

## ภาคผนวก ก

### แสดงผลการเลือกช่วงเวลา (Lag Length) ที่เหมาะสม

#### 1. กรณีศึกษาประเทศไทยกับประเทศจีน

เมื่อช่วงเวลา = 2

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Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
96 observations used for estimation from 2001M4 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                2.1261           12.0556           .17636[.860]
DLEXPO(-1)         .076642          .12285            .62385[.534]
DLEXPO(-2)         .092610          .10469            .88460[.379]
DLMPITH(-1)        -1.8275          1.2172           -1.5014[.137]
DLMPITH(-2)        1.5613           1.2061            1.2945[.199]
DLMPICN(-1)        -.31847          2.5689           -.12397[.902]
DLMPICN(-2)        .38686           2.0418            .18947[.850]
DLRER(-1)          3.8926           3.0582            1.2729[.207]
DLRER(-2)          -1.8442          3.3463           -.55110[.583]
LEXPO(-1)          -.53980          .11917           -4.5299[.000]
LMPITH(-1)         1.1724           .94032            1.2468[.216]
LMPICN(-1)         .56906           2.3152            .24579[.806]
LRER(-1)           -1.16829         1.7225           -.097701[.922]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 19.6858[.001]
Likelihood Ratio Statistic          CHSQ( 4) = 22.0310[.000]
F Statistic                          F( 4, 83) = 5.3526[.001]
*****
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## เมื่อช่วงเวลา = 3

Variable Addition Test (OLS case)

\*\*\*\*\*

Dependent variable is DLEXPO

List of the variables added to the regression:

LEXPO(-1) LMPITH(-1) LMPICN(-1) LRER(-1)

95 observations used for estimation from 2001M5 to 2009M3

\*\*\*\*\*

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	6.1445	13.6726	.44940[.654]
DLEXPO(-1)	.16546	.13630	1.2140[.228]
DLEXPO(-2)	.20117	.13053	1.5411[.127]
DLEXPO(-3)	.15189	.10671	1.4234[.159]
DLMPITH(-1)	-1.4908	1.3606	-1.0957[.277]
DLMPITH(-2)	1.9349	1.5231	1.2704[.208]
DLMPITH(-3)	.35492	1.3105	.27083[.787]
DLMPICN(-1)	-.15946	3.1159	-.051177[.959]
DLMPICN(-2)	.51952	3.1723	.16377[.870]
DLMPICN(-3)	-1.4768	2.2025	-.67051[.505]
DLRER(-1)	4.8958	3.1507	1.5539[.124]
DLRER(-2)	-1.5924	3.3600	-.47392[.637]
DLRER(-3)	-2.3311	3.3970	-.68624[.495]
LEXPO(-1)	-.65518	.13673	-4.7919[.000]
LMPITH(-1)	1.4296	1.0799	1.3239[.189]
LMPICN(-1)	-.072278	2.7911	-.025896[.979]
LRER(-1)	-.19532	1.8838	-.10368[.918]

\*\*\*\*\*

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic CHSQ( 4) = 23.0551[.000]

Likelihood Ratio Statistic CHSQ( 4) = 26.4078[.000]

F Statistic F( 4, 78) = 6.2489[.000]

\*\*\*\*\*

## เมื่อช่วงเวลา = 4

Variable Addition Test (OLS case)

\*\*\*\*\*

Dependent variable is DLEXPO

List of the variables added to the regression:

LEXPO(-1) LMPITH(-1) LMPICN(-1) LRER(-1)

94 observations used for estimation from 2001M6 to 2009M3

\*\*\*\*\*

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	-10.5535	13.8908	-.75975[.450]
DLEXPO(-1)	.31460	.13962	2.2533[.027]
DLEXPO(-2)	.37979	.13536	2.8059[.006]
DLEXPO(-3)	.23709	.12696	1.8675[.066]
DLEXPO(-4)	.22925	.10187	2.2504[.027]
DLMPITH(-1)	-2.1504	1.4028	-1.5329[.130]
DLMPITH(-2)	.16766	1.4968	.11201[.911]
DLMPITH(-3)	-1.9378	1.4767	-1.3123[.194]
DLMPITH(-4)	-3.3134	1.2780	-2.5927[.011]
DLMPICN(-1)	-2.4565	3.5209	-.69769[.488]
DLMPICN(-2)	-2.0299	3.6894	-.55018[.584]
DLMPICN(-3)	-4.3733	3.3382	-1.3101[.194]
DLMPICN(-4)	-2.5226	2.1847	-1.1547[.252]
DLRER(-1)	3.9224	3.1174	1.2582[.212]
DLRER(-2)	-3.7751	3.3275	-1.1345[.260]
DLRER(-3)	-1.7380	3.2148	-.54063[.590]
DLRER(-4)	-3.9208	3.2843	-1.1938[.236]
LEXPO(-1)	-.84220	.14981	-5.6217[.000]
LMPITH(-1)	2.6224	1.1959	2.1929[.032]
LMPICN(-1)	2.2642	3.0126	.75158[.455]
LRER(-1)	1.7520	2.0014	.87537[.384]

\*\*\*\*\*

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic CHSQ( 4) = 29.1714[.000]

Likelihood Ratio Statistic CHSQ( 4) = 34.9256[.000]

F Statistic F( 4, 73) = 8.2121[.000]

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เมื่อช่วงเวลา = 5

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Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
93 observations used for estimation from 2001M7 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
INPT                -16.9145              14.3801                 -1.1762[.244]
DLEXPO(-1)          .51685                .15108                  3.4212[.001]
DLEXPO(-2)          .50928                .14353                  3.5482[.001]
DLEXPO(-3)          .40482                .13978                  2.8961[.005]
DLEXPO(-4)          .47393                .13090                  3.6207[.001]
DLEXPO(-5)          .30862                .10573                  2.9190[.005]
DLMPITH(-1)         -3.4647               1.5320                  -2.2616[.027]
DLMPITH(-2)         -1.8676               1.6175                  -1.1546[.252]
DLMPITH(-3)         -2.5390               1.4996                  -1.6931[.095]
DLMPITH(-4)         -2.1262               1.6180                  -1.3141[.193]
DLMPITH(-5)         1.5134                1.4457                  1.0468[.299]
DLMPICN(-1)         -4.7092               3.7631                  -1.2514[.215]
DLMPICN(-2)         -3.9720               4.0977                  -.96932[.336]
DLMPICN(-3)         -6.8496               3.9472                  -1.7353[.087]
DLMPICN(-4)         -5.1736               3.4398                  -1.5041[.137]
DLMPICN(-5)         -2.6026               2.1806                  -1.1936[.237]
DLRER(-1)           2.3526                3.1662                  .74305[.460]
DLRER(-2)           -2.8615               3.4245                  -.83560[.406]
DLRER(-3)           -.024543              3.3321                  -.0073656[.994]
DLRER(-4)           -4.7227               3.2275                  -1.4633[.148]
DLRER(-5)           -1.1923               3.2626                  -.36546[.716]
LEXPO(-1)           -1.1200               1.17647                 -0.9522[.341]
LMPITH(-1)          3.0170                1.3554                  2.2260[.029]
LMPICN(-1)          4.3513                3.3284                  1.3073[.196]
LRER(-1)            1.6411                2.2130                  .74160[.461]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 35.5366[.000]
Likelihood Ratio Statistic          CHSQ( 4) = 44.7750[.000]
F Statistic                          F( 4, 68) = 10.5132[.000]
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เมื่อช่วงเวลา = 6

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Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
92 observations used for estimation from 2001M8 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                -30.3071         15.2732           -1.9843[.052]
DLEXPO(-1)          .60018           .17800            3.3718[.001]
DLEXPO(-2)          .54561           .16888            3.2307[.002]
DLEXPO(-3)          .49400           .15721            3.1423[.003]
DLEXPO(-4)          .57543           .15097            3.8115[.000]
DLEXPO(-5)          .38903           .14627            2.6597[.010]
DLEXPO(-6)          .10787           .11211            .96217[.340]
DLMPITH(-1)         -3.6877          1.7533            -2.1033[.039]
DLMPITH(-2)         -2.1562          1.8205            -1.1844[.241]
DLMPITH(-3)         -2.7226          1.6439            -1.6562[.103]
DLMPITH(-4)         -2.3527          1.7326            -1.3579[.179]
DLMPITH(-5)          1.1285           1.9354            .58307[.562]
DLMPITH(-6)          .026190          1.5644            .016741[.987]
DLMPICN(-1)         -7.5560          4.0239            -1.8778[.065]
DLMPICN(-2)         -6.8800          4.3690            -1.5747[.120]
DLMPICN(-3)        -11.1442         4.3814            -2.5435[.013]
DLMPICN(-4)        -10.2490         4.1413            -2.4748[.016]
DLMPICN(-5)         -9.1753          3.4856            -2.6324[.011]
DLMPICN(-6)         -4.8427          2.1740            -2.2276[.029]
DLRER(-1)           1.4009           3.6367            .38521[.701]
DLRER(-2)           -1.0274          3.5363            -.29053[.772]
DLRER(-3)           -1.1606          3.4234            -.33903[.736]
DLRER(-4)           -5.2100          3.3398            -1.5600[.124]
DLRER(-5)           -1.7641          3.2898            -.53625[.594]
DLRER(-6)           -.30683          3.2770            -.093629[.926]
LEXPO(-1)           -1.2617          .22542            -5.5969[.000]
LMPITH(-1)           2.9055           1.5025            1.9338[.058]
LMPICN(-1)           7.9749           3.6574            2.1805[.033]
LRER(-1)             1.3252           2.3567            .56232[.576]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 31.9049[.000]
Likelihood Ratio Statistic          CHSQ( 4)= 39.1791[.000]
F Statistic                          F( 4, 63)= 8.3618[.000]
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เมื่อช่วงเวลา = 7

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Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
91 observations used for estimation from 2001M9 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
INPT           -29.5008         16.6419             -1.7727[.082]
DLEXPO(-1)    .41389          .22874              1.8095[.076]
DLEXPO(-2)    .42651          .19938              2.1392[.037]
DLEXPO(-3)    .34820          .18451              1.8871[.064]
DLEXPO(-4)    .54578          .17129              3.1862[.002]
DLEXPO(-5)    .33804          .16957              1.9935[.051]
DLEXPO(-6)    -.017776        .15548              -.11433[.909]
DLEXPO(-7)    -.10076         .11189              -.90050[.372]
DLMPITH(-1)   -3.6693         1.8474              -1.9862[.052]
DLMPITH(-2)   -2.5207         2.0246              -1.2451[.218]
DLMPITH(-3)   -2.3834         1.8407              -1.2948[.201]
DLMPITH(-4)   -1.4274         1.8516              -.77089[.444]
DLMPITH(-5)   1.1696          2.0618              .56725[.573]
DLMPITH(-6)   -1.3691         2.0892              -.65530[.515]
DLMPITH(-7)   -1.4051         1.5761              -.89151[.376]
DLMPICN(-1)   -6.3739         4.3512              -1.4648[.148]
DLMPICN(-2)   -4.8109         4.6596              -1.0325[.306]
DLMPICN(-3)   -8.6041         4.6614              -1.8458[.070]
DLMPICN(-4)   -8.7596         4.7007              -1.8635[.067]
DLMPICN(-5)   -6.8087         4.3247              -1.5744[.121]
DLMPICN(-6)   -3.5575         3.6468              -.97553[.333]
DLMPICN(-7)   1.8791          2.2583              .83211[.409]
DLRER(-1)     .82807          3.8588              .21459[.831]
DLRER(-2)     -3.4040         3.8581              -.88232[.381]
DLRER(-3)     .10563          3.5144              .030057[.976]
DLRER(-4)     -7.1736         3.4351              -2.0883[.041]
DLRER(-5)     -3.3944         3.3890              -1.0016[.321]
DLRER(-6)     .47864          3.2807              .14590[.885]
DLRER(-7)     3.0052          3.2867              .91436[.364]
LEXPO(-1)     -1.0871         .28009              -3.8810[.000]
LMPITH(-1)    2.8487          1.6324              1.7452[.086]
LMPICN(-1)    7.0756          4.0841              1.7325[.089]
LRER(-1)      1.5625          2.4576              .63578[.527]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 19.4051[.001]
Likelihood Ratio Statistic          CHSQ( 4)= 21.8251[.000]
F Statistic                          F( 4, 58)= 3.9301[.007]
*****

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เมื่อช่วงเวลา = 8

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
90 observations used for estimation from 2001M10 to 2009M3
*****
Regressor              Coefficient      Standard Error    T-Ratio[Prob]
INPT                   -40.7839         18.7153           -2.1792[.034]
DLEXPO(-1)            .74722          .28740            2.6000[.012]
DLEXPO(-2)            .68456          .24298            2.8174[.007]
DLEXPO(-3)            .54811          .21588            2.5390[.014]
DLEXPO(-4)            .69753          .19894            3.5061[.001]
DLEXPO(-5)            .47870          .19484            2.4569[.017]
DLEXPO(-6)            .14749          .18247            .80832[.423]
DLEXPO(-7)            .063163         .15800            .39977[.691]
DLEXPO(-8)            .20059          .11731            1.7099[.093]
DLMPITH(-1)           -4.6859         2.0650            -2.2691[.027]
DLMPITH(-2)           -3.5695         2.2017            -1.6212[.111]
DLMPITH(-3)           -3.6524         2.1209            -1.7220[.091]
DLMPITH(-4)           -2.7955         2.0750            -1.3472[.184]
DLMPITH(-5)           -1.5202         2.1992            -.069128[.945]
DLMPITH(-6)           -2.5586         2.2779            -1.1232[.266]
DLMPITH(-7)           -2.0420         2.1499            -.94981[.347]
DLMPITH(-8)           -1.54929        1.6346            -.93604[.347]
DLMPICN(-1)           -7.8878         4.7584            -1.6576[.103]
DLMPICN(-2)           -6.1661         4.9644            -1.2421[.220]
DLMPICN(-3)           -9.9880         4.9773            -2.0067[.050]
DLMPICN(-4)           -9.8846         4.9775            -1.9858[.052]
DLMPICN(-5)           -8.3533         4.9369            -1.6920[.097]
DLMPICN(-6)           -5.8216         4.4839            -1.2983[.200]
DLMPICN(-7)           -1.81060        3.7266            -.48603[.629]
DLMPICN(-8)           -2.5208         2.2973            -1.0973[.277]
DLRER(-1)             -1.3397         4.0954            -.32713[.745]
DLRER(-2)             -3.0203         4.1634            -.72543[.471]
DLRER(-3)             .42290          3.9309            .10759[.915]
DLRER(-4)             -7.8088         3.6030            -2.1673[.035]
DLRER(-5)             -2.8468         3.6391            -.78228[.438]
DLRER(-6)             -1.0927         3.4878            -.31328[.755]
DLRER(-7)             2.2667          3.3900            .66862[.507]
DLRER(-8)             -2.3461         3.4009            -.68984[.493]
LEXPO(-1)             -1.3815         .32857            -4.2047[.000]
LMPITH(-1)            3.6856          1.8055            2.0413[.046]
LMPICN(-1)            9.5072          4.6217            2.0571[.045]
LRER(-1)              2.3043          2.6385            .87335[.386]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic    CHSQ( 4)= 22.8956[.000]
Likelihood Ratio Statistic        CHSQ( 4)= 26.4204[.000]
F Statistic                        F( 4, 53)= 4.5208[.003]
*****

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## เมื่อช่วงเวลา = 9

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Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPICN(-1)      LRER(-1)
89 observations used for estimation from 2001M11 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT               -43.6004        22.4910          -1.9386[.058]
DLEXPO(-1)         .83662         .34812           2.4033[.020]
DLEXPO(-2)         .77599         .32219           2.4085[.020]
DLEXPO(-3)         .63291         .27560           2.2965[.026]
DLEXPO(-4)         .76155         .24210           3.1456[.003]
DLEXPO(-5)         .52396         .23159           2.2625[.028]
DLEXPO(-6)         .21577         .21928           .98399[.330]
DLEXPO(-7)         .12648         .19278           .65610[.515]
DLEXPO(-8)         .28030         .16704           1.6781[.100]
DLEXPO(-9)         .070055        .13482           .51962[.606]
DLMPITH(-1)        -5.4918        2.4309           -2.2591[.028]
DLMPITH(-2)        -4.3387        2.6167           -1.6581[.104]
DLMPITH(-3)        -4.4284        2.4857           -1.7816[.081]
DLMPITH(-4)        -3.9651        2.6979           -1.4697[.148]
DLMPITH(-5)        -1.1937        2.8261           -.42239[.675]
DLMPITH(-6)        -3.0356        2.6504           -1.1453[.258]
DLMPITH(-7)        -2.0489        2.5337           -.80864[.423]
DLMPITH(-8)        -.39197        2.4175           -.16214[.872]
DLMPITH(-9)        .14254         1.8070           .078881[.937]
DLMPICN(-1)        -7.7418        5.5570           -1.3932[.170]
DLMPICN(-2)        -5.5605        5.5804           -.99644[.324]
DLMPICN(-3)        -9.2148        5.4524           -1.6901[.098]
DLMPICN(-4)        -9.1081        5.5331           -1.6461[.106]
DLMPICN(-5)        -7.8748        5.4204           -1.4528[.153]
DLMPICN(-6)        -5.4233        5.3308           -1.0174[.314]
DLMPICN(-7)        -.58494        4.8076           -.12167[.904]
DLMPICN(-8)        -3.1883        3.9518           -.80679[.424]
DLMPICN(-9)        -.14977        2.5264           -.059283[.953]
DLRER(-1)          -2.0233        4.4286           -.45686[.650]
DLRER(-2)          -4.2610        4.6294           -.92042[.362]
DLRER(-3)          -.87521        4.3792           -.19985[.842]
DLRER(-4)          -9.3849        4.2167           -2.2256[.031]
DLRER(-5)          -3.0454        3.9464           -.77169[.444]
DLRER(-6)          -.90300        3.8808           -.23268[.817]
DLRER(-7)          2.2070        3.6811           .59956[.552]
DLRER(-8)          -2.6381        3.6226           -.72823[.470]
DLRER(-9)          -2.5077        3.6207           -.69261[.492]
LEXPO(-1)          -1.4930        .41058           -3.6364[.001]
LMPITH(-1)         4.4732        2.0627           2.1686[.035]
LMPICN(-1)         9.3741        5.4497           1.7201[.092]
LRER(-1)           3.2874        2.9253           1.1238[.267]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 19.3418[.001]
Likelihood Ratio Statistic          CHSQ( 4)= 21.8082[.000]
F Statistic                          F( 4, 48)= 3.3320[.017]
*****

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## การประมาณค่าของ Error Correction Model ตามกระบวนการ ARDL โดยใช้ SBC

### ระยะสั้น

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Error Correction Representation for the Selected ARDL Model
ARDL(6,2,0,0) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is dLEXPO
93 observations used for estimation from 2001M7 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
dLEXPO1        .44606            .14333              3.1122[.003]
dLEXPO2        .50954            .13044              3.9065[.000]
dLEXPO3        .48056            .11689              4.1112[.000]
dLEXPO4        .44534            .10392              4.2855[.000]
dLEXPO5        .27196            .091036            2.9874[.004]
dLMPITH        -1.6787           1.0613              -1.5816[.118]
dLMPITH1       -5.2082           1.0051              -5.1817[.000]
dLMPICN        3.1032            1.5444              2.0094[.048]
dLRER          1.5254            1.5440              .98793[.326]
dINPT          -11.8327          9.5853              -1.2345[.221]
ecm(-1)        -1.0835           .15933              -6.8005[.000]
*****
List of additional temporary variables created:
dLEXPO = LEXPO-LEXPO(-1)
dLEXPO1 = LEXPO(-1)-LEXPO(-2)
dLEXPO2 = LEXPO(-2)-LEXPO(-3)
dLEXPO3 = LEXPO(-3)-LEXPO(-4)
dLEXPO4 = LEXPO(-4)-LEXPO(-5)
dLEXPO5 = LEXPO(-5)-LEXPO(-6)
dLMPITH = LMPITH-LMPITH(-1)
dLMPITH1 = LMPITH(-1)-LMPITH(-2)
dLMPICN = LMPICN-LMPICN(-1)
dLRER = LRER-LRER(-1)
dINPT = INPT-INPT(-1)
ecm = LEXPO -2.8495*LMPITH -2.8640*LMPICN -1.4078*LRER + 10.9208*INPT
*****
R-Squared          .52216      R-Bar-Squared      .45726
S.E. of Regression .45318      F-stat.      F( 10, 82)      8.8511[.000]
Mean of Dependent Variable .020418      S.D. of Dependent Variable .61515
Residual Sum of Squares 16.6353      Equation Log-likelihood -51.9314
Akaike Info. Criterion -63.9314      Schwarz Bayesian Criterion -79.1270
DW-statistic      1.9687
*****
R-Squared and R-Bar-Squared measures refer to the dependent variable
dLEXPO and in cases where the error correction model is highly
restricted, these measures could become negative.

```

### ระยะยาว

```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(6,2,0,0) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is LEXPO
93 observations used for estimation from 2001M7 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
LMPITH         2.8495           .70250              4.0562[.000]
LMPICN         2.8640           1.5157              1.8896[.062]
LRER           1.4078           1.3812              1.0193[.311]
INPT           -10.9208         8.9495              -1.2203[.226]
*****

```



## เมื่อช่วงเวลา = 4

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUK(-1)      LRER(-1)
94 observations used for estimation from 2001M6 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
INPT                19.3340              13.0699                 1.4793[.143]
DLEXPO(-1)         .21088              .12608                 1.6727[.099]
DLEXPO(-2)         .59304              .11949                 4.9632[.000]
DLEXPO(-3)         .50352              .12471                 4.0376[.000]
DLEXPO(-4)         .24722              .11259                 2.1957[.031]
DLMPIUK(-1)        -.29254              1.0704                 -.27329[.785]
DLMPIUK(-2)        1.1851              1.3557                 .87411[.385]
DLMPIUK(-3)        -.36078              1.4009                 -.25753[.797]
DLMPIUK(-4)        -2.0355              1.0417                 -1.9541[.055]
DLRER(-1)          4.4599              5.2381                 .85142[.397]
DLRER(-2)          3.8945              5.4381                 .71615[.476]
DLRER(-3)          -.044172            5.1452                 -.0085852[.993]
DLRER(-4)          1.1367              4.6475                 .24457[.807]
DLRER(-1)          2.0108              2.0913                 .96150[.339]
DLRER(-2)          -.40109             2.1022                 -.19080[.849]
DLRER(-3)          -.81095             1.9982                 -.40584[.686]
DLRER(-4)          -.12828             2.0024                 -.064063[.949]
LEXPO(-1)          -.87943             1.4337                 -6.1339[.000]
LMPITH(-1)         1.4012              .32900                 4.2590[.000]
LMPIUK(-1)         -2.1688             2.9031                 -.74709[.457]
LRER(-1)           -.51677             .75346                 -.68587[.495]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 33.5377[.000]
Likelihood Ratio Statistic          CHSQ( 4) = 41.4799[.000]
F Statistic                          F( 4, 73) = 10.1231[.000]
*****

```

เมื่อช่วงเวลา = 5

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUK(-1)      LRER(-1)
93 observations used for estimation from 2001M7 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                32.3300          14.2063           2.2758[.026]
DLEXPO(-1)         .34373           .14455            2.3780[.020]
DLEXPO(-2)         .66753           .13127            5.0853[.000]
DLEXPO(-3)         .57453           .13611            4.2210[.000]
DLEXPO(-4)         .37016           .13591            2.7235[.008]
DLEXPO(-5)         .19689           .11566            1.7023[.093]
DLMPITH(-1)        -.91304          1.0807            -.84489[.401]
DLMPITH(-2)        .30246           1.4110            .21435[.831]
DLMPITH(-3)        -1.2820          1.5428            -.83096[.409]
DLMPITH(-4)        -2.7042          1.4720            -1.8371[.071]
DLMPITH(-5)        -.65543          1.1176            -.58648[.559]
DLMPIUK(-1)        8.0133           5.4709            1.4647[.148]
DLMPIUK(-2)        7.6059           5.7424            1.3245[.190]
DLMPIUK(-3)        4.8805           5.6046            .87079[.387]
DLMPIUK(-4)        5.6905           5.1165            1.1122[.270]
DLMPIUK(-5)        9.9666           4.6544            2.1413[.036]
DLRER(-1)          2.8518           2.1453            1.3293[.188]
DLRER(-2)          .11345           2.1440            .052914[.958]
DLRER(-3)          .43604           2.1331            .20442[.839]
DLRER(-4)          -.063406         2.0436            -.031027[.975]
DLRER(-5)          .96068           1.9755            .48629[.628]
LEXPO(-1)          -1.0818          .17664            -6.1244[.000]
LMPITH(-1)         1.7725           .38036            4.6601[.000]
LMPIUK(-1)         -4.1307          3.0871            -1.3381[.185]
LRER(-1)           -1.1059          .78783            -1.4037[.165]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 35.1702[.000]
Likelihood Ratio Statistic          CHSQ( 4) = 44.1839[.000]
F Statistic                          F( 4, 68) = 10.3389[.000]
*****

```

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## เมื่อช่วงเวลา = 6

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUK(-1)      LRER(-1)
92 observations used for estimation from 2001M8 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                36.3717          16.4919           2.2054[.031]
DLEXPO(-1)         .43969           .19437            2.2621[.027]
DLEXPO(-2)         .73332           .16045            4.5703[.000]
DLEXPO(-3)         .64255           .16236            3.9576[.000]
DLEXPO(-4)         .43778           .16170            2.7073[.009]
DLEXPO(-5)         .25639           .15720            1.6309[.108]
DLEXPO(-6)         .081722          .13484            .60608[.547]
DLMPITH(-1)        -1.3332          1.2565            -1.0611[.293]
DLMPITH(-2)        -.12765          1.5471            -.082509[.935]
DLMPITH(-3)        -1.7201          1.6868            -1.0197[.312]
DLMPITH(-4)        -3.2003          1.7628            -1.8155[.074]
DLMPITH(-5)        -1.2002          1.7333            -.69247[.491]
DLMPITH(-6)        -.59093          1.2267            -.48171[.632]
DLMPIUK(-1)        9.8258           6.2165            1.5806[.119]
DLMPIUK(-2)        8.7379           6.3459            1.3769[.173]
DLMPIUK(-3)        6.5121           6.3456            1.0262[.309]
DLMPIUK(-4)        7.1436           5.9527            1.2001[.235]
DLMPIUK(-5)        10.8705          5.4289            2.0024[.050]
DLMPIUK(-6)        .28041           5.0836            .055160[.956]
DLRER(-1)          3.3101           2.3054            1.4358[.156]
DLRER(-2)          .45330           2.3142            .19588[.845]
DLRER(-3)          .87537           2.3241            .37664[.708]
DLRER(-4)          .54892           2.2964            .23904[.812]
DLRER(-5)          1.1914           2.1546            .55296[.582]
DLRER(-6)          1.0114           2.1236            .47628[.636]
LEXPO(-1)          -1.2025          .24321            -4.9442[.000]
LMPITH(-1)         2.0174           .49100            4.1088[.000]
LMPIUK(-1)         -4.6495          3.4581            -1.3445[.184]
LRER(-1)           -1.3192          .90124            -1.4637[.148]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic    CHSQ( 4)= 27.1326[.000]
Likelihood Ratio Statistic        CHSQ( 4)= 32.1487[.000]
F Statistic                        F( 4, 63)= 6.5879[.000]
*****

```



เมื่อช่วงเวลา = 7

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUK(-1)      LRER(-1)
91 observations used for estimation from 2001M9 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
INPT           42.3930          18.4122             2.3024[.025]
DLEXPO(-1)    .41117           .25690              1.6005[.115]
DLEXPO(-2)    .67201           .21110              3.1835[.002]
DLEXPO(-3)    .62869           .19015              3.3063[.002]
DLEXPO(-4)    .49920           .18781              2.6580[.010]
DLEXPO(-5)    .30177           .18394              1.6406[.106]
DLEXPO(-6)    .022152         .17219              .12865[.898]
DLEXPO(-7)    -.12418          .14176              -.87600[.385]
DLMPITH(-1)   -1.7167          1.2926              -1.3280[.189]
DLMPITH(-2)   -.14587          1.6541              -.088192[.930]
DLMPITH(-3)   -2.0507          1.7842              -1.1494[.255]
DLMPITH(-4)   -3.9005          1.8498              -2.1086[.039]
DLMPITH(-5)   -2.9436          2.0144              -1.4613[.149]
DLMPITH(-6)   -2.9158          1.8728              -1.5570[.125]
DLMPITH(-7)   -1.7853          1.2705              -1.4052[.165]
DLMPIUK(-1)   12.1487          6.5980              1.8413[.071]
DLMPIUK(-2)   9.5978           6.7815              1.4153[.162]
DLMPIUK(-3)   8.8793           6.7636              1.3128[.194]
DLMPIUK(-4)   9.2339           6.5334              1.4133[.163]
DLMPIUK(-5)   14.9825          6.1752              2.4262[.018]
DLMPIUK(-6)   3.9428           5.8043              .67929[.500]
DLMPIUK(-7)   6.5513           5.1220              1.2790[.206]
DLRER(-1)     3.1861           2.3722              1.3431[.184]
DLRER(-2)     .80072           2.4167              .33132[.742]
DLRER(-3)     .91773           2.4049              .38161[.704]
DLRER(-4)     1.9499           2.4629              .79170[.432]
DLRER(-5)     1.8083           2.3317              .77552[.441]
DLRER(-6)     1.6297           2.2742              .71658[.477]
DLRER(-7)     2.3002           2.2338              1.0297[.307]
LEXPO(-1)     -1.1832          .30601              -3.8665[.000]
LMPITH(-1)    2.0004           .60179              3.3240[.002]
LMPIUK(-1)    -5.5440          3.7602              -1.4744[.146]
LRER(-1)      -1.7984          .99276              -1.8116[.075]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 20.6031[.000]
Likelihood Ratio Statistic          CHSQ( 4)= 23.3607[.000]
F Statistic                          F( 4, 58)= 4.2437[.004]
*****

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## เมื่อช่วงเวลา = 8

Variable Addition Test (OLS case)

\*\*\*\*\*

Dependent variable is DLEXPO

List of the variables added to the regression:

LEXPO(-1) LMPITH(-1) LMPIUK(-1) LRER(-1)

90 observations used for estimation from 2001M10 to 2009M3

\*\*\*\*\*

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	41.3699	21.0430	1.9660 [.055]
DLEXPO(-1)	.36265	.33288	1.0895 [.281]
DLEXPO(-2)	.62295	.28172	2.2113 [.031]
DLEXPO(-3)	.57560	.24589	2.3409 [.023]
DLEXPO(-4)	.47242	.22646	2.0861 [.042]
DLEXPO(-5)	.27650	.22762	1.2147 [.230]
DLEXPO(-6)	-.0042070	.21441	-.019622 [.984]
DLEXPO(-7)	-.13228	.18612	-.71073 [.480]
DLEXPO(-8)	-.037283	.14859	-.25091 [.803]
DLMPITH(-1)	-1.6447	1.4079	-1.1682 [.248]
DLMPITH(-2)	.019018	1.8059	.010531 [.992]
DLMPITH(-3)	-1.5809	1.9982	-.79113 [.432]
DLMPITH(-4)	-3.4681	2.0196	-1.7172 [.092]
DLMPITH(-5)	-2.6228	2.2195	-1.1817 [.243]
DLMPITH(-6)	-2.4337	2.2861	-1.0646 [.292]
DLMPITH(-7)	-1.0745	2.0968	-.51246 [.610]
DLMPITH(-8)	.78039	1.4095	.55366 [.582]
DLMPIUK(-1)	11.6377	7.2788	1.5988 [.116]
DLMPIUK(-2)	9.2546	7.4990	1.2341 [.223]
DLMPIUK(-3)	8.1933	7.5034	1.0919 [.280]
DLMPIUK(-4)	8.5829	7.2949	1.1766 [.245]
DLMPIUK(-5)	14.1369	7.0589	2.0027 [.050]
DLMPIUK(-6)	2.8082	7.2646	.38655 [.701]
DLMPIUK(-7)	6.8313	6.2668	1.0901 [.281]
DLMPIUK(-8)	.25354	6.1087	.041505 [.967]
DLRER(-1)	3.6566	2.7755	1.3175 [.193]
DLRER(-2)	.46345	2.6060	.17784 [.860]
DLRER(-3)	1.0451	2.6866	.38900 [.699]
DLRER(-4)	2.0622	2.6259	.78533 [.436]
DLRER(-5)	1.5704	2.6075	.60227 [.550]
DLRER(-6)	1.6130	2.6562	.60727 [.546]
DLRER(-7)	2.0921	2.4864	.84144 [.404]
DLRER(-8)	1.0946	2.4714	.44291 [.660]
LEXPO(-1)	-1.1348	.38042	-2.9831 [.004]
LMPITH(-1)	1.9321	.74501	2.5933 [.012]
LMPIUK(-1)	-5.3674	4.1978	-1.2786 [.207]
LRER(-1)	-1.8559	1.1568	-1.6043 [.115]

\*\*\*\*\*

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic CHSQ( 4) = 14.7767 [.005]

Likelihood Ratio Statistic CHSQ( 4) = 16.1413 [.003]

F Statistic F( 4, 53) = 2.6028 [.046]

\*\*\*\*\*

## เมื่อช่วงเวลา = 9

Variable Addition Test (OLS case)

\*\*\*\*\*

Dependent variable is DLEXPO

List of the variables added to the regression:

LEXPO(-1) LMPITH(-1) LMPIUK(-1) LRER(-1)

89 observations used for estimation from 2001M1 to 2009M3

\*\*\*\*\*

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	41.4700	23.8556	1.7384 [.089]
DLEXPO(-1)	.25615	.41256	.62088 [.538]
DLEXPO(-2)	.51238	.36343	1.4098 [.165]
DLEXPO(-3)	.46391	.31782	1.4597 [.151]
DLEXPO(-4)	.40414	.28722	1.4071 [.166]
DLEXPO(-5)	.23150	.27458	.84310 [.403]
DLEXPO(-6)	-.028392	.26626	-.10664 [.916]
DLEXPO(-7)	-.17370	.23105	-.75179 [.456]
DLEXPO(-8)	-.11429	.19568	-.58409 [.562]
DLEXPO(-9)	-.12529	.15579	-.80423 [.425]
DLMPITH(-1)	-1.5607	1.4957	-1.0434 [.302]
DLMPITH(-2)	.12254	1.9226	.063737 [.949]
DLMPITH(-3)	-1.6757	2.1855	-.76674 [.447]
DLMPITH(-4)	-3.4547	2.2849	-1.5120 [.137]
DLMPITH(-5)	-2.6020	2.4415	-1.0657 [.292]
DLMPITH(-6)	-2.2744	2.5109	-.90582 [.370]
DLMPITH(-7)	-1.2978	2.5518	-.50857 [.613]
DLMPITH(-8)	.49430	2.2764	.21714 [.829]
DLMPITH(-9)	-.048557	1.4924	-.032536 [.974]
DLMPIUK(-1)	12.7812	7.9569	1.6063 [.115]
DLMPIUK(-2)	10.3369	8.3824	1.2332 [.224]
DLMPIUK(-3)	9.7645	8.3725	1.1663 [.249]
DLMPIUK(-4)	7.3965	8.1046	.91263 [.366]
DLMPIUK(-5)	13.5058	7.8511	1.7202 [.092]
DLMPIUK(-6)	2.3246	8.2820	.28069 [.780]
DLMPIUK(-7)	5.6444	7.9227	.71244 [.480]
DLMPIUK(-8)	-.90742	7.5059	-.12090 [.904]
DLMPIUK(-9)	-2.9851	6.6758	-.44716 [.657]
DLRER(-1)	3.4872	2.9108	1.1980 [.237]
DLRER(-2)	1.2255	3.1113	.39388 [.695]
DLRER(-3)	.53380	2.8694	.18603 [.853]
DLRER(-4)	2.6809	2.9469	.90973 [.368]
DLRER(-5)	1.4097	2.7731	.50835 [.614]
DLRER(-6)	2.1057	3.0231	.69652 [.489]
DLRER(-7)	1.8738	2.9827	.62823 [.533]
DLRER(-8)	1.6027	2.7230	.58859 [.559]
DLRER(-9)	.74450	2.6741	.27842 [.782]
LEXPO(-1)	-1.0415	.45975	-2.2653 [.028]
LMPITH(-1)	1.8830	.90213	2.0872 [.042]
LMPIUK(-1)	-5.6584	4.6843	-1.2079 [.233]
LRER(-1)	-1.8566	1.3573	-1.3679 [.178]

\*\*\*\*\*

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic CHSQ( 4)= 10.3439 [.035]

Likelihood Ratio Statistic CHSQ( 4)= 10.9960 [.027]

F Statistic F( 4, 48)= 1.5781 [.195]

\*\*\*\*\*

## เมื่อช่วงเวลา = 10

Variable Addition Test (OLS case)

\*\*\*\*\*

Dependent variable is DLEXPO

List of the variables added to the regression:

LEXPO(-1) LMPITH(-1) LMPIUK(-1) LRER(-1)

88 observations used for estimation from 2001M12 to 2009M3

\*\*\*\*\*

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	18.3833	27.2484	.67466[.504]
DLEXPO(-1)	-.27073	.50716	-.53383[.596]
DLEXPO(-2)	-.053437	.47219	-.11317[.910]
DLEXPO(-3)	-.10554	.42461	-.24856[.805]
DLEXPO(-4)	-.11112	.38382	-.28951[.774]
DLEXPO(-5)	-.20868	.35200	-.59285[.556]
DLEXPO(-6)	-.34333	.32480	-1.0570[.296]
DLEXPO(-7)	-.44446	.29215	-1.5214[.135]
DLEXPO(-8)	-.36673	.24798	-1.4789[.146]
DLEXPO(-9)	-.43569	.21766	-2.0017[.052]
DLEXPO(-10)	-.38529	.18175	-2.1198[.040]
DLMPITH(-1)	-1.8747	1.5745	-1.1907[.240]
DLMPITH(-2)	-.23805	1.9507	-.12203[.903]
DLMPITH(-3)	-1.6737	2.2527	-.74296[.462]
DLMPITH(-4)	-3.6788	2.4494	-1.5019[.140]
DLMPITH(-5)	-1.9754	2.6471	-.74623[.460]
DLMPITH(-6)	-1.6829	2.6279	-.64037[.525]
DLMPITH(-7)	-.79538	2.6521	-.29991[.766]
DLMPITH(-8)	.69245	2.6109	.26522[.792]
DLMPITH(-9)	-.22991	2.3026	-.099851[.921]
DLMPITH(-10)	.32291	1.5055	.21449[.831]
DLMPIUK(-1)	7.4183	8.4379	.87917[.384]
DLMPIUK(-2)	5.8693	9.0661	.64739[.521]
DLMPIUK(-3)	8.3049	9.0682	.91582[.365]
DLMPIUK(-4)	5.5239	8.7099	.63421[.529]
DLMPIUK(-5)	7.6511	8.4609	.90429[.371]
DLMPIUK(-6)	-2.5143	9.0831	-.27681[.783]
DLMPIUK(-7)	1.1172	8.7795	.12725[.899]
DLMPIUK(-8)	-3.0407	9.3053	-.32677[.745]
DLMPIUK(-9)	-3.6347	7.9674	-.45620[.651]
DLMPIUK(-10)	.98982	7.0889	.13963[.890]
DLRER(-1)	3.7828	3.0395	1.2445[.220]
DLRER(-2)	1.0601	3.1475	.33680[.738]
DLRER(-3)	-.74403	3.4832	-.21360[.832]
DLRER(-4)	1.9697	3.0174	.65278[.517]
DLRER(-5)	.26890	3.0562	.087986[.930]
DLRER(-6)	-.049932	3.2643	-.015296[.988]
DLRER(-7)	.74359	3.1978	.23253[.817]
DLRER(-8)	-.17513	3.2885	-.053257[.958]
DLRER(-9)	-.53086	2.8132	-.18870[.851]
DLRER(-10)	-1.5431	2.8727	-.53714[.594]
LEXPO(-1)	-.49997	.55144	-.90666[.370]
LMPITH(-1)	.66942	1.1226	.59631[.554]
LMPIUK(-1)	-2.2666	5.1755	-.43795[.664]
LRER(-1)	-.72553	1.5934	-.45532[.651]

\*\*\*\*\*

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic CHSQ( 4)= 3.6379[.457]

Likelihood Ratio Statistic CHSQ( 4)= 3.7152[.446]

F Statistic F( 4, 43)= .46356[.762]

\*\*\*\*\*







## การประมาณค่าของ Error Correction Model ตามกระบวนการ ARDL โดยใช้ SBC

### ระยะสั้น

```

Error Correction Representation for the Selected ARDL Model
ARDL(5,0,0,0) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is dLEXPO
94 observations used for estimation from 2001M6 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
dLEXPO1            .22869                .10961                  2.0863[.040]
dLEXPO2            .53834                .10575                  5.0906[.000]
dLEXPO3            .49703                .11553                  4.3023[.000]
dLEXPO4            .26149                .10659                  2.4532[.016]
dLMPITH            1.3488                .29273                  4.6076[.000]
dLMPIUK            .18911                1.8345                  .10309[.918]
dLRER              -.37150               .57935                  -.64123[.523]
dINPT              8.3105                6.8251                  1.2176[.227]
ecm(-1)            -.89344               .12697                  -7.0364[.000]
*****
List of additional temporary variables created:
dLEXPO = LEXPO-LEXPO(-1)
dLEXPO1 = LEXPO(-1)-LEXPO(-2)
dLEXPO2 = LEXPO(-2)-LEXPO(-3)
dLEXPO3 = LEXPO(-3)-LEXPO(-4)
dLEXPO4 = LEXPO(-4)-LEXPO(-5)
dLMPITH = LMPITH-LMPITH(-1)
dLMPIUK = LMPIUK-LMPIUK(-1)
dLRER = LRER-LRER(-1)
dINPT = INPT-INPT(-1)
ecm = LEXPO -1.5096*LMPITH - .21167*LMPIUK + .41581*LRER -9.3016*INPT
*****
R-Squared          .45254          R-Bar-Squared          .40101
S.E. of Regression .37976          F-stat. F( 8, 85)      8.7827[.000]
Mean of Dependent Variable .0024616      S.D. of Dependent Variable .49069
Residual Sum of Squares 12.2587          Equation Log-likelihood -37.6386
Akaike Info. Criterion -46.6386          Schwarz Bayesian Criterion -58.0834
DW-statistic        2.0647
*****
R-Squared and R-Bar-Squared measures refer to the dependent variable
dLEXPO and in cases where the error correction model is highly
restricted, these measures could become negative.

```

### ระยะยาว

```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(5,0,0,0) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is LEXPO
94 observations used for estimation from 2001M6 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
LMPITH            1.5096                .25867                  5.8362[.000]
LMPIUK            .21167                2.0529                  .10311[.918]
LRER              -.41581               .65080                  -.63891[.525]
INPT              9.3016                7.5639                  1.2297[.222]
*****

```





## เมื่อช่วงเวลา = 4

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
94 observations used for estimation from 2001M6 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                13.3395          6.8789            1.9392[.056]
DLEXPO(-1)          .33904           .10598            3.1991[.002]
DLEXPO(-2)          .11568           .10819            1.0692[.288]
DLEXPO(-3)          .23522           .094431           2.4909[.015]
DLEXPO(-4)          .21230           .089685           2.3671[.021]
DLMPITH(-1)         -2.5087          .58766            -4.2689[.000]
DLMPITH(-2)         -.71310          .74118            -.96212[.339]
DLMPITH(-3)         -.45822          .74088            -.61848[.538]
DLMPITH(-4)         -.62757          .59555            -1.0538[.295]
DLMPIUS(-1)         12.4036          3.6804            3.3702[.001]
DLMPIUS(-2)         2.8557           3.9910            .71553[.477]
DLMPIUS(-3)         -7.5360          4.0343            -1.8680[.066]
DLMPIUS(-4)         1.8452           4.2457            .43460[.665]
DLRER(-1)           .18241           1.5086            .12091[.904]
DLRER(-2)           -.13186          1.4846            -.088818[.929]
DLRER(-3)           -1.4895          1.5059            -.98916[.326]
DLRER(-4)           -1.3210          1.5005            -.88035[.382]
LEXPO(-1)           -.56360          1.0763            -5.2363[.000]
LMPITH(-1)          1.0741           .45463            2.3626[.021]
LMPIUS(-1)          -1.5409          1.3935            -1.1058[.272]
LRER(-1)            -.32095          .67206            -.47756[.634]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 27.9173[.000]
Likelihood Ratio Statistic          CHSQ( 4) = 33.1244[.000]
F Statistic                          F( 4, 73) = 7.7099[.000]
*****

```

## เมื่อช่วงเวลา = 5

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
93 observations used for estimation from 2001M7 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
INPT           16.8904          7.1595              2.3592[.021]
DLEXPO(-1)    .41439           .11673              3.5500[.001]
DLEXPO(-2)    .19429           .11317              1.7167[.091]
DLEXPO(-3)    .37731           .10871              3.4706[.001]
DLEXPO(-4)    .28874           .097934             2.9483[.004]
DLEXPO(-5)    .24938           .091301             2.7315[.008]
DLMPITH(-1)   -2.9015          .61135              -4.7460[.000]
DLMPITH(-2)   -1.3413          .77146              -1.7387[.087]
DLMPITH(-3)   -.58668          .77933              -.75280[.454]
DLMPITH(-4)   -.37750          .76588              -.49290[.624]
DLMPITH(-5)   .20165           .64343              .31340[.755]
DLMPIUS(-1)   12.2189         3.7920              3.2223[.002]
DLMPIUS(-2)   4.1310          4.2657              .96843[.336]
DLMPIUS(-3)   -7.5915         4.0222              -1.8874[.063]
DLMPIUS(-4)   .91025          4.4629              .20396[.839]
DLMPIUS(-5)   2.3041          4.5891              .50209[.617]
DLRER(-1)     .046465         1.5245              .030479[.976]
DLRER(-2)     .18687          1.5189              .12303[.902]
DLRER(-3)     -.93518         1.5105              -.61910[.538]
DLRER(-4)     -1.8462         1.5137              -1.2197[.227]
DLRER(-5)     -.70136         1.4744              -.47571[.636]
LEXPO(-1)     -.73508         .12299              -5.9769[.000]
LMPITH(-1)    1.4493          .50571              2.8658[.006]
LMPIUS(-1)    -2.0587         1.4573              -1.4127[.162]
LRER(-1)      -.30825         .70442              -.43759[.663]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4) = 33.5780[.000]
Likelihood Ratio Statistic          CHSQ( 4) = 41.6580[.000]
F Statistic                          F( 4, 68) = 9.6063[.000]
*****

```

เมื่อช่วงเวลา = 6

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
92 observations used for estimation from 2001M8 to 2009M3
*****
Regressor          Coefficient      Standard Error    T-Ratio[Prob]
INPT                17.4067          7.8812            2.2086[.031]
DLEXPO(-1)         .45362           .12807            3.5419[.001]
DLEXPO(-2)         .21389           .12903            1.6577[.102]
DLEXPO(-3)         .38501           .11757            3.2746[.002]
DLEXPO(-4)         .36818           .12034            3.0595[.003]
DLEXPO(-5)         .33853           .10646            3.1800[.002]
DLEXPO(-6)         .10845           .10025            1.0818[.283]
DLMPITH(-1)        -3.2566          .66636            -4.8872[.000]
DLMPITH(-2)        -1.7016          .82416            -2.0647[.043]
DLMPITH(-3)        -.93211          .85978            -1.0841[.282]
DLMPITH(-4)        -.15540          .87720            -.17715[.860]
DLMPITH(-5)        .77019           .87862            .87659[.384]
DLMPITH(-6)        .59240           .68391            .86620[.390]
DLMPIUS(-1)        12.2016          3.9613            3.0802[.003]
DLMPIUS(-2)        5.3980           4.4240            1.2202[.227]
DLMPIUS(-3)        -7.2089          4.4162            -1.6324[.108]
DLMPIUS(-4)        -1.0840          4.5935            -.23598[.814]
DLMPIUS(-5)        .27160           4.8476            .056027[.955]
DLMPIUS(-6)        -2.3362          4.8603            -.48066[.632]
DLRER(-1)          -1.4711          1.6761            -.87768[.383]
DLRER(-2)          -.013183         1.5583            -.0084603[.993]
DLRER(-3)          -1.0457          1.5902            -.65756[.513]
DLRER(-4)          -1.7623          1.5492            -1.1375[.260]
DLRER(-5)          -1.5676          1.5502            -1.0112[.316]
DLRER(-6)          -2.6946          1.5251            -1.7668[.082]
LEXPO(-1)          -.83343          1.5361            -5.4255[.000]
LMPITH(-1)         1.8908           .57857            3.2680[.002]
LMPIUS(-1)         -2.6248          1.5886            -1.6522[.103]
LRER(-1)           .069795          .75174            .092844[.926]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic    CHSQ( 4)= 31.1267[.000]
Likelihood Ratio Statistic        CHSQ( 4)= 37.9955[.000]
F Statistic                        F( 4, 63)= 8.0535[.000]
*****

```

เมื่อช่วงเวลา = 7

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
91 observations used for estimation from 2001M9 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
INPT                20.7008              8.2408                  2.5120[.015]
DLEXPO(-1)         .38384               .14775                  2.5979[.012]
DLEXPO(-2)         .20994               .13452                  1.5606[.124]
DLEXPO(-3)         .22549               .12668                  1.7800[.080]
DLEXPO(-4)         .36066               .12315                  2.9287[.005]
DLEXPO(-5)         .18647               .12384                  1.5057[.138]
DLEXPO(-6)         .042131              .11518                  .36577[.716]
DLEXPO(-7)        -.089422              .095166                 -.93964[.351]
DLMPITH(-1)        -3.9260               .72961                  -5.3810[.000]
DLMPITH(-2)        -2.2731               .86319                  -2.6334[.011]
DLMPITH(-3)        -1.3184               .87522                  -1.5064[.137]
DLMPITH(-4)        -.42915               .89382                  -.48013[.633]
DLMPITH(-5)        -.16593               .94623                  -.17536[.861]
DLMPITH(-6)        -.87373               .89821                  -.97274[.335]
DLMPITH(-7)        -1.3522               .68661                  -1.9694[.054]
DLMPIUS(-1)        14.6263              3.9077                  3.7430[.000]
DLMPIUS(-2)        8.8720                4.4174                  2.0084[.049]
DLMPIUS(-3)        -5.9632              4.3613                  -1.3673[.177]
DLMPIUS(-4)        1.3397               4.7444                  .28237[.779]
DLMPIUS(-5)        2.0009               4.7698                  .41949[.676]
DLMPIUS(-6)        -1.1091              4.7745                  -.23230[.817]
DLMPIUS(-7)        -2.1694              5.2536                  -.41294[.681]
DLRER(-1)          -1.5589              1.7055                  -.91401[.364]
DLRER(-2)          .58627               1.6043                  .36544[.716]
DLRER(-3)          -1.7702              1.5668                  -1.1298[.263]
DLRER(-4)          -2.7647              1.5217                  -1.8169[.074]
DLRER(-5)          -2.5398              1.4929                  -1.7013[.094]
DLRER(-6)          -1.5728              1.5632                  -1.0062[.319]
DLRER(-7)          -.71744              1.4901                  -.48148[.632]
LEXPO(-1)          -.74414              1.7843                  -4.1704[.000]
LMPITH(-1)         2.2106               .62584                  3.5322[.001]
LMPIUS(-1)         -4.0761              1.6533                  -2.4655[.017]
LRER(-1)           .14145               .73896                  .19142[.849]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 23.9080[.000]
Likelihood Ratio Statistic          CHSQ( 4)= 27.7363[.000]
F Statistic                          F( 4, 58)= 5.1670[.001]
*****

```

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## เมื่อช่วงเวลา = 8

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
90 observations used for estimation from 2001M10 to 2009M3
*****
Regressor          Coefficient          Standard Error          T-Ratio[Prob]
INPT                22.9339                9.4110                2.4369[.018]
DLEXPO(-1)         .27948                 .18600                1.5026[.139]
DLEXPO(-2)         .18356                 .16426                1.1175[.269]
DLEXPO(-3)         .22918                 .14087                1.6269[.110]
DLEXPO(-4)         .30046                 .13580                2.2125[.031]
DLEXPO(-5)         .20656                 .13590                1.5199[.134]
DLEXPO(-6)        -.032261               .13573                -.23769[.813]
DLEXPO(-7)        -.13906                .11831                -1.1754[.245]
DLEXPO(-8)        -.081171               .10031                -.80922[.422]
DLMPITH(-1)       -4.0494                .83860                -4.8288[.000]
DLMPITH(-2)       -2.7122                1.0125                -2.6786[.010]
DLMPITH(-3)       -1.6214                .99808                -1.6245[.110]
DLMPITH(-4)       -.60394                .98365                -.61398[.542]
DLMPITH(-5)       -.23593                1.0333                -.22833[.820]
DLMPITH(-6)       -1.2611                1.0286                -1.2260[.226]
DLMPITH(-7)       -2.1140                .96789                -2.1841[.033]
DLMPITH(-8)       -.77364                .73425                -1.0536[.297]
DLMPIUS(-1)      14.5608                4.2052                3.4626[.001]
DLMPIUS(-2)      10.8379                4.8247                2.2463[.029]
DLMPIUS(-3)      -4.1426                4.8011                -.86285[.392]
DLMPIUS(-4)       .49193                5.0462                .097484[.923]
DLMPIUS(-5)       2.8115                5.4372                .51710[.607]
DLMPIUS(-6)       .32149                5.1121                .062887[.950]
DLMPIUS(-7)      -.90301                5.6117                -.16092[.873]
DLMPIUS(-8)      -.98984                5.4221                -.18256[.856]
DLRER(-1)        -1.8429                1.7922                -1.0283[.308]
DLRER(-2)         .40927                1.7791                .23004[.819]
DLRER(-3)        -1.3261                1.7102                -.77539[.442]
DLRER(-4)        -3.2944                1.6492                -1.9976[.051]
DLRER(-5)        -3.3114                1.6235                -2.0397[.046]
DLRER(-6)        -2.3286                1.6771                -1.3885[.171]
DLRER(-7)        -.21257                1.6337                -.13012[.897]
DLRER(-8)       -.096561               1.5434                -.062563[.950]
LEXPO(-1)        -.73541                .21079                -3.4889[.001]
LMPITH(-1)        2.4717                .73482                3.3637[.001]
LMPIUS(-1)       -4.9476                1.8931                -2.6135[.012]
LRER(-1)         .22974                .79629                .28852[.774]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic    CHSQ( 4)= 20.1106[.000]
Likelihood Ratio Statistic       CHSQ( 4)= 22.7607[.000]
F Statistic                       F( 4, 53)= 3.8127[.009]
*****

```

## เมื่อช่วงเวลา = 9

```

Variable Addition Test (OLS case)
*****
Dependent variable is DLEXPO
List of the variables added to the regression:
LEXPO(-1)      LMPITH(-1)      LMPIUS(-1)      LRER(-1)
89 observations used for estimation from 2001M11 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
INPT           18.5936          10.7469             1.7301[.090]
DLEXPO(-1)    .33187           .21899              1.5154[.136]
DLEXPO(-2)    .27217           .20153              1.3505[.183]
DLEXPO(-3)    .25774           .17008              1.5154[.136]
DLEXPO(-4)    .31390           .15114              2.0768[.043]
DLEXPO(-5)    .22521           .14466              1.5568[.126]
DLEXPO(-6)    -.060823         .14770              -.41181[.682]
DLEXPO(-7)    -.046250         .14033              -.32958[.743]
DLEXPO(-8)    .015999         .12485              .12814[.899]
DLEXPO(-9)    .077749         .10449              .74408[.460]
DLMPITH(-1)   -3.6572          .98717              -3.7047[.001]
DLMPITH(-2)   -2.3413          1.1433              -2.0479[.046]
DLMPITH(-3)   -1.1728          1.1586              -1.0122[.317]
DLMPITH(-4)   -.30001          1.1116              -.26989[.788]
DLMPITH(-5)   .21109           1.1578              .18232[.856]
DLMPITH(-6)   -.83546          1.1549              -.72342[.473]
DLMPITH(-7)   -1.1657          1.1492              -1.0144[.315]
DLMPITH(-8)   .52740           1.0619              .49666[.622]
DLMPITH(-9)   1.1640           .76558              1.5205[.135]
DLMPIUS(-1)   14.4456          4.5034              3.2077[.002]
DLMPIUS(-2)   9.7576           5.1769              1.8848[.066]
DLMPIUS(-3)   -6.0180          5.2886              -1.1379[.261]
DLMPIUS(-4)   -.81379          5.5062              -.14780[.883]
DLMPIUS(-5)   3.4506           5.7044              .60491[.548]
DLMPIUS(-6)   .044120          5.7295              .0077006[.994]
DLMPIUS(-7)   -1.4705          6.1954              -.23736[.813]
DLMPIUS(-8)   -3.9401          5.7880              -.68073[.499]
DLMPIUS(-9)   -4.9535          5.9323              -.83501[.408]
DLRER(-1)     -1.3281          1.8630              -.71286[.479]
DLRER(-2)     .52191           1.8524              .28175[.779]
DLRER(-3)     -1.0581          1.9067              -.55492[.582]
DLRER(-4)     -3.7798          1.7988              -2.1013[.041]
DLRER(-5)     -2.6826          1.7558              -1.5279[.133]
DLRER(-6)     -1.8592          1.8413              -1.0097[.318]
DLRER(-7)     .67911           1.7793              .38168[.704]
DLRER(-8)     -.59434          1.6660              -.35674[.723]
DLRER(-9)     -.23007          1.6153              -.14243[.887]
LEXPO(-1)     -.73100          .24121              -3.0306[.004]
LMPITH(-1)    2.4036           .84795              2.8346[.007]
LMPIUS(-1)    -4.1517          2.1479              -1.9330[.059]
LRER(-1)      .42526           .85220              .49901[.620]
*****
Joint test of zero restrictions on the coefficients of additional variables:
Lagrange Multiplier Statistic      CHSQ( 4)= 16.4257[.002]
Likelihood Ratio Statistic          CHSQ( 4)= 18.1583[.001]
F Statistic                          F( 4, 48)= 2.7160[.041]
*****

```









## การประมาณค่าของ Error Correction Model ตามกระบวนการ ARDL โดยใช้ SBC

### ระยะสั้น

```

Error Correction Representation for the Selected ARDL Model
ARDL(2,2,0,1) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is dLEXPO
96 observations used for estimation from 2001M4 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
dLEXPO1       .22752           .092652             2.4557[.016]
dLMPITH       -.2356E-3        .51870              -.4543E-3[1.00]
dLMPITH1      -2.2303         .53012              -4.2072[.000]
dLMPIUS       1.7327          .98679              1.7559[.083]
dLRER         2.6723          1.5691              1.7031[.092]
dINPT         4.2984          4.9467              .86893[.387]
ecm(-1)       -.45203         .082631             -5.4705[.000]
*****
List of additional temporary variables created:
dLEXPO = LEXPO-LEXPO(-1)
dLEXPO1 = LEXPO(-1)-LEXPO(-2)
dLMPITH = LMPITH-LMPITH(-1)
dLMPITH1 = LMPITH(-1)-LMPITH(-2)
dLMPIUS = LMPIUS-LMPIUS(-1)
dLRER = LRER-LRER(-1)
dINPT = INPT-INPT(-1)
ecm = LEXPO + .38822*LMPITH -3.8332*LMPIUS + 1.7107*LRER -9.5090*INPT
*****
R-Squared      .42969          R-Bar-Squared      .37725
S.E. of Regression .25096        F-stat. F( 6, 89) 10.9249[.000]
Mean of Dependent Variable .012345      S.D. of Dependent Variable .31802
Residual Sum of Squares 5.4794      Equation Log-likelihood 1.2231
Akaike Info. Criterion -7.7769      Schwarz Bayesian Criterion -19.3165
DW-statistic 1.9753
*****
R-Squared and R-Bar-Squared measures refer to the dependent variable
dLEXPO and in cases where the error correction model is highly
restricted, these measures could become negative.

```

### ระยะยาว

```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(2,2,0,1) selected based on Schwarz Bayesian Criterion
*****
Dependent variable is LEXPO
96 observations used for estimation from 2001M4 to 2009M3
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
LMPITH         -.38822         .94168              -.41227[.681]
LMPIUS         3.8332         2.2262              1.7219[.089]
LRER           -1.7107        1.3390              -1.2776[.205]
INPT           9.5090         10.6602             .89201[.375]
*****

```

## ประวัติผู้เขียน

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ประวัติการศึกษา

สำเร็จการศึกษาระดับมัธยมศึกษา โรงเรียนสาธิตมหาวิทยาลัยเชียงใหม่  
ปีการศึกษา 2544

สำเร็จการศึกษาระดับปริญญาตรี เทคโนโลยีชีวภาพคณะอุตสาหกรรมเกษตร  
มหาวิทยาลัยเชียงใหม่ปีการศึกษา 2548

ประวัติการทำงาน พ.ศ.

2548-ปัจจุบัน พนักงานขอ Program for HIV Prevention and Treatment

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
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