

R1('D1LD','CONCH2T5') = SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY);
R1('D2LD','CONCH2T5') = (SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);
R1('KD','CONCH2T5') = SUM(Z, FD.L('CAPIT',Z));
R1('D1KD','CONCH2T5') = SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY);
R1('D2KD','CONCH2T5') = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);
R1('GFSAV','CONCH2T5') = S.L('CGENF');
R1('D1GFSAV','CONCH2T5') = S.L('CGENF') - R1('GFSAV',TODAY);
R1('D2GFSAV','CONCH2T5') = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);
R1('MIC','CONCH2T5') = SUM(I, ITC.L(I));
R1('PROP98','CONCH2T5') = IGT.L('LSK14','CGENF');

R2('M-STAT','CONCH2T5') = edram999.MODELSTAT;
R2('S-STAT','CONCH2T5') = edram999.SOLVESTAT;

R3('JGT',G,'CONCH2T5') = IGT.L(G,'CGENF');
R3('GOVS',G,'CONCH2T5') = S.L(G);
R3('Y',H,'CONCH2T5') = Y.L(H);
R3('Y',G,'CONCH2T5') = Y.L(G);

R4('DS',I,'CONCH2T5') = DS.L(I);
R4('FDL',I,'CONCH2T5') = FD.L('LABOR',I);
R4('P',I,'CONCH2T5') = P.L(I);
R4('PD',I,'CONCH2T5') = PD.L(I);
R4('M',I,'CONCH2T5') = M.L(I);
R4('D1DS',I,'CONCH2T5') = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,'CONCH2T5') = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,'CONCH2T5') = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,'CONCH2T5') = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,'CONCH2T5') = FD.L('CAPIT',I);
R4('D1FDK',I,'CONCH2T5') = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,'CONCH2T5') = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('D1P',I,'CONCH2T5') = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,'CONCH2T5') = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,'CONCH2T5') = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,'CONCH2T5') = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,'CONCH2T5') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL',I,'CONCH2T5') = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL',I,'CONCH2T5') = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY);
R4('D2RRL',I,'CONCH2T5') = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);
R4('D1RRK',I,'CONCH2T5') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);
R4('D2RRK',I,'CONCH2T5') = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 -
R4('RRK',I,TODAY))/R4('RRK',I,TODAY);

R5('PII0',I,PE,'CONCH2T5') = PII0(I,PE);
R5('DIRTI',I,PE,'CONCH2T5') = DIRTI.L(I,PE);

R6('YD',H,'CONCH2T5') = YD.L(H)/HH.L(H);
R6('Y',H,'CONCH2T5') = Y.L(H)/HH.L(H);
R6('YDR',H,'CONCH2T5') = YD.L(H)/HH.L(H)/CPLL(H);
R6('YR',H,'CONCH2T5') = Y.L(H)/HH.L(H)/CPLL(H);
R6('CPIH',H,'CONCH2T5') = CPLL(H);
R6('D1YD',H,'CONCH2T5') = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);
R6('D2YD',H,'CONCH2T5') = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);
R6('D1Y',H,'CONCH2T5') = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);
R6('D2Y',H,'CONCH2T5') = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);
R6('D1YDR',H,'CONCH2T5') = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);
R6('D2YDR',H,'CONCH2T5') = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);
R6('D1YR',H,'CONCH2T5') = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);
R6('D2YR',H,'CONCH2T5') = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);
R6('D1CPIH',H,'CONCH2T5') = CPLL(H) - R6('CPIH',H,TODAY);
R6('D1CPIH',H,'CONCH2T5') = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);

R7('POLN',PE,'CONCH2T5') = SUM(I, DIRTI.L(I,PE));
R7('D1POLN',PE,'CONCH2T5') = SUM(I, DIRTI.L(I,PE)) - R7('POLN',PE,TODAY);
R7('D2POLN',PE,'CONCH2T5') = (SUM(I, DIRTI.L(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

* EXPERIMENT 9: SAME AS EXP. 2, BUT NOW DECREASE BASE IMPORTS BY 20%

REG3('CONCH') = 0.8;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC','CONCH2T6) = Y.L('CTBAC');
R1('PIT','CONCH2T6) = Y.L('CTPIT');
R1('SAU','CONCH2T6) = Y.L('CTSAU');
R1('GFREV','CONCH2T6) = Y.L('CGENF') + SUM(G, IGT.L('CGENF',G));
R1('SFREV','CONCH2T6) = SUM(GSF, Y.L('GSF') - IGT.L('CGENF',GSF));
R1('STATIC','CONCH2T6) = 0;
R1('DGF','CONCH2T6) = R1('GFREV','CONCH2T6) - R1('GFREV','TODAY');
R1('DSF','CONCH2T6) = R1('SFREV','CONCH2T6) - R1('SFREV','TODAY');
R1('DDRE','CONCH2T6) = R1('DGF','CONCH2T6) + R1('DSF','CONCH2T6) - R1('STATIC','CONCH2T6);
R1('PDRE','CONCH2T6)\$R1('STATIC','CONCH2T6) = R1('DDRE','CONCH2T6) / R1('STATIC','CONCH2T6) * 100;
R1('SPI','CONCH2T6) = SPILL;
R1('D1SPI','CONCH2T6) = SPILL - R1('SPI','TODAY');
R1('D2SPI','CONCH2T6) = (SPILL - R1('SPI','TODAY'))/R1('SPI','TODAY');
R1('CPI','CONCH2T6) = SUM(H, CPL.L(H)*HH.L(H))/SUM(H1, HH.L(H1));
R1('D1CPI','CONCH2T6) = SUM(H, CPL.L(H)*HH.L(H))/SUM(H1, HH.L(H1)) - R1('CPI','TODAY');
R1('D2CPI','CONCH2T6) = (SUM(H, CPL.L(H)*HH.L(H))/SUM(H1, HH.L(H1))) - R1('CPI','TODAY))/R1('CPI','TODAY');
R1('GN','CONCH2T6) = SUM(I, N.L(I));
R1('D1GN','CONCH2T6) = SUM(I, N.L(I)) - R1('GN','TODAY');
R1('D2GN','CONCH2T6) = (SUM(I, N.L(I)) - R1('GN','TODAY'))/R1('GN','TODAY');
R1('POP','CONCH2T6) = SUM(H, HH.L(H));
R1('D1POP','CONCH2T6) = SUM(H, HH.L(H)) - R1('POP','TODAY');
R1('D2POP','CONCH2T6) = (SUM(H, HH.L(H)) - R1('POP','TODAY'))/R1('POP','TODAY');
R1('W','CONCH2T6) = RA.L('LABOR') / RA0('LABOR') * 100;
R1('D1W','CONCH2T6) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W','TODAY');
R1('D2W','CONCH2T6) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W','TODAY'))/R1('W','TODAY');
R1('R','CONCH2T6) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100;
R1('D1R','CONCH2T6) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R','TODAY');
R1('D2R','CONCH2T6) = (SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 -
R1('R','TODAY'))/R1('R','TODAY');
R1('LD','CONCH2T6) = SUM(Z, FD.L('LABOR',Z));
R1('D1LD','CONCH2T6) = SUM(Z, FD.L('LABOR',Z)) - R1('LD','TODAY');
R1('D2LD','CONCH2T6) = (SUM(Z, FD.L('LABOR',Z)) - R1('LD','TODAY'))/R1('LD','TODAY');
R1('KD','CONCH2T6) = SUM(Z, FD.L('CAPIT',Z));
R1('D1KD','CONCH2T6) = SUM(Z, FD.L('CAPIT',Z)) - R1('KD','TODAY');
R1('D2KD','CONCH2T6) = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD','TODAY'))/R1('KD','TODAY');
R1('GFSAV','CONCH2T6) = S.L('CGENF');
R1('D1GFSAV','CONCH2T6) = S.L('CGENF') - R1('GFSAV','TODAY');
R1('D2GFSAV','CONCH2T6) = (S.L('CGENF') - R1('GFSAV','TODAY'))/R1('GFSAV','TODAY');
R1('MIC','CONCH2T6) = SUM(I, ITC.L(I));
R1('PROP98','CONCH2T6) = IGT.L('LSK14','CGENF');

R2('M-STAT','CONCH2T6) = edram999.MODELSTAT;
R2('S-STAT','CONCH2T6) = edram999.SOLVESTAT;

R3('IGT',G,'CONCH2T6) = IGT.L(G,'CGENF');
R3('GOVS',G,'CONCH2T6) = S.L(G);
R3('Y',H,'CONCH2T6) = Y.L(H);
R3('Y',G,'CONCH2T6) = Y.L(G);

R4('DS',I,'CONCH2T6) = DS.L(I);
R4('FDL',I,'CONCH2T6) = FD.L('LABOR',I);
R4('P',I,'CONCH2T6) = P.L(I);
R4('PD',I,'CONCH2T6) = PD.L(I);
R4('M',I,'CONCH2T6) = M.L(I);
R4('D1DS',I,'CONCH2T6) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,'CONCH2T6) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,'CONCH2T6) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,'CONCH2T6) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,'CONCH2T6) = FD.L('CAPIT',I);
R4('D1FDK',I,'CONCH2T6) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,'CONCH2T6) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('D1P',I,'CONCH2T6) = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,'CONCH2T6) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,'CONCH2T6) = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,'CONCH2T6) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,'CONCH2T6) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;

$R4('RRL',I,'CONCH2T6') = R.L('LABOR',I) / R0('LABOR',I) * 100;$
 $R4('D1RRL',I,'CONCH2T6') = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,'TODAY');$
 $R4('D2RRL',I,'CONCH2T6') = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,'TODAY')) / R4('RRL',I,'TODAY');$
 $R4('D1RRK',I,'CONCH2T6') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,'TODAY');$
 $R4('D2RRK',I,'CONCH2T6') = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,'TODAY')) / R4('RRK',I,'TODAY');$

$R5('PHO',I,PE,'CONCH2T6') = PHO(I,PE);$
 $R5('DIRTI',I,PE,'CONCH2T6') = DIRTLL(I,PE);$

$R6('YD',H,'CONCH2T6') = YD.L(H)/HH.L(H);$
 $R6('Y',H,'CONCH2T6') = Y.L(H)/HH.L(H);$
 $R6('YDR',H,'CONCH2T6') = YD.L(H)/HH.L(H)/CPLL(H);$
 $R6('YR',H,'CONCH2T6') = Y.L(H)/HH.L(H)/CPLL(H);$
 $R6('CPIH',H,'CONCH2T6') = CPLL(H);$
 $R6('D1YD',H,'CONCH2T6') = YD.L(H)/HH.L(H) - R6('YD',H,'TODAY');$
 $R6('D2YD',H,'CONCH2T6') = (YD.L(H)/HH.L(H) - R6('YD',H,'TODAY')) / R6('YD',H,'TODAY');$
 $R6('D1Y',H,'CONCH2T6') = Y.L(H)/HH.L(H) - R6('Y',H,'TODAY');$
 $R6('D2Y',H,'CONCH2T6') = (Y.L(H)/HH.L(H) - R6('Y',H,'TODAY')) / R6('Y',H,'TODAY');$
 $R6('D1YDR',H,'CONCH2T6') = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,'TODAY');$
 $R6('D2YDR',H,'CONCH2T6') = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,'TODAY')) / R6('YDR',H,'TODAY');$
 $R6('D1YR',H,'CONCH2T6') = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,'TODAY');$
 $R6('D2YR',H,'CONCH2T6') = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,'TODAY')) / R6('YR',H,'TODAY');$
 $R6('D1CPIH',H,'CONCH2T6') = CPLL(H) - R6('CPIH',H,'TODAY');$
 $R6('D1CPIH',H,'CONCH2T6') = (CPLL(H) - R6('CPIH',H,'TODAY')) / R6('CPIH',H,'TODAY');$

$R7('POLN',PE,'CONCH2T6') = SUM(I,DIRTLL(I,PE));$
 $R7('D1POLN',PE,'CONCH2T6') = SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,'TODAY');$
 $R7('D2POLN',PE,'CONCH2T6') = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,'TODAY')) / R7('POLN',PE,'TODAY');$

* EXPERIMENT 10: SAME AS EXP. 2, BUT NOW DECREASE BASE IMPORTS BY 40%

REG3('CONCH') = 0.6;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

$R1('BAC',CONCH2T7) = Y.L('CTBAC');$
 $R1('PIT',CONCH2T7) = Y.L('CTPIT');$
 $R1('SAU',CONCH2T7) = Y.L('CTSAU');$
 $R1('GFREV',CONCH2T7) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));$
 $R1('SFREV',CONCH2T7) = SUM(GSF,Y.L(GSF) - IGT.L('CGENF',GSF));$
 $R1('STATIC',CONCH2T7) = 0;$
 $R1('DGF',CONCH2T7) = R1('GFREV',CONCH2T7) - R1('GFREV',TODAY);$
 $R1('DSF',CONCH2T7) = R1('SFREV',CONCH2T7) - R1('SFREV',TODAY);$
 $R1('DDRE',CONCH2T7) = R1('DGF',CONCH2T7) + R1('DSF',CONCH2T7) - R1('STATIC',CONCH2T7);$
 $R1('PDRE',CONCH2T7) = R1('STATIC',CONCH2T7) - R1('DDRE',CONCH2T7) / R1('STATIC',CONCH2T7) * 100;$
 $R1('SPI',CONCH2T7) = SPILL;$
 $R1('D1SPI',CONCH2T7) = SPILL - R1('SPI',TODAY);$
 $R1('D2SPI',CONCH2T7) = (SPILL - R1('SPI',TODAY)) / R1('SPI',TODAY);$
 $R1('CPI',CONCH2T7) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1)));$
 $R1('D1CPI',CONCH2T7) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);$
 $R1('D2CPI',CONCH2T7) = (SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY)) / R1('CPI',TODAY);$
 $R1('GN',CONCH2T7) = SUM(I,N.L(I));$
 $R1('D1GN',CONCH2T7) = SUM(I,N.L(I)) - R1('GN',TODAY);$
 $R1('D2GN',CONCH2T7) = (SUM(I,N.L(I)) - R1('GN',TODAY)) / R1('GN',TODAY);$
 $R1('POP',CONCH2T7) = SUM(H,HH.L(H));$
 $R1('D1POP',CONCH2T7) = SUM(H,HH.L(H)) - R1('POP',TODAY);$
 $R1('D2POP',CONCH2T7) = (SUM(H,HH.L(H)) - R1('POP',TODAY)) / R1('POP',TODAY);$
 $R1('W',CONCH2T7) = RA.L('LABOR') / RA0('LABOR') * 100;$
 $R1('D1W',CONCH2T7) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);$
 $R1('D2W',CONCH2T7) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY)) / R1('W',TODAY);$
 $R1('R',CONCH2T7) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100;$
 $R1('D1R',CONCH2T7) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);$
 $R1('D2R',CONCH2T7) = (SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY)) / R1('R',TODAY);$
 $R1('LD',CONCH2T7) = SUM(Z,FD.L('LABOR',Z));$
 $R1('D1LD',CONCH2T7) = SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY);$
 $R1('D2LD',CONCH2T7) = (SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY)) / R1('LD',TODAY);$

R1('KD','CONCH2T7) = SUM(Z, FD.L('CAPIT',Z));
R1('D1KD','CONCH2T7) = SUM(Z, FD.L('CAPIT',Z)) - R1('KD','TODAY');
R1('D2KD','CONCH2T7) = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD','TODAY'))/R1('KD','TODAY');
R1('GFSAV','CONCH2T7) = S.L('CGENF');
R1('D1GFSAV','CONCH2T7) = S.L('CGENF') - R1('GFSAV','TODAY');
R1('D2GFSAV','CONCH2T7) = (S.L('CGENF') - R1('GFSAV','TODAY'))/R1('GFSAV','TODAY');
R1('MIC','CONCH2T7) = SUM(I, ITC.L(I));
R1('PROP98','CONCH2T7) = IGT.L('LSK14','CGENF');

R2('M-STAT','CONCH2T7) = edram999.MODELSTAT;
R2('S-STAT','CONCH2T7) = edram999.SOLVESTAT;

R3('IGT','G','CONCH2T7) = IGT.L(G,'CGENF');
R3('GOVS','G','CONCH2T7) = S.L(G);
R3('Y','H','CONCH2T7) = Y.L(H);
R3('Y','G','CONCH2T7) = Y.L(G);

R4('DS','I','CONCH2T7) = DS.L(I);
R4('FDL','I','CONCH2T7) = FD.L('LABOR',I);
R4('P','I','CONCH2T7) = P.L(I);
R4('PD','I','CONCH2T7) = PD.L(I);
R4('M','I','CONCH2T7) = M.L(I);
R4('D1DS','I','CONCH2T7) = DS.L(I) - R4('DS','I','TODAY');
R4('D2DS','I','CONCH2T7) = (DS.L(I) - R4('DS','I','TODAY'))/R4('DS','I','TODAY');
R4('D1FDL','I','CONCH2T7) = FD.L('LABOR',I) - R4('FDL','I','TODAY');
R4('D2FDL','I','CONCH2T7) = (FD.L('LABOR',I) - R4('FDL','I','TODAY'))/R4('FDL','I','TODAY');
R4('FDK','I','CONCH2T7) = FD.L('CAPIT',I);
R4('D1FDK','I','CONCH2T7) = FD.L('CAPIT',I) - R4('FDK','I','TODAY');
R4('D2FDK','I','CONCH2T7) = (FD.L('CAPIT',I) - R4('FDK','I','TODAY'))/R4('FDK','I','TODAY');
R4('D1P','I','CONCH2T7) = P.L(I) - R4('P','I','TODAY');
R4('D2P','I','CONCH2T7) = (P.L(I) - R4('P','I','TODAY'))/R4('P','I','TODAY');
R4('D1M','I','CONCH2T7) = M.L(I) - R4('M','I','TODAY');
R4('D2M','I','CONCH2T7) = (M.L(I) - R4('M','I','TODAY'))/R4('M','I','TODAY');
R4('RRK','I','CONCH2T7) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL','I','CONCH2T7) = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL','I','CONCH2T7) = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL','I','TODAY');
R4('D2RRL','I','CONCH2T7) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL','I','TODAY'))/R4('RRL','I','TODAY');
R4('D1RRK','I','CONCH2T7) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK','I','TODAY');
R4('D2RRK','I','CONCH2T7) = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK','I','TODAY'))/R4('RRK','I','TODAY');

R5('PII0','I,PE','CONCH2T7) = PII0(I,PE);
R5('DIRTI','I,PE','CONCH2T7) = DIRTLL(I,PE);

R6('YD','H','CONCH2T7) = YD.L(H)/HH.L(H);
R6('Y','H','CONCH2T7) = Y.L(H)/HH.L(H);
R6('YDR','H','CONCH2T7) = YD.L(H)/HH.L(H)/CPL.L(H);
R6('YR','H','CONCH2T7) = Y.L(H)/HH.L(H)/CPL.L(H);
R6('CPIH','H','CONCH2T7) = CPL.L(H);
R6('D1YD','H','CONCH2T7) = YD.L(H)/HH.L(H) - R6('YD','H','TODAY');
R6('D2YD','H','CONCH2T7) = (YD.L(H)/HH.L(H) - R6('YD','H','TODAY'))/R6('YD','H','TODAY');
R6('D1Y','H','CONCH2T7) = Y.L(H)/HH.L(H) - R6('Y','H','TODAY');
R6('D2Y','H','CONCH2T7) = (Y.L(H)/HH.L(H) - R6('Y','H','TODAY'))/R6('Y','H','TODAY');
R6('D1YDR','H','CONCH2T7) = YD.L(H)/HH.L(H)/CPL.L(H) - R6('YDR','H','TODAY');
R6('D2YDR','H','CONCH2T7) = (YD.L(H)/HH.L(H)/CPL.L(H) - R6('YDR','H','TODAY'))/R6('YDR','H','TODAY');
R6('D1YR','H','CONCH2T7) = Y.L(H)/HH.L(H)/CPL.L(H) - R6('YR','H','TODAY');
R6('D2YR','H','CONCH2T7) = (Y.L(H)/HH.L(H)/CPL.L(H) - R6('YR','H','TODAY'))/R6('YR','H','TODAY');
R6('D1CPIH','H','CONCH2T7) = CPL.L(H) - R6('CPIH','H','TODAY');
R6('D2CPIH','H','CONCH2T7) = (CPL.L(H) - R6('CPIH','H','TODAY'))/R6('CPIH','H','TODAY');

R7('POLN','PE','CONCH2T7) = SUM(I, DIRTLL(I,PE));
R7('D1POLN','PE','CONCH2T7) = SUM(I, DIRTLL(I,PE)) - R7('POLN','PE','TODAY');
R7('D2POLN','PE','CONCH2T7) = (SUM(I, DIRTLL(I,PE)) - R7('POLN','PE','TODAY'))/R7('POLN','PE','TODAY');

* EXPERIMENT 11: SAME AS EXP. 2, BUT NOW DECREASE BASE IMPORTS BY 60%

REG3('CONCH) = 0.4;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC',CONCH2T8) = Y.L('CTBAC');
R1('PIT',CONCH2T8) = Y.L('CTPIT');
R1('SAU',CONCH2T8) = Y.L('CTS AU');
R1('GFREV',CONCH2T8) = Y.L('CGENF') + SUM(G, IGT.L('CGENF',G));
R1('SFREV',CONCH2T8) = SUM(GSF, Y.L('GSF') - IGT.L('CGENF',GSF));
R1('STATIC',CONCH2T8) = 0;
R1('DGF',CONCH2T8) = R1('GFREV',CONCH2T8) - R1('GFREV',TODAY);
R1('DSF',CONCH2T8) = R1('SFREV',CONCH2T8) - R1('SFREV',TODAY);
R1('DDRE',CONCH2T8) = R1('DGF',CONCH2T8) + R1('DSF',CONCH2T8) - R1('STATIC',CONCH2T8);
R1('PDRE',CONCH2T8)\$R1('STATIC',CONCH2T8) = R1('DDRE',CONCH2T8) / R1('STATIC',CONCH2T8) * 100;
R1('SPI',CONCH2T8) = SPILL;
R1('D1SPI',CONCH2T8) = SPILL - R1('SPI',TODAY);
R1('D2SPI',CONCH2T8) = (SPILL - R1('SPI',TODAY))/R1('SPI',TODAY);
R1('CPI',CONCH2T8) = SUM(H, CPL.L(H)*HH.L(H)/SUM(H1, HH.L(H1)));
R1('D1CPI',CONCH2T8) = SUM(H, CPL.L(H)*HH.L(H)/SUM(H1, HH.L(H1))) - R1('CPI',TODAY);
R1('D2CPI',CONCH2T8) = (SUM(H, CPL.L(H)*HH.L(H)/SUM(H1, HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);
R1('GN',CONCH2T8) = SUM(I, N.L(I));
R1('D1GN',CONCH2T8) = SUM(I, N.L(I)) - R1('GN',TODAY);
R1('D2GN',CONCH2T8) = (SUM(I, N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);
R1('POP',CONCH2T8) = SUM(H, HH.L(H));
R1('D1POP',CONCH2T8) = SUM(H, HH.L(H)) - R1('POP',TODAY);
R1('D2POP',CONCH2T8) = (SUM(H, HH.L(H)) - R1('POP',TODAY))/R1('POP',TODAY);
R1('W',CONCH2T8) = RA.L('LABOR') / RA0('LABOR') * 100;
R1('D1W',CONCH2T8) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);
R1('D2W',CONCH2T8) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY))/R1('W',TODAY);
R1('R',CONCH2T8) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100;
R1('D1R',CONCH2T8) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);
R1('D2R',CONCH2T8) = (SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);
R1('LD',CONCH2T8) = SUM(Z, FD.L('LABOR',Z));
R1('D1LD',CONCH2T8) = SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY);
R1('D2LD',CONCH2T8) = (SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);
R1('KD',CONCH2T8) = SUM(Z, FD.L('CAPIT',Z));
R1('D1KD',CONCH2T8) = SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY);
R1('D2KD',CONCH2T8) = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);
R1('GFSAV',CONCH2T8) = S.L('CGENF');
R1('D1GFSAV',CONCH2T8) = S.L('CGENF') - R1('GFSAV',TODAY);
R1('D2GFSAV',CONCH2T8) = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);
R1('MIC',CONCH2T8) = SUM(I, ITC.L(I));
R1('PROP98',CONCH2T8) = IGT.L('LSK14',CGENF);

R2('M-STAT',CONCH2T8) = edram999.MODELSTAT;
R2('S-STAT',CONCH2T8) = edram999.SOLVESTAT;

R3('IGT',G,CONCH2T8) = IGT.L(G,'CGENF');
R3('GOVS',G,CONCH2T8) = S.L(G);
R3('Y',H,CONCH2T8) = Y.L(H);
R3('Y',G,CONCH2T8) = Y.L(G);

R4('DS',I,CONCH2T8) = DS.L(I);
R4('FDL',I,CONCH2T8) = FD.L('LABOR',I);
R4('P',I,CONCH2T8) = P.L(I);
R4('PD',I,CONCH2T8) = PD.L(I);
R4('M',I,CONCH2T8) = M.L(I);
R4('D1DS',I,CONCH2T8) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,CONCH2T8) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,CONCH2T8) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,CONCH2T8) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,CONCH2T8) = FD.L('CAPIT',I);
R4('D1FDK',I,CONCH2T8) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,CONCH2T8) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('D1P',I,CONCH2T8) = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,CONCH2T8) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,CONCH2T8) = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,CONCH2T8) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,CONCH2T8) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL',I,CONCH2T8) = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL',I,CONCH2T8) = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY);

$R4('D2RRL',I,'CONCH2T8') = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY)) / R4('RRL',I,TODAY);$
 $R4('D1RRK',I,'CONCH2T8') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);$
 $R4('D2RRK',I,'CONCH2T8') = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 -$
 $R4('RRK',I,TODAY)) / R4('RRK',I,TODAY);$

$R5('PII0',I,PE,'CONCH2T8') = PII0(I,PE);$
 $R5('DIRTT',I,PE,'CONCH2T8') = DIRTLL(I,PE);$

$R6('YD',H,'CONCH2T8') = YD.L(H)/HH.L(H);$
 $R6('Y',H,'CONCH2T8') = Y.L(H)/HH.L(H);$
 $R6('YDR',H,'CONCH2T8') = YD.L(H)/HH.L(H)/CPLL(H);$
 $R6('YR',H,'CONCH2T8') = Y.L(H)/HH.L(H)/CPLL(H);$
 $R6('CPIH',H,'CONCH2T8') = CPLL(H);$
 $R6('D1YD',H,'CONCH2T8') = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);$
 $R6('D2YD',H,'CONCH2T8') = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY)) / R6('YD',H,TODAY);$
 $R6('D1Y',H,'CONCH2T8') = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);$
 $R6('D2Y',H,'CONCH2T8') = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY)) / R6('Y',H,TODAY);$
 $R6('D1YDR',H,'CONCH2T8') = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);$
 $R6('D2YDR',H,'CONCH2T8') = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY)) / R6('YDR',H,TODAY);$
 $R6('D1YR',H,'CONCH2T8') = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);$
 $R6('D2YR',H,'CONCH2T8') = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY)) / R6('YR',H,TODAY);$
 $R6('D1CPIH',H,'CONCH2T8') = CPLL(H) - R6('CPIH',H,TODAY);$
 $R6('D1CPIH',H,'CONCH2T8') = (CPLL(H) - R6('CPIH',H,TODAY)) / R6('CPIH',H,TODAY);$

$R7('POLN',PE,'CONCH2T8') = SUM(I,DIRTLL(I,PE));$
 $R7('D1POLN',PE,'CONCH2T8') = SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY);$
 $R7('D2POLN',PE,'CONCH2T8') = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY)) / R7('POLN',PE,TODAY);$
\$OFFTEXT

* EXPERIMENT 12: INCR. STATIC ANNUAL OPERATING COSTS OF PETRO SECTOR (VIA INTERMEDS.) BY \$523 MILLION

$REG1(I,'CONCH') = 1.0;$
 $ETAM('CONCH') = 1.5;$
 $REG3('CONCH') = 1.0;$

$REG1(I,'PETRO') = 1.024;$

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

$R1('BAC',PETRO1) = Y.L('CTBAC');$
 $R1('PIT',PETRO1) = Y.L('CTPIT');$
 $R1('SAU',PETRO1) = Y.L('CTSAU');$
 $R1('GFREV',PETRO1) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));$
 $R1('SFREV',PETRO1) = SUM(GSF,Y.L(GSF) - IGT.L('CGENF',GSF));$
 $R1('STATIC',PETRO1) = 0;$
 $R1('DGF',PETRO1) = R1('GFREV',PETRO1) - R1('GFREV',TODAY);$
 $R1('DSF',PETRO1) = R1('SFREV',PETRO1) - R1('SFREV',TODAY);$
 $R1('DDRE',PETRO1) = R1('DGF',PETRO1) + R1('DSF',PETRO1) - R1('STATIC',PETRO1);$
 $R1('PDRE',PETRO1)SR1('STATIC',PETRO1) = R1('DDRE',PETRO1) / R1('STATIC',PETRO1) * 100;$
 $R1('SPI',PETRO1) = SPLL;$
 $R1('D1SPI',PETRO1) = SPLL - R1('SPI',TODAY);$
 $R1('D2SPI',PETRO1) = (SPLL - R1('SPI',TODAY)) / R1('SPI',TODAY);$
 $R1('CPI',PETRO1) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1)));$
 $R1('D1CPI',PETRO1) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);$
 $R1('D2CPI',PETRO1) = (SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY)) / R1('CPI',TODAY);$
 $R1('GN',PETRO1) = SUM(I,N.L(I));$
 $R1('D1GN',PETRO1) = SUM(I,N.L(I)) - R1('GN',TODAY);$
 $R1('D2GN',PETRO1) = (SUM(I,N.L(I)) - R1('GN',TODAY)) / R1('GN',TODAY);$
 $R1('POP',PETRO1) = SUM(H,HH.L(H));$
 $R1('D1POP',PETRO1) = SUM(H,HH.L(H)) - R1('POP',TODAY);$
 $R1('D2POP',PETRO1) = (SUM(H,HH.L(H)) - R1('POP',TODAY)) / R1('POP',TODAY);$
 $R1('W',PETRO1) = RA.L('LABOR') / RA0('LABOR') * 100;$
 $R1('D1W',PETRO1) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);$
 $R1('D2W',PETRO1) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY)) / R1('W',TODAY);$
 $R1('R',PETRO1) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100;$
 $R1('DIR',PETRO1) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);$

$R1('D2R',PETRO1) = (SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);$
 $R1('LD',PETRO1) = SUM(Z, FD.L('LABOR',Z));$
 $R1('D1LD',PETRO1) = SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY);$
 $R1('D2LD',PETRO1) = (SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);$
 $R1('KD',PETRO1) = SUM(Z, FD.L('CAPIT',Z));$
 $R1('D1KD',PETRO1) = SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY);$
 $R1('D2KD',PETRO1) = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);$
 $R1('GFSAV',PETRO1) = S.L('CGENF');$
 $R1('D1GFSAV',PETRO1) = S.L('CGENF') - R1('GFSAV',TODAY);$
 $R1('D2GFSAV',PETRO1) = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);$
 $R1('MIC',PETRO1) = SUM(I, ITC.L(I));$
 $R1('PROP98',PETRO1) = IGT.L('LSK14',CGENF);$

$R2('M-STAT',PETRO1) = edram999.MODELSTAT;$
 $R2('S-STAT',PETRO1) = edram999.SOLVESTAT;$

$R3('IGT',G,PETRO1) = IGT.L(G,CGENF);$
 $R3('GOVS',G,PETRO1) = S.L(G);$
 $R3('Y',H,PETRO1) = Y.L(H);$
 $R3('Y',G,PETRO1) = Y.L(G);$

$R4('DS',I,PETRO1) = DS.L(I);$
 $R4('FDL',I,PETRO1) = FD.L('LABOR',I);$
 $R4('P',I,PETRO1) = P.L(I);$
 $R4('PD',I,PETRO1) = PD.L(I);$
 $R4('M',I,PETRO1) = M.L(I);$
 $R4('D1DS',I,PETRO1) = DS.L(I) - R4('DS',I,TODAY);$
 $R4('D2DS',I,PETRO1) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);$
 $R4('D1FDL',I,PETRO1) = FD.L('LABOR',I) - R4('FDL',I,TODAY);$
 $R4('D2FDL',I,PETRO1) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);$
 $R4('FDK',I,PETRO1) = FD.L('CAPIT',I);$
 $R4('D1FDK',I,PETRO1) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);$
 $R4('D2FDK',I,PETRO1) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);$
 $R4('PVA',I,PETRO1) = PVA.L(I);$
 $R4('D1PVA',I,PETRO1) = PVA.L(I) - R4('PVA',I,TODAY);$
 $R4('D2PVA',I,PETRO1) = (PVA.L(I) - R4('PVA',I,TODAY))/R4('PVA',I,TODAY);$
 $R4('D1P',I,PETRO1) = P.L(I) - R4('P',I,TODAY);$
 $R4('D2P',I,PETRO1) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);$
 $R4('D1M',I,PETRO1) = M.L(I) - R4('M',I,TODAY);$
 $R4('D2M',I,PETRO1) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);$
 $R4('RRK',I,PETRO1) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;$
 $R4('RRL',I,PETRO1) = R.L('LABOR',I) / R0('LABOR',I) * 100;$
 $R4('D1RRL',I,PETRO1) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);$
 $R4('D2RRL',I,PETRO1) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);$
 $R4('DIRRK',I,PETRO1) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);$
 $R4('D2RRK',I,PETRO1) = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY))/R4('RRK',I,TODAY);$

$R5('PHO',I,PE,PETRO1) = PHO(I,PE);$
 $R5('DIRTI',I,PE,PETRO1) = DIRTIL(I,PE);$

$R6('YD',H,PETRO1) = YD.L(H)/HH.L(H);$
 $R6('Y',H,PETRO1) = Y.L(H)/HH.L(H);$
 $R6('YDR',H,PETRO1) = YD.L(H)/HH.L(H)/CPLL(H);$
 $R6('YR',H,PETRO1) = Y.L(H)/HH.L(H)/CPLL(H);$
 $R6('CPIH',H,PETRO1) = CPLL(H);$
 $R6('D1YD',H,PETRO1) = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);$
 $R6('D2YD',H,PETRO1) = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);$
 $R6('D1Y',H,PETRO1) = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);$
 $R6('D2Y',H,PETRO1) = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);$
 $R6('D1YDR',H,PETRO1) = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);$
 $R6('D2YDR',H,PETRO1) = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);$
 $R6('D1YR',H,PETRO1) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);$
 $R6('D2YR',H,PETRO1) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);$
 $R6('D1CPIH',H,PETRO1) = CPLL(H) - R6('CPIH',H,TODAY);$
 $R6('D1CPIH',H,PETRO1) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);$

$R7('POLN',PE,PETRO1) = SUM(I, DIRTIL(I,PE));$
 $R7('D1POLN',PE,PETRO1) = SUM(I, DIRTIL(I,PE)) - R7('POLN',PE,TODAY);$

R7('D2POLN',PE,'PETRO1') = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

* EXPERIMENT 13: ELIM. 0.906 OF PETRO SECTOR K STOCK AND INCR. INTERMEDS. BY 0.011

REG1(I,'PETRO') = 1.011;
REG12('PETRO') = 0.906;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC',PETRO2) = Y.L('CTBAC');
R1('PIT',PETRO2) = Y.L('CTPIT');
R1('SAU',PETRO2) = Y.L('CTSAU');
R1('GFREV',PETRO2) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));
R1('SFREV',PETRO2) = SUM(GSF,Y.L(GSF) - IGT.L('CGENF',GSF));
R1('STATIC',PETRO2) = 0;
R1('DGF',PETRO2) = R1('GFREV',PETRO2) - R1('GFREV',TODAY);
R1('DSF',PETRO2) = R1('SFREV',PETRO2) - R1('SFREV',TODAY);
R1('DDRE',PETRO2) = R1('DGF',PETRO2) + R1('DSF',PETRO2) - R1('STATIC',PETRO2);
R1('PDRE',PETRO2)*R1('STATIC',PETRO2) = R1('DDRE',PETRO2) / R1('STATIC',PETRO2) * 100;
R1('SPI',PETRO2) = SPIL;
R1('D1SPI',PETRO2) = SPIL - R1('SPI',TODAY);
R1('D2SPI',PETRO2) = (SPIL - R1('SPI',TODAY))/R1('SPI',TODAY);
R1('CPI',PETRO2) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1)));
R1('D1CPI',PETRO2) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);
R1('D2CPI',PETRO2) = (SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);
R1('GN',PETRO2) = SUM(I,N.L(I));
R1('D1GN',PETRO2) = SUM(I,N.L(I)) - R1('GN',TODAY);
R1('D2GN',PETRO2) = (SUM(I,N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);
R1('POP',PETRO2) = SUM(H,HH.L(H));
R1('D1POP',PETRO2) = SUM(H,HH.L(H)) - R1('POP',TODAY);
R1('D2POP',PETRO2) = (SUM(H,HH.L(H)) - R1('POP',TODAY))/R1('POP',TODAY);
R1('W',PETRO2) = RA.L('LABOR') / RA0('LABOR') * 100;
R1('D1W',PETRO2) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);
R1('D2W',PETRO2) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY))/R1('W',TODAY);
R1('R',PETRO2) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100;
R1('D1R',PETRO2) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);
R1('D2R',PETRO2) = (SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);
R1('LD',PETRO2) = SUM(Z,FD.L('LABOR',Z));
R1('D1LD',PETRO2) = SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY);
R1('D2LD',PETRO2) = (SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);
R1('KD',PETRO2) = SUM(Z,FD.L('CAPIT',Z));
R1('D1KD',PETRO2) = SUM(Z,FD.L('CAPIT',Z)) - R1('KD',TODAY);
R1('D2KD',PETRO2) = (SUM(Z,FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);
R1('GFSAV',PETRO2) = S.L('CGENF');
R1('D1GFSAV',PETRO2) = S.L('CGENF') - R1('GFSAV',TODAY);
R1('D2GFSAV',PETRO2) = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);
R1('MIC',PETRO2) = SUM(I,ITC.L(I));
R1('PROP98',PETRO2) = IGT.L('LSK14','CGENF');

R2('M-STAT',PETRO2) = edram999.MODELSTAT;
R2('S-STAT',PETRO2) = edram999.SOLVESTAT;

R3('IGT',G,PETRO2) = IGT.L(G,'CGENF');
R3('GOVS',G,PETRO2) = S.L(G);
R3('Y',H,PETRO2) = Y.L(H);
R3('Y',G,PETRO2) = Y.L(G);

R4('DS',I,PETRO2) = DS.L(I);
R4('FDL',I,PETRO2) = FD.L('LABOR',I);
R4('P',I,PETRO2) = P.L(I);
R4('PD',I,PETRO2) = PD.L(I);
R4('M',I,PETRO2) = M.L(I);
R4('D1DS',I,PETRO2) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,PETRO2) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,PETRO2) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,PETRO2) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,PETRO2) = FD.L('CAPIT',I);

$R4('D1FDK',I,'PETRO2') = FD.L('CAPIT',I) - R4('FDK',I,'TODAY');$
 $R4('D2FDK',I,'PETRO2') = (FD.L('CAPIT',I) - R4('FDK',I,'TODAY'))/R4('FDK',I,'TODAY');$
 $R4('PVA',I,'PETRO2') = PVA.L(I);$
 $R4('D1PVA',I,'PETRO2') = PVA.L(I) - R4('PVA',I,'TODAY');$
 $R4('D2PVA',I,'PETRO2') = (PVA.L(I) - R4('PVA',I,'TODAY'))/R4('PVA',I,'TODAY');$
 $R4('D1P',I,'PETRO2') = P.L(I) - R4('P',I,'TODAY');$
 $R4('D2P',I,'PETRO2') = (P.L(I) - R4('P',I,'TODAY'))/R4('P',I,'TODAY');$
 $R4('D1M',I,'PETRO2') = M.L(I) - R4('M',I,'TODAY');$
 $R4('D2M',I,'PETRO2') = (M.L(I) - R4('M',I,'TODAY'))/R4('M',I,'TODAY');$
 $R4('RRK',I,'PETRO2') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;$
 $R4('RRL',I,'PETRO2') = R.L('LABOR',I) / R0('LABOR',I) * 100;$
 $R4('D1RRL',I,'PETRO2') = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,'TODAY');$
 $R4('D2RRL',I,'PETRO2') = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,'TODAY'))/R4('RRL',I,'TODAY');$
 $R4('D1RRK',I,'PETRO2') = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,'TODAY');$
 $R4('D2RRK',I,'PETRO2') = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,'TODAY'))/R4('RRK',I,'TODAY');$

$R5('PII0',I,PE,'PETRO2') = PII0(I,PE);$
 $R5('DIRT1',I,PE,'PETRO2') = DIRT1.L(I,PE);$

$R6('YD',H,'PETRO2') = YD.L(H)/HH.L(H);$
 $R6('Y',H,'PETRO2') = Y.L(H)/HH.L(H);$
 $R6('YDR',H,'PETRO2') = YD.L(H)/HH.L(H)/CPI.L(H);$
 $R6('YR',H,'PETRO2') = Y.L(H)/HH.L(H)/CPI.L(H);$
 $R6('CPIH',H,'PETRO2') = CPI.L(H);$
 $R6('D1YD',H,'PETRO2') = YD.L(H)/HH.L(H) - R6('YD',H,'TODAY');$
 $R6('D2YD',H,'PETRO2') = (YD.L(H)/HH.L(H) - R6('YD',H,'TODAY'))/R6('YD',H,'TODAY');$
 $R6('D1Y',H,'PETRO2') = Y.L(H)/HH.L(H) - R6('Y',H,'TODAY');$
 $R6('D2Y',H,'PETRO2') = (Y.L(H)/HH.L(H) - R6('Y',H,'TODAY'))/R6('Y',H,'TODAY');$
 $R6('D1YDR',H,'PETRO2') = YD.L(H)/HH.L(H)/CPI.L(H) - R6('YDR',H,'TODAY');$
 $R6('D2YDR',H,'PETRO2') = (YD.L(H)/HH.L(H)/CPI.L(H) - R6('YDR',H,'TODAY'))/R6('YDR',H,'TODAY');$
 $R6('D1YR',H,'PETRO2') = Y.L(H)/HH.L(H)/CPI.L(H) - R6('YR',H,'TODAY');$
 $R6('D2YR',H,'PETRO2') = (Y.L(H)/HH.L(H)/CPI.L(H) - R6('YR',H,'TODAY'))/R6('YR',H,'TODAY');$
 $R6('D1CPIH',H,'PETRO2') = CPI.L(H) - R6('CPIH',H,'TODAY');$
 $R6('D2CPIH',H,'PETRO2') = (CPI.L(H) - R6('CPIH',H,'TODAY'))/R6('CPIH',H,'TODAY');$

$R7('POLN',PE,'PETRO2') = SUM(I,DIRT1.L(I,PE));$
 $R7('D1POLN',PE,'PETRO2') = SUM(I,DIRT1.L(I,PE)) - R7('POLN',PE,'TODAY');$
 $R7('D2POLN',PE,'PETRO2') = (SUM(I,DIRT1.L(I,PE)) - R7('POLN',PE,'TODAY'))/R7('POLN',PE,'TODAY');$

* EXPERIMENT 14: MAKE CAPITAL STOCK OF PETRO SECTOR 0.906 AS "EFFECTIVE" AND INCREASE INTERMEDIATES BY 0.011

$REG12('PETRO') = 1;$
 $REG13('PETRO') = 0.906;$

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

$R1('BAC',PETRO3) = Y.L('CTBAC');$
 $R1('PIT',PETRO3) = Y.L('CTPIT');$
 $R1('SAU',PETRO3) = Y.L('CTSAU');$
 $R1('GFREV',PETRO3) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));$
 $R1('SFREV',PETRO3) = SUM(GSF,Y.L('GSF') - IGT.L('CGENF',GSF));$
 $R1('STATIC',PETRO3) = 0;$
 $R1('DGF',PETRO3) = R1('GFREV',PETRO3) - R1('GFREV',TODAY);$
 $R1('DSF',PETRO3) = R1('SFREV',PETRO3) - R1('SFREV',TODAY);$
 $R1('DDRE',PETRO3) = R1('DGF',PETRO3) + R1('DSF',PETRO3) - R1('STATIC',PETRO3);$
 $R1('PDRE',PETRO3) = R1('DDRE',PETRO3) * R1('STATIC',PETRO3) = R1('DDRE',PETRO3) / R1('STATIC',PETRO3) * 100;$
 $R1('SPI',PETRO3) = SPILL;$
 $R1('D1SPI',PETRO3) = SPILL - R1('SPI',TODAY);$
 $R1('D2SPI',PETRO3) = (SPILL - R1('SPI',TODAY))/R1('SPI',TODAY);$
 $R1('CPI',PETRO3) = SUM(H,CPI.L(H)*HH.L(H)/SUM(H1,HH.L(H1)));$
 $R1('D1CPI',PETRO3) = SUM(H,CPI.L(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);$
 $R1('D2CPI',PETRO3) = (SUM(H,CPI.L(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);$
 $R1('GN',PETRO3) = SUM(I,N.L(I));$
 $R1('D1GN',PETRO3) = SUM(I,N.L(I)) - R1('GN',TODAY);$
 $R1('D2GN',PETRO3) = (SUM(I,N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);$
 $R1('POP',PETRO3) = SUM(H,HH.L(H));$

$R1(D1POP, PETRO3) = \text{SUM}(H, HH.L(H)) - R1(POP, TODAY);$
 $R1(D2POP, PETRO3) = (\text{SUM}(H, HH.L(H)) - R1(POP, TODAY)) / R1(POP, TODAY);$
 $R1(W, PETRO3) = \text{RA.L}(LABOR) / \text{RAO}(LABOR) * 100;$
 $R1(D1W, PETRO3) = \text{RA.L}(LABOR) / \text{RAO}(LABOR) * 100 - R1(W, TODAY);$
 $R1(D2W, PETRO3) = (\text{RA.L}(LABOR) / \text{RAO}(LABOR) * 100 - R1(W, TODAY)) / R1(W, TODAY);$
 $R1(R, PETRO3) = \text{SUM}(I, R.L(CAPIT, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(CAPIT, I) * \text{KS.L}(I)) * 100;$
 $R1(D1R, PETRO3) = \text{SUM}(I, R.L(CAPIT, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(CAPIT, I) * \text{KS.L}(I)) * 100 - R1(R, TODAY);$
 $R1(D2R, PETRO3) = (\text{SUM}(I, R.L(CAPIT, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(CAPIT, I) * \text{KS.L}(I)) * 100 -$
 $R1(R, TODAY)) / R1(R, TODAY);$
 $R1(LD, PETRO3) = \text{SUM}(Z, \text{FD.L}(LABOR, Z));$
 $R1(D1LD, PETRO3) = \text{SUM}(Z, \text{FD.L}(LABOR, Z)) - R1(LD, TODAY);$
 $R1(D2LD, PETRO3) = (\text{SUM}(Z, \text{FD.L}(LABOR, Z)) - R1(LD, TODAY)) / R1(LD, TODAY);$
 $R1(KD, PETRO3) = \text{SUM}(Z, \text{FD.L}(CAPIT, Z));$
 $R1(D1KD, PETRO3) = \text{SUM}(Z, \text{FD.L}(CAPIT, Z)) - R1(KD, TODAY);$
 $R1(D2KD, PETRO3) = (\text{SUM}(Z, \text{FD.L}(CAPIT, Z)) - R1(KD, TODAY)) / R1(KD, TODAY);$
 $R1(GFSAV, PETRO3) = \text{S.L}(CGENF);$
 $R1(D1GFSAV, PETRO3) = \text{S.L}(CGENF) - R1(GFSAV, TODAY);$
 $R1(D2GFSAV, PETRO3) = (\text{S.L}(CGENF) - R1(GFSAV, TODAY)) / R1(GFSAV, TODAY);$
 $R1(MIC, PETRO3) = \text{SUM}(I, \text{ITC.L}(I));$
 $R1(PROP98, PETRO3) = \text{IGT.L}(LSK14, CGENF);$

$R2(M-STAT, PETRO3) = \text{edram999.MODELSTAT};$
 $R2(S-STAT, PETRO3) = \text{edram999.SOLVESTAT};$

$R3(IGT, G, PETRO3) = \text{IGT.L}(G, CGENF);$
 $R3(GOVS, G, PETRO3) = \text{S.L}(G);$
 $R3(Y, H, PETRO3) = \text{Y.L}(H);$
 $R3(Y, G, PETRO3) = \text{Y.L}(G);$

$R4(DS, I, PETRO3) = \text{DS.L}(I);$
 $R4(FDL, I, PETRO3) = \text{FD.L}(LABOR, I);$
 $R4(P, I, PETRO3) = \text{P.L}(I);$
 $R4(PD, I, PETRO3) = \text{PD.L}(I);$
 $R4(M, I, PETRO3) = \text{M.L}(I);$
 $R4(D1DS, I, PETRO3) = \text{DS.L}(I) - R4(DS, I, TODAY);$
 $R4(D2DS, I, PETRO3) = (\text{DS.L}(I) - R4(DS, I, TODAY)) / R4(DS, I, TODAY);$
 $R4(D1FDL, I, PETRO3) = \text{FD.L}(LABOR, I) - R4(FDL, I, TODAY);$
 $R4(D2FDL, I, PETRO3) = (\text{FD.L}(LABOR, I) - R4(FDL, I, TODAY)) / R4(FDL, I, TODAY);$
 $R4(FDK, I, PETRO3) = \text{FD.L}(CAPIT, I);$
 $R4(D1FDK, I, PETRO3) = \text{FD.L}(CAPIT, I) - R4(FDK, I, TODAY);$
 $R4(D2FDK, I, PETRO3) = (\text{FD.L}(CAPIT, I) - R4(FDK, I, TODAY)) / R4(FDK, I, TODAY);$
 $R4(PVA, I, PETRO3) = \text{PVA.L}(I);$
 $R4(D1PVA, I, PETRO3) = \text{PVA.L}(I) - R4(PVA, I, TODAY);$
 $R4(D2PVA, I, PETRO3) = (\text{PVA.L}(I) - R4(PVA, I, TODAY)) / R4(PVA, I, TODAY);$
 $R4(D1P, I, PETRO3) = \text{P.L}(I) - R4(P, I, TODAY);$
 $R4(D2P, I, PETRO3) = (\text{P.L}(I) - R4(P, I, TODAY)) / R4(P, I, TODAY);$
 $R4(D1M, I, PETRO3) = \text{M.L}(I) - R4(M, I, TODAY);$
 $R4(D2M, I, PETRO3) = (\text{M.L}(I) - R4(M, I, TODAY)) / R4(M, I, TODAY);$
 $R4(RRK, I, PETRO3) = \text{R.L}(CAPIT, I) * \text{KS.L}(I) / \text{R0}(CAPIT, I) * \text{KS.L}(I) * 100;$
 $R4(RRL, I, PETRO3) = \text{R.L}(LABOR, I) / \text{R0}(LABOR, I) * 100;$
 $R4(D1RRL, I, PETRO3) = \text{R.L}(LABOR, I) / \text{R0}(LABOR, I) * 100 - R4(RRL, I, TODAY);$
 $R4(D2RRL, I, PETRO3) = (\text{R.L}(LABOR, I) / \text{R0}(LABOR, I) * 100 - R4(RRL, I, TODAY)) / R4(RRL, I, TODAY);$
 $R4(D1RRK, I, PETRO3) = \text{R.L}(CAPIT, I) * \text{KS.L}(I) / \text{R0}(CAPIT, I) * \text{KS.L}(I) * 100 - R4(RRK, I, TODAY);$
 $R4(D2RRK, I, PETRO3) = (\text{R.L}(CAPIT, I) * \text{KS.L}(I) / \text{R0}(CAPIT, I) * \text{KS.L}(I) * 100 -$
 $R4(RRK, I, TODAY)) / R4(RRK, I, TODAY);$

$R5(PII0, I, PE, PETRO3) = \text{PII0}(I, PE);$
 $R5(DIRTI, I, PE, PETRO3) = \text{DIRTI.L}(I, PE);$

$R6(YD, H, PETRO3) = \text{YD.L}(H) / \text{HH.L}(H);$
 $R6(Y, H, PETRO3) = \text{Y.L}(H) / \text{HH.L}(H);$
 $R6(YDR, H, PETRO3) = \text{YD.L}(H) / \text{HH.L}(H) / \text{CPI.L}(H);$
 $R6(YR, H, PETRO3) = \text{Y.L}(H) / \text{HH.L}(H) / \text{CPI.L}(H);$
 $R6(CPIH, H, PETRO3) = \text{CPI.L}(H);$
 $R6(D1YD, H, PETRO3) = \text{YD.L}(H) / \text{HH.L}(H) - R6(YD, H, TODAY);$
 $R6(D2YD, H, PETRO3) = (\text{YD.L}(H) / \text{HH.L}(H) - R6(YD, H, TODAY)) / R6(YD, H, TODAY);$
 $R6(D1Y, H, PETRO3) = \text{Y.L}(H) / \text{HH.L}(H) - R6(Y, H, TODAY);$
 $R6(D2Y, H, PETRO3) = (\text{Y.L}(H) / \text{HH.L}(H) - R6(Y, H, TODAY)) / R6(Y, H, TODAY);$
 $R6(D1YDR, H, PETRO3) = \text{YD.L}(H) / \text{HH.L}(H) / \text{CPI.L}(H) - R6(YDR, H, TODAY);$
 $R6(D2YDR, H, PETRO3) = (\text{YD.L}(H) / \text{HH.L}(H) / \text{CPI.L}(H) - R6(YDR, H, TODAY)) / R6(YDR, H, TODAY);$

$R6('D1YR',H,PETRO3) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);$
 $R6('D2YR',H,PETRO3) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);$
 $R6('D1CPIH',H,PETRO3) = CPLL(H) - R6('CPIH',H,TODAY);$
 $R6('D1CPIH',H,PETRO3) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);$

$R7('POLN',PE,PETRO3) = \text{SUM}(I, \text{DIRTLL}(I,PE));$
 $R7('D1POLN',PE,PETRO3) = \text{SUM}(I, \text{DIRTLL}(I,PE)) - R7('POLN',PE,TODAY);$
 $R7('D2POLN',PE,PETRO3) = (\text{SUM}(I, \text{DIRTLL}(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);$

* EXPERIMENT 15: SAME AS EXP. 13, BUT NOW DECR. IMPORT ELASTICITY TO 1.25 (FROM DEFAULT OF 1.5)

ETAM('PETRO') = 1.25;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

$R1('BAC',PETRO3T1) = Y.L('CTBAC');$
 $R1('PIT',PETRO3T1) = Y.L('CTPIT');$
 $R1('SAU',PETRO3T1) = Y.L('CTS AU');$
 $R1('GFREV',PETRO3T1) = Y.L('CGENF') + \text{SUM}(G, \text{IGT.L}('CGENF',G));$
 $R1('SFREV',PETRO3T1) = \text{SUM}(GSF, Y.L(GSF) - \text{IGT.L}('CGENF',GSF));$
 $R1('STATIC',PETRO3T1) = 0;$
 $R1('DGF',PETRO3T1) = R1('GFREV',PETRO3T1) - R1('GFREV',TODAY);$
 $R1('DSF',PETRO3T1) = R1('SFREV',PETRO3T1) - R1('SFREV',TODAY);$
 $R1('DDRE',PETRO3T1) = R1('DGF',PETRO3T1) + R1('DSF',PETRO3T1) - R1('STATIC',PETRO3T1);$
 $R1('PDRE',PETRO3T1) \$R1('STATIC',PETRO3T1) = R1('DDRE',PETRO3T1) / R1('STATIC',PETRO3T1) * 100;$
 $R1('SPI',PETRO3T1) = \text{SPILL};$
 $R1('D1SPI',PETRO3T1) = \text{SPILL} - R1('SPI',TODAY);$
 $R1('D2SPI',PETRO3T1) = (\text{SPILL} - R1('SPI',TODAY))/R1('SPI',TODAY);$
 $R1('CPI',PETRO3T1) = \text{SUM}(H, CPLL(H)*HH.L(H)/\text{SUM}(H1, HH.L(H1)));$
 $R1('D1CPI',PETRO3T1) = \text{SUM}(H, CPLL(H)*HH.L(H)/\text{SUM}(H1, HH.L(H1))) - R1('CPI',TODAY);$
 $R1('D2CPI',PETRO3T1) = (\text{SUM}(H, CPLL(H)*HH.L(H)/\text{SUM}(H1, HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);$
 $R1('GN',PETRO3T1) = \text{SUM}(I, N.L(I));$
 $R1('D1GN',PETRO3T1) = \text{SUM}(I, N.L(I)) - R1('GN',TODAY);$
 $R1('D2GN',PETRO3T1) = (\text{SUM}(I, N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);$
 $R1('POP',PETRO3T1) = \text{SUM}(H, HH.L(H));$
 $R1('D1POP',PETRO3T1) = \text{SUM}(H, HH.L(H)) - R1('POP',TODAY);$
 $R1('D2POP',PETRO3T1) = (\text{SUM}(H, HH.L(H)) - R1('POP',TODAY))/R1('POP',TODAY);$
 $R1('W',PETRO3T1) = \text{RA.L}('LABOR') / \text{RA0}('LABOR') * 100;$
 $R1('D1W',PETRO3T1) = \text{RA.L}('LABOR') / \text{RA0}('LABOR') * 100 - R1('W',TODAY);$
 $R1('D2W',PETRO3T1) = (\text{RA.L}('LABOR') / \text{RA0}('LABOR') * 100 - R1('W',TODAY))/R1('W',TODAY);$
 $R1('R',PETRO3T1) = \text{SUM}(I, R.L('CAPIT',I) * \text{KS.L}(I)) / \text{SUM}(I, R0('CAPIT',I) * \text{KS.L}(I)) * 100;$
 $R1('D1R',PETRO3T1) = \text{SUM}(I, R.L('CAPIT',I) * \text{KS.L}(I)) / \text{SUM}(I, R0('CAPIT',I) * \text{KS.L}(I)) * 100 - R1('R',TODAY);$
 $R1('D2R',PETRO3T1) = (\text{SUM}(I, R.L('CAPIT',I) * \text{KS.L}(I)) / \text{SUM}(I, R0('CAPIT',I) * \text{KS.L}(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);$
 $R1('LD',PETRO3T1) = \text{SUM}(Z, \text{FD.L}('LABOR',Z));$
 $R1('D1LD',PETRO3T1) = \text{SUM}(Z, \text{FD.L}('LABOR',Z)) - R1('LD',TODAY);$
 $R1('D2LD',PETRO3T1) = (\text{SUM}(Z, \text{FD.L}('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);$
 $R1('KD',PETRO3T1) = \text{SUM}(Z, \text{FD.L}('CAPIT',Z));$
 $R1('D1KD',PETRO3T1) = \text{SUM}(Z, \text{FD.L}('CAPIT',Z)) - R1('KD',TODAY);$
 $R1('D2KD',PETRO3T1) = (\text{SUM}(Z, \text{FD.L}('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);$
 $R1('GFS AV',PETRO3T1) = \text{S.L}('CGENF');$
 $R1('D1GFS AV',PETRO3T1) = \text{S.L}('CGENF') - R1('GFS AV',TODAY);$
 $R1('D2GFS AV',PETRO3T1) = (\text{S.L}('CGENF') - R1('GFS AV',TODAY))/R1('GFS AV',TODAY);$
 $R1('MIC',PETRO3T1) = \text{SUM}(I, \text{ITC.L}(I));$
 $R1('PROP98',PETRO3T1) = \text{IGT.L}('LSK14',CGENF);$

$R2('M-STAT',PETRO3T1) = \text{edram999.MODELSTAT};$
 $R2('S-STAT',PETRO3T1) = \text{edram999.SOLVESTAT};$

$R3('TGT',G,PETRO3T1) = \text{IGT.L}(G,CGENF);$
 $R3('GOVS',G,PETRO3T1) = \text{S.L}(G);$
 $R3('Y',H,PETRO3T1) = Y.L(H);$
 $R3('Y',G,PETRO3T1) = Y.L(G);$

$R4('DS',I,PETRO3T1) = \text{DS.L}(I);$
 $R4('FDL',I,PETRO3T1) = \text{FD.L}('LABOR',I);$
 $R4('P',I,PETRO3T1) = \text{P.L}(I);$
 $R4('PD',I,PETRO3T1) = \text{PD.L}(I);$

R4('M',I,PETRO3T1) = M.L(I);
R4('D1DS',I,PETRO3T1) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,PETRO3T1) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,PETRO3T1) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,PETRO3T1) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,PETRO3T1) = FD.L('CAPIT',I);
R4('D1FDK',I,PETRO3T1) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,PETRO3T1) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('PVA',I,PETRO3T1) = PVA.L(I);
R4('D1PVA',I,PETRO3T1) = PVA.L(I) - R4('PVA',I,TODAY);
R4('D2PVA',I,PETRO3T1) = (PVA.L(I) - R4('PVA',I,TODAY))/R4('PVA',I,TODAY);
R4('D1P',I,PETRO3T1) = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,PETRO3T1) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,PETRO3T1) = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,PETRO3T1) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,PETRO3T1) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL',I,PETRO3T1) = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL',I,PETRO3T1) = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY);
R4('D2RRL',I,PETRO3T1) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);
R4('D1RRK',I,PETRO3T1) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);
R4('D2RRK',I,PETRO3T1) = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 -
R4('RRK',I,TODAY))/R4('RRK',I,TODAY);

R5('PII0',I,PE,PETRO3T1) = PII0(I,PE);
R5('DIRTI',I,PE,PETRO3T1) = DIRTI.L(I,PE);

R6('YD',H,PETRO3T1) = YD.L(H)/HH.L(H);
R6('Y',H,PETRO3T1) = Y.L(H)/HH.L(H);
R6('YDR',H,PETRO3T1) = YD.L(H)/HH.L(H)/CPLL(H);
R6('YR',H,PETRO3T1) = Y.L(H)/HH.L(H)/CPLL(H);
R6('CPIH',H,PETRO3T1) = CPLL(H);
R6('D1YD',H,PETRO3T1) = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);
R6('D2YD',H,PETRO3T1) = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);
R6('D1Y',H,PETRO3T1) = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);
R6('D2Y',H,PETRO3T1) = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);
R6('D1YDR',H,PETRO3T1) = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);
R6('D2YDR',H,PETRO3T1) = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);
R6('D1YR',H,PETRO3T1) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);
R6('D2YR',H,PETRO3T1) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);
R6('D1CPIH',H,PETRO3T1) = CPLL(H) - R6('CPIH',H,TODAY);
R6('D1CPIH',H,PETRO3T1) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);

R7('POLN',PE,PETRO3T1) = SUM(I,DIRTI.L(I,PE));
R7('D1POLN',PE,PETRO3T1) = SUM(I,DIRTI.L(I,PE)) - R7('POLN',PE,TODAY);
R7('D2POLN',PE,PETRO3T1) = (SUM(I,DIRTI.L(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

* EXPERIMENT 16: SAME AS EXP. 13, BUT DECREASE IMPORT ELASTICITY TO 1.0

ETAM('PETRO') = 1.0;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC',PETRO3T2) = Y.L('CTBAC');
R1('PIT',PETRO3T2) = Y.L('CTPIT');
R1('SAU',PETRO3T2) = Y.L('CTSAU');
R1('GFREV',PETRO3T2) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));
R1('SFREV',PETRO3T2) = SUM(GSF,Y.L('GSF') - IGT.L('CGENF',GSF));
R1('STATIC',PETRO3T2) = 0;
R1('DGF',PETRO3T2) = R1('GFREV',PETRO3T2) - R1('GFREV',TODAY);
R1('DSF',PETRO3T2) = R1('SFREV',PETRO3T2) - R1('SFREV',TODAY);
R1('DDRE',PETRO3T2) = R1('DGF',PETRO3T2) + R1('DSF',PETRO3T2) - R1('STATIC',PETRO3T2);
R1('PDRE',PETRO3T2)\$R1('STATIC',PETRO3T2) = R1('DDRE',PETRO3T2) / R1('STATIC',PETRO3T2) * 100;
R1('SPI',PETRO3T2) = SPILL;
R1('D1SPI',PETRO3T2) = SPILL - R1('SPI',TODAY);
R1('D2SPI',PETRO3T2) = (SPILL - R1('SPI',TODAY))/R1('SPI',TODAY);
R1('CPI',PETRO3T2) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1)));
R1('D1CPI',PETRO3T2) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);
R1('D2CPI',PETRO3T2) = (SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);

R1('GN',PETRO3T2) = SUM(I, N.L(I));
R1('D1GN',PETRO3T2) = SUM(I, N.L(I)) - R1('GN',TODAY);
R1('D2GN',PETRO3T2) = (SUM(I, N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);
R1('POP',PETRO3T2) = SUM(H, HH.L(H));
R1('D1POP',PETRO3T2) = SUM(H, HH.L(H)) - R1('POP',TODAY);
R1('D2POP',PETRO3T2) = (SUM(H, HH.L(H)) - R1('POP',TODAY))/R1('POP',TODAY);
R1('W',PETRO3T2) = RA.L('LABOR') / RA0('LABOR') * 100;
R1('D1W',PETRO3T2) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);
R1('D2W',PETRO3T2) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY))/R1('W',TODAY);
R1('R',PETRO3T2) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100;
R1('D1R',PETRO3T2) = SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);
R1('D2R',PETRO3T2) = (SUM(I, R.L('CAPIT',I) * KS.L(I)) / SUM(I, R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);
R1('LD',PETRO3T2) = SUM(Z, FD.L('LABOR',Z));
R1('D1LD',PETRO3T2) = SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY);
R1('D2LD',PETRO3T2) = (SUM(Z, FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);
R1('KD',PETRO3T2) = SUM(Z, FD.L('CAPIT',Z));
R1('D1KD',PETRO3T2) = SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY);
R1('D2KD',PETRO3T2) = (SUM(Z, FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);
R1('GFSAV',PETRO3T2) = S.L('CGENF');
R1('D1GFSAV',PETRO3T2) = S.L('CGENF') - R1('GFSAV',TODAY);
R1('D2GFSAV',PETRO3T2) = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);
R1('MIC',PETRO3T2) = SUM(I, ITC.L(I));
R1('PROP98',PETRO3T2) = IGT.L('LSK14',CGENF);

R2('M-STAT',PETRO3T2) = edram999.MODELSTAT;
R2('S-STAT',PETRO3T2) = edram999.SOLVESTAT;

R3('IGT',G,PETRO3T2) = IGT.L(G,CGENF);
R3('GOVS',G,PETRO3T2) = S.L(G);
R3('Y',H,PETRO3T2) = Y.L(H);
R3('Y',G,PETRO3T2) = Y.L(G);

R4('DS',I,PETRO3T2) = DS.L(I);
R4('FDL',I,PETRO3T2) = FD.L('LABOR',I);
R4('P',I,PETRO3T2) = P.L(I);
R4('PD',I,PETRO3T2) = PD.L(I);
R4('M',I,PETRO3T2) = M.L(I);
R4('D1DS',I,PETRO3T2) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,PETRO3T2) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,PETRO3T2) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,PETRO3T2) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,PETRO3T2) = FD.L('CAPIT',I);
R4('D1FDK',I,PETRO3T2) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,PETRO3T2) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('PVA',I,PETRO3T2) = PVA.L(I);
R4('D1PVA',I,PETRO3T2) = PVA.L(I) - R4('PVA',I,TODAY);
R4('D2PVA',I,PETRO3T2) = (PVA.L(I) - R4('PVA',I,TODAY))/R4('PVA',I,TODAY);
R4('D1P',I,PETRO3T2) = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,PETRO3T2) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,PETRO3T2) = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,PETRO3T2) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,PETRO3T2) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL',I,PETRO3T2) = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL',I,PETRO3T2) = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY);
R4('D2RRL',I,PETRO3T2) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);
R4('D1RRK',I,PETRO3T2) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);
R4('D2RRK',I,PETRO3T2) = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY))/R4('RRK',I,TODAY);

R5('PII0',I,PE,PETRO3T2) = PII0(I,PE);
R5('DIRTI',I,PE,PETRO3T2) = DIRTIL(I,PE);

R6('YD',H,PETRO3T2) = YD.L(H)/HH.L(H);
R6('Y',H,PETRO3T2) = Y.L(H)/HH.L(H);
R6('YDR',H,PETRO3T2) = YD.L(H)/HH.L(H)/CPLL(H);
R6('YR',H,PETRO3T2) = Y.L(H)/HH.L(H)/CPLL(H);
R6('CPIH',H,PETRO3T2) = CPLL(H);
R6('D1YD',H,PETRO3T2) = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);
R6('D2YD',H,PETRO3T2) = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);

R6('D1Y',H,PETRO3T2) = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);
R6('D2Y',H,PETRO3T2) = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);
R6('D1YDR',H,PETRO3T2) = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);
R6('D2YDR',H,PETRO3T2) = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);
R6('D1YR',H,PETRO3T2) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);
R6('D2YR',H,PETRO3T2) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);
R6('D1CPIH',H,PETRO3T2) = CPLL(H) - R6('CPIH',H,TODAY);
R6('D1CPIH',H,PETRO3T2) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);

R7('POLN',PE,PETRO3T2) = SUM(I,DIRTLL(I,PE));
R7('D1POLN',PE,PETRO3T2) = SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY);
R7('D2POLN',PE,PETRO3T2) = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

* EXPERIMENT 17: SAME AS EXP. 13, BUT DECREASE IMPORT ELASTICITY TO 0.75

ETAM('PETRO') = 0.75;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC',PETRO3T3) = Y.L('CTBAC');
R1('PIT',PETRO3T3) = Y.L('CTPIT');
R1('SAU',PETRO3T3) = Y.L('CTS AU');
R1('GFREV',PETRO3T3) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));
R1('SFREV',PETRO3T3) = SUM(GSF,Y.L('GSF') - IGT.L('CGENF',GSF));
R1('STATIC',PETRO3T3) = 0;
R1('DGF',PETRO3T3) = R1('GFREV',PETRO3T3) - R1('GFREV',TODAY);
R1('DSF',PETRO3T3) = R1('SFREV',PETRO3T3) - R1('SFREV',TODAY);
R1('DDRE',PETRO3T3) = R1('DGF',PETRO3T3) + R1('DSF',PETRO3T3) - R1('STATIC',PETRO3T3);
R1('PDRE',PETRO3T3)SR1('STATIC',PETRO3T3) = R1('DDRE',PETRO3T3) / R1('STATIC',PETRO3T3) * 100;
R1('SPI',PETRO3T3) = SPILL;
R1('D1SPI',PETRO3T3) = SPILL - R1('SPI',TODAY);
R1('D2SPI',PETRO3T3) = (SPILL - R1('SPI',TODAY))/R1('SPI',TODAY);
R1('CPI',PETRO3T3) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1)));
R1('D1CPI',PETRO3T3) = SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY);
R1('D2CPI',PETRO3T3) = (SUM(H,CPLL(H)*HH.L(H)/SUM(H1,HH.L(H1))) - R1('CPI',TODAY))/R1('CPI',TODAY);
R1('GN',PETRO3T3) = SUM(I,N.L(I));
R1('D1GN',PETRO3T3) = SUM(I,N.L(I)) - R1('GN',TODAY);
R1('D2GN',PETRO3T3) = (SUM(I,N.L(I)) - R1('GN',TODAY))/R1('GN',TODAY);
R1('POP',PETRO3T3) = SUM(H,HH.L(H));
R1('D1POP',PETRO3T3) = SUM(H,HH.L(H)) - R1('POP',TODAY);
R1('D2POP',PETRO3T3) = (SUM(H,HH.L(H)) - R1('POP',TODAY))/R1('POP',TODAY);
R1('W',PETRO3T3) = RA.L('LABOR') / RA0('LABOR') * 100;
R1('D1W',PETRO3T3) = RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY);
R1('D2W',PETRO3T3) = (RA.L('LABOR') / RA0('LABOR') * 100 - R1('W',TODAY))/R1('W',TODAY);
R1('R',PETRO3T3) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100;
R1('DIR',PETRO3T3) = SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY);
R1('D2R',PETRO3T3) = (SUM(I,R.L('CAPIT',I) * KS.L(I)) / SUM(I,R0('CAPIT',I) * KS.L(I)) * 100 - R1('R',TODAY))/R1('R',TODAY);
R1('LD',PETRO3T3) = SUM(Z,FD.L('LABOR',Z));
R1('D1LD',PETRO3T3) = SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY);
R1('D2LD',PETRO3T3) = (SUM(Z,FD.L('LABOR',Z)) - R1('LD',TODAY))/R1('LD',TODAY);
R1('KD',PETRO3T3) = SUM(Z,FD.L('CAPIT',Z));
R1('D1KD',PETRO3T3) = SUM(Z,FD.L('CAPIT',Z)) - R1('KD',TODAY);
R1('D2KD',PETRO3T3) = (SUM(Z,FD.L('CAPIT',Z)) - R1('KD',TODAY))/R1('KD',TODAY);
R1('GFSAV',PETRO3T3) = S.L('CGENF');
R1('D1GFSAV',PETRO3T3) = S.L('CGENF') - R1('GFSAV',TODAY);
R1('D2GFSAV',PETRO3T3) = (S.L('CGENF') - R1('GFSAV',TODAY))/R1('GFSAV',TODAY);
R1('MIC',PETRO3T3) = SUM(I,ITC.L(I));
R1('PROP98',PETRO3T3) = IGT.L('LSK14',CGENF);

R2('M-STAT',PETRO3T3) = edram999.MODELSTAT;
R2('S-STAT',PETRO3T3) = edram999.SOLVESTAT;

R3('IGT',G,PETRO3T3) = IGT.L(G,'CGENF');
R3('GOVS',G,PETRO3T3) = S.L(G);
R3('Y',H,PETRO3T3) = Y.L(H);
R3('Y',G,PETRO3T3) = Y.L(G);

R4('DS',I,PETRO3T3) = DS.L(I);
R4('FDL',I,PETRO3T3) = FD.L('LABOR',I);
R4('P',I,PETRO3T3) = P.L(I);
R4('PD',I,PETRO3T3) = PD.L(I);
R4('M',I,PETRO3T3) = M.L(I);
R4('D1DS',I,PETRO3T3) = DS.L(I) - R4('DS',I,TODAY);
R4('D2DS',I,PETRO3T3) = (DS.L(I) - R4('DS',I,TODAY))/R4('DS',I,TODAY);
R4('D1FDL',I,PETRO3T3) = FD.L('LABOR',I) - R4('FDL',I,TODAY);
R4('D2FDL',I,PETRO3T3) = (FD.L('LABOR',I) - R4('FDL',I,TODAY))/R4('FDL',I,TODAY);
R4('FDK',I,PETRO3T3) = FD.L('CAPIT',I);
R4('D1FDK',I,PETRO3T3) = FD.L('CAPIT',I) - R4('FDK',I,TODAY);
R4('D2FDK',I,PETRO3T3) = (FD.L('CAPIT',I) - R4('FDK',I,TODAY))/R4('FDK',I,TODAY);
R4('PVA',I,PETRO3T3) = PVA.L(I);
R4('D1PVA',I,PETRO3T3) = PVA.L(I) - R4('PVA',I,TODAY);
R4('D2PVA',I,PETRO3T3) = (PVA.L(I) - R4('PVA',I,TODAY))/R4('PVA',I,TODAY);
R4('D1P',I,PETRO3T3) = P.L(I) - R4('P',I,TODAY);
R4('D2P',I,PETRO3T3) = (P.L(I) - R4('P',I,TODAY))/R4('P',I,TODAY);
R4('D1M',I,PETRO3T3) = M.L(I) - R4('M',I,TODAY);
R4('D2M',I,PETRO3T3) = (M.L(I) - R4('M',I,TODAY))/R4('M',I,TODAY);
R4('RRK',I,PETRO3T3) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100;
R4('RRL',I,PETRO3T3) = R.L('LABOR',I) / R0('LABOR',I) * 100;
R4('D1RRL',I,PETRO3T3) = R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY);
R4('D2RRL',I,PETRO3T3) = (R.L('LABOR',I) / R0('LABOR',I) * 100 - R4('RRL',I,TODAY))/R4('RRL',I,TODAY);
R4('D1RRK',I,PETRO3T3) = R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 - R4('RRK',I,TODAY);
R4('D2RRK',I,PETRO3T3) = (R.L('CAPIT',I) * KS.L(I) / R0('CAPIT',I) * KS.L(I) * 100 -
R4('RRK',I,TODAY))/R4('RRK',I,TODAY);

R5('PII0',I,PE,PETRO3T3) = PII0(I,PE);
R5('DIRT',I,PE,PETRO3T3) = DIRTLL(I,PE);

R6('YD',H,PETRO3T3) = YD.L(H)/HH.L(H);
R6('Y',H,PETRO3T3) = Y.L(H)/HH.L(H);
R6('YDR',H,PETRO3T3) = YD.L(H)/HH.L(H)/CPLL(H);
R6('YR',H,PETRO3T3) = Y.L(H)/HH.L(H)/CPLL(H);
R6('CPIH',H,PETRO3T3) = CPLL(H);
R6('D1YD',H,PETRO3T3) = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);
R6('D2YD',H,PETRO3T3) = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);
R6('D1Y',H,PETRO3T3) = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);
R6('D2Y',H,PETRO3T3) = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);
R6('D1YDR',H,PETRO3T3) = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);
R6('D2YDR',H,PETRO3T3) = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);
R6('D1YR',H,PETRO3T3) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);
R6('D2YR',H,PETRO3T3) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);
R6('D1CPIH',H,PETRO3T3) = CPLL(H) - R6('CPIH',H,TODAY);
R6('D1CPIH',H,PETRO3T3) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);

R7('POLN',PE,PETRO3T3) = SUM(I,DIRTLL(I,PE));
R7('D1POLN',PE,PETRO3T3) = SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY);
R7('D2POLN',PE,PETRO3T3) = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

* EXPERIMENT 18: SAME AS EXP. 13, BUT DECREASE IMPORT ELASTICITY TO 0.5

ETAM(PETRO) = 0.5;

SOLVE edram999 MINIMIZING SPI USING NLP;

* SAVE SOLUTION VALUES

R1('BAC',PETRO3T4) = Y.L('CTBAC');
R1('PIT',PETRO3T4) = Y.L('CTPIT');
R1('SAU',PETRO3T4) = Y.L('CTSAU');
R1('GFREV',PETRO3T4) = Y.L('CGENF') + SUM(G,IGT.L('CGENF',G));
R1('SFREV',PETRO3T4) = SUM(GSF,Y.L(GSF) - IGT.L('CGENF',GSF));
R1('STATIC',PETRO3T4) = 0;
R1('DGF',PETRO3T4) = R1('GFREV',PETRO3T4) - R1('GFREV',TODAY);
R1('DSF',PETRO3T4) = R1('SFREV',PETRO3T4) - R1('SFREV',TODAY);
R1('DDRE',PETRO3T4) = R1('DGF',PETRO3T4) + R1('DSF',PETRO3T4) - R1('STATIC',PETRO3T4);
R1('PDRE',PETRO3T4)\$R1('STATIC',PETRO3T4) = R1('DDRE',PETRO3T4) / R1('STATIC',PETRO3T4) * 100;
R1('SPI',PETRO3T4) = SPLI;
R1('D1SPI',PETRO3T4) = SPLI - R1('SPI',TODAY);

$R1(D2SFI, PETRO3T4) = (SPLL - R1(SPI, TODAY)) / R1(SPI, TODAY);$
 $R1(CPI, PETRO3T4) = \text{SUM}(H, CPLL(H) * HHL(H) / \text{SUM}(H1, HHL(H1)));$
 $R1(D1CPI, PETRO3T4) = \text{SUM}(H, CPLL(H) * HHL(H) / \text{SUM}(H1, HHL(H1))) - R1(CPI, TODAY);$
 $R1(D2CPI, PETRO3T4) = (\text{SUM}(H, CPLL(H) * HHL(H) / \text{SUM}(H1, HHL(H1))) - R1(CPI, TODAY)) / R1(CPI, TODAY);$
 $R1(GN, PETRO3T4) = \text{SUM}(I, N.L(I));$
 $R1(D1GN, PETRO3T4) = \text{SUM}(I, N.L(I)) - R1(GN, TODAY);$
 $R1(D2GN, PETRO3T4) = (\text{SUM}(I, N.L(I)) - R1(GN, TODAY)) / R1(GN, TODAY);$
 $R1(POP, PETRO3T4) = \text{SUM}(H, HHL(H));$
 $R1(D1POP, PETRO3T4) = \text{SUM}(H, HHL(H)) - R1(POP, TODAY);$
 $R1(D2POP, PETRO3T4) = (\text{SUM}(H, HHL(H)) - R1(POP, TODAY)) / R1(POP, TODAY);$
 $R1(W, PETRO3T4) = \text{RA.L}(\text{LABOR}) / \text{RA0}(\text{LABOR}) * 100;$
 $R1(D1W, PETRO3T4) = \text{RA.L}(\text{LABOR}) / \text{RA0}(\text{LABOR}) * 100 - R1(W, TODAY);$
 $R1(D2W, PETRO3T4) = (\text{RA.L}(\text{LABOR}) / \text{RA0}(\text{LABOR}) * 100 - R1(W, TODAY)) / R1(W, TODAY);$
 $R1(R, PETRO3T4) = \text{SUM}(I, R.L(\text{CAPIT}, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(\text{CAPIT}, I) * \text{KS.L}(I)) * 100;$
 $R1(D1R, PETRO3T4) = \text{SUM}(I, R.L(\text{CAPIT}, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(\text{CAPIT}, I) * \text{KS.L}(I)) * 100 - R1(R, TODAY);$
 $R1(D2R, PETRO3T4) = (\text{SUM}(I, R.L(\text{CAPIT}, I) * \text{KS.L}(I)) / \text{SUM}(I, R0(\text{CAPIT}, I) * \text{KS.L}(I)) * 100 - R1(R, TODAY)) / R1(R, TODAY);$
 $R1(LD, PETRO3T4) = \text{SUM}(Z, FD.L(\text{LABOR}, Z));$
 $R1(D1LD, PETRO3T4) = \text{SUM}(Z, FD.L(\text{LABOR}, Z)) - R1(LD, TODAY);$
 $R1(D2LD, PETRO3T4) = (\text{SUM}(Z, FD.L(\text{LABOR}, Z)) - R1(LD, TODAY)) / R1(LD, TODAY);$
 $R1(KD, PETRO3T4) = \text{SUM}(Z, FD.L(\text{CAPIT}, Z));$
 $R1(D1KD, PETRO3T4) = \text{SUM}(Z, FD.L(\text{CAPIT}, Z)) - R1(KD, TODAY);$
 $R1(D2KD, PETRO3T4) = (\text{SUM}(Z, FD.L(\text{CAPIT}, Z)) - R1(KD, TODAY)) / R1(KD, TODAY);$
 $R1(GFSAV, PETRO3T4) = \text{S.L}(\text{CGENF});$
 $R1(D1GFSAV, PETRO3T4) = \text{S.L}(\text{CGENF}) - R1(GFSAV, TODAY);$
 $R1(D2GFSAV, PETRO3T4) = (\text{S.L}(\text{CGENF}) - R1(GFSAV, TODAY)) / R1(GFSAV, TODAY);$
 $R1(MIC, PETRO3T4) = \text{SUM}(I, \text{ITC.L}(I));$
 $R1(PROP98, PETRO3T4) = \text{IGT.L}(\text{LSK14}, \text{CGENF});$

$R2(M\text{-STAT}, PETRO3T4) = \text{edram999.MODELSTAT};$
 $R2(S\text{-STAT}, PETRO3T4) = \text{edram999.SOLVESTAT};$

$R3(IGT, G, PETRO3T4) = \text{IGT.L}(G, \text{CGENF});$
 $R3(GOVS, G, PETRO3T4) = \text{S.L}(G);$
 $R3(Y, H, PETRO3T4) = \text{Y.L}(H);$
 $R3(Y, G, PETRO3T4) = \text{Y.L}(G);$

$R4(DS, I, PETRO3T4) = \text{DS.L}(I);$
 $R4(FDL, I, PETRO3T4) = \text{FD.L}(\text{LABOR}, I);$
 $R4(P, I, PETRO3T4) = \text{P.L}(I);$
 $R4(PD, I, PETRO3T4) = \text{PD.L}(I);$
 $R4(M, I, PETRO3T4) = \text{M.L}(I);$
 $R4(D1DS, I, PETRO3T4) = \text{DS.L}(I) - R4(DS, I, TODAY);$
 $R4(D2DS, I, PETRO3T4) = (\text{DS.L}(I) - R4(DS, I, TODAY)) / R4(DS, I, TODAY);$
 $R4(D1FDL, I, PETRO3T4) = \text{FD.L}(\text{LABOR}, I) - R4(FDL, I, TODAY);$
 $R4(D2FDL, I, PETRO3T4) = (\text{FD.L}(\text{LABOR}, I) - R4(FDL, I, TODAY)) / R4(FDL, I, TODAY);$
 $R4(FDK, I, PETRO3T4) = \text{FD.L}(\text{CAPIT}, I);$
 $R4(D1FDK, I, PETRO3T4) = \text{FD.L}(\text{CAPIT}, I) - R4(FDK, I, TODAY);$
 $R4(D2FDK, I, PETRO3T4) = (\text{FD.L}(\text{CAPIT}, I) - R4(FDK, I, TODAY)) / R4(FDK, I, TODAY);$
 $R4(PVA, I, PETRO3T4) = \text{PVA.L}(I);$
 $R4(D1PVA, I, PETRO3T4) = \text{PVA.L}(I) - R4(PVA, I, TODAY);$
 $R4(D2PVA, I, PETRO3T4) = (\text{PVA.L}(I) - R4(PVA, I, TODAY)) / R4(PVA, I, TODAY);$
 $R4(D1P, I, PETRO3T4) = \text{P.L}(I) - R4(P, I, TODAY);$
 $R4(D2P, I, PETRO3T4) = (\text{P.L}(I) - R4(P, I, TODAY)) / R4(P, I, TODAY);$
 $R4(D1M, I, PETRO3T4) = \text{M.L}(I) - R4(M, I, TODAY);$
 $R4(D2M, I, PETRO3T4) = (\text{M.L}(I) - R4(M, I, TODAY)) / R4(M, I, TODAY);$
 $R4(RRK, I, PETRO3T4) = \text{R.L}(\text{CAPIT}, I) * \text{KS.L}(I) / \text{R0}(\text{CAPIT}, I) * \text{KS.L}(I) * 100;$
 $R4(RRL, I, PETRO3T4) = \text{R.L}(\text{LABOR}, I) / \text{R0}(\text{LABOR}, I) * 100;$
 $R4(D1RRL, I, PETRO3T4) = \text{R.L}(\text{LABOR}, I) / \text{R0}(\text{LABOR}, I) * 100 - R4(RRL, I, TODAY);$
 $R4(D2RRL, I, PETRO3T4) = (\text{R.L}(\text{LABOR}, I) / \text{R0}(\text{LABOR}, I) * 100 - R4(RRL, I, TODAY)) / R4(RRL, I, TODAY);$
 $R4(D1RRK, I, PETRO3T4) = \text{R.L}(\text{CAPIT}, I) * \text{KS.L}(I) / \text{R0}(\text{CAPIT}, I) * \text{KS.L}(I) * 100 - R4(RRK, I, TODAY);$
 $R4(D2RRK, I, PETRO3T4) = (\text{R.L}(\text{CAPIT}, I) * \text{KS.L}(I) / \text{R0}(\text{CAPIT}, I) * \text{KS.L}(I) * 100 - R4(RRK, I, TODAY)) / R4(RRK, I, TODAY);$

$R5(PH0, I, PE, PETRO3T4) = \text{PH0}(I, PE);$
 $R5(DIRTI, I, PE, PETRO3T4) = \text{DIRTLL}(I, PE);$

$R6(YD, H, PETRO3T4) = \text{YD.L}(H) / \text{HHL}(H);$
 $R6(Y, H, PETRO3T4) = \text{Y.L}(H) / \text{HHL}(H);$
 $R6(YDR, H, PETRO3T4) = \text{YD.L}(H) / \text{HHL}(H) / \text{CPLL}(H);$

```

R6('YR',H,PETRO3T4) = Y.L(H)/HH.L(H)/CPLL(H);
R6('CPIH',H,PETRO3T4) = CPLL(H);
R6('D1YD',H,PETRO3T4) = YD.L(H)/HH.L(H) - R6('YD',H,TODAY);
R6('D2YD',H,PETRO3T4) = (YD.L(H)/HH.L(H) - R6('YD',H,TODAY))/R6('YD',H,TODAY);
R6('D1Y',H,PETRO3T4) = Y.L(H)/HH.L(H) - R6('Y',H,TODAY);
R6('D2Y',H,PETRO3T4) = (Y.L(H)/HH.L(H) - R6('Y',H,TODAY))/R6('Y',H,TODAY);
R6('D1YDR',H,PETRO3T4) = YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY);
R6('D2YDR',H,PETRO3T4) = (YD.L(H)/HH.L(H)/CPLL(H) - R6('YDR',H,TODAY))/R6('YDR',H,TODAY);
R6('D1YR',H,PETRO3T4) = Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY);
R6('D2YR',H,PETRO3T4) = (Y.L(H)/HH.L(H)/CPLL(H) - R6('YR',H,TODAY))/R6('YR',H,TODAY);
R6('D1CPIH',H,PETRO3T4) = CPLL(H) - R6('CPIH',H,TODAY);
R6('D1CPIH',H,PETRO3T4) = (CPLL(H) - R6('CPIH',H,TODAY))/R6('CPIH',H,TODAY);

R7('POLN',PE,PETRO3T4) = SUM(I,DIRTLL(I,PE));
R7('D1POLN',PE,PETRO3T4) = SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY);
R7('D2POLN',PE,PETRO3T4) = (SUM(I,DIRTLL(I,PE)) - R7('POLN',PE,TODAY))/R7('POLN',PE,TODAY);

```

```

*-----
* 7.3 PUT RESULTS INTO OUTPUT FILE
*-----

```

```

PUT 'edram999          ';
LOOP(T, PUT T.TL);
PUT /;

PUT MODEL              ;
LOOP(T$(ORD(T) GT 1), LOOP(MSS$(R2('M-STAT',T) EQ ORD(MS)), PUT MS.TE(MS)));
PUT /;

PUT 'SOLVER            ;
LOOP(T$(ORD(T) GT 1), LOOP(SS$(R2('S-STAT',T) EQ ORD(SS)), PUT SS.TE(SS)));
PUT /;

LOOP(R1H, PUT R1H.TE(R1H) ');
  LOOP(T, PUT R1(R1H,T));
  PUT /;

LOOP(PE, PUT PE.TL; PUT/
  LOOP(R7H, PUT R7H.TE(R7H) ');
  LOOP(T, PUT R7(R7H,PE,T));
  PUT /);

LOOP(H, PUT H.TL; PUT/
  LOOP(R6H, PUT R6H.TE(R6H) ');
  LOOP(T, PUT R6(R6H,H,T));
  PUT /);

LOOP(I, PUT I.TL; PUT /;
  LOOP(R4H, PUT R4H.TE(R4H) ');
  LOOP(T, PUT R4(R4H,I,T)) PUT /);
  LOOP((R5H,PE), PUT R5H.TE(R5H), PE.TL;
  LOOP(T, PUT R5(R5H,I,PE,T));
  PUT /);

```

APPENDIX C1: E-SAM3.PRN INPUT FILE

TABLE SAM(Z,Z1) SOCIAL ACCOUNTING MATRIX⁴²

	AGRIC	ENMIN	OTHPR	CONST	FOODS	TOBAC
AGRIC	11.559336	0.000458	0.012967	0.241684	11.873332	0.000493
ENMIN	0.060224	1.290284	0.006595	0.052217	0.031601	0.000005
OTHPR	0.098438	0.001108	0.132501	0.525348	0.324872	0
CONST	0.700913	0.130299	0.032666	0.060143	0.194959	0.000014
FOODS	4.770115	0.001128	0.01577	0.029124	6.757592	0.000001
TOBAC	0.000694	0.00002	0.000011	0.000518	0.00051	0.000539
APPAR	0.257857	0.005505	0.003634	0.243033	0.024003	0.000002
MFRCO	0.370212	0.061657	0.016277	11.467733	0.712509	0.000009
PAPER	0.70202	0.015606	0.016881	0.820692	1.738985	0.000184
CONCH	0.049895	0.001257	0.001191	0.63079	0.070286	0.000011
CHEMS	3.01307	0.091039	0.05244	1.411846	1.223604	0.000083
PETRO	1.12537	0.066572	0.053448	0.968469	0.158741	0.00001
ELECT	0.021076	0.001333	0.001425	0.484141	0.018732	0.000002
AEROS	0.007437	0.001612	0.001027	0.037813	0.005014	0
MOTOR	0.070555	0.005232	0.005206	0.125311	0.030202	0.000001
ENGIN	0.288218	0.079766	0.058661	0.320723	0.012841	0
OTHMA	0.462324	0.117079	0.038147	4.50262	1.194411	0.000014
TRANS	1.593912	0.134871	0.044962	1.386471	1.259147	0.000056
COMMU	0.30973	0.020048	0.010424	0.533593	0.143692	0.000036
UTILI	1.049565	0.273182	0.09102	0.196819	0.59227	0.000016
WHOLE	3.367576	0.098397	0.051491	2.757333	2.585952	0.00013
RETAI	0.193194	0.036476	0.013026	2.92122	0.433806	0.000049
BANKS	0.211542	0.047106	0.013702	0.424501	0.296409	0.000042
INSUR	0.210583	0.008657	0.006106	0.359642	0.077589	0.000009
REALE	4.115346	0.038585	0.006104	0.355168	0.134698	0.000011
OFIRE	0.119809	0.934967	0.009144	0.07911	0.063782	0.000016
BSERV	3.268545	0.147195	0.130387	5.115769	1.504536	0.000533
HEALT	0.438614	0.000258	0.000139	0.018711	0.002183	0.000001
ENTER	0.009627	0.002447	0.000462	0.042702	0.029118	0.000007
OSERV	0.564175	0.033083	0.016881	0.938027	0.426976	0.000058
LABOR	3.828467	1.242996	0.452283	24.587211	6.347706	0.000558
CAPIT	8.890522	0.830751	0.147995	25.379997	1.657914	0.000692
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0

⁴² Contents of the table have been cut and paste from a spreadsheet version of the file for improved clarity.

HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	0.155269	0.050412	0.018343	0.997172	0.257441	0.000023
FTPIT	0	0	0	0	0	0
FTPRO	0.073872	0.052283	0.017701	0.431567	0.65148	0.000272
FTDUT	0.170495	0.01883	0.004751	0.286031	0.132875	0.000012
FTMSC	0	0	0	0	0.5352	0.433333
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0.2676	0
CTCIG	0	0	0	0	0	0.65
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0.015071	0.001664	0.00042	0.025283	0.011745	0.000001
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0.90094	0.119027	2.598903	0	0.12662
CTBAC	0.024161	0.0171	0.005789	0.141151	0.213076	0.000089
CTLAB	0.032778	0.010642	0.003872	0.210508	0.054347	0.000005
CTPIT	0	0	0	0	0	0
CTRGU	0.053995	0.005963	0.001505	0.090585	0.042081	0.000004
CTSVC	0	0	0	0	0	0
CTPAM	0.024563	0.002713	0.000685	0.041207	0.019143	0.000002
CGENF	0	0	0	0	0	0
LTPRP	0.172498	0.016119	0.002871	0.492434	0.032186	0.000013
L TSAU	0	0.24163	0.031923	0.69702	0	0.033959
LTFMS	0.061694	0.006814	0.001719	0.103501	0.048081	0.000004
LTHHS	0	0	0	0	0	0
LTMSC	0.317413	0.035057	0.008846	0.532507	0.247375	0.000022
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0.401517	17.350115	2.009715	0.449366	24.867929	2.118942

+	APPAR	MFRCO	PAPER	CONCH	CHEMS	PETRO
AGRIC	0.273301	0.06734	0.005502	0.002261	0.042735	0.006029
ENMIN	0.00766	0.048832	0.043759	0.001834	0.202812	13.209899
OTHPR	0.020502	0.914846	0.035924	0.00374	0.168848	0.073543
CONST	0.061637	0.1765	0.215606	0.011245	0.124542	0.192882
FOODS	0.00923	0.026087	0.072722	0.023842	0.055422	0.033452
TOBAC	0.000137	0.000353	0.000367	0.000037	0.000279	0.00019
APPAR	3.876692	0.328358	0.098039	0.004321	0.121815	0.005003
MFRCO	0.035171	5.058926	0.706364	0.029882	0.172421	0.135581

PAPER	0.08825	0.450834	6.601906	0.091999	0.316584	0.084799
CONCH	0.040949	0.151528	0.061733	0.098252	0.073432	0.076438
CHEMS	1.185836	1.06453	1.416929	0.446329	3.832209	0.476857
PETRO	0.052127	0.191754	0.131686	0.029665	0.169387	2.045957
ELECT	0.003763	0.061797	0.03002	0.001378	0.014458	0.0089
AEROS	0.000785	0.02859	0.002601	0.000227	0.001444	0.000844
MOTOR	0.003407	0.053629	0.013717	0.000524	0.004124	0.010757
ENGIN	0.002542	0.036735	0.00674	0.000541	0.004318	0.003097
OTHMA	0.189018	3.847349	0.337823	0.042938	0.208171	0.064347
TRANS	0.217052	1.175888	0.964546	0.066043	0.572714	1.208482
COMMU	0.04386	0.126716	0.147888	0.014265	0.074978	0.049806
UTILI	0.23717	0.722091	0.579407	0.020854	0.492355	2.30766
WHOLE	0.683816	1.773638	1.158872	0.110668	0.740133	0.979424
RETAI	0.080883	0.213666	0.166157	0.016556	0.091941	0.078864
BANKS	0.077413	0.217883	0.185467	0.015087	0.098566	0.169153
INSUR	0.017065	0.053654	0.045125	0.003117	0.022617	0.025495
REALE	0.086253	0.233871	0.230491	0.013255	0.075088	0.057165
OFIRE	0.029884	0.066948	0.255224	0.006869	0.061437	0.200316
BSERV	0.391837	0.762501	0.871645	0.154244	0.645375	0.372769
HEALT	0.000529	0.001356	0.001216	0.00017	0.000764	0.00051
ENTER	0.004591	0.011876	0.013966	0.002144	0.008152	0.00665
OSERV	0.134353	0.395444	0.36229	0.019151	0.211269	0.229529
LABOR	3.118972	9.662129	7.919973	0.432591	3.378638	1.579097
CAPIT	0.242862	1.110729	1.39295	0.162355	0.665529	0.288784
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	0.126495	0.391863	0.321207	0.018626	0.135944	0.064043
FTPIT	0	0	0	0	0	0
FTPRO	0.095433	0.436462	0.547362	0.068429	0.499425	0.19808
FTDUT	0.037348	0.096475	0.079917	0.005782	0.042197	0.07896
FTMSC	0	0	0	0	0	3.12129
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0.423894
CTREG	0	0	0	0	0	0
CTMSC	0.003301	0.008528	0.007064	0.000511	0.00373	0.00698
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	2.570228

CTSAU	0.623046	1.445315	1.253314	0.164003	1.196967	0.7653
CTBAC	0.031213	0.142752	0.179023	0.022381	0.163345	0.064785
CTLAB	0.026704	0.082724	0.067808	0.003932	0.028698	0.01352
CTPIT	0	0	0	0	0	0
CTRGU	0.011828	0.030553	0.025309	0.001831	0.013363	0.025006
CTSVC	0	0	0	0	0	0
CTPAM	0.005381	0.013899	0.011513	0.000833	0.006079	0.011376
CGENF	0	0	0	0	0	0
LTPRP	0.004715	0.021563	0.027042	0.001937	0.014135	0.005606
LTSAU	0.1671	0.38763	0.336136	0.043985	0.321024	0.205252
LTFMS	0.013514	0.034909	0.028918	0.002092	0.015269	0.028572
LTHHS	0	0	0	0	0	0
LTMSC	0.069531	0.179608	0.148782	0.010764	0.078558	0.147001
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	9.13491	7.159532	7.230105	2.389762	17.441498	0.483889

+	ELECT	AEROS	MOTOR	ENGIN	OTHMA	TRANS
AGRIC	0.008479	0.002382	0.001501	0.001393	0.044001	0.00652
ENMIN	0.009263	0.005207	0.002229	0.002823	0.166963	0.14712
OTHPR	0.022194	0.002492	0.011978	0.007385	0.512986	0.003284
CONST	0.707909	0.146037	0.037275	0.082997	0.338657	0.496436
FOODS	0.054623	0.009013	0.007108	0.00704	0.145505	0.047411
TOBAC	0.001048	0.00014	0.000126	0.000123	0.000736	0.000201
APPAR	0.023331	0.050011	0.188668	0.007981	0.284707	0.044917
MFRCO	3.154606	0.630267	0.918575	0.700663	2.42177	0.186697
PAPER	0.649174	0.113171	0.043325	0.052053	0.827416	0.406767
CONCH	0.057651	0.030871	0.076635	0.030832	0.15671	0.018007
CHEMS	1.802694	0.420777	0.453577	0.308031	2.122123	0.385431
PETRO	0.100304	0.03713	0.019597	0.029158	0.230424	2.481873
ELECT	21.304736	1.967765	0.19899	0.022351	1.485781	0.034558
AEROS	0.211346	3.021103	0.007342	0.121288	0.058001	0.166101
MOTOR	0.057038	0.024211	1.720409	0.093931	0.071115	0.156077
ENGIN	0.035426	1.750633	0.085722	1.340707	0.210088	0.237957
OTHMA	3.743698	1.218757	0.990455	2.010809	12.319465	0.637898
TRANS	0.799051	0.296619	0.211664	0.234499	1.438939	7.368956
COMMU	0.475169	0.113861	0.020237	0.050246	0.263636	0.696727
UTILI	0.811127	0.197231	0.065047	0.125017	1.283869	0.551002
WHOLE	5.528258	0.725137	0.633749	0.640936	3.713207	1.160379
RETAI	0.414665	0.11943	0.072166	0.06862	0.363732	0.647018
BANKS	0.540635	0.174596	0.052967	0.080482	0.384955	0.462552
INSUR	0.112203	0.031893	0.012214	0.017438	0.084092	0.243062
REALE	0.848187	0.14644	0.028459	0.057941	0.361	0.855119
OFIRE	0.185957	0.051296	0.025181	0.021566	0.158455	0.338979
BSERV	2.829199	0.854711	0.180702	0.32252	1.572791	2.443867
HEALT	0.003547	0.001058	0.000291	0.000465	0.002426	0.011604

ENTER	0.044684	0.010494	0.004933	0.005283	0.02558	0.027929
OSERV	0.743435	0.185235	0.359854	0.151006	0.652974	1.449595
LABOR	24.778963	9.102405	1.428797	3.597949	17.35952	15.861647
CAPIT	2.871719	0.563386	0.079315	0.397363	1.859157	4.239047
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	1.004949	0.368067	0.057947	0.149707	0.701351	0.643294
FTPIT	0	0	0	0	0	0
FTPRO	0.863134	0.144042	0.018507	0.111392	0.733169	0.30331
FTDUT	0.242957	0.073506	0.026494	0.033347	0.170024	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0.0313	0	0	0
CTLIC	0	0	3.366718	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	1.727173	0	0	0
CTMSC	0.021476	0.006497	0.002342	0.002948	0.015029	0.01221
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	2.235809	0.320601	0.824128	0.350876	2.526111	0
CTBAC	0.282301	0.047111	0.006053	0.036432	0.239794	0.099202
CTLAB	0.21215	0.077701	0.012233	0.031604	0.148059	0.135803
CTPIT	0	0	0	0	0	0
CTRGU	0.076943	0.023279	0.008391	0.010561	0.053846	0.043747
CTSVC	0	0	0	0	0	0
CTPAM	0.035002	0.01059	0.003817	0.004804	0.024495	0.019901
CGENF	0	0	0	0	0	0
LTPRP	0.05575	0.011984	0.00154	0.006415	0.036221	0.082248
L TSAU	0.599639	0.085984	0.221029	0.094104	0.677497	0
LTFMS	0.087914	0.026598	0.009587	0.012066	0.061523	0.049985
LTHHS	0	0	0	0	0	0
LTMSC	0.452315	0.136847	0.049324	0.062082	0.316535	0.257171
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0

CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	51.389018	10.417974	9.768842	3.899098	16.912755	7.452338

+	COMMU	UTILI	WHOLE	RETAI	BANKS	INSUR
AGRIC	0.027619	0.0032	0.32567	0.352304	0.012647	0.002549
ENMIN	0.002256	8.370354	0.031621	0.031399	0.003357	0.000298
OTHPR	0.00052	0.00172	0.004719	0.224131	0.000226	0.000135
CONST	1.50094	3.320297	0.384932	1.040948	0.172124	0.042208
FOODS	0.003363	0.003652	0.323346	8.154611	0.00301	0.000464
TOBAC	0.000071	0.000069	0.008579	0.000446	0.000072	0.000011
APPAR	0.017759	0.00221	0.511685	0.095395	0.034064	0.001811
MFRCO	0.119517	0.061536	0.568423	0.517759	0.067574	0.019167
PAPER	0.71791	0.154655	2.440901	1.974542	1.395506	0.24002
CONCH	0.015236	0.004055	0.0868	0.068451	0.005719	0.003943
CHEMS	0.090312	0.17752	0.696525	0.772045	0.035947	0.026147
PETRO	0.041587	0.470901	0.528976	0.546221	0.053789	0.005658
ELECT	1.19165	0.151407	0.740058	0.096451	0.059717	0.00937
AEROS	0.013319	0.004113	0.012591	0.005366	0.001347	0.000229
MOTOR	0.009567	0.183726	0.273498	1.284807	0.01245	0.003341
ENGIN	0.063151	0.138379	0.108787	0.059253	0.002958	0.000641
OTHMA	0.305412	0.177397	0.810058	0.616508	0.316705	0.05384
TRANS	0.229901	1.303762	1.005724	1.226491	1.047862	0.097552
COMMU	5.287664	0.180876	1.755138	1.341641	0.769203	0.342956
UTILI	0.23036	3.664134	1.075967	3.258885	0.575594	0.019024
WHOLE	0.430396	0.389134	2.562139	2.598863	0.461298	0.078097
RETAI	0.26978	0.16896	0.756796	1.265638	0.292328	0.115078
BANKS	0.390399	0.443867	0.953589	1.446188	2.476694	0.228961
INSUR	0.089661	0.108081	0.146865	0.306119	0.180224	0.131696
REALE	0.544995	0.341939	2.640613	7.416977	1.684377	0.623822
OFIRE	0.250489	0.178908	0.227255	0.480009	3.70215	7.159318
BSERV	2.919667	1.249636	7.108107	8.459874	5.47537	1.090047
HEALT	0.002686	0.00153	0.007583	0.010162	0.004596	0.001044
ENTER	2.206901	0.01426	0.067412	0.388488	0.030121	0.007523
OSERV	0.853535	0.25033	1.515229	1.617243	0.486321	0.288633
LABOR	9.796939	4.981212	36.103751	46.324436	14.355551	6.899408
CAPIT	8.137778	9.344942	14.053167	17.574784	3.922813	1.060132
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0

HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	0.39733	0.202021	1.464244	1.878759	0.582212	0.279816
FTPIT	0	0	0	0	0	0
FTPRO	0.58227	0.668645	1.426949	1.784532	3.042354	0
FTDUT	0	0	0	0	0	0
FTMSC	0.25	0.036119	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0.010422	0.010276	0.022715	0.031916	0.011025	0.005464
CTINS	0	0	0	0	0	1.281
CTGAS	0	0	0	0	0	0
CTSAU	0	0	1.860269	3.507012	0	0
CTBAC	0.19044	0.218691	0.466706	0.583659	0.995049	0
CTLAB	0.083878	0.042648	0.309109	0.396616	0.122908	0.059071
CTPIT	0	0	0	0	0	0
CTRGU	0.03734	0.036817	0.081384	0.114347	0.039499	0.019577
CTSVC	0	0	0	0	0	0
CTPAM	0.016986	0.016748	0.037022	0.052017	0.017968	0.008906
CGENF	0	0	0	0	0	0
LTPRP	0.157893	0.181315	0.272666	0.340993	0.076112	0.020569
L TSAU	0	0	0.49892	0.940572	0	0
LTFMS	0.042665	0.042066	0.092988	0.130651	0.045131	0.022369
LTHHS	0	0	0	0	0	0
LTMSC	0.219507	0.21643	0.478419	0.672194	0.232197	0.115087
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0.361543	0.879039	0.146516	5.127337	10.345912	35.738318

+	REALE	OFIRE	BSERV	HEALT	ENTER	OSERV
AGRIC	0.012227	0.009574	1.027916	0.045562	0.193672	0.067467
ENMIN	0.004682	0.001464	0.024879	0.008346	0.009569	0.027166
OTHPR	0.00049	0.000421	0.015197	0.017328	0.005566	0.018231
CONST	4.212101	3.380814	0.473052	0.36422	0.481408	1.859099
FOODS	0.001308	0.001137	0.052393	0.568576	0.790641	0.961546
TOBAC	0.000027	0.000024	0.000441	0.000301	0.000175	0.000334
APPAR	0.002444	0.002371	0.082188	0.190353	0.119103	0.266334
MFRCO	0.096147	0.043825	0.345001	0.276497	0.115662	0.644303
PAPER	0.561051	0.573255	4.408065	1.257819	0.769934	2.770309

CONCH	0.01126	0.003327	0.138158	0.098374	0.035135	0.266165
CHEMS	0.08139	0.082158	1.207663	2.72682	0.225049	0.685471
PETRO	0.075773	0.027433	0.454346	0.16316	0.166699	0.475497
ELECT	0.018641	0.046897	3.468318	0.147874	0.02853	0.276339
AEROS	0.000466	0.001013	0.036581	0.005766	0.002209	0.010139
MOTOR	0.008723	0.006123	0.166027	0.040552	0.050331	1.381535
ENGIN	0.001382	0.024642	0.02034	0.00892	0.006982	0.161164
OTHMA	0.086076	0.09967	1.661893	1.534684	0.657419	1.505411
TRANS	0.378612	0.349864	1.862825	0.586628	0.383732	1.009992
COMMU	0.726734	0.818368	3.539367	0.850923	0.644707	1.11472
UTILI	1.506979	0.129979	0.846518	0.805321	1.020008	1.653236
WHOLE	0.245801	0.212407	2.592321	1.184982	1.061692	1.767841
RETAI	0.37022	0.270172	1.390891	0.710413	0.526152	1.297563
BANKS	0.569652	0.736487	1.407519	0.402077	0.472139	0.766629
INSUR	0.23312	0.61787	0.276816	0.206383	0.088706	0.21035
REALE	5.083432	3.704623	6.712558	4.059258	2.828939	6.340696
OFIRE	0.24057	5.184447	0.755461	0.371548	0.727978	0.840054
BSERV	3.854988	4.141593	20.679108	4.538855	4.710106	6.035825
HEALT	0.003859	0.003706	0.018991	1.511673	0.020216	0.009526
ENTER	0.026727	0.025364	0.364477	0.037416	8.401873	0.200053
OSERV	0.939734	0.410591	3.019901	0.984466	1.608997	2.081274
LABOR	6.904012	14.818356	81.15913	36.877877	17.866776	32.370525
CAPIT	7.750762	14.043509	70.993554	17.778901	17.278533	19.380057
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	0.280003	0.600981	3.291534	1.495639	0.724615	1.312837
FTPIT	0	0	0	0	0	0
FTPRO	1.003102	2.175332	1.540413	0.385765	0.374908	0.420507
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0.058691	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0.009833	0.014456	0.060592	0.022816	0.017766	0.025129
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0

CTBAC	0.32808	0.711476	0.503816	0.126171	0.12262	0.137533
CTLAB	0.05911	0.12687	0.69486	0.315737	0.15297	0.277146
CTPIT	0	0	0	0	0	0
CTRGU	0.035229	0.051793	0.217088	0.081743	0.063652	0.090031
CTSVC	0	0	0	0	0	0
CTPAM	0.016026	0.023561	0.098754	0.037185	0.028956	0.040956
CGENF	0	0	0	0	0	0
LTPRP	0.150384	0.272478	1.377447	0.344954	0.335245	0.37602
L TSAU	0	0	0	0	0	0
LTFMS	0.040252	0.059178	0.248041	0.093398	0.072728	0.102868
LTHHS	0	0	0	0	0	0
LTMSC	0.207094	0.304467	1.276163	0.480531	0.374181	0.529251
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	70.184772	0.153977	0.551487	0.199147	0.99408	82.273384

+	LABOR	CAPIT	CFOOD	CHOME	CFUEL	CFURN
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	23.777788	0	0
FOODS	0	0	32.883178	0	0	0
TOBAC	0	0	3.340374	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	1.377718	0	2.925332
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0.060767
CHEMS	0	0	0	0	0	0.295253
PETRO	0	0	0	0	6.052373	0
ELECT	0	0	0	0	0	7.602734
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0.83543
OTHMA	0	0	0	0	0	6.825586
TRANS	0	0	0	0	0	1.002836
COMMU	0	0	0	0	11.507592	0
UTILI	0	0	0	0	13.644613	0
WHOLE	0	0	7.24471	3.547604	1.210475	3.70902
RETAI	0	0	51.550189	14.190417	4.841898	14.836082
BANKS	0	0	0	11.766319	0	0
INSUR	0	0	0	4.699939	0	0
REALE	0	0	0	55.23593	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0.665738	0	0.340371
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0

OSERV	0	0	0	2.401741	0	15.159806
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	1.213623	0	0	0	0	0
HOUS1	32.928102	11.847762	0	0	0	0
HOUS2	64.83912	25.235163	0	0	0	0
HOUS4	106.26508	33.730844	0	0	0	0
HOUS6	83.979418	24.286312	0	0	0	0
HOUS8	62.633258	17.096707	0	0	0	0
HOUS9	102.87823	42.378764	0	0	0	0
HOUSH	66.883059	97.524447	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	22.075	0	0	0	0	0
FTPIT	0	0	0	0	0	0
FTPPO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0

CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0	0	0	0	0	0

+	CCLTH	CTRNS	CMEDS	CAMUS	COTHR	HOUS0
AGRIC	0	0	0	0	2.539355	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	9.387898	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	2.032104	0
CONCH	0	0.477097	0.218616	0.105547	0	0
CHEMS	0	2.749598	1.752053	0.538516	0	0
PETRO	0	0	0	0	0	0
ELECT	0	0.257275	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	1.143753	0	0.027689	0	0
ENGIN	0.415912	0.234125	0.07143	0.260078	0.04303	0
OTHMA	2.213172	2.383414	0.755435	3.553428	0.407619	0
TRANS	0	18.37215	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	2.403396	1.449052	0.559507	0.897052	1.004421	0
RETAI	9.613586	5.796209	2.238027	3.588206	4.017686	0
BANKS	0	13.146795	0	0	12.876469	0
INSUR	0	32.299072	0	0	14.402309	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0.014056	1.39861	6.163193	0
HEALT	0	0	24.360068	0	0	0
ENTER	0	0	0	20.240428	0	0
OSERV	6.531271	30.937646	0	3.281351	88.301716	0
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	10.76592
CHOME	0	0	0	0	0	13.281156
CFUEL	0	0	0	0	0	4.282987
CFURN	0	0	0	0	0	2.86241
CCLTH	0	0	0	0	0	2.617971
CTRNS	0	0	0	0	0	9.993636
CMEDS	0	0	0	0	0	2.501066
CAMUS	0	0	0	0	0	2.419586
COTHR	0	0	0	0	0	9.685431
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0

INVES	0	0	0	0	0	0
FTSOC	0	0	0	0	0	0
FTPIT	0	0	0	0	0	-0.140447
FTPPO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0.016619
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0.040047
CTSVL	0	0	0	0	0	0.062723
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0	0	0	0	0	0.023017
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0.00128
LTMSC	0	0	0	0	0	1.647934
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0	0	0	0	0	0

+	HOUS1	HOUS2	HOUS4	HOUS6	HOUS8	HOUS9
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0

CHEMS	0	0	0	0	0	0
PETRO	0	0	0	0	0	0
ELECT	0	0	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0
OTHMA	0	0	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	11.760944	14.417583	16.989892	12.317381	7.711555	10.893192
CHOME	13.458055	15.524196	20.214279	13.644921	9.300077	16.68008
CFUEL	5.063482	5.890155	7.34422	4.367782	2.860451	3.853261
CFURN	5.265873	7.435694	7.701613	5.931894	6.114145	9.458237
CCLTH	3.032147	3.771783	5.082043	3.562265	2.700488	5.069411
CTRNS	10.726709	13.907983	20.210352	15.09759	8.832407	15.767968
CMEDS	4.493446	5.536783	6.09531	3.523162	2.036197	2.992034
CAMUS	3.442499	3.907552	6.719765	4.926953	3.010417	4.896402
COTHR	9.170714	13.56763	19.087118	18.765433	12.811489	25.195673
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	1.355385	3.498307	6.985825	7.142381	6.153025	12.928126
FTSOC	0	0	0	0	0	0
FTPIT	3.797307	10.113819	20.931066	15.66709	12.155856	24.018277
FTPRO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0.055929	0.203127
CTHHS	0.020714	0.02858	0.040673	0.031391	0.022336	0.04056
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0.017791	0.064616
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0

CTLAB	0	0	0	0	0	0
CTPIT	0.239589	0.965361	2.64611	3.107023	3.07166	7.492692
CTRGU	0.049914	0.068868	0.098009	0.075644	0.053822	0.097738
CTSVC	0.078177	0.107864	0.153506	0.118476	0.084298	0.153081
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0.849201	1.708312	2.655105	2.053323	1.512126	2.754885
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0.001595	0.0022	0.003132	0.002417	0.00172	0.003123
LTMSC	2.053965	2.833928	4.033071	3.112728	2.214772	4.021912
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0	0	0	0	0	0

+	HOUSH	INVES	FTSOC	FTPIT	FTPRO	FTDUT
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	15.112366	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	3.814919	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0
CHEMS	0	0	0	0	0	0
PETRO	0	0	0	0	0	0
ELECT	0	18.651765	0	0	0	0
AEROS	0	2.236222	0	0	0	0
MOTOR	0	14.678845	0	0	0	0
ENGIN	0	2.114158	0	0	0	0
OTHMA	0	12.021148	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0

LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	10.161985	0	0	0	0	0
CHOME	15.560429	0	0	0	0	0
CFUEL	3.594611	0	0	0	0	0
CFURN	8.823352	0	0	0	0	0
CCLTH	4.729127	0	0	0	0	0
CTRNS	14.709542	0	0	0	0	0
CMEDS	2.791193	0	0	0	0	0
CAMUS	4.567731	0	0	0	0	0
COTHR	23.504413	0	0	0	0	0
HOUS0	0	0	15.663147	0	0	0
HOUS1	0	0	8.899515	0	0	0
HOUS2	0	0	4.449758	0	0	0
HOUS4	0	0	2.373204	0	0	0
HOUS6	0	0	1.779903	0	0	0
HOUS8	0	0	0.444976	0	0	0
HOUS9	0	0	0.596268	0	0	0
HOUSH	0	0	0.598047	0	0	0
INVES	12.060325	0	9.320571	0	0	0
FTSOC	0	0	0	0	0	0
FTPIT	42.769767	0	0	0	0	0
FTPRO	0	0	0	0	0	0
FDUT	0	0	0	0	0	0
FTMSC	2.296698	0	0	0	0	0
CTHHS	0.045861	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0.730593	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	11.440565	0	0	0	0	0
CTRGU	0.11051	0	0	0	0	0
CTSVC	0.173084	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	3.118085	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0.003531	0	0	0	0	0
LTMSC	4.547463	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	129.31274	18.650699	1.5
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0

LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0	0
ROW	0	0	0	0	0	0

+	FTMSC	CTHHS	CTBOZ	CTCIG	CTHOR	CTEST
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0
CHEMS	0	0	0	0	0	0
PETRO	0	0	0	0	0	0
ELECT	0	0	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0
OTHMA	0	0	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0

FTSOC	0	0	0	0	0	0
FTPIT	0	0	0	0	0	0
FTPPO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0.007452	0.2676	0.165	0.020796	0.813
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	6.931696	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	-0.0015	0.111963	0	0
CSOTH	0	0.239282	0	0	0.037895	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0
LSK14	0	0	0	0.044987	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0.32805	0	0
LSOTH	0	0	0.0015	0	0	0
ROW	0	0	0	0	0	0

+	CTTRL	CTLIC	CTDIE	CTREG	CTMSC	CTINS
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0
CHEMS	0	0	0	0	0	0

PETRO	0	0	0	0	0	0
ELECT	0	0	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0
OTHMA	0	0	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	0	0
FTSOC	0	0	0	0	0	0
FTPIT	0	0	0	0	0	0
FTPRO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0

CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0.0313	0	0	0	0.143298	1.281
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0.622392	0.193523	0.755437	0	0
CSCOR	0	0	0	0.664319	0	0
CSK14	0	0	0	0.029115	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0.050048	0	0
CSHTH	0	0	0	0.090022	0	0
CSOTH	0	0	0	0.138232	0.108295	-0.026859
LSTRA	0	2.744326	0.230371	0	0	0
LSCOR	0	0	0	0	0.059747	0
LSK14	0	0	0	0	-0.011787	0
LSWEL	0	0	0	0	0.000151	0
LSHTH	0	0	0	0	0.00268	0
LSOTH	0	0	0	0	0.084826	0.026859
ROW	0	0	0	0	0	0

+	CTGAS	CTSAU	CTBAC	CTLAB	CTPIT	CTRGU
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0
CHEMS	0	0	0	0	0	0
PETRO	0	0	0	0	0	0
ELECT	0	0	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0
OTHMA	0	0	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0
LABOR	0	0	0	0	0	0

CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	1.434426	0	0
HOUS1	0	0	0	1.304023	0	0
HOUS2	0	0	0	0.652012	0	0
HOUS4	0	0	0	0.434674	0	0
HOUS6	0	0	0	0.434674	0	0
HOUS8	0	0	0	0.108669	0	0
HOUS9	0	0	0	0.145616	0	0
HOUSH	0	0	0	0.146051	0	0
INVES	0	0	0	-0.005196	0	0
FTSOC	0	0	0	0	0	0
FTPIT	0	0	0	0	0	0
FTPRO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	18.739	6.1	0	28.963	0.060779
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	1.05354	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	-0.654441	0	0	0	1.699979
LSTRA	1.516688	0	0	0	0	0.00085

LSCOR	0	0.044748	0	0	0	0
LSK14	0	0	0	0	0	0
LSWEL	0	2.688934	0	0	0	0
LSHTH	0	0	0	0	0	0.073994
LSOTH	0	0	0	0	0	0.146241
ROW	0	0	0	0	0	0

+	CTSVC	CTPAM	CGENF	LTPRP	L TSAU	LTFMS
AGRIC	0	0	0	0	0	0
ENMIN	0	0	0	0	0	0
OTHPR	0	0	0	0	0	0
CONST	0	0	0	0	0	0
FOODS	0	0	0	0	0	0
TOBAC	0	0	0	0	0	0
APPAR	0	0	0	0	0	0
MFRCO	0	0	0	0	0	0
PAPER	0	0	0	0	0	0
CONCH	0	0	0	0	0	0
CHEMS	0	0	0	0	0	0
PETRO	0	0	0	0	0	0
ELECT	0	0	0	0	0	0
AEROS	0	0	0	0	0	0
MOTOR	0	0	0	0	0	0
ENGIN	0	0	0	0	0	0
OTHMA	0	0	0	0	0	0
TRANS	0	0	0	0	0	0
COMMU	0	0	0	0	0	0
UTILI	0	0	0	0	0	0
WHOLE	0	0	0	0	0	0
RETAI	0	0	0	0	0	0
BANKS	0	0	0	0	0	0
INSUR	0	0	0	0	0	0
REALE	0	0	0	0	0	0
OFIRE	0	0	0	0	0	0
BSERV	0	0	0	0	0	0
HEALT	0	0	0	0	0	0
ENTER	0	0	0	0	0	0
OSERV	0	0	0	0	0	0
LABOR	0	0	0	0	0	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	-0.276861	0	0	0
FTSOC	0	0	0	0	0	0

FTPIT	0	0	0	0	0	0
FTPRO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0	0	0	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0.036879	0.356239	0	0	0	0
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0.02156	0	0	0
CSCOR	0.24031	0	4.798528	0	0	0
CSK14	0	0	1.026829	0	0	0
CSUNI	0.65402	0	4.876743	0	0	0
CSWEL	0	0	0.175835	0	0	0
CSHTH	0	0	0.94283	0	0	0
CSOTH	0	0.274847	3.142951	0	0	0
LSTRA	0	0	0.00085	0	0	0
LSCOR	0	0	0.898075	0	0	0
LSK14	0	0	25.39087	0	0	0
LSWEL	0	0	6.190652	0	0	0
LSHTH	0	0	8.350778	0	0	0
LSOTH	0	0	1.445703	19.565406	5.583404	1.585095
ROW	0	0	0	0	0	0

+	LTHHS	LTMSC	FSDEF	FSNON	CSTRA	CSCOR
AGRIC	0	0	0	0.01716	0.004664	0.028197
ENMIN	0	0	0	0.003217	0.001341	0.008106
OTHPR	0	0	0	0.002013	0.000179	0.00108
CONST	0	0	2.121956	0.000001	1.901865	0.06595
FOODS	0	0	0.14671	0.174894	0.032905	0.198952
TOBAC	0	0	0	0	0	0
APPAR	0	0	0.00852	0.033401	0.001458	0.008818
MFRCO	0	0	0.01074	0.032661	0.016945	0.102453
PAPER	0	0	0	0.087221	0.025299	0.152965
CONCH	0	0	0	0.003881	0.00068	0.004113
CHEMS	0	0	0	0.043825	0.007681	0.046441
PETRO	0	0	0.539783	0.051928	0.070992	0.429239

ELECT	0	0	1.060009	0.220949	0.016441	0.099405
AEROS	0	0	5.545673	0.173757	0.001146	0.006931
MOTOR	0	0	0.209384	0.022456	0.003663	0.022149
ENGIN	0	0	4.553183	0.146772	0.001992	0.012047
OTHMA	0	0	2.2107	0.150715	0.02128	0.128665
TRANS	0	0	0	1.420764	0.046033	0.278329
COMMU	0	0	0	0.045128	0.02632	0.159141
UTILI	0	0	0	0.199233	0.046782	0.282856
WHOLE	0	0	0	0.233903	0.074383	0.449745
RETAI	0	0	0	0.000521	0.000148	0.000893
BANKS	0	0	0	0.006939	0.000303	0.00183
INSUR	0	0	0	0.015932	0.007062	0.042702
REALE	0	0	0	0.346643	0.010169	0.061485
OFIRE	0	0	0	0.023335	0	0
BSERV	0	0	3.489192	2.991729	0.125913	0.761309
HEALT	0	0	0	0.111967	0.000028	0.000172
ENTER	0	0	0	0.06045	0.00312	0.018865
OSERV	0	0	0	1.698262	0.040386	0.244187
LABOR	0	0	9.176503	9.72987	1.659353	2.2386
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	20.125738	0	0
HOUS1	0	0	0	14.6369	0	0
HOUS2	0	0	0	5.488838	0	0
HOUS4	0	0	0	2.439483	0	0
HOUS6	0	0	0	1.219742	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	30.114969	0	0
FTSOC	0	0	0.372167	0.39461	0.067298	0.09079
FTPIT	0	0	0	0	0	0
FTPPO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0	0	0.078566	0.083304	0.014207	0.019166
CTPIT	0	0	0	0	0	0

CTRGU	0	0	0	0	0	0
CT SVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LT FMS	0	0	0	0	0	0
LT HHS	0	0	0	0	0	0
LT MSC	0	0	0	0	0	0
FSDEF	0	0	0	29.523087	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	1.305832	0	0
CSCOR	0	0	0	0.248211	0	0
CSK14	0	0	0	0.093797	0	0
CSUNI	0	0	0	4.122075	0	0
CSWEL	0	0	0	1.358355	0	0
CSHTH	0	0	0	0.315302	0	0
CSOTH	0	0	0	0.682389	0	0
LSTRA	0	0	0	0.731784	0.225	0
LSCOR	0	0	0	0.267746	0	0.003688
LSK14	0	0	0	3.499294	0	0
LSWEL	0	0	0	9.576518	0	0
LSHTH	0	0	0	11.656947	0	0
LSOTH	0.018997	32.621032	0	0.460681	0	0
ROW	0	0	0	0	0	0

+	CSK14	CSUNI	CSWEL	CSHTH	CSOTH	LSTRA
AGRIC	0.003792	0.020092	0.005715	0.005192	0.023023	0.005196
ENMIN	0.003016	0.01598	0.001643	0.001493	0.006618	0.001494
OTHPR	0.000465	0.002461	0.000219	0.000199	0.000881	0.000199
CONST	0.235766	0.429803	0.004589	0.024724	0.434767	1.935443
FOODS	0.012889	0.068287	0.040321	0.036633	0.162441	0.03666
TOBAC	0	0	0	0	0	0
APPAR	0.012723	0.06741	0.001787	0.001624	0.007199	0.001625
MFRCO	0.012497	0.066213	0.020764	0.018864	0.083651	0.018878
PAPER	0.010856	0.057517	0.031001	0.028165	0.124893	0.028186
CONCH	0.004383	0.023224	0.000834	0.000757	0.003358	0.000758
CHEMS	0.049498	0.262246	0.009412	0.008551	0.037919	0.008557
PETRO	0.10159	0.538241	0.086993	0.079035	0.350467	0.079093
ELECT	0.014011	0.074233	0.020146	0.018303	0.081163	0.018317
AEROS	0.001255	0.006649	0.001405	0.001276	0.005659	0.001277
MOTOR	0.001677	0.008887	0.004489	0.004078	0.018084	0.004081
ENGIN	0.003454	0.018298	0.002441	0.002218	0.009836	0.00222
OTHMA	0.048503	0.256976	0.026076	0.023691	0.105053	0.023708
TRANS	0.036131	0.191426	0.056408	0.051248	0.227251	0.051286
COMMU	0.023597	0.125022	0.032253	0.029302	0.129936	0.029324
UTILI	0.090766	0.480892	0.057326	0.052082	0.230947	0.05212
WHOLE	0.094068	0.498386	0.091148	0.08281	0.36721	0.082872
RETAI	0.000337	0.001785	0.000181	0.000165	0.000729	0.000165
BANKS	0.068946	0.365286	0.000371	0.000337	0.001494	0.000337
INSUR	0.003714	0.019676	0.008654	0.007863	0.034865	0.007868
REALE	0.066498	0.352318	0.012461	0.011321	0.050202	0.01133
OFIRE	0.030029	0.159097	0	0	0	0
BSERV	0.25033	1.326289	0.154292	0.140178	0.621597	0.140282
HEALT	0.01303	0.069034	0.000035	0.000032	0.00014	0.000032
ENTER	0.00079	0.004185	0.003823	0.003474	0.015403	0.003476
OSERV	0.061343	0.325004	0.049489	0.044961	0.199374	0.044995
LABOR	0.124542	4.033908	0.819701	0.744717	2.733789	3.747762
CAPIT	0	0	0	0	0	0

CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	0	0	0	0
HOUS1	0	0	0	0	0	0
HOUS2	0	0	0	0	0	0
HOUS4	0	0	0	0	0	0
HOUS6	0	0	0	0	0	0
HOUS8	0	0	0	0	0	0
HOUS9	0	0	0	0	0	0
HOUSH	0	0	0	0	0	0
INVES	0	0	0	0	-3.830986	0
FTSOC	0.005051	0.163601	0.033244	0.030203	0.110873	0.151996
FTPIT	0	0	0	0	0	0
FTPRO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0.001066	0.034537	0.007018	0.006376	0.023406	0.032087
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LTFMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LTMSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0.502752	0
CSCOR	0	0	0	0	0.0179	0
CSK14	0	0	0	0	2.19368	0
CSUNI	0	0	0	0	0.414125	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0.001253	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	0	0
LSCOR	0	0	0	0	0	0

LSK14	1.956807	0	0	0	0	0
LSWEL	0	0	0	0	0	0
LSHTH	0	0	0	0	0	0
LSOTH	0	0	0	0	0.141617	0
ROW	0	0	0	0	0	0

+	LSCOR	LSK14	LSWEL	LSHTH	LSOTH	ROW
AGRIC	0.011444	0.028951	0.004814	0.006578	0.029505	24
ENMIN	0.00329	0.023026	0.001384	0.001891	0.008482	0.5
OTHPR	0.000438	0.003546	0.000184	0.000252	0.00113	0.5
CONST	0.22606	0.317861	0.019411	0.0432	3.422369	23
FOODS	0.080745	0.098396	0.033968	0.046413	0.20818	10
TOBAC	0	0	0	0	0	0.01
APPAR	0.003579	0.097133	0.001505	0.002057	0.009227	5
MFRCO	0.041581	0.095409	0.017492	0.023901	0.107205	1
PAPER	0.062081	0.082877	0.026116	0.035684	0.16006	1
CONCH	0.001669	0.033464	0.000702	0.000959	0.004304	0.081353
CHEMS	0.018848	0.377878	0.007929	0.010834	0.048595	0.918647
PETRO	0.174208	0.775568	0.073286	0.100135	0.449149	11
ELECT	0.040344	0.106965	0.016972	0.02319	0.104016	70
AEROS	0.002813	0.009581	0.001183	0.001617	0.007252	11.105502
MOTOR	0.008989	0.012805	0.003782	0.005167	0.023176	2
ENGIN	0.004889	0.026366	0.002057	0.00281	0.012605	9.134784
OTHMA	0.052219	0.370284	0.021968	0.030016	0.134633	4.759714
TRANS	0.11296	0.275832	0.04752	0.06493	0.291239	0.5
COMMU	0.064588	0.180149	0.027171	0.037125	0.166523	5
UTILI	0.114798	0.692931	0.048293	0.065986	0.295976	0.5
WHOLE	0.18253	0.71814	0.076787	0.104919	0.470606	19
RETAI	0.000363	0.002572	0.000153	0.000208	0.000935	0.5
BANKS	0.000743	0.526352	0.000312	0.000427	0.001915	0.5
INSUR	0.017331	0.028352	0.007291	0.009962	0.044682	0.5
REALE	0.024954	0.507665	0.010498	0.014344	0.064337	0.5
OFIRE	0	0.229248	0	0	0	31
BSERV	0.308979	1.91109	0.129982	0.177602	0.796622	105
HEALT	0.00007	0.099474	0.000029	0.00004	0.00018	55
ENTER	0.007657	0.006031	0.003221	0.004401	0.01974	32
OSERV	0.099104	0.468308	0.041691	0.056965	0.255513	0.5
LABOR	8.254698	26.312283	3.472605	4.744821	22.763867	0
CAPIT	0	0	0	0	0	0
CFOOD	0	0	0	0	0	0
CHOME	0	0	0	0	0	0
CFUEL	0	0	0	0	0	0
CFURN	0	0	0	0	0	0
CCLTH	0	0	0	0	0	0
CTRNS	0	0	0	0	0	0
CMEDS	0	0	0	0	0	0
CAMUS	0	0	0	0	0	0
COTHR	0	0	0	0	0	0
HOUS0	0	0	15.856648	5.767757	0	0
HOUS1	0	0	0	5.243415	0	0
HOUS2	0	0	0	2.621708	0	0
HOUS4	0	0	0	1.747805	0	0
HOUS6	0	0	0	1.747805	0	0
HOUS8	0	0	0	0.436951	0	0
HOUS9	0	0	0	0.585515	0	0
HOUSH	0	0	0	0.587262	0	0
INVES	0	0	0	0	9.860733	-26.677182
FTSOC	0.334782	1.067135	0.140837	0.192434	0.923224	0
FTPIT	0	0	0	0	0	0

FTPPO	0	0	0	0	0	0
FTDUT	0	0	0	0	0	0
FTMSC	0	0	0	0	0	0
CTHHS	0	0	0	0	0	0
CTBOZ	0	0	0	0	0	0
CTCIG	0	0	0	0	0	0
CTHOR	0	0	0	0	0	0
CTEST	0	0	0	0	0	0
CTTRL	0	0	0	0	0	0
CTLIC	0	0	0	0	0	0
CTDIE	0	0	0	0	0	0
CTREG	0	0	0	0	0	0
CTMSC	0	0	0	0	0	0
CTINS	0	0	0	0	0	0
CTGAS	0	0	0	0	0	0
CTSAU	0	0	0	0	0	0
CTBAC	0	0	0	0	0	0
CTLAB	0.070674	0.225278	0.029731	0.040624	0.194897	0
CTPIT	0	0	0	0	0	0
CTRGU	0	0	0	0	0	0
CTSVC	0	0	0	0	0	0
CTPAM	0	0	0	0	0	0
CGENF	0	0	0	0	0	0
LTPRP	0	0	0	0	0	0
L TSAU	0	0	0	0	0	0
LT FMS	0	0	0	0	0	0
LTHHS	0	0	0	0	0	0
LT MSC	0	0	0	0	0	0
FSDEF	0	0	0	0	0	0
FSNON	0	0	0	0	0	0
CSTRA	0	0	0	0	0	0
CSCOR	0	0	0	0	0	0
CSK14	0	0	0	0	0	0
CSUNI	0	0	0	0	0	0
CSWEL	0	0	0	0	0	0
CSHTH	0	0	0	0	0	0
CSOTH	0	0	0	0	0	0
LSTRA	0	0	0	0	1.071753	0
LSCOR	0	0	0	0	9.053424	0
LSK14	0	0	0	0	4.830778	0
LSWEL	0	0	0	0	1.66927	0
LSHTH	0	0	0	0	4.17526	0
LSOTH	0	0	0	0	0	0
ROW	0	0	0	0	0.000000;	0

APPENDIX C2: E-CCM4.PRN INPUT FILE

TABLE CCM(I,J) CAPITAL COEFFICIENT MATRIX

	AGRIC	ENMIN	OTHPR	CONST	FOODS	TOBAC	APPAR		
CONST	0.324694	0.676109	0.488780	0.115243	0.265769	0.338983	0.297361		
MFRCO	0.005300	0.019845	0.049140	0.189226	0.022279	0.000000	0.001414		
ELECT	0.001776	0.073939	0.016544	0.075341	0.156365	0.197034	0.133522		
AEROS	0.000000	0.000185	0.000000	0.019284	0.007144	0.000000	0.000000		
ENGIN	0.015760	0.107131	0.201244	0.089778	0.246901	0.175354	0.243246		
MOTOR	0.641380	0.047468	0.102703	0.453405	0.129345	0.165254	0.153314		
OTHMA	0.011089	0.075245	0.141590	0.049598	0.168688	0.123375	0.171143		
+	MFRCO	PAPER	CONCH	CHEMS	PETRO	ELECT	AEROS	MOTOR	
CONST	0.258227	0.195752	0.292727	0.292727	0.256849	0.231693	0.268576	0.127134	
MFRCO	0.007471	0.052354	0.087598	0.087598	0.054996	0.000344	0.000000	0.000824	
ELECT	0.213622	0.185731	0.218786	0.218786	0.169621	0.358302	0.386586	0.146488	
AEROS	0.000000	0.000000	0.061755	0.061755	0.048128	0.000000	0.000000	0.000000	
ENGIN	0.190469	0.301488	0.181362	0.181362	0.227203	0.200291	0.124425	0.406408	
MOTOR	0.196203	0.052554	0.060741	0.060741	0.107172	0.068449	0.132871	0.033206	
OTHMA	0.134009	0.212120	0.097032	0.097032	0.136030	0.140920	0.087542	0.285940	
+	ENGIN	OTHMA	TRANS	COMMU	UTILI	WHOLE	RETAI	BANKS	
CONST	0.257268	0.236515	0.286060	0.257072	0.401250	0.046664	0.205915	0.198383	
MFRCO	0.000000	0.014176	0.001255	0.000000	0.073003	0.011049	0.009193	0.012417	
ELECT	0.319557	0.257046	0.231778	0.606496	0.089017	0.579593	0.373401	0.379405	
AEROS	0.000000	0.021234	0.033083	0.000000	0.044468	0.001034	0.000490	0.027968	
ENGIN	0.197742	0.254241	0.116659	0.024875	0.147495	0.130722	0.156523	0.199537	
MOTOR	0.086299	0.048420	0.265464	0.094055	0.163005	0.139477	0.144595	0.055745	
OTHMA	0.139127	0.168367	0.065702	0.017502	0.081762	0.091461	0.109883	0.126545	
+	INSUR	REALE	OFIRE	BSERV	HEALT	ENTER	OSERV		
CONST	0.302618	0.881776	0.060502	0.056896	0.357373	0.285387	0.150468		
MFRCO	0.000637	0.002459	0.090632	0.132660	0.001258	0.000000	0.000000		
ELECT	0.532869	0.029541	0.338585	0.299452	0.131555	0.449278	0.325790		
AEROS	0.000000	0.017193	0.004439	0.045458	0.129926	0.000000	0.007488		
ENGIN	0.069172	0.042216	0.142530	0.176913	0.210408	0.101291	0.137558		
MOTOR	0.046035	0.005623	0.265228	0.186651	0.085757	0.092778	0.285620		
OTHMA	0.048668	0.021191	0.098083	0.101970	0.083723	0.071266	0.093076		

APPENDIX C3: E-MSC.PRN INPUT FILE

TABLE MISCG(G,H,*) TAX TABLE FIGURES

	TAXBASE	TAXBM	MTR	TAXSD	TAXOD	TAXPI	TAXCVC
LTPRP.HOUS0	0.196966	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS1	0.220547	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS2	0.604412	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS4	1.087304	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS6	1.649146	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS8	2.191750	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUS9	3.408153	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
LTPRP.HOUSH	16.128556	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
CTPIT.HOUS0	0.000000	0.000000	0.000000	1.822902	34.958719	0.431618	1.115330
CTPIT.HOUS1	0.000000	0.000000	0.010000	3.045972	10.965045	0.077754	1.115330
CTPIT.HOUS2	0.102620	10.262000	0.020000	2.991683	10.799716	0.220022	1.115330
CTPIT.HOUS4	0.383820	24.322000	0.040000	2.065449	11.353596	0.477294	1.115330
CTPIT.HOUS6	0.946380	38.386000	0.060000	1.295508	13.127673	0.699792	1.115330
CTPIT.HOUS8	1.840500	53.288000	0.080000	0.791744	15.198575	0.821293	1.115330
CTPIT.HOUS9	2.965140	67.346000	0.093000	0.516953	19.960186	0.882510	1.115330
CTPIT.HOUSH	2.965140	67.346000	0.093000	0.602559	35.457835	0.862383	1.115330
FTPIT.HOUS0	0.000000	0.000000	0.150000	1.822902	32.192717	0.431618	1.161586
FTPIT.HOUS1	0.000000	0.000000	0.150000	3.045972	9.859655	0.077754	1.161586
FTPIT.HOUS2	0.000000	0.000000	0.150000	2.991683	10.029138	0.220022	1.161586
FTPIT.HOUS4	3.181250	21.208333	0.240000	2.065449	10.931954	0.477294	1.161586
FTPIT.HOUS6	6.362500	42.350000	0.280000	1.295508	12.901153	0.699792	1.161586
FTPIT.HOUS8	23.138500	102.300000	0.310000	0.791744	15.117543	0.821293	1.161586
FTPIT.HOUS9	39.770000	155.950000	0.360000	0.516953	20.088401	0.882510	1.161586
FTPIT.HOUSH	83.870000	278.450000	0.396000	0.602559	43.971313	0.862383	1.161586;

TABLE MISC(Z,*) MISCELLANEOUSECTORAL DATA

	JOBS	ETAM	ETAE	SIGMA	R0
AGRIC	0.390033	1.500000	-1.650000	0.900000	0.071700
ENMIN	0.017785	1.500000	-1.650000	0.800000	0.110300
OTHPR	0.006819	1.500000	-1.650000	0.800000	0.110300
CONST	0.617459	1.500000	-1.650000	0.900000	0.291100
FOODS	0.183350	1.500000	-1.650000	0.900000	0.108200
TOBAC	0.000010	1.500000	-1.650000	0.800000	0.204900
APPAR	0.178768	1.500000	-1.650000	0.900000	0.105700
MFRCO	0.295156	1.500000	-1.650000	0.800000	0.123500
PAPER	0.192271	1.500000	-1.650000	0.800000	0.111400
CONCH	0.017028	1.500000	-1.650000	0.800000	0.111400
CHEMS	0.133659	1.500000	-1.650000	0.800000	0.150100
PETRO	0.021983	1.500000	-1.650000	0.800000	0.110300
ELECT	0.357539	1.500000	-1.650000	0.900000	0.128900
AEROS	0.142026	1.500000	-1.650000	0.900000	0.128900
MOTOR	0.035362	1.500000	-1.650000	0.900000	0.252000
ENGIN	0.063712	1.500000	-1.650000	0.900000	0.252000
OTHMA	0.337900	1.500000	-1.650000	0.900000	0.169100
TRANS	0.445444	1.500000	-1.650000	0.900000	0.239300
COMMU	0.169100	1.500000	-1.650000	0.900000	0.098100
UTILI	0.082942	1.500000	-1.650000	0.800000	0.087400
WHOLE	0.803766	0.500000	-0.650000	0.900000	0.200800
RETAI	2.325532	0.500000	-0.650000	0.900000	0.159300
BANKS	0.207722	1.500000	-1.650000	0.900000	0.131400
INSUR	0.131157	1.500000	-1.650000	0.900000	0.131400
REALE	0.194275	1.500000	-1.650000	0.900000	0.131400
OFIRE	0.266548	1.500000	-1.650000	0.900000	0.131400
BSERV	2.031556	1.500000	-1.650000	0.800000	0.225800
HEALT	0.910980	0.500000	-0.650000	0.800000	0.225800
ENTER	0.389745	0.500000	-0.650000	0.800000	0.225800
OSERV	0.969416	0.500000	-0.650000	0.800000	0.225800
FSDEF	0.073289	0.000000	0.000000	0.000000	0.000000
FSNON	0.205400	0.000000	0.000000	0.000000	0.000000
CSTRA	0.018793	0.000000	0.000000	0.000000	0.000000
CSCOR	0.063642	0.000000	0.000000	0.000000	0.000000

CSK14	0.005946	0.000000	0.000000	0.000000	0.000000	0.000000
CSUNI	0.137826	0.000000	0.000000	0.000000	0.000000	0.000000
CSWEL	0.078401	0.000000	0.000000	0.000000	0.000000	0.000000
CSHTH	0.034611	0.000000	0.000000	0.000000	0.000000	0.000000
CSOTH	0.038187	0.000000	0.000000	0.000000	0.000000	0.000000
LSTRA	0.012564	0.000000	0.000000	0.000000	0.000000	0.000000
LSCOR	0.162724	0.000000	0.000000	0.000000	0.000000	0.000000
LSK14	0.840707	0.000000	0.000000	0.000000	0.000000	0.000000
LSWEL	0.091209	0.000000	0.000000	0.000000	0.000000	0.000000
LSHTH	0.073317	0.000000	0.000000	0.000000	0.000000	0.000000
LSOTH	0.290246	0.000000	0.000000	0.000000	0.000000	0.000000;

TABLE MISCH(H,*) MISCELLANEOUHOUSEHOLD DATA

	ETAPIT	ETATP	HHO	HWO	ETARA	NRPG	ETAYD	ETAU
HOUS0	0.000000	-0.050000	3.399801	0.116858	0.000000	1.000000	1.300000	-0.800000
HOUS1	-0.100000	0.000000	6.645019	3.850428	0.200000	1.000000	1.500000	-0.700000
HOUS2	-0.150000	0.000000	4.847234	2.826404	0.300000	1.000000	1.600000	-0.600000
HOUS4	-0.200000	0.000000	3.104775	2.441916	0.400000	1.000000	1.800000	-0.500000
HOUS6	-0.250000	0.000000	2.147786	1.245083	0.500000	1.000000	2.000000	-0.400000
HOUS8	-0.350000	0.000000	1.397786	0.689917	0.700000	1.000000	2.100000	-0.300000
HOUS9	-0.400000	0.000000	1.031727	0.808322	0.800000	1.000000	2.300000	-0.200000
HOUSH	-0.400000	0.000000	0.567208	0.193327	0.800000	1.000000	2.300000	-0.200000;

TABLE TPC(H,G) FRACTION OF NON-WORKING HOUSEHOLDS COLLECTING TRANSFER PAYMENTS

	FTSOC	FSNON	CTLAB	LSWEL	LSHTH
HOUS0	0.400000	0.500000	0.200000	0.350000	1.000000
HOUS1	0.250000	0.400000	0.200000	0.000000	1.000000
HOUS2	0.250000	0.300000	0.200000	0.000000	1.000000
HOUS4	0.200000	0.200000	0.200000	0.000000	1.000000
HOUS6	0.150000	0.100000	0.200000	0.000000	1.000000
HOUS8	0.150000	0.000000	0.200000	0.000000	1.000000
HOUS9	0.150000	0.000000	0.200000	0.000000	1.000000
HOUSH	0.150000	0.000000	0.200000	0.000000	1.000000;

TABLE ATAX(GII,GI) DEDUCTABILIT OF OTHERTAXES

	FTPIT	CTPIT	LTPRP
FTPIT	0.000000	0.000000	0.000000
CTPIT	1.000000	0.000000	0.000000
LTPRP	1.000000	1.000000	0.000000;

TABLE TAUFF(G,F) ASSIGNMENT OF FACTOR TAXES

	LABOR	CAPIT
FTSOC	1.000000	0.000000
FTPPO	0.000000	1.000000
CTBAC	0.000000	1.000000
CTLAB	1.000000	0.000000;

PARAMETER OMEGA(F) RATE AT WHICH FACTOR PAYMENTS APPEAR IN PIT CALCULATIONS/

LABOR 0.857457,
CAPIT 0.702593/

TABLE ITCE(Z,Z1) ELIGIBILITY FOR INVESTMENT TAX CREDIT

	FOODS	TOBAC	APPAR	PAPER	CONCH	CHEMS	PETRO	ELECT	AEROS	MOTOR
ENGIN	OTHMA									
CONST	0.300000	0.300000	0.300000	0.300000	0.300000	0.300000	0.300000	0.300000	0.300000	0.300000
0.300000	0.300000									
MFRCO	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
PAPER	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
ELECT	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
AEROS	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
MOTOR	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									

ENGIN	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
OTHMA	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
WHOLE	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000									
RETAI	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000	0.060000
0.060000	0.060000;									

TABLE LAMBDA(C,C1) OWN AND CROSS PRICE ELASTICITY PARAMENTERS

	CFOOD	CHOME	CFUEL	CFURN	CCLTH	CTRNS	CMEDS	CAMUS	COTHR
CFOOD	0.240000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
CHOME	-0.119000	0.056900	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
CFUEL	-0.084600	0.020100	-0.020400	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
CFURN	0.030000	-0.024000	0.037900	-0.037800	0.000000	0.000000	0.000000	0.000000	0.000000
CCLTH	-0.006800	-0.037700	-0.019700	0.073500	-0.026900	0.000000	0.000000	0.000000	0.000000
CTRNS	0.007100	0.003600	0.053500	-0.032500	-0.028800	-0.044800	0.000000	0.000000	0.000000
CMEDS	-0.080000	0.067200	-0.026800	-0.045900	-0.019000	0.091400	-0.068600	0.000000	0.000000
CAMUS	0.001000	0.020700	0.027800	-0.045400	0.068000	0.061900	0.017500	-0.142900	0.000000
COTHR	0.012200	0.012200	0.012200	0.044100	-0.002700	-0.111500	0.064100	-0.008600	-0.021900;

PARAMETER BETA(C) INCOME ELASTICITY PARAMETER

/CFOOD	-0.004,
CHOME	0.004,
CFUEL	-0.106,
CFURN	0.029,
CCLTH	0.047,
CTRNS	0.004,
CMEDS	0.004,
CAMUS	0.027,
COTHR	-0.004/;

APPENDIX C4: POLLUTE.PRN INPUT FILE

TABLE POLN1(I,PE) POLLUTION EMITTED BY INDUSTRY

	ROG	PM10	TOG	CO	NOX	SOX	PM
aeros	58.31	28.21	73.78	61.98	77.43	78.03	51.68
agric	200.46	485.80	1390.66	466.96	4.14	0.00	960.67
appar	0.84	0.00	0.96	0.00	0.00	0.00	0.00
banks	0.00	0.00	0.00	0.00	0.00	0.00	0.00
bserv	0.33	0.00	0.37	0.00	0.00	0.00	0.00
chems	100.47	0.04	101.31	0.00	0.00	0.00	0.05
commu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
conch	367.12	0.00	379.56	0.00	0.41	0.14	0.00
const	31.35	216.72	31.86	0.00	0.00	0.00	348.98
elect	0.10	0.00	0.16	0.00	0.03	0.00	0.00
engin	0.12	0.00	0.13	0.00	0.00	0.00	0.00
enmin	32.85	0.00	73.54	0.28	2.21	0.00	0.00
enter	0.22	0.00	0.24	0.00	0.00	0.00	0.00
foods	22.36	32.56	26.17	2.37	9.39	1.01	42.76
healt	0.19	0.00	0.20	0.00	0.00	0.00	0.00
insur	0.00	0.00	0.00	0.00	0.00	0.00	0.00
mfrco	359.99	55.99	511.71	14.61	14.46	7.28	95.06
oserv	64.90	0.10	65.70	0.03	0.06	0.00	0.12
othma	19.96	1.90	29.18	0.04	0.09	0.00	2.15
othpr	23.77	43.09	43.41	694.12	3.41	0.01	50.27
paper	8.13	0.08	8.13	0.01	0.03	0.00	0.08
reale	0.02	0.00	0.02	0.00	0.00	0.00	0.00
retai	0.12	0.30	0.16	0.01	0.00	0.00	0.34
trans	1607.02	1251.00	1945.46	13659.63	2429.13	112.06	2262.74
utili	59.40	50.78	1597.37	281.75	528.84	64.08	58.83
whole	2.13	0.14	2.84	0.02	0.02	0.00	0.27;

TABLE POLN2(PSO,PE) POLLUTION EMITTED BY OTHER SOURCES

	ROG	PM10	TOG	CO	NOX	SOX	PM
hh	115.21	151.97	212.34	1642.10	87.76	5.56	164.38
misc	1.96	3.50	2.80	18.67	0.66	0.02	4.24
natr	289.13	82.45	492.30	578.74	8.69	0.00	93.69;

APPENDIX D:

INSTRUCTION FOR MODIFYING INPUT DATA MATRICES

This document outlines the steps taken to convert input files for DRAM to input files for E-DRAM.

SAM Component summary:

DOF's Social Accounting Matrix Excel file contains the following essential sheets

SAM Sheet

The Social Accounting Matrix (SAM or SAM9899) for the 1998-1999 fiscal and modeling year organizes input data for the Dynamic Revenue Analysis Model (DRAM). The SAM shows each payment and purchased received by each sector in the economy. Payments received by each sector are represented in each row. Each column show the expenditures made by that sector. Data in the entries of the SAM come from throughout the Excel spreadsheet.

Notes Sheet

For SAM9899, the Notes sheet was not extensively used. The purpose of the Notes sheet is to highlight assumptions made in the data configuration and aggregation. The major use of this sheet is to show what data and calculations come from where and highlight arbitrary percentage rates used to update data.

IO Sheet

Computation of the Input-Output (IO) matrix uses MAKE and USE matrices. The MAKE matrix show purchases of output used by industries to make commodities to satisfy intermediate and final demand. The USE matrix illustrates the buying of commodities for industry and final uses. Matrix multiplication brings these two matrices together to form the IO matrix. Each row of the IO matrix shows payments received (supply) by that sector; each column shows expenditures made (demand) by the sector.

Note: Data originated from the United States Department of Commerce, Bureau of Economic Analysis (BEA) Input-Output Accounts of the U.S. Economy, 1992 Benchmark, IED (BE-51) Washington, DC. Data released is dated November 14, 1997. The data are provided in 6 digit industry codes. The data's media is 3.5 inch floppy diskettes. These files are currently saved by DOF at I:\Erbkp\DRAM\9899\Data\IO.

STEP BY STEP INSTRUCTIONS

The following are instructions for modifying SAM

Create an Aggregation (Mapping) Template

- 1) Construct an Excel file that maps the BEA data into the desired E-DRAM sectoring scheme, using BEA numbers (6 digits). This Excel file has been named “(BEA codes to E-DRAM sectors.XLS”.

Create Tables to Facilitate the Conversion of BEA’s Table-Format Data to (more Aggregate) Matrix-Format Data

- 2) Create a new Access database file. (All subsequent work will be done in this new Access database file.)
- 3) Import the Excel file created in step 1 above into two separate Access tables, one named “SAM Columns” and the other “SAM Rows”. (Select the primary key option when importing into each table.) In the former (latter) name the E-DRAM sector field “Column (Row) name” and the BEA number field “BEA number”. These tables will provide links between the BEA data and E-DRAM's sectors by aggregating BEA categories into E-DRAM sectors along both the row and column dimensions of data matrices to be constructed from data tables.

Creating the MAKE matrix

- 5) Import the file “SICMAKE.TXT” from the primary BEA data [BEA explains the formatting of this file in the file “SICMAKE.FMT” - data fields are delimited with tabs] into a third Access table (do not select the primary key option). Name field 1 “Industry #”, field 2 “Commodity #”, and field 4 “Make table value”. . Name the table “MAKE”.
- 6) Once this import is completed, create *Access Relationships* that will associate the MAKE *table* cells with MAKE *matrix* cells. From the Tools menu select Relationships. Drag the three tables created thus far (MAKE, SAM Rows, and SAM Columns) into the newly appeared Relationships window. Then (by clicking and dragging) relate:
 - a) the MAKE table's Industry # to the SAM Rows table's BEA number.
 - b) The MAKE table's Commodity # to the SAM Column table's BEA number.
- 7) Create *Access Queries* to pull together the desired data.

Select the Query tab in the database widow, then click the “new” button. In the New Query Box that appears, click “Simple Query” then “OK” From the following Tables, select the following fields:

 - a) MAKE table
 - i) MAKE table value
 - ii) Industry #
 - iii) Commodity #
 - b) SAM Rows table
 - i) BEA number
 - ii) Row name
 - c) SAM Columns table
 - i) BEA number
 - ii) Column name

Choose detail (show every field of every record) and name the query “MAKE query”. The result is a *table* with all the information that goes into a MAKE matrix.

- 8) Again go to the Query Tab in the database window, then click the “new” button. In the New Query Box that appears, click “Crosstab Query” then “OK” From the following queries, select the following fields:
 - a) MAKE query (that was just created using the steps above)
 - i) Row names
 - ii) Column names
 - iii) MAKE value

The result is a MAKE *matrix* aggregated by E-DRAM sector.

Creating the USE matrix

- 9) Import the file “SICUSE.TXT” from the primary BEA data [Data formatting is explained in the file “SICUSE.FMT” -data are delimited with tabs]. Name field 1 “Commodity #” with data type as text, field 2 “Industry #” with data type as text, and field 4 “Use Value”. No primary key is used. Name the table “USE”. (Columns five through 13 represent other costs, such as transportation costs and retail margins. These data points are not used.)

NOTE: Some records in fields one and two have a letter in them (that is why--- we specified above that these data fields be imported as text). These letters must now be taken out and replace with numbers. The letter I in some of the records represents investment, while C represents consumption. Used the search and replace command replacing the letter I with the number 8 and C with the number 9. Then convert these fields back to number format.
- 10) Create Access *Relationships* that will associate the USE *table* cells with USE *matrix* cells. From the Tools menu select Relationships. Drag the three tables created thus far (MAKE, SAM Rows, and SAM Columns) into the newly appeared Relationships window. Then (by clicking and dragging) relate
 - a) the USE table's Industry # to the SAM Columns table's BEA number.
 - b) The USE table's Commodity # to the SAM Rows table's BEA number
- 11) Select the Query tab in the database widow, then click the “new” button. In the New Query Box that appears, click “Simple Query” then “OK” From the following Tables, select the following fields:
 - a) USE table
 - i) USE table value
 - ii) Industry #
 - iii) Commodity #
 - b) SAM Rows table
 - i) BEA number
 - ii) Row names
 - c) SAM Columns table
 - i) BEA number
 - ii) Column names

Choose detail (show every field of every record) and name the query “USE query”. The result is a *table* with all the information that goes into a USE matrix.
- 12) Again go to the Query Tab in the database window, then click the “new” button. In the New Query Box that appears, click “Crosstab Query” then “OK” From the following queries, select the following fields:
 - a) USE query (that was just created using the steps above)
 - i) Row names

- ii) Column names
 - iii) MAKE value
- The result is a USE *matrix* aggregated by E-DRAM sector.

Creating the IO matrix

- 13) Import the MAKE and USE tables from Access to Excel.
- 14) Create a MAKE matrix in share form by dividing the cells in each column by the total of that column. [Each cell (row x, column y) specifies the amount of commodity y produced by industry x.]
- 15) Create a national IO matrix by post-multiplying the MAKE in shares matrix created in step 14) by the commodity-industry block of the USE matrix using Excel's MMULT function..
- 16) Copy the Labor and Capital payments rows from the newly imported Excel USE Table and past it below the newly created IO Table, making sure to line up the columns by industry.
- 17) Divide all cells by 1000 to convert all values from millions to billions of dollars.
- 18) Convert the national IO Table into share-of-labor-payment form by dividing each-cell in the IO Table by the industry-payment-to-labor cell just added to the bottom of its respective column in step 16).. For example, the labor payment now at the bottom of the IO Table column titled AGRIC is the divisor for each cell above it in that column. (Also divide each cell in the newly added Capital payments row by its corresponding Labor payments to get each industry's national payment to capital as share of labor figure which will be used below.)

Insert New IO into Original IO

- 19) Copy the newly created "E-DRAM IO Matrix" worksheet into the SAM9899.XLS file supplied by CA DOF. SAM9899.XLS contains an "I-O worksheet" that contains the I-O matrices and supporting data for the original DRAM (with a slightly different sectoring scheme); copy this to a worksheet titled "I-O working". All subsequent work is done in "I-O working".
- 20) Insert rows and columns as necessary to expand the first two matrices in "I-O working" to accommodate the modified sectoring scheme. [We added a column and row before the DRAM Chemicals sector (CHEM) to make room for the EDRAM Consumer Chemicals sector (CONCH) and another column and row before Other Manufactures (OTHMA) to accommodate an Engines sector (ENGIN) which incorporates combustion engine manufactures from the Aerospace (AEROS) and OTHMA sectors.]
- 21) Copy and paste the national E-DRAM IO Matrix from the "E-DRAM IO Matrix" worksheet into the first (national) I-O matrix in the "I-O working" sheet. Copy and paste the national E-DRAM IO Matrix in share-of-labor form created in step 18) into the second matrix in "I-O working" which is of the same share-of-labor form.
- 22) Scale the national IO matrix to suit California.

This is already done by DOF for its DRAM sectoralization on the "I-O" worksheet of SAM9899.XLS as spelled out below. We then walk through these adjustments for the modified sectoring scheme in the "I-O working" worksheet.

- a) Labor
 - i) Replace national wage and salary data in the IO matrix with CA specific wage and salary estimates for the model year. California wages and salaries come from the Employment Development Department's ES 202 data that is quarterly

and broken down by two-digit SIC code. This ES 202 data is aggregated using Excel's *sumif* function in conjunction with a SIC to DRAM sector mapping. This historical wage and salary data is then updated to the model year using the Department of Finance's (DOF) Budget Forecast. This is done by multiplying the ES 202 wage and salary data (aggregated by DRAM sector) by the forecasted wage and salary growth rate of the appropriate forecasting model sector (Farming, Mining, Construction, Manufacturing, TCU, Trade, FIRE, or Services).

- DOF's original salary and wage work for DRAM is modified for E-DRAM as follows. Multiply each ES 202 data point for the DRAM sectoralization by the ratio of relevant E-DRAM sector labor payments to DRAM sector labor payments. For example, to get E-DRAM payments to labor in the CHEM sector, we multiplied the ES 202 wage and salary data points by the fraction (labor payments to DRAM CHEM sector found in the original DRAM I-O table/labor payments to E-DRAM CHEM sector found in the E-DRAM I-O table). E-DRAM payments to labor in the CONCH sector were derived by multiplying the ES 202 wage and salary data points by one minus the fraction cited directly above. Similar steps were used to recalculate payments to labor in the E-DRAM AEROS, MOTOR, and OTHMA sectors.
 - ii) Multiply each cell in the national share-of-labor payments IO Table created in step 18) (including the Capital payments as share of labor payments cell) by the CA industry specific labor payment estimates derived in step 22)a). Everything has now been converted back into straight dollars and is at CA scale; results are contained in the third matrix on the "I-O working" worksheet.
- b) Capital
- i) Derive CA Proprietor Income for each E-DRAM sector.
 - (1) Take the capital payment to each DRAM sector given in current incarnation of the IO [up through step 22)a)ii)] and divide it by the sum of capital payments to all DRAM sectors included in the same CA proprietary income aggregate reporting category (Farming, Mining, Construction, Manufacturing, TCU, Trade, FIRE, Services).
 - (2) Multiply this share by the total proprietary income reported for the appropriate aggregate category.
 - ii) Derive CA Property Income for each E-DRAM sector.
 - (1) Divide the E-DRAM sector-specific proprietor income derived immediately above by total proprietor income.
 - (2) Multiply this ration (share) by total CA property income.
 - iii) Sum proprietary and property income by sector to get E-DRAM sector-specific capital payments.
 - iv) Adjust sector specific capital estimates so that sum of these estimates matches the total forecasted capital income. Do this by multiplying each estimated E-DRAM sector-specific capital payment by the ratio of the sum of these estimates to total forecasted capital payments.
- All this can be done for E-DRAM by inserting columns where necessary and using Excel's fill feature to carry the appropriate calculations over to the new sectors. (Old sectors that have been modified are automatically updated through cell referencing)
- c) Jobs

Monthly jobs by DRAM sector data is also included in the “I-O” and thus “I-O working” worksheets. This monthly data is left alone for E-DRAM, but the annual calculations and estimates of jobs by sector listed at the bottom of the sheet are modified for E-DRAM using the ratios described in the bullet point under step 22)a)ii).

Insert New IO into Original SAM

- 23) Copy the “SAM” worksheet to one titled “SAM-working”
- 24) Insert rows and columns in the appropriate place to facilitate new sectors
- 25) Copy and paste the requirements matrix from “I-O Working” over the newly expanded requirements table portion of the “SAM-working” sheet.
- 26) Modify parent sector rows and fill in along new sector rows in the rest of SAM (outside requirements matrix portion) as follows
 - a) For the nine aggregate consumer goods columns
 - i) For parent sectors, multiply the current (old) values by an average of the ratio of spending on new parent sector to spending on the old parent sector by sectors included in/contributing to the aggregate consumer goods
 - ii) For new sectors, multiply the current (old) values by one minus the ratio described immediately above
 - b) For the investment column
 - i) For parent sectors, multiply the current (old) values by the ratio of capital spending in new parent sector to spending in the old parent sector
 - ii) For new sectors, multiply the current (old) values by one minus the ratio described immediately above
 - c) For government spending columns
 - i) For parent sectors, multiply the current (old) values by the ratio of the sum of spending by all industry sectors on the new parent sector to spending by all industry sectors on the old parent sectors.
 - ii) For new sectors, sum the current (old) values of parent sectors weighted by one minus the ratio used for the corresponding parent sector as described immediately above.
- 27) Modify parent sector columns and fill in along new sector columns in the rest of SAM (outside requirements matrix portion) as follows.
 - a) For payments to government rows
 - i) For parent sectors, multiply the current (old values) by the ratio of the sum of payments to all industry sectors by the new parent sector to payments to all industrial sectors by the old parent sectors.
 - ii) For new sectors, sum the current (old) values of parent sectors weighted by one minus the ratio used for the corresponding parent sector as described immediately above.

Reconfigure SAM for export to limited width text file that can be converted to .prn file and be read into GAMS.

OTHER INPUT MATRICES MUST ALSO BE MODIFIED

CCM

The following modifications must be made to the CCM.prn file

- 1) Add a column for each new sector (CONCH and ENGIN)
 - a) If the new sector is a sub-sector of a single original sector, copy the coefficients from this “parent” sector and paste them in as the coefficients for the new sector as well.
 - b) If the new sector is has more than one “parent” sector in the original model, create new capital coefficients for this new sector as weighted averages of the capital coefficients of the parent sectors. [Weight each parent coefficient by the share of revenue in the new sector which came from the parent sector. More specifically, weight each parent capital coefficient by the product of one minus the ratio described in step 26)c)i) and the row total of expenditures by each industry on the parent industry]
- 2) If one of the new sectors is a sub-sector of one of the original capital input sectors. (CONST, MFRCO, ELECT, AEROS, MOTOR, OTHMA) add that new sector as new row in the CCM.

MSC

The following modifications must be made to the MSC.prn file

- 1) To the MSC(Z,*) table add a row for each new sector – fill in with appropriately weighted values from parent sector(s)
- 2) To the ITCE(Z, Z1) table add a column for each new sector– fill in with appropriately weighted values from parent sector(s)

APPENDIX E:

BEA CODE TO E-DRAM SECTOR MAPPING

<u>Row name</u>	<u>Row #</u>	<u>BEA #</u>	<u>BEA Descriptor</u>
01AGRIC	1	10100	Dairy farm products
01AGRIC	1	10200	Poultry and eggs
01AGRIC	1	10301	Meat animals
01AGRIC	1	10302	Miscellaneous livestock
01AGRIC	1	20100	Cotton
01AGRIC	1	20201	Food grains
01AGRIC	1	20202	Feed grains
01AGRIC	1	20203	Grass seeds
01AGRIC	1	20300	Tobacco
01AGRIC	1	20401	Fruits
01AGRIC	1	20402	Tree nuts
01AGRIC	1	20501	Vegetables
01AGRIC	1	20502	Sugar crops
01AGRIC	1	20503	Miscellaneous crops
01AGRIC	1	20600	Oil bearing crops
01AGRIC	1	20701	Forest products
01AGRIC	1	20702	Greenhouse and nursery products
02ENMIN	2	70000	Coal
02ENMIN	2	80001	Crude petroleum and natural gas
03OTHPR	3	30001	Forestry products
03OTHPR	3	30002	Commercial fishing
03OTHPR	3	50001	Iron and ferroalloy ores, and miscellaneous metal ores, n.e.c.
03OTHPR	3	60100	Copper ore
03OTHPR	3	60200	Nonferrous metal ores, except copper
03OTHPR	3	90001	Dimension, crushed and broken stone
03OTHPR	3	90002	Sand and gravel
03OTHPR	3	90003	Clay, ceramic, and refractory minerals
03OTHPR	3	90004	Nonmetallic mineral services and miscellaneous
03OTHPR	3	100000	Chemical and fertilizer minerals
04CONST	4	110101	New residential 1 unit structures, nonfarm
04CONST	4	110102	New residential 2-4 unit structures, nonfarm
04CONST	4	110105	New residential additions and alterations, nonfarm
04CONST	4	110108	New residential garden and high-rise apartments construction
04CONST	4	110400	New highways, bridges, and other horizontal construction
04CONST	4	110501	New farm residential construction
04CONST	4	110601	Petroleum and natural gas well drilling
04CONST	4	110602	Petroleum, natural gas, and solid mineral exploration
04CONST	4	110603	Access structures for solid mineral development
04CONST	4	110800	New office, industrial and commercial buildings construction
04CONST	4	110900	Other new construction
04CONST	4	120101	Maintenance and repair of farm and nonfarm residential structures
04CONST	4	120214	Maintenance and repair of highways & streets
04CONST	4	120215	Maintenance and repair of petroleum and natural gas wells
04CONST	4	120300	Other repair and maintenance construction
05FOODS	5	140101	Meat packing plants
05FOODS	5	140102	Sausages and other prepared meat products
05FOODS	5	140105	Poultry slaughtering and processing
05FOODS	5	140200	Creamery butter
05FOODS	5	140300	Natural, processed, and imitation cheese
05FOODS	5	140400	Dry, condensed, and evaporated dairy products
05FOODS	5	140500	Ice cream and frozen desserts
05FOODS	5	140600	Fluid milk
05FOODS	5	140700	Canned and cured fish and seafoods
05FOODS	5	140800	Canned specialties
05FOODS	5	140900	Canned fruits, vegetables, preserves, jams, and jellies

05FOODS	5	141000	Dehydrated fruits, vegetables, and soups
05FOODS	5	141100	Pickles, sauces, and salad dressings
05FOODS	5	141200	Prepared fresh or frozen fish and seafoods
05FOODS	5	141301	Frozen fruits, fruit juices, and vegetables
05FOODS	5	141302	Frozen specialties, n.e.c.
05FOODS	5	141401	Flour and other grain mill products
05FOODS	5	141402	Cereal breakfast foods
05FOODS	5	141403	Prepared flour mixes and doughs
05FOODS	5	141501	Dog and cat food
05FOODS	5	141502	Prepared feeds, n.e.c.
05FOODS	5	141600	Rice milling
05FOODS	5	141700	Wet corn milling
05FOODS	5	141801	Bread, cake, and related products
05FOODS	5	141802	Cookies and crackers
05FOODS	5	141803	Frozen bakery products, except bread
05FOODS	5	141900	Sugar
05FOODS	5	142002	Chocolate and cocoa products
05FOODS	5	142004	Salted and roasted nuts and seeds
05FOODS	5	142005	Candy and other confectionery products
05FOODS	5	142101	Malt beverages
05FOODS	5	142102	Malt
05FOODS	5	142103	Wines, brandy, and brandy spirits
05FOODS	5	142104	Distilled and blended liquors
05FOODS	5	142200	Bottled and canned soft drinks
05FOODS	5	142300	Flavoring extracts and flavoring syrups, n.e.c.
05FOODS	5	142400	Cottonseed oil mills
05FOODS	5	142500	Soybean oil mills
05FOODS	5	142600	Vegetable oil mills, n.e.c.
05FOODS	5	142700	Animal and marine fats and oils
05FOODS	5	142800	Roasted coffee
05FOODS	5	142900	Edible fats and oils, n.e.c.
05FOODS	5	143000	Manufactured ice
05FOODS	5	143100	Macaroni, spaghetti, vermicelli, and noodles
05FOODS	5	143201	Potato chips and similar snacks
05FOODS	5	143202	Food preparations, n.e.c.
06TOBAC	6	150101	Cigarettes
06TOBAC	6	150102	Cigars
06TOBAC	6	150103	Chewing and smoking tobacco and snuff
06TOBAC	6	150200	Tobacco stemming and redrying
07APPAR	7	160100	Broadwoven fabric mills and fabric finishing plants
07APPAR	7	160200	Narrow fabric mills
07APPAR	7	160300	Yarn mills and finishing of textiles, n.e.c.
07APPAR	7	160400	Thread mills
07APPAR	7	170100	Carpets and rugs
07APPAR	7	170600	Coated fabrics, not rubberized
07APPAR	7	170700	Tire cord and fabrics
07APPAR	7	170900	Cordage and twine
07APPAR	7	171001	Nonwoven fabrics
07APPAR	7	171100	Textile goods, n.e.c.
07APPAR	7	180101	Womens hosiery, except socks
07APPAR	7	180102	Hosiery, n.e.c.
07APPAR	7	180201	Knit outerwear mills
07APPAR	7	180202	Knit underwear and nightwear mills
07APPAR	7	180203	Knitting mills, n.e.c.
07APPAR	7	180300	Knit fabric mills
07APPAR	7	180400	Apparel made from purchased materials
07APPAR	7	190100	Curtains and draperies
07APPAR	7	190200	Housefurnishings, n.e.c.
07APPAR	7	190301	Textile bags
07APPAR	7	190302	Canvas and related products
07APPAR	7	190303	Pleating and stitching
07APPAR	7	190304	Automotive and apparel trimmings
07APPAR	7	190305	Schiffli machine embroideries

07APPAR	7	190306	Fabricated textile products, n.e.c.
08MFRCO	8	130200	Ammunition, except for small arms, n.e.c.
08MFRCO	8	130500	Small arms
08MFRCO	8	130600	Small arms ammunition
08MFRCO	8	130700	Ordnance and accessories, n.e.c.
08MFRCO	8	200100	Logging
08MFRCO	8	200200	Sawmills and planing mills, general
08MFRCO	8	200300	Hardwood dimension and flooring mills
08MFRCO	8	200400	Special product sawmills, n.e.c.
08MFRCO	8	200501	Millwork
08MFRCO	8	200502	Wood kitchen cabinets
08MFRCO	8	200600	Veneer and plywood
08MFRCO	8	200701	Structural wood members, n.e.c.
08MFRCO	8	200702	Prefabricated wood buildings and components
08MFRCO	8	200703	Mobile homes
08MFRCO	8	200800	Wood preserving
08MFRCO	8	200901	Wood pallets and skids
08MFRCO	8	200903	Wood products, n.e.c.
08MFRCO	8	200904	Reconstituted wood products
08MFRCO	8	210000	Wood containers, n.e.c.
08MFRCO	8	220101	Wood household furniture, except upholstered
08MFRCO	8	220102	Household furniture, n.e.c.
08MFRCO	8	220103	Wood television and radio cabinets
08MFRCO	8	220200	Upholstered household furniture
08MFRCO	8	220300	Metal household furniture
08MFRCO	8	220400	Mattresses and bedsprings
08MFRCO	8	230100	Wood office furniture
08MFRCO	8	230200	Office furniture, except wood
08MFRCO	8	230300	Public building and related furniture
08MFRCO	8	230400	Wood partitions and fixtures
08MFRCO	8	230500	Partitions and fixtures, except wood
08MFRCO	8	230600	Drapery hardware and window blinds and shades
08MFRCO	8	230700	Furniture and fixtures, n.e.c.
08MFRCO	8	350100	Glass and glass products, except containers
08MFRCO	8	350200	Glass containers
08MFRCO	8	360100	Cement, hydraulic
08MFRCO	8	360200	Brick and structural clay tile
08MFRCO	8	360300	Ceramic wall and floor tile
08MFRCO	8	360400	Clay refractories
08MFRCO	8	360500	Structural clay products, n.e.c.
08MFRCO	8	360600	Vitreous china plumbing fixtures
08MFRCO	8	360701	Vitreous china table and kitchenware
08MFRCO	8	360702	Fine earthenware table and kitchenware
08MFRCO	8	360800	Porcelain electrical supplies
08MFRCO	8	360900	Pottery products, n.e.c.
08MFRCO	8	361000	Concrete block and brick
08MFRCO	8	361100	Concrete products, except block and brick
08MFRCO	8	361200	Ready-mixed concrete
08MFRCO	8	361300	Lime
08MFRCO	8	361400	Gypsum products
08MFRCO	8	361500	Cut stone and stone products
08MFRCO	8	361600	Abrasive products
08MFRCO	8	361700	Asbestos products
08MFRCO	8	361900	Minerals, ground or treated
08MFRCO	8	362000	Mineral wool
08MFRCO	8	362100	Nonclay refractories
08MFRCO	8	362200	Nonmetallic mineral products, n.e.c.
08MFRCO	8	390200	Metal shipping barrels, drums, kegs, and pails
08MFRCO	8	400100	Enameled iron and metal sanitary ware
08MFRCO	8	400200	Plumbing fixture fittings and trim
08MFRCO	8	400300	Heating equipment, except electric and warm air furnaces
08MFRCO	8	400400	Fabricated structural metal
08MFRCO	8	400500	Metal doors, sash, frames, molding, and trim

08MFRCO	8	400600	Fabricated plate work (boiler shops)
08MFRCO	8	400700	Sheet metal work
08MFRCO	8	400800	Architectural and ornamental metal work
08MFRCO	8	400901	Prefabricated metal buildings and components
08MFRCO	8	400902	Miscellaneous structural metal work
08MFRCO	8	410100	Screw machine products, bolts, etc.
08MFRCO	8	410201	Automotive stampings
08MFRCO	8	410202	Crowns and closures
08MFRCO	8	410203	Metal stampings, n.e.c.
08MFRCO	8	420100	Cutlery
08MFRCO	8	420201	Hand and edge tools, except machine tools and handsaws
08MFRCO	8	420202	Saw blades and handsaws
08MFRCO	8	420300	Hardware, n.e.c.
08MFRCO	8	420401	Plating and polishing
08MFRCO	8	420402	Coating, engraving, and allied services, n.e.c.
08MFRCO	8	420500	Miscellaneous fabricated wire products
08MFRCO	8	420700	Steel springs, except wire
08MFRCO	8	420800	Pipe, valves, and pipe fittings
08MFRCO	8	421000	Metal foil and leaf
08MFRCO	8	421100	Fabricated metal products, n.e.c.
09PAPER	9	240100	Pulp mills
09PAPER	9	240400	Envelopes
09PAPER	9	240500	Sanitary paper products
09PAPER	9	240701	Paper coating and glazing
09PAPER	9	240702	Bags, except textile
09PAPER	9	240703	Die-cut paper and paperboard and cardboard
09PAPER	9	240705	Stationery, tablets, and related products
09PAPER	9	240706	Converted paper products, n.e.c.
09PAPER	9	240800	Paper and paperboard mills
09PAPER	9	250000	Paperboard containers and boxes
09PAPER	9	260100	Newspapers
09PAPER	9	260200	Periodicals
09PAPER	9	260301	Book publishing
09PAPER	9	260302	Book printing
09PAPER	9	260400	Miscellaneous publishing
09PAPER	9	260501	Commercial printing
09PAPER	9	260601	Manifold business forms
09PAPER	9	260602	Blankbooks, looseleaf binders and devices
09PAPER	9	260700	Greeting cards
09PAPER	9	260802	Bookbinding and related work
09PAPER	9	260803	Typesetting
09PAPER	9	260806	Platemaking and related services
10CHEMS	10	270100	Industrial inorganic and organic chemicals
10CHEMS	10	270201	Nitrogenous and phosphatic fertilizers
10CHEMS	10	270202	Fertilizers, mixing only
10CHEMS	10	270300	Pesticides and agricultural chemicals, n.e.c.
10CHEMS	10	270401	Gum and wood chemicals
10CHEMS	10	270402	Adhesives and sealants
10CHEMS	10	270403	Explosives
10CHEMS	10	270404	Printing ink
10CHEMS	10	270405	Carbon black
10CHEMS	10	270406	Chemicals and chemical preparations, n.e.c.
10CHEMS	10	280100	Plastics materials and resins
10CHEMS	10	280200	Synthetic rubber
10CHEMS	10	280300	Cellulosic manmade fibers
10CHEMS	10	280400	Manmade organic fibers, except cellulosic
10CHEMS	10	290100	Drugs
10.1CONCH	10	290201	Soap and other detergents
10.1CONCH	10	290202	Polishes and sanitation goods
10.1CONCH	10	290203	Surface active agents
10.1CONCH	10	290300	Toilet preparations
10.1CONCH	10	300000	Paints and allied products
10CHEMS	10	320100	Tires and inner tubes

10CHEMS	10	320200	Rubber and plastics footwear
10CHEMS	10	320300	Fabricated rubber products, n.e.c.
10CHEMS	10	320400	Miscellaneous plastics products, n.e.c.
10CHEMS	10	320500	Rubber and plastics hose and belting
10CHEMS	10	320600	Gaskets, packing, and sealing devices
11PETRO	11	310101	Petroleum refining
11PETRO	11	310102	Lubricating oils and greases
11PETRO	11	310103	Products of petroleum and coal, n.e.c.
11PETRO	11	310200	Asphalt paving mixtures and blocks
11PETRO	11	310300	Asphalt felts and coatings
12ELECT	12	510102	Calculating and accounting machines
12ELECT	12	510103	Electronic computers
12ELECT	12	510104	Computer peripheral equipment
12ELECT	12	510400	Office machines, n.e.c.
12ELECT	12	560300	Telephone and telegraph apparatus
12ELECT	12	560500	Communication equipment
12ELECT	12	570100	Electron tubes
12ELECT	12	570200	Semiconductors and related devices
12ELECT	12	570300	Other electronic components
12ELECT	12	620102	Laboratory apparatus and furniture
12ELECT	12	620200	Mechanical measuring devices
12ELECT	12	620300	Environmental controls
13AEROS	13	130100	Guided missiles and space vehicles
13AEROS	13	600100	Aircraft
15.1ENGIN	13	600200	Aircraft and missile engines and engine parts
13AEROS	13	600400	Aircraft and missile equipment, n.e.c.
13AEROS	13	620101	Search and navigation equipment
14MOTOR	14	590100	Truck and bus bodies
14MOTOR	14	590200	Truck trailers
14MOTOR	14	590301	Motor vehicles and passenger car bodies
14MOTOR	14	590302	Motor vehicle parts and accessories
14MOTOR	14	610603	Motor homes
15OTHMA	15	130300	Tanks and tank components
15OTHMA	15	330001	Leather tanning and finishing
15OTHMA	15	340100	Boot and shoe cut stock and findings
15OTHMA	15	340201	Shoes, except rubber
15OTHMA	15	340202	House slippers
15OTHMA	15	340301	Leather gloves and mittens
15OTHMA	15	340302	Luggage
15OTHMA	15	340303	Womens handbags and purses
15OTHMA	15	340304	Personal leather goods, n.e.c.
15OTHMA	15	340305	Leather goods, n.e.c.
15OTHMA	15	370101	Blast furnaces and steel mills
15OTHMA	15	370102	Electrometallurgical products, except steel
15OTHMA	15	370103	Steel wiredrawing and steel nails and spikes
15OTHMA	15	370104	Cold-rolled steel sheet, strip, and bars
15OTHMA	15	370105	Steel pipe and tubes
15OTHMA	15	370200	Iron and steel foundries
15OTHMA	15	370300	Iron and steel forgings
15OTHMA	15	370401	Metal heat treating
15OTHMA	15	370402	Primary metal products, n.e.c.
15OTHMA	15	380100	Primary smelting and refining of copper
15OTHMA	15	380400	Primary aluminum
15OTHMA	15	380501	Primary nonferrous metals, n.e.c.
15OTHMA	15	380600	Secondary nonferrous metals
15OTHMA	15	380700	Rolling, drawing, and extruding of copper
15OTHMA	15	380800	Aluminum rolling and drawing
15OTHMA	15	380900	Nonferrous rolling and drawing, n.e.c.
15OTHMA	15	381000	Nonferrous wiredrawing and insulating
15OTHMA	15	381100	Aluminum castings
15OTHMA	15	381200	Copper foundries
15OTHMA	15	381300	Nonferrous castings, n.e.c.
15OTHMA	15	381400	Nonferrous forgings

150THMA	15	390100	Metal cans
15.1ENGIN	15	430100	Turbines and turbine generator sets
15.1ENGIN	15	430200	Internal combustion engines, n.e.c.
15.1ENGIN	15	440001	Farm machinery and equipment
15.1ENGIN	15	440002	Lawn and garden equipment
15.1ENGIN	15	450100	Construction machinery and equipment
15.1ENGIN	15	450200	Mining machinery, except oil field
15.1ENGIN	15	450300	Oil and gas field machinery and equipment
15.1ENGIN	15	460100	Elevators and moving stairways
15.1ENGIN	15	460200	Conveyors and conveying equipment
15.1ENGIN	15	460300	Hoists, cranes, and monorails
15.1ENGIN	15	460400	Industrial trucks and tractors
150THMA	15	470100	Machine tools, metal cutting types
150THMA	15	470200	Machine tools, metal forming types
150THMA	15	470300	Special dies and tools and machine tool accessories
150THMA	15	470401	Power-driven handtools
150THMA	15	470402	Rolling mill machinery and equipment
150THMA	15	470404	Electric and gas welding and soldering equipment
150THMA	15	470405	Industrial patterns
150THMA	15	470500	Metalworking machinery, n.e.c.
150THMA	15	480100	Food products machinery
150THMA	15	480200	Textile machinery
150THMA	15	480300	Woodworking machinery
150THMA	15	480400	Paper industries machinery
150THMA	15	480500	Printing trades machinery and equipment
150THMA	15	480600	Special industry machinery, n.e.c.
150THMA	15	490100	Pumps and compressors
150THMA	15	490200	Ball and roller bearings
150THMA	15	490300	Blowers and fans
150THMA	15	490500	Mechanical power transmission equipment
150THMA	15	490600	Industrial process furnaces and ovens
150THMA	15	490700	General industrial machinery and equipment, n.e.c.
150THMA	15	490800	Packaging machinery
150THMA	15	500100	Carburetors, pistons, rings, and valves
150THMA	15	500200	Fluid power equipment
150THMA	15	500300	Scales and balances, except laboratory
150THMA	15	500400	Industrial and commercial machinery and equipment, n.e.c.
150THMA	15	520100	Automatic vending machines
150THMA	15	520200	Commercial laundry equipment
150THMA	15	520300	Refrigeration and heating equipment
150THMA	15	520400	Measuring and dispensing pumps
150THMA	15	520500	Service industry machinery, n.e.c.
150THMA	15	530200	Power, distribution, and specialty transformers
150THMA	15	530300	Switchgear and switchboard apparatus
150THMA	15	530400	Motors and generators
150THMA	15	530500	Relays and industrial controls
150THMA	15	530700	Carbon and graphite products
150THMA	15	530800	Electrical industrial apparatus, n.e.c.
150THMA	15	540100	Household cooking equipment
150THMA	15	540200	Household refrigerators and freezers
150THMA	15	540300	Household laundry equipment
150THMA	15	540400	Electric housewares and fans
150THMA	15	540500	Household vacuum cleaners
150THMA	15	540700	Household appliances, n.e.c.
150THMA	15	550100	Electric lamp bulbs and tubes
150THMA	15	550200	Lighting fixtures and equipment
150THMA	15	550300	Wiring devices
150THMA	15	560100	Household audio and video equipment
150THMA	15	560200	Prerecorded records and tapes
150THMA	15	580100	Storage batteries
150THMA	15	580200	Primary batteries, dry and wet
150THMA	15	580400	Electrical equipment for internal combustion engines
150THMA	15	580600	Magnetic and optical recording media

150THMA	15	580700	Electrical machinery, equipment, and supplies, n.e.c.
150THMA	15	610100	Ship building and repairing
150THMA	15	610200	Boat building and repairing
150THMA	15	610300	Railroad equipment
15.1ENGIN	15	610500	Motorcycles, bicycles, and parts
150THMA	15	610601	Travel trailers and campers
15.1ENGIN	15	610700	Transportation equipment, n.e.c.
150THMA	15	620400	Surgical and medical instruments and apparatus
150THMA	15	620500	Surgical appliances and supplies
150THMA	15	620600	Dental equipment and supplies
150THMA	15	620700	Watches, clocks, watchcases, and parts
150THMA	15	620800	X-ray apparatus and tubes
150THMA	15	620900	Electromedical and electrotherapeutic apparatus
150THMA	15	621000	Laboratory and optical instruments
150THMA	15	621100	Instruments to measure electricity
150THMA	15	630200	Ophthalmic goods
150THMA	15	630300	Photographic equipment and supplies
150THMA	15	640101	Jewelry, precious metal
150THMA	15	640102	Jewelers materials and lapidary work
150THMA	15	640104	Silverware and plated ware
150THMA	15	640105	Costume jewelry
150THMA	15	640200	Musical instruments
150THMA	15	640301	Games, toys, and childrens vehicles
150THMA	15	640302	Dolls and stuffed toys
150THMA	15	640400	Sporting and athletic goods, n.e.c.
150THMA	15	640501	Pens, mechanical pencils, and parts
150THMA	15	640502	Lead pencils and art goods
150THMA	15	640503	Marking devices
150THMA	15	640504	Carbon paper and inked ribbons
150THMA	15	640700	Fasteners, buttons, needles, and pins
150THMA	15	640800	Brooms and brushes
150THMA	15	640900	Hard surface floor coverings, n.e.c.
150THMA	15	641000	Burial caskets
150THMA	15	641100	Signs and advertising specialties
150THMA	15	641200	Manufacturing industries, n.e.c.
16TRANS	16	650100	Railroads and related services
16TRANS	16	650200	Local and suburban transit and interurban highway passenger transportation
16TRANS	16	650301	Trucking and courier services, except air
16TRANS	16	650302	Warehousing and storage
16TRANS	16	650400	Water transportation
16TRANS	16	650500	Air transportation
16TRANS	16	650600	Pipelines, except natural gas
16TRANS	16	650701	Freight forwarders and other transportation services
16TRANS	16	650702	Arrangement of passenger transportation
17COMMU	17	660100	Telephone, telegraph communications, and communications services n.e.c.
17COMMU	17	660200	Cable and other pay television services
17COMMU	17	670000	Radio and TV broadcasting
18UTILI	18	680100	Electric services (utilities)
18UTILI	18	680201	Natural gas transportation
18UTILI	18	680202	Natural gas distribution
18UTILI	18	680301	Water supply and sewerage systems
18UTILI	18	680302	Sanitary services, steam supply, and irrigation systems
19WHOLE	19	690100	Wholesale trade
20RETAI	20	690200	Retail trade, except eating and drinking
20RETAI	20	740000	Eating and drinking places
21BANKS	21	700100	Banking
22INSUR	22	700400	Insurance carriers
23REALE	23	710201	Real estate agents, managers, operators, and lessors
24OFIRE	24	700200	Credit agencies other than banks
24OFIRE	24	700300	Security and commodity brokers
24OFIRE	24	700500	Insurance agents, brokers, and services
24OFIRE	24	710100	Owner-occupied dwellings
24OFIRE	24	710202	Royalties

25BSERV	25	40001	Agricultural, forestry, and fishery services
25BSERV	25	40002	Landscape and horticultural services
25BSERV	25	730102	Services to dwellings and other buildings
25BSERV	25	730103	Personnel supply services
25BSERV	25	730104	Computer and data processing services
25BSERV	25	730106	Detective and protective services
25BSERV	25	730107	Miscellaneous equipment rental and leasing
25BSERV	25	730108	Photofinishing labs and commercial photography
25BSERV	25	730109	Other business services
25BSERV	25	730111	Management and public relations services
25BSERV	25	730112	Research, development, and testing services, except noncommercial
25BSERV	25	730200	Advertising
25BSERV	25	730301	Legal services
25BSERV	25	730302	Engineering, architectural, and surveying services
25BSERV	25	730303	Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c.
26HEALT	26	770100	Doctors and dentists
26HEALT	26	770200	Hospitals
26HEALT	26	770301	Nursing and personal care facilities
26HEALT	26	770303	Other medical and health services
26HEALT	26	770304	Veterinary services
26HEALT	26	770305	Other medical and health services
27ENTER	27	760101	Motion picture services and theaters
27ENTER	27	760102	Video tape rental
27ENTER	27	760201	Theatrical producers (except motion picture), bands, orchestras and entertainers
27ENTER	27	760202	Bowling centers
27ENTER	27	760203	Professional sports clubs and promoters
27ENTER	27	760204	Racing, including track operation
27ENTER	27	760205	Physical fitness facilities and membership sports and recreation clubs
27ENTER	27	760206	Other amusement and recreation services
28OSERV	28	720101	Hotels
28OSERV	28	720102	Other lodging places
28OSERV	28	720201	Laundry, cleaning, garment services, and shoe repair
28OSERV	28	720202	Funeral service and crematories
28OSERV	28	720203	Portrait photographic studios, and other miscellaneous personal services
28OSERV	28	720204	Electrical repair shops
28OSERV	28	720205	Watch, clock, jewelry, and furniture repair
28OSERV	28	720300	Beauty and barber shops
28OSERV	28	730101	Miscellaneous repair shops
28OSERV	28	750001	Automotive rental and leasing, without drivers
28OSERV	28	750002	Automotive repair shops and services
28OSERV	28	750003	Automobile parking and car washes
28OSERV	28	770401	Elementary and secondary schools
28OSERV	28	770402	Colleges, universities, and professional schools
28OSERV	28	770403	Private libraries, vocational schools, and educational services, n.e.c.
28OSERV	28	770501	Business associations and professional membership organizations
28OSERV	28	770502	Labor organizations, civic, social, and fraternal associations
28OSERV	28	770503	Religious organizations
28OSERV	28	770504	Other membership organizations
28OSERV	28	770600	Job training and related services
28OSERV	28	770700	Child day care services
28OSERV	28	770800	Residential care
28OSERV	28	770900	Social services, n.e.c.
29GFENT	29	780100	U.S. Postal Service
29GFENT	29	780200	Federal electric utilities
29GFENT	29	780500	Other Federal Government enterprises
30SETRA	30	790100	State and local government passenger transit
31SEUTI	31	790200	State and local government electric utilities
32SEOTH	32	790300	Other State and local government enterprises
33NCIMP	33	800000	Noncomparable imports
34MISC	34	810001	Scrap
34MISC	34	810002	Used and secondhand goods
34MISC	34	820000	General government industry
34MISC	34	830001	Rest of the world adjustment to final uses

34MISC	34	840000	Household industry
34MISC	34	850000	Inventory valuation adjustment
35LABOR	35	880000	Compensation of employees
36BTAX	36	890000	Indirect business tax and nontax liability
37CAPIT	37	900000	Other value added
38C	38	910000	Personal consumption expenditures
39IFIX	39	920000	Gross private fixed investment
40IINV	40	930000	Change in business inventories
41X	41	940000	Exports of goods and services
42M	42	950000	Imports of goods and services
43FCDEF	43	960090	Federal Government consumption expenditures, national defense, consumption expenditures
44FIDEF	44	960080	Federal Government gross investment, national defense, gross investment
45FCNON	45	970090	Federal Government consumption expenditures, nondefense, consumption expenditures
46FINON	46	970080	Federal Government gross investment, nondefense
47SCK12	47	980091	State and local government consumption expenditures, elementary and secondary public school systems, consumption expenditures
48SCOED	48	980092	State and local government consumption expenditures, public educational facilities beyond high school, consumption expenditures
49SCLIB	49	980093	State and local government consumption expenditures, other education and libraries, consumption expenditures
50SIK12	50	980081	State and local government gross investment, elementary and secondary public school systems, gross investment
51SIOED	51	980082	State and local government gross investment, public educational facilities beyond high school, gross investment
52SILIB	52	980083	State and local government gross investment, other education and libraries, gross investment
53SCHOS	53	991091	State and local government consumption expenditures, hospitals and categorical health programs, consumption expenditures
54SCWEL	54	991092	State and local government consumption expenditures, public welfare institutions and activities, consumption expenditures
55SCSAN	55	991094	State and local government consumption expenditures, sanitation, consumption expenditures
56SIHOS	56	991081	State and local government gross investment, hospitals and categorical health programs, gross investment
57SIWEL	57	991082	State and local government gross investment, public welfare institutions and activities, gross investment
58SISEW	58	991083	State and local government gross investment, public sewerage systems, gross investment
59SISAN	59	991084	State and local government gross investment, sanitation, gross investment
60SCPOL	60	992091	State and local government consumption expenditures, police, consumption expenditures
61SCFRE	61	992092	State and local government consumption expenditures, fire fighting organizations and auxiliary services, consumption expenditures
62SCCOR	62	992093	State and local government consumption expenditures, correctional institutions, consumption expenditures
63SIPOL	63	992081	State and local government gross investment, police, gross investment
64SIFRE	64	992082	State and local government gross investment, fire fighting organizations and auxiliary services, gross investment
65SICOR	65	992083	State and local government gross investment, correctional institutions, gross investment
66SCHWY	66	993091	State and local government consumption expenditures, public highways (non-capital expenditures of toll roads), consumption expenditures
67SCRES	67	993098	State and local government consumption expenditures, natural and agricultural resources and recreation facilities, consumption expenditures
68SCOTH	68	993099	State and local government consumption expenditures, other general government activities, n.e.c, consumption expenditures
68SIHWY	69	993081	State and local government gross investment, public highways, gross investment
70SIPRT	70	993082	State and local government gross investment, waterports and airports, gross investment
71SITRA	71	993083	State and local government gross investment, government-operated transit systems, gross investment
72SICOM	72	993084	State and local government gross investment, other commerce activities n.e.c., gross investment
73SIUTI	73	993085	State and local government gross investment, gas and electric utilities, gross investment
74SIWAT	74	993086	State and local government gross investment, government-operated water supply facilities, gross investment
75SIRED	75	993087	State and local government gross investment, redevelopment projects, gross investment
76SIRES	76	993088	State and local government gross investment, natural and agricultural resources and recreation facilities, gross investment
77SIOTH	77	993089	State and local government gross investment, other general government activities, n.e.c, gross investment

