Appendix A. Literature Review.

In this section, we are supposed to review the studies that examined the exports of the petrochemical sector, but we are not aware of such studies to the best of our knowledge. To this end, below, we reviewed the studies that explored other dimensions of the Saudi petrochemical sector, such as financial performance, sustainability, competitiveness, and investments.

Skovgaard *et. al.* (2022) investigate the role of public financing in the petrochemical sector. The study analyzes public and private financial flows into large-scale petrochemical projects for the period 2010-20 and discusses the role of public financing at the macro level. In addition, the role of international and domestic public financing is analyzed in detail. Two petrochemical projects such as Sadara (Saudi Arabia) and Surgil (Uzbekistan), which received international and public financing, were analyzed as case studies.

Ghaithan (2021) and others discuss the sustainability of the plastics and petrochemical industries. The study examines the integrated impact of Industry 4.0 technologies and lean manufacturing on the sustainability performance of the plastics and petrochemical industries in Saudi Arabia. For this purpose, the authors had been used questionnaires among the plastic and petrochemical organizations in Saudi Arabia to assess three hypotheses. The first hypothesis at that Industry 4.0 technologies directly and positively affect the sustainability performance of plastic and petrochemical industries in Saudi Arabia. The second hypothesis considers Industry 4.0 technologies directly and positively influence lean manufacturing. The last hypothesis is about the indirect relation between Industry 4.0 technologies and sustainability performance is significantly mediated by lean manufacturing.

Based on the result of the survey and data reliability test the causal relationship (including direct linkage) between Industry 4.0 and lean manufacturing the structural equation modeling (SEM) approach and sustainability performance consisted of 17 latent factors. It was found that plastic and petrochemical industries in Saudi Arabia are on the border of implementing Industry 4.0 technologies and those technologies can have a substantial impact on the sustainability performance measures of plastic and petrochemical industries. The study also found that adopting Industry 4.0 technologies without lean manufacturing may not have a visible and immediate impact on sustainability performance, because lean manufacturing concentrates on developing the human aspect of organization sustainability. Another finding from hypothesis two is that Industry 4.0 technologies directly and positively enhance lean manufacturing practices. The study concludes that Industry 4.0 technology and lean manufacturing are powerful tools for advancement in achieving sustainability in the plastic and petrochemical sector.

Aljarallah (2020) analyze the impact of Saudi Arabia's accession to the WTO on the petrochemical industry and the sustainability of the sector's competitiveness under new conditions. The study uses a qualitative and quantitative approach to analyze the competitiveness of the petrochemical sector. As a qualitative approach, the authors used expert opinions collected through interviews with semi-structured questionnaires. Quantitatively, Porter's model was used to find out the

strengths, weaknesses, opportunities, and threats of the industry in terms of identifying competitive advantages of the Saudi petrochemical industry. The results of the study describe that the petrochemical sector has the potential to contribute to the growth of production, diversification of the economy, job creation, opening of new investment opportunities for companies, and opening of domestic markets for certain new products.

Anis et. al. (2020) study the financial performance of the petrochemical sector in Saudi Arabia. They analyze the financial data in two categories such as financial ratio analysis and financial variability analysis using the available data of petrochemical companies. They also study the impact of capital structure on the profitability of petrochemical companies. They found that in Saudi Arabia, the total debt ratio of petrochemical companies increases, and the companies adopt the policy of working with equity. In addition, the research found that the average profitability of the petrochemical industry in Saudi Arabia has declined recently. In 2004-2007, the average profitability of selected companies was 92.5%, but after the global recession, it dropped to 51.9%. The authors point out that the average profitability of the petrochemical industry in 2020 is in a negative situation due to lower sales prices, high production costs, and low demand in the international market. In general, the analysis of the financial ratios of the study shows that the petrochemical companies in Saudi Arabia have growth debt in the composition of the capital structure, while the operating performance and the use of resources show negative trends. The shareholders of the companies enjoy benefits from working on equity.

Al-Gamdi *et al.* (2006) analyze the competitive advantages of Saudi Arabia in the global petrochemical industry. For this purpose, they use Porter's model. The study concludes that the future success of the Saudi petrochemical industry depends on how the sector adapts its strategy to the changes in the main international market segments and the volatility of the global market. The study also concluded that Saudi Arabia's petrochemical industry has strategic advantages mainly due to increasing demand in the local and international markets and support from the Saudi government. The authors noted that the main challenges of the sector are dependence on skilled foreign labor, high cost of technology transfer, low productivity of Saudi labor due to lack of work motivation, etc. The study analyzed that the petrochemical industry has helped Saudi Arabia maintain its competitiveness. However, with the emerging global competition, a careful selection of strategies is needed to improve the country's competitiveness.

Alfares *et.al.* (2002) analyze the expansion of the Saudi Arabia petrochemical industry using the mixed integer linear programming model. The paper investigates the optimum planning for the future development of the Saudi petrochemical industry. The model considers a number of petrochemical products that are mainly aimed for export to the international market and are not limited to domestic consumption only. The model also provides an optimum set of products and associated technologies for the petrochemical industry. The objective of the model is to maximize the total annual profit. The constraints for the optimization are (i) limited raw materials availability, (ii) limited investment budget, and (iii) unique production-level do each product.

The study classifies four product categories such as propylene derivatives, ethylene derivatives, syngas derivatives, and aromatic derivatives, and is based on the potential of 23 petrochemical products and 54 production processes. The model estimates the production costs based on local conditions in Saudi Arabia. Production costs for each of the production processes are assumed to be a function of production capacity (level). Solving the model with inputs such as relevant production technologies, capacities, local production costs, and selling prices yield the recommended products under different scenarios of available capital investments and raw materials. The model results show that the investment opportunities in petrochemical production are very profitable, regardless of the investment strategy and availability of raw materials. The annual return on a $1 billion investment ranges from 69% to 83%, while the annual return on a $2 billion investment ranges from 45% to 73%. The sensitivity analysis has shown that the mode is quite sensitive to the availability of both capital and raw materials (ethylene and propylene).

Bardesi *et al.* (1996) examine the role of multinational enterprises and FDI in the growth of the petrochemical sector in Saudi Arabia. The study econometrically analyses the impact of the FDI on import and export in Saudi Arabia. The empirical analyses of the FDI inflows are initially associated with an immediate increase in imports, which refers to import creation. Thereafter, they happen to be associated with a decrease in imports, resulting in an "import substitution effect." In the end, exports increase because the projects come onstream ("export creation"). The authors analyzed the KSA petrochemical sector in two ways. First, they conducted a microeconomic analysis of the investment activity of the Saudi Basic Industries Cooperation (SABIC). Second, they estimated the impact of foreign direct investment on Saudi Arabia's imports and exports using polynomial distributed lag models. The study found that the import substitution effect starts after two years of import creation and the export creation effect becomes statistically significant after three years. They investigate the total exports of goods and services mostly focusing on the FDI perspective in addition to national income, and real effective exchange rate.

Although petrochemical is one of the promising industries of the Saudi economy and exports, to our knowledge there is a lack of studies that analyzed petrochemical export.

Appendix B. Data and Econometric Methodology.

B1. Data

For the empirical analysis, we use annual data for the period 1993 to 2020 for the variables in equations (1) and (2) in the main text. Following the existing literature on international trade, the real effective exchange rate was used as it is a more comprehensive measure of competitiveness than the bilateral real exchange rate. The real effective exchange rate is also considered a measure of price competitiveness in the international trade literature (see e.g., Balassa 1964; Samuelson 1964; UNCTAD 2012; Nagayasu 2017). For foreign income as a measure of demand for Saudi chemical and rubber-plastics exports, we consider the real GDP of the main importers of these products from Saudi Arabia rather than that of all Saudi Arabia's trading partners. In equations (1) and (2), we use the value-added of the non-oil manufacturing sector as a measure of the domestic production capacity of chemicals and rubber-plastics. Ideally, one should use the value-added of the petrochemicals sector given that the focus of the research project including this work is the petrochemical sector as mentioned in the Introduction section. We, however, use the value-added of non-oil manufacturing instead because of the following reason. We cannot pinpoint the exports of petrochemicals in the total exports of chemicals due to the data unavailability issue. As a result, we cannot extract the export of petrochemicals from the export of other chemicals and make them separate. In this case, chemical exports are larger than the value-added of petrochemicals.[1] Table B1 documents variables, their definitions, and sources.

Table B1. Variables and their descriptions.

Variable Notation	Variable Definition	Data Source
XGNOIL_CHEM	Chemical exports of Saudi Arabia, Million SAR in 2010 prices.	The data on chemical exports in nominal values in US$ Thousand are from World Integrated Trade Solution (WITS) online database.[2] WITS lists the following products under the export group named Chemicals: Inorganic chemicals, compounds of precious metals, radioactive elements; Organic chemicals; Pharmaceutical products; Fertilizers; Tanning/dyeing extract, tannins & derivatives, pigm; Essential oils & resinoids, perfume, cosmetic & toiletries; Soap, organic surface-active agents, washing pharmaceuticals; Albuminoidal subs, modified starches, glues; Explosives, pyrotechnic products, matches, pyrope; Photographic or cinematographic goods; Miscellaneous chemical products. The nominal values in US$ are converted into real values in SAR by multiplying the exchange rate and dividing by World non-fuel commodity price index, 2010=100.

[1] Even, in the case of modeling rubber-plastics exports, the value-added of petrochemicals should not be considered, as the latter is smaller than the former in some years of the period under consideration. This does not seem reasonable given that Saudi Arabia does not have a large volume of re-exports of rubber-plastics.

[2] https://wits.worldbank.org/CountryProfile/en/Country/SAU/StartYear/1991/EndYear/2019/TradeFlow/Export/Indicator/XPRT-TRD-VL/Partner/BY-COUNTRY/Product/28-38_Chemicals

XGNOIL_RP	Export of Rubber-plastics, Million SAR in 2010 prices.	The data on exports of rubber-plastics in nominal values in US$ Thousand are from WITS online database. WITS lists the following products under the export group named Plastic and Rubber: Plastics and articles thereof., and Rubber and articles thereof. The nominal values in US$ are converted into real values in SAR by multiplying the exchange rate and dividing by World non-fuel commodity price index, 2010=100.
REER_CHEM	Real exchange rate of SAR for Chemicals exports, 2010=100	The real effective exchange rate is measured as the nominal effective exchange rate multiplied by the ratio of the domestic price to the foreign price. For chemicals export, REER is calculated as: **REER_CHEM = NEER * PGDPPETCH / PF_CHEM** Were, **NEER** is based on the consumer price index, which equals 100 in the base year of 2010. The International Monetary Fund defines the NEER as the weighted average value of the local currency relative to several foreign currencies, divided by a price deflator. The data for 1991-1999 are from the International Financial Statistics of the International Monetary Fund and for 2000-2020 are from SAMA (2021). An increase in NEER means an appreciation of the Saudi riyal, and this is true for REER too. **PGDPPETCH** is the domestic price of the petrochemical sector, which equals 100 in the base year of 2010. It is calculated as the percentage ratio of nominal value added (in million SAR) to real value added (in million SAR of 2010 prices) of the petrochemical sector and obtained from GaStat via SAMA (2021). **PF_CHEM** is the average of the indexes of international price of three products from the Chemicals group. These are the international price of potassium fertilizer in USD/Tonne, the international price of propane in USD/Gallon, and the international price of Urea in USD/Tonne. They are from the IMF Primary Commodity Price Database. First, these prices were converted into indexes where 2010=100, then their average was calculated.
REER_RP	Real exchange rate of SAR for rubber-plastics exports, 2010=100	For rubber-plastics export, REER is constructed as: **REER_RP = NEER * PGDPPETCH / PF_RP** Where **PF_RP** is the international price of rubber in US cents per pound and retrieved from the IMF Primary Commodity Price Database. It was converted to an index, where 2010=100. Note that the selection of the above-given foreign/international prices for chemicals and rubber-plastics exports were dictated by the data availability and continuity for the period under consideration, 1993-2020.
GDPF_CHEM	Foreign GDP (constant 2015 US$) for chemicals exports	The main destination of Saudi chemicals export is East Asia and the Pacific, especially China. Therefore, we considered Chinese GDP as the measure of foreign income. The data are measured in USD in 2010 prices and taken from World Development Indicators (WDI, 2021).[3]
GDPF_RP	Foreign GDP (constant 2015 US$) for rubber-plastics exports	The main destination of Saudi rubber-plastic export is the Middle East and North Africa (MENA) and East Asia and Pacific regions.

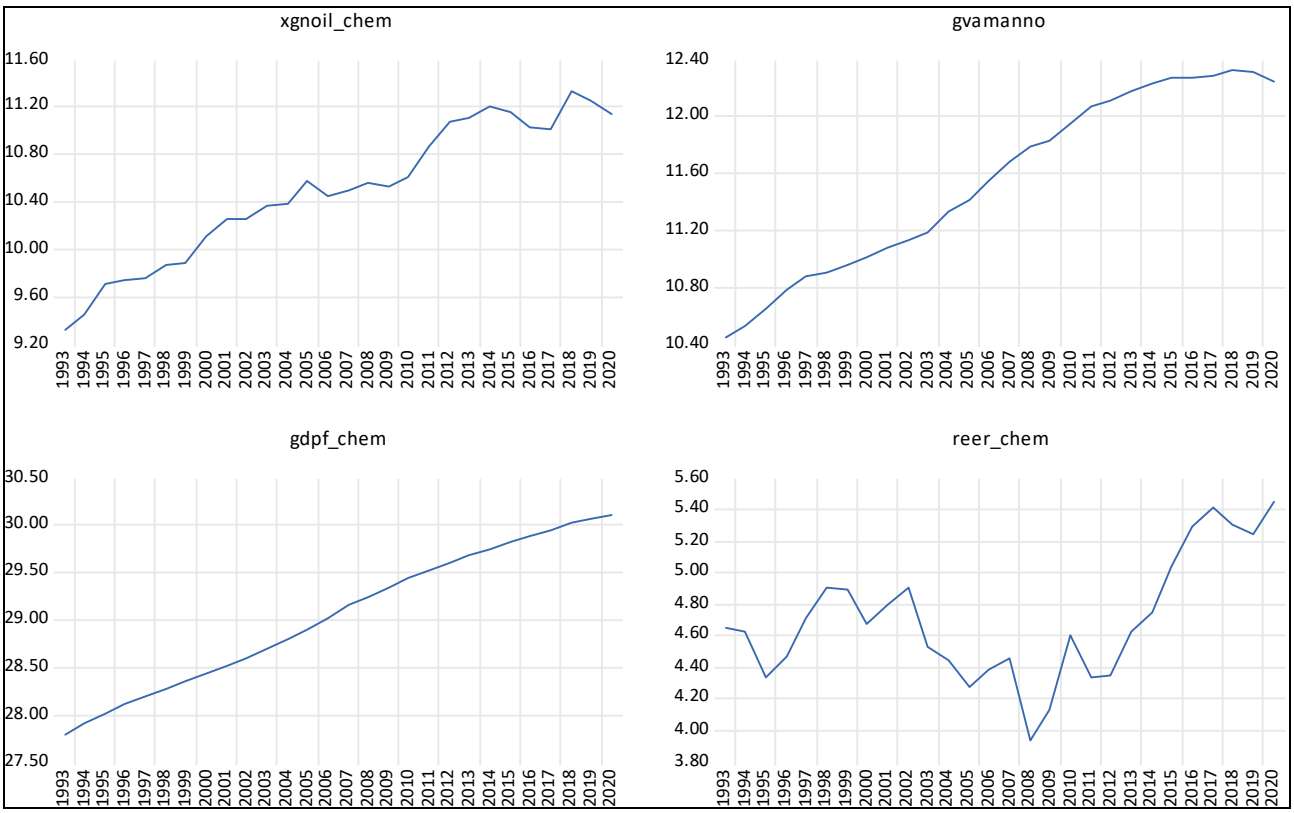
[3] We have also considered the GDP of East Asia and Pacific from WDI (2021), but Chinese GDP yields more statistically significant results in the regression analysis.

		Therefore, we considered the sum of these two regions' GDPs as the measure of foreign income. The data are measured in USD in 2015 prices and obtained from WDI (2021).
GVAMANNO	Gross value added in non-oil manufacturing, Million SAR in 2010 prices.	The values are from GaStat via SAMA (2021) Yearly Statistics.

Figures B1 (panels A and B) show the natural logarithms and growth rates, respectively, of the variables used in the chemical exports equation. Figure B2 (panels A and B) shows the natural logarithms and growth rates of the variables used in the rubber-plastics export equation. Lowercase letters denote the natural logarithmic expression of a particular variable.

Figure B1. Graphs of the log levels and growth rates of the variables for Chemical exports

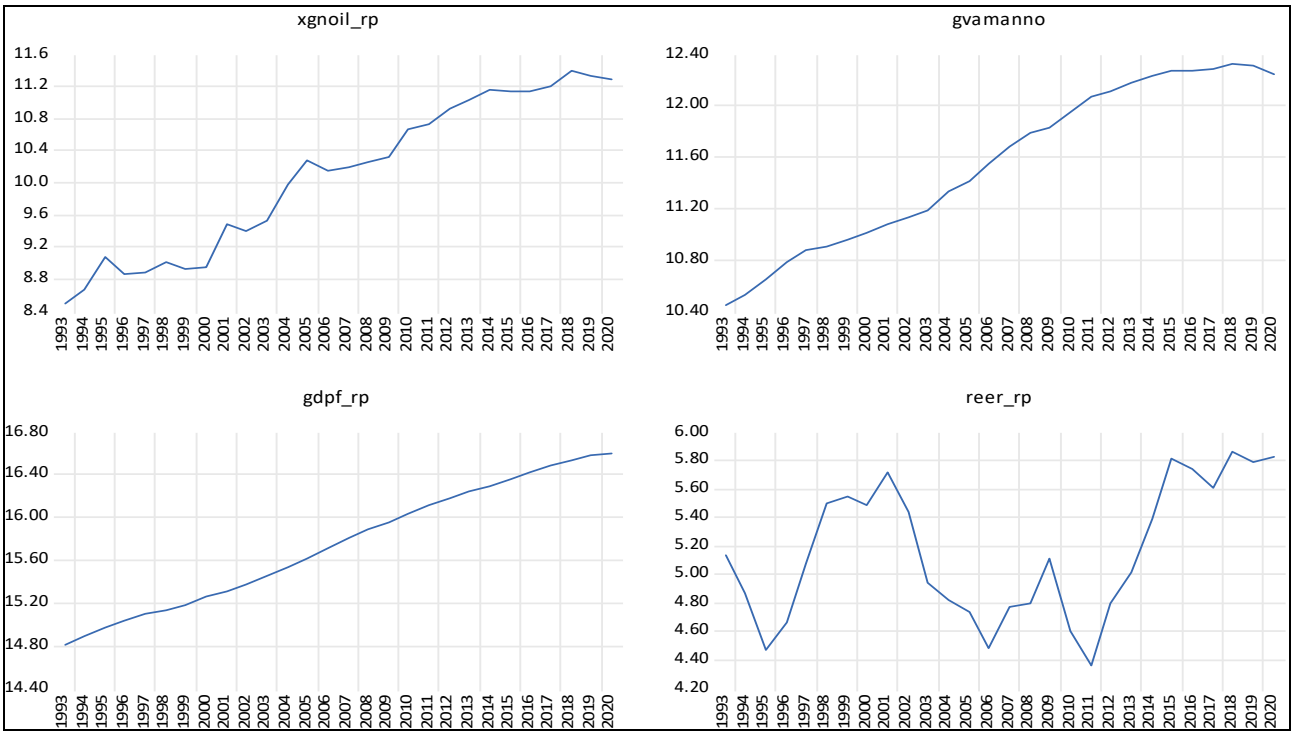
Panel A. Log levels of the variables



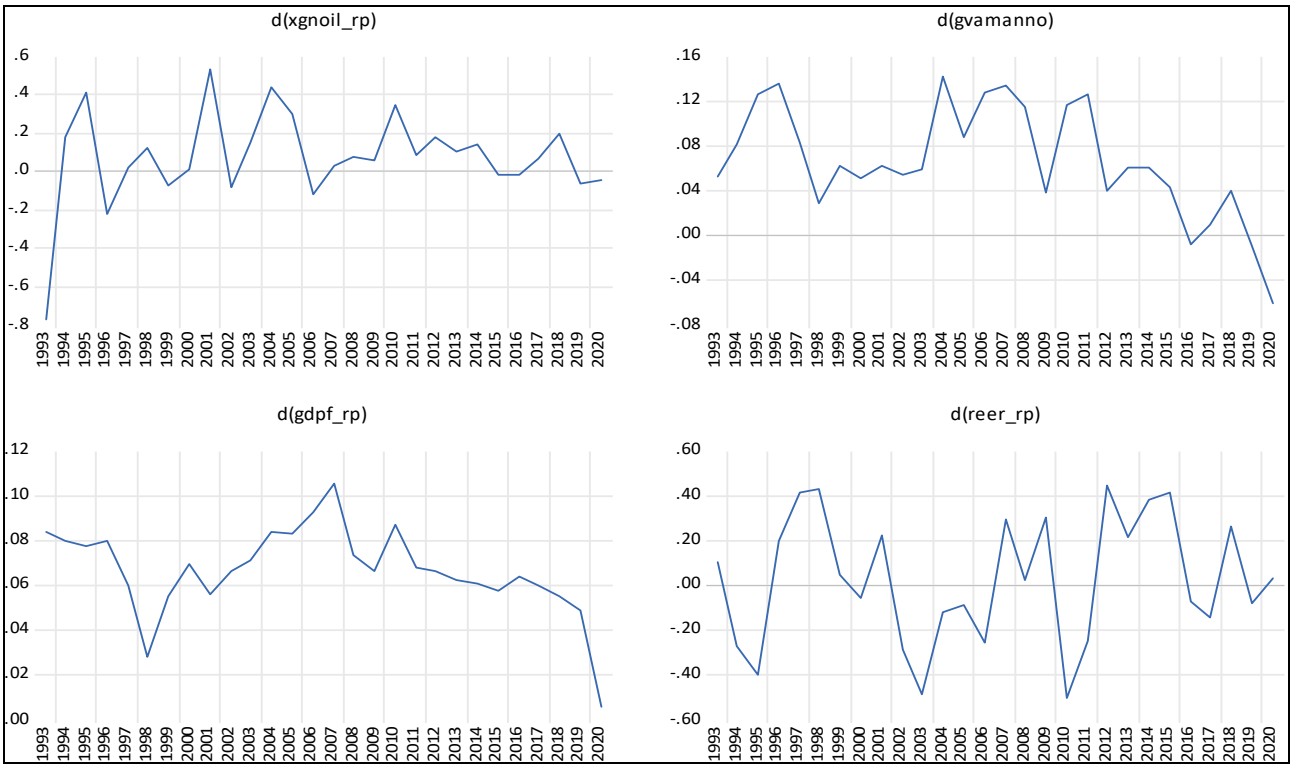
Panel B. Growth rates of the variables

Figure B2. Graphs of the log levels and growth rates of the variables for rubber-plastics exports

Panel A. Log levels of the variables



Panel B. Growth rates of the variables



B2. Econometric Methodology

In this study, for the long-run estimations, we use the autoregressive distributed lags (ADL) approach following Hendry (2020), Hendry and Juselius (2000), Hendry and Juselius (2001), and Castle et al. (2022) among others. It captures both the long-term and short-term dynamics of the process at hand. It has been shown in the literature that the ADL method can provide more consistent estimates in small samples compared to other alternative methods (Banerjee et al. 1993; Pesaran and Shin 1999; Pesaran et al. 2001; Enders 2015). In particular, Chudik et al. (2017) state that the ADL approach is valid regardless of whether the regressors are exogenous or endogenous (see, e.g., Pesaran and Shin 1999; Pesaran, 1997; Pesaran and Smith, 1995).[4] We perform the ADL approach in the context of the general-to-specific (*Gets*) framework using *Autometrics* - a machine learning modeling algorithm (see, e.g., Ericsson, 2021). Computer technology is used in *Autometrics* for model selection within the framework of the *Gets* method. This approach involves several steps as described by Hendry and Krolzig (2005) inter alia. First, the general unconstrained model (GUM) is specified based on a combination of theory- and data-driven approaches. If GUM passes all post-estimation diagnostic tests (e.g., tests for autocorrelation of residuals, the ARCH effect, normality, heteroskedasticity, and the RESET test for misspecification of the functional form) at the specified significance level (the so-called target level), it is considered as a congruent GUM. Otherwise, supersaturation explained below can be performed for the initial GUM to pick up any type of dummy variables to satisfy post-estimation tests. The resulting specification is called congruent GUM. The next step is the multiple-path reduction of the GUM. This phase is quite extensive compared to the others. It performs a tree search with the congruent GUM as the root and each branch as a possible reduction path from GUM. Each branch starts with the elimination of one of the insignificant variables from the congruent GUM and ends with a terminal model that should pass all diagnostic tests. The compassing test and tiebreak based on Schwarz's information criterion can be used to select a final model among the terminal models.

Note that the supersaturation feature of *Autometrics* allows for impulse indicator saturation (IIS) for outliers, step indicator saturation (SIS) for location shifts, differenced impulse indicator saturation (DIIS) for blip type outliers, and trend indicator saturation (TIS) for trend breaks to be

[4] Following a recommendation by an anonymous referee, we have also conducted System of Simultaneous Equations (SSE) estimations to address a potential endogeneity issue that might occur between exports and output, given that the former is a component of the latter. Our SSE estimations consists of two equations: one for exports and another for domestic output. We performed SSE estimations twice, as we have two exports products: chemicals and rubber-plastics. The chosen estimation method is two-stage least squares, utilizing lagged values of the variables and other variables as instruments. The post-estimation test results reveal that the residuals of the estimated equations exhibit no issues such as autocorrelation/serial correlation and non-normality. Additional estimation and test results are available from the authors upon request. The magnitudes of the estimated coefficients derived from the SSE approach are as follows: -0.29**, 0.18**, and 0.63*** for $reer\_chem, gdpf\_chem,$ and $gvamanno$, respectively in the $xgnoil\_chem$ equation. Similarly, -0.16*, 1.50**, 0.19 for $reer\_rp, gdpf\_rp,$ and $gvamanno$, respectively in the $xgnoil\_rp$ equation. These coefficients are very close to those obtained from the ADL approach in Panel C of Table 1.

considered in the model selection process. Model selection by *Autometrics* with tight significance levels and bias correction is a useful approach that allows for outliers and shifts, omitted variables, incorrect distributional shape; non-stationarity; misspecification; and non-linearity (see i.e. Castle et al, 2011, 2012, 2015; Hendry and Doornik, 2014; Bergamelli and Urga, 2016; Doornik, 2009; Doornik and Hendry, 2021a; Hendry, 2020; Castle et. al. 2021; Pellini, 2021 among others). Including the N number of each saturation type, i.e., IIS, SIS, DIIS, and TIS makes the number of regressors a few times larger than the number of observations in the model selection process. It is obvious that conventional methods are not applicable in such situations. This problem can be handled by *Autometrics* because it uses a block search method for the saturations.[5] Monte Carlo simulations show that *Autometrics* outperforms other machine learning methods such as LASSO (least absolute shrinkage and selection operator) in retaining relevant regressors and excluding irrelevant regressors and has better small sample properties. In addition, *Autometrics* has the option to treat certain regressors as unrestricted, meaning that they are forcibly retained in the final model - they cannot be excluded during the model selection process even if they are statistically insignificant. Based on the features described above, the literature proves that *Gets* with *Autometrics* has many advantages over traditional and other machine learning methods (See e.g., Epprecht et al., 2021; Desboulets, 2018; Castle et al., 2011).

We estimated the ADL specifications for the export equations (1) and (2) with *Autometrics* in the *Gets* framework in the PcGive toolbox in OxMetrics 8.0 (Doornik, 2009, chap. 4; Doornik and Hendry, 2009). To this end, we followed Hendry (2020) and Castle et al. (2021a, b, c) as they provide comprehensive guidance on the application of *Gets* using *Autometrics* with supersaturation.

Since we work with time series data, we examine whether our variables are non-stationary. For this exercise, the augmented Dickey-Fuller test (ADF, Dickey and Fuller, 1979) and the Phillips-Perron test (PP, Phillips and Perron, 1988) unit root tests are employed. The KPSS - Kwiatkowski-Phillips-Schmidt-Shin (1992) test is also used if further testing is needed.

[5] It establishes blocks of saturations, i.e., dummies for subsets of observations, includes one block in the model, retains significant dummies, repeats the process for another block, and finally re-estimates the model with the retained dummies from the different blocks and selects the statistically significant dummies from the combined set. IIS is a pulse dummy variable that takes a value of one for a given date and zero otherwise, SIS is a shift dummy variable which takes values of one from a given date onward and zero otherwise, TIS is a cumulative series of SIS while DIIS is the first difference of IIS. IIS and SIS are used to capture one-time temporary break and permanent break, respectively, while TIS accounts for a break in trend development of the data (see discussions in Castle et al., 2014, 2015; Pellini, 2021 inter alia).

Appendix C. The Unit Root Test and Long-term Estimation Results.

C1. Unit Root Test Results

The results of the ADF, Phillips-Perron (PP), and KPSS tests are reported in Table C1. From the statistics of the ADF and PP tests, we can conclude that all variables included in our analysis follow unit root processes. The null hypothesis of a unit root process cannot be rejected for all variables, even at the 10% significance level. However, the results of the ADF and PP tests both strongly reject the null hypothesis for first differences, except for $gvamanno$, $gdpf\_chem$, and $gdpf\_pr$. These results indicate that $xgnoil\_chem$, $xgnoil\_pr$ and $reer$ are non-stationary at the level and stationary at their first differences, i.e. I (1). In contrast, the null hypothesis of unit root for $gvamanno$ $gdpf\_chem$ and $gdpf\_pr$ in their first difference cannot be rejected.

Table C1. Unit root tests results

Panel A. The ADF unit root test

Level					First Difference	
Variables	t-stat	*C*	*T*	k	t-stat	*C*
$xgnoil\_chem$	-0.607	x		0	-6.067[a]	x
$gdpf\_chem$	-1.270	x		1	-1.762[c]	
$reer\_chem$	-1.393	x	x	0	-5.134[a]	x
$gvamanno$	-2.109	x		1	-2.646	x
$xgnoil\_rp$	-0.274	x		0	-7.139[a]	x
$gdpf\_rp$	-1.367	x		1	-1.281	x
$reer\_rp$	-2.248	x	x	1	-4.121[a]	x
Panel B. The PP Unit Root Test						
$xgnoil\_chem$	-0.432	x		0	-10.21[a]	x
$gdpf\_chem$	-2.514	x		0	-1.714[c]	
$reer\_chem$	-1.250	x	x	0	-5.095[a]	x
$gvamanno$	0.809	x	x	0	-2.621	x
$xgnoil\_rp$	-0.217	x		0	-7.245[a]	x
$gdpf\_rp$	-1.412	x		0	-1.227	x
$reer\_rp$	-1.323	x		0	-4.058	x
Panel C. The KPSS Unit Root Test						
$gdpf\_chem$	0.782*	x			0.361	x
$gdpf\_rp$	0.782*	x			0.162	x
$gvamanno$	0.772*	x			0.340	x

Notes: The maximum lag order is set to two, and the optimal lag order (k) is selected based on the Schwarz criterion. a, b and c indicate rejection of the null hypothesis of unit root at the 1%, 5%, and 10% significance levels, respectively. The critical values for the ADF and PP tests are taken from MacKinnon (1996). * Indicates reject the null hypothesis of stationarity at a 1% significance level. The critical values for the KPSS test are taken from Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1). Note that the final UR test equation can take one of three options of the deterministic regressors: intercept (C), intercept and trend (T), or none of these. x indicates that the corresponding option is selected in the final UR test equation based on the statistical significance of the deterministic regressors.

Source: Authors own estimations.

DeJong et al. (1992) argue that the ADF and PP tests are biased upward in rejecting the null hypothesis of a unit root and have little explanatory power over the alternative hypothesis that the series is stationary. We have used the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test to find

the unit root process of $gdpf\_chem$ and $gdpf\_pr$ on the level and in the first difference. The null hypothesis of the KPSS test is that the variable under consideration is stationary. KPSS unit root test results for $gvamanno$, $gdpf\_chem$, and $gdpf\_pr$ are reported in Panel C of Table C1. The results of the KPSS test show that the null hypothesis of stationarity is rejected at the level because the KPSS statistic is greater than the critical value at the 1% significance level. However, for the first differences of the variables, the null hypothesis of stationarity cannot be rejected because the KPSS statistic is smaller than the critical value at the 10% significance level. From this, we conclude that all variables are non-stationary in their log levels but stationary in the first differences of their log levels. In other words, they can be considered as an I(1) series. This conclusion is supported by the results of the ADF, the PP, and the KPSS test.

C2. The Long-run Estimation Results from ADL in *Gets* framework using *Autometrics.*

For long-run estimation of equations (1) and (2) in the main text, a GUM of ADL specification was formulated with two lags of all variables and contemporaneous values of the explanatory variables. The estimated GUM specification for both export equations has successfully passed all residual diagnostic tests as well as the recursive estimation (stability) tests. For robustness analysis, all the regressors in the GUM were fixed (retained) and *Autometrics* was run with the option of Large Residuals with the target size of 5% to see if the initial GUM ADL specification needs to include any dummy variable to capture any outliers if they exist.[6] *Autometrics* picks up no dummy variable. This again confirms that the initial GUM ADL specification is statistically congruent and can be used to select the parsimonious/final specification.[7]

In the second phase, we ran *Autometrics* with the option of None on the congruent GUMs of chemicals equation and rubber-plastics equation at the target sizes of 5% and 10% respectively.[8] The final conditional ADL specifications for chemicals and rubber-plastics exports are presented in Panel A of Table 1. They pass all diagnostic tests such as autocorrelation, ARCH effect, heteroskedasticity, normality, and RESET. The results are reported in Panel B of Table 3.

[6] This target size is quite large and hence, the chance of picking up dummy variable(s) is very high as discussed in Castle et al. (2021a, b, c).

[7] To perform a robustness analysis, *Autometrics* was run with the Large Residuals option and a target size of 2.5%. *Autometrics* does not pick up any dummy variables. This is further evidence of the statistical congruence of the initial specification of GUM ADL.

[8] As noted in the literature, various options can be considered regarding fixing regressors to be part of the final specification before running Autometrics depending upon research purposes (e.g., see Castle et al., 2022; Castle et al., 2021a, b; Pellini, 2021; Hendry and Krolzig 2005). For example, if Autometrics is run on an ADL specification for a cointegration analysis, then a researcher may want to fix autoregressive term to have it part of the final specification, otherwise cointegration analysis cannot be conducted if Autometrics drops this term. Or a researcher can fix theoretically articulated regressors or any other regressors that s/he wants to retain in the final specification. In this regard, we fixed only $xgnoil\_chem_{t-1}$ in the export equation of chemicals, and $xgnoil\_rp_{t-1}$ and $gvamanno$ in the export equation of rubber-plastics. We selected the option of None meaning no saturation effect because we already ran Autometrics on GUMs with the options of Large Residuals and Saturation Estimations, which included IIS, SIS, DIIS, and TIS.

Finally, we used the final conditional ADL specification and performed the long-term static analysis. The results are shown in Panel C of Table 3. Apparently, the estimated log run coefficients have theoretically expected signs. In addition, they are statistically coherent: all the coefficients appear statistically significant expect for $gvamanno$ in rubber-plastics equation, but the Wald test of joint significance of explanatory variables yields the sample chi-squared value of 963.3, which shows statistical significance at the 1% level. The same test for the for chemicals equation yields the sample chi-squared value of 10131.8 indicating statistical significance at the 1% level again. Lastly, the single equation cointegration test, referred to as the ECM-based cointegration test (see Ericsson and MacKinnon, 2002), was conducted to determine whether the variables establish a long-term relationship.

Appendix D. Petrochemical sector relations in the KGEMM and scenario analysis results.

Please note we put Tables D1 and D2 here for readers' convenience in understanding petrochemical sector relations, although the contents of the tables are also given in Appendix E.

Table D1. Petrochemical sector relations in the KGEMM

1.	Value-added demand side	LOG(GVAPETCH) = 0.31 * LOG(TDPETCH) + 0.54 * LOG(DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) + 0.38 * LOG(DELE_IND) + 4.70 - 0.20 * DSH2008 + ECT_GVAPETCH
2.	Value-added supply side	LOG(GVAPETCH_POT) = 0.31 * LOG(ETPETCH) + 0.43 * LOG(CAPPETCH) + 3.96 + 0.24 * DST0312 - 0.29 * DP2012 + GAP_GVAPETCH
3.	Employment	LOG(ETPETCH) = 1.65 * LOG(GVAPETCH) - 1.21 * LOG(WPETCH) - 3.85 + 0.05 * @TREND + ECT_ETPETCH
4.	Investments	LOG(IFPETCH) = 2.72 * LOG(GVAPETCH) + 2.24 * LOG(RER) - 0.13 * RRLEND1 - 20.72 + ECT_IFPETCH
5.	Capital Stock	CAPPETCH = CAPPETCH(-1) * 0.79 + IFPETCH
6.	Exports of Chemicals	LOG(XGNOIL_CHEM) = 0.19 * LOG(GDPF_CHEM) + 0.61 * LOG(GVAMANNO) - 0.28 * (LOG(NEER) + LOG(PGDPPETCH) - LOG(PF_CHEM1)) - 0.67 + ECT_XGNOIL_CHEM
7.	Exports of Rubber- Plastics	LOG(XGNOIL_RP) = (- 14.84 - 20.76) + 1.50 * LOG(GDPF_RP) - 0.18 * (LOG(NEER) + LOG(PGDPPETCH) - LOG(PF_RUBBER / 165.72 * 100)) + 0.19 * LOG(GVAMANNO) + ECT_XGNOIL_RP
8.	Ethane	LOG(DETH_IND_NEU) = - 0.14 * LOG(PETH_IND_NEU / PGDPPETCH * 100) + 0.71 * LOG(GVAPETCH) - 4.19 - 0.21 * DSH000102 - 0.19 * DP2008 + ECT_DETH_IND_NEU
9.	LPG	LOG(DLPG_IND_NEU) = - 0.14 * LOG(PLPG_IND_NEU / PGDPPETCH * 100) + 0.53 * LOG(GVAPETCH) - 2.93 + 0.17 * DTB9501 - 0.47 * DSH2003 + ECT_DLPG_IND_NEU
10.	Naphtha	LOG(DNAP_IND_NEU) = - 0.07 * LOG(PNAP_IND_NEU / PGDPPETCH * 100) + 1.49 * LOG(GVAPETCH) - 11.63 - 0.04 * @TREND - 1.28 * DST9091 - 0.33 * DSH2018 + ECT_DNAP_IND_NEU
11.	Methane	LOG(DNGA_IND_NEU) = - 0.08 * LOG(PNGA_IND_NEU / PGDPPETCH * 100) + 0.35 * LOG(GVAPETCH) - 1.76 + 0.06 * TI2009 + 0.12 * S12001 + ECT_DNGA_IND_NEU
12.	Intermediate Demand	IDPETCH = 0.002 * GVAOIL + 0.03 * GVAMINOTH + 0.33 * GVAPETCH + 0.007 * GVAMANNOLPC + 0.00003 * GVAU + 0.005 * GVACON + 0.0008 * GVADIS + 0.0005 * (GVATRACOM - GVATRAPIPE) + 0.0003 * GVAAGR + 0.0004 * GVAFIBU + 0.001 * GVAGOV + 0.0006 * GVAOTHS + DIS_IDPETCH
13.	Final Demand	FDPETCH = 0.23 * CONS + 0.00000007 * GC + 0.00 * IFOIL + 0.001 * IFNOILP + 0.0002 * GI + 0.00 * XGOIL + 0.59 * XGNOIL + 0.00 * XS + DIS_FDPETCH
14.	Total Demand	TDPETCH = IDPETCH + FDPETCH
15.	Output Gap	GAP_GVAPETCH = GVAPETCH - POT_GVAPETCH
16.	Unit Labor Cost	ULCPETCH = WPETCH * ETPETCH / GVAPETCH
17.	Producer Price	LOG(PGDPPETCH) = 0.17 * LOG(PF_PETCH) + 1.69 * LOG(GVANOIL_Z / GVANOIL * 100) + 0.14 * LOG(PELE_IND) + 0.24 * LOG(ULCPETCH) - 4.18 - 0.04 * @TREND + 0.59 * DSH2008 + 0.42 * DP2007 + ECT_PGDPPETCH
18.	Weighted average price of feedstock for petrochemicals, SAR/TOE	PF_PETCH = DETH_IND_NEU / (DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) * PETH_IND_NEU + DLPG_IND_NEU / (DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) * PLPG_IND_NEU + DNAP_IND_NEU / (DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) * PNAP_IND_NEU + DNGA_IND_NEU / (DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) * PNGA_IND_NEU
19.	Weighted average price of energy for petrochemicals, SAR/TOE	PE_PETCH = (DNGA_IND/(DNGA_IND+DELE_IND))* PNGA_IND + (DELE_IND/(DNGA_IND+DELE_IND))* PELE_IND
20.	Non-oil manufacturing	GVAMANNO = GVAMANNOLPC + GVAPETCH
21.	Non-oil manufacturing potential	POT_GVAMANNO = POT_GVAMANNOLPC + POT_GVAPETCH

Source: The table was re-produced from Hasanov et al. (2023), except for # 6, 7, 16, 19, 20, and 21.

Table D2. Variables and their definitions

#	Mnemonic	Description and unit
1.	CAPPETCH	Capital Stock for Petrochemical, real, Million SAR at 2010 prices.
2.	CONS	Consumption, private, real, Million SAR at 2010 prices
3.	DELE_IND	Demand for electricity in industrial sector, MTOE
4.	DETH_IND_NEU	Demand for Ethane in Industry Sector, Non-Energy Use, MTOE
5.	DIS_CAPPETCH	Discrepancy term for the identity of CAPPETCH
6.	DIS_FDPETCH	Discrepancy term for the identity of FDPETCH
7.	DIS_IDPETCH	Discrepancy term for the identity of IDPETCH
8.	DLPG_IND_NEU	Demand for Liquefied Petroleum Gases in Industry, Non-Energy Use, MTOE
9.	DNAP_IND_NEU	Demand for Naphtha in Industry Sector, Non-Energy Use, MTOE
10.	DNGA_IND	Final Demand for Natural Gas in Industry Sector, MTOE
11.	DNGA_IND_NEU	Demand for Natural Gas (Methane) for Non-Energy Use, MTOE
12.	DP2008	Dummy variable, taking unity in 2008 and zero otherwise.
13.	DP2012	Dummy variable, taking unity in 2012 and zero otherwise.
14.	DSH000102	Dummy variable, taking unity in 2000, 2001 and 2002 and zero otherwise.
15.	DSH2003	Dummy variable, taking unity since 2003 and zero before 2003.
16.	DSH2008	Dummy variable, taking unity since 2008 and zero before 2008.
17.	DSH2018	Dummy variable, taking unity since 2018 and zero before 2018.
18.	DST0312	Dummy variable, taking unity from 2003 to 2012 and zero otherwise.
19.	DST9091	Dummy variable, taking unity from 1990 to 1991 and zero otherwise.
20.	DTB9501	Dummy variable, taking value from negative unity in 2001 to negative 7 in 1995 and zero otherwise (generated from Autometrics in OxMetrics).
21.	ECT_DETH_IND_NEU	Error Correction Term from the Long-run Equation of DETH_IND_NEU
22.	ECT_DLPG_IND_NEU	Error Correction Term from the Long-run Equation of DLPG_IND_NEU
23.	ECT_DNAP_IND_NEU	Error Correction Term from the Long-run Equation of DNAP_IND_NEU
24.	ECT_DNGA_IND_NEU	Error Correction Term from the Long-run Equation of DNGA_IND_NEU
25.	ECT_ETPETCH	Error Correction Term from the Long-run Equation of ETPETCH
26.	ECT_GVAPETCH	Error Correction Term from the Long-run Equation of GVAPETCH
27.	ECT_IFPETCH	Error Correction Term from the Long-run Equation of IFPETCH
28.	ETPETCH	Employment in petrochemicals, Person Thousand
29.	FDPETCH	Final Demand in Petro-Chemical, real, Million SAR at 2010 prices
30.	GAP_GVAPETCH	Gap from production function of GVAPETCH
31.	GC	Consumption, government, real, Million SAR at 2010 prices
32.	GI	Investment, government, real, Million SAR at 2010 prices
33.	GVAAGR	Gross value added in agriculture and forestry, real, Million SAR at 2010 prices
34.	GVACON	Gross Value Added, Construction, real, Million SAR at 2010 prices
35.	GVADIS	Gross value added in retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices
36.	GVAFIBU	Gross value added in financial and business services, real, Million SAR at 2010 prices
37.	GVAGOV	Gross value added in public administration, real, Million SAR at 2010 prices
38.	GVAMANNOLPC	Gross value added in non-oil manufacturing excluding petrochemical, real, Million SAR at 2010 prices
39.	GVAMINOTH	Gross value added in non-oil extraction, real, Million SAR at 2010 prices
40.	GVANOIL	Gross value added, Non-oil Sector, real, Million SAR at 2010 prices
41.	GVANOIL_Z	Gross value added, non-oil, nominal, Million SAR
42.	GVAOTHS	Gross Value Added in other services, excluding arts, entertainment, and recreation, real, Million SAR at 2010 prices

43.	GVAPETCH	Gross value added in petrochemicals, real, Million SAR at 2010 prices
44.	GVATRACOM	Gross value added in transport and communication, real, Million SAR at 2010 prices
45.	GVATRAPIPE	Gross value added in pipeline transportation hydrocarbon, real, Million SAR at 2010 prices
46.	GVAU	Gross Value Added, Utilities, real, Million SAR at 2010 prices
47.	IDPETCH	Intermediate Demand for Petro-Chemical, real, Million SAR at 2010 prices
48.	IFNOILP	Investments, Non-oil, Private Sector, real, Million SAR at 2010 prices
49.	IFOIL	Investment, Oil sector, real, Million SAR at 2010 prices
50.	IFPETCH	Investment in Petro-chemical, real, Million SAR at 2010 prices
51.	PELE_IND	Electricity Price for Industry Sector, SAR/TOE
52.	PETH_IND_NEU	Ethane price in Saudi Arabia, SAR /TOE
53.	PGDPPETCH	GDP Deflator, Petrochemicals, 2010=100
54.	PLPG_IND_NEU	LPG price SAR /TOE
55.	PNAP_IND_NEU	Naphtha price SAR/TOE
56.	PNGA_IND	Price of Natural Gas, SAR/TOE
57.	PNGA_IND_NEU	Methane price in Saudi Arabia SAR/TOE
58.	POT_GVAPETCH	Potential output in petrochemicals, real, Million SAR at 2010 prices
59.	PF_PETCH	Weighted average price of feedstock for petrochemicals, SAR/TOE
60.	PE_PETCH	Weighted average price of energy for petrochemicals, SAR/TOE
61.	RER	Real Exchange Rate of SAR against per USD
62.	RRLEND1	Real interest rate, lending, %
63.	S12001	Dummy variable, taking unity from 1970 to 2001 and zero otherwise (generated from Autometrics in OxMetrics).
64.	TDPETCH	Total demand for Petro-Chemical, real, Million SAR at 2010 prices
65.	TI2009	Dummy variable, taking value from negative 1 in 2009 to negative 20 in 1990 and zero otherwise (generated from Autometrics in OxMetrics).
66.	WPETCH	Wage rate in Petro-chemical, SAR
67.	XGNOIL	Exports of Goods, Non-oil, real, Million SAR at 2010 prices
68.	XGOIL	Real Exports goods, Oil, real, Million SAR at 2010 prices
69.	XS	Exports, services, real, Million SAR at 2010 prices

Source: The table was re-produced from Hasanov et al. (2023), except for # 17, 19, 59, and 60.

Table D3. Impact of the foreign price and domestic price reform shocks on selected economic indicators in the long run.

Indicator	Period average	Percentage change deviation from Business as Usual			
		Scenario 1 Foreign price increase	Scenario 2 Domestic prices reform	Scenario 3 Domestic prices reform+ Mitigation	Scenario 4 Domestic prices reform + Mitigation+ Localization
		Panel A	Panel B	Panel C	Panel D
Chemicals exports	2023-2025	3.39	-0.09	0.53	2.26
	2026-2030	3.60	-0.11	0.61	2.32
	2031-2035	3.87	-0.11	0.60	2.18
Rubber-Plastics exports	2023-2025	1.97	-0.07	0.14	0.70
	2026-2030	2.04	-0.08	0.17	0.73
	2031-2035	2.14	-0.08	0.18	0.70
Non-oil exports	2023-2025	1.54	-0.05	0.18	0.82
	2026-2030	1.68	-0.06	0.22	0.86
	2031-2035	1.96	-0.07	0.23	0.87
Non-oil value added	2023-2025	0.33	-0.05	0.36	1.12
	2026-2030	0.50	-0.09	0.45	1.29
	2031-2035	0.73	-0.11	0.48	1.37
Export diversification*	2023-2025	0.33	-0.09	-0.02	0.17
	2026-2030	0.37	-0.08	0.00	0.19
	2031-2035	0.47	-0.07	0.02	0.23
Economic diversification*	2023-2025	0.08	-0.06	0.04	0.23
	2026-2030	0.12	-0.08	0.05	0.26
	2031-2035	0.17	-0.08	0.06	0.27

Note. * Absolute deviation from Business as Usual.

Source: Authors own assessment.

Appendix E. KGEMM Behavioral Equations and Identities. KGEMM Variables

E1. KGEMM Behavioral Equations and Identities

Please note that the tables in this section were re-produced from Hasanov et al. (2023).

The tables below report the identities and estimated long-run equations while the estimated final ECM specifications are reported in Appendix B of Hasanov et al. (2023).

Table 7.1. Real Block Equations and Identities (demand-side and supply-side)

7.1.1. Demand-Side

Identities for Intermediate, Final and Total Demand by Economic Activity Sector

Intermediate Demand

IDAGR = A1 * GVAOIL + A2 * GVAMINOTH + A3 * GVAPETCH + A4 * GVAMANNOLPC + A5 * GVAU + A6 * GVACON + A7 * GVADIS + A8 * (GVATRACOM - GVATRAPIPE) + A9 * GVAAGR + A10 * GVAFIBU + A11 * GVAGOV + A12 * GVAOTHS + DIS_IDAGR (1)

IDCON = B1 * GVAOIL + B2 * GVAMINOTH + B3 * GVAPETCH + B4 * GVAMANNOLPC + B5 * GVAU + B6 * GVACON + B7 * GVADIS + B8 * (GVATRACOM - GVATRAPIPE) + B9 * GVAAGR + B10 * GVAFIBU + B11 * GVAGOV + B12 * GVAOTHS + DIS_IDCON (2)

IDDIS = C1 * GVAOIL + C2 * GVAMINOTH + C3 * GVAPETCH + C4 * GVAMANNOLPC + C5 * GVAU + C6 * GVACON + C7 * GVADIS + C8 * (GVATRACOM - GVATRAPIPE) + C9 * GVAAGR + C10 * GVAFIBU + C11 * GVAGOV + C12 * GVAOTHS + DIS_IDDIS (3)

IDFIBU = D1 * GVAOIL + D2 * GVAMINOTH + D3 * GVAPETCH + D4 * GVAMANNOLPC + D5 * GVAU + D6 * GVACON + D7 * GVADIS + D8 * (GVATRACOM - GVATRAPIPE) + D9 * GVAAGR + D10 * GVAFIBU + D11 * GVAGOV + D12 * GVAOTHS + DIS_IDFIBU (4)

IDGOV = E1 * GVAOIL + E2 * GVAMINOTH + E3 * GVAPETCH + E4 * GVAMANNOLPC + E5 * GVAU + E6 * GVACON + E7 * GVADIS + E8 * (GVATRACOM - GVATRAPIPE) + E9 * GVAAGR + E10 * GVAFIBU + E11 * GVAGOV + E12 * GVAOTHS + DIS_IDGOV (5)

IDMANNOLPC = F1 * GVAOIL + F2 * GVAMINOTH + F3 * GVAPETCH + F4 * GVAMANNOLPC + F5 * GVAU + F6 * GVACON + F7 * GVADIS + F8 * (GVATRACOM - GVATRAPIPE) + F9 * GVAAGR + F10 * GVAFIBU + F11 * GVAGOV + F12 * GVAOTHS + DIS_IDMANNOLPC (6)

IDMINOTH = G1 * GVAOIL + G2 * GVAMINOTH + G3 * GVAPETCH + G4 * GVAMANNOLPC + G5 * GVAU + G6 * GVACON + G7 * GVADIS + G8 * (GVATRACOM - GVATRAPIPE) + G9 * GVAAGR + G10 * GVAFIBU + G11 * GVAGOV + G12 * GVAOTHS + DIS_IDMINOTH (7)

IDOIL = H1 * GVAOIL + H2 * GVAMINOTH + H3 * GVAPETCH + H4 * GVAMANNOLPC + H5 * GVAU + H6 * GVACON + H7 * GVADIS + H8 * (GVATRACOM - GVATRAPIPE) + H9 * GVAAGR + H10 * GVAFIBU + H11 * GVAGOV + H12 * GVAOTHS + DIS_IDOIL (8)

IDOILREF = I1 * GVAAGR + I2 * GVACON + I3 * GVADIS + I4 * GVAFIBU + I5 * GVAFIBUOTH + I6 * GVAREAL + I7 * GVAMANNO + I8 * GVAMINOTH + I9 * GVAOILMIN + I10 * GVAOILREF + I11 * GVAOTHS + I12 * GVAGOV + I13 * GVATRACOM + I14 * GVAU (9)

IDOTHS = J1 * GVAOIL + J2 * GVAMINOTH + J3 * GVAPETCH + J4 * GVAMANNOLPC + J5 * GVAU + J6 * GVACON + J7 * GVADIS + J8 * (GVATRACOM - GVATRAPIPE) + J9 * GVAAGR + J10 * GVAFIBU + J11 * GVAGOV + J12 * GVAOTHS + DIS_IDOTHS (10)

IDPETCH = K1 * GVAOIL + K2 * GVAMINOTH + K3 * GVAPETCH + K4 * GVAMANNOLPC + K5 * GVAU + K6 * GVACON + K7 * GVADIS + K8 * (GVATRACOM - GVATRAPIPE) + K9 * GVAAGR + K10 * GVAFIBU + K11 * GVAGOV + K12 * GVAOTHS + DIS_IDPETCH (11)

IDTRACOM = L1 * GVAOIL + L2 * GVAMINOTH + L3 * GVAPETCH + L4 * GVAMANNOLPC + L5 * GVAU + L6 * GVACON + L7 * GVADIS + L8 * (GVATRACOM - GVATRAPIPE) + L9 * GVAAGR + L10 * GVAFIBU + L11 * GVAGOV + L12 * GVAOTHS + DIS_IDTRACOM (12)

IDU = M1 * GVAOIL + M2 * GVAMINOTH + M3 * GVAPETCH + M4 * GVAMANNOLPC + M5 * GVAU + M6 * GVACON + M7 * GVADIS + M8 * (GVATRACOM - GVATRAPIPE) + M9 * GVAAGR + M10 * GVAFIBU + M11 * GVAGOV + M12 * GVAOTHS + DIS_IDU (13)

Here, the coefficients from A1 to M12 are Input-Output coefficients. We do not report numerical values of them due to the data confidentiality issue as they obtained from OEGEM. (14)

Final Demand

FDAGR = N1 * CONS + N2 * GC + N3 * IFOIL + N4 * IFNOILP + N5 * GI + N6 * XGOIL + N7 * XGNOIL + N8 * XS + DIS_FDAGR (15)

FDCON = O1 * CONS + O2 * GC + O3 * IFOIL + O4 * IFNOILP + O5 * GI + O6 * XGOIL + O7 * XGNOIL + O8 * XS + DIS_FDCON (16)

FDDIS = P1 * CONS + P2 * GC + P3 * IFOIL + P4 * IFNOILP + P5 * GI + P6 * XGOIL + P7 * XGNOIL + P8 * XS + DIS_FDDIS (17)

FDFIBU = Q1 * CONS + Q2 * GC + Q3 * IFOIL + Q4 * IFNOILP + Q5 * GI + Q6 * XGOIL + Q7 * XGNOIL + Q8 * XS + DIS_FDFIBU (18)

FDGOV = R1 * CONS + R2 * GC + R3 * IFOIL + R4 * IFNOILP + R5 * GI + R6 * XGOIL + R7 * XGNOIL + R8 * XS + DIS_FDGOV (19)

FDMANNOLPC = S1 * CONS + S2 * GC + S3 * IFOIL + S4 * IFNOILP + S5 * GI + S6 * XGOIL + S7 * XGNOIL + S8 * XS + DIS_FDMANNOLPC (20)

FDMINOTH = T1 * CONS + T2 * GC + T3 * IF + T4 * X + T5 * IS (21)

FDOIL = U1 * CONS + U2 * GC + U3 * IFOIL + U4 * IFNOILP + U5 * GI + U6 * XGOIL + U7 * XGNOIL + U8 * XS (22)

FDOILREF_OLD = V1 * CONS + V2 * GC + V3 * IF + V4 * X + V5 * IS (23)

FDOTHS = W1 * CONS + W2 * GC + W3 * IFOIL + W4 * IFNOILP + W5 * GI + W6 * XGOIL + W7 * XGNOIL + W8 * XS + DIS_FDOTHS (24)

FDPETCH = X1 * CONS + X2 * GC + X3 * IFOIL + X4 * IFNOILP + X5 * GI + X6 * XGOIL + X7 * XGNOIL + X8 * XS + DIS_FDPETCH (25)

FDTRACOM = Y1 * CONS + Y2 * GC + Y3 * IFOIL + Y4 * IFNOILP + Y5 * GI + Y6 * XGOIL + Y7 * XGNOIL + Y8 * XS + DIS_FDTRACOM (26)

FDU = Z1 * CONS + Z2 * GC + Z3 * IFOIL + Z4 * IFNOILP + Z5 * GI + Z6 * XGOIL + Z7 * XGNOIL + Z8 * XS + DIS_FDU (27)

Here, the coefficients from N1 to Z8 are Input-Output coefficients. We do not report numerical values of them due to the data confidentiality issue as they obtained from OEGEM.

Total Demand

TDAGR = IDAGR + FDAGR (28)

TDPETCH = IDPETCH + FDPETCH (29)

TDCON = IDCON + FDCON (30)

TDDIS = IDDIS + FDDIS (31)

TDFIBU = IDFIBU + FDFIBU (32)

TDGOV = IDGOV + FDGOV (33)

TDMANNOLPC = IDMANNOLPC + FDMANNOLPC (34)

TDMINOTH = IDMINOTH + FDMINOTH (35)

TDOIL = IDOIL + FDOIL (36)

TDOILREF_OLD = IDOILREF_OLD + FDOILREF_OLD (37)

TDOTHS = IDOTHS + FDOTHS (38)

TDTRACOM = IDTRACOM + FDTRACOM (39)

TDU = IDU + FDU (40)

Identities for Total Final Expenditure and Domestic Demand

TFE = CONS + IF + GC + IS + X (41)

DOMD = CONS + IF + IS + GC (42)

DOMD_Z = CONS_Z + IF_Z + IS_Z + GC_Z (43)

Equations for Investments by Economic Activity Sector

LOG(IFDIS) = 1.00 * LOG(GVADIS) - 0.03 * RRLEND1 - 2.33 + ECT_IFDIS (44)

LOG(IFCON) = 0.82 * LOG(GVACON) - 0.02 * RRLEND1 + 0.30 + ECT_IFCON (45)

LOG(IFFIBU) = 2.32 * LOG(GVAFIBU) + 0.94 * LOG(REER) - 21.98 - 0.54 * DSH2010 + ECT_IFFIBU (46)

LOG(IFMANNOLPC) = 0.69 * LOG(GVAMANNOLPC) - 0.03 * RRLEND1 + 0.86 * LOG(RER) + 1.40 + ECT_IFMANNOLPC (47)

LOG(IFOTHS) = 2.65 * LOG(GVAOTHS) - 0.13 * RRLEND1 - 2.75 * LOG(RER) - 14.26 + ECT_IFOTHS (48)

LOG(IFPETCH) = 2.72 * LOG(GVAPETCH) + 2.24 * LOG(RER) - 0.13 * RRLEND1 - 20.72 + ECT_IFPETCH (49)

LOG(IFTRACOX) = 0.81 * LOG(GVATRACOM) - 0.06 * RRLEND1 + 1.09 + ECT_IFTRACOM (50)

LOG(IFU) = 0.79 * LOG(GVAU) - 0.05 * RRLEND1 - 0.37 * LOG(RER) + 2.54 + ECT_IFU (51)

LOG(IFAGR) = 3.25 * LOG(GVAAGR) + 3.26 * LOG(RER) - 33.17 + 2.54 * DST1012 + ECT_IFAGR (52)

Identities for Investments

IF = IFOIL + IFNOIL + DIS_IF + INIS (53)

IF_Z = IF * PIF / 100 (54)

IFNOIL = IFNOILP + GI + ISP (55)

IFNOILP = IFDOMP + 100 * (((FI$IN_Z * RXD) / (WPMF$_WLD / 111.4992 * 100))) + DIS_IFNOILP (56)

FI$IN_Z = FDI$IN_Z + FPI$IN_Z + FOI$IN_Z (57)

IFDOMP = IFAGR + IFCON + IFDIS + IFFIBU + IFMANNO + IFPETCH + IFMINOTH + IFOTHS + IFTRACOX + IFU + DIS_IFDOM (58)

IFMANNO = IFMANNOLPC + IFPETCH (59)

IFNOIL_Z = IFNOILP_Z + GI_Z (60)

GI = GI_Z / PIF * 100 + DIS_GI (61)

Equations for Gross Value Added by Economic Activity Sector

LOG(GVAAGR) = 0.14 * LOG(DELE_AGR) + 0.07 * LOG(TDAGR) + 0.08 * LOG(DDIS_IND) + 9.85 + 0.01 * @TREND - 0.07 * DP2008 - 0.11 * DP2009 + 0.01 * DBT2010 + ECT_GVAAGR (62)

LOG(GVACON) = 0.28 * LOG(TDCON) + 0.63 * LOG(DELE_COMM + DEN_TOT_TRA) + 5.68 + ECT_GVACON (63)

LOG(GVADIS) = 1.22 * LOG(TDDIS) + 0.18 * LOG(DELE_COMM) - 3.07 + ECT_GVADIS (64)

LOG(GVAFIBU) = 0.16 * LOG(DELE_COMM) + 0.71 * LOG(TDFIBU) + 3.57 + ECT_GVAFIBU (65)

LOG(GVAGOV) = 0.25 * LOG(TDGOV) + 0.29 * LOG(DELE_GOV) + 0.13 * LOG(DEN_TOT_TRA) + 8.72 - 0.06 * DP2008 + ECT_GVAGOV (66)

LOG(GVAMANNOLPC) = 0.91 * LOG(TDMANNOLPC) + 0.19 * LOG(DNGA_IND) + 0.12 * LOG(DDIS_IND) + 0.24 * LOG(DHFO_IND) + 0.05 * LOG(DCOIL_IND) - 0.92 + 0.18 * DP1997 + ECT_GVAMANNOLPC (67)

LOG(GVAOILMIN) = 0.98 * LOG(OILMBD) + 11.44 + 0.002 * @TREND + ECT_GVAOILMIN (68)

LOG(GVAOILREF) = 1.01 * LOG(TDOIL) + 0.56 * LOG(OILUSE * 365 * 0.1486 - DCOIL_U) - 0.36 * LOG(DNGA_IND + DNGA_IND_NEU + DNGA_EOU) - 4.4 - 0.21 * DP2013 + ECT_GVAOILREF (69)

LOG(GVAOTHS) = 0.47 * LOG(TDOTHS) + 0.19 * LOG(DELE_COMM) + 5.43 + 0.03 * DBT2015 + ECT_GVAOTHS (70)

LOG(GVAPETCH) = 0.31 * LOG(TDPETCH) + 0.54 * LOG(DETH_IND_NEU + DLPG_IND_NEU + DNAP_IND_NEU + DNGA_IND_NEU) + 0.38 * LOG(DELE_IND) + 4.70 - 0.20 * DSH2008 + ECT_GVAPETCH (71)

LOG(DETH_IND_NEU) = - 0.14 * LOG(PETH_IND_NEU / PGDPPETCH * 100) + 0.71 * LOG(GVAPETCH) - 4.19 - 0.21 * DSH000102 - 0.19 * DP2008 + ECT_DETH_IND_NEU (72)

LOG(DLPG_IND_NEU) = - 0.14 * LOG(PLPG_IND_NEU / PGDPPETCH * 100) + 0.53 * LOG(GVAPETCH) - 2.93 + 0.17 * DTB9501 - 0.47 * DSH2003 + ECT_DLPG_IND_NEU (73)

LOG(DNAP_IND_NEU) = - 0.31 * LOG(PNAP_IND_NEU / PGDPPETCH * 100) + 3.47 * LOG(GVAPETCH) - 24.81 - 0.14 * @TREND - 1.35 * DP1991 + ECT_DNAP_IND_NEU (74)

LOG(DNGA_IND_NEU) = - 0.08 * LOG(PNGA_IND_NEU / PGDPPETCH * 100) + 0.35 * LOG(GVAPETCH) - 1.76 + 0.06 * TI2009 + 0.12 * S12001 + ECT_DNGA_IND_NEU (75)

LOG(GVATRACOM) = 1.40 * LOG(TDTRACOM) + 0.38 * LOG(DELE_COMM) + 0.65 * LOG(DGAS_TRA) + 0.14 * LOG(DEOTH_TRA) - 4.21 - 0.06 * @TREND + 0.07 * DBT2016 + ECT_GVATRACOM (76)

LOG(GVAU) = 0.14 * LOG(TDU) + 0.46 * LOG(DNGA_U) + 0.17 * LOG(DCOIL_U) + 0.49 * LOG(DDIS_U + DHFO_U) + 5.16 - 0.07 * DP2008 + ECT_GVAU (77)

Identities for Gross Value Added

Sectoral Aggregations

GVAREAL = GVAFIBU - GVAFIBUOTH (78)

GVAIND = GVAU + GVAMAN + GVAMINOTH + GVAOILMIN (79)

GVAMIN = GVAMINOTH + GVAOILMIN (80)

GVAMANNO = GVAMANNOLPC + GVAPETCH (81)

GVAMAN = GVAMANNO + GVAOILREF (82)

GVAOIL = GVAOILMIN + GVAOILREF + DIS_GVAOIL (83)

GVANOIL = GVAAGR + GVACON + GVAU + GVAMANNO + GVAMINOTH + GVADIS + GVATRACOM + GVAFIBU + GVAOTHS + GVAGOV - GVAFISIM + DIS_GVANOIL (84)

GDP = GVANOIL + GVAOIL + GVANIT (85)

Value Added in Nominal Terms by Economic Activity Sector

GVACON_Z = GVACON * PGDPCON / 100 (86)

GVAFIBU_Z = GVAFIBUOTH_Z + GVAREAL_Z (87)

GVAFIBUOTH_Z = GVAFIBUOTH * PGDPFIBUOTH / 100 (88)

GVASER = GVADIS + GVATRACOM + GVAFIBU + GVAOTHS + GVAGOV (89)

GVASER_Z = GVADIS_Z + GVATRACOM_Z + GVAFIBU_Z + GVAOTHS_Z + GVAGOV_Z (90)

GVADIS_Z = GVADIS * PGDPDIS / 100 (91)

GVATRACOM_Z = GVATRACOM * PGDPTRACOM / 100 (92)

GVAGOV_Z = GVAGOV * PGDPGOV / 100 (93)

GVAIND_Z = GVAU_Z + GVAMAN_Z + GVAMINOTH_Z + GVAOILMIN_Z (94)

GVAU_Z = GVAU * PGDPU / 100 (95)

GVAMAN_Z = GVAMAN * PGDPMAN / 100 (96)

GVAMINOTH_Z = GVAMINOTH * PGDPMINOTH / 100 (97)

GVAOILMIN_Z = GVAOILMIN * PGDPOILMIN / 100 (98)

GVAMIN_Z = GVAMINOTH_Z + GVAOILMIN_Z (99)

GVAMANNO_Z = GVAMAN_Z - GVAOILREF_Z (100)

GVAOILREF_Z = GVAOILREF * PGDPOILREF / 100 (101)

GVAAGR_Z = GVAAGR * PGDPAGR / 100 (102)

GVANOIL_Z = GVAAGR_Z + GVACON_Z + GVAU_Z + GVAMANNO_Z + GVAMINOTH_Z + GVADIS_Z + GVATRACOM_Z + GVAFIBU_Z + GVAOTHS_Z + GVAGOV_Z - GVAFISIM_Z + DIS_GVANOIL_Z (103)

GVAFISIM_Z = GVAFISIM * PGDPFISIM / 100 (104)

GVAOIL_Z = GVAOILMIN_Z + GVAOILREF_Z + DIS_GVAOIL_Z (105)

GDP_Z = GVANOIL_Z + GVAOIL_Z + GVANIT_Z (106)

GDP$_Z = GDP_Z / RXD (107)

GVANIT_Z = GVANIT * PGDPNIT / 100 + DIS_GVANIT_Z (108)

Disposable Income, Private Consumption and Wealth

DI_T_Z = NNSA_Z + CONS_Z + GC_Z (109)

DI_Z = LABCOMP + GCGPE - REMOF + DIS_DI_Z (110)

DI = DI_Z / CPI * 100 (111)

LOG(CONS) = 1.00 * LOG(DI) - 0.03 * (RCB-@PCH(CPI)*100) - 0.54 * LOG(WEALTH) + 5.97 + ECT_CONS (112)

PCONS = CONS_Z / CONS * 100 (113)

WEALTH = ((M3 - M0) - LIABP) / CPI * 100 (114)

7.1.2. Supply-Side (115)

Identities for Capital Stocks by Economic Activity Sector

CAPAGR = CAPAGR(-1) * 0.95 + IFAGR + DIS_CAPAGR (116)

CAPCON = CAPCON(-1) * 0.95 + IFCON + DIS_CAPCON (117)

CAPDIS = CAPDIS(-1) * 0.95 + IFDIS + DIS_CAPDIS (118)

CAPFIBU = CAPFIBU(-1) * 0.95 + IFFIBU + DIS_CAPFIBU (119)

CAPGOV = CAPGOV(-1) * 0.95 + GI + DIS_CAPGOV (120)

CAPMANNOLPC = CAPMANNOLPC(-1) * 0.95 + IFMANNOLPC + DIS_CAPMANNOLPC (121)

CAPNOIL = CAPNOIL(-1) * 0.95 + IFNOIL + DIS_CAPNOIL (122)

CAPOILREF = CAPOILREF(-1) * 0.95 + IFOIL + DIS_CAPOILREF (123)

CAPOTHS = CAPOTHS(-1) * 0.95 + IFOTHS + DIS_CAPOTHS (124)

CAPPETCH = CAPPETCH(-1) * 0.788 + IFPETCH + DIS_CAPPETCH (125)

CAPU = CAPU(-1) * 0.95 + IFU + DIS_CAPU (126)

KOILREF = IFREF + KOILREF(-1) * 0.9500000 + DIS_KOILREF (127)

Identities for the Estimated Potential Output Equations by Economic Activity Sector

POT_GVAAGR = EXP(0.21 * LOG(CAPAGR) + 0.19 * LOG(ETAGR) + 0.56 * LOG(AGRLANDSH) + 4.82 + 0.003 * DSH2010 * @TREND) (128)

POT_GVACON = EXP(0.28 * LOG(CAPCON) + 0.72 * LOG(ETCON) + 3.09 + 0.10 * DP2011) (129)

POT_GVADIS = EXP(0.73 * LOG(CAPDIS) + 0.56 * LOG(ETDIS) - 0.98 - 0.14 * DP2003 - 0.07 * DP2011) (130)

POT_GVAFIBU = EXP(0.36 * LOG(CAPFIBU) + 0.51 * LOG(ETFIBU) + 4.96 + 0.41 * DP2013) (131)

POT_GVAGOV = EXP(0.09 * LOG(CAPGOV) + 0.66 * LOG(ETGOV_SAMA) + 6.74) (132)

POT_GVAMANNOLPC = EXP (0.82 * LOG(CAPMANNOLPC) + 0.46 * LOG(ETMANNO) - 0.24) (133)

POT_GVANOIL = EXP(0.40 * LOG(CAPNOIL) + 0.59 * LOG(ETNOIL) + 2.51) (134)

POT_GVAOILREF = EXP(0.86 * LOG(CAPOILREF) + 0.44 * LOG(ETOILREF) + 1.23) (135)

POT_GVAOTHS = EXP(0.11 * LOG(CAPOTHS) + 0.71 * LOG(ETOTHS) + 4.19 + 0.04 * DBT2015) (136)

POT_GVAPETCH = EXP (0.43 * LOG(CAPPETCH) + 0.31 * LOG(ETPETCH) + 3.96 + 0.24 * DST0312 - 0.29 * DP2012) (137)

POT_GVATRACOM = EXP (1.23 * LOG(CAPNOIL - CAPMANNO) + 0.40 * LOG(ETTRACOM) - 8.93) (138)

POT_GVAU = EXP (0.78 * LOG(CAPU) + 0.35 * LOG(ETU) - 1.11) (139)

POT_GVAMANNO = POT_GVAMANNOLPC + POT_GVAPETCH (140)

Identities for Output Gaps by Economic Activity Sector

GAP_GVAAGR = GVAAGR - POT_GVAAGR (141)

GAP_GVACON = GVACON - POT_GVACON (142)

GAP_GVADIS = GVADIS - POT_GVADIS (143)

GAP_GVAFIBU = GVAFIBU - POT_GVAFIBU (144)

GAP_GVAGOV = GVAGOV - POT_GVAGOV (145)

GAP_GVAMANNOLPC = GVAMANNOLPC - POT_GVAMANNOLPC (146)

GAP_GVANOIL = GVANOIL - POT_GVANOIL (147)

GAP_GVAOILREF = GVAOILREF - POT_GVAOILREF (148)

GAP_GVAOTHS = GVAOTHS - POT_GVAOTHS (149)

GAP_GVAPETCH = GVAPETCH - POT_GVAPETCH (150)

GAP_GVATRACOM = GVATRACOM - POT_GVATRACOM (151)

GAP_GVAU = GVAU - POT_GVAU (152)

Table 7.2. Fiscal Block Behavioral Equations and Identities

Equations for Government Expenditure Items

LOG(GWSA_Z) = 0.86 * LOG(GREV) + 1.18 + ECT_GWSA_Z (153)

LOG(GAE_Z) = 0.87 * LOG(GREV) - 0.96 + ECT_GAE_Z (154)

LOG(GMO_Z) = 0.68 * LOG(GREV) + 2.05 + ECT_GMO_Z (155)

LOG(GCGPE) = 0.72 * LOG(GREV) - 5.57 + 6.21 * DSH1981 + ECT_GCGPE (156)

LOG(GC_Z_OTH) = 1.03 * LOG(GREV) - 2.28 + ECT_GC_Z_OTH (157)

LOG(GI_Z) = 0.81 * LOG(GREV) + 0.80 + ECT_GI_Z (158)

Identities for Government Expenditures

GEXP = PSCE + PSCAPE (159)

PSCE = GWSA_Z + GAE_Z + GMO_Z + GCGPE + PSCE_OTH (160)

LOG(PSCE_OTH) = 0.45 * LOG(GREVOIL) + 0.65 * LOG(GREVNOIL) - 1.70 - 2.29 * DP1986 + ECT_PSCE_OTH (161)

PSCAPE = PSCAPE(-1) * GI_Z / GI_Z(-1) + DIS_PSCAPE (162)

GC_Z = GWSA_Z + GAE_Z + GMO_Z + GC_Z_OTH (163)

GC = GC_Z / PGC * 100 (164)

Identities for Government Revenues

GREV = GREVOIL + GREVNOIL (165)

GREVOIL = 0.80 * XGOIL$_Z * RXD + DIS_GREVOIL (166)

GREVNOIL = 0.85 * CEN_TOT_KSA + VAT_REV + EXPL + HUVF + OVF + TOITT + TOIPC + DIS_GREVNOIL (167)

VAT_REV = VAT_RATE / 100 * C_RATIO * (0.90 * GC_Z + 0.90 * (CONS * PCONS / 100)) * VAT_REV_DUMMY + DIS_VAT_REV (168)

EXPL = EXPL(-1) * POPNS / POPNS(-1) + DIS_EXPL (169)

HUVF = HUVF(-1) * XSTRAV_Z / XSTRAV_Z(-1) + DIS_HUVF (170)

OVF = OVF(-1) * XSTRAV_Z / XSTRAV_Z(-1) + DIS_OVF (171)

TOITT = TOITT(-1) * M_Z / M_Z(-1) + DIS_TOIT (172)

TOIPC = TOIPC(-1) * GVANOIL / GVANOIL(-1) + DIS_TOIPC (173)

Identities for Total and Non-oil Budget Balance

GB = GREV - GEXP (174)

GBNOIL = GB - GREVOIL (175)

DEBT_GOV = - 0.44 * GB + 17290.59 + 225653.47 * DP2008 + ECT_DEBT_GOV (176)

DEBTG_GOV = DEBTG_GOV(-1) + DEBT_GOV (177)

Table 7.3. Monetary Block Equations and Identities

LOG(M2) = 1.00 * LOG(PGDP) + 0.82 * LOG(GDP) - 0.02 * IRD + 0.10 * LOG(WPO_AL_R) + 0.624835 * LOG(REER) + 0.03 * @TREND(50) - 3.21 + ECT_MD_UR (178)

M0 = M2 - DTS - DD (179)

M1 = M2 - DTS (180)

M3 = M2 + DQM (181)

LIABP = (LIABP(-1) * (DD + DTS) / (DD(-1) + DTS(-1)) + DIS_LIABP) (182)

RLEND = RLEND(-1) + (RSH - RSH(-1)) (183)

RRLEND = RLEND - DLOG(CPI) * 100 (184)

RLG = RLG(-1) + (RSH - RSH(-1)) + DIS_RLG (185)

IRD = IR_UK – RLEND (186)

RDEBT = RDEBT(-1) + RLEND - RLEND(-1) (187)

RRXD = (RXD / 3.75 * 100) * (CPI_USA / CPI) (188)

REER = NEER * CPI / CPI_USA + DIS_REER (189)

REERE = EXP(1.28 * LOG(((GVANOIL / RXD) / (POP * 10^3)) / (GDPPC_WLD) * 100) + 0.20 * LOG(((GVAOIL / RXD) / (POP * 10^3)) / (GDPPC_WLD) * 100) - 0.24 * LOG(NFA / GDP_Z * 100) + 0.68 * LOG(GC_Z / GDP_Z * 100) - 3.28) (190)

PRODDN = ((GVANOIL / RXD) / (POP * 10^3)) / (GDPPC_WLD) * 100 (191)

PRODDO = ((GVAOIL / RXD) / (POP * 10^3)) / (GDPPC_WLD) * 100 (192)

Table 7.4. External Block Equations and Identities

Exports Related Equations and Identities

X = XG + XS + DIS_X (193)

XG = XGNOIL + XGOIL (194)

LOG(XGNOIL) = - 1.173509 * LOG(REER) + 0.815899 * LOG(GDP_MNA * RXD) + 1.080521 * LOG(GVANOIL) - 10.30389 + ECT_XGNOIL (195)

LOG(XOILREF) = 2.68 * LOG(WTREF) + 1.49 * LOG(GVAOILREF) - 0.18 * LOG(WPO_AL_R) - 20.52 - 0.12 * @TREND - 0.21 * DP2001 + ECT_XOILREF (196)

WPO_AL_R = WPO_AL / CPI_USA * 100 + DIS_WPO_AL_R (197)

XGOIL = XGOIL_Z / PGDPOIL * 100 (198)

XGOIL_Z = XGOIL$_Z * RXD (199)

XGOIL$_Z = XOILC * 365 * WPO_AL + XOILREF * 1.2 * WPO_AL + DIS_XGOIL$_Z (200)

XOILC = OILMBD - OILUSE (201)

XGNOIL_Z = XGNOIL * PGDPNOIL / 100 (202)

X_Z = X * PX / 100 (203)

X$_Z = XG$_Z + XS$_Z (204)

XG$_Z = XGOIL$_Z + XGNOIL$_Z (205)

XGNOIL$_Z = XGNOIL_Z / RXD (206)

XS$_Z = XS_Z / RXD (207)

XS = XS_Z / PX * 100 (208)

XS_Z = (XSOIL_Z + XSII_Z + XSTRAN_Z + XSTRAV_Z + XSIP_Z + XSFIN_Z + XSCOM_Z + XSOBS_Z + XSGOV_Z) (209)

Imports Related Equations and Identities

M = MG + MS + DIS_M (210)

MG = MGCAP + MGCONS + MGINTER + DIS_MG (211)

LOG(MGCAP) = 1.03 * LOG(DOMD) + 0.84 * LOG(NEER) - 0.31 * LOG(PGDP_US / PGDP) - 7.16 + 0.37 * DSH2003 - 0.15 * DBT2018 + ECT_MGCAP (212)

LOG(MGCONS) = 0.86 * LOG(DOMD) + 1.08 * LOG(REER) - 7.07 + 0.02 * @TREND - 0.12 * DBT2018 + 0.32 * DSH2003 + ECT_MGCONS (213)

LOG(MGINTER) = 2.56 * LOG(GVANOIL + GVAOIL) + 0.56 * LOG(NEER) - 0.86 * LOG(PGDP_US / PGDP) - 25.62 - 0.04 * @TREND - 0.09 * DBT2018 - 0.14 * DSH2010 + ECT_MGINTER (214)

MG_Z = MGCAP_Z + MGCONS_Z + MGINTER_Z + DIS_MG_Z (215)

MGCAP_Z = MGCAP * PMG (216)

MGCONS_Z = MGCONS * PMG (217)

MGINTER_Z = MGINTER * PMG (218)

LOG(MS) = 0.44 * LOG(DOMD) - 1.61 * LOG(RRXD) + 12.60 + ECT_MS (219)

MOILREF = DOILREF_T + XOILREF * 0.14 - QOILREF + DIS_MOILREF (220)

M_Z = M * PM / 100 (221)

Overall and Non-oil Trade Balance

TB = X - M (222)

TBNOIL = XGNOIL - M (223)

Other BOP Related Equations and Identities

LOG(100 * REMOF * RXD / PGDP) = 1.70 * LOG(GDP) + 1.00 * LOG(ETNS) - 1.43 * LOG(PGDP) - 0.09 * LOG((EXPL / PGDP * 100) + 1) - 14.79 + ECT_REMOF (224)

FDI$OUT_Z = FDI$OUT_Z(-1) * (GDP$_Z / GDP$_Z(-1)) + DIS_FDI$OUT (225)

FDI$ = FDI$IN_Z - FDI$OUT_Z + DIS_FDI$ (226)

WTOUR = (WTOUR(-1) * (AA1 * MS$_ZAF / MS$_ZAF(-1) + AA2 * MS$_USA / MS$_USA(-1) + AA3 * MS$_CAN / MS$_CAN(-1) + AA4 * (MS$_MEX) / (MS$_MEX(-1)) + AA5 * MS$_JPN / MS$_JPN(-1) + AA6 * (MS$_TUR) / (MS$_TUR(-1)) + AA7 * MS$_DEU / MS$_DEU(-1) + AA8 * MS$_FRA / MS$_FRA(-1) + AA9 * MS$_ITA / MS$_ITA(-1) + AA10 * MS$_GBR / MS$_GBR(-1))) + DIS_WTOUR (227)

WTREF = 100 * (AB1 * DOILREF_ARGENTIN / AB2 + AB3 * DOILREF_AUSTRALI / AB4 + AB5 * DOILREF_AUSTRIA / AB6 + AB7 * DOILREF_BELGIUM / AB8 + 0 * DOILREF_BRAZIL / AB9 + AB10 * DOILREF_BULGARIA / AB11 + AB12 * DOILREF_CANADA / AB13 + AB14 * DOILREF_CHILE / AB15 + AB16 * DOILREF_CHINA / AB17 + AB18 * DOILREF_CROATIA / AB19 + AB20 * DOILREF_CZECH / AB21 + AB22 * DOILREF_DENMARK / AB23 + AB24 * DOILREF_FINLAND / AB25 + AB26 * DOILREF_FRANCE / AB27 + AB28 * DOILREF_GERMANY / AB29 + AB30 * DOILREF_GREECE / AB31 + AB32 * DOILREF_HK / AB33 + AB34 * DOILREF_HUNGARY / AB35 + AB36 * DOILREF_INDIA / AB37 + AB38 * DOILREF_INDONESI / AB39 + AB40 * DOILREF_IRELAND / AB41 + AB42 * DOILREF_ITALY / AB43 + AB44 * DOILREF_JAPAN / AB45 + AB46 * DOILREF_KOREA / AB47 + AB48 * DOILREF_MALAYSIA / AB49 + AB50 * DOILREF_MEXICO / AB51 + AB52 * DOILREF_NETH / AB53 + AB54 * DOILREF_NORWAY / AB55 + AB56 * DOILREF_PHILIPPI / AB57 + AB58 * DOILREF_POLAND / AB59 + AB60 * DOILREF_PORTUGAL / AB61 + AB62 * DOILREF_ROMANIA / AB63 + AB64 * DOILREF_RUSSIA / AB65 + AB66 * DOILREF_SAFRICA / AB67 + AB68 * DOILREF_SINGPORE / AB69 + AB70 * DOILREF_SLOVAKIA / AB71 + AB72 * DOILREF_SPAIN / AB73 + AB74 * DOILREF_SWEDEN / AB75 + AB76 * DOILREF_SWITZ / AB77 + AB78 * DOILREF_TAIWAN / AB79 + AB80 * DOILREF_THAILAND / AB81 + AB82 * DOILREF_TURKEY / AB83 + AB84 * DOILREF_UAEMOD / AB85 + AB86 * DOILREF_UK / AB87 + AB88 * DOILREF_US / AB89) (228)

Here, the coefficients from AA1 to AA10 and from AB1 to AB89 are obtained from OEGEM. We do not report numerical values of them due to the data confidentiality issue.

Table 7.5. Domestic Prices Block Equations and Identities

Consumer prices
Equations for Sectorial CPI

LOG(CPIU) = 0.44 * LOG(PGDPREAL) + 0.13 * LOG(PE_RES) + 0.69 * LOG(PGDPSER) - 1.47 - 0.20 * DP2018 - 0.26 * DP2019 + ECT_CPIU (229)

LOG(CPIFOOD) = 1.67 * LOG(PGDPAGR) + 0.50 * LOG(PMG) + 0.16 * LOG(WDIS) + 0.08 * LOG(PELE_COMM) - 7.55 + ECT_CPIFOOD (230)

LOG(CPITRA) = 0.18 * LOG(WSER) + 0.19 * LOG(PE_TRACOM) + 0.30 * LOG(PMG) + 0.25 + ECT_CPITRA_ULC (231)

LOG(CPIHH) = 0.21 * LOG(WDIS) + 0.71 * LOG(PGDPMANNO) + 0.25 * LOG(PM) - 1.20 - 0.01 * @TREND - 0.08 * DP2008 + ECT_CPIHH_ULC (232)

LOG(CPICOMM) = 0.25 * LOG(WTRACOM) + 0.57 * LOG(PGDPTRACOM) + 0.49 * LOG(PM) - 0.03 * (@TREND) + ECT_CPICOM_ULC (233)

LOG(CPIHTL) = 0.63 * LOG(PGDPDIS) + 0.06 * LOG(PMS) + 1.36 + ECT_CPIHTL_ULC (234)

LOG(CPICLOTH) = 0.50 * LOG(PGDPMANNO) + 0.16 * LOG(PM) + 0.14 * LOG(WDIS) + 1.58 - 0.02 * @TREND + 0.09 * DP2016 + ECT_CPICLOTH_ULC (235)

LOG(CPIMISC) = 0.52 * LOG(PGDPMANNO) + 0.34 * LOG(PGDPSER) + 0.21 * LOG(PMG) - 0.07 - 0.004 * @TREND + ECT_CPIMISC_ULC (236)

LOG(CPIEDU) = 0.12 * LOG(W_OLD) + 0.24 * LOG(PGDPSER) + 0.05 * LOG(PMS) + 2.13 + ECT_CPIEDU_ULC (237)

LOG(CPIART) = 0.60 * LOG(PGDPSER) + 0.56 * LOG(WSER) + 0.55 * LOG(PM) - 0.05 * (@TREND) + ECT_CPIART_ULC (238)

LOG(CPIHEAL) = 0.16 * LOG(PGDPSER) + 0.09 * LOG(PMS) + 3.45 + 0.05 * DP2003 + 0.05 * DB1617 + ECT_CPIHEAL_ULC (239)

LOG(CPITOBC) = 1.61 * LOG(PGDPMANNO) + 0.71 * LOG(WDIS) + 0.15 * LOG(PELE_COMM) + 0.01 * (@TREND) + ECT_CPITOBC_ULC (240)

Identity for Total CPI

CPI = CPIU_W * CPIU + CPIFOOD_W * CPIFOOD + CPITRA_W * CPITRA + CPIHH_W * CPIHH + CPICOMM_W * CPICOMM + CPIHTL_W * CPIHTL + CPICLOTH_W * CPICLOTH + CPIMISC_W * CPIMISC + CPIEDU_W * CPIEDU + CPIART_W * CPIART + CPIHEAL_W * CPIHEAL + CPITOBC_W * CPITOBC + DIS_CPI (241)

Producer prices
Equations for Sectoral Producer Prices

LOG(PGDPAGR) = 0.05 * LOG(WAGR) + 0.24 * LOG(PELE_AGR) + 0.34 * LOG(PMG) + 0.82 + 0.09 * DP2017 + ECT_PGDPAGR (242)

LOG(PGDPCON) = 0.09 * LOG(ULCCON) + 0.09 * LOG(PE_CON) + 0.59 * LOG(PM) + 0.20 + 0.01 * @TREND + ECT_PGDPCON (243)

LOG(PGDPDIS) = 0.22 * LOG(WDIS) + 0.50 * LOG(PMG) - 0.67 + 0.01 * @TREND + 0.16 * DP2017 + ECT_PGDPDIS (244)

LOG(PGDPFIBU) = 0.14 * LOG(ULCFIBU) + 0.63 * LOG(PELE_COMM) + 0.51 * LOG(PMG) - 3.08 + ECT_PGDPFIBU (245)

LOG(PGDPGOV) = 0.30 * LOG(ULCGOV) + 0.12 * LOG(PE_GOV) + 1.74 * LOG(PM) - 5.65 + ECT_PGDPGOV (246)

LOG(PGDPMANNO) = 0.04 * LOG(WMAN) + 0.14 * LOG(PE_MANNO) + 0.97 * LOG(PM) - 1.08 + ECT_PGDPMANNO (247)

LOG(PGDPOILREF) = 0.11 * LOG(ULCOILREF) + 0.69 * LOG(PGDPOIL) + 0.75 * LOG(PCOIL_IND) - 2.52 + ECT_PGDPOILREF (248)

LOG(PGDPOTHS) = 0.12 * LOG(ULCSER) + 0.04 * LOG(PE_OTHS) + 0.62 * LOG(PM) + 0.96 + ECT_PGDPOTHS (249)

LOG(PGDPTRACOM) = 0.14 * LOG(ULCTRACOM) + 0.07 * LOG(PE_TRACOM) + 0.32 * LOG(PM) + 2.04 + ECT_PGDPTRACOM (250)

LOG(PGDPSER) = 0.07 * LOG(WSER) + 0.75 * LOG(PM) + 0.12 * LOG(PELE_COMM) - 1.27 + 0.01 * @TREND - 0.06 * DP2008 + ECT_PGDPSER (251)

LOG(PGDPU) = 0.22 * LOG(ULCU) + 0.80 * LOG(PE_U) + 0.92 * LOG(PMG) - 4.73 - 0.20 * DP2008 + ECT_PGDPU (252)

Identities for Producer Prices

PGDP = (GVANOIL / GDP) * PGDPNOIL + (GVAOIL / GDP) * PGDPOIL + (GVANIT / GDP) * PGDPNIT + DIS_PGDP (253)

PGDPNOIL = (GVAAGR / GVANOIL) * PGDPAGR + (GVAMINOTH / GVANOIL) * PGDPMINOTH + (GVAMANNO / GVANOIL) * PGDPMANNO + (GVAU / GVANOIL) * PGDPU + (GVACON / GVANOIL) * PGDPCON + (GVADIS / GVANOIL) * PGDPDIS + (GVATRACOM / GVANOIL) * PGDPTRACOM + (GVAFIBU / GVANOIL) * PGDPFIBU + (GVAOTHS / GVANOIL) * PGDPOTHS + (GVAGOV / GVANOIL) * PGDPGOV + DIS_PGDPNOIL (254)

Identities for aggregate energy prices

PE_AGR = (DELE_AGR / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_AGR + (DGAS_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (255)

PE_CON = (DGAS_TRA / (DEN_TOT_TRA + DELE_COMM)) * PGAS_TRA + (DDIS_TRA / (DEN_TOT_TRA + DELE_COMM)) * PDIS_TRA + (DKER_TRA / (DEN_TOT_TRA + DELE_COMM)) * PKER_TRA + (DELE_COMM / (DEN_TOT_TRA + DELE_COMM)) * PELE_COMM (256)

PE_DIS = (DELE_COMM / (DELE_COMM + DGAS_TRA + DDIS_TRA)) * PELE_AGR + (DGAS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA)) * PDIS_TRA (257)

PE_FIBU = (DELE_COMM / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_COMM + (DGAS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (258)

PE_GOV = (DELE_GOV / (DELE_GOV + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_GOV + (DGAS_TRA / (DELE_GOV + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_GOV + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_GOV + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (259)

PE_OTHS = (DELE_COMM / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_COMM + (DGAS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (260)

PE_TRACOM = (DELE_COMM / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_COMM + (DGAS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_COMM + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (261)

PE_U = (DNGA_U / (DNGA_U + DCOIL_U + DDIS_U + DHFO_U)) * PNGA_IND + (DCOIL_U / (DNGA_U + DCOIL_U + DDIS_U + DHFO_U)) * PCOIL_IND + (DDIS_U / (DNGA_U + DCOIL_U + DDIS_U + DHFO_U)) * PDIS_IND + (DHFO_U / (DNGA_U + DCOIL_U + DDIS_U + DHFO_U)) * PHFO_IND (262)

PE_MANNO = (DNGA_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PNGA_IND + (DNGA_IND_NEU / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + (263)

DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PNGA_IND + (DDIS_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PDIS_IND + (DHFO_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PHFO_IND + (DCOIL_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PCOIL_IND + (DELE_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * PELE_IND + (DOTH_IND / (DNGA_IND + DNGA_IND_NEU + DHFO_IND + DDIS_IND + DCOIL_IND + DELE_IND + DOTH_IND)) * POTH_IND

PE_OILREF = (DCOIL_IND / (DCOIL_IND + DELE_EOU + DNGA_EOU)) * PCOIL_IND + (DELE_EOU / (DCOIL_IND + DELE_EOU + DNGA_EOU)) * PELE_IND + (DNGA_EOU / (DCOIL_IND + DELE_EOU + DNGA_EOU)) * PNGA_IND (264)

PE_AGR = (DELE_AGR / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PELE_AGR + (DGAS_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PGAS_TRA + (DDIS_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PDIS_TRA + (DKER_TRA / (DELE_AGR + DGAS_TRA + DDIS_TRA + DKER_TRA)) * PKER_TRA (265)

Table 7.6. Labor and Wages Block Equations and Identities

Equations for Sectorial Employment

LOG(ETAGR) = 0.92 * LOG(GVAAGR) - 0.86 * LOG(WAGR / PGDPAGR * 100) + 1.36 + 0.0421962346875 * @TREND + 0.18 * DP2018 + ECT_ETAGR (266)

LOG(ETCON) = 0.94 * LOG(GVACON) - 0.21 * LOG(WCON / PGDPCON * 100) - 1.68 - 0.24 * DP200708 + ECT_ETCON (267)

LOG(ETDIS) = 0.13 * LOG(GVADIS) - 0.72 * LOG(WDIS / PGDPDIS * 100) + 12.87 + 0.13 * DBT2016 - 0.13 * DP2003 + ECT_ETDIS (268)

LOG(ETFIBU) = 0.93 * LOG(GVAFIBU) - 0.16 * LOG(WFIBU / PGDPFIBU * 100) - 3.50 - 0.35 * DP201314 + 0.38 * DP201718 + ECT_ETFIBU (269)

LOG(ETGOV_SAMA) = 1.12 * LOG(GVAGOV) - 0.14 * LOG(GWSA_Z / PGDPGOV * 100) - 5.42 + ECT_ETGOV (270)

LOG(ETMANNO) = 0.74 * LOG(GVAMANNO) + 0.13 * LOG(WMAN * 100 / PGDPMAN) - 6.21 - 0.36 * DP2010 + ECT_ETMANNO (271)

LOG(ETMINOTH) = 0.28 * LOG(GVAMINOTH) - 0.58 * LOG(WMIN / PGDPMINOTH * 100) + 9.21 - 0.15 * DP2009 + 0.19 * DP2014 + ECT_ETMINOTH (272)

LOG(ETOTHS) = 1.00 * LOG(GVAOTHS) - 0.53 * LOG(W_CEIC / PGDPOTHS * 100) + 1.94 + 0.16 * DP2014 - 0.09 * DP2009 + ECT_ETOTHS (273)

LOG(ETPETCH) = 1.65 * LOG(GVAPETCH) - 1.21 * LOG(WPETCH) - 3.85 + 0.05 * @TREND + ECT_ETPETCH (274)

LOG(ETTRACOM) = 0.47 * LOG(GVATRACOM) - 0.54 * LOG(WTRACOM / PGDPTRACOM * 100) - 6.29 + ECT_ETTRACOM (275)

LOG(ETU) = 0.42 * LOG(GVAU) - 0.48 * LOG(WU / PGDPU * 100) + 5.63 + ECT_ETU (276)

Identities for Labor Market

ET = ETNOIL + ETOIL + DIS_ET (277)

ETNOIL = ETAGR + ETCON + ETDIS + ETFIBU + ETGOV_SAMA + ETMANNO + ETPETCH + ETMINOTH + ETOTHS + ETTRACOM + ETU + DIS_ETNOIL (278)

ETOIL = ETOILREF + ETOILMIN (279)

ETMIN = ETMINOTH + ETOILMIN (280)

ETP = ETPS + ETPNS (281)

ETSER = ETDIS + ETTRACOM + ETFIBU + ETOTHS + ETGOV (282)

LF = PART / 100.00 * (POPS + POPNS - POP014) + DIS_LF (283)

U = LF - ET + DIS_U (284)

UR = U / LF * 100 (285)

UR_C = UR - UR_N (286)

Equations for Sectoral Wages

LOG(WAGR) = 0.77 * LOG(GVAAGR / ETAGR) + 2.20 * LOG(PGDPAGR) - 4.63 + ECT_WAGR (287)

LOG(WCON) = 0.81 * LOG(GVACON / ETCON) + 0.21 * LOG(PGDPCON) + 5.12 - 0.41 * DST0308 - 0.14 * DB0910 + 0.16 * DST9803 + ECT_WCON (288)

LOG(WFIBU) = 0.37 * LOG(GVAFIBU / ETFIBU) + 0.80 * LOG(PGDPFIBU) + 4.68 + ECT_WFIBU (289)

LOG(WMAN) = 0.95 * LOG(GVAMAN / ETMAN) + 0.50 * LOG(PGDPMANNO) + 2.95 + 0.58 * DP2011 + 0.40 * DP2012 + ECT_WMAN (290)

LOG(WMIN) = 0.17 * LOG(GVAMIN / ETMIN) + 0.17 * LOG(PGDPMIN) + 9.85 + 0.31 * DP2009 - 0.21 * DP2011 - 0.17 * DP2016 + ECT_WMIN (291)

LOG(WTRACOM) = 0.14 * LOG(GVATRACOM / ETTRACOM) + 0.77 * LOG(PGDPTRACOM) + 6.36 - 0.32 * DSH2003 - 0.22 * DP2011 + ECT_WTRACOM (292)

LOG(WU) = 1.61 * LOG(GVAU / ETU) + 0.95 * LOG(PGDPU) + 1.09 - 0.05 * @TREND - 0.57 * DST1012 + ECT_WU (293)

Identities for Unit Labor Cost by Sector

ULCAGR = WAGR * ETAGR / GVAAGR (294)

ULCCON = WCON * ETCON / GVACON (295)

ULCDIS = WDIS * ETDIS / GVADIS (296)

ULCFIBU = WFIBU * ETFIBU / GVAFIBU (297)

ULCFIBUOTH = WFIBU * ETFIBU / GVAFIBUOTH (298)

ULCGOV = W_OLD * ETGOV / GVAGOV (299)

ULCMANNO = WMAN * ETMANNO / GVAMANNO (300)

ULCOILREF = WMAN * ETOILREF / GVAOILREF (301)

ULCOTHS = W_OLD * ETOTHS / GVAOTHS (302)

ULCTRACOM = WTRACOM * ETTRACOM / GVATRACOM (303)

ULCU = WU * ETU / GVAU (304)

ULCSER = W_OLD * ETSER / GVASER (305)

ULCNOIL = W_OLD * ETNOIL / GVANOIL (306)

ULCOIL = W_OLD * ETOIL / GVAOIL (307)

An Identity for Labor Compensation

LABCOMP = (ETAGR * WAGR + ETCON * WCON + ETDIS * WDIS + ETFIBU * WFIBU + ETGOV_SAMA * ((GWSA_Z * 10^6) / (ETGOV_SAMA * 10^3)) + ETMANNO * WMAN + ETPETCH * WPETCH + ETMINOTH * W_CEIC + ETOTHS * W_CEIC + ETTRACOM * WTRACOM + ETU * WU + ETOILREF * W_CEIC + ETOILMIN * W_CEIC) / 1000 + DIS_LABCOMP (308)

Table 7.7. Energy Block Equations and Identities

Energy Demand Equations

Industry

LOG(DCOIL_IND) = 1.32 * LOG(GVAIND - GVAU) - 0.65 * LOG(PCOIL_IND / PGDPIND * 100) + 1.75902734383 * LOG(PDIS_IND / PGDPIND * 100) - 25.7704535637 + ECT_DCOIL_IND (309)

LOG(DDIS_IND) = 0.21 * LOG(GVAMANNO) - 0.13 * LOG(PDIS_IND / PGDPMANNO * 100) - 2.06 + 0.0250113640177 * @TREND - 0.17 * DBT2016 - 0.16 * DP1986 + ECT_DDIS_IND (310)

LOG(DELE_IND) = 0.61 * LOG(GVAMANNO) - 0.31 * LOG(PELE_IND * 100 / PGDPMANNO) + 0.94 * LOG(POP1564) - 13.12 + 0.61 * DSH9005 + 0.41 * DP2006 + ECT_DELE_IND (311)

LOG(DHFO_IND) = 0.94 * LOG(GVAMANNO) - 0.13 * LOG(PHFO_IND / PGDPIND * 100) + 0.59 * LOG(PNGA_IND / PGDPIND * 100) - 11.22 - 0.42 * DP2009 + ECT_DHFO_IND (312)

LOG(DNGA_IND) = 0.44 * LOG(GVAMANNO) - 0.43 * LOG(PNGA_IND / PGDPIND * 100) + 0.08 * LOG(PHFO_IND / PGDPIND * 100) + 0.47 * LOG(NG_PRO) - 3.34 + 0.17 * DP2015 - 0.14 * DP1997 + ECT_DNGA_IND (313)

LOG(DOTH_IND) = 0.06 * LOG(GVAMANNO) - 0.09 * LOG(POTH_IND / PGDPMANNO * 100) + 1.14 * LOG(NGL) - 9.68 + ECT_DOTH_IND (314)

Transport

LOG(DDIS_TRA) = 0.81 * LOG(GVANOIL) - 0.22 * LOG(PDIS_TRA / PGDPNOIL * 100) + 0.08 * LOG(PGAS_TRA / PGDPNOIL * 100) - 7.56 + ECT_DDIS_TRA (315)

LOG(DGAS_TRA) = 0.20 * LOG(GVANOIL) - 0.21 * LOG(PGAS_TRA / CPI * 100) + 1.23 * LOG(POP) - 10.97 + ECT_DGAS_TRA (316)

LOG(DKER_TRA) = 0.31 * LOG(GVANOIL) - 0.10 * LOG(PKER_TRA / PGDPTRACOM * 100) - 3.83 + ECT_DKER_TRA (317)

Residential

LOG(DELE_RES / POP) = 0.39 * LOG(DI / POP) - 0.32 * LOG(PELE_RES_CONS / CPI * 100) + 0.001 * CDD - 8.79 - 0.26 * DST1998 + 0.25 * DP1997 + ECT_DELE_RES (318)

LOG(DKER_RES / POP) = 0.26 * LOG(DI / POP) - 0.25 * LOG(PKER_RES / CPI * 100) + 0.29 * LOG(PELE_RES_INV / CPI * 100) - 12.70 + 0.72 * DP1991 + ECT_DKER_RES (319)

LOG(DLPG_RES) = 0.28 * LOG(GDP) - 0.13 * LOG(PLPG_RES / PGDP * 100) + 0.28 * LOG(PELE_RES_CONS / CPI * 100) - 4.95 + 0.35 * DP2011 + ECT_DLPG_RES (320)

Commercial, Government and Agriculture

LOG(DELE_COMM) = 0.44 * LOG(GVADIS + GVATRACOM + GVAFIBU + GVAOTHS + GVACON) - 0.15 * LOG(PELE_COMM / CPI * 100) - 0.17 * LOG(IFDIS + IFTRACOX + IFFIBU + IFOTHS + IFCON) - 6.93 + 0.08 * @TREND - 0.11 * DBT2017 + ECT_DELE_COMM (321)

LOG(DELE_GOV) = 0.57 * LOG(GVAGOV) - 0.12 * LOG(PELE_GOV / PGDPGOV * 100) - 7.34 + 0.03 * @TREND + 0.169704273369 * DP2018 + ECT_DELE_GOV (322)

LOG(DELE_AGR) = 1.86 * LOG(GVAAGR) - 0.25 * LOG(PELE_AGR / PGDPAGR * 100) - 0.09 * LOG(IFAGR) + 0.34 * LOG(WAGR / PGDPAGR * 100) - 22.01 + 0.29 * DP2009 + ECT_DELE_AGR (323)

An Identify for Electricity Supply

ELE_STOT_KSA = (DCOIL_U + DDIS_U + DHFO_U + DNGA_U) * ELE_EF + ELE_SS + DIS_ELE_STOT_KSA (324)

Identities to Calculate Total Energy Demand in TOE for Customer Types and the Kingdom

DEN_TOT_IND = DCOIL_IND + DDIS_IND + DHFO_IND + DOTH_IND + DNGA_IND + DELE_IND (325)

DEN_TOT_TRA = DGAS_TRA + DDIS_TRA + DKER_TRA (326)

DEOTH_TRA = DDIS_TRA + DKER_TRA (327)

DEN_TOT_RES = DELE_RES + DLPG_RES + DKER_RES (328)

DEN_TOT_CGA = DELE_COMM + DELE_GOV + DELE_AGR (329)

DEN_TOT_KSA = DEN_TOT_IND + DEN_TOT_TRA + DEN_TOT_RES + DEN_TOT_CGA (330)

DELE_TOT_KSA = DELE_RES + DELE_IND + DELE_COMM + DELE_GOV + DELE_AGR + DELE_OTH (331)

Identities to Calculate Energy Demand in Million SAR by Customer Type

Industry

CCOIL_IND = DCOIL_IND * PCOIL_IND (332)

CDIS_IND = DDIS_IND * PDIS_IND (333)

CHFO_IND = DHFO_IND * PHFO_IND (334)

COTH_IND = DOTH_IND * POTH_IND (335)

CNGA_IND = DNGA_IND * PNGA_IND (336)

CELE_IND = DELE_IND * PELE_IND (337)

CEN_TOT_IND = CCOIL_IND + CDIS_IND + CHFO_IND + COTH_IND + CNGA_IND + CELE_IND (338)

Residential (339)

CLPG_RES = DLPG_RES * PLPG_RES (340)

CKER_RES = DKER_RES * PKER_RES (341)

CELE_RES = DELE_RES * PELE_RES (342)

CEN_TOT_RES = CLPG_RES + CKER_RES + CELE_RES (343)

Transport

CGAS_TRA = DGAS_TRA * PGAS_TRA (344)

CDIS_TRA = DDIS_TRA * PDIS_TRA (345)

CKER_TRA = DKER_TRA * PKER_TRA (346)

CEN_TOT_TRA = CGAS_TRA + CDIS_TRA + CKER_TRA (347)

Commercial and Public Services and Agriculture and Forestry (348)

CELE_COMM = DELE_COMM * PELE_COMM (349)

CELE_GOV = DELE_GOV * PELE_GOV (350)

CELE_AGR = DELE_AGR * PELE_AGR (351)

CEN_TOT_CGA = CELE_COMM + CELE_GOV + CELE_AGR (352)

Identity to Calculate Energy Demand in Million SAR for the Kingdom

DNGA_TOT = DNGA_IND + DNGA_U + DNGA_IND_NEU + DNGA_EOU (353)

CNGA_TOT = DNGA_TOT * PNGA_IND (354)

CEN_TOT_KSA = CEN_TOT_IND + CEN_TOT_RES + CEN_TOT_TRA + CEN_TOT_CGA (355)

OILUSE = (DEN_TOT_KSA - DNGA_TOT) / (365 * 0.1486) + DIS_OILUSE (356)

Table 7.8. CO2 Emissions Block Equations and Identities

Industry

CO2_COIL_IND = (DCOIL_IND * 10^6 * 7.33) * 0.43 (356)

CO2_DIS_IND = (DDIS_IND * 10^6 * 0.99 * 7.5 * 42) * 0.01 (357)

CO2_HFO_IND = (DHFO_IND * 10^6 * 6.7) * 0.43 (358)

CO2_NGA_IND = (DNGA_IND * 10^6 * 39.2) * 0.05 (359)

CO2_ELE_IND = (DELE_IND * 10^6 * 11.63) * 0.65 (360)

Transport

CO2_DIS_TRA = (DDIS_TRA * 10^6 * 0.99 * 7.5 * 42) * 0.01 (361)

CO2_GAS_TRA = (DGAS_TRA * 10^6 * 0.95 * 8.5 * 42) * 0.01 (362)

CO2_KER_TRA = (DKER_TRA * 10^6 * 0.95 * 7.8 * 42) * 0.01 (363)

Residential (364)

CO2_ELE_RES = (DELE_RES * 10^6 * 11.63) * 0.645 (365)

CO2_KER_RES = (DKER_RES * 10^6 * 0.95 * 7.8 * 42) * 0.01 (366)

CO2_LPG_RES = (DLPG_RES * 10^6 * 0.89 * 11.6 * 42) * 0.24 (367)

CO2 from Commercial, Government, Agriculture, and Other Electricity Use

CO2_ELE_COMM = (DELE_COMM * 10^6 * 11.63) * 0.65 (368)

CO2_ELE_GOV = (DELE_GOV * 10^6 * 11.63) * 0.65 (369)

CO2_ELE_AGR = (DELE_AGR * 10^6 * 11.63) * 0.65 (370)

CO2_ELE_OTH = (DELE_OTH * 10^6 * 11.63) * 0.65 (371)

CO2 from total electricity generated and based on the fuel mix components

CO2_ELE_STOT_KSA = (ELE_STOT_KSA * 10^6 * 11.63) * 0.65 (372)

CO2_COIL_U = (DCOIL_U * 7.33 * 10^6) * 0.43 (373)

CO2_DIS_U = (DDIS_U * 10^6 * 0.99 * 7.5 * 42) * 0.01 (374)

CO2_HFO_U = (DHFO_U * 10^6 * 1.04 * 6.7) * 0.43 (375)

CO2_NGA_U = (DNGA_U * 10^6 * 39.2) * 0.05 (376)

CO2_ELE_KSA_PFM = CO2_COIL_U + CO2_DIS_U + CO2_HFO_U + CO2_NGA_U (377)

Total CO2 Emissions by Sector

CO2_EN_TOT_IND = CO2_COIL_IND + CO2_DIS_IND + CO2_HFO_IND + CO2_NGA_IND + CO2_ELE_IND (378)

CO2_EN_TOT_TRA = CO2_GAS_TRA + CO2_DIS_TRA + CO2_KER_TRA (379)

CO2_EN_TOT_RES = CO2_ELE_RES + CO2_LPG_RES + CO2_KER_RES (380)

CO2_EN_TOT_CGAO = CO2_ELE_COMM + CO2_ELE_GOV + CO2_ELE_AGR + CO2_ELE_OTH (381)

Total CO2 Emissions from Oil use and for the Kingdom (382)

CO2_OILUSE = (OILUSE * 365 * 10^6) * 0.43 (383)

CO2_EN_TOT_KSA = CO2_EN_TOT_IND + CO2_EN_TOT_TRA + CO2_EN_TOT_RES + CO2_EN_TOT_CGAO (384)

Table 7.9. Population and Age Cohorts Block Equations and Identities

Identities for Saudis and Non-Saudis

POPS = POPSM + POPSF (385)

POPNS = (POP - POPS) + DIS_POPNS (386)

Identities for Age Cohorts

POP014 = POPM014 + POPF014 (387)

POP1519 = POPM1519 + POPF1519 (388)

POP2024 = POPM2024 + POPF2024 (389)

POP2529 = POPM2529 + POPF2529 (390)

POP3034 = POPM3034 + POPF3034 (391)

POP3539 = POPM3539 + POPF3539 (392)

POP4044 = POPM4044 + POPF4044 (393)

POP4549 = POPM4549 + POPF4549 (394)

POP5054 = POPM5054 + POPF5054 (395)

POP5559 = POPM5559 + POPF5559 (396)

POP6064 = POPM6064 + POPF6064 (397)

POP65A = POPM65A + POPF65A (398)

POP = POP014 + POP1519 + POP2024 + POP2529 + POP3034 + POP3539 + POP4044 + POP4549 + POP5054 + POP5559 + POP6064 + POP65A + DIS_POP (399)

Identities for Working Age Group

POPW = POPWF + POPWM (400)

POPWF = POPF1519 + POPF2024 + POPF2529 + POPF3034 + POPF3539 + POPF4044 + POPF4549 + POPF5054 + POPF5559 + POPF6064 (401)

POPWM = POPM1519 + POPM2024 + POPM2529 + POPM3034 + POPM3539 + POPM4044 + POPM4549 + POPM5054 + POPM5559 + POPM6064 (402)

E2. KGEMM Variables

Please note that this section was re-produced from Hasanov et al. (2023).

#	Mnemonic	Description and unit
1.	AGRLANDSH	Agricultural land, % of land area
2.	C_RATIO	Value Added Tax Collection Efficiency Ratio
3.	CAPAGR	Capital stock, non-energy private excluding private dwellings, agriculture, and forestry, real, Million SAR at 2010 prices.
4.	CAPCON	Capital stock, non-energy private excluding private dwellings, construction, real, Million SAR at 2010 prices.
5.	CAPDIS	Capital stock, non-energy private excluding private dwellings, retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices.
6.	CAPFIBU	Capital stock, non-energy private excluding private dwellings, financial and business services, real, Million SAR at 2010 prices.
7.	CAPGOV	Capital stock, non-energy private excluding private dwellings, government, real, Million SAR at 2010 prices.
8.	CAPMANNO	Capital stock, non-energy private excluding private dwellings, manufacturing excluding petroleum refining, real, Million SAR at 2010 prices.
9.	CAPMANNOLPC	Capital stock, non-energy private excluding private dwellings, manufacturing excluding petroleum refining and petrochemicals, real, Million SAR at 2010 prices.
10.	CAPNOIL	Capital stock, in non-oil sector, real, Million SAR at 2010 prices.
11.	CAPOILREF	Capital Stock, in Oil Refinery, real, Million SAR at 2010 prices.
12.	CAPOTHS	Capital stock, non-energy private excluding private dwellings, other services, real, Million SAR at 2010 prices.
13.	CAPPETCH	Capital Stock for Petrochemical, real, Million SAR at 2010 prices.
14.	CAPU	Capital stock, non-energy private excluding private dwellings, utilities, real, Million SAR at 2010 prices.
15.	CCOIL_IND	Consumption of Crude Oil, Industry, Million SAR
16.	CDD	Cooling Degree Days
17.	CDIS_IND	Consumption of Diesel, Industry, nominal, Million SAR
18.	CDIS_TRA	Consumption of Diesel, Transport, nominal, Million SAR
19.	CELE_AGR	Consumption of Electricity, Agriculture, nominal, Million SAR
20.	CELE_COMM	Consumption of Electricity, Commercial, nominal, Million SAR
21.	CELE_GOV	Consumption of Electricity, Government, nominal, Million SAR
22.	CELE_IND	Consumption of Electricity, Industry, nominal, Million SAR
23.	CELE_RES	Consumption of Electricity, Residential, nominal, Million SAR
24.	CEN_TOT_CGA	Consumption of Total Energy, Commercial, Government, Agriculture, nominal, Million SAR
25.	CEN_TOT_IND	Consumption of Total Energy, Industry, nominal, Million SAR
26.	CEN_TOT_KSA	Consumption of Total Energy, KSA, nominal, Million SAR
27.	CEN_TOT_RES	Consumption of Total Energy, Residential, nominal, Million SAR
28.	CEN_TOT_TRA	Consumption of Total Energy, Transport, nominal, Million SAR
29.	CGAS_TRA	Consumption of Gasoline, Transport, nominal, Million SAR
30.	CHFO_IND	Consumption of HFO, Industry, nominal, Million SAR
31.	CKER_RES	Consumption of Kerosene, Residential, nominal, Million SAR
32.	CKER_TRA	Consumption of Kerosene, Transport, nominal, Million SAR
33.	CLPG_RES	Consumption of LPG, Residential, nominal, Million SAR
34.	CNGA_IND	Consumption of Natural Gas, Industry, nominal, Million SAR
35.	CNGA_TOT	Consumption of Total Natural Gas, nominal, Million SAR
36.	CO2_COIL_IND	CO2 Emissions from Crude Oil Consumption in Industry, Metric tons
37.	CO2_COIL_U	CO2 Emissions, Crude Oil, Utility, Metric tons
38.	CO2_DIS_IND	CO2 Emissions from Diesel Consumption in Industry, Metric tons

39.	CO2_DIS_TRA	CO2 Emissions from Diesel Consumption in Transport, Metric tons
40.	CO2_DIS_U	CO2 Emissions, Diesel, Utility, Metric tons
41.	CO2_ELE_AGR	CO2 Emissions from Electricity Consumption in Agriculture Sector, Metric tons
42.	CO2_ELE_COMM	CO2 Emissions from Electricity Consumption in Commercial Sector, Metric tons
43.	CO2_ELE_GOV	CO2 Emissions from Electricity Consumption in Government Sector, Metric tons
44.	CO2_ELE_IND	CO2 Emissions from Electricity Consumption in Industry, Metric tons
45.	CO2_ELE_KSA_PFM	CO2 Emissions, Electricity Generation Fuel Mix, Utility, Metric tons
46.	CO2_ELE_OTH	CO2 Emissions from Electricity Consumption in Other, Metric tons
47.	CO2_ELE_RES	CO2 Emissions from Electricity Consumption in Residential Sector, Metric tons
48.	CO2_ELE_STOT_KSA	CO2 Emissions from Electricity Supply, Total Kingdom, Metric tons
49.	CO2_EN_TOT_CGAO	CO2 Emissions from Total Energy Use in Commercial, Government, Agriculture and Other, Metric tons
50.	CO2_EN_TOT_IND	CO2 Emissions from Total Energy Use in Industry, Metric tons
51.	CO2_EN_TOT_KSA	CO2 Emissions from Total Energy Use, KSA, Metric tons
52.	CO2_EN_TOT_RES	CO2 Emissions from Total Energy Use, Residential, Metric tons
53.	CO2_EN_TOT_TRA	CO2 Emissions from Total Energy Use in Transport, Metric tons
54.	CO2_GAS_TRA	CO2 Emissions from Gasoline Consumption in Transport, Metric tons
55.	CO2_HFO_IND	CO2 Emissions from HFO Consumption in Industry, Metric tons
56.	CO2_HFO_U	CO2 Emissions from HFO Consumption in Utility, Metric tons
57.	CO2_KER_RES	CO2 Emissions from Kerosene type Jet Fuel Consumption in Residential Sector, Metric tons
58.	CO2_KER_TRA	CO2 Emissions from Kerosene type Jet Fuel Consumption in Transport, Metric tons
59.	CO2_LPG_RES	CO2 Emissions from LPG Consumption in Residential Sector, Metric tons
60.	CO2_NGA_IND	CO2 Emissions from Natural Gas Consumption in Industry, Metric tons
61.	CO2_NGA_U	CO2 Emissions from Natural Gas Consumption in Utility, Metric tons
62.	CO2_OILUSE	CO2 Emissions from Domestic Oil Use, Metric tons
63.	CONS	Consumption, private, real, Million SAR at 2010 prices
64.	CONS_Z	Consumption, private, nominal, Million SAR
65.	COTH_IND	Consumption of Other Energy in Industry, nominal, Million SAR
66.	CPI	Consumer price index, Index 2010 = 100,
67.	CPI_USA	United States - Consumer price index, Index, 2010= 100(rebased from 1982/84=10
68.	CPIART	Consumer price index, recreation & culture, Index 2010 = 100,
69.	CPIART_W	Weight for CPIART. It takes 0.035 for 1970-2012 and 0.034 for 2013-2020 as reported by GaStat.
70.	CPICLOTH	Consumer price index, clothing, Index 2010 = 100,
71.	CPICLOTH_W	Weight for CPICLOTH. It takes 0.084 for 1970-2012 and 0.062 for 2013-2020 as reported by GaStat.
72.	CPICOMM	Consumer price index, communication, Index 2010 = 100,
73.	CPICOMM_W	Weight for CPICOMM. It takes 0.081 for 1970-2012 and 0.085 for 2013-2020 as reported by GaStat.
74.	CPIEDU	Consumer price index, education, Index 2010 = 100,
75.	CPIEDU_W	Weight for CPIEDU. It takes 0.027 for 1970-2012 and 0.042 for 2013-2020 as reported by GaStat.
76.	CPIFOOD	Consumer price index, food & beverages, Index 2010 = 100,
77.	CPIFOOD_W	Weight for CPIFOOD. It takes 0.217 for 1970-2012 and 0.188 for 2013-2020 as reported by GaStat.
78.	CPIHEAL	Consumer price index, health, Index 2010 = 100,
79.	CPIHEAL_W	Weight for CPIHEAL. It takes 0.026 for 1970-2012 and 0.023 for 2013-2020 as reported by GaStat.
80.	CPIHH	Consumer price index, household items, Index 2010 = 100,
81.	CPIHH_W	Weight for CPIHH. It takes 0.091 for 1970-2012 and 0.085 for 2013-2020 as reported by GaStat.
82.	CPIHTL	Consumer price index, hotels & restaurants, Index 2010 = 100,

83.	CPIHTL_W	Weight for CPIHTL. It takes 0.056 for 1970-2012 and 0.065 for 2013-2020 as reported by GaStat.
84.	CPIMISC	Consumer price index, other, Index 2010 = 100,
85.	CPIMISC_W	Weight for CPIMISC. It takes 0.069 for 1970-2012 and 0.057 for 2013-2020 as reported by GaStat.
86.	CPITOBC	Consumer price index, tobacco, Index 2010 = 100,
87.	CPITOBC_W	Weight for CPITOBC. It takes 0.005 for 1970-2012 and 0.007 for 2013-2020 as reported by GaStat.
88.	CPITRA	Consumer price index, transport, Index 2010 = 100,
89.	CPITRA_W	Weight for CPITRA. It takes 0.104 for 1970-2012 and 0.100 for 2013-2020 as reported by GaStat.
90.	CPIU	Consumer price index, Housing, Water, Electricity, Gas and Other Fuels, 2010 = 100
91.	CPIU_W	Weight for CPIU. It takes 0.205 for 1970-2012 and 0.253 for 2013-2020 as reported by GaStat.
92.	DB0910	Blip dummy variable, positive unity value in 2009 and negative unity value in 2010, zero value otherwise
93.	DB1617	Blip dummy variable, positive unity value in 2016 and negative unity value in 2017, zero value otherwise
94.	DBT2010	Dummy variable, take 1, 2, … , 10 for 2010, 2011, …, 2019 and zero value otherwise
95.	DBT2015	Dummy variable, take 1,2,.., 5 for 2015, 2016, …, 2019 and zero value otherwise
96.	DBT2016	Dummy variable, take 1,2,..,4 for 2016, 2017, …, 2019 and zero value otherwise
97.	DBT2017	Dummy variable, take 1,2,3 for 2017, 2018, 2019 and zero value otherwise
98.	DBT2018	Dummy variable, take 1,2, for 2018 and 2019 and zero value otherwise
99.	DCOIL_IND	Demand for Crude oil in Industry, MTOE
100.	DCOIL_U	Demand for crude oil in utility, MTOE
101.	DD	Demand Deposits, nominal, Million SAR
102.	DDIS_IND	Demand for Diesel in Industry, MTOE
103.	DDIS_TRA	Demand for Diesel in Transport Sector, MTOE
104.	DDIS_U	Demand for diesel in Utility, MTOE
105.	DEBT_GOV	General Government Debt, nominal, Million SAR
106.	DEBTG_GOV	General Government Gross Debt, nominal, Million SAR
107.	DELE_AGR	Demand for electricity in Agricultural sector, MTOE
108.	DELE_COMM	Demand for electricity in Commercial services, MTOE
109.	DELE_EOU	Electricity Energy Industry Own Use, MTOE
110.	DELE_GOV	Demand for electricity in Public (government) services, MTOE
111.	DELE_IND	Demand for electricity in industrial sector, MTOE
112.	DELE_OTH	Demand for electricity, Other, MTOE
113.	DELE_RES	Demand for electricity in Residential sector, MTOE
114.	DELE_TOT_KSA	Demand for Electricity, Total, Kingdom, MTOE
115.	DEN_TOT_CGA	Demand for Electricity, Total, Commercial, Public and Agriculture, MTOE
116.	DEN_TOT_IND	Demand for Energy, Total, Industry, MTOE
117.	DEN_TOT_KSA	Demand for Energy, Total, Kingdom, MTOE
118.	DEN_TOT_RES	Demand for Energy, Total, Residential, MTOE
119.	DEN_TOT_TRA	Demand for Energy, Total, Transport, MTOE
120.	DEOTH_TRA	other energy demand in transportation, MTOE
121.	DETH_IND_NEU	Demand for Ethane in Industry Sector, Non-Energy Use, MTOE
122.	DGAS_TRA	Demand for Motor Gasoline excl. biofuels in Transport, MTOE
123.	DHFO_IND	Demand for HFO in Industry Sector, MTOE
124.	DHFO_U	Demand for HFO in Utility, MTOE
125.	DI	Disposable Income, real, Millions SAR at 2010 prices
126.	DI_T_Z	Total Disposable Income, nominal, Million SAR

127.	DI_Z	Private Disposable Income, Millions SAR
128.	DIS_CAPAGR	Discrepancy term for the identity of CAPAGR
129.	DIS_CAPCON	Discrepancy term for the identity of CAPCON
130.	DIS_CAPDIS	Discrepancy term for the identity of CAPDIS
131.	DIS_CAPFIBU	Discrepancy term for the identity of CAPFIBU
132.	DIS_CAPGOV	Discrepancy term for the identity of CAPGOV
133.	DIS_CAPMANNOLPC	Discrepancy term for the identity of CAPMANNOLPC
134.	DIS_CAPNOIL	Discrepancy term for the identity of CAPNOIL
135.	DIS_CAPOILREF	Discrepancy term for the identity of CAPOILREF
136.	DIS_CAPOTHS	Discrepancy term for the identity of CAPOTHS
137.	DIS_CAPPETCH	Discrepancy term for the identity of CAPPETCH
138.	DIS_CAPU	Discrepancy term for the identity of CAPU
139.	DIS_CPI	Discrepancy term for the identity of CPI
140.	DIS_DI_Z	Discrepancy term for the identity of DI_Z
141.	DIS_ELE_STOT_KSA	Discrepancy term for the identity of DIS_ELE_STOT_KSA
142.	DIS_ET	Discrepancy term for the identity of ET
143.	DIS_ETNOIL	Discrepancy term for the identity of ETNOIL
144.	DIS_EXPL	Discrepancy term for the identity of EXPL
145.	DIS_FDAGR	Discrepancy term for the identity of FDAGR
146.	DIS_FDCON	Discrepancy term for the identity of FDCON
147.	DIS_FDDIS	Discrepancy term for the identity of FDDIS
148.	DIS_FDFIBU	Discrepancy term for the identity of FDFIBU
149.	DIS_FDGOV	Discrepancy term for the identity of FDGOV
150.	DIS_FDI$	Discrepancy term for the identity of FDI$
151.	DIS_FDI$OUT	Discrepancy term for the identity of FDI$OUT
152.	DIS_FDMANNOLPC	Discrepancy term for the identity of FDMANNOLPC
153.	DIS_FDOTHS	Discrepancy term for the identity of FDOTHS
154.	DIS_FDPETCH	Discrepancy term for the identity of FDPETCH
155.	DIS_FDTRACOM	Discrepancy term for the identity of FDTRACOM
156.	DIS_FDU	Discrepancy term for the identity of FDU
157.	DIS_GI	Discrepancy term for the identity of GI
158.	DIS_GREVNOIL	Discrepancy term for the identity of GREVNOIL
159.	DIS_GREVOIL	Discrepancy term for the identity of GREVOIL
160.	DIS_GVANIT_Z	Discrepancy term for the identity of GVANIT_Z
161.	DIS_GVANOIL	Discrepancy term for the identity of GVANOIL
162.	DIS_GVANOIL_Z	Discrepancy term for the identity of GVANOIL_Z
163.	DIS_GVAOIL	Discrepancy term for the identity of GVAOIL
164.	DIS_GVAOIL_Z	Discrepancy term for the identity of GVAOIL_Z
165.	DIS_HUVF	Discrepancy term for the identity of HUVF
166.	DIS_IDAGR	Discrepancy term for the identity of IDAGR
167.	DIS_IDCON	Discrepancy term for the identity of IDCON
168.	DIS_IDDIS	Discrepancy term for the identity of IDDIS
169.	DIS_IDFIBU	Discrepancy term for the identity of IDFIBU
170.	DIS_IDGOV	Discrepancy term for the identity of IDGOV
171.	DIS_IDMANNOLPC	Discrepancy term for the identity of IDMANNOLPC

172.	DIS_IDMINOTH	Discrepancy term for the identity of IDMINOTH
173.	DIS_IDOIL	Discrepancy term for the identity of IDOIL
174.	DIS_IDOTHS	Discrepancy term for the identity of IDOTHS
175.	DIS_IDPETCH	Discrepancy term for the identity of IDPETCH
176.	DIS_IDTRACOM	Discrepancy term for the identity of IDTRACOM
177.	DIS_IDU	Discrepancy term for the identity of IDU
178.	DIS_IF	Discrepancy term for the identity of IF
179.	DIS_IFDOM	Discrepancy term for the identity of IFDOM
180.	DIS_IFNOILP	Discrepancy term for the identity of IFNOILP
181.	DIS_KOILREF	Discrepancy term for the identity of KOILREF
182.	DIS_LABCOMP	Discrepancy term for the identity of LABCOMP
183.	DIS_LF	Discrepancy term for the identity of LF
184.	DIS_LIABP	Discrepancy term for the identity of LIABP
185.	DIS_M	Discrepancy term for the identity of M
186.	DIS_MG	Discrepancy term for the identity of MG
187.	DIS_MG_Z	Discrepancy term for the identity of MG_Z
188.	DIS_MOILREF	Discrepancy term for the identity of MOILREF
189.	DIS_OILUSE	Discrepancy term for the identity of OILUSE
190.	DIS_OVF	Discrepancy term for the identity of OVF
191.	DIS_PGDP	Discrepancy term for the identity of PGDP
192.	DIS_PGDPNOIL	Discrepancy term for the identity of PGDPNOIL
193.	DIS_POP	Discrepancy in Population, Thousand
194.	DIS_POPNS	Discrepancy in Non-Saudi Population, Thousand
195.	DIS_PSCAPE	Discrepancy term for the identity of PSCAPE
196.	DIS_REER	Discrepancy term for the identity of REER
197.	DIS_RLG	Discrepancy term for the identity of RLG
198.	DIS_TOIPC	Discrepancy term for the identity of TOIPC
199.	DIS_TOIT	Discrepancy term for the identity of TOIT
200.	DIS_U	Discrepancy term for the identity of U
201.	DIS_VAT_REV	Discrepancy term for the identity of VAT_REV
202.	DIS_WPO_AL_R	Discrepancy term for the identity of WPO_AL_R
203.	DIS_WTOUR	Discrepancy term for the identity of WTOUR
204.	DIS_X	Discrepancy term for the identity of X
205.	DIS_XGOIL$_Z	Discrepancy term for the identity of XGOIL$_Z
206.	DKER_RES	Demand for Kerosene type jet fuel excl. biofuels in Residential Sector, MTOE
207.	DKER_TRA	Demand for Kerosene type jet fuel excl. biofuels in Transportation Sector, MTOE
208.	DLPG_IND_NEU	Demand for Liquefied Petroleum Gases in Industry, Non-Energy Use, MTOE
209.	DLPG_RES	Demand for Liquefied Petroleum Gases in Residential sector, MTOE
210.	DNAP_IND_NEU	Demand for Naphtha in Industry Sector, Non-Energy Use, MTOE
211.	DNGA_EOU	Demand for natural gas in Energy industry own use, MTOE
212.	DNGA_IND	Final Demand for Natural Gas in Industry Sector, MTOE
213.	DNGA_IND_NEU	Demand for Natural Gas (Methane) for Non-Energy Use, MTOE
214.	DNGA_TOT	Demand for Natural Gas, Total, MTOE
215.	DNGA_U	Demand for natural gas in Utility, MTOE
216.	DOILREF_ARGENTIN	Refined oil, total demand, Argentina, MTOE

217.	DOILREF_AUSTRALI	Refined oil, total demand, Australia, MTOE
218.	DOILREF_AUSTRIA	Refined oil, total demand, Austria, MTOE
219.	DOILREF_BELGIUM	Refined oil, total demand, Belgium, MTOE
220.	DOILREF_BRAZIL	Refined oil, total demand, Brazil, MTOE
221.	DOILREF_BULGARIA	Refined oil, total demand, Bulgaria, MTOE
222.	DOILREF_CANADA	Refined oil, total demand, Canada, MTOE
223.	DOILREF_CHILE	Refined oil, total demand, Chile, MTOE
224.	DOILREF_CHINA	Refined oil, total demand, China, MTOE
225.	DOILREF_CROATIA	Refined oil, total demand, Croatia, MTOE
226.	DOILREF_CZECH	Refined oil, total demand, Czech, MTOE
227.	DOILREF_DENMARK	Refined oil, total demand, Denmark, MTOE
228.	DOILREF_FINLAND	Refined oil, total demand, Finland, MTOE
229.	DOILREF_FRANCE	Refined oil, total demand, France, MTOE
230.	DOILREF_GERMANY	Refined oil, total demand, Germany, MTOE
231.	DOILREF_GREECE	Refined oil, total demand, Greece, MTOE
232.	DOILREF_HK	Refined oil, total demand, Hong Kong, MTOE
233.	DOILREF_HUNGARY	Refined oil, total demand, Hungary, MTOE
234.	DOILREF_INDIA	Refined oil, total demand, India, MTOE
235.	DOILREF_INDONESI	Refined oil, total demand, Indonesia, MTOE
236.	DOILREF_IRELAND	Refined oil, total demand, Ireland, MTOE
237.	DOILREF_ITALY	Refined oil, total demand, Italy, MTOE
238.	DOILREF_JAPAN	Refined oil, total demand, Japan, MTOE
239.	DOILREF_KOREA	Refined oil, total demand, Korea, MTOE
240.	DOILREF_MALAYSIA	Refined oil, total demand, Malaysia, MTOE
241.	DOILREF_MEXICO	Refined oil, total demand, Mexico, MTOE
242.	DOILREF_NETH	Refined oil, total demand, Netherlands, MTOE
243.	DOILREF_NORWAY	Refined oil, total demand, Norway, MTOE
244.	DOILREF_PHILIPPI	Refined oil, total demand, Philippines, MTOE
245.	DOILREF_POLAND	Refined oil, total demand, Poland, MTOE
246.	DOILREF_PORTUGAL	Refined oil, total demand, Portugal, MTOE
247.	DOILREF_ROMANIA	Refined oil, total demand, Romania, MTOE
248.	DOILREF_RUSSIA	Refined oil, total demand, Russia, MTOE
249.	DOILREF_SAFRICA	Refined oil, total demand, South Africa, MTOE
250.	DOILREF_SINGPORE	Refined oil, total demand, Singapore, MTOE
251.	DOILREF_SLOVAKIA	Refined oil, total demand, Slovakia, MTOE
252.	DOILREF_SPAIN	Refined oil, total demand, Spain, MTOE
253.	DOILREF_SWEDEN	Refined oil, total demand, Sweden, MTOE
254.	DOILREF_SWITZ	Refined oil, total demand, Switzerland, MTOE
255.	DOILREF_T	Refined oil demand, total, MTOE
256.	DOILREF_TAIWAN	Refined oil, total demand, Taiwan, MTOE
257.	DOILREF_THAILAND	Refined oil, total demand, Thailand, MTOE
258.	DOILREF_TURKEY	Refined oil, total demand, Turkey, MTOE
259.	DOILREF_UAEMOD	Refined oil, total demand, UAE, MTOE
260.	DOILREF_UK	Refined oil, total demand, United Kingdom, MTOE
261.	DOILREF_US	Refined oil, total demand, United States, MTOE

262.	DOMD	Domestic Demand, total, Million SAR at 2010 prices
263.	DOMD_Z	Domestic Demand, total, Million SAR
264.	DOTH_IND	Demand for other refined oil products in Industry, MTOE
265.	DP1986	Dummy variable, taking unity in 1986 and zero otherwise.
266.	DP1991	Dummy variable, taking unity in 1991 and zero otherwise.
267.	DP1997	Dummy variable, taking unity in 1997 and zero otherwise.
268.	DP2001	Dummy variable, taking unity in 2001 and zero otherwise.
269.	DP2003	Dummy variable, taking unity in 2003 and zero otherwise.
270.	DP2006	Dummy variable, taking unity in 2006 and zero otherwise.
271.	DP200708	Dummy variable, taking unity in 2007 and 2008 and zero otherwise.
272.	DP2008	Dummy variable, taking unity in 2008 and zero otherwise.
273.	DP2009	Dummy variable, taking unity in 2009 and zero otherwise.
274.	DP2010	Dummy variable, taking unity in 2010 and zero otherwise.
275.	DP2011	Dummy variable, taking unity in 2011 and zero otherwise.
276.	DP2012	Dummy variable, taking unity in 2012 and zero otherwise.
277.	DP2013	Dummy variable, taking unity in 2013 and zero otherwise.
278.	DP201314	Dummy variable, taking unity in 2013 and 2014 and zero otherwise.
279.	DP2014	Dummy variable, taking unity in 2014 and zero otherwise.
280.	DP2015	Dummy variable, taking unity in 2015 and zero otherwise.
281.	DP2016	Dummy variable, taking unity in 2016 and zero otherwise.
282.	DP2017	Dummy variable, taking unity in 2017 and zero otherwise.
283.	DP201718	Dummy variable, taking unity in 2017 and 2018 and zero otherwise.
284.	DP2018	Dummy variable, taking unity in 2018 and zero otherwise.
285.	DP2019	Dummy variable, taking unity in 2019 and zero otherwise.
286.	DQM	Other Quasi-Money Deposits, nominal, million Riyals
287.	DSH000102	Dummy variable, taking unity in 2000, 2001 and 2002 and zero otherwise.
288.	DSH1981	Dummy variable, taking unity from 1981 to 2019 and zero otherwise.
289.	DSH2003	Dummy variable, taking unity from 2003 to 2019 and zero otherwise.
290.	DSH2008	Dummy variable, taking unity from 2008 to 2019 and zero otherwise.
291.	DSH2010	Dummy variable, taking unity from 2010 to 2019 and zero otherwise.
292.	DSH9005	Dummy variable, taking unity from 1990 to 2005 and zero otherwise.
293.	DST0308	Dummy variable, taking unity from 2003 to 2008 and zero otherwise.
294.	DST0312	Dummy variable, taking unity from 2003 to 2012 and zero otherwise.
295.	DST1012	Dummy variable, taking unity from 2010 to 2012 and zero otherwise.
296.	DST1998	Dummy variable, taking unity from 1970 to 1998 and zero otherwise (Created by Autometrics in OxMetrics)
297.	DST9803	Dummy variable, taking unity from 1998 to 2003 and zero otherwise.
298.	DTB9501	Dummy variable, taking value from negative unity in 2001 to negative 7 in 1995 and zero otherwise (Created by Autometrics in OxMetrics)
299.	DTS	Time and Savings Deposits, nominal, Million SAR
300.	ECT_CONS	Equilibrium Correction Term from the Long-run Equation of CONS
301.	ECT_CPIART_ULC	Equilibrium Correction Term from the Long-run Equation of CPIART
302.	ECT_CPICLOTH_ULC	Equilibrium Correction Term from the Long-run Equation of CPICLOTH
303.	ECT_CPICOM_ULC	Equilibrium Correction Term from the Long-run Equation of CPICOM
304.	ECT_CPIEDU_ULC	Equilibrium Correction Term from the Long-run Equation of CPIEDU
305.	ECT_CPIFOOD_ULC	Equilibrium Correction Term from the Long-run Equation of CPIFOOD

306.	ECT_CPIHEAL_ULC	Equilibrium Correction Term from the Long-run Equation of CPIHEAL
307.	ECT_CPIHH_ULC	Equilibrium Correction Term from the Long-run Equation of CPIHH
308.	ECT_CPIHTL_ULC	Equilibrium Correction Term from the Long-run Equation of CPIHTL
309.	ECT_CPIMISC_ULC	Equilibrium Correction Term from the Long-run Equation of CPIMISC
310.	ECT_CPITOBC_ULC	Equilibrium Correction Term from the Long-run Equation of CPITOBC
311.	ECT_CPITRA_ULC	Equilibrium Correction Term from the Long-run Equation of CPITRA
312.	ECT_CPIU_ULC	Equilibrium Correction Term from the Long-run Equation of CPIU
313.	ECT_DCOIL_IND	Equilibrium Correction Term from the Long-run Equation of DCOIL_IND
314.	ECT_DDIS_IND	Equilibrium Correction Term from the Long-run Equation of DDIS_IND
315.	ECT_DDIS_TRA	Equilibrium Correction Term from the Long-run Equation of DDIS_TRA
316.	ECT_DEBT_GOV	Equilibrium Correction Term from the Long-run Equation of DEBT_GOV
317.	ECT_DELE_AGR	Equilibrium Correction Term from the Long-run Equation of DELE_AGR
318.	ECT_DELE_COMM	Equilibrium Correction Term from the Long-run Equation of DELE_COMM
319.	ECT_DELE_GOV	Equilibrium Correction Term from the Long-run Equation of DELE_GOV
320.	ECT_DELE_IND	Equilibrium Correction Term from the Long-run Equation of DELE_IND
321.	ECT_DELE_RES	Equilibrium Correction Term from the Long-run Equation of DELE_RES
322.	ECT_DETH_IND_NEU	Equilibrium Correction Term from the Long-run Equation of DETH_IND_NEU
323.	ECT_DGAS_TRA	Equilibrium Correction Term from the Long-run Equation of DGAS_TRA
324.	ECT_DHFO_IND	Equilibrium Correction Term from the Long-run Equation of DHFO_IND
325.	ECT_DKER_RES	Equilibrium Correction Term from the Long-run Equation of DKER_RES
326.	ECT_DKER_TRA	Equilibrium Correction Term from the Long-run Equation of DKER_TRA
327.	ECT_DLPG_IND_NEU	Equilibrium Correction Term from the Long-run Equation of DLPG_IND_NEU
328.	ECT_DLPG_RES	Equilibrium Correction Term from the Long-run Equation of DLPG_RES
329.	ECT_DNAP_IND_NEU	Equilibrium Correction Term from the Long-run Equation of DNAP_IND_NEU
330.	ECT_DNGA_IND	Equilibrium Correction Term from the Long-run Equation of DNGA_IND
331.	ECT_DNGA_IND_NEU	Equilibrium Correction Term from the Long-run Equation of DNGA_IND_NEU
332.	ECT_DOTH_IND	Equilibrium Correction Term from the Long-run Equation of DOTH_IND
333.	ECT_ETAGR	Equilibrium Correction Term from the Long-run Equation of ETAGR
334.	ECT_ETCON	Equilibrium Correction Term from the Long-run Equation of ETCON
335.	ECT_ETDIS	Equilibrium Correction Term from the Long-run Equation of ETDIS
336.	ECT_ETFIBU	Equilibrium Correction Term from the Long-run Equation of ETFIBU
337.	ECT_ETGOV	Equilibrium Correction Term from the Long-run Equation of ETGO
338.	ECT_ETMANNO	Equilibrium Correction Term from the Long-run Equation of ETMANNO
339.	ECT_ETMINOTH	Equilibrium Correction Term from the Long-run Equation of ETMINOTH
340.	ECT_ETOTHS	Equilibrium Correction Term from the Long-run Equation of ETOTHS
341.	ECT_ETPETCH	Equilibrium Correction Term from the Long-run Equation of ETPETCH
342.	ECT_ETTRACOM	Equilibrium Correction Term from the Long-run Equation of ETTRACOM
343.	ECT_ETU	Equilibrium Correction Term from the Long-run Equation of ETU
344.	ECT_GAE_Z	Equilibrium Correction Term from the Long-run Equation of GAE_Z
345.	ECT_GC_Z_OTH	Equilibrium Correction Term from the Long-run Equation of GC_Z_OTH
346.	ECT_GCGPE	Equilibrium Correction Term from the Long-run Equation of GCGPE
347.	ECT_GI_Z	Equilibrium Correction Term from the Long-run Equation of GI_Z
348.	ECT_GMO_Z	Equilibrium Correction Term from the Long-run Equation of GMO_Z
349.	ECT_GVAAGR	Equilibrium Correction Term from the Long-run Equation of GVAAGR
350.	ECT_GVACON	Equilibrium Correction Term from the Long-run Equation of GVACON

351.	ECT_GVADIS	Equilibrium Correction Term from the Long-run Equation of GVADIS
352.	ECT_GVAFIBU	Equilibrium Correction Term from the Long-run Equation of GVAFIBU
353.	ECT_GVAGOV	Equilibrium Correction Term from the Long-run Equation of GVAGOV
354.	ECT_GVAMANNOLPC	Equilibrium Correction Term from the Long-run Equation of GVAMANNOLPC
355.	ECT_GVAOILMIN	Equilibrium Correction Term from the Long-run Equation of GVAOILMIN
356.	ECT_GVAOILREF	Equilibrium Correction Term from the Long-run Equation of GVAOILREF
357.	ECT_GVAOTHS	Equilibrium Correction Term from the Long-run Equation of GVAOTHS
358.	ECT_GVAPETCH	Equilibrium Correction Term from the Long-run Equation of GVAPETCH
359.	ECT_GVATRACOM	Equilibrium Correction Term from the Long-run Equation of GVATRACOM
360.	ECT_GVAU	Equilibrium Correction Term from the Long-run Equation of GVAU
361.	ECT_GWSA_Z	Equilibrium Correction Term from the Long-run Equation of GWSA_Z
362.	ECT_IFAGR	Equilibrium Correction Term from the Long-run Equation of IFAGR
363.	ECT_IFCON	Equilibrium Correction Term from the Long-run Equation of IFCON
364.	ECT_IFDIS	Equilibrium Correction Term from the Long-run Equation of IFDIS
365.	ECT_IFFIBU	Equilibrium Correction Term from the Long-run Equation of IFFIBU
366.	ECT_IFMANNOLPC	Equilibrium Correction Term from the Long-run Equation of IFMANNOLPC
367.	ECT_IFOTHS	Equilibrium Correction Term from the Long-run Equation of IFOTHS
368.	ECT_IFPETCH	Equilibrium Correction Term from the Long-run Equation of IFPETCH
369.	ECT_IFTRACOM	Equilibrium Correction Term from the Long-run Equation of IFTRACOM
370.	ECT_IFU	Equilibrium Correction Term from the Long-run Equation of IFU
371.	ECT_MD_UR	Equilibrium Correction Term from the Long-run Equation of M2 (In the case no restriction on the income and price coefficients)
372.	ECT_MGCAP	Equilibrium Correction Term from the Long-run Equation of MGCAP
373.	ECT_MGCONS	Equilibrium Correction Term from the Long-run Equation of MGCONS
374.	ECT_MGINTER	Equilibrium Correction Term from the Long-run Equation of MGINTER
375.	ECT_MS	Equilibrium Correction Term from the Long-run Equation of MS
376.	ECT_PGDPAGR	Equilibrium Correction Term from the Long-run Equation of PGDPAGR
377.	ECT_PGDPCON	Equilibrium Correction Term from the Long-run Equation of PGDPCON
378.	ECT_PGDPDIS	Equilibrium Correction Term from the Long-run Equation of PGDPDIS
379.	ECT_PGDPFIBU	Equilibrium Correction Term from the Long-run Equation of PGDPFIBU
380.	ECT_PGDPGOV	Equilibrium Correction Term from the Long-run Equation of PGDPGOV
381.	ECT_PGDPMANNO	Equilibrium Correction Term from the Long-run Equation of PGDPMANNO
382.	ECT_PGDPOILREF	Equilibrium Correction Term from the Long-run Equation of PGDPOILREF
383.	ECT_PGDPOTHS	Equilibrium Correction Term from the Long-run Equation of PGDPOTHS
384.	ECT_PGDPSER	Equilibrium Correction Term from the Long-run Equation of PGDPSER
385.	ECT_PGDPTRACOM	Equilibrium Correction Term from the Long-run Equation of PGDPTRACOM
386.	ECT_PGDPU	Equilibrium Correction Term from the Long-run Equation of PGDPU
387.	ECT_PSCE_OTH	Equilibrium Correction Term from the Long-run Equation of PSCE_OTH
388.	ECT_REMOF	Equilibrium Correction Term from the Long-run Equation of REMOF
389.	ECT_WAGR	Equilibrium Correction Term from the Long-run Equation of WAGR
390.	ECT_WCON	Equilibrium Correction Term from the Long-run Equation of WCON
391.	ECT_WFIBU	Equilibrium Correction Term from the Long-run Equation of WFIBU
392.	ECT_WMAN	Equilibrium Correction Term from the Long-run Equation of WMAN
393.	ECT_WMIN	Equilibrium Correction Term from the Long-run Equation of WMIN
394.	ECT_WTRACOM	Equilibrium Correction Term from the Long-run Equation of WTRACOM

395.	ECT_WU	Equilibrium Correction Term from the Long-run Equation of WU
396.	ECT_XGNOIL	Equilibrium Correction Term from the Long-run Equation of XGNOI
397.	ECT_XOILREF	Equilibrium Correction Term from the Long-run Equation of XOILREF
398.	ELE_EF	Electricity generation efficiency of fossil fuels
399.	ELE_SS	Solar electricity production, MTOE
400.	ELE_STOT_KSA	Electricity Supply, Total Kingdom, MTOE
401.	ET	Total Employment, person Thousand
402.	ETAGR	Employment, Agriculture, fishing and forestry, Person Thousand,
403.	ETCON	Employment, Construction, Person Thousand,
404.	ETDIS	Employment, Distribution, Person Thousand,
405.	ETFIBU	Employment financial, insurance, real estate, and business services, Person Thousand
406.	ETGOV	Employment in Government, Person Thousand
407.	ETGOV_SAMA	Employment, Government Total, person Thousand
408.	ETMAN	Employment, Manufacturing, Person Thousand,
409.	ETMANNO	Employment, Manufacturing: Non-Oil, Person Thousand,
410.	ETMIN	Employment in Mining sector, Thousand
411.	ETMINOTH	Employment, mining, and quarrying: non-oil, Person Thousand,
412.	ETNOIL	Employment in non-oil activities, Thousand
413.	ETNS	Total Employment Expatriate, Person Thousand
414.	ETOIL	Employment in Oil Sector, Thousand
415.	ETOILMIN	Employment, oil and gas extraction, total, Persons Thousand
416.	ETOILREF	Employment in Oil Refinery, Thousand
417.	ETOTHS	Employment in Other Services, Person Thousand
418.	ETP	Total Employment, Private, Person Thousand
419.	ETPETCH	Employment in petrochemicals, Person Thousand
420.	ETPNS	Employment, Private, Expatriate, person Thousand
421.	ETPS	Employment, Private, Saudi, person Thousand
422.	ETSER	Total employment in service sector, Person Thousand
423.	ETTRACOM	Employment, Transport and Communication, Person Thousand
424.	ETU	Employment, Utilities, Person Thousand
425.	EXPL	Expat Levies, nominal, Million SAR
426.	FDAGR	Final Demand in Agriculture, real, Million SAR at 2010 prices
427.	FDCON	Final Demand in Construction, real, Million SAR at 2010 prices
428.	FDDIS	Final demand in retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices
429.	FDFIBU	Final Demand in Utility, real, Million SAR at 2010 prices
430.	FDGOV	Final demand for public administration, real, Million SAR at 2010 prices
431.	FDI$	Total foreign direct investment, Million USD
432.	FDI$IN_Z	Foreign Direct Investment Inflow Net, nominal, Million USD
433.	FDI$OUT_Z	Foreign Direct Investment Outflow, nominal, Million USD
434.	FDMANNOLPC	Final Demand in Non-oil Manufacturing, real, Million SAR at 2010 prices
435.	FDMINOTH	Final Demand in Non-oil Mining, real, Million SAR at 2010 prices
436.	FDOIL	Final Demand in Oil sector, real, Million SAR at 2010 prices
437.	FDOILREF_OLD	Final Demand in Oil Refinery, real, Million SAR at 2010 prices
438.	FDOTHS	Final demand in other services, real, Million SAR at 2010 prices
439.	FDPETCH	Final Demand in Petro-Chemical, real, Million SAR at 2010 prices

440.	FDTRACOM	Final demand in transport and communication, real, Million SAR at 2010 prices
441.	FDU	Final demand in utilities, real, Million SAR at 2010 prices
442.	FI$IN_Z	Foreign Investment Inflow Net, nominal, Million USD
443.	FOI$IN_Z	Foreign Other Investment Net incurrence of liabilities, nominal, Million USD
444.	FPI$IN_Z	Foreign Portfolio Investment Net incurrence of liabilities, nominal, Million USD
445.	GAE_Z	Government Administrative Expenses, nominal, Million SAR
446.	GAP_GVAAGR	Gap from production function of GVAAGR
447.	GAP_GVACON	Gap from production function of GVACON
448.	GAP_GVADIS	Gap from production function of GVADIS
449.	GAP_GVAFIBU	Gap from production function of GVAFIBU
450.	GAP_GVAGOV	Gap from production function of GVAGOV
451.	GAP_GVAMANNO	Gap from production function of GVAMANNO
452.	GAP_GVAMANNOLPC	Gap from production function of GVAMANNOLPC
453.	GAP_GVANOIL	Gap from production function of GVANOIL
454.	GAP_GVAOILREF	Gap from production function of GVAOILREF
455.	GAP_GVAOTHS	Gap from production function of GVAOTHS
456.	GAP_GVAPETCH	Gap from production function of GVAPETCH
457.	GAP_GVATRACOM	Gap from production function of GVATRACOM
458.	GAP_GVAU	Gap from production function of GVAU
459.	GB	Government balance, nominal, Million SAR
460.	GBNOIL	Non-oil government financial balance, nominal, Million SAR
461.	GC	Consumption, government, real, Million SAR at 2010 prices
462.	GC_Z	Consumption, government, nominal, Million SAR
463.	GC_Z_OTH	Government other consumption, nominal, Million SAR
464.	GCGPE	Personal sector transfers from central government, nominal, Million SAR
465.	GDP	GDP, real, Million SAR at 2010 prices
466.	GDP$_Z	GDP, Nominal, Million USD
467.	GDP_MNA	GDP of Middle East & North Africa, Million USD at 2010 prices
468.	GDP_Z	GDP, nominal, Million SAR
469.	GDPPC_WLD	GDP per capita, real, Million USD at 2010 prices
470.	GEXP	Government expenditure, total, nominal, Million SAR
471.	GI	Investment, government, real, Million SAR at 2010 prices
472.	GI_Z	Investment, government, nominal, Million SAR
473.	GMO_Z	Government Maintenance and Operation, nominal, Millions SAR
474.	GREV	Government Revenue, Total, nominal, Million SAR
475.	GREVNOIL	Government revenue, non-oil, nominal, Million SAR
476.	GREVOIL	Government revenue, oil, nominal, Million SAR
477.	GVAAGR	Gross value added in agriculture and forestry, real, Million SAR at 2010 prices
478.	GVAAGR_Z	Gross value added in agriculture and forestry, nominal, Million SAR
479.	GVACON	Gross Value Added, Construction, real, Million SAR at 2010 prices
480.	GVACON_Z	Gross value added in construction, nominal, Million SAR
481.	GVADIS	Gross value added in retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices
482.	GVADIS_Z	Gross value added in retail, wholesale, hotels and catering, nominal, Million SAR
483.	GVAFIBU	Gross value added in financial and business services, real, Million SAR at 2010 prices
484.	GVAFIBU_Z	Gross value added in financial and business services, nominal, Million SAR

485.	GVAFIBUOTH	Gross value added in other financial and business services, real, Million SAR at 2010 prices
486.	GVAFIBUOTH_Z	Gross value added in other financial and business services, nominal, Million SAR
487.	GVAFISIM	GDP, financial intermediaries, real, Million SAR at 2010 prices
488.	GVAFISIM_Z	GDP, financial intermediaries, nominal, Million SAR
489.	GVAGOV	Gross value added in public administration, real, Million SAR at 2010 prices
490.	GVAGOV_Z	Gross value added in public administration, nominal, Million SAR
491.	GVAIND	Gross Value added in Industry, real, Million SAR at 2010 prices
492.	GVAIND_Z	Gross value added in industry, real, Million SAR at 2010 prices
493.	GVAMAN	Gross value added in manufacturing, real, Million SAR at 2010 prices
494.	GVAMAN_Z	Gross value added in manufacturing, nominal, Million SAR
495.	GVAMANNO	Gross value added in non-oil manufacturing, real, Million SAR at 2010 prices
496.	GVAMANNO_Z	Gross value added in manufacturing, nominal, Million SAR
497.	GVAMANNOLPC	Gross value added in non-oil manufacturing excluding Petro-chemical, real, Million SAR at 2010 prices
498.	GVAMIN	Gross value added in mining and quarrying real, Million SAR at 2010 prices
499.	GVAMIN_Z	Gross value added in mining and quarrying real, nominal, Million SAR
500.	GVAMINOTH	Gross value added in non-oil extraction, real, Million SAR at 2010 prices
501.	GVAMINOTH_Z	Gross value added in extraction, nominal, Million SAR
502.	GVANIT	Gross value-added, import taxes, real, Million SAR at 2010 prices
503.	GVANIT_Z	Gross value added, import taxes, nominal, Million SAR
504.	GVANOIL	Gross value added, Non-oil Sector, real, Million SAR at 2010 prices
505.	GVANOIL_Z	Gross value added, non-oil, nominal, Million SAR
506.	GVAOIL	Gross value added, Oil sector, real, Million SAR at 2010 prices
507.	GVAOIL_Z	Gross value added, oil, nominal, Million SAR
508.	GVAOILMIN	Gross value added, oil mining, real, Million SAR at 2010 prices
509.	GVAOILMIN_Z	Gross value added, oil mining, nominal, Million SAR
510.	GVAOILREF	Gross value added, oil refining, real, Million SAR at 2010 prices
511.	GVAOILREF_Z	Gross value added, oil refining, nominal, Million SAR
512.	GVAOTHS	Gross Value Added in other services, excluding arts, entertainment, and recreation, real, Million SAR at 2010 prices
513.	GVAOTHS_Z	Gross Value Added in other services, excluding arts, entertainment and recreation, nominal, Million SAR
514.	GVAPETCH	Gross value added in petrochemicals, real, Million SAR at 2010 prices
515.	GVAREAL	Gross value added, imputed rents, real, Million SAR at 2010 prices
516.	GVAREAL_Z	Gross value added, imputed rents, nominal, Million SAR
517.	GVASER	Gross value added in services, real, Million SAR at 2010 prices
518.	GVASER_Z	Gross Value added, in services, nominal, Million SAR
519.	GVATRACOM	Gross value added in transport and communication, real, Million SAR at 2010 prices
520.	GVATRACOM_Z	Gross value added in transport and communication, nominal, Millions SAR
521.	GVATRAPIPE	Gross value added in pipeline transportation hydrocarbon, real, Million SAR at 2010 prices
522.	GVAU	Gross Value Added, Utilities, real, Million SAR at 2010 prices
523.	GVAU_Z	Gross value added in utilities, nominal, Million SAR
524.	GWSA_Z	Government Wages, Salaries and Allowances, nominal, Million SAR
525.	HUVF	Hajj and Umrah Visa Fees Collection, nominal, Million SAR
526.	IDAGR	Intermediate Demand for Agriculture, real, Million SAR at 2010 prices
527.	IDCON	Intermediate demand for construction, real, Million SAR at 2010 prices
528.	IDDIS	Intermediate demand for retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices

529.	IDFIBU	Intermediate demand for FIBU, real, Million SAR at 2010 prices
530.	IDGOV	Intermediate demand for public administration, real, Million SAR at 2010 prices
531.	IDMANNOLPC	Intermediate demand for non-oil manufacturing, real, Million SAR at 2010 prices
532.	IDMINOTH	Intermediate demand for non-oil mining, real, Million SAR at 2010 prices
533.	IDOIL	Intermediate demand for oil sector, real, Million SAR at 2010 prices
534.	IDOILREF_OLD	Intermediate demand for oil refinery, real, Million SAR at 2010 prices
535.	IDOTHS	Intermediate demand for other services, real, Million SAR at 2010 prices
536.	IDPETCH	Intermediate Demand for Petro-Chemical, real, Million SAR at 2010 prices
537.	IDTRACOM	Intermediate demand for transport and communication, real, Million SAR at 2010 prices
538.	IDU	Intermediate demand for utilities, real, Million SAR at 2010 prices
539.	IF	Investment, total fixed investment, real, Million SAR at 2010 prices
540.	IF_Z	Investment, total fixed investment, nominal, Million SAR
541.	IFAGR	Investment in Agriculture, real, Million SAR at 2010 prices
542.	IFCON	Investment in Construction, real, Million SAR at 2010 prices
543.	IFDIS	Investment in Distribution, real, Million SAR at 2010 prices
544.	IFDOMP	Investment, domestic, private, real, Million SAR at 2010 prices
545.	IFFIBU	Investment in FIBU Millions SAR real, Million SAR at 2010 prices
546.	IFMANNO	Investment in non-oil manufacturing excluding Petro-chemical, real, Million SAR at 2010 prices
547.	IFMANNOLPC	Investment in non-oil manufacturing excluding Petro-chemical, real, Million SAR at 2010 prices
548.	IFMINOTH	Investment in Non-oil Mining, real, Million SAR at 2010 prices
549.	IFNOIL	Investment funds, non-oil, total, real, Million SAR at 2010 prices
550.	IFNOIL_Z	Investment funds, non-oil, nominal, Million SAR
551.	IFNOILP	Investments, Non-oil, Private Sector, real, Million SAR at 2010 prices
552.	IFNOILP_Z	Investment Non-Oil Private Sector nominal, Million SAR
553.	IFOIL	Investment, Oil sector, real, Million SAR at 2010 prices
554.	IFOTHS	Investment in Others, real, Million SAR at 2010 prices
555.	IFPETCH	Investment in Petro-chemical, real, Million SAR at 2010 prices
556.	IFREF	Investment in Refined oil, Million SAR/MTOE
557.	IFTRACOX	Investment in Transport and Communication, real, Million SAR at 2010 prices
558.	IFU	Investment in Utility, real, Million SAR at 2010 prices
559.	IRD	Interest Rate Differential (between Interest payments (% of revenue) in UK and Saudi Interbank Lending Rate), %
560.	IR_UK	Interest payments (% of revenue) in UK, %
561.	IS	Investment Stock building, real, Million SAR at 2010 prices
562.	IS_Z	Stock building, nominal, Million SAR
563.	ISP	Industrial Support Package, real, Million SAR at 2010 prices
564.	KOILREF	Refined oil, capital stock, nominal, Thousands USD
565.	LABCOMP	Labour compensation, nominal, Million SAR
566.	LF	Labour force, Person thousands,
567.	LIABP	Bank claims on private sector, nominal, Million SAR
568.	M	Imports, goods & services, real, Million SAR at 2010 prices
569.	M0	Money supply, M0, Currency Outside Banks, nominal, Million SAR
570.	M1	Money supply, M1, nominal, Million SAR
571.	M2	Money supply, M2, nominal, Million SAR
572.	M3	Money supply, M3, nominal, Million SAR

573.	M_Z	Imports, goods & services, nominal, Million SAR
574.	MG	Import of Goods, real, Million SAR at 2010 prices
575.	MG_Z	Imports of Goods, nominal, Million SAR
576.	MGCAP	Import of Goods, Capital Goods, real, Million SAR at 2010 prices
577.	MGCAP_Z	Import of Goods, Capital Goods, SAR Million
578.	MGCONS	Import of Goods, Consumer Goods, real, Million SAR at 2010 prices
579.	MGCONS_Z	Import of Goods, Consumer Goods, nominal, Million SAR
580.	MGINTER	Import of Goods, Intermediate Goods, real, Million SAR at 2010 prices
581.	MGINTER_Z	Import of Goods, Intermediate Goods, nominal, Million SAR
582.	MOILREF	Imports of oil refined goods, MTOE
583.	MS	Imports, services, real, Million SAR at 2010 prices
584.	MS$_CAN	Canada - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
585.	MS$_DEU	Germany - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
586.	MS$_FRA	France - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
587.	MS$_GBR	United Kingdom - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
588.	MS$_ITA	Italy - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
589.	MS$_JPN	Japan - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
590.	MS$_MEX	Mexico - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
591.	MS$_TUR	Turkey - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
592.	MS$_USA	United States - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
593.	MS$_ZAF	South Africa - Imports, services, constant prices and exchange rate, Million USD at 2010 prices
594.	NEER	Nominal Effective Exchange Rate, units of MTP currency basket for a unit of SAR, 2010=100
595.	NFA	Net foreign assets, nominal, Million SAR
596.	NG_PRO	Production Of Natural Gas Liquids, Million Barrels
597.	NGL	Natural gas liquids, KTOE
598.	NNSA_Z	Net National Saving, Adjusted, nominal, Million SAR
599.	OILMBD	Oil production, Barrels per Day Millions
600.	OILUSE	Oil, domestic use, Barrels per Day Millions
601.	OVF	Other Visa Fees Collection, nominal, Million SAR
602.	PART	Labour Force Participation Rate for Population ages 15 and above, %
603.	PCOIL_IND	Price of Arab light in Industry, SAR/TOE
604.	PCONS	Consumption, private deflator, Index 2010=100,
605.	PDIS_IND	Price of Diesel in Industry Sector, SAR/TOE
606.	PDIS_TRA	Price of Diesel in Transport Sector, SAR/TOE
607.	PE_AGR	Price of energy in Agriculture, weighted average, SAR/TOE
608.	PE_CON	Price of energy in construction, weighted average, SAR/TOE
609.	PE_DIS	Price of energy in Distribution, weighted average, SAR/TOE
610.	PE_FIBU	Price of energy in FIBU, weighted average, SAR/TOE
611.	PE_GOV	Price of energy in public administration, weighted average, SAR/TOE
612.	PE_MANNO	Price of energy in non-oil manufacturing, weighted average, SAR/TOE
613.	PE_OILREF	Price of energy in oil refining, weighted average, SAR/TOE
614.	PE_OTHS	Price of energy in other service sectors, weighted average, SAR/TOE
615.	PE_RES	Price of Energy, weighted average, Residential, SAR/TOE
616.	PE_TRACOM	Price of energy in transport and communication, weighted average, SAR/TOE
617.	PE_U	Price of energy in utility, weighted average, SAR/TOE

618.	PELE_AGR	Electricity Price for Agriculture/forestry Sector, SAR/TOE
619.	PELE_COMM	Electricity Price for Commercial Sector, SAR/TOE
620.	PELE_GOV	Electricity Price for Government Sector, SAR/TOE
621.	PELE_IND	Electricity Price for Industry Sector, SAR/TOE
622.	PELE_RES	Electricity Price for residential Sector, SAR/TOE
623.	PELE_RES_CONS	Electricity Price for Residential Sector, SAR/TOE
624.	PELE_RES_INV	Electricity Price for Residential Sector, SAR/TOE
625.	PETH_IND_NEU	Ethane price in Saudi Arabia, SAR /TOE
626.	PGAS_TRA	Price of Gasoline in Transport Sector, SAR/TOE
627.	PGC	Consumption, government deflator, Index 2010=100,
628.	PGDP	GDP deflator, Index 2010=100,
629.	PGDP_US	US GDP deflator (base year 2010)
630.	PGDPAGR	GDP deflator, agriculture and fishing, Index 2010=100,
631.	PGDPCON	GDP deflator, construction, Index 2010=100,
632.	PGDPDIS	GDP deflator, distribution, Index 2010=100,
633.	PGDPFIBU	GDP deflator, Financial & business services, Index 2010=100,
634.	PGDPFIBUOTH	GDP deflator, Other Financial & business services, Index 2010=100,
635.	PGDPFISIM	GDP deflator, Imputed financial services, Index 2010=100,
636.	PGDPGOV	GDP deflator, government services, Index 2010=100,
637.	PGDPIND	GDP deflator, Industry, Index 2010=100,
638.	PGDPMAN	GDP deflator, manufacturing, Index 2010=100,
639.	PGDPMANNO	GDP deflator, non-oil manufacturing, index 2010=100
640.	PGDPMIN	GDP deflator, quarrying and mining, Index 2010=100,
641.	PGDPMINOTH	GDP deflator, non-oil quarrying and mining, Index 2010=100,
642.	PGDPNIT	GDP deflator, Import taxes, Index 2010=100,
643.	PGDPNOIL	GDP deflator, non-oil sector, Index 2010=100,
644.	PGDPOIL	GDP deflator, oil sector, Index 2010=100,
645.	PGDPOILMIN	oil extraction GDP deflator, Index 2010=100,
646.	PGDPOILREF	oil refining GDP deflator, Index 2010=100,
647.	PGDPOTHS	Other services (excluding arts, entertainment, and recreation) GDP deflator, Index 2010=100,
648.	PGDPPETCH	GDP Deflator, Petrochemicals, 2010=100
649.	PGDPREAL	imputed rent GDP deflator, Index 2010=100,
650.	PGDPSER	GDP deflator, services, Index 2010=100,
651.	PGDPTRACOM	GDP deflator, transport, storage & communication, Index 2010=100,
652.	PGDPU	GDP deflator, electricity, gas and water, Index 2010=100,
653.	PHFO_IND	Price of HFO in Industry, SAR/TOE
654.	PIF	Investment deflator, Index 2010=100,
655.	PIFI	Public Investment Fund Investments, real, Million SAR at 2010 prices
656.	PKER_RES	Price of Kerosene in Residential Sector, SAR/TOE
657.	PKER_TRA	Price of Kerosene in Transport Sector, SAR/TOE
658.	PLPG_IND_NEU	LPG price SAR /TOE
659.	PLPG_RES	Price of LPG in Residential Sector, SAR/TOE
660.	PM	Import deflator, total, Index 2010=100,
661.	PMG	Import deflator, goods, Index 2010 = 100,
662.	PMS	Import deflator, services, Index 2010 = 100,

663.	PNAP_IND_NEU	Naphtha price SAR/TOE
664.	PNGA_IND	Price of Natural Gas, SAR/TOE
665.	PNGA_IND_NEU	Methane price in Saudi Arabia SAR/TOE
666.	POP	Population total, Person Thousands,
667.	POP014	Domestic population age group between 0-14, Person Thousand
668.	POP1519	Domestic population age group between 15-19, Person Thousand
669.	POP1564	Domestic population age group between 15-64, Person Thousand
670.	POP2024	Domestic population age group between 20-24, Person Thousand
671.	POP2529	Domestic population age group between 25-29, Person Thousand
672.	POP3034	Domestic population age group between 30-34, Person Thousand
673.	POP3539	Domestic population age group between 35-39, Person Thousand
674.	POP4044	Domestic population age group between 40-44, Person Thousand
675.	POP4549	Domestic population age group between 45-49, Person Thousand
676.	POP5054	Domestic population age group between 50-54, Person Thousand
677.	POP5559	Domestic population age group between 55-59, Person Thousand
678.	POP6064	Domestic population age group between 60-64, Person Thousand
679.	POP65A	Domestic population age group between 65 and above, Person Thousand
680.	POPF014	Population 0 - 14, Females, Person Thousand
681.	POPF1519	population 15 - 19, Females, person Thousand
682.	POPF2024	Population 20 - 24, Females, person Thousand
683.	POPF2529	Population 25 - 29, Females, person Thousand
684.	POPF3034	Population 30 - 34, Females, person Thousand
685.	POPF3539	Population 35 - 39, Females, person Thousand
686.	POPF4044	Population 40 - 44, Females, person Thousand
687.	POPF4549	Population 45 - 49, Females, person Thousand
688.	POPF5054	Population 50 - 54, Females, person Thousand
689.	POPF5559	Population 55 - 59, Females, person Thousand
690.	POPF6064	Population 60 - 64, Females, person Thousand
691.	POPF65A	Population 65 and above, Females, person Thousand
692.	POPM014	population 0 - 14 years, Males, Person Thousand
693.	POPM1519	Population 15 - 19, Males, person Thousand
694.	POPM2024	Population 20 - 24, Males, person Thousand
695.	POPM2529	Population 25 - 29, Males, person Thousand
696.	POPM3034	Population 30 - 34, Males, person Thousand
697.	POPM3539	Population 35 - 39, Males, person Thousand
698.	POPM4044	Population 40 - 44, Males, person Thousand
699.	POPM4549	Population 45 - 49, Males, person Thousand
700.	POPM5054	Population 50 - 54, Males, person Thousand
701.	POPM5559	Population 55 - 59, Males, person Thousand
702.	POPM6064	Population 60 - 64, Males, person Thousand
703.	POPM65A	Population 65 and Above, Males, person Thousand
704.	POPNS	Population, Non-Saudis, Thousand
705.	POPS	Population, Saudis, Thousand
706.	POPSF	Population, Saudis Female, Thousand
707.	POPSM	Population, Saudis Male, Thousand

708.	POPW	Working age population, Thousand
709.	POPWF	Working age population, female, Thousand
710.	POPWM	Working age population, male, Thousand
711.	POT_GVAAGR	Potential output in Agriculture and forestry, real, Million SAR at 2010 prices
712.	POT_GVACON	Potential output in Construction, real, Million SAR at 2010 prices
713.	POT_GVADIS	Potential output in Retail, Wholesale, Hotels and Catering, real, Million SAR at 2010 prices
714.	POT_GVAFIBU	Potential output in Financial and Business services, real, Million SAR at 2010 prices
715.	POT_GVAGOV	Potential output in Public Administration, real, Million SAR at 2010 prices
716.	POT_GVAMANNO	Potential output in Non-oil Manufacturing, real, Million SAR at 2010 prices
717.	POT_GVAMANNOLPC	Potential output in Non-oil Manufacturing less Petro-chemicals, real, Million SAR at 2010 prices
718.	POT_GVANOIL	Potential output in Non-oil Sector, real, Million SAR at 2010 prices
719.	POT_GVAOILREF	Potential output in Oil Refinery, real, Million SAR at 2010 prices
720.	POT_GVAOTHS	Potential output in Other Services, real, Million SAR at 2010 prices
721.	POT_GVAPETCH	Potential output in petrochemicals, real, Million SAR at 2010 prices
722.	POT_GVATRACOM	Potential output in Transport and Communication, real, Million SAR at 2010 prices
723.	POT_GVAU	Potential output in Utilities, real, Million SAR at 2010 prices
724.	POTH_IND	Price of other refined oil products used in Industry, weighted average, SAR/TOE
725.	PRODDN	Productivity Differential, Non-oil Sector
726.	PRODDO	Productivity Differential, Oil Sector
727.	PSCAPE	Public capital expenditures, nominal, Million SAR
728.	PSCE	Public Sector Current Expenditures, nominal, Million SAR
729.	PSCE_OTH	Public Sector Other Current Expenditures, nominal, Million SAR
730.	PX	Export deflator, total, Index 2010=100,
731.	QOILREF	Refined oil, supply, MTOE
732.	RCB	Interest rate, central bank policy, %, nominal 3 months
733.	RDEBT	Effective interest rate on external debt, %, nominal
734.	REER	Real Effective Exchange Rate, CPI based, units of MTP currency basket for a unit of SAR, 2010=100
735.	REERE	Real Effective Exchange Rate, Equilibrium
736.	REMOF	Personal remittances outflow, paid, Million USD
737.	RER	Real Exchange Rate of SAR against per USD
738.	RLEND	Interest rate, lending, %, nominal
739.	RLG	Interest rate, 10-year government bonds, %, nominal
740.	RRLEND	Real interest rate, lending, %
741.	RRLEND1	Real interest rate, lending, %
742.	RRXD	Real exchange rate, SAR price of per USD, Index 2010 = 100
743.	RSH	Interest rate, short-term, %, Nominal
744.	RXD	EOP exchange rate, SAR/USD nominal, nominal
745.	S12001	Dummy variable, taking unity from 1970 to 2001 and zero otherwise (Created by Autometrics in OxMetrics)
746.	TB	Trade Balance, real, Million SAR at 2010 prices
747.	TBNOIL	Trade Balance, Non-oil, real, Million SAR at 2010 prices
748.	TDAGR	Total demand for Agriculture, real, Million SAR at 2010 prices
749.	TDCON	Total demand for construction, real, Million SAR at 2010 prices
750.	TDDIS	Total demand for retail, wholesale, hotels, and catering, real, Million SAR at 2010 prices
751.	TDFIBU	Total demand for FIBU, real, Million SAR at 2010 prices

752.	TDGOV	Total demand for public administration, real, Million SAR at 2010 prices
753.	TDMANNOLPC	Total demand for non-oil manufacturing, real, Million SAR at 2010 prices
754.	TDMINOTH	Total demand for other services, real, Million SAR at 2010 prices
755.	TDOIL	Total demand for oil sector, real, Million SAR at 2010 prices
756.	TDOILREF_OLD	Total demand for oil refinery, real, Million SAR at 2010 prices
757.	TDOTHS	Total demand for other services, real, Million SAR at 2010 prices
758.	TDPETCH	Total demand for Petro-Chemical, real, Million SAR at 2010 prices
759.	TDTRACOM	Total demand for transport and communication, real, Million SAR at 2010 prices
760.	TDU	Total demand for utilities, real, Million SAR at 2010 prices
761.	TFE	Total final expenditure, real, real, Million SAR at 2010 prices
762.	TI2009	Dummy variable, taking value from negative 1 in 2009 to negative 20 in 1990 and zero otherwise (Created by Autometrics in OxMetrics)
763.	TOIPC	Taxes on Income, Profits, and Capital Gains, nominal, Million SAR
764.	TOITT	Tax on International Trade and Transactions, nominal, Million SAR
765.	U	Unemployment, Person Thousands,
766.	ULCAGR	Unit Labor Cost in Agriculture
767.	ULCCON	Unit Labor Cost in Construction
768.	ULCDIS	Unit labor cost in retail, wholesale, hotels, and catering
769.	ULCFIBU	Unit labor cost in financial and business services
770.	ULCFIBUOTH	Unit labor cost in other financial and business services
771.	ULCGOV	Unit labor cost in Public Administration
772.	ULCMANNO	Unit labor cost in non-oil manufacturing
773.	ULCNOIL	Unit labor cost in non-oil sector
774.	ULCOIL	Unit labor cost in oil sector
775.	ULCOILREF	Unit labor cost in oil refining
776.	ULCOTHS	Unit labor cost in other services
777.	ULCSER	Unit labor cost in service sector
778.	ULCTRACOM	Unit labor cost in transport and communication
779.	ULCU	Unit labor cost in utilities
780.	UR	Unemployment Rate, %
781.	UR_C	Cyclical Component of Unemployment Rate, %
782.	UR_N	Non-accelerating Inflation Rate of Unemployment
783.	VAT_RATE	Rate of Value Added Tax, %
784.	VAT_REV	VAT Revenues,
785.	VAT_REV_DUMMY	Dummy variable for VAT
786.	W_CEIC	Wage, Average annual, Riyal, calculated based on CEIC employment and Earnings data
787.	W_OLD	Wage, Average annual, SAR
788.	WAGR	Wage in Agriculture, SAR
789.	WCON	Wage in Construction, SAR
790.	WDIS	Wage in Distribution, SAR
791.	WEALTH	Wealth, Private Sector, real, Million SAR at 2010 prices
792.	WFIBU	Wage in Financial and Business services, SAR
793.	WMAN	Wage in Manufacturing, SAR
794.	WMIN	Wage in Mining, SAR
795.	WPETCH	Wage rate in Petro-chemical, SAR

796.	WPMF$_WLD	World non-fuel exports price, Index, 2005=100
797.	WPO_AL	World Crude Oil Spot Price: Arabian Light, US$ per barrel, nominal
798.	WPO_AL_R	World Crude Oil Spot Price: Arabian Light, US$ per barrel, Real, 2005=100
799.	WSER	Wage in services, nominal, SAR
800.	WTOUR	KSA Tourism demand indicator, Index 2010 = 100,
801.	WTRACOM	Wage in Transport and Communication, SAR
802.	WTREF	World trade index, refined oil
803.	WU	Wage in Utilities, nominal, SAR
804.	X	Exports, goods & services, real, Million SAR at 2010 prices
805.	X$_Z	Exports, goods & services, nominal, Million USD
806.	X_Z	Exports, goods & services, nominal, Million SAR
807.	XG	Real Exports of Goods, real, Million SAR at 2010 prices
808.	XG$_Z	Exports of goods, USD Millions, Nominal
809.	XGNOIL	Exports of Goods, Non-oil, real, Million SAR at 2010 prices
810.	XGNOIL$_Z	Exports of goods, non-oil, nominal Million USD
811.	XGNOIL_Z	Exports of goods, non-oil, nominal, Million SAR
812.	XGOIL	Real Exports goods, Oil, real, Million SAR at 2010 prices
813.	XGOIL$_Z	Exports of goods, oil, nominal, Million USD
814.	XGOIL_Z	Exports, oil, nominal, Million SAR
815.	XOILC	Crude Oil for Export, Million Barrels per Day
816.	XOILREF	Saudi Exports of Refined Oil Products, Including LPG and Natural gasoline, Million Barrels
817.	XS	Exports, services, real, Million SAR at 2010 prices
818.	XS$_Z	Exports of services, nominal, Million USD
819.	XS_Z	Exports, services, nominal, Million SAR
820.	XSCOM_Z	Exports, communication services, nominal, Million SAR
821.	XSFIN_Z	Exports, financial services, nominal, Million SAR
822.	XSGOV_Z	Exports, government, nominal, Million SAR
823.	XSII_Z	Exports, Investment Income, nominal, Million SAR
824.	XSIP_Z	Exports, insurance and pension services, nominal, Million SAR
825.	XSOBS_Z	Exports, Other business services, nominal, Million SAR
826.	XSOIL_Z	Exports, Oil Services, nominal, Million SAR
827.	XSTRAN_Z	Exports, transportation service, nominal, Million SAR
828.	XSTRAV_Z	Exports, travel service, nominal, Million SAR

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