostly

emanating from foreign exchange changes leading to a contraction of output. This particular result indicates that import dependency limits export-oriented industrialization.

The results indicate that import is sensitive to export, investment and capacity utilization in a positive direction. The results imply the import dependency in production in Turkey which is the main economic structural drawback in Turkey. However, the paper argues that it is not the fundamental problem. State's organic ties with the bourgeoisie, the inactive public sphere and weak civil society, strong bureaucracy, populist (coalitional) governments, and deep bottlenecks in capital accumulation processes leading to drastic economic downturns limit the formation of policies targeting the deep structural drawbacks.

The interest as a price of credit decreases import while the monetary gain for the short-term capital resulting in appreciation of T.L. increases import. The results indicate that import decreases with interest rate thus the interest rate's impact on imports through loans overcome its impact on imports through capital flows. The result indicates the (postponed) consumption preferences in Turkey that are directed for economic growth (consumption-led) and also saving deficit.

The results indicate that investment increases with export but decreases with imports. Therefore, export-oriented industrialization leads to capital accumulation but the import dependency of export resulted in the contraction of investment (in import-competing sectors). Additionally, the debt level increases with export and investment but decreases with imports. Therefore, export and capital accumulation, in general, brings high foreign debt implying the importance of foreign savings in the capital accumulation process. The results also indicate that import increases the interest rates implying the nexus between import and liquidity, and the nexus between import and credit demand for investment in the country.

In sum, import dependency in Turkey emerging as the structural drawback generates externalities on interest rates and investment. Moreover, foreign savings are used to finance export expansion which puts the considerable risk on export-oriented industrialization since import dependency brings current account deficit and interest rate rise. Therefore, the policies should address import dependency and saving deficit including policies on curbing consumption booms. Additionally, Turkey suffers from low value-added, low technology exports, thus, R&D investments and educational investments to increase the number of qualified researchers should be implemented.

However, in the absence of an active public sphere and strong checks and balances on the government, the state's organic ties with the bourgeoisie, policy agenda dictated by international financial institutions and populist policies limit policies targeting structural drawbacks. Even though most of the required policies are top-down, bottom-up, participatory politics would be necessary to induce efforts at the government level for local infrastructural needs including education, health, and transportation infrastructure. Moreover, the state's active response to local demands and interaction with civil society would increase the effectiveness of developmental state or proactive state policies targeting expansion of the industrial base, technological sophistication, and complexity of production processes.

4 Conclusion

The Turkish economy has been functioning under the model of export-oriented industrialization since the 1980s. Trade liberalization followed by the capital account liberalization in the late 1980s paved the way for neo-liberal restructuring phases, 1980–2001

and post-2001 that are guided and supported by International Financial Institutions of IMF and World Bank (with the guiding policy prescriptions of Washington and Post-Washington consensus).

The bottlenecks in capitalist accumulation in the 1960–1980 period under the accumulation model of import substitution industrialization had an impact on the articulation of the Turkish economy to the global economy. The bottlenecks in capitalist accumulation emerging in the political economy of Turkey before 1980 constituting the structural drawbacks in the Turkish economy magnified in the post-1980 period due mainly to weak institutional structure, weak checks and balances on the (populist) government and the inactive public sphere.

The organic ties with the industrial bourgeoisie resulted in an uncompetitive industrial structure in the period of import substitution industrialization. Trade liberalization in the early 1980s without undertaking required investments constituting the industrial base and without enforcing for productivity enhancement aggravated import dependency emerged in the previous period. Capital account liberalization magnified the import dependency, increased economy's exposure to up and downs in the global economy and generated certain cycles in the economy that started with rising interest rates followed by an appreciation of T.L. and increasing current account deficit ending with sudden capital outflows. The banks financed high public deficit by borrowing from global markets in foreign-denominated currency due to vast arbitrage opportunity between an interest rate of treasury bonds and loans from global markets in the foreign-denominated currency which constituted the weak balance sheet of banks.

In the early post-2001 episode, the neoliberal restructuring of the economy entailed, on the one hand, the regulation of the financial sector, privatization, and contraction of the government and reorganization of certain state institutions and on the other hand the promotion of civil rights and good governance. The political and economic restructuring led to the surge in foreign direct investment which was the indicator that the capital sought the profit opportunities in the long period implying that the problematic core of the economy was healing.

In the late post-2001 episode, the state's organic ties with the bourgeoisie developed thanks to construction-led economic growth. The importance of non-tradeable increased due mainly to appreciated T.L. and construction-led economic growth while import dependency, the current account deficit, and private debt increased dramatically in the period. The state's active involvement in capitalist accumulation that is clustered around sectors that are labor-intensive and low technology intensive along with its construction-led economic growth model aggravated the structural drawbacks and postponed the costly recovery process.

Even though the industrial base of export restructured towards medium technology, the low technology content products still constitute a great share of export and high-technology content products have a negligible share in industrial production and in export. In the presence of late, premature industrialization the structural drawbacks determine the performance of the export-oriented industrialization in Turkey. The present study aims to contribute the relevant literature by evaluating the export-oriented industrialization in Turkey within the economic environment that constitutes

the structural drawbacks. Time-series techniques are used to model the dynamic and evolving nature of the interrelations among variables.

The study used data for the period of 2007: Q1–2017: Q4 and VEC framework to model the dynamic co-evolving relations between export, import, investment, capacity utilization, interest rate and debt in Turkey. The study contributes to the literature by being the first empirical investigation evaluating the performance of the export-oriented industrialization by emphasizing the structural drawbacks and its impact on export performance. The empirical results are considered within the relevant political economy context in Turkey.

The results indicate that export is responsive to investment and capacity utilization and responsive to interest rate and import in the negative direction. Import is responsive to export, investment and capacity utilization in a positive direction and decreases with interest rate. Investment increases with export but decreases with imports. Additionally, the debt level increases with export and investment but decreases with import and import increases the interest rate and export decrease the interest rate.

These results suggest that Turkey should undertake investments to decrease the import dependency which does not only bring current account deficit and constitute conditions for (sudden) capital outflows but also decreases investment and increases interest rate negatively impacting the performance of the economy. Additionally, Turkey suffers from low value-added, low technology exports, thus, R&D investments and educational investments to increase the number of qualified researchers should be implemented.

Authors' contribution

DG contributed to the research, analysis, and manuscript. The authors read and approved the final manuscript.

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Availability of data and materials

The data are from Electronic Data Delivery System of the Central Bank of Turkey <https://evds2.tcmb.gov.tr/index.php/> that requires neither license nor permission of acquisition. The model is developed and executed with the E-views 9. The author would provide the data and the code, if it is requested.

Competing interests

The author whose name is listed immediately below certifies that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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References

- Arslan I, Van Wijnbergen S (1993) Export incentives, exchange rate policy and export growth in Turkey. *Rev Econ Stat* 1993:128–133
- Atabek A, Andrews D, Gönenç R (2017) Rebalancing Turkey's growth by improving resource allocation and productivity in manufacturing. *Global Prod* 45:199
- Bakir C, Öniş Z (2010) The regulatory state and Turkish banking reforms in the age of post-Washington Consensus. *Dev Change* 41(1):77–106
- Çalışkan A, Karimova A (2017) global liquidity, current account deficit, and exchange rate balance sheet effects in Turkey. *Emerg Mark Fin Trade* 53(7):1619–1640
- Celasun, M. (1994). Development Policy and Industrialization in Turkey. *International Journal on World Peace*, 41-57
- Celasun M, Rodrik D (1989) Debt, Adjustment, and Growth Turkey. *Developing country debt and economic performance*, vol 3. University of Chicago Press, Philippines, pp 615–616
- Droumagueta M, Warneb A, Wozniack T (2015) Granger causality and regime inference in Bayesian Markov–Switching VARs. The University of Melbourne, Melbourne

- Ege A, Ege AY (2017) The Turkish economy and the challenge of technology: a trade perspective. *New Pers Turkey* 57:31–60
- Engle RF, Granger CW (1987) Co-integration and error correction: representation, estimation, and testing. *Econometrica* 55:251–276
- Ertürk I (2003) Governance or financialisation: the Turkish case. *Compet Change* 7(4):185–204
- Filiztekin A (2002) Openness and productivity growth in Turkish manufacturing industry
- Granger CW (1969) Investigating causal relations by econometric models and cross-spectral methods. *Econometrica* 1969:424–438
- Habibi N, Walker JW (2011) What is driving Turkey's reengagement with the Arab world? *Middle East Brief* 49:1–9
- İzmen Ü, Yılmaz K (2009) Turkey's recent trade and foreign direct investment performance. *Turkey and the Global Economy*. Routledge, London, pp 173–204
- Keyder Ç (1987) *State and class in Turkey*. Verso, London, New York
- Kızılca FK, Özcan KM (2008) How did export-led growth strategy work in the Turkish Case? The experience of manufacturing sector after 1980. *J Int Trade Diplom* 2(1):137–160
- Lütkepohl H (2001) *Vector autoregressions*. Companion to Theoretical Econometrics. Blackwell Companions to Contemporary Economics, Oxford, pp 678–699
- Nagy S, Yıldırım IE (2018) Construction industry and economic growth in The Republic Of Turkey. *Ann Fac Econ* 1(2):140–162
- Onaran Ö, Stockhammer E (2005) Two different export-oriented growth strategies: accumulation and distribution in Turkey and South Korea. *Emerg Mark Fin Trade* 41(1):65–89
- Onaran Ö, Yentürk N (2001) Do Low Wages Stimulate Investment? An analysis of the relationship between distribution and investment in Turkish private manufacturing industry. *Int Rev Appl Econ* 15(4):359–374
- Öniş Z (2019) Turkey under the challenge of state capitalism: the political economy of the late AKP era. *Southeast European and Black Sea Studies* 19(2):201–225
- Öniş Z, Senses F (2007) Global dynamics, domestic coalitions and a reactive state: Major policy shifts in post-war Turkish economic development. *Domestic Coalitions and a Reactive State: Major Policy Shifts in Post-War Turkish Economic Development* (October 2007)
- Ozler S, Yılmaz K (2001) Does trade liberalization improve productivity? Plant level evidence from Turkish manufacturing industry. Working paper, UCLA
- Özmen E, Yolcu-Karadam D (2014) Structural change in Turkish external trade: evidence from BEC Sectors (No. 1413). ERC-Economic Research Center, Middle East Technical University
- Rodrik D (2016) Premature deindustrialization. *J Econ Growth* 21(1):1–33
- Saygılı H (2010) Sectoral exports dynamics of Turkey: a panel co-integration analysis. *Empir Econ* 38(2):373–384
- Saygılı H, Saygılı M (2011) Structural changes in exports of an emerging economy: case of Turkey. *Struct Change Econ Dynam* 22(4):342–360
- Şenses F (2012) Turkey's experience with neoliberal policies since 1980 in retrospect and prospect. *New Persp Turkey* 47:11–31
- Sims E (2013) *Graduate Macro Theory II: Notes on Time Series*. University of Notre Dame, https://www3.nd.edu/~esims1/time_series_notes_sp13.pdf. Access 06 Feb 2019
- Srouf I, Vivarelli M, Taymaz E (2013) Technological Change and Skill-based Employment Disparities: Evidence from Turkey (No. dises1393). Università Cattolica del Sacro Cuore, Dipartimenti e Istituti di Scienze Economiche (DISCE)
- Taymaz E (1999) Trade liberalization and employment generation: the experience of Turkey in the 1980s. *Turkey* 2:223–260
- Taymaz E, Voyvoda E (2012) Marching to the beat of a late drummer: turkey's experience of neoliberal industrialization since 1980. *New Persp Turkey* 47:83–113
- Taymaz E, Yılmaz K (2006) Productivity and trade orientation: Turkish manufacturing industry before and after the customs union
- Toraganlı N, Ertugrul HM (2016) Does credit composition matter for current account dynamics? Evidence from Turkey. *J Int Trade Econ Dev* 25(8):1090–1100

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