# AN ANALYSIS OF EXPORT PARADOX: THE TURKISH CASE IN THE AFTERMATH OF APRIL 5TH 1994 AUSTERITY MEASURES PACKAGE

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**Abstract**

*The combined impact of the fragility of Turkish economy, variable currency rates and global scale crises have greatly contributed to the formation of probable shocks. Alongside with the financial deregulation of post-1980s economic setting in Turkey, a favorite hub of short-term foreign direct investment in the mentioned time period, in particular, the post 1990s multitude economic crises have led to the shortening of the time interval of foreign direct investments stay and affected the infrastructure of Turkish economics. In this regard, this study aims to elucidate and elaborate the changes in foreign trade in the light of economic austerity measures by means of VAR analysis*

**Key Words:** *1994 Crisis, Import Dependency, VAR Analysis*

**JEL Classification: G01, F4**

## 1-INTRODUCTION

Countries aimed to maximize their earnings in the aftermath of Adam Smith's introduction of the term 'absolute advantage' to the field of international economics. Among the actions taken by governments, lay the efforts to increase efficiency in the production of goods and services, boosting up of R&D activities in addition to the major changes in the marketing of goods and services. The way that countries maximize their production in the short run facilitated by means of additions to the capital. As well as the fact that foreign direct investment (FDI) contributes to the production in the short run in developing and developed countries, they may also contribute to the fragilities leading to the exit and leaving the economies with crises. The liberalization of capital and the opening of Turkish economy pave the way to 1994 Turkish Financial Crisis and rendered the country serious economic turmoil

## 2-PRE-1994 FINANCIAL CRISIS ECONOMIC STRUCTURE

The liberalization of interest rates in the post January 24$^{th}$ Economic Austerity Measures and subsequent liberalization of capital movements increased the assets of Turkish central banks. Coupled with public debt policies the volume of incoming FDI to Turkey expanded significantly. The uncontrollable public deficits increased with higher interest rate financing via the resources of Turkish central bank. In terms of private sectors financing public deficits, the initial was liberalized to borrow internationally from external resources. The short run borrowing from

international markets of the banking sector and increases of residents' movements in international markets and in domestic stock exchange markets on the one hand relaxed pressures on foreign payments' balance while giving the chance to easily to finance public debts.

In the very period, monetary policies implemented by Turkish Central Bank attracted FDI. Skyrocketing interest rates owing to increasing domestic borrowing relative returns to TL both domestically and internationally speaking got ameliorated. Those policies in the post-1980setting aiming to promote exports brought about the devaluation of TL which was subsequented by governments leaving aside the devaluation policy in the 1990s. In other words, central banks did not intervene in the valuation of TL due to FDI entry in the name of controlling monetary magnitudes (Tiryaki, 2002: 12).

Financial crises may simply be defined as serious price fluctuations at financial markets inclusive of currency and stock exchange markets and as unreturned banking credits' increasing to the banking system, thereby leading to serious economic distress(Kibritçioğlu, <www.ceterisparibus.net>, 15.02.2010).

The domestic debt ratio to GDP had a tendency to rise from the beginning of 1990s to 1994. On the other hand, governments with the objective of decreasing interest rates and lengthening the maturity date changed the financing public deficits with legislation passed at the end of 1993. In the same year, treasury's debts to the Central Bank were erased with power granted to the Treasury to do borrowing twice. As a result, the Treasury started using resources of Central Bank more and more. While public deficits were financed through the resources of the Turkish Central Bank rather than internal borrowing, devaluation expectations increased alongside with an emerging currency demand widening the gap between market currency rate and official currency rate (Merkez Bankası Yıllık Rapor 1994, s. 13).

## 3- APRIL 5th 1994 ECONOMIC AUSTERITY MEASURES PACKAGE

The Economic austerity package introduced the following measures (Parasız, 1998:391) the devaluation of TL to overcome the overvaluation of the currency, once having been realized there emerged a great deal of increase in exports. As additional taxes have been introduced, public budget was balanced by means of putting an end to the public employment whilst prices of products of State Economic Enterprises rose significantly to increase public revenue, thereby rationalizing the subsidies and accelerating privatization. Social security institutions were introduced new arrangements to solve their funding problems along side with measures to increase autonomy of the Central Bank.

The pretext of the April 5th Austerity Package was to eliminate three-digit-inflation level, to overcome the facility of the Turkish economy; and to rationalize the current account deficit levels. In the aftermath of the devaluation of TL, the currency was devalued at a rate of 36, 9%.The valuation of foreign currencies and substantial increases in volume of exports turned the current account deficit into current account surplus while contracting foreign trade deficit. GNP contracted at a rate of 6.1% while skyrocketing inflation rate to 106, 3% Consumption expenditures recessed at a higher rate, yet the greatest response was given by the investment expenditures. In the preceding year along with the increasing current account deficit, investment expenditures grew by 29, 1% yet the same expenditures accounted of a 29, 8% decrease. It is important to note that increases in investment expenditures were due to the private sector in 1993 however in the aftermath of April 5th 1994 Austerity Measures, the fundamental decrease of total investment

expenditures was predominantly due to the 34,8% decrease in public investment expenditures(Tiryaki, 2002: 15).

Increase in price level got normalized to the level of pre-crisis setting in 1994 and returned back to 70%. The reasons for unsustainability of structural adjustment was owing to several factors: the use of fiscal policy by only means of relying on tax policies, the insufficient use of monetary policies, lack of credibility of governments thereby supporting Rational Expectations of the Neoclassical School, the political populism realized through subsidies with pressures on parliamentarians as the Constitutional Economics School asserts through, the inability of the Treasury to transform -short run debts to long run debts

In light of Turkish experience in the April 5th Financial Crisis, it will be essential that one elaborate the role of economic policies. In this regard, economic policies have a four major objectives are (i) full employment, (ii) price stability, (iii) a high, but sustainable, rate of economic growth, and (iv) keeping the Balance of Payments in equilibrium. Government and central banks are limited in the number of goals they can achieve in the short term. For instance, there may be pressure on the government to reduce inflation, reduce unemployment, and reduce interest rates while maintaining currency stability. If all of these are selected as goals for the short term, then policy is likely to be incoherent, because a normal consequence of reducing inflation and maintaining currency stability is increasing unemployment and increasing interest rates. (Selen, 2005: 183)

The inward processing procedure makes it possible to import goods temporarily so that they can be processed (assembling, manufacturing, transforming or repair) and then to export the resulting compensating products, while benefiting from an exemption from import duties or taxes which would be carried out under the trade policy normally applicable to imported goods. (Sönmez, 2005: 24). In such regard, the aim of the Inward Processing regime is to enable exporters to supply raw materials, intermediate unfinished goods for the production of their exports without being subject to customs duties, including VAT. The customs duties or other relevant charges are not applied when the goods are exported to a third country. Henceforth, PO has become a system allowing Turkish manufacturers/exporters to obtain raw materials, intermediate unfinished goods that are used in the production of the exported goods without paying customs duty and being subject to commercial policy measures. Having granting IPO authorization, the owner of the IPO authorization becomes obliged to import goods stated on authorization and export them after processing the imported goods. The basic endeavor of the IPO, therefore, is to maintain materials at the world market prices and enhance the competitiveness of Turkish exporters.

Given the perspective above the IPP gives the chance to firms to strengthen their capital, thereby being a major impetus for the foreign trade, sustaining a price advantage for the firms and increasing volume transactions for firms. (Selen, 2005: 190). The IPP, by means of facilitating firms to import raw and semi-finished products without being subject to trade policy measures gives the chance companies to import more of the materials in particular those that are regulated by trade, henceforth full employment resources. In such regard, IPP is a facilitating regulation as the funds are financed publicly, that is to say, it is mechanism that gives exemptions to companies that fulfill the criteria required (DPT, 2004: 245).

## 4-DATA SET AND METHODOLOGY

The analysis used an unrestricted **Vector auto regression (**VAR) modeling. **VAR** is an econometric model used to capture the evolution and the interdependencies between multiple time series, generalizing the univariate AR models. All the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. At structural and cointegrated equation modeling, some variables may be determined as endogenous or as exogenous. Before forecasting these models, equations at models must be determined fully. In this process, frequently, some of the variables pre-determined are assumed to be present in the equation. To enable such a process, the VAR technique was developed. Henceforth, all the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. (Gujarati, 2005: 747.)

In addition to the VAR modeling equations, impulse response analysis, variance decomposition analysis and Granger causality tests are carried out. Johansen cointegration test may be also fulfilled depending on problematization. It is extremely difficult to elaborate the coefficients obtained in VAR modeling forecasting. In this respect, the second step becomes the Impulse-Response Analysis. Impulse response analysis is used widely in the empirical literature to uncover the dynamic relationship between macroeconomic variables within vector autoregressive (VAR) models. Impulse responses measure the time profile of the effect of a shock, or impulse on the (expected) future values of a variable. By imposing specific restrictions on the parameters of the VAR model the shocks can be attributed an economic meaning (Bozkurt, 2007: 95).

In terms of the previous works done on the subject, Yapraklı (2007), used a cointegration and causality analysis covering the relationship of total industrial production index import price indexation based on total and intermediary goods groups between 2001:3 – 2007:5 period concluding that in the long run, economic growth is negatively affected by consumption goods 'imports and positively affected by total investment and intermediary goods' imports;

Aydın ve Çıplak (2007) analyzed the structure of current account structure and elaborated on the dynamics of such a deficit between2001 – 2007. In concluding remarks, as a result of production's and exports 'dependency on imports current account deficit grew, thereby leading to the increase in the deficit in question in post-2004 era.

Yamak ve Korkmaz (2005) applied a causality test on real currency changes of TL within the quarters between 1995 – 2004 and applied a causality test on foreign trade balance with the implementation of retroactive causality between foreign trade balance and real foreign currencies Real increases in the value of TL distracted the foreign trade balance.

This work analyzes the attained intermediary goods', investment goods' imports, manufacturing industry's exports and real effective foreign currency rates between the first quarter of 1989 to January 2009 quarter. All series have been drawn from Central Bank of Turkey's Data Base. All series have been cleansed out of seasonality by moving averages method to minimize the breaks that may be probably observed. The logarithm functions have not been calculated since there was no big difference between the log and non-log forms of series. The lag interval has been determined as 3 both based on Schwartz and Akaike Criteria

In terms of the variables used in the study, imalexsa refers to the de-seasonalized form of manufacturing industry's exports series, while armalimsa refers to the de-seasonalized form of

intermediary goods' imports. In a similar way, yatmalimsa refers to the deseasonalized form of investment goods' imports and reelkursa denotes the deseasonalized form of real foreign currencies

The stationary tests carried out demonstrate that at 5%level series do not have unit roots and they are found out to be stationary. The findings have been shown at Additional Table 1 by findings of KPSS and ADF tests.

In the additional graphic-1 whereby impulse and response analyses are shown and a unit standard deviation corresponds to one year, interaction between intermediary goods imports, real foreign currencies, manufacturing industries exports variables is demonstrated. Manufacturing industry exports variable's one unit standard deviation intermediary goods imports first has an increasing, then a reversed response. In the very end, it has a stationary response. It is interesting to note that by 1994 intermediary goods imports variable has a stationary response. Intermediary goods and real foreign currencies variables have a stationary impulse and response drive. This very tendency starts in 1994' end. In the previous stages, it follows the pattern pursued by exports of manufacturing goods variables. Within Intermediary goods export variable's and investment goods imports variable's, one standard deviation impulse by manufacturing industry's exports variable's impulse, the response is very similar to the response given by intermediary goods variable's response

Based on the assumption derived from intermediary goods imports and manufacturing industry exports, rather than the impulse and response analysis between real foreign exchange currencies and other, the realized impulse and response analysis within the variables remains more important. This is owing to the fact that dependency on foreign resources is more of a structural nature rather than being based on foreign exchange currencies

In the additional Table-3, we present the coefficients of variance decomposition of the variables, imports of investment, intermediary goods, exports of manufacturing industry and real effective foreign exchange currencies coupled with impulse and response analyses in which a unit time dimension refers to 1 year length.

In the analysis in which intermediary goods imports is taken as a dependent variable and the basic influential variable become exports of manufacturing industry, real effective foreign currencies, imports of investment goods, in the first sections of the table, the basic influential variable on the imports of intermediary goods is the exports of manufacturing goods. While the effect of the intermediary goods imports on itself fades away, real foreign currencies and investment goods imports variable have stationary effect on themselves

In the second section of the table, in which exports of manufacturing industry is taken as a dependent variable, the effects of the variables imports of intermediary goods, investment goods and real effective foreign currency on the previous are sought for. While the manufacturing industry exports have an increasing response on itself. The effect of the influence of the import of intermediary goods on the variable decreases. This is in contrast with the first section of the table in which the influencers on intermediary goods imports are looked for. Investment goods imports and foreign effective currencies become more determiners on the manufacturing industry exports. This becomes on the agenda in the aftermath of 1994 Financial Crisis where foreign currency regime is put into discussion.

In third section of the analysis, the basic influencers on the foreign effective currencies are sought and discussed. As manufacturing industry exports and intermediary goods imports become more influential as it does in the first two parts of the analysis. The investment goods imports do not have a great impulse on the variable, maintaining a stationary effect for the 20 years in question. This situation indicates the fact that Turkish economy relying on the imports structurally witnesses the pressure of the real sector on the foreign currencies.

In the last section of the table, the determinants of investment goods imports are discussed. According to the findings, manufacturing industry exports become the main determinants of investment goods imports thereby cluing that most investment goods are imported for the manufacturing industry to export their production. As the necessary manufacturing industry exports, it has to import investment goods. The intermediary goods variable follows a stationary pattern.

## 5-RESULTS

Turkish neoliberal transformation policy in the macroeconomic field liberalized the markets by January 24$^{th}$ 1980 Economic Austerity Measures and with the financial liberalization in 1989, the pace of FDI's entry into Turkish economy got more and more accelerated, leading to real growth in the real sector alongside with their utilization in stock exchange markets and alike markets, henceforth being an obstacle to the growth and expansion of the real sector

While adequate measures have not been taken to regulate and control FDI incoming in the aftermath of 1989 Financial Liberalization, the very situation has made the Turkish economy more fragile. The increasing pressure on the demand has skyrocketed the inflation, leading to exorbitant interest rates in banking sector in face of increasing demand, making the April 5$^{th}$ 2004 Economic Austerity Measures inevitable

The empirical findings of the study reveal that manufacturing sector due to its dependency on imports has deeply felt the crisis in its real sector by the austerity measure package in 1994 and financial liberalization. Indeed the signed 1996 Customs Union Agreement with the EU and the emerging IPR have led the manufacturing industry to emphasize more and more on the investment and intermediary goods imports.

To wrap up: this very situation has exacerbated the current account deficit. This very problematization may be solved by fiscal measures and other remedies to deal with the fragility of Turkish economy and more incoming FDIs chance to sustain the balance in economy. Indeed in the short run, this remains no viable alternative for the Turkish economic setting. The reason behind this is simply that most goods and services produced in Turkish manufacturing industry have no value added and remain far from branding. Indeed as more quality investment goods and intermediary goods are exported to the foreign markets, the current account deficit will shrink and more FDI will be incoming to facilitate the sustainability of the deficit. In this regard it is important to hold the short term FDI for the innovation and R&D activities to solve the problematization in the days ahead.

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## ADDITIONAL TABLES

**Additional Table – 1:** Stationary Tests of Variables

| | | **Level** | | **1st Difference** | |
|---|---|---|---|---|---|
| | | **Intercept** | **With trend and intercept** | **Constant** | **With trend and intercept** |
| **ADF** | **ARMALİMSA** | 1,677 | 0,208 | -1,408 | -2,072 |
| | **IMALEXSA** | 3,882 | 0,918 | -2,685 | -4,049* |
| | **REKURSA** | -1,682 | -3,189 | -10,008* | -9,949* |
| | **YATMALİSA** | -1,962 | -2,981 | -10,440* | -10,389* |
| **KPSS** | **ARMALİMSA** | 0,907 | 0,244 | 0,134* | 0,088* |
| | **IMALEXSA** | 0,946 | 0,271 | 0,187* | 0,066* |
| | **REKURSA** | 1,071 | 0,225 | 0,054* | 0,053* |
| | **YATMALİSA** | 0,905 | 0,259 | 0,066* | 0,060* |

(The critical values of constant monthly data for ADF test, significant at 1% level are -3,48, for intercept ve -4,03 with trend and intercept The critical values of intercept monthly data for ADF test, significant at 5% level are -2,88, for intercept and -3,44 with intercept and trend. The critical values of monthly data for ADF test, significant at 10 % level are -2,57, for intercept and -3,14for intercept and trend.The critical values of constant monthly data for KPSS test, significant at 1% level are 0,739 for intercept ve -0,216 with trend and intercept. The critical values of intercept monthly data for KPSS test, significant at 5% level are 0,463 , for intercept and 0,146 with intercept and trend. The critical values of monthly data for KPSS test, significant at 10 % level are 0,347, for intercept and 0,147 for intercept and trend.** series do not have unit roots at 5% level verified by stationary tests.)

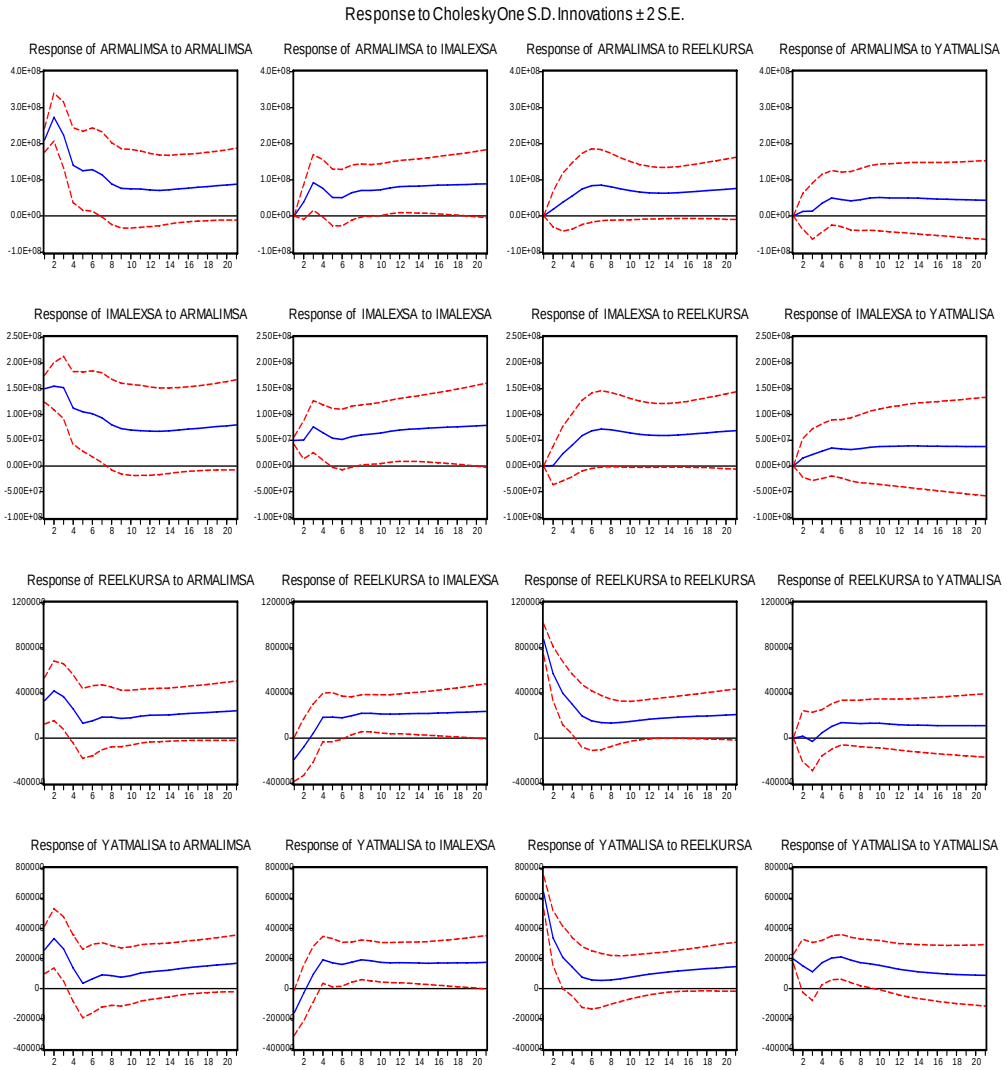
**ADDITIONAL TABLE – 2:** VAR Equations

Vector Autoregression Estimates
Date: 05/04/10 Time: 09:39
Sample (adjusted): 1989Q4 2009Q4
Included observations: 81 after adjustments
Standard errors in ( ) & t-statistics in [ ]

| | ARMALIMSA | IMALEXSA | REELKURSA | YATMALISA |
|---|---|---|---|---|
| ARMALIMSA(-1) | 0.633110 | -0.029183 | 0.000316 | 8.48E-05 |
| | (0.36666) | (0.27569) | (0.00166) | (0.00128) |
| | [ 1.72670] | [-0.10585] | [ 0.18968] | [ 0.06615] |
| ARMALIMSA(-2) | -0.854202 | -0.478548 | -0.001155 | -0.001390 |
| | (0.33402) | (0.25115) | (0.00152) | (0.00117) |
| | [-2.55734] | [-1.90541] | [-0.76221] | [-1.19059] |
| ARMALIMSA(-3) | 0.607460 | 0.266307 | -0.001071 | -0.000695 |
| | (0.28372) | (0.21334) | (0.00129) | (0.00099) |
| | [ 2.14102] | [ 1.24830] | [-0.83171] | [-0.70047] |
| IMALEXSA(-1) | 0.885554 | 1.061344 | 0.000900 | 0.001182 |
| | (0.48781) | (0.36679) | (0.00221) | (0.00170) |
| | [ 1.81538] | [ 2.89363] | [ 0.40685] | [ 0.69308] |
| IMALEXSA(-2) | 0.515792 | 0.556342 | 0.000700 | 0.001011 |
| | (0.42169) | (0.31707) | (0.00191) | (0.00147) |
| | [ 1.22315] | [ 1.75461] | [ 0.36603] | [ 0.68600] |
| IMALEXSA(-3) | -0.841737 | -0.469387 | 0.001598 | 0.000940 |
| | (0.39724) | (0.29869) | (0.00180) | (0.00139) |
| | [-2.11899] | [-1.57151] | [ 0.88670] | [ 0.67692] |
| REELKURSA(-1) | -26.17613 | -55.99819 | 0.598584 | -0.175410 |
| | (96.9510) | (72.8985) | (0.43989) | (0.33881) |
| | [-0.26999] | [-0.76817] | [ 1.36077] | [-0.51772] |
| REELKURSA(-2) | 86.86468 | 51.32874 | 0.283695 | 0.127675 |
| | (126.019) | (94.7553) | (0.57178) | (0.44040) |
| | [ 0.68930] | [ 0.54170] | [ 0.49616] | [ 0.28991] |
| REELKURSA(-3) | -50.15760 | 27.01313 | -0.332857 | -0.246642 |
| | (94.2795) | (70.8898) | (0.42777) | (0.32948) |
| | [-0.53201] | [ 0.38106] | [-0.77813] | [-0.74858] |
| YATMALISA(-1) | 64.36329 | 78.29552 | 0.074408 | 0.764074 |
| | (127.087) | (95.5580) | (0.57662) | (0.44413) |
| | [ 0.50645] | [ 0.81935] | [ 0.12904] | [ 1.72038] |
| YATMALISA(-2) | -89.25208 | -24.90220 | -0.350358 | -0.100353 |
| | (153.866) | (115.694) | (0.69813) | (0.53772) |

| | | | | |
|---|---|---|---|---|
| | [-0.58006] | [-0.21524] | [-0.50185] | [-0.18663] |
| YATMALISA(-3) | 73.28021 | -21.56556 | 0.436048 | 0.349996 |
| | (113.022) | (84.9823) | (0.51280) | (0.39498) |
| | [ 0.64837] | [-0.25377] | [ 0.85032] | [ 0.88612] |
| C | -5.22E+08 | -4.98E+08 | 3080329. | 2937036. |
| | (3.4E+08) | (2.5E+08) | (1523378) | (1173351) |
| | [-1.55386] | [-1.97454] | [ 2.02204] | [ 2.50312] |
| R-squared | 0.962471 | 0.970962 | 0.890133 | 0.865759 |
| Adj. R-squared | 0.955848 | 0.965838 | 0.870745 | 0.842070 |
| Sum sq. resids | 3.00E+18 | 1.70E+18 | 6.18E+13 | 3.66E+13 |
| S.E. equation | 2.10E+08 | 1.58E+08 | 952941.4 | 733983.5 |
| F-statistic | 145.3265 | 189.4802 | 45.91106 | 36.54608 |
| Log likelihood | -1660.032 | -1636.935 | -1223.001 | -1201.854 |
| Akaike AIC | 41.30942 | 40.73915 | 30.51854 | 29.99641 |
| Schwarz SC | 41.69372 | 41.12344 | 30.90283 | 30.38070 |
| Mean dependent | 1.24E+09 | 1.03E+09 | 12979576 | 11946997 |
| S.D. dependent | 1.00E+09 | 8.54E+08 | 2650592. | 1846944. |
| Determinant resid covariance (dof adj.) | | 3.19E+54 | | |
| Determinant resid covariance | | 1.58E+54 | | |
| Log likelihood | | -5514.117 | | |
| Akaike information criterion | | 137.4350 | | |
| Schwarz criterion | | 138.9722 | | |

**ADDITIONAL GRAPHIC – 1:** Impulse Response Analysis



**ADDITIONAL TABLE – 3:** Variance Decomposition Analysis

Variance Decomposition of ARMALIMSA:

| Period | S.E. | ARMALIMSA | IMALEXSA | REELKURSA | YATMALISA |
|---|---|---|---|---|---|
| 1 | 2.10E+08 | 100.0000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 3.48E+08 | 98.37622 | 1.215785 | 0.275442 | 0.132550 |
| 3 | 4.26E+08 | 93.30871 | 5.523872 | 0.980294 | 0.187121 |
| 4 | 4.60E+08 | 89.45174 | 7.485622 | 2.309224 | 0.753417 |
| 5 | 4.88E+08 | 86.12023 | 7.759859 | 4.400644 | 1.719269 |
| 6 | 5.16E+08 | 83.18775 | 7.895680 | 6.591392 | 2.325174 |
| 7 | 5.41E+08 | 80.19217 | 8.608690 | 8.481727 | 2.717413 |
| 8 | 5.60E+08 | 77.23871 | 9.611719 | 9.969084 | 3.180490 |
| 9 | 5.77E+08 | 74.60162 | 10.56405 | 11.08882 | 3.745515 |
| 10 | 5.92E+08 | 72.29348 | 11.51108 | 11.90637 | 4.289076 |
| 11 | 6.08E+08 | 70.17677 | 12.56256 | 12.50399 | 4.756680 |
| 12 | 6.23E+08 | 68.18792 | 13.66908 | 12.96843 | 5.174570 |
| 13 | 6.37E+08 | 66.35138 | 14.72747 | 13.36429 | 5.556861 |
| 14 | 6.52E+08 | 64.68106 | 15.70493 | 13.72734 | 5.886661 |
| 15 | 6.66E+08 | 63.15252 | 16.61731 | 14.07710 | 6.153064 |
| 16 | 6.81E+08 | 61.73800 | 17.47099 | 14.42647 | 6.364533 |
| 17 | 6.96E+08 | 60.42654 | 18.25803 | 14.78189 | 6.533536 |
| 18 | 7.11E+08 | 59.21355 | 18.97658 | 15.14316 | 6.666706 |
| 19 | 7.26E+08 | 58.08957 | 19.63522 | 15.50695 | 6.768258 |
| 20 | 7.42E+08 | 57.04268 | 20.24345 | 15.86996 | 6.843919 |
| 21 | 7.57E+08 | 56.06401 | 20.80669 | 16.22952 | 6.899789 |

Variance Decomposition of IMALEXSA:

| Period | S.E. | ARMALIMSA | IMALEXSA | REELKURSA | YATMALISA |
|---|---|---|---|---|---|
| 1 | 1.58E+08 | 90.19445 | 9.805552 | 0.000000 | 0.000000 |
| 2 | 2.27E+08 | 89.87713 | 9.661129 | 0.002310 | 0.459431 |
| 3 | 2.86E+08 | 85.19436 | 13.22422 | 0.697143 | 0.884285 |
| 4 | 3.18E+08 | 81.41593 | 14.84247 | 2.207085 | 1.534515 |
| 5 | 3.46E+08 | 77.94142 | 14.97752 | 4.759905 | 2.321161 |
| 6 | 3.72E+08 | 74.84366 | 14.86026 | 7.493795 | 2.802279 |
| 7 | 3.96E+08 | 71.73895 | 15.21032 | 9.922162 | 3.128572 |

| | | | | | |
|---|---|---|---|---|---|
| 8 | 4.15E+08 | 68.75384 | 15.89335 | 11.86708 | 3.485729 |
| 9 | 4.33E+08 | 66.08168 | 16.66624 | 13.34647 | 3.905611 |
| 10 | 4.49E+08 | 63.75560 | 17.49074 | 14.43111 | 4.322546 |
| 11 | 4.65E+08 | 61.67538 | 18.40115 | 15.22175 | 4.701721 |
| 12 | 4.81E+08 | 59.77841 | 19.35150 | 15.82161 | 5.048472 |
| 13 | 4.96E+08 | 58.06069 | 20.26599 | 16.30787 | 5.365446 |
| 14 | 5.10E+08 | 56.52236 | 21.10886 | 16.72746 | 5.641322 |
| 15 | 5.25E+08 | 55.14130 | 21.88094 | 17.10856 | 5.869198 |
| 16 | 5.40E+08 | 53.89101 | 22.58602 | 17.46947 | 6.053500 |
| 17 | 5.55E+08 | 52.75514 | 23.22280 | 17.81995 | 6.202121 |
| 18 | 5.70E+08 | 51.72336 | 23.79330 | 18.16275 | 6.320593 |
| 19 | 5.85E+08 | 50.78415 | 24.30555 | 18.49714 | 6.413163 |
| 20 | 6.01E+08 | 49.92506 | 24.76851 | 18.82184 | 6.484587 |
| 21 | 6.16E+08 | 49.13591 | 25.18880 | 19.13571 | 6.539581 |

Variance Decomposition of REELKURSA:

| Period | **S.E.** | **ARMALIMSA** | **IMALEXSA** | **REELKURSA** | **YATMALISA** |
|---|---|---|---|---|---|
| 1 | 952941.4 | 11.94173 | 3.944109 | 84.11416 | 0.000000 |
| 2 | 1189470. | 19.98444 | 2.992617 | 77.00779 | 0.015145 |
| 3 | 1307636. | 24.38810 | 2.591172 | 72.95158 | 0.069144 |
| 4 | 1378757. | 25.43189 | 4.078708 | 70.31006 | 0.179341 |
| 5 | 1414221. | 25.00934 | 5.569844 | 68.73240 | 0.688411 |
| 6 | 1448247. | 24.95353 | 6.852164 | 66.65818 | 1.536127 |
| 7 | 1485316. | 25.25555 | 8.271328 | 64.21076 | 2.262363 |
| 8 | 1524196. | 25.47010 | 9.934596 | 61.73968 | 2.855627 |
| 9 | 1561154. | 25.50789 | 11.45344 | 59.62757 | 3.411099 |
| 10 | 1597754. | 25.61118 | 12.69933 | 57.77584 | 3.913648 |
| 11 | 1635390. | 25.84141 | 13.77551 | 56.07510 | 4.307984 |
| 12 | 1673997. | 26.10682 | 14.77987 | 54.50756 | 4.605741 |
| 13 | 1712684. | 26.34360 | 15.71100 | 53.09804 | 4.847366 |
| 14 | 1751422. | 26.57524 | 16.55098 | 51.82097 | 5.052802 |
| 15 | 1790566. | 26.82627 | 17.31416 | 50.63614 | 5.223430 |
| 16 | 1830237. | 27.08857 | 18.02547 | 49.52334 | 5.362622 |
| 17 | 1870309. | 27.34725 | 18.69413 | 48.47965 | 5.478970 |
| 18 | 1910741. | 27.60155 | 19.31872 | 47.50074 | 5.578991 |
| 19 | 1951613. | 27.85611 | 19.90040 | 46.57849 | 5.665003 |
| 20 | 1992988. | 28.11063 | 20.44447 | 45.70657 | 5.738326 |
| 21 | 2034862. | 28.36142 | 20.95543 | 44.88202 | 5.801127 |

Variance Decomposition of YATMALISA:

| Period | S.E. | ARMALIMSA | IMALEXSA | REELKURSA | YATMALISA |
|---|---|---|---|---|---|
| 1 | 733983.5 | 12.17093 | 4.844035 | 75.80100 | 7.184027 |
| 2 | 886204.1 | 22.45939 | 3.451681 | 66.28387 | 7.805056 |
| 3 | 958415.3 | 26.73986 | 3.928433 | 61.29737 | 8.034332 |
| 4 | 1011207. | 25.80706 | 7.049726 | 57.04385 | 10.09936 |
| 5 | 1048584. | 24.10488 | 9.188875 | 53.56544 | 13.14081 |
| 6 | 1084650. | 22.88594 | 10.75245 | 50.33849 | 16.02312 |
| 7 | 1119705. | 22.12983 | 12.52138 | 47.46296 | 17.88582 |
| 8 | 1153290. | 21.40958 | 14.50760 | 44.98084 | 19.10198 |
| 9 | 1183468. | 20.73913 | 16.18646 | 43.01056 | 20.06385 |
| 10 | 1211425. | 20.29779 | 17.50635 | 41.43089 | 20.76497 |
| 11 | 1238602. | 20.09701 | 18.65077 | 40.11117 | 21.14104 |
| 12 | 1265487. | 20.02664 | 19.71622 | 38.98914 | 21.26800 |
| 13 | 1291866. | 20.02261 | 20.67546 | 38.04759 | 21.25434 |
| 14 | 1318013. | 20.10249 | 21.50635 | 37.24850 | 21.14266 |
| 15 | 1344377. | 20.27640 | 22.23313 | 36.54987 | 20.94060 |
| 16 | 1371144. | 20.51984 | 22.88646 | 35.92791 | 20.66579 |
| 17 | 1398270. | 20.80610 | 23.47622 | 35.37336 | 20.34432 |
| 18 | 1425768. | 21.12694 | 24.00275 | 34.87697 | 19.99334 |
| 19 | 1453722. | 21.47985 | 24.47157 | 34.42789 | 19.62069 |
| 20 | 1482178. | 21.85661 | 24.89254 | 34.01802 | 19.23283 |
| 21 | 1511120. | 22.24678 | 25.27333 | 33.64258 | 18.83732 |