DETERMINANTS OF INSURANCE COMPANIES' STOCK RETURN IN GCC COUNTRIES

By

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ABSTRACT

This study examines the determinants of insurance companies' stock returns in GCC stock markets using two models based on panel data over the period of 2001-2010. In the first model, monthly data for each of the GCC market were used to analyses the effect of macroeconomic variables (inflation, interest rate, money supply, oil prices and unemployment rate) on insurance index' stock returns with stock market return as the control variable. In the second model, using annual data, firm specific variables (earning per share, dividend yield, leverage, loss ratio, reinsurance dependence, solvency margin, affiliated investment and stability of underwriting operation), macroeconomic variables (inflation, money supply, oil prices and unemployment rate) and stock market return are all modelled together into determining their effects on insurance companies' stock returns. This study applied panel data estimation which includes pooled estimation, fixed effect panel estimation and random effect panel estimation to derive the most appropriate estimation.The results from the first model indicate four out of five macroeconomic indicators, namely inflation, money supply, oil prices and unemployment rate, are significant in affecting the insurance index returns in the GCC stock markets. The analyses using the second model reveal that only earning per share, dividend yield, leverage and solvency margin effect insurance companies' stock returns significantly. This study contributes to the literature in terms of revealing the effect of a comprehensive set of economics, firm specific and insurance company specific factors on GCC's Insurance companies' stock returns based on robust analyses. The research findings highlight crucial factors to be given due attention by managers, actuaries shareholders, portfolio managers and policy makers dealing with insurance companies in GCC markets.

Keywords: GCC market, insurance sector, stock returns, asset pricing theory, panel data, insurance company specific factors

ABSTRAK

Kajian ini meneliti penentu pulangan saham syarikat insurans dalam pasaran saham *GCC* dengan menggunakan dua model yang bersandarkan data panel dari tahun 2001-2010. Dalam model yang pertama, data bulanan dari setiap pasaran *GCC* digunakan untuk menganalisis kesan pemboleh ubah makroekonomi (inflasi, kadar faedah, penawaran wang, harga minyak dan kadar pengangguran) terhadap indeks insurans pulangan saham dengan pulangan pasaran saham bertindak sebagai pemboleh ubah kawalan. Model kedua yang mengupayakan data tahunan pula memodelkan bersekali pemboleh ubah khusus firma (perolehan sesaham, hasil dividen, leveraj, nisbah kerugian, kebergantungan insurans semula, margin mampu bayar, pelaburan bergabung, dan kestabilan operasi penajajaminan), pemboleh ubah makroekonomi (inflasi, penawaran wang, harga minyak dan kadar pengangguran) dan pulangan pasaran saham untuk menentukan kesan ketiga-tiga aspek ini terhadap pulangan saham syarikat insurans. Kajian ini mengaplikasikan anggaran data panel yang melibatkan anggaran terkumpul, anggaran panel kesan tetap dan anggaran panel kesan rawak untuk mendapatkan anggaran yang paling bersesuaian. Dapatan daripada model pertama memperlihatkan empat daripada lima petunjuk makroekonomi, khususnya inflasi, penawaran wang, harga minyak dan kadar pengangguran, bersifat signifikan dalam mempengaruhi pulangan indeks insurans dalam pasaran saham *GCC*. Analisis yang menggunakan model kedua memaparkan bahawa hanya perolehan sesaham, hasil dividen, leveraj dan margin mampu bayar mempengaruhi pulangan saham syarikat insurans secara signifikan. Kajian ini menyumbang kepada kosa ilmu dari segi pendedahan kesan set ekonomi yang komprehensif, faktor khusus firma dan faktor khusus syarikat insurans terhadap pulangan saham syarikat insurans *GCC* berdasarkan analisis yang teguh. Hasil kajian mengetengahkan faktor-faktor penting yang perlu dipertimbangkan oleh pengurus, pemegang saham aktuari, pengurus portfolio dan penggubal dasar dalam pengurusan syarikat insurans di pasaran *GCC*.

Kata kunci: pasaran *GCC*, sektor insurans, pulangan saham, teori harga asset, data panel, faktor khusus syarikat insurans

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LIST OF ABBREVIATIONS

AFF.IN	Affiliated investment
AMEX	American Stock Exchange
API	American Petroleum Institute
APT	Arbitrage Pricing Theory
APY	Annual Percentage Yield
BRIC	Grouping acronym that refers to the countries of Brazil, Russia, India and China
BV	Book value
C.V	Coefficient Variation
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Indices
CPS:	Cash per Share
CRR	Capital Adequacy Ratio
D	Durbin-Watson value
DFA	Dynamic Financial Analysis
Dl	Durbin-Watson lowers value
DR	Discount Rates
DSE	Dhaka Stock Exchange
DU	Durbin-Watson upper value
DV	Dependent Variable
DY	Dividend Yield

E/P	Earnings/Price
EMH	Efficient Market Hypothesis
EPS	Earnings per Share
FEM	Fixed Effect Model
FF:	Fama and French
FIML	Full Information Maximum Likelihood
FL	Financial leverage
FL	Factor Loading Model
FOREX	Foreign Exchange Market
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GX	Government Expenditure
I.S.R	Insurance Sector Index Return
ID	Domestic Interest Rate
IM	Imports
INFR	Inflation Rate
INTR	Interest Rate
IP	Industrial Production
IRIS	Insurance Regulatory Information System
ISE	Istanbul Stock Exchange
IV	Independent Variable
IW	World Interest Rate

KLSE	Kuala Lumpur Stock Exchange
KSA	Kingdom of Saudi Arabia
LEV	Leverage
LGB	Government bond yield
LR	loss ratio
LTR	Long-Term Interest Rates
MS	Money Supply
MVM	Macroeconomic Variable Model
NAIC	The National Association of Insurance Commissioners
NASDAQ	National Association of Securities Dealers Automated Quotations
NDX	Index that tracks the largest 100 non-financial companies listed on the
NLSLS	Non-Linear Stage Least Squares NLSLS
NYMEX	New York Mercantile Exchange
NYS	New York State Insurance
NYSE	New York Stock Exchange
OL	Operating Leverage
OLS	Ordinary least squares
OP	Oil Prices
OPEC	Organization of the Petroleum Exporting Countries
PLS	Panel Least Squares
QFCA	Qatar Financial Centre Authority
REM	Random Effects Model
R^2:	Coefficient of Determination

REID	Reinsurance Dependence
RF	Risk-Free Rate
ROA	Return on Assets
RPI	Retail Price Indices
S &P500	Standard & Poor's 500
S.R	Stock return
SAMBA	Free Software Re-Implementation of the Smb/Cifs Networking Protocol
SES	Stock Exchange of Singapore's All-S Sector Indices
SM	Solvency Margin
Std. Dev	Standard Deviation
SUO	Stability of Underwriting Operation
SUR	Seemingly Unrelated Regression
TA	Total Foreign Tourist Arrivals
TB	Treasury Bill Rate
UAE	United Arab of Emirates
UNMR	Unemployment rate
VAR	Vector Autoregressive
VIF	Variance Inflation Factor
WTI	West Texas Intermediate
β:	Coefficient of Variation
σ^2	Statistical Variance

CHAPTER ONE

BACKGROUND OF STUDY

1.0 INTRODUCTION

A number of studies have been executed to identify the determinants of stock returns in a number of countries and regions. While some of the factors have been found to positively influence returns, others were found to have negative effects. Still, it is not absolutely clear whether a specific factor has a negative or positive impact as the results have been conflicting. A few studies have been done on stock markets in Africa (Olowoniyi & Ojenike, 2012), in Asian stock markets (Tarazi & Gallato, 2012; Haque & Sarwar, 2012; Caglayan & Lajeri-Chaherli, 2009; Al-Mutairi & Al-Omar, 2007) and in the West (Artmann, Finter & Kempf, 2012). Most of the studies on this subject have been carried out in the developed nations and studies on emerging markets are growing fast. A few studies are also available specifically on GCC markets (Onour, 2008; Sbeiti & Haddadd, 2011).

Interestingly, studies have covered a number of factors ranging from macroeconomic to microeconomic factors using a number of models and statistical procedures. Most of these studies have focused on macroeconomic determinants of stock returns. These factors include inflation (Tarazi & Gallato, 2012), interest rates (Chau, 2012; Caglayan & Lajeri-

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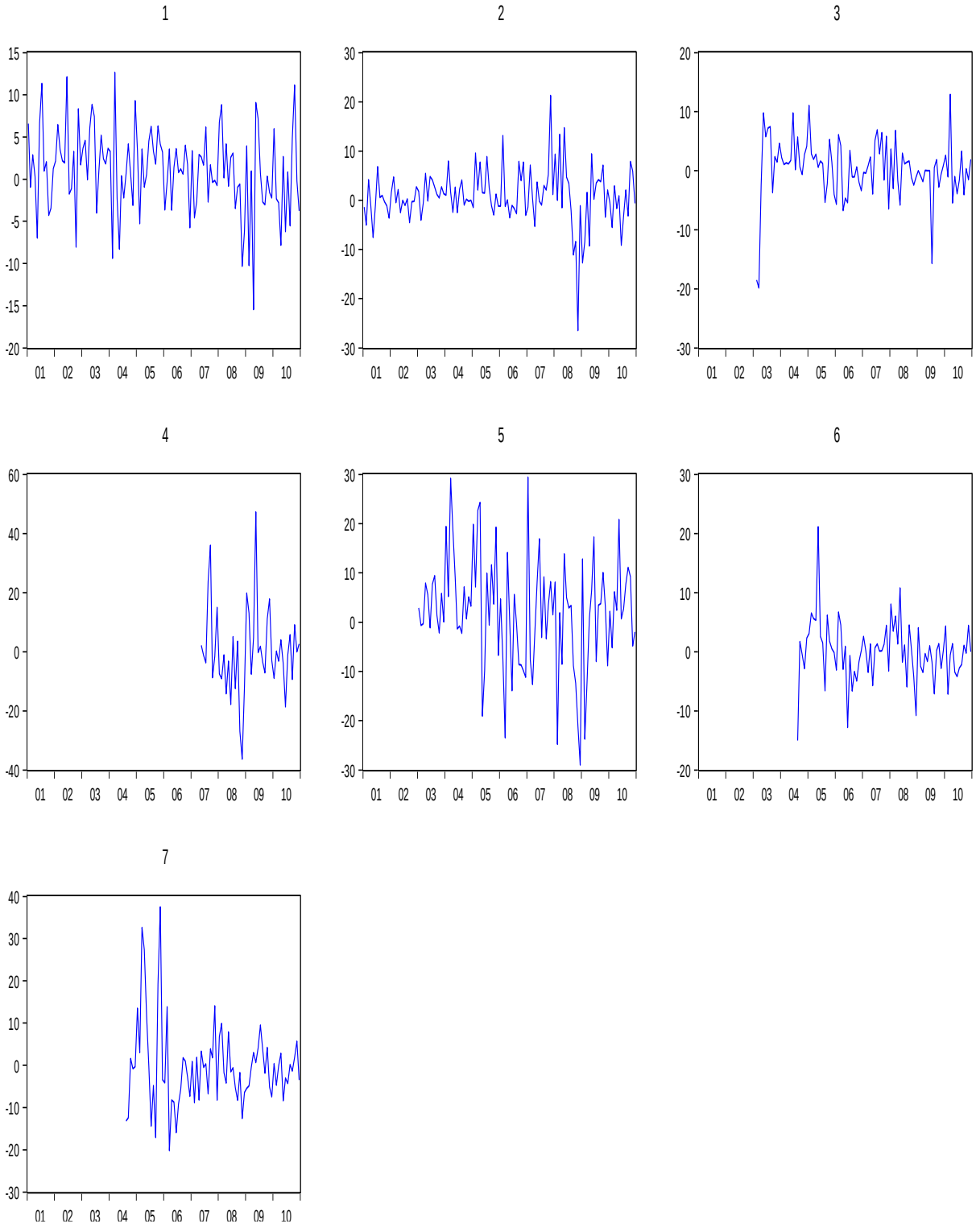
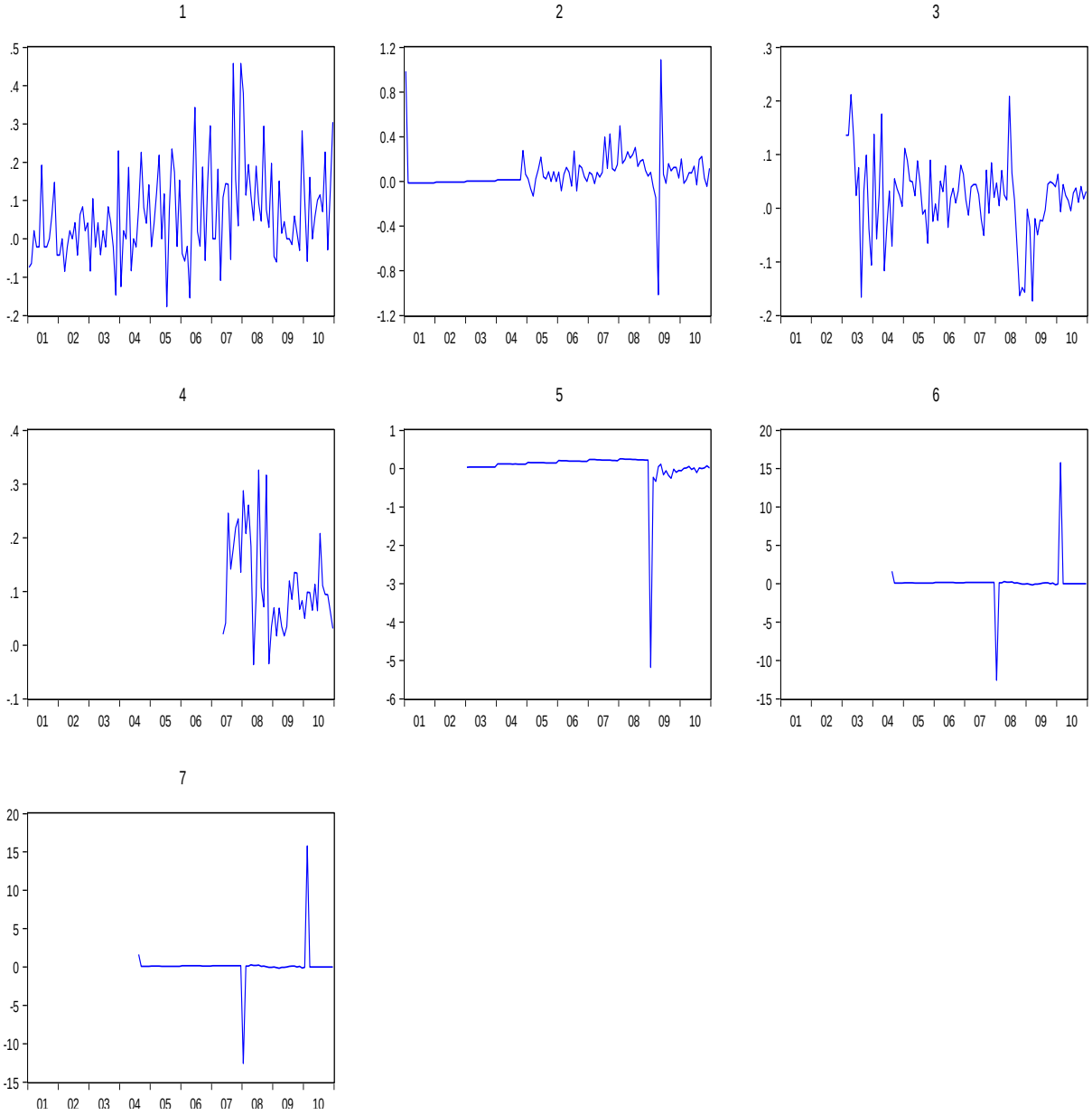
APPENDICES

Appendix A (Summary Statistics of All Variables- First Model)

INSURANCE STOCK RETURNS (ISR)



INFLATION (DLNCPI)



INTEREST RATE (DINTR)

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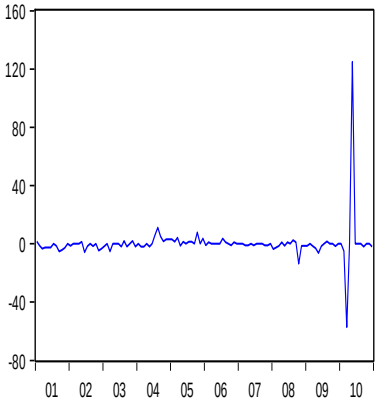

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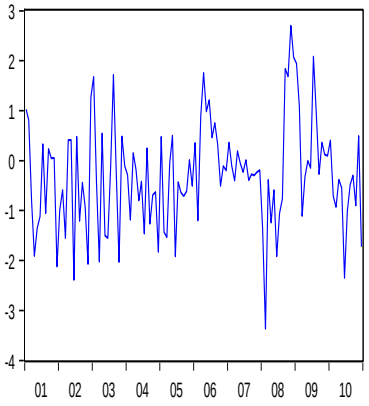

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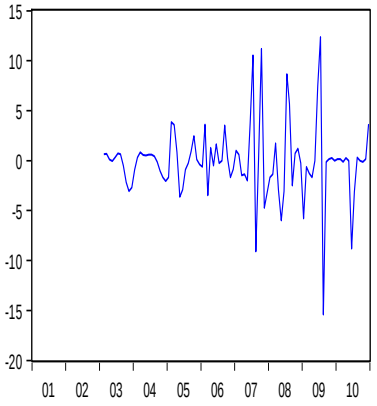

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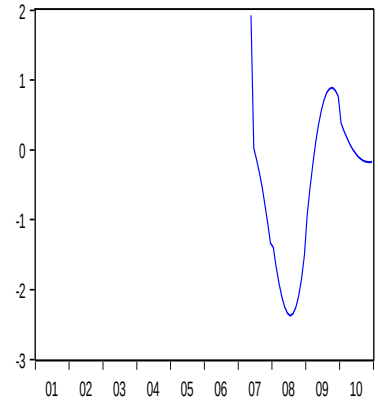

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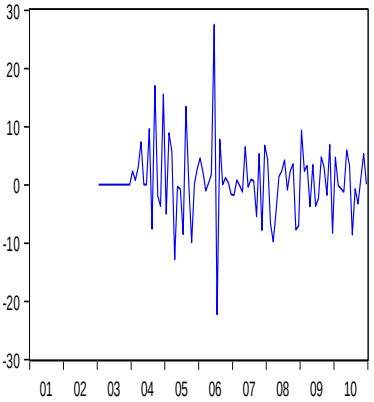

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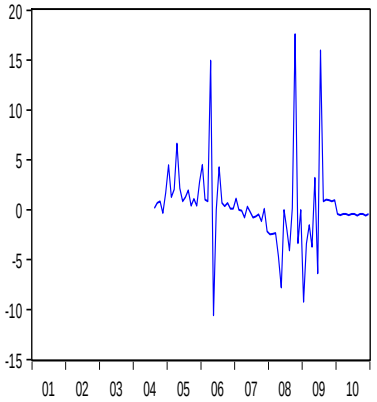

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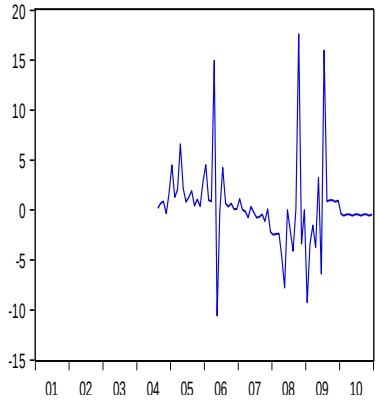
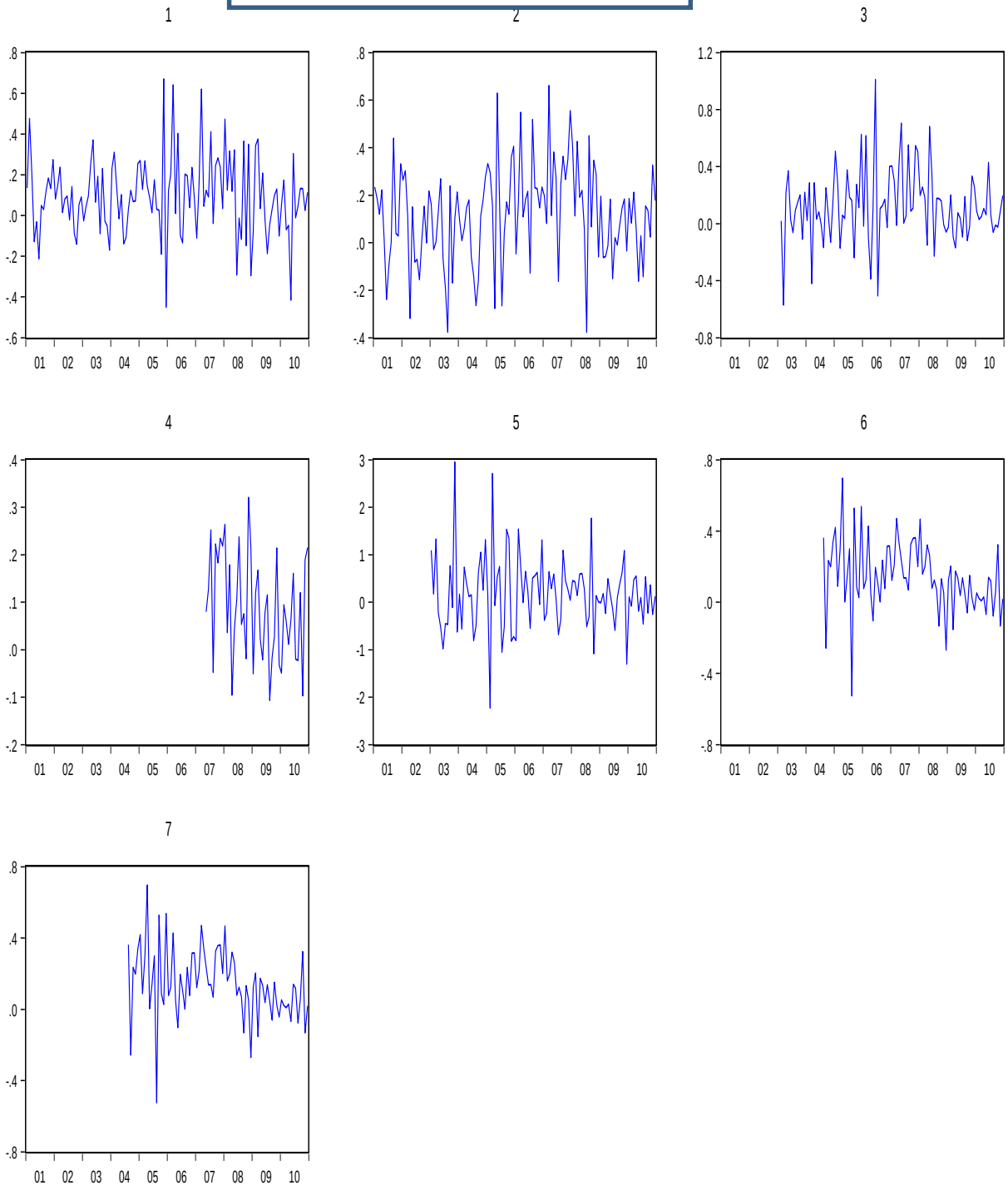
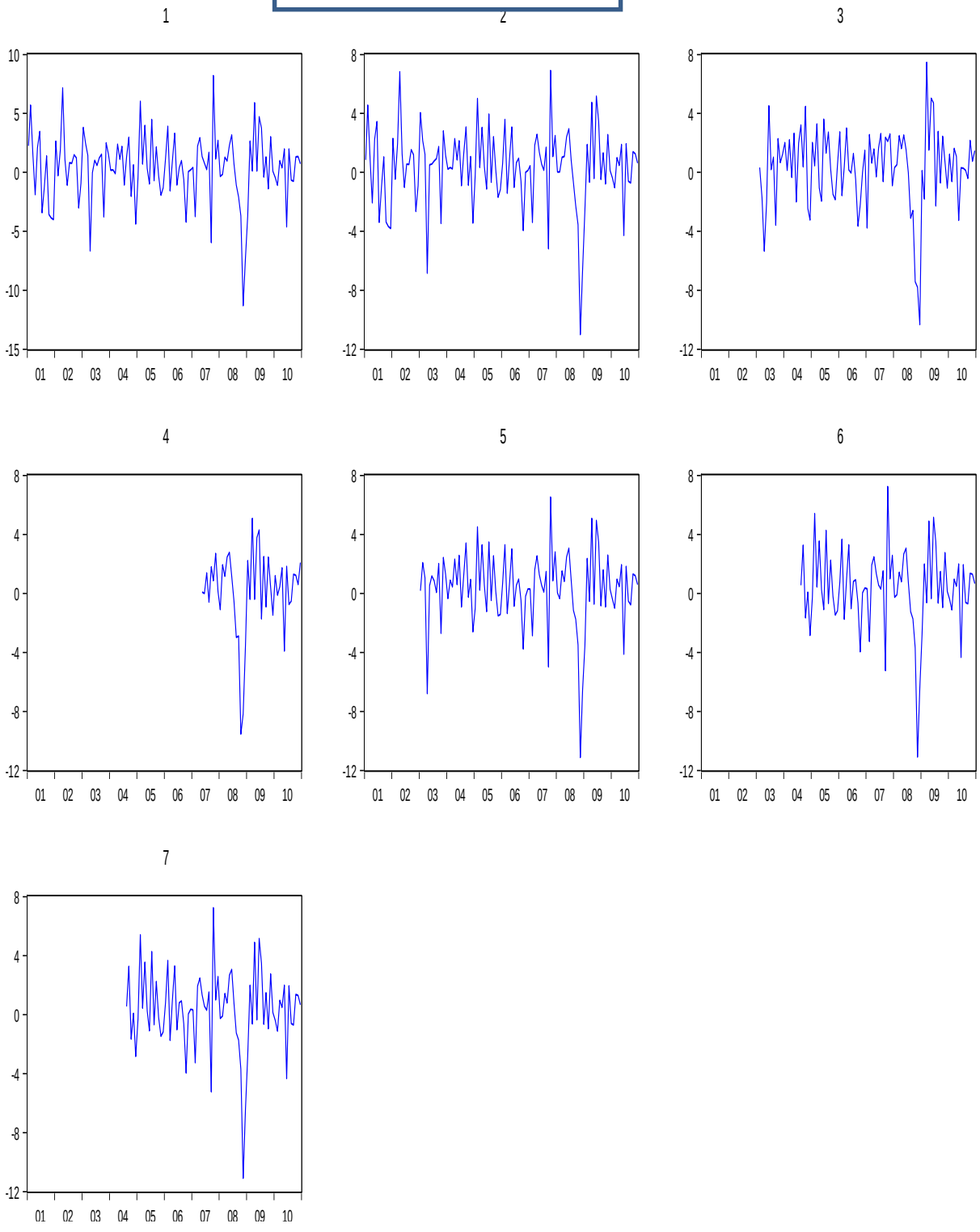


MONEY SUPPLY (DLNMS)



OIL PRICES (DLNOP)



UNEMPLOYMENT RATE (DUNMR)

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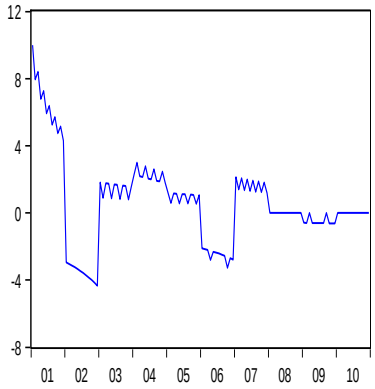

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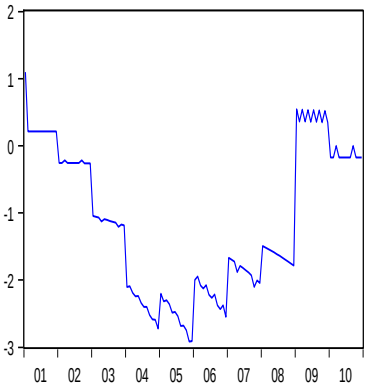

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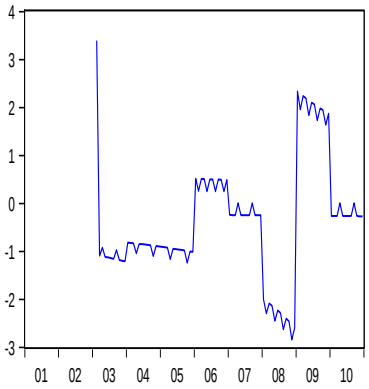

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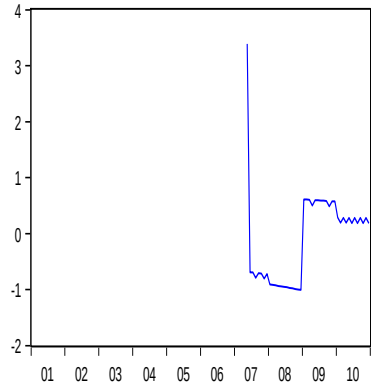

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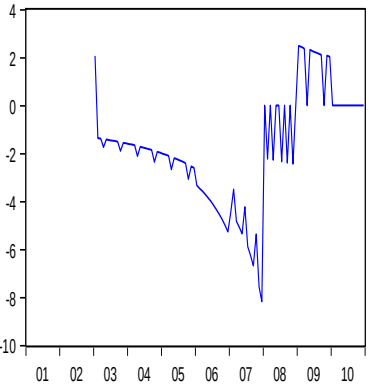

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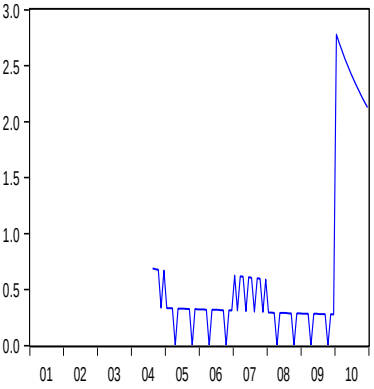

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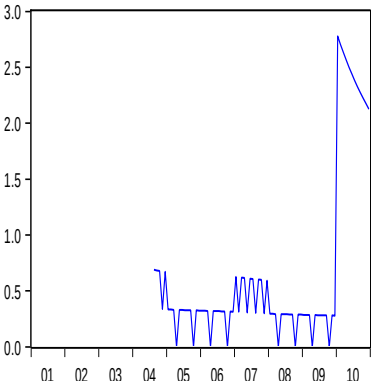
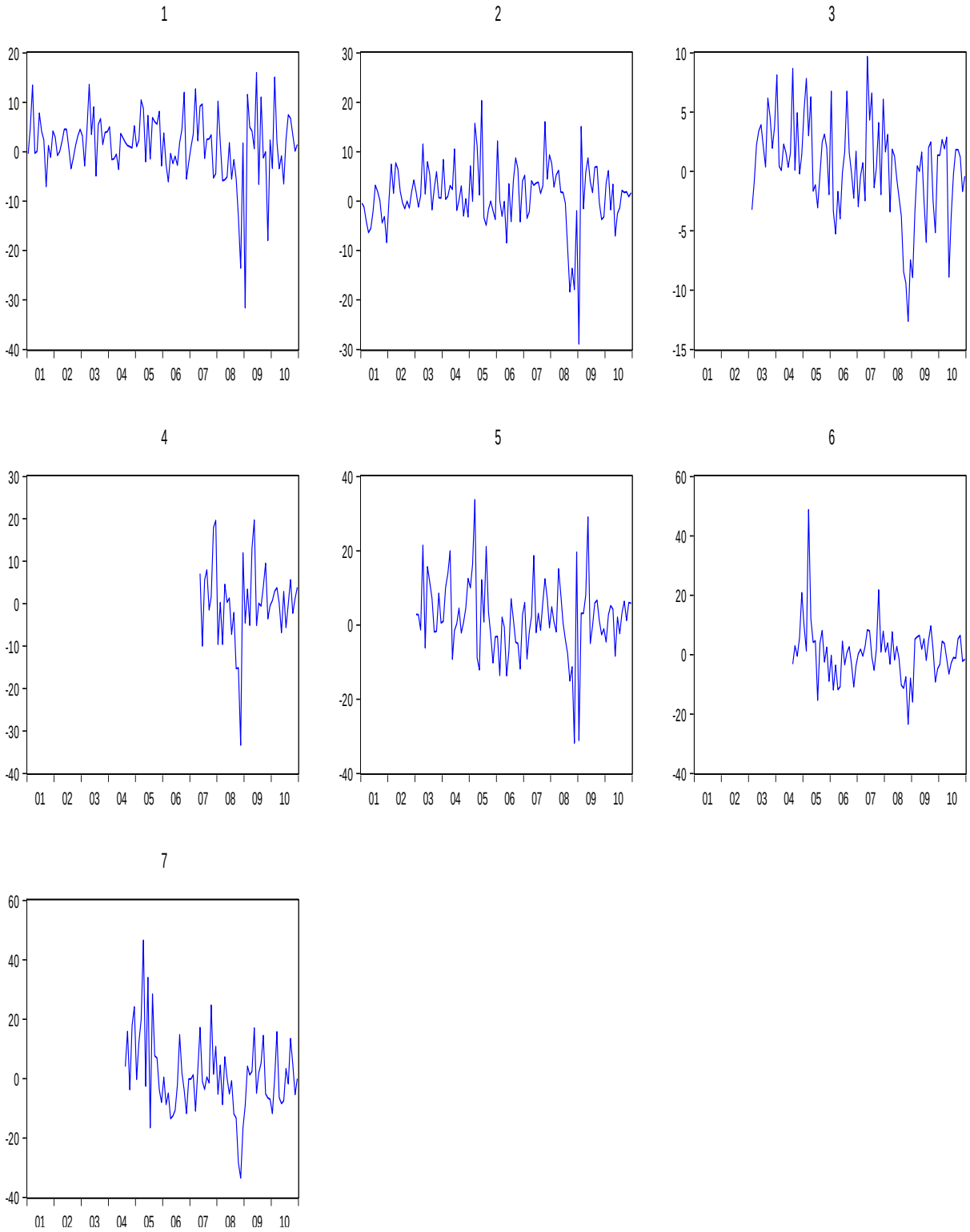
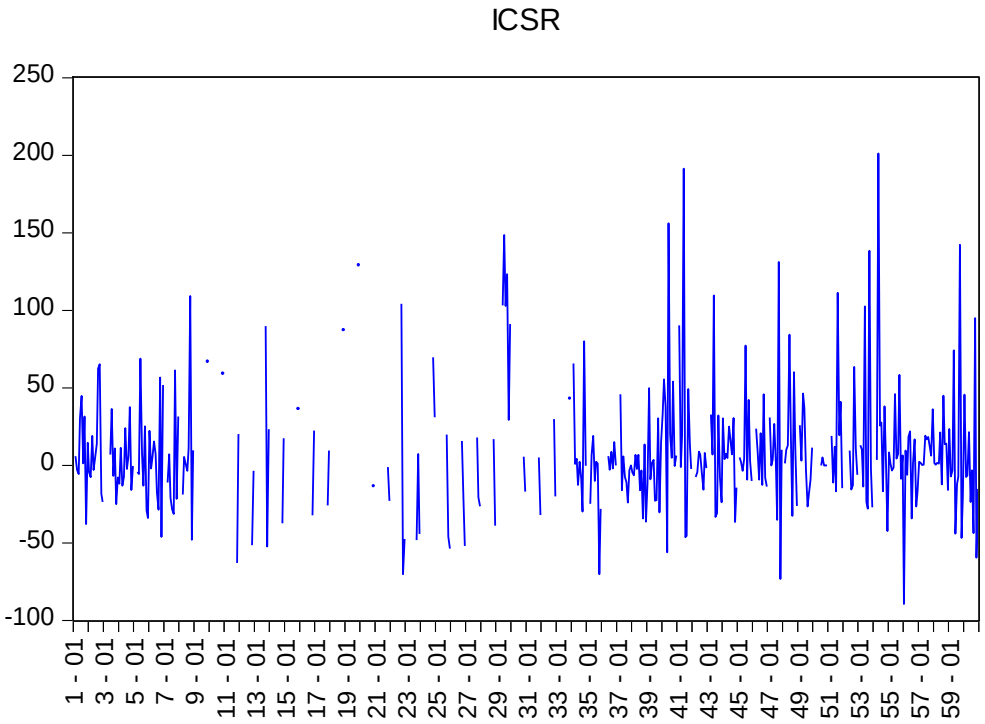
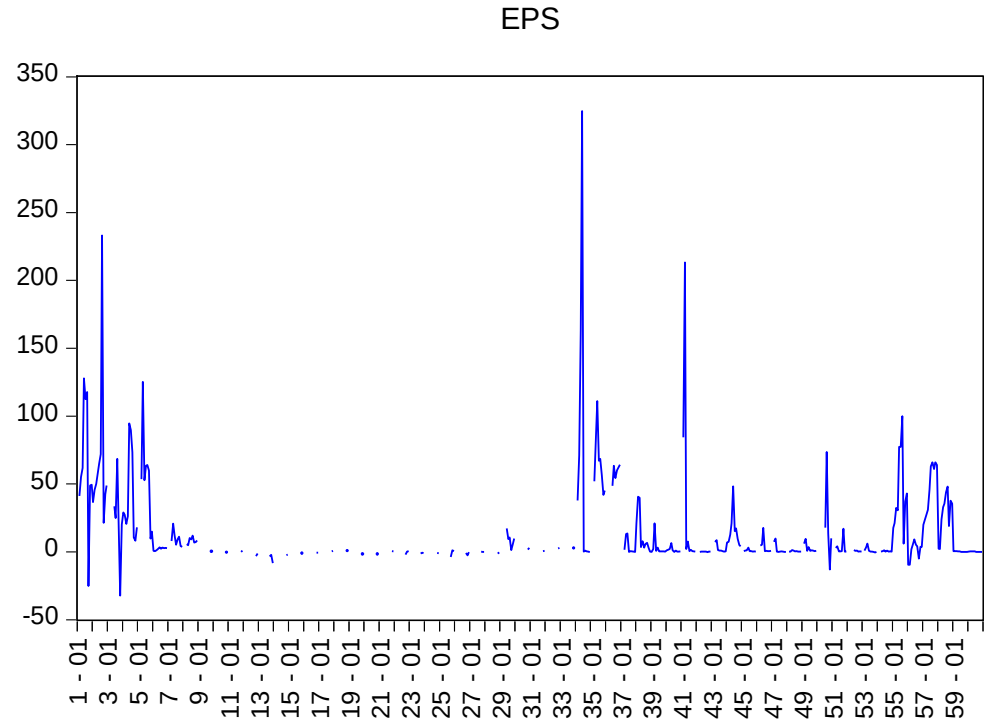


STOCK MARKET RETURN (SMR)



Appendix B (Summary Statistics of All Variables- Second Model)





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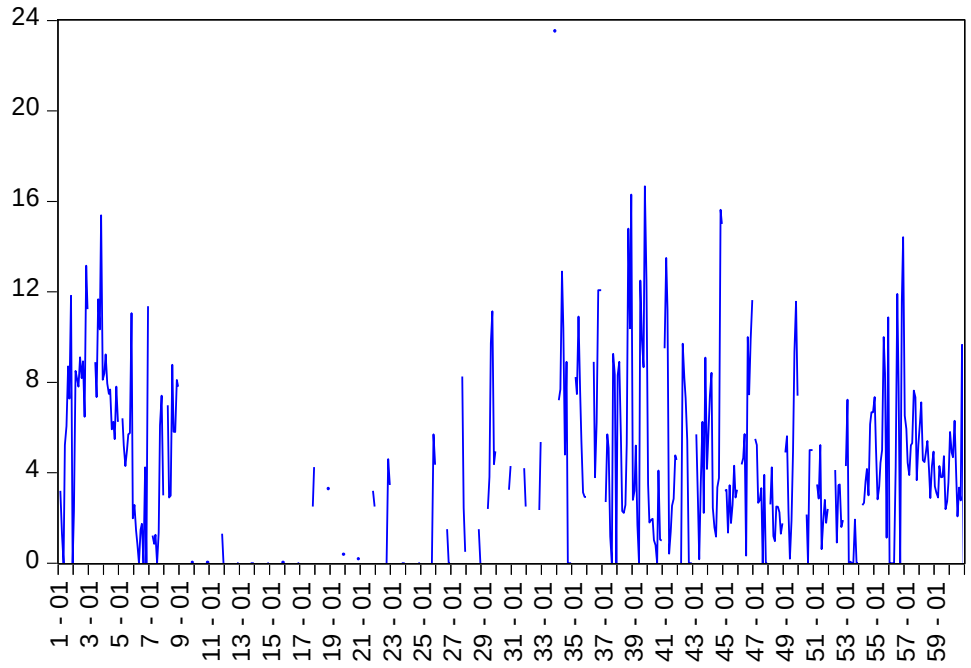
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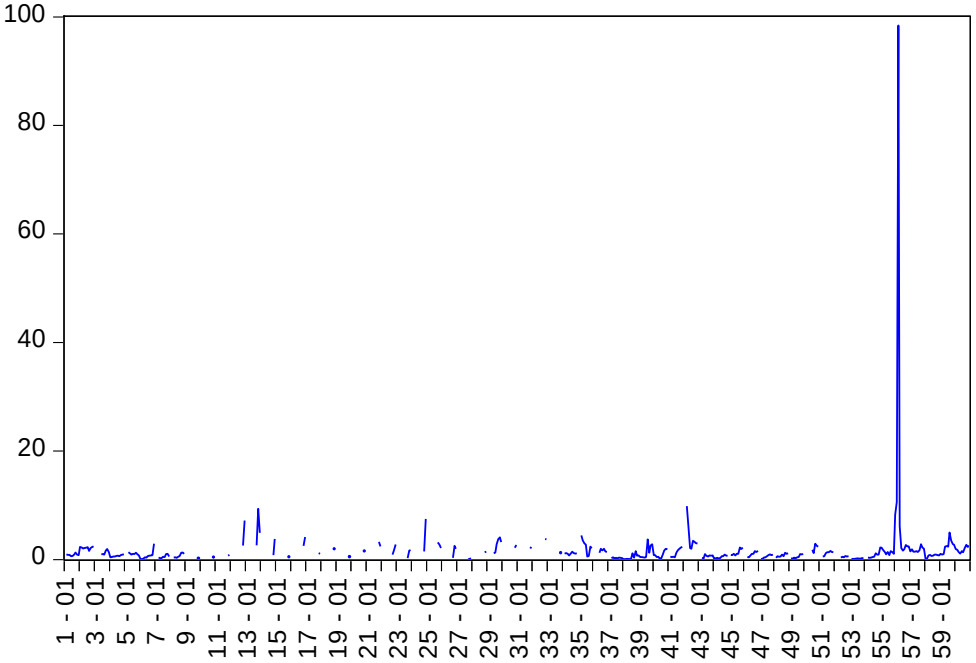
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55 - 01
57 - 01
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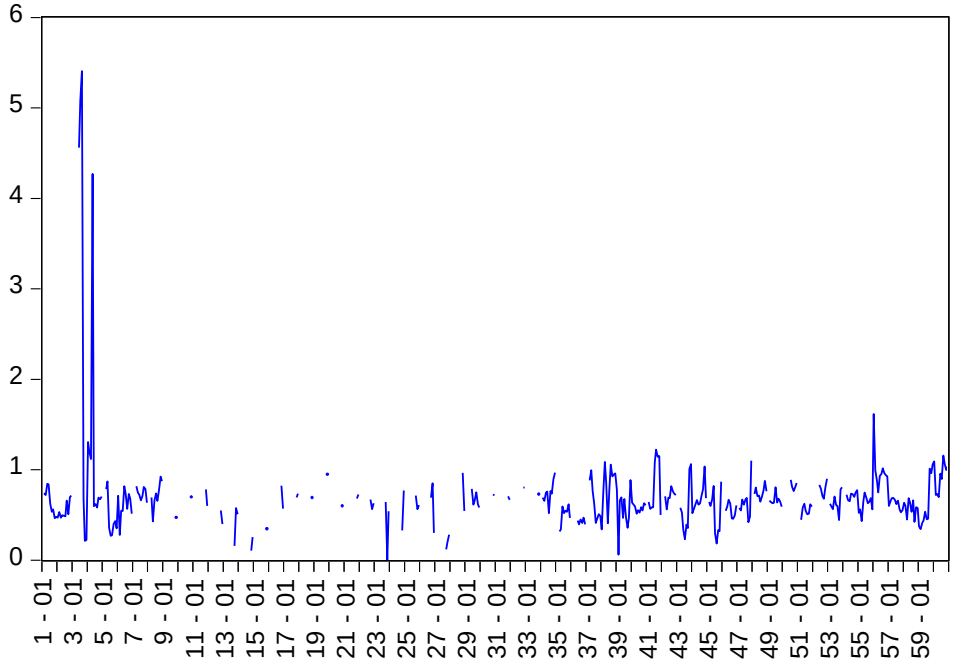
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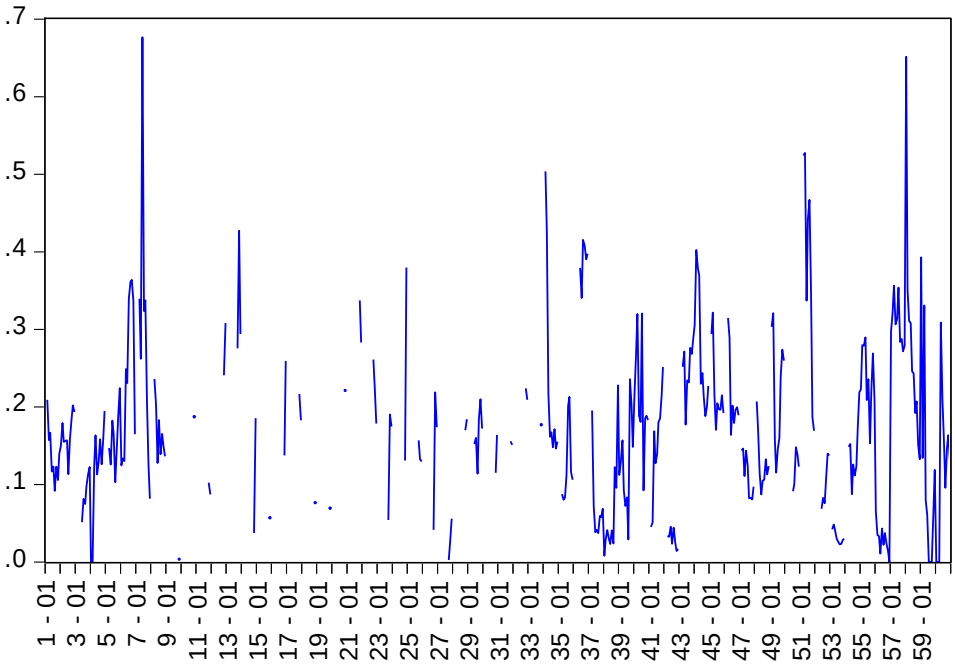
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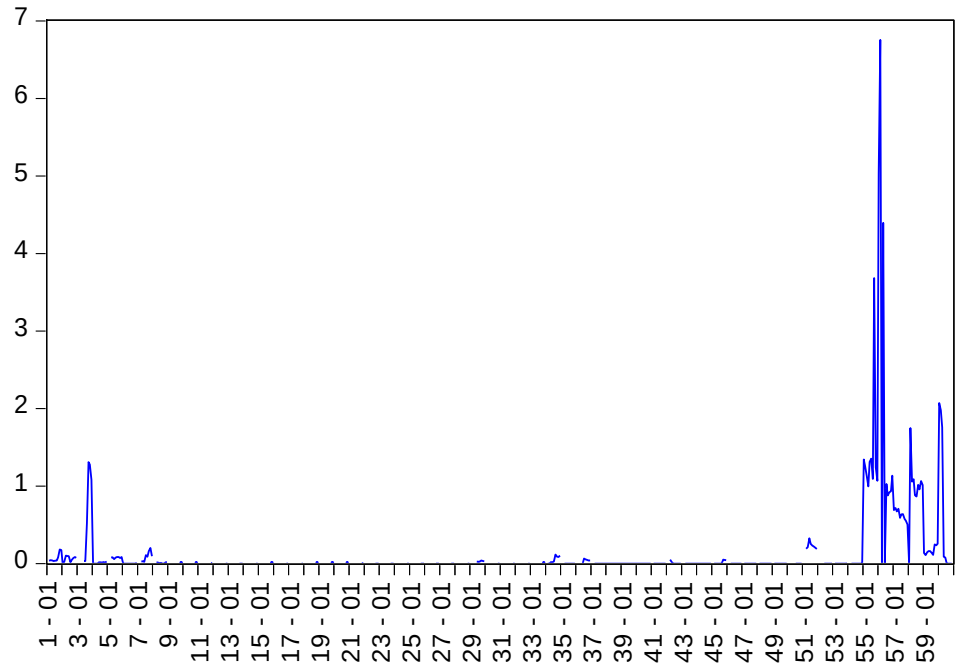
AFFIN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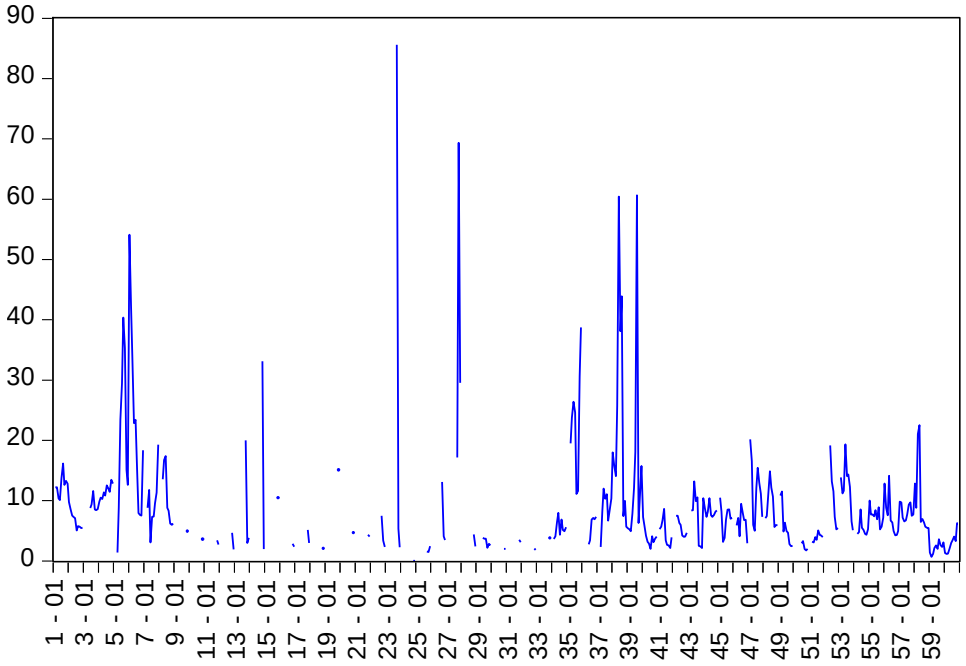
SM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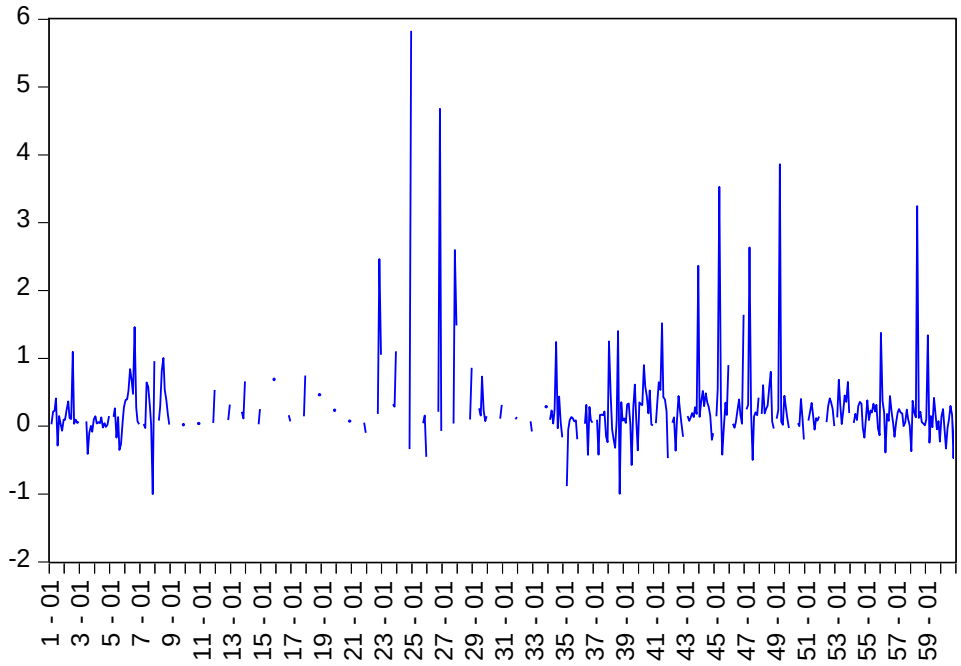
SUO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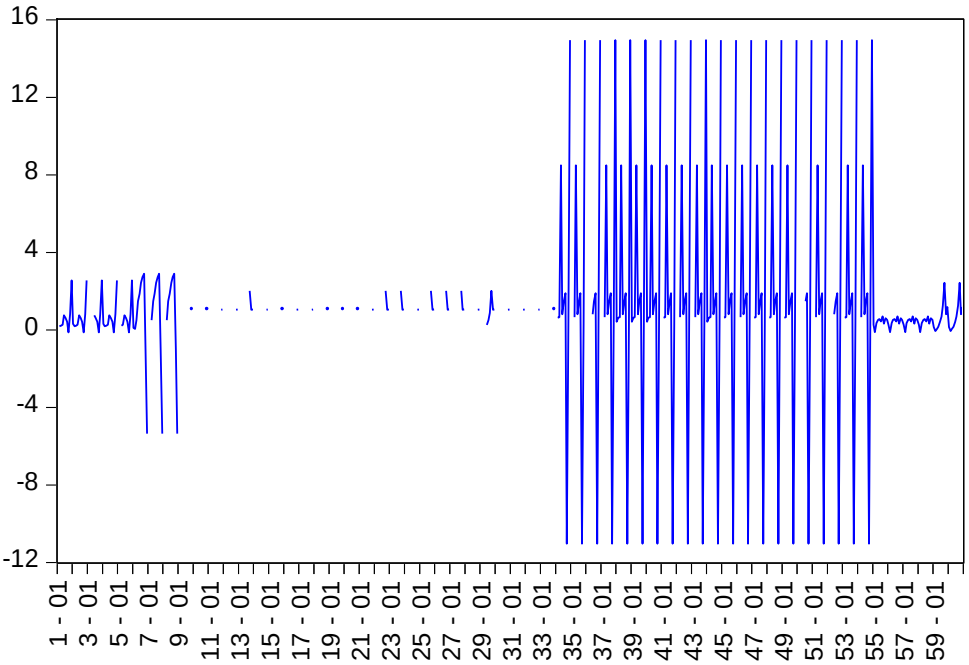
DLNCPI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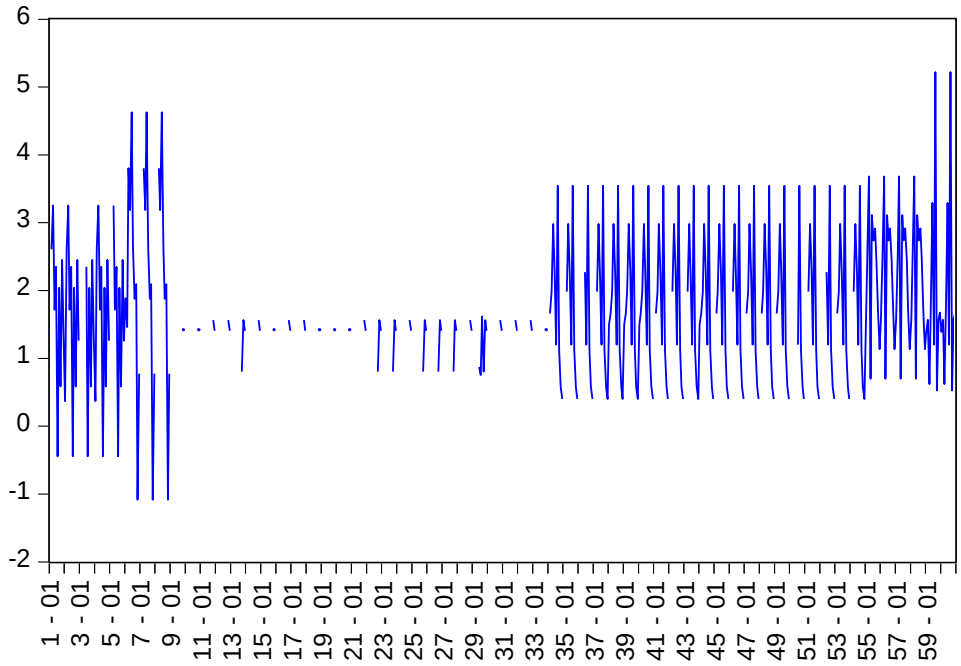
DLNMS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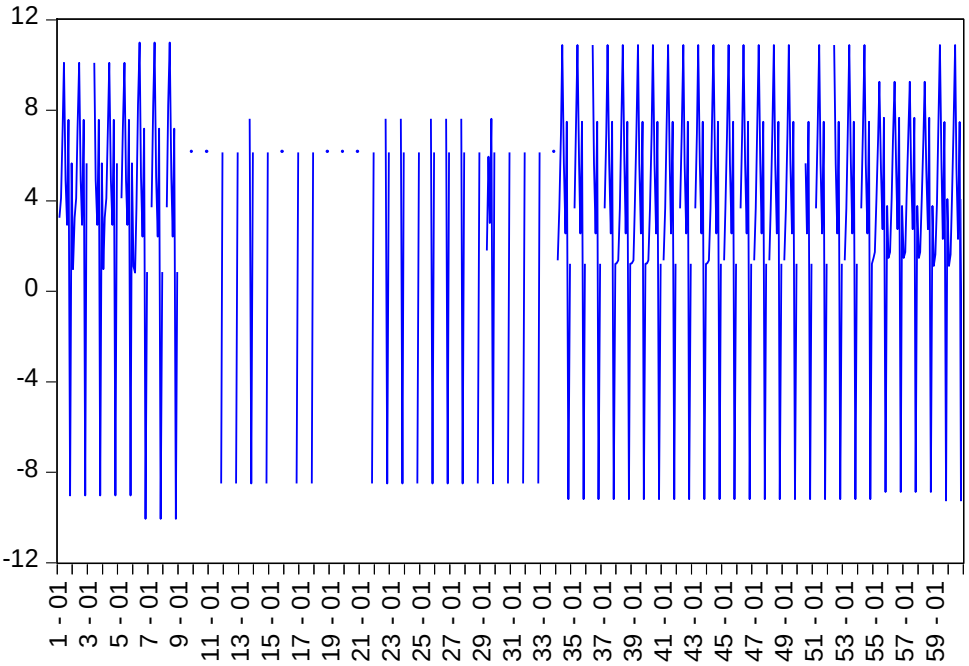
DLNOP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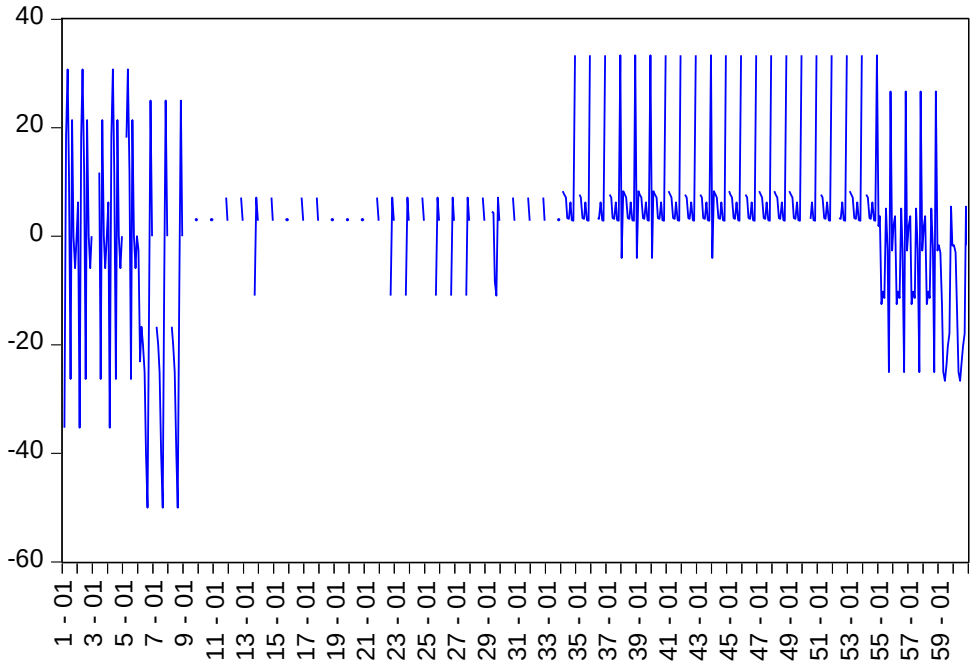
DUNMR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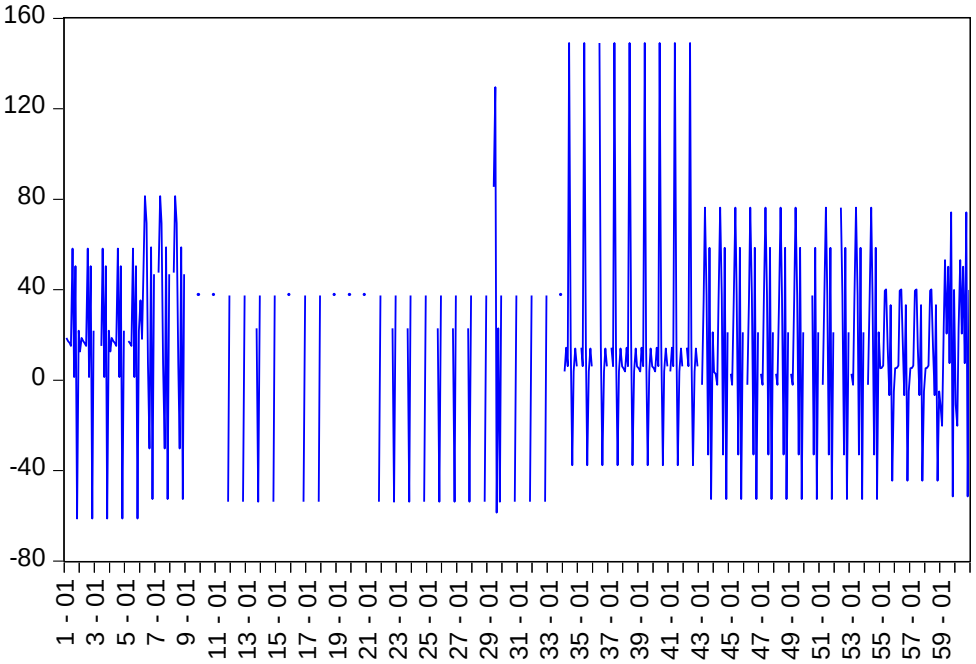
SMR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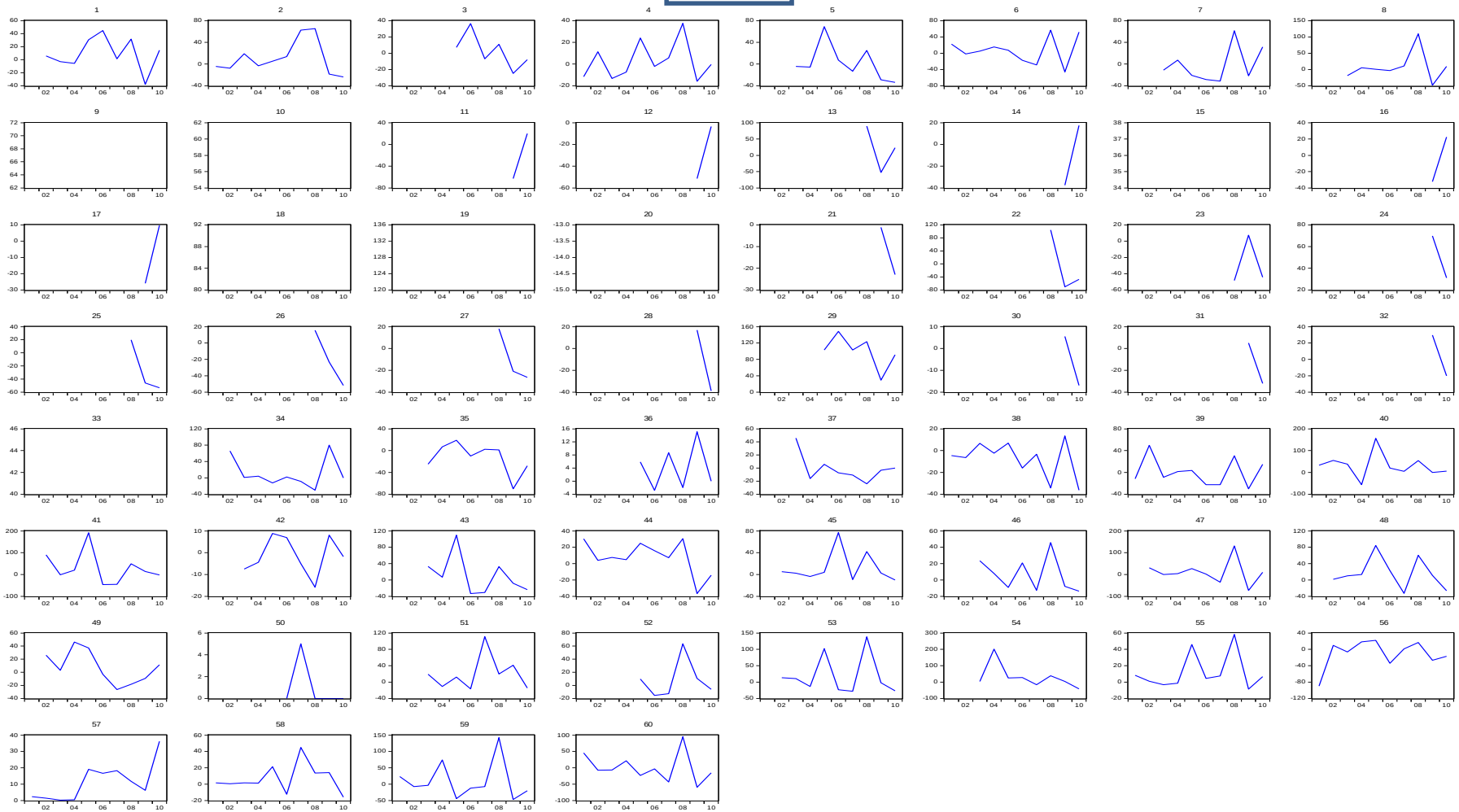
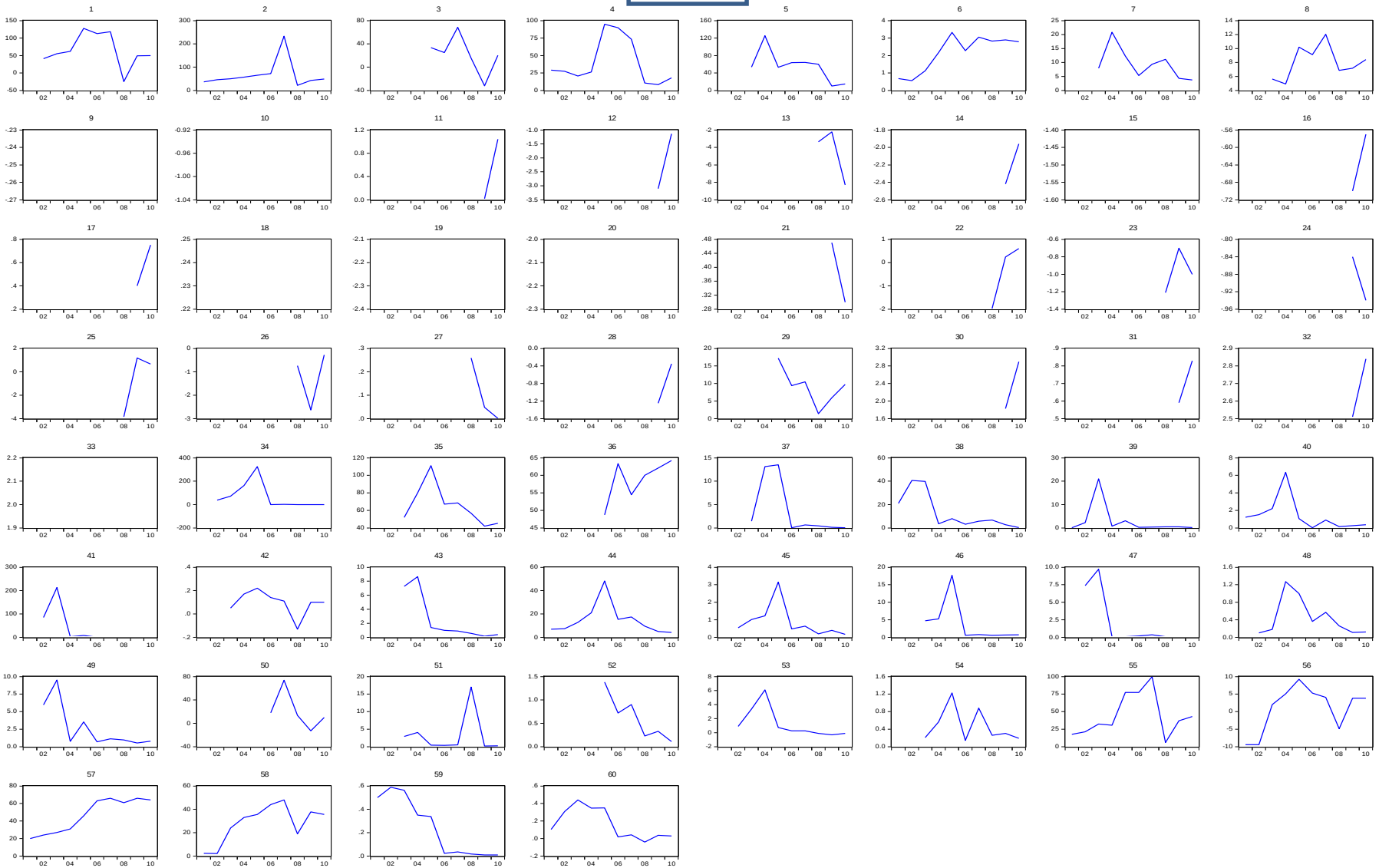
Appendix C (Summary Statistics of All Variables- Second Model by Cross Section)

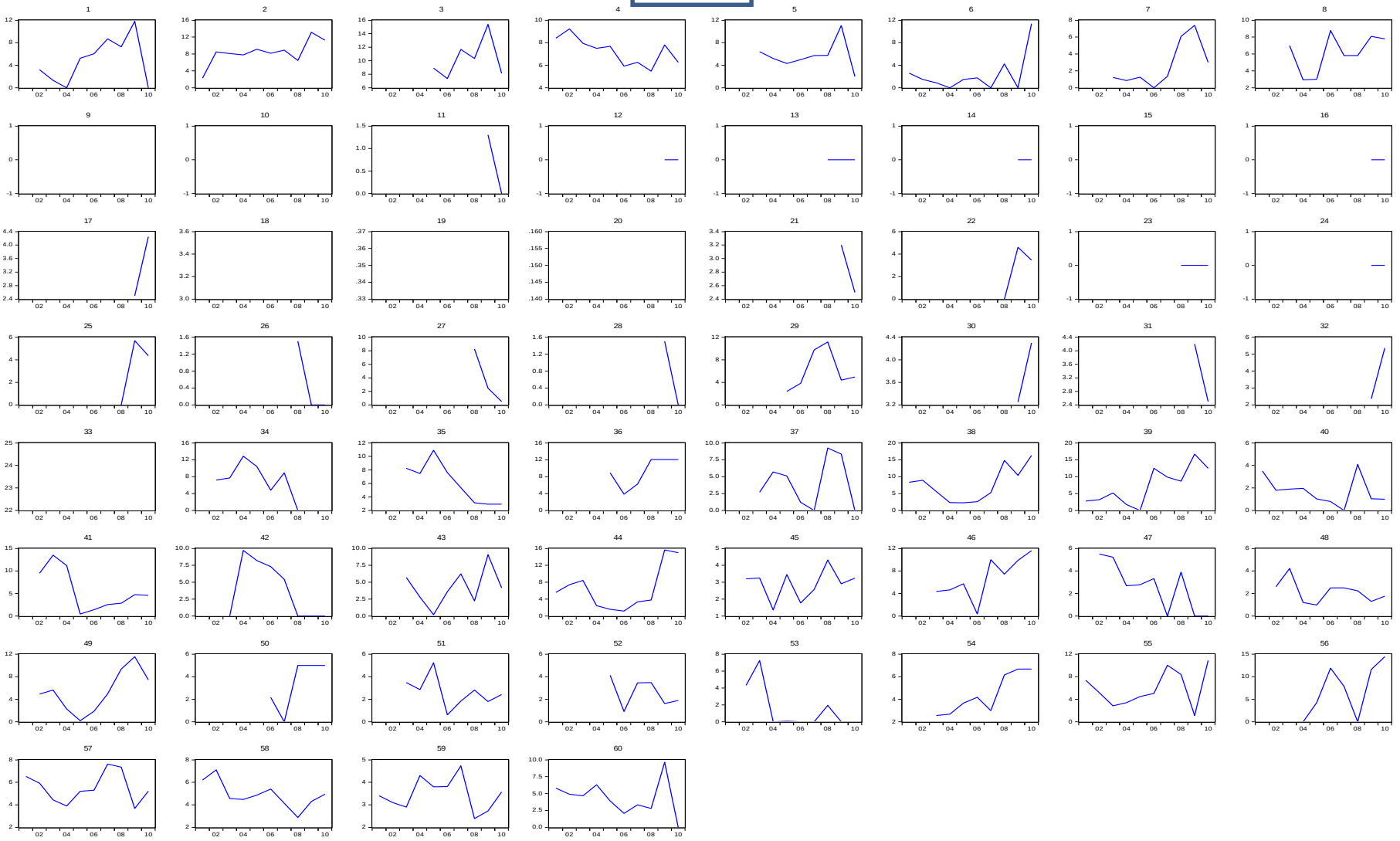
ICSR



EPS



DY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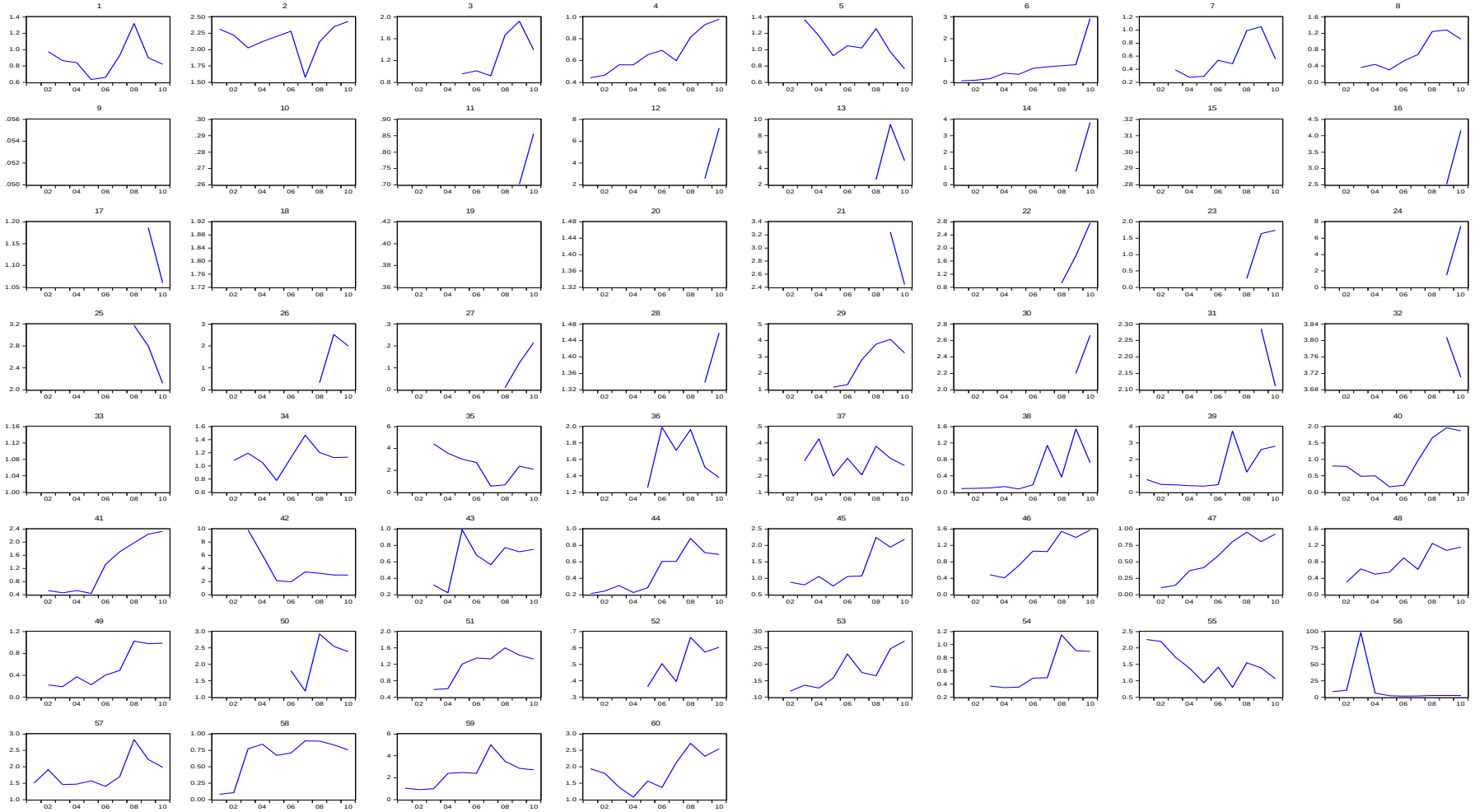
LEV



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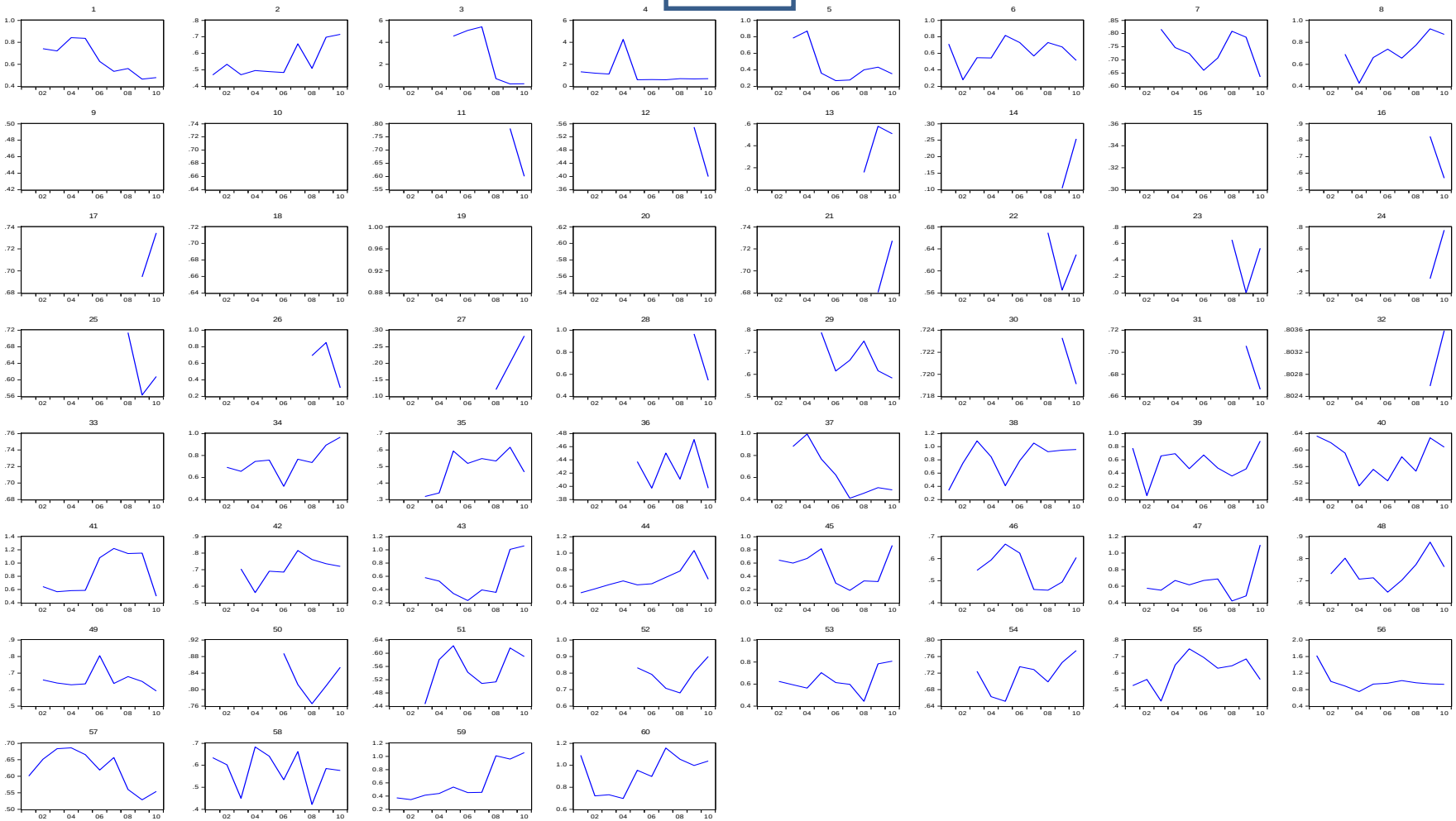

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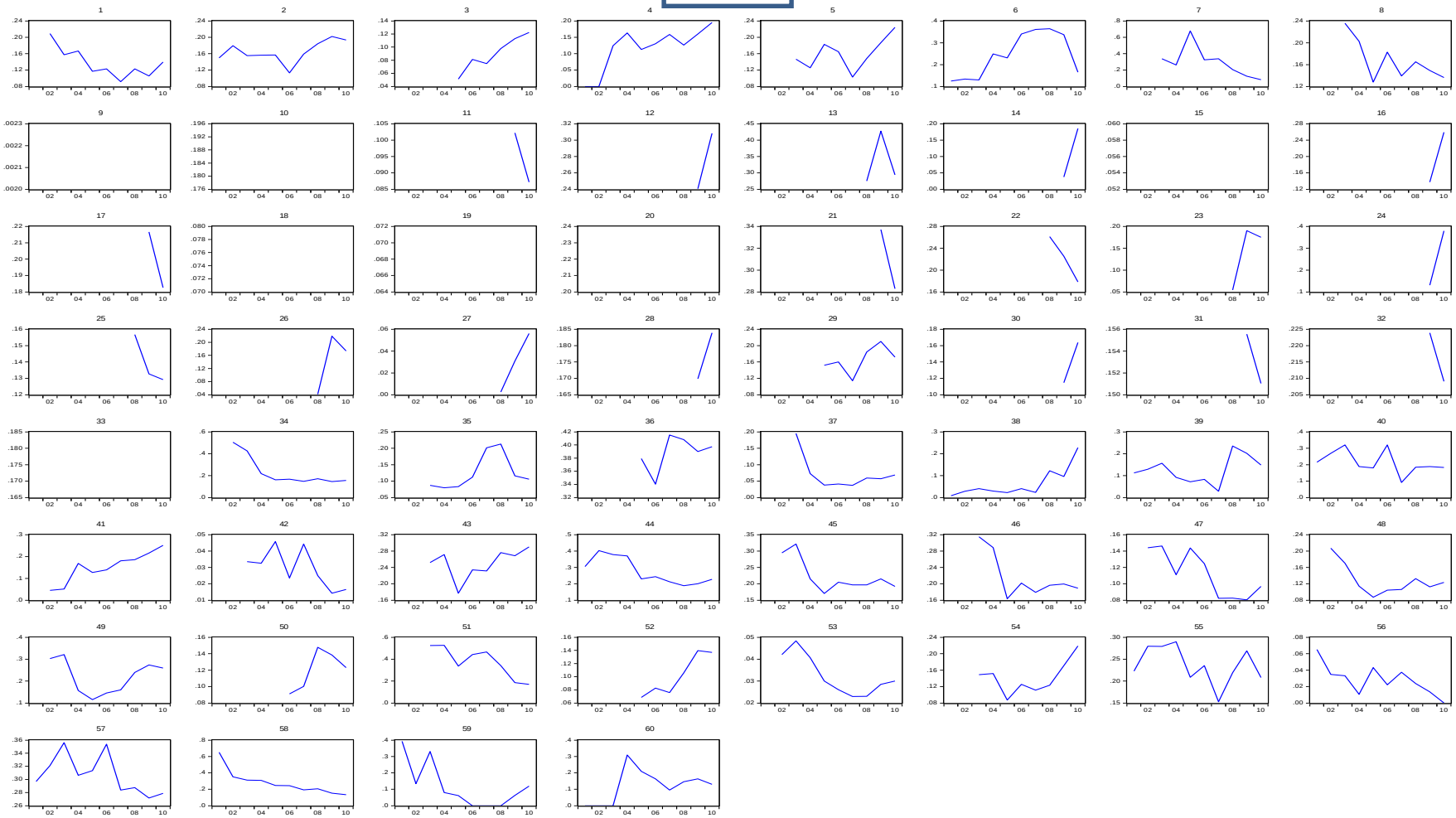
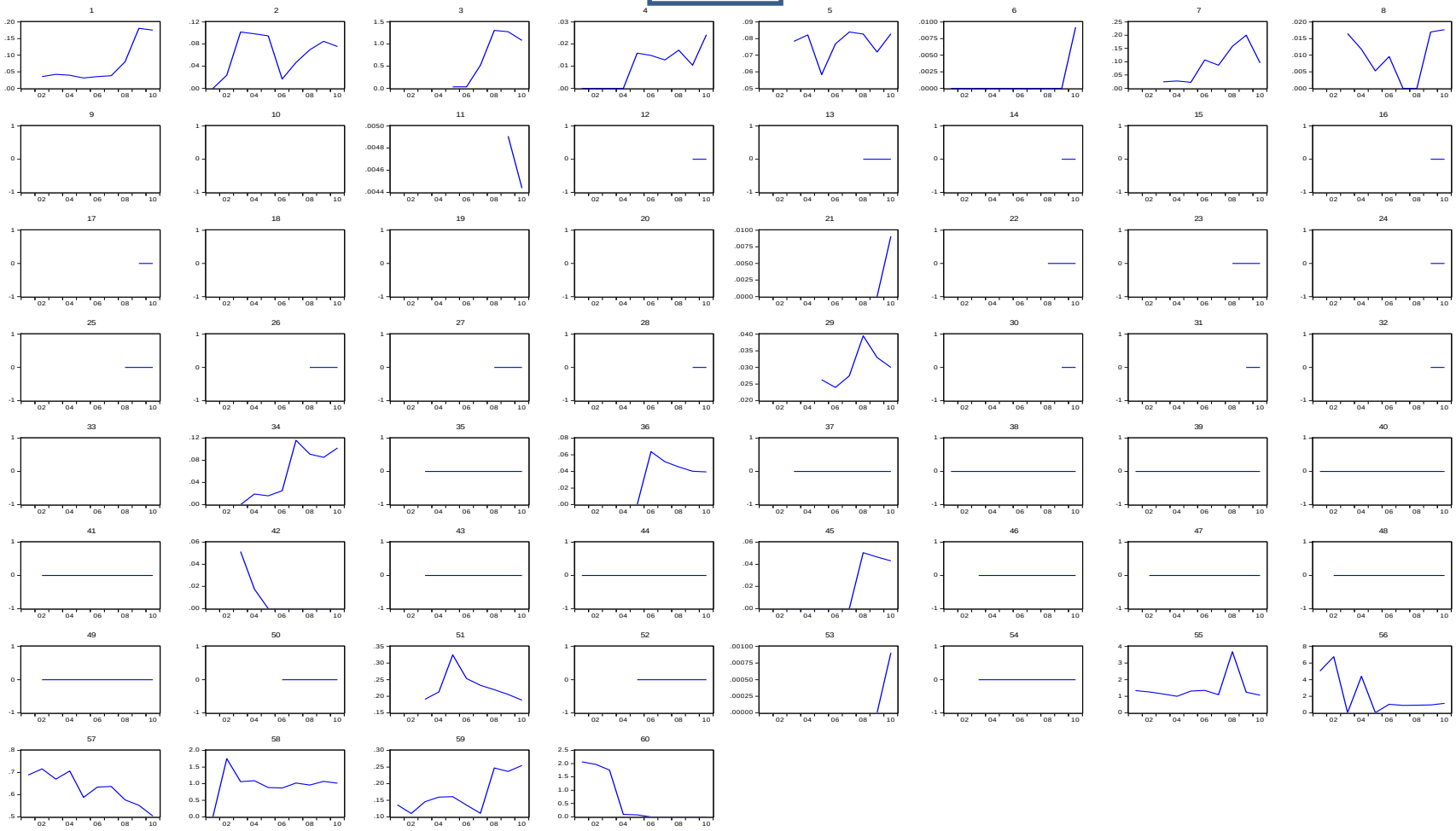
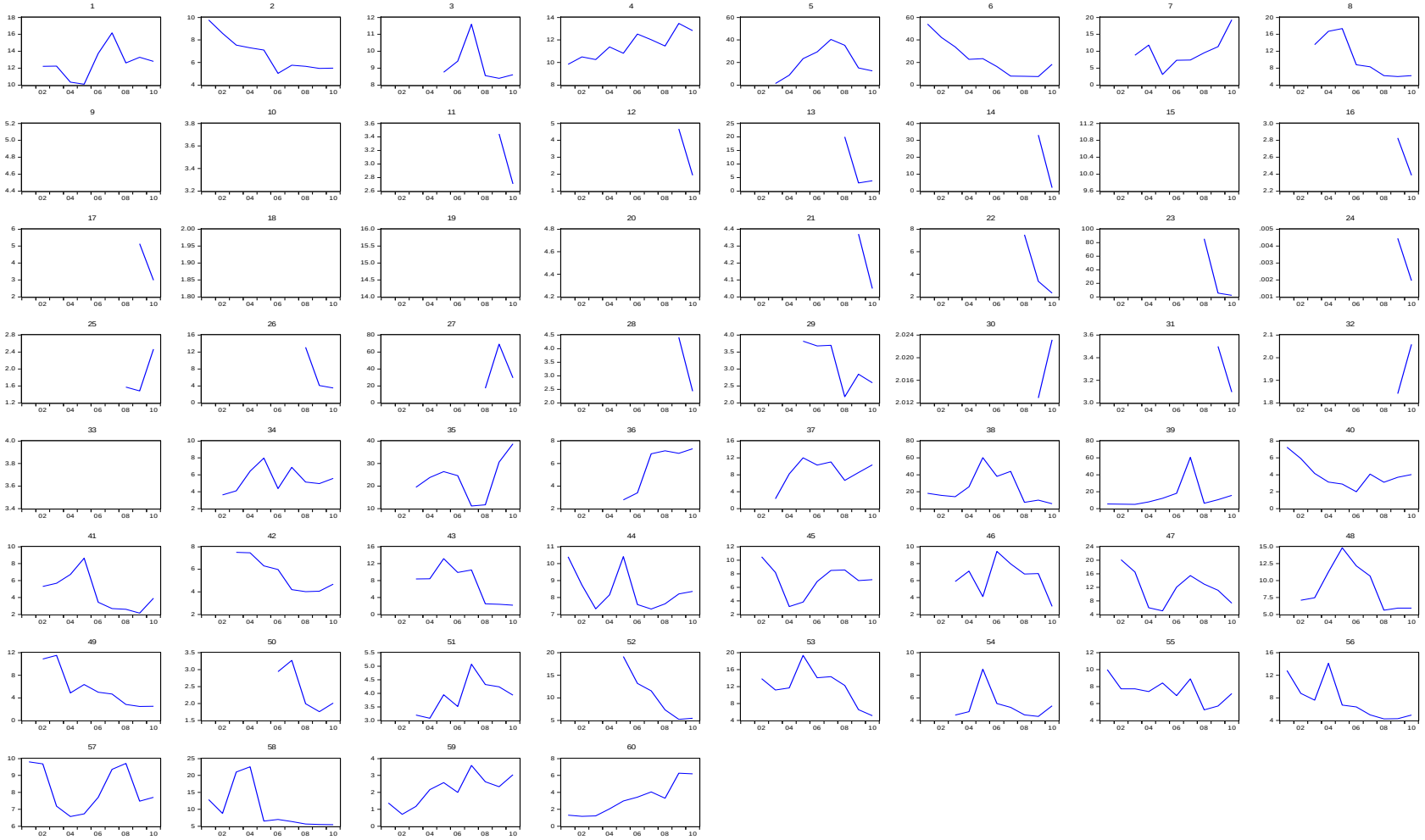


AFFIN



SM



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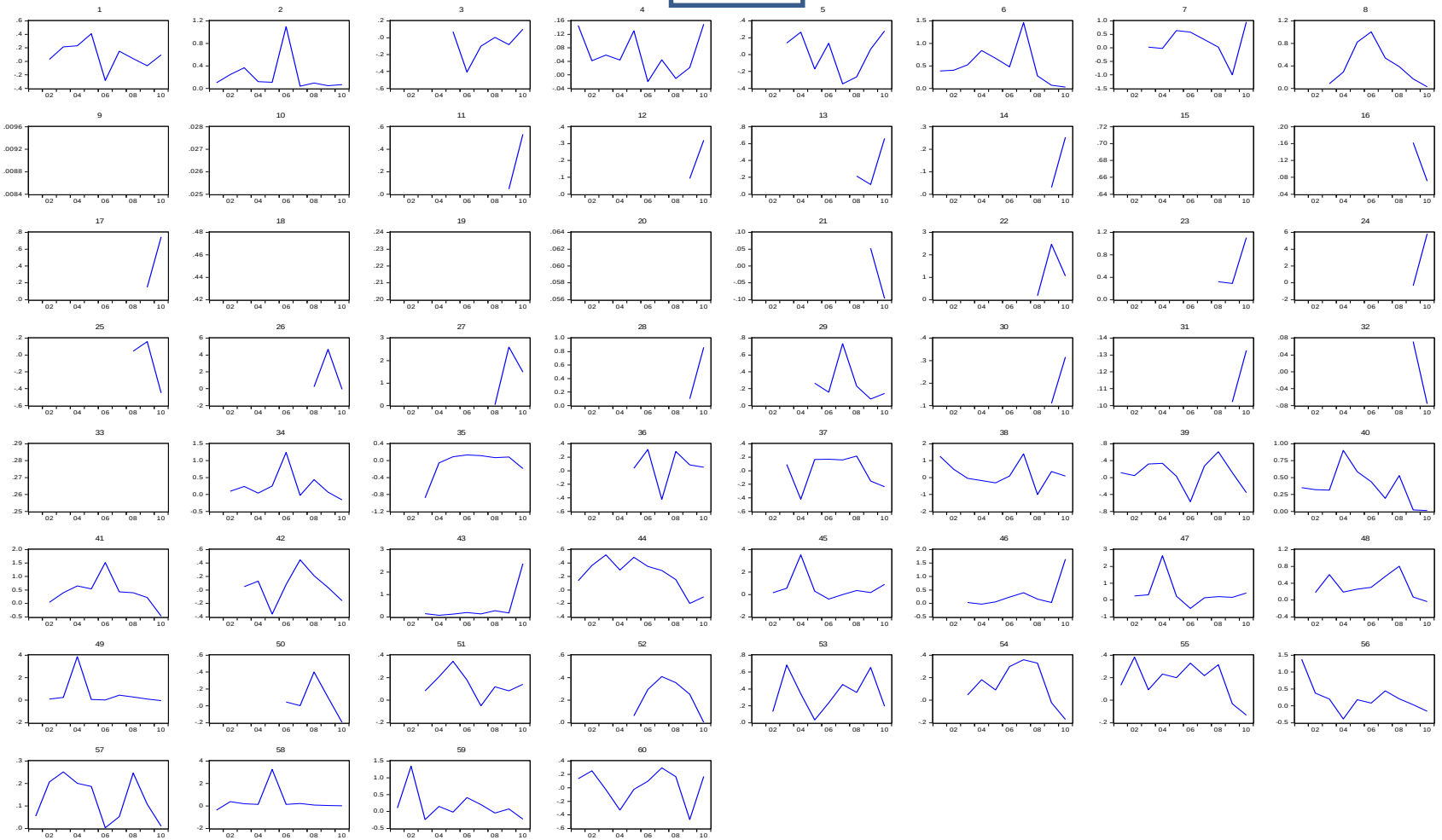
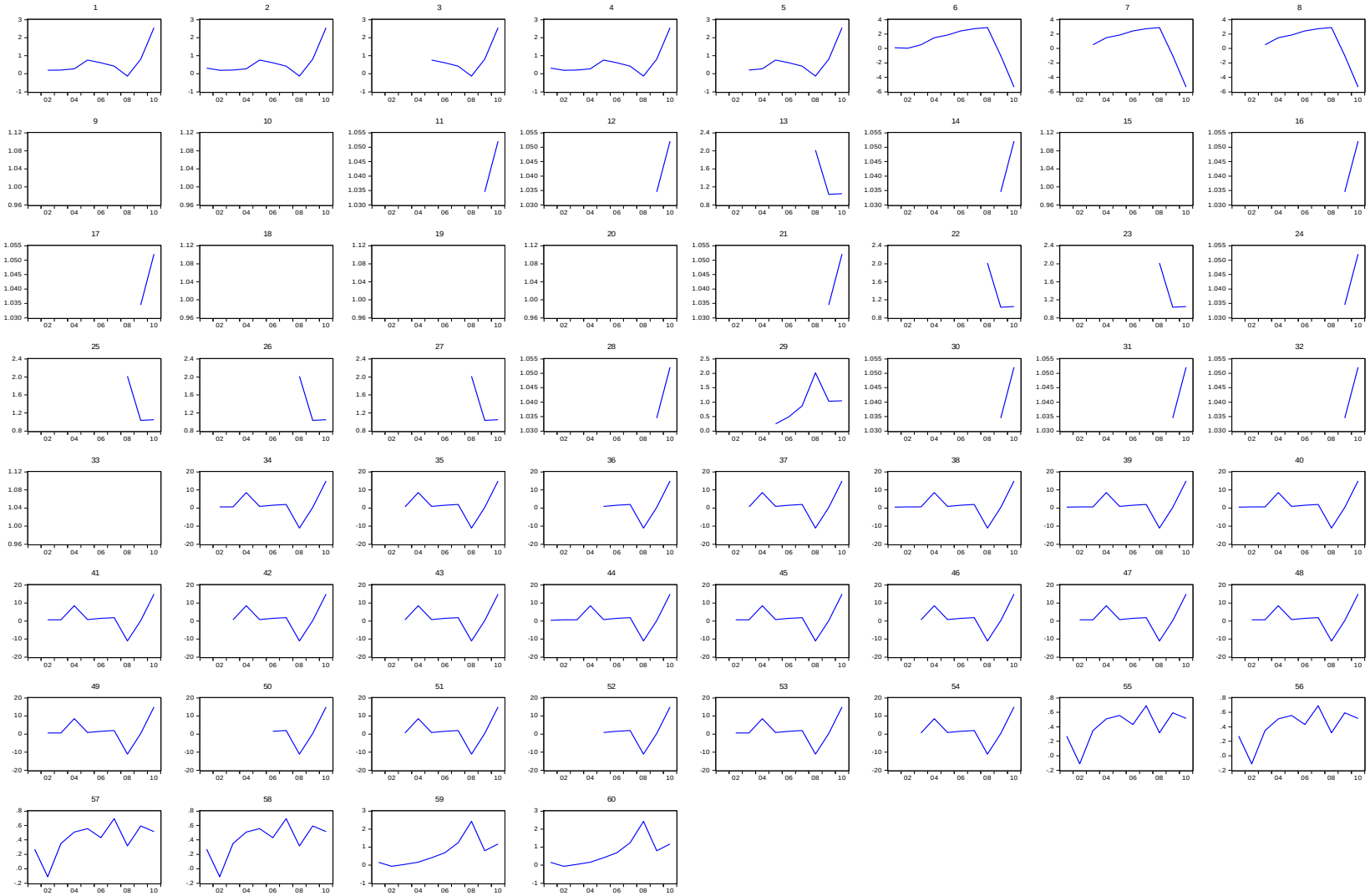


DLNCP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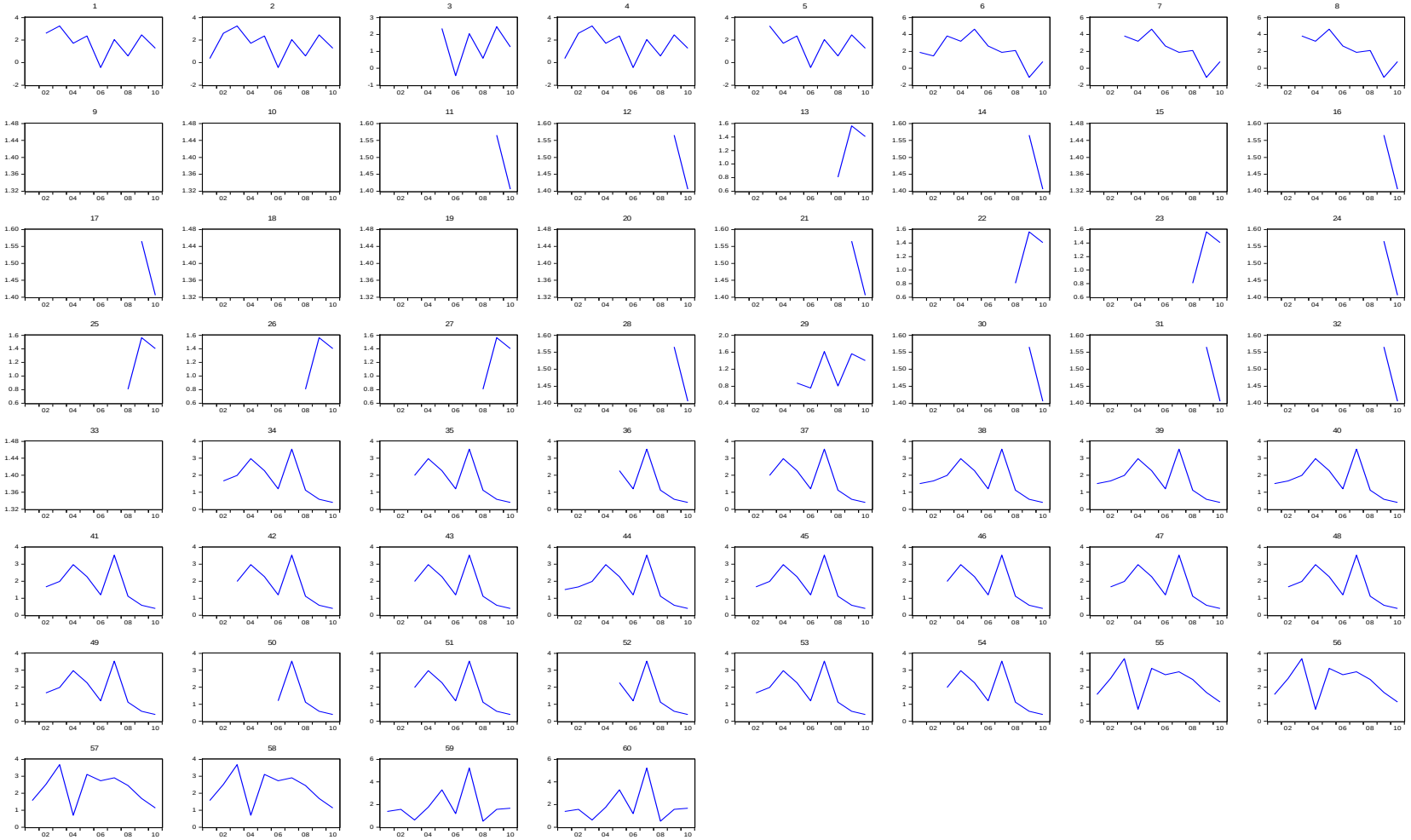
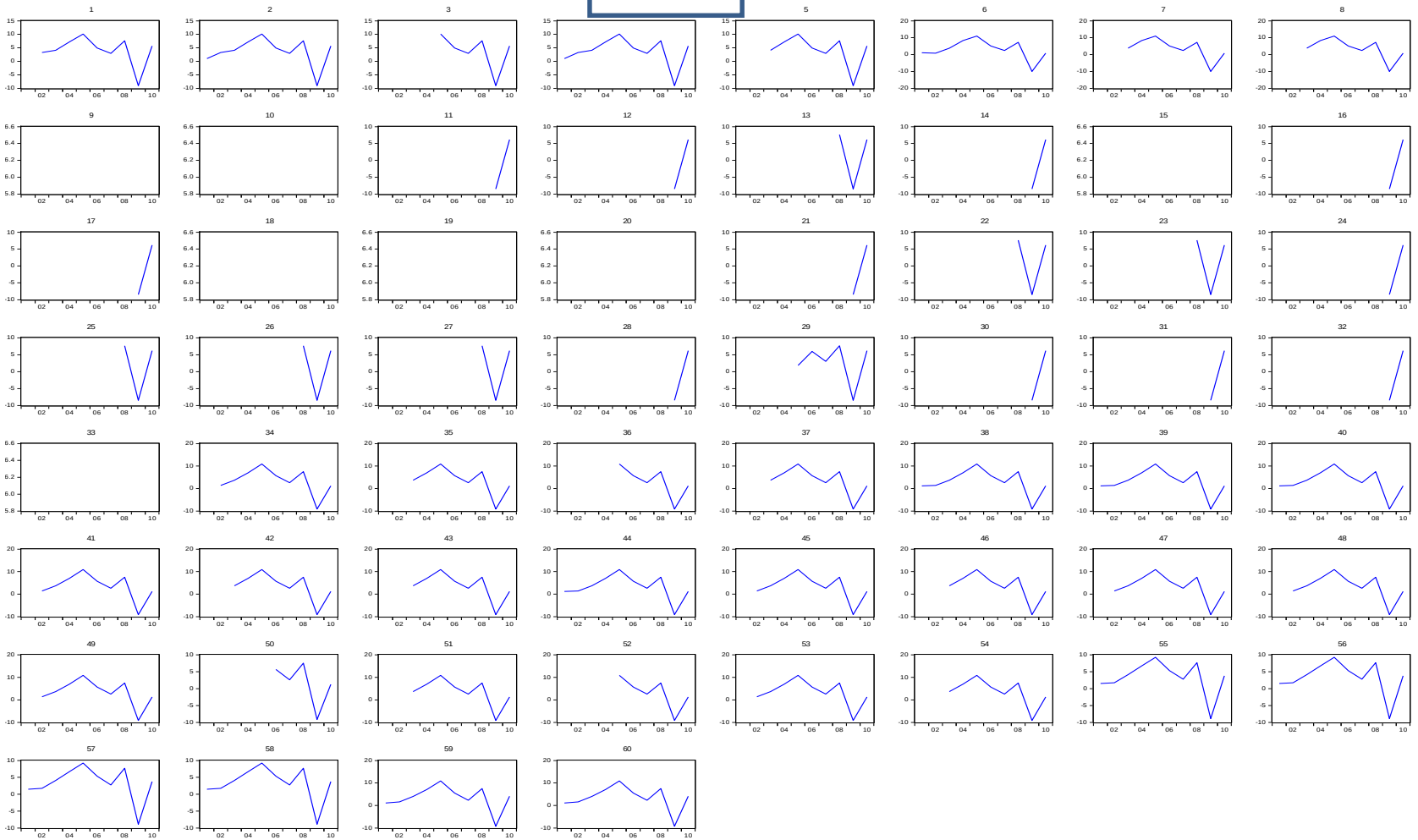
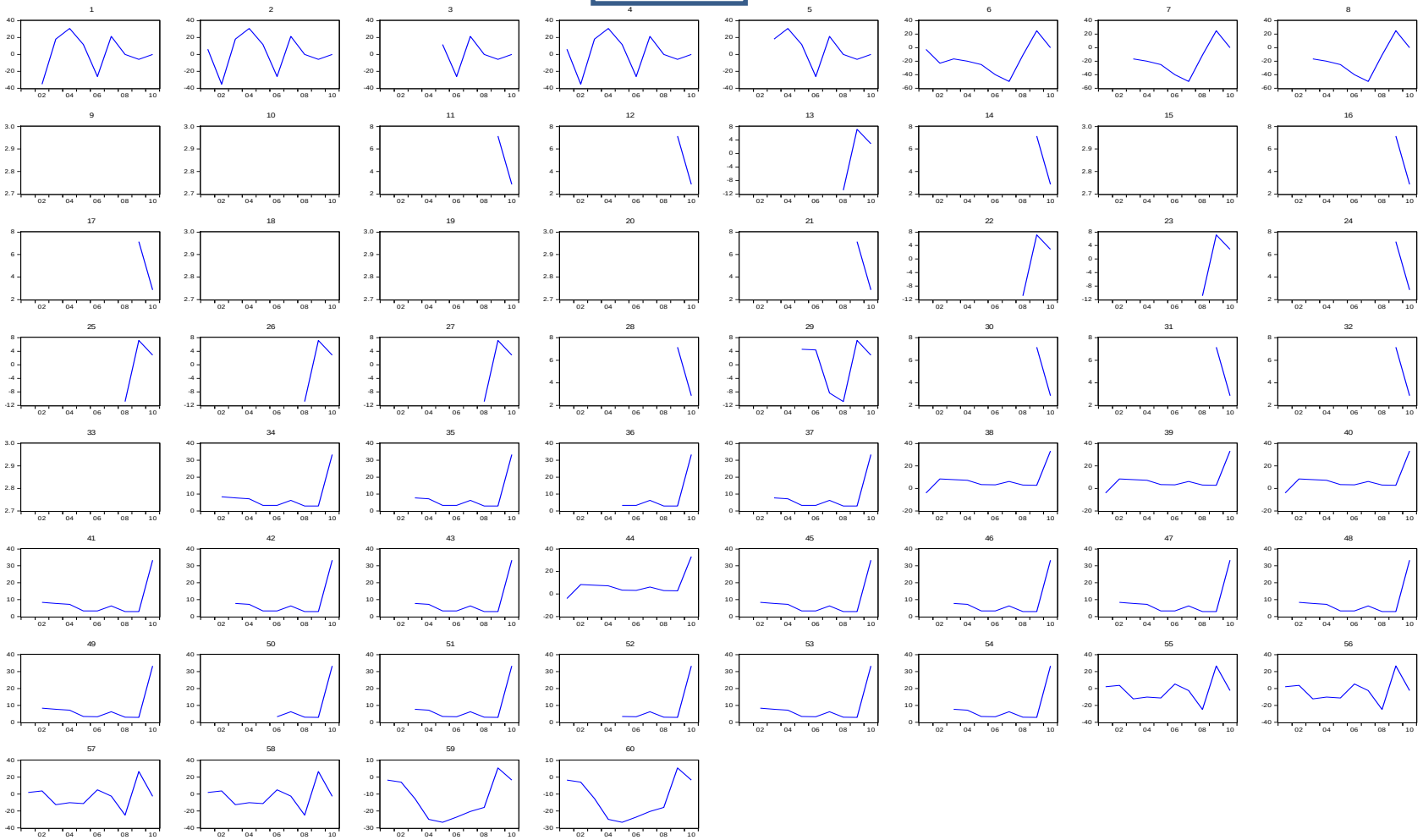
DLNMS



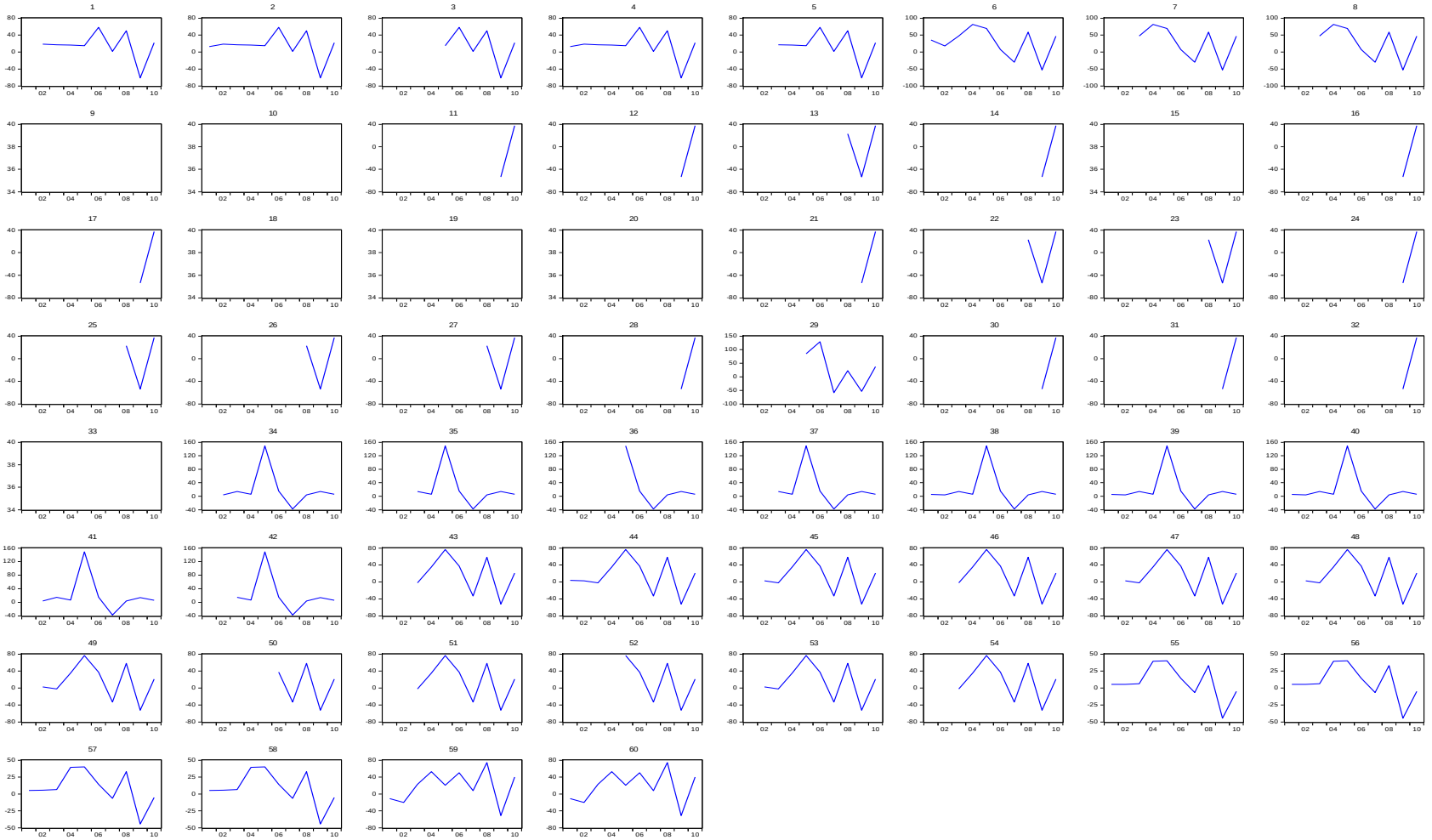
DLNOP



DUNMR



SMR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Appendix D (Pearson Correlation by Stock Market)-First Model

Kuwait stock market

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.002	.062	.033	-.019	.030	.177
	Sig. (2-tailed)		.983	.502	.719	.833	.742	.053
	N	120	120	120	120	120	120	120
DLNCPI	Pearson Correlation	-.002	1	-.023	-.032	-.107	-.051	.045
	Sig. (2-tailed)	.983		.802	.732	.245	.581	.629
	N	120	120	120	120	120	120	120
DINTR	Pearson Correlation	.062	-.023	1	-.205*	.056	-.010	-.015
	Sig. (2-tailed)	.502	.802		.025	.545	.910	.872
	N	120	120	120	120	120	120	120
DLNMS	Pearson Correlation	.033	-.032	-.205*	1	-.060	.046	.080
	Sig. (2-tailed)	.719	.732	.025		.512	.621	.388
	N	120	120	120	120	120	120	120
DLNOP	Pearson Correlation	-.019	-.107	.056	-.060	1	-.008	.176
	Sig. (2-tailed)	.833	.245	.545	.512		.935	.055
	N	120	120	120	120	120	120	120
DUNMR	Pearson Correlation	.030	-.051	-.010	.046	-.008	1	.117
	Sig. (2-tailed)	.742	.581	.910	.621	.935		.204
	N	120	120	120	120	120	120	120
SMR	Pearson Correlation	.177	.045	-.015	.080	.176	.117	1
	Sig. (2-tailed)	.053	.629	.872	.388	.055	.204	
	N	120	120	120	120	120	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

Muscat securities market

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	.160	-.224*	.014	.278**	-.143	.404**
	Sig. (2-tailed)		.080	.014	.881	.002	.119	.000
	N	120	120	120	120	120	120	120
DLNCPI	Pearson Correlation	.160	1	.069	.134	-.157	-.022	.017
	Sig. (2-tailed)	.080		.451	.144	.086	.812	.855
	N	120	120	120	120	120	120	120
DINTR	Pearson Correlation	-.224*	.069	1	.086	-.095	.012	-.206*
	Sig. (2-tailed)	.014	.451		.351	.303	.893	.024
	N	120	120	120	120	120	120	120
DLNMS	Pearson Correlation	.014	.134	.086	1	-.148	-.202*	-.051
	Sig. (2-tailed)	.881	.144	.351		.107	.027	.583
	N	120	120	120	120	120	120	120
DLNOP	Pearson Correlation	.278**	-.157	-.095	-.148	1	.033	.289**
	Sig. (2-tailed)	.002	.086	.303	.107		.720	.001
	N	120	120	120	120	120	120	120
DUNMR	Pearson Correlation	-.143	-.022	.012	-.202*	.033	1	-.114
	Sig. (2-tailed)	.119	.812	.893	.027	.720		.215
	N	120	120	120	120	120	120	120
SMR	Pearson Correlation	.404**	.017	-.206*	-.051	.289**	-.114	1
	Sig. (2-tailed)	.000	.855	.024	.583	.001	.215	
	N	120	120	120	120	120	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Bahrain stock exchange

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.038	-.049	.110	.124	-.266**	.195
	Sig. (2-tailed)		.713	.638	.290	.232	.009	.058
	N	95	95	95	95	95	95	95
DLNCPI	Pearson Correlation	-.038	1	-.038	.041	.132	.024	.264**
	Sig. (2-tailed)	.713		.712	.694	.203	.817	.010
	N	95	95	95	95	95	95	95
DINTR	Pearson Correlation	-.049	-.038	1	-.221*	-.061	-.005	.033
	Sig. (2-tailed)	.638	.712		.032	.554	.963	.750
	N	95	95	95	95	95	95	95
DLNMS	Pearson Correlation	.110	.041	-.221*	1	-.060	-.082	.040
	Sig. (2-tailed)	.290	.694	.032		.563	.431	.704
	N	95	95	95	95	95	95	95
DLNOP	Pearson Correlation	.124	.132	-.061	-.060	1	.294**	.399**
	Sig. (2-tailed)	.232	.203	.554	.563		.004	.000
	N	95	95	95	95	95	95	95
DUNMR	Pearson Correlation	-.266**	.024	-.005	-.082	.294**	1	-.036
	Sig. (2-tailed)	.009	.817	.963	.431	.004		.728
	N	95	95	95	95	95	95	95
SMR	Pearson Correlation	.195	.264**	.033	.040	.399**	-.036	1
	Sig. (2-tailed)	.058	.010	.750	.704	.000	.728	
	N	95	95	95	95	95	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.092	.324*	-.141	.434**	.260	.450**
	Sig. (2-tailed)		.554	.032	.360	.003	.088	.002
	N	44	44	44	44	44	44	44
DLNCPI	Pearson Correlation	-.092	1	-.333*	.133	-.131	-.429**	-.062
	Sig. (2-tailed)	.554		.027	.391	.398	.004	.687
	N	44	44	44	44	44	44	44
DINTR	Pearson Correlation	.324*	-.333*	1	-.235	.292	.832**	.306*
	Sig. (2-tailed)	.032	.027		.124	.054	.000	.044
	N	44	44	44	44	44	44	44
DLNMS	Pearson Correlation	-.141	.133	-.235	1	-.109	-.287	-.137
	Sig. (2-tailed)	.360	.391	.124		.480	.059	.374
	N	44	44	44	44	44	44	44
DLNOP	Pearson Correlation	.434**	-.131	.292	-.109	1	.256	.504**
	Sig. (2-tailed)	.003	.398	.054	.480		.093	.000
	N	44	44	44	44	44	44	44
DUNMR	Pearson Correlation	.260	-.429**	.832**	-.287	.256	1	.237
	Sig. (2-tailed)	.088	.004	.000	.059	.093		.121
	N	44	44	44	44	44	44	44
SMR	Pearson Correlation	.450**	-.062	.306*	-.137	.504**	.237	1
	Sig. (2-tailed)	.002	.687	.044	.374	.000	.121	
	N	44	44	44	44	44	44	44

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Qatar Exchange

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.104	.027	-.010	.304**	.026	.207*
	Sig. (2-tailed)		.315	.792	.924	.003	.803	.043
	N	96	96	96	96	96	96	96
DLNCPI	Pearson Correlation	-.104	1	-.146	.044	.124	-.335**	.309**
	Sig. (2-tailed)	.315		.155	.673	.228	.001	.002
	N	96	96	96	96	96	96	96
DINTR	Pearson Correlation	.027	-.146	1	.071	.043	.026	.055
	Sig. (2-tailed)	.792	.155		.491	.680	.802	.596
	N	96	96	96	96	96	96	96
DLNMS	Pearson Correlation	-.010	.044	.071	1	.019	-.097	.082
	Sig. (2-tailed)	.924	.673	.491		.854	.347	.426
	N	96	96	96	96	96	96	96
DLNOP	Pearson Correlation	.304**	.124	.043	.019	1	.004	.151
	Sig. (2-tailed)	.003	.228	.680	.854		.966	.141
	N	96	96	96	96	96	96	96
DUNMR	Pearson Correlation	.026	-.335**	.026	-.097	.004	1	.026
	Sig. (2-tailed)	.803	.001	.802	.347	.966		.803
	N	96	96	96	96	96	96	96
SMR	Pearson Correlation	.207*	.309**	.055	.082	.151	.026	1
	Sig. (2-tailed)	.043	.002	.596	.426	.141	.803	
	N	96	96	96	96	96	96	96

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Abu Dhabi Securities Exchange

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.260*	-.064	.211	.241*	-.083	.132
	Sig. (2-tailed)		.022	.581	.065	.035	.474	.252
	N	77	77	77	77	77	77	77
DLNCPI	Pearson Correlation	-.260*	1	.029	-.152	-.023	.253*	.035
	Sig. (2-tailed)	.022		.801	.187	.840	.027	.761
	N	77	77	77	77	77	77	77
DINTR	Pearson Correlation	-.064	.029	1	.066	-.041	-.118	.031
	Sig. (2-tailed)	.581	.801		.571	.723	.307	.786
	N	77	77	77	77	77	77	77
DLNMS	Pearson Correlation	.211	-.152	.066	1	.129	-.205	.235*
	Sig. (2-tailed)	.065	.187	.571		.265	.074	.040
	N	77	77	77	77	77	77	77
DLNOP	Pearson Correlation	.241*	-.023	-.041	.129	1	-.022	.262*
	Sig. (2-tailed)	.035	.840	.723	.265		.852	.022
	N	77	77	77	77	77	77	77
DUNMR	Pearson Correlation	-.083	.253*	-.118	-.205	-.022	1	.007
	Sig. (2-tailed)	.474	.027	.307	.074	.852		.955
	N	77	77	77	77	77	77	77
SMR	Pearson Correlation	.132	.035	.031	.235*	.262*	.007	1
	Sig. (2-tailed)	.252	.761	.786	.040	.022	.955	
	N	77	77	77	77	77	77	77

*. Correlation is significant at the 0.05 level (2-tailed).

Dubai Financial Market

Correlations

		ISR	DLNCPI	DINTR	DLNMS	DLNOP	DUNMR	SMR
ISR	Pearson Correlation	1	-.101	.126	.153	.115	-.079	.290*
	Sig. (2-tailed)		.380	.273	.185	.320	.495	.011
	N	77	77	77	77	77	77	77
DLNCPI	Pearson Correlation	-.101	1	.029	-.152	-.023	.253*	.036
	Sig. (2-tailed)	.380		.801	.187	.840	.027	.754
	N	77	77	77	77	77	77	77
DINTR	Pearson Correlation	.126	.029	1	.066	-.041	-.118	.032
	Sig. (2-tailed)	.273	.801		.571	.723	.307	.781
	N	77	77	77	77	77	77	77
DLNMS	Pearson Correlation	.153	-.152	.066	1	.129	-.205	.137
	Sig. (2-tailed)	.185	.187	.571		.265	.074	.235
	N	77	77	77	77	77	77	77
DLNOP	Pearson Correlation	.115	-.023	-.041	.129	1	-.022	.352**
	Sig. (2-tailed)	.320	.840	.723	.265		.852	.002
	N	77	77	77	77	77	77	77
DUNMR	Pearson Correlation	-.079	.253*	-.118	-.205	-.022	1	-.021
	Sig. (2-tailed)	.495	.027	.307	.074	.852		.855
	N	77	77	77	77	77	77	77
SMR	Pearson Correlation	.290*	.036	.032	.137	.352**	-.021	1
	Sig. (2-tailed)	.011	.754	.781	.235	.002	.855	
	N	77	77	77	77	77	77	77

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix E: Panel Data Estimation (First Model with Oman)

Dependent Variable: ISR

Method: Panel Least Squares

Date: 03/26/14 Time: 19:23

Sample: 2001M01 2010M12

Cross-sections included: 7

Total panel (unbalanced) observations: 629

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.276426	0.330555	0.836248	0.4033
DLNCPI	-0.613366	0.262469	-2.336912	0.0198
DINTR	0.028605	0.045964	0.622346	0.5339
DLNMS	0.101628	0.861059	0.118027	0.9061
DLNOP	0.414672	0.117762	3.521279	0.0005
DUNMR	-0.179848	0.158925	-1.131654	0.2582
SMR	0.219673	0.037499	5.858046	0.0000

R-squared	0.099044	Mean dependent var	0.657963
Adjusted R-squared	0.090353	S.D. dependent var	8.027897
S.E. of regression	7.656641	Akaike info criterion	6.920090
Sum squared resid	36464.22	Schwarz criterion	6.969548
Log likelihood	-2169.368	F-statistic	11.39626
Durbin-Watson stat	1.995939	Prob(F-statistic)	0.000000

Dependent Variable: ISR
Method: Panel EGLS
Date: 03/26/14 Time: 19:28
Sample: 2001M01 2010M12
Cross-sections included: 7
Total panel (unbalanced) observations: 629
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.275370	0.145367	1.894306	0.0586
DLNCPI	-0.517615	0.095025	-5.447120	0.0000
DINTR	0.013787	0.027753	0.496772	0.6195
DLNMS	0.887752	0.197095	4.504173	0.0000
DLNOP	0.324196	0.061941	5.233927	0.0000
DUNMR	-0.119015	0.075323	-1.580072	0.1146
SMR	0.189942	0.033753	5.627452	0.0000

Weighted Statistics

R-squared	0.211752	Mean dependent var	0.940517
Adjusted R-squared	0.204148	S.D. dependent var	8.504983
S.E. of regression	7.587339	Sum squared resid	35807.12
F-statistic	27.84863	Durbin-Watson stat	2.013806
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.095103	Mean dependent var	0.657963
Sum squared resid	36623.72	Durbin-Watson stat	1.952526

Dependent Variable: ISR
Method: Panel Least Squares
Date: 03/24/14 Time: 17:43
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 7
Total panel (unbalanced) observations: 629
White period standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.301958	0.081283	3.714894	0.0002
DLNCPI	-0.605709	0.135349	-4.475155	0.0000
DINTR	0.027149	0.017122	1.585609	0.1133
DLNMS	0.102320	0.460279	0.222301	0.8242
DLNOP	0.413832	0.194652	2.126006	0.0339
DUNMR	-0.098195	0.135065	-0.727022	0.4675
SMR	0.216416	0.041242	5.247434	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.102923	Mean dependent var	0.657963
Adjusted R-squared	0.085447	S.D. dependent var	8.027897
S.E. of regression	7.677259	Akaike info criterion	6.934853
Sum squared resid	36307.23	Schwarz criterion	7.026703
Log likelihood	-2168.011	Hannan-Quinn criter.	6.970533
F-statistic	5.889541	Durbin-Watson stat	1.998359
Prob(F-statistic)	0.000000		

Dependent Variable: ISR
Method: Panel EGLS (Cross-section weights)
Date: 03/24/14 Time: 17:48
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 7
Total panel (unbalanced) observations: 629
Linear estimation after one-step weighting matrix
White period standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.276994	0.116864	2.370218	0.0181
DLNCPI	-0.534571	0.064098	-8.339951	0.0000
DINTR	0.013638	0.013683	0.996683	0.3193
DLNMS	0.798585	0.562359	1.420062	0.1561
DLNOP	0.244106	0.122286	1.996183	0.0464
DUNMR	-0.187888	0.182314	-1.030574	0.3031
SMR	0.179515	0.045819	3.917934	0.0001

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.089345	Mean dependent var	0.777603
Adjusted R-squared	0.071605	S.D. dependent var	7.919647
S.E. of regression	7.629419	Sum squared resid	35856.15
F-statistic	5.036355	Durbin-Watson stat	2.005899
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.095361	Mean dependent var	0.657963
Sum squared resid	36613.29	Durbin-Watson stat	1.937780

Dependent Variable: ISR
Method: Panel EGLS (Cross-section random effects)
Date: 03/24/14 Time: 17:37
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 7
Total panel (unbalanced) observations: 629
Swamy and Arora estimator of component variances
White period standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.276426	0.239998	1.151785	0.2499
DLNCPI	-0.613366	0.140526	-4.364797	0.0000
DINTR	0.028605	0.016638	1.719289	0.0861
DLNMS	0.101628	0.424214	0.239569	0.8107
DLNOP	0.414672	0.193334	2.144846	0.0324
DUNMR	-0.179848	0.125601	-1.431894	0.1527
SMR	0.219673	0.040603	5.410297	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	3.78E-07	0.0000
Idiosyncratic random	7.677259	1.0000

Weighted Statistics

R-squared	0.099044	Mean dependent var	0.657963
Adjusted R-squared	0.090353	S.D. dependent var	8.027897
S.E. of regression	7.656641	Sum squared resid	36464.22
F-statistic	11.39626	Durbin-Watson stat	1.995939
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.099044	Mean dependent var	0.657963
Sum squared resid	36464.22	Durbin-Watson stat	1.995939

Appendix F: Panel Data Estimation (First Model without Oman)

Dependent Variable: ISR

Method: Panel Least Squares

Date: 03/26/14 Time: 19:25

Sample: 2001M01 2010M12

Cross-sections included: 6

Total panel (unbalanced) observations: 509

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.305171	0.386192	0.790205	0.4298
DLNCPI	-0.642526	0.280287	-2.292387	0.0223
DINTR	0.032819	0.049106	0.668338	0.5042
DLNMS	0.044893	0.947603	0.047376	0.9622
DLNOP	0.417450	0.138234	3.019880	0.0027
DUNMR	-0.151437	0.179367	-0.844286	0.3989
SMR	0.209749	0.042381	4.949112	0.0000

R-squared	0.090821	Mean dependent var	0.618407
Adjusted R-squared	0.079955	S.D. dependent var	8.500599
S.E. of regression	8.153688	Akaike info criterion	7.048475
Sum squared resid	33374.28	Schwarz criterion	7.106681
Log likelihood	-1786.837	F-statistic	8.357790
Durbin-Watson stat	1.957121	Prob(F-statistic)	0.000000

Dependent Variable: ISR

Method: Panel EGLS

Date: 03/26/14 Time: 19:27

Sample: 2001M01 2010M12

Cross-sections included: 6

Total panel (unbalanced) observations: 509

Linear estimation after one-step weighting matrix

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.158918	0.192527	0.825429	0.4095
DLNCPI	-0.505148	0.090705	-5.569099	0.0000
DINTR	-0.007254	0.026280	-0.276011	0.7827
DLNMS	0.757205	0.260933	2.901915	0.0039
DLNOP	0.330747	0.066024	5.009499	0.0000
DUNMR	-0.130884	0.034166	-3.830845	0.0001
SMR	0.209148	0.028707	7.285538	0.0000

Weighted Statistics

R-squared	0.193080	Mean dependent var	0.960578
Adjusted R-squared	0.183435	S.D. dependent var	9.645840
S.E. of regression	8.085084	Sum squared resid	32815.03
F-statistic	20.01974	Durbin-Watson stat	2.031944
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.087238	Mean dependent var	0.618407
Sum squared resid	33505.83	Durbin-Watson stat	1.948240

Dependent Variable: ISR
Method: Panel Least Squares
Date: 03/24/14 Time: 17:49
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 6
Total panel (unbalanced) observations: 509
White period standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.316525	0.066055	4.791831	0.0000
DLNCPI	-0.634658	0.139973	-4.534152	0.0000
DINTR	0.031419	0.017653	1.779824	0.0757
DLNMS	0.043151	0.477657	0.090338	0.9281
DLNOP	0.416373	0.239474	1.738696	0.0827
DUNMR	-0.051336	0.130714	-0.392736	0.6947
SMR	0.205578	0.043806	4.692955	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.095521	Mean dependent var	0.618407
Adjusted R-squared	0.075502	S.D. dependent var	8.500599
S.E. of regression	8.173395	Akaike info criterion	7.062939
Sum squared resid	33201.78	Schwarz criterion	7.162722
Log likelihood	-1785.518	Hannan-Quinn criter.	7.102064
F-statistic	4.771582	Durbin-Watson stat	1.959532
Prob(F-statistic)	0.000001		

Dependent Variable: ISR
Method: Panel EGLS (Cross-section weights)
Date: 03/24/14 Time: 17:50
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 6
Total panel (unbalanced) observations: 509
Linear estimation after one-step weighting matrix
White period standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.329971	0.090927	3.628975	0.0003
DLNCPI	-0.575428	0.053921	-10.67158	0.0000
DINTR	0.019763	0.009878	2.000622	0.0460
DLNMS	0.863659	0.718915	1.201337	0.2302
DLNOP	0.190952	0.138330	1.380409	0.1681
DUNMR	-0.124281	0.172627	-0.719941	0.4719
SMR	0.148235	0.041122	3.604798	0.0003

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.071580	Mean dependent var	0.712564
Adjusted R-squared	0.051031	S.D. dependent var	8.301568
S.E. of regression	8.087025	Sum squared resid	32503.79
F-statistic	3.483461	Durbin-Watson stat	1.927439
Prob(F-statistic)	0.000105		

Unweighted Statistics

R-squared	0.082834	Mean dependent var	0.618407
Sum squared resid	33667.50	Durbin-Watson stat	1.874293

Dependent Variable: ISR
Method: Panel EGLS (Period random effects)
Date: 03/24/14 Time: 17:51
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 6
Total panel (unbalanced) observations: 509
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (no d.f. correction)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.405170	0.454952	0.890578	0.3736
DLNCPI	-0.584289	0.192471	-3.035732	0.0025
DINTR	0.034041	0.027070	1.257516	0.2092
DLNMS	-0.211132	0.994493	-0.212301	0.8320
DLNOP	0.394601	0.151164	2.610413	0.0093
DUNMR	-0.177105	0.163888	-1.080649	0.2804
SMR	0.205398	0.060283	3.407241	0.0007

Effects Specification

	S.D.	Rho
Period random	2.383347	0.0852
Idiosyncratic random	7.809064	0.9148

Weighted Statistics

R-squared	0.074612	Mean dependent var	0.542332
Adjusted R-squared	0.063551	S.D. dependent var	8.037972
S.E. of regression	7.776046	Sum squared resid	30354.38
F-statistic	6.745826	Durbin-Watson stat	1.939355
Prob(F-statistic)	0.000001		

Unweighted Statistics

R-squared	0.090423	Mean dependent var	0.618407
Sum squared resid	33388.91	Durbin-Watson stat	1.950645

Appendix G: White Heteroskedasticity Test-panel A (All GCC stock markets)

White Heteroskedasticity Test:

F-statistic	1.564129	Probability	0.035589
Obs*R-squared	41.29711	Probability	0.038555

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/09/14 Time: 03:01
Sample: 1 840
Included observations: 629
Excluded observations: 211

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-60.61157	159.0959	-0.380975	0.7034
DLNCPI	152.6593	186.7312	0.817535	0.4139
DLNCPI^2	6.927893	2.700405	2.565501	0.0105
DLNCPI*DINTR	-9.163715	24.66089	-0.371589	0.7103
DLNCPI*DLNMS	64.81889	132.0652	0.490810	0.6237
DLNCPI*DLNOP	-26.72351	13.74365	-1.944427	0.0523
DLNCPI*DUNMR	-84.49202	21.52239	-3.925772	0.0001
DLNCPI*SMR	-0.112846	1.783815	-0.063261	0.9496
DINTR	33.00148	44.69722	0.738334	0.4606
DINTR^2	-2.448479	3.134071	-0.781246	0.4350
DINTR*DLNMS	-14.65929	15.50150	-0.945669	0.3447
DINTR*DLNOP	0.707017	2.349567	0.300914	0.7636
DINTR*DUNMR	4.168104	3.770339	1.105498	0.2694
DINTR*SMR	-1.057001	0.812909	-1.300269	0.1940
DLNMS	89.06474	110.7679	0.804066	0.4217
DLNMS^2	-13.76780	13.48319	-1.021109	0.3076
DLNMS*DLNOP	-1.806362	7.832821	-0.230614	0.8177
DLNMS*DUNMR	-2.494447	10.02963	-0.248708	0.8037
DLNMS*SMR	1.397729	1.521947	0.918382	0.3588
DLNOP	-3.469504	17.69072	-0.196120	0.8446
DLNOP^2	0.211138	0.525008	0.402161	0.6877
DLNOP*DUNMR	0.591081	1.194896	0.494671	0.6210
DLNOP*SMR	0.162197	0.238400	0.680357	0.4965
DUNMR	-28.32710	28.24116	-1.003043	0.3162
DUNMR^2	-1.725578	0.803488	-2.147608	0.0321
DUNMR*SMR	0.494923	0.476939	1.037707	0.2998
SMR	8.472644	5.951352	1.423650	0.1551
SMR^2	0.058676	0.040543	1.447247	0.1483

R-squared	0.065655	Mean dependent var	58.03549
Adjusted R-squared	0.023680	S.D. dependent var	148.7413
S.E. of regression	146.9697	Akaike info criterion	12.86182
Sum squared resid	12981659	Schwarz criterion	13.05965
Log likelihood	-4017.044	F-statistic	1.564129
Durbin-Watson stat	1.850951	Prob(F-statistic)	0.035589

Appendix H: White Heteroskedasticity Test-panel A (All GCC stock markets without Oman).

White Heteroskedasticity Test:

F-statistic	1.744819	Probability	0.012422
Obs*R-squared	45.40538	Probability	0.014730

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/11/14 Time: 11:34
Sample: 1 720
Included observations: 509
Excluded observations: 211

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.69958	187.4309	-0.073091	0.9418
DLNCPI	256.4359	240.1118	1.067985	0.2861
DLNCPI^2	1.161081	3.626444	0.320171	0.7490
DLNCPI*DINTR	-35.34422	36.21739	-0.975891	0.3296
DLNCPI*DLNMS	205.3447	182.1138	1.127562	0.2601
DLNCPI*DLNOP	-14.29312	18.12672	-0.788511	0.4308
DLNCPI*DUNMR	-11.80906	26.79780	-0.440673	0.6596
DLNCPI*SMR	1.892542	1.978002	0.956795	0.3392
DINTR	38.10788	55.22586	0.690037	0.4905
DINTR^2	-3.051518	4.202523	-0.726116	0.4681
DINTR*DLNMS	-11.63648	17.84152	-0.652213	0.5146
DINTR*DLNOP	1.014188	2.884259	0.351628	0.7253
DINTR*DUNMR	2.120891	3.765373	0.563262	0.5735
DINTR*SMR	-1.381053	0.957149	-1.442882	0.1497
DLNMS	47.08692	128.9085	0.365274	0.7151
DLNMS^2	-6.599019	14.31125	-0.461107	0.6449
DLNMS*DLNOP	-1.561750	8.909341	-0.175294	0.8609
DLNMS*DUNMR	5.776843	15.49723	0.372766	0.7095
DLNMS*SMR	1.019258	1.656510	0.615304	0.5386
DLNOP	-7.046887	21.10907	-0.333832	0.7387
DLNOP^2	-0.021784	0.625907	-0.034803	0.9723
DLNOP*DUNMR	0.242422	1.218669	0.198924	0.8424
DLNOP*SMR	0.132381	0.279579	0.473504	0.6361
DUNMR	-45.32525	27.09636	-1.672743	0.0950
DUNMR^2	3.480020	0.900781	3.863336	0.0001
DUNMR*SMR	0.280788	0.368561	0.761850	0.4465
SMR	9.286361	6.780190	1.369631	0.1714
SMR^2	0.076166	0.046111	1.651824	0.0992

R-squared	0.089205	Mean dependent var	65.52990
Adjusted R-squared	0.038079	S.D. dependent var	163.7471
S.E. of regression	160.5992	Akaike info criterion	13.04914
Sum squared resid	12405996	Schwarz criterion	13.28197
Log likelihood	-3293.006	F-statistic	1.744819
Durbin-Watson stat	1.864779	Prob(F-statistic)	0.012422

Appendix I: Hausman Test (First Model with Oman)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	5.362408	6	0.4982

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
DLNCPI	-0.373744	-0.531646	0.014601	0.1913
DINTR	0.035854	0.029840	0.000258	0.7081
DLNMS	-0.628420	-0.158216	0.156822	0.2351
DLNOP	0.305697	0.380094	0.034845	0.6902
DUNMR	-0.250378	-0.196831	0.008020	0.5499
SMR	0.164068	0.211911	0.001115	0.1520

Period random effects test equation:
Dependent Variable: ISR
Method: Panel Least Squares
Date: 03/27/14 Time: 16:24
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 7
Total panel (unbalanced) observations: 629

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.425401	0.331791	1.282136	0.2004
DLNCPI	-0.373744	0.291575	-1.281810	0.2005
DINTR	0.035854	0.048166	0.744372	0.4570
DLNMS	-0.628420	0.946844	-0.663700	0.5072
DLNOP	0.305697	0.228796	1.336114	0.1821
DUNMR	-0.250378	0.181681	-1.378116	0.1688
SMR	0.164068	0.052222	3.141719	0.0018

Effects Specification

Period fixed (dummy variables)

R-squared	0.340469	Mean dependent var	0.657963
Adjusted R-squared	0.176570	S.D. dependent var	8.027897
S.E. of regression	7.284759	Akaike info criterion	6.986541
Sum squared resid	26693.06	Schwarz criterion	7.876780
Log likelihood	-2071.267	Hannan-Quinn criter.	7.332358
F-statistic	2.077306	Durbin-Watson stat	1.913999
Prob(F-statistic)	0.000000		

Appendix J: Hausman Test (First Model without Oman)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	5.567632	6	0.4733

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
DLNCPI	-0.408044	-0.584289	0.024214	0.2574
DINTR	0.043422	0.034041	0.000407	0.6420
DLNMS	-0.908731	-0.211132	0.229363	0.1452
DLNOP	0.318435	0.394601	0.041548	0.7087
DUNMR	-0.348106	-0.177105	0.022360	0.2528
SMR	0.153869	0.205398	0.001620	0.2004

Period random effects test equation:
Dependent Variable: ISR
Method: Panel Least Squares
Date: 03/27/14 Time: 16:26
Sample: 2001M01 2010M12
Periods included: 120
Cross-sections included: 6
Total panel (unbalanced) observations: 509

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.483650	0.387143	1.249282	0.2123
DLNCPI	-0.408044	0.324713	-1.256629	0.2097
DINTR	0.043422	0.052767	0.822902	0.4111
DLNMS	-0.908731	1.059503	-0.857696	0.3916
DLNOP	0.318435	0.253170	1.257792	0.2092
DUNMR	-0.348106	0.232328	-1.498336	0.1349
SMR	0.153869	0.060084	2.560919	0.0108

Effects Specification

Period fixed (dummy variables)

R-squared	0.363741	Mean dependent var	0.618407
Adjusted R-squared	0.156085	S.D. dependent var	8.500599
S.E. of regression	7.809064	Akaike info criterion	7.159123
Sum squared resid	23355.91	Schwarz criterion	8.206841
Log likelihood	-1695.997	Hannan-Quinn criter.	7.569932
F-statistic	1.751649	Durbin-Watson stat	1.887541
Prob(F-statistic)	0.000027		

Appendix K: Panel Data Estimation for Panel B (Second model)

Dependent Variable: ICSR
Method: Panel Least Squares
Date: 04/03/14 Time: 18:49
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.77977	9.766348	2.025298	0.0436
EPS	-0.009971	0.056159	-0.177556	0.8592
DY	-0.484471	0.510447	-0.949110	0.3432
LEV	-0.257163	0.144379	-1.781175	0.0758
LR	-4.024317	1.870541	-2.151419	0.0321
REID	-7.176678	14.26292	-0.503170	0.6152
SM	-0.512195	0.161253	-3.176334	0.0016
AFFIN	-2.249034	2.395738	-0.938765	0.3485
SUO	-1.980219	1.538060	-1.287479	0.1988
DLNCPI	-1.022439	0.546646	-1.870388	0.0623
DLNMS	-1.953127	2.495011	-0.782813	0.4343
DLNOP	0.514388	0.561849	0.915527	0.3606
DUNMR	0.001600	0.238449	0.006709	0.9947
SMR	0.305955	0.084137	3.636380	0.0003

R-squared	0.186142	Mean dependent var	8.682778
Adjusted R-squared	0.155386	S.D. dependent var	39.93881
S.E. of regression	36.70492	Akaike info criterion	10.08202
Sum squared resid	463454.3	Schwarz criterion	10.23377
Log likelihood	-1790.681	Hannan-Quinn criter.	10.14237
F-statistic	6.052174	Durbin-Watson stat	2.062765
Prob(F-statistic)	0.000000		

Dependent Variable: ICSR
Method: Panel EGLS (Cross-section weights)
Date: 04/05/14 Time: 00:25
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358
Linear estimation after one-step weighting matrix
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.44337	3.831834	2.725423	0.0068
EPS	0.062272	0.036591	1.701834	0.0897
DY	-0.570584	0.314974	-1.811528	0.0709
LEV	-0.222103	0.115687	-1.919852	0.0557
LR	-1.608692	2.035473	-0.790328	0.4299
REID	7.428558	10.25895	0.724105	0.4695
SM	-0.365715	0.117617	-3.109356	0.0020
AFFIN	-0.123774	3.001888	-0.041232	0.9671
SUO	-0.523185	2.251873	-0.232333	0.8164
DLNCPI	-0.922411	0.296799	-3.107862	0.0020
DLNMS	-2.024675	1.516421	-1.335167	0.1827
DLNOP	0.821506	0.424119	1.936969	0.0536
DUNMR	-0.053657	0.094850	-0.565697	0.5720
SMR	0.206482	0.062987	3.278184	0.0012

Weighted Statistics

R-squared	0.285575	Mean dependent var	8.694061
Adjusted R-squared	0.258577	S.D. dependent var	41.62473
S.E. of regression	35.89122	Sum squared resid	443133.8
F-statistic	10.57742	Durbin-Watson stat	2.062761
Prob(F-statistic)	0.000000		

Dependent Variable: ICSR
Method: Panel Least Squares
Date: 04/03/14 Time: 19:01
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358
White cross-section standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.53392	12.32619	2.152646	0.0321
EPS	-0.009892	0.041191	-0.240142	0.8104
DY	-0.650246	0.561832	-1.157368	0.2479
LEV	-0.149191	0.138433	-1.077706	0.2819
LR	-4.290469	1.672103	-2.565912	0.0107
REID	-6.903030	15.89736	-0.434225	0.6644
SM	-0.637608	0.163117	-3.908898	0.0001
AFFIN	-3.094775	2.435274	-1.270812	0.2047
SUO	-1.102349	1.677585	-0.657105	0.5116
DLNCPI	0.163803	1.264926	0.129496	0.8970
DLNMS	-5.142757	2.765270	-1.859767	0.0638
DLNOP	-0.123963	2.305522	-0.053768	0.9572
DUNMR	0.009032	0.160139	0.056401	0.9551
SMR	0.372294	0.108622	3.427438	0.0007

Effects Specification

Period fixed (dummy variables)

R-squared	0.250782	Mean dependent var	8.682778
Adjusted R-squared	0.201580	S.D. dependent var	39.93881
S.E. of regression	35.68706	Akaike info criterion	10.04954
Sum squared resid	426644.8	Schwarz criterion	10.29885
Log likelihood	-1775.868	Hannan-Quinn criter.	10.14869
F-statistic	5.096958	Durbin-Watson stat	2.062937
Prob(F-statistic)	0.000000		

Dependent Variable: ICSR
Method: Panel EGLS (Period weights)
Date: 04/03/14 Time: 19:02
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358
Linear estimation after one-step weighting matrix
White period standard errors & covariance (no d.f. correction)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.19718	6.790464	2.679814	0.0077
EPS	-0.003407	0.047894	-0.071131	0.9433
DY	-0.495834	0.488438	-1.015142	0.3108
LEV	-0.060086	0.078299	-0.767389	0.4434
LR	-3.568724	3.578906	-0.997155	0.3194
REID	10.09212	11.20996	0.900281	0.3686
SM	-0.572661	0.189003	-3.029902	0.0026
AFFIN	-3.612973	1.564942	-2.308695	0.0216
SUO	-1.379481	2.537409	-0.543657	0.5870
DLNCPI	-0.026340	0.499532	-0.052730	0.9580
DLNMS	-4.511228	2.116077	-2.131883	0.0337
DLNOP	0.706885	1.780536	0.397007	0.6916
DUNMR	0.144573	0.114766	1.259717	0.2086
SMR	0.355114	0.102296	3.471433	0.0006

Effects Specification

Period fixed (dummy variables)

Weighted Statistics

R-squared	0.231932	Mean dependent var	7.663563
Adjusted R-squared	0.181492	S.D. dependent var	39.07438
S.E. of regression	35.54037	Sum squared resid	423144.4
F-statistic	4.598152	Durbin-Watson stat	2.021830
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.246126	Mean dependent var	8.682778
Sum squared resid	429296.5	Durbin-Watson stat	2.072797

Dependent Variable: ICSR
Method: Panel EGLS (Cross-section random effects)
Date: 04/03/14 Time: 19:05
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.79579	9.772739	2.025614	0.0436
EPS	-0.011498	0.059493	-0.193271	0.8469
DY	-0.470963	0.498387	-0.944974	0.3453
LEV	-0.234272	0.129988	-1.802251	0.0724
LR	-3.966535	1.842725	-2.152537	0.0321
REID	-9.498331	14.62715	-0.649363	0.5165
SM	-0.483465	0.165158	-2.927294	0.0036
AFFIN	-2.142420	2.455949	-0.872339	0.3836
SUO	-2.220317	1.554673	-1.428157	0.1542
DLNCPI	-1.010455	0.522277	-1.934711	0.0538
DLNMS	-1.898478	2.399765	-0.791110	0.4294
DLNOP	0.511020	0.538204	0.949490	0.3430
DUNMR	-0.011196	0.231218	-0.048423	0.9614
SMR	0.304370	0.080789	3.767455	0.0002

Effects Specification	S.D.	Rho
Cross-section random	5.247708	0.0220
Idiosyncratic random	35.00039	0.9780

Weighted Statistics

R-squared	0.185971	Mean dependent var	7.996332
Adjusted R-squared	0.155208	S.D. dependent var	39.47661
S.E. of regression	36.28456	Sum squared resid	452899.7
F-statistic	6.045319	Durbin-Watson stat	2.106536
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.185971	Mean dependent var	8.682778
Sum squared resid	463552.0	Durbin-Watson stat	2.058129

Appendix L: White Heteroskedasticity Test-panel B

White Heteroskedasticity Test:

F-statistic	1.656604	Probability	0.024936
Obs*R-squared	41.22115	Probability	0.029480

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/31/14 Time: 16:01
Sample: 2 600
Included observations: 358
Excluded observations: 241
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2272.946	737.2522	3.082996	0.0022
EPS	-5.359713	6.653442	-0.805555	0.4211
EPS^2	0.015560	0.033389	0.466020	0.6415
DY	-126.4526	83.44576	-1.515387	0.1306
DY^2	5.286666	4.855010	1.088909	0.2770
LEV	48.53616	140.6249	0.345146	0.7302
LEV^2	-0.643069	1.382486	-0.465154	0.6421
LR	133.5740	754.6761	0.176995	0.8596
LR^2	-28.39000	137.7816	-0.206051	0.8369
REID	-1574.574	2849.989	-0.552484	0.5810
REID^2	1168.955	6136.505	0.190492	0.8490
SM	-62.05438	39.54724	-1.569120	0.1176
SM^2	0.491173	0.518492	0.947311	0.3442
AFFIN	-429.8870	332.8434	-1.291560	0.1974
AFFIN^2	71.34476	83.93111	0.850040	0.3959
SUO	149.8354	416.9161	0.359390	0.7195
SUO^2	-94.57800	83.54974	-1.131996	0.2585
DLNCPI	40.35671	56.77265	0.710848	0.4777
DLNCPI^2	0.716929	3.723084	0.192563	0.8474
DLNMS	-26.38020	352.7168	-0.074791	0.9404
DLNMS^2	-41.30209	55.01392	-0.750757	0.4533
DLNOP	73.05547	61.67557	1.184512	0.2371
DLNOP^2	-1.398144	5.044903	-0.277140	0.7818
DUNMR	-15.00295	12.41882	-1.208082	0.2279
DUNMR^2	-0.892036	0.492020	-1.813006	0.0707
SMR	-4.242746	10.62880	-0.399175	0.6900
SMR^2	0.193490	0.113034	1.711777	0.0879

R-squared	0.115143	Mean dependent var	1294.565
Adjusted R-squared	0.045637	S.D. dependent var	2952.166
S.E. of regression	2884.014	Akaike info criterion	18.84418
Sum squared resid	2.75E+09	Schwarz criterion	19.13684
Log likelihood	-3346.108	F-statistic	1.656604
Durbin-Watson stat	1.979292	Prob(F-statistic)	0.024936

Appendix M: Hausman Test (Second Model)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	37.932852	13	0.0003

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
EPS	-0.006773	-0.011498	0.002060	0.9171
DY	-0.682074	-0.470963	0.172365	0.6111
LEV	-0.077487	-0.234272	0.027627	0.3455
LR	-3.377457	-3.966535	8.790398	0.8425
REID	-29.308345	-9.498331	464.027044	0.3578
SM	-0.172291	-0.483465	0.030949	0.0769
AFFIN	-0.615463	-2.142420	9.812372	0.6259
SUO	-5.017515	-2.220317	2.609440	0.0833
DLNCPI	-0.935734	-1.010455	0.003441	0.2027
DLNMS	-1.466279	-1.898478	0.301327	0.4311
DLNOP	0.419092	0.511020	0.017618	0.4886
DUNMR	-0.113216	-0.011196	0.007739	0.2462
SMR	0.276147	0.304370	0.000255	0.0770

Cross-section random effects test equation:
Dependent Variable: ICSR
Method: Panel Least Squares
Date: 03/29/14 Time: 17:43
Sample: 2001 2010
Periods included: 10
Cross-sections included: 60
Total panel (unbalanced) observations: 358

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.11353	9.083918	2.324275	0.0208
EPS	-0.006773	0.075017	-0.090282	0.9281
DY	-0.682074	0.677380	-1.006930	0.3148
LEV	-0.077487	0.395133	-0.196104	0.8447
LR	-3.377457	4.964062	-0.680382	0.4968
REID	-29.30835	28.38887	-1.032388	0.3028
SM	-0.172291	0.270467	-0.637013	0.5246
AFFIN	-0.615463	4.432423	-0.138855	0.8897
SUO	-5.017515	3.404086	-1.473968	0.1416
DLNCPI	-0.935734	0.419368	-2.231294	0.0264
DLNMS	-1.466279	2.120613	-0.691441	0.4899
DLNOP	0.419092	0.562660	0.744841	0.4570
DUNMR	-0.113216	0.173925	-0.650945	0.5156
SMR	0.276147	0.073640	3.749930	0.0002

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.386899	Mean dependent var	8.682778
Adjusted R-squared	0.232010	S.D. dependent var	39.93881
S.E. of regression	35.00039	Akaike info criterion	10.12837
Sum squared resid	349132.7	Schwarz criterion	10.91965
Log likelihood	-1739.979	Hannan-Quinn criter.	10.44307
F-statistic	2.497914	Durbin-Watson stat	2.713502
Prob(F-statistic)	0.000000		

Appendix N: Critical Values for the Durbin-Watson Test: 1% significance level: Panel B