Impact of household debt and savings on economic growth

Contents

In this chapter, the empirical consequences will be presented and analyzed. However, before making so, the aim of this thesis will be re-emphasized. The impact of family debt and family nest eggs on economic growing would be analysed. Section 4. 2 trades with the sample of 25 states selected for the period of 1995 to 2004. There is besides the theoretical account specification in the Section 4. 3. The subdivision 4. 4 is dedicated to panel informations accounts. Finally, Section 4. 5 and 4. 6 trade with the reading of the empirical consequences.

4. 2 Sample of states selected

Table 4. 2. 1 below summarizes the list of states selected for the proving intent.

Data handiness has put terrible limitations on the figure of states. Ideally many more states should be taken into consideration to avoid prejudice ; nevertheless limitations on information available for most states reduced the sample size to 25. Given informations handiness we use informations over the period 1995 to 2004.

Longitudinal informations, cross-sectional clip series informations or most normally known as panel informations are informations when there are many instances which may include families, concerns and economic systems were analysed at two or more clip frames. There exist two types of information in longitudinal informations:

The cross sectional information shown through the alterations between issues

The clip series reflected in the alterations within issues over clip.

It is through panel informations arrested development techniques that benefits can be arisen by the different sorts of information.

The pick of panel informations over times series informations is clear as panel informations makes studies possible and it is even available in developing states which were non used to be holding statistical aggregation before.

Panel informations normally gives the research worker a big figure of informations points, increasing the grades of freedom and cut downing the co one-dimensionality among explanatory variables which therefore increases the efficiency of econometric variables. Longitudinal information replies more inquiries compared to clip series or transverse sectional informations particularly refering consecutive observations. Making illations utilizing clip series or transverse sectional information is more complicated compared to panel informations. Panel information besides enables the analysis of more complicated behavioral theoretical accounts unlike clip series or transverse sectional informations.

Ordinary multiple arrested development techniques on longitudinal informations may be possible but non the best since their coefficients estimates derived from arrested development may hold resort to omitted

variable prejudice where it is impossible to command for unknown variable or variables that have an impact on the dependant variable.

4. 5. 1 Fixed v/s Random Effects Model

Fixed-Effects (FE) explores the relationship between forecaster and result variables within an entity (state, individual, company, etc.) where each entity has its ain single features that may or may non act upon the forecaster variables. When utilizing Fixed Effect, we assume that something within the person may impact or bias the forecaster or result variables and we need to command for this.

This is the principle behind the premise of the correlativity between entity ' s error term and forecaster variables. FE removes the consequence of those time-invariant features from the forecaster variables so we can measure the forecasters ' net consequence.

Hence, fixed effects arrested development proctors omitted variables that are distinguishable between instances but are unchanged over clip.

Changes in the variables over clip become possible to measure how the independent variables have an consequence on dependant variable thanks to fixed effects arrested developments.

The Random Effect (RE) theoretical account is another manner for covering with panel informations sets. In the random effects theoretical account, there are no single effects. This implies that the error term ? i and the explanatory variable Xit will non be correlated, that is Xit and ? i are independent. It is

assumed that fixed effects are less efficient compared to random effects if all the statements proposed are met to the full.

The general signifier of a panel arrested development is as follows:

$$Y_{it} = ?_i + ? X_{it} + ?_t \dots\dots\dots\dots\dots (A)$$

Where,

Y_{it} is the dependent variable of a peculiar state I at clip T

X_{it} is a matrix of explanatory variables of state I at clip T

$?_i$ is the intercept term of state I

$?_t$ is the perturbation term

Because states are likely to change in several respects, single specific effects have to be allowed. This is handled by the fixed consequence theoretical account, which is one method of covering with panel informations set. Since states are likely to change, state specific effects imply that

$$?_i = ? + ?_i \dots\dots\dots\dots\dots\dots\dots\dots\dots . (B)$$

Where

$?_i$ is the cross-sectional constituent of the error term and

$?$ is a changeless

Replacing (B) in (A) , we obtain

Yi = ? + ? Xit + ? i + ? it............................ . (C)

The fixed consequence theoretical account assumes that ? i, the mistake term, will be fixed in perennial sampling. Therefore each state will hold a specific ? i.

Fixed Effectss and Random Effects for Regression 1

Table 4. 5. 1 nowadayss the consequences of the fixed and random consequence theoretical accounts while Table

4. 5. 2 studies the Hausman trial consequences. The tabular arraies are presented below:

Dependant variable: GDP

Fixed Effectss (1)

Random Effectss (2)

Household nest eggs

-0. 186***

(0. 083)

-0. 125***

(0. 034)

Household debt

-0. 034***

(0. 011)

-0. 028***

(0. 007)

Consumption

-0. 220***

(0. 098)

-0. 018

(0. 026)

Investing

0. 365***

(0. 107)

0. 118***

(0. 042)

Inflation

0. 008

(0. 009)

-0. 014**

(0. 006)

Rate of involvement

0. 067

(0. 046)

0. 072

(0. 045)

Changeless

8. 795

(6. 990)

4. 310**

(1. 952)

R^2 (Within)

0. 2250

0. 1253

F-statistic

$F (6, 219) = 10. 60$

Notes to Postpone 4. 5. 1 Data is collected for a sample of 25 states over the period 1995 to 2004. Column 1 shows the Fixed Effects while Column 2 shows the Random Effects. The family nest egg rate is calculated as sum disposable income less family spendings as portion of disposable income. The family debt to GDP ratio is calculated as the ratio of primary balances to GDP divided by 100. The ingestion portion to GDP is the portion of GDP devoted to consumption comparative to current priced end product. The investing portion to GDP the portion of GDP devoted to investing relation to current priced end product. Inflation is the existent rate of rising prices after accommodation. The rate of involvement is the involvement on nest eggs. Openness is the entire trade as a % of GDP and is calculated by imports plus exports divided by GDP.

Robust criterion mistakes are in parentheses

***: 1 % significance degree

**: 5 % significance degree

*: 10 % significance degree

Valuess in (…) represent standard mistakes

4. 5. 2 Hausman Specification Test

By and large, it is logical to utilize fixed effects for panel informations since their consequences are ever consistent but still the theoretical account tally after them may non be the best 1. If there is justified grounds, random

effects should be used since they give better Price-values being more competent as calculator.

In order to find whether the fixed or random effects theoretical account is appropriate for our informations set, a Hausman trial is to be carried out. The significance of an calculator in relation to an alternate calculator is evaluated by the trial. It enables analysis of the theoretical account with implicit in given informations set and therefore the relationship between the regressors and the perturbation term can be tested for any mark of correlativity nowadays or non.

If the additive theoretical account Y = bX + vitamin E, where Y is univariate and X is the regressors vector, B is the coefficients vector and vitamin E is the disturbance term. We have two calculators for B: b0 and b1. Under the void hypothesis, both of these calculators are consistent, but b1 is more efficient (has smaller asymptotic discrepancy) than b0. Under the alternate hypothesis, one or both of these calculators is inconsistent. We can deduce the statistic:

H= (b1-b0) ' (Var (b0) -Var (b1)) -1 (b1-b0)

where T is the figure of observations. This statistic has chi-square distribution with K (Length of B) grades of freedom.

If the void hypothesis is rejected, it would either intend that one or both of the calculators is non consistent.

The hypothesis under trial is

H0: ? = 0 (RE specification is acceptable)

H1: ? ? 0 (RE specification is invalid: Iron should be used)

If an undistinguished P-value is obtained (P & A ; gt ; ? 2 greater than 0. 05) random effects must be used. However, if a important P-value is obtained, fixed consequence must be used. However, the Hausman trial frequently leads to negative trial statistics caused by estimated parametric quantity discrepancy differences that are non positive semi-definite (non PSD) . In such instances, the absolute value of the statistic must be used which leaves the trial statistic asymptotically unchanged under H0. Furthermore, happening a non-PSD parametric quantity discrepancy difference with a negative trial statistic should non be interpreted as grounds in favour of H0.

Table 4. 5. 2: Hausman Specification Test for arrested development (1)

GDP

Coefficients-Fixed Effectss

Coefficients-Random Effectss

Difference

Household Savingss

-0. 186

-0. 125

-0. 061

Household debt

-0. 034

-0. 028

-0. 006

Consumption

-0. 220

-0. 018

-0. 202

Investing

0. 365

0. 118

0. 247

Inflation

0. 008

-0. 014

0. 022

Rate of involvement

0. 068

0. 072

-0. 004

Beginning: Writer ' s Computation ? 2 (6) = a", 47. 62a",

Notes to postpone 4. 5. 2 Data is collected for a sample of 25 states over the period 1995 to 2004. The family nest egg rate is calculated as sum disposable income less family spendings as portion of disposable income. The family debt to GDP ratio is calculated as the ratio of primary balances to GDP divided by 100. The ingestion portion to GDP is the portion of GDP devoted to consumption comparative to current priced end product. The investing portion to GDP the portion of GDP devoted to investing relation to current priced end product. Inflation is the existent rate of rising prices after accommodation. The rate of involvement is the involvement on nest eggs. Openness is the entire trade as a % of GDP and is calculated by imports plus exports divided by GDP.

Based on the Hausman trial, H0 is rejected. Hence, for the arrested development, the fixed consequence theoretical account will be most appropriate. Therefore, the fixed consequence consequences are discussed below.

4. 5. 2. 1 Findingss based on arrested development (1)

Based on the fixed consequence coefficient, it can be observed nest eggs, debt, ingestion, investing are important while rising prices, involvement rate

and the changeless term are all insignificant at the 10 % degree. Debt and investing are non merely important but they have their expected value. It can be seen that R2 is about 0. 2250 significance that 22. 50 % of fluctuation in GDP can be explained by these variables.

The coefficient of nest eggs is consistent with the theoretical literature which postulates that nest egg has a important function to play in finding economic growing in host states. Savings is important at 1 % degree. The empirical consequence show that a 1 % additions in nest eggs negatively affects economic growing by 0. 19 % in the selected states.

If the family nest eggs ratio is analysed over the old 10 old ages, the consequences show that it was unstable changing from 13 % of disposable income in 1995 to merely 3 % in 2004. This unstable fluctuation in family nest eggs may be perchance due to the rise in consumer loans and mortgage remotion from the market for lodging.

Household debt is defined as consumer debt is consumer recognition which is outstanding and is important at 1 % degree. The consequences show that there is a negative coefficient for family debt which suggests that a 1 % addition in debt will diminish economic growing by 0. 034 % . Harmonizing to our informations, with a diminution in family nest eggs, unemployment and involvement rates, people could perchance hold started to borrow more and salvage less. When families normally borrow money, it allows them to pass more than they have as current income and this creates dissavings and this is hazardous with all jobs linked with deficiency of recognition worthiness which decreases economic growing.

Consumption is assumed to be holding a positive relationship with economic growing. Consumption is found to be important even at 1 % degree. Families can really devour more goods and services and hence, increases their criterion of life. This increases entire revenue enhancement grosss for authorities which can now put more on substructure for the benefits of everyone. The exports of goods can therefore go possible and due to demand pull inclinations, there can be grasp of the place currencies. As a consequence, exports will fall and economic growing will worsen every bit good. The coefficient of ingestion is negative and this determination is important at the 1 % degree. An addition in ingestion of 1 % will do economic growing to diminish by 0. 219 % .

The determination that the coefficient of investing is both consistent with theory and statistically important is non surprising at all. Investment is normally a major determiner of economic growing and this has been confirmed by the consequences. Investing is seen to be important at 1 % . Hence a 1 % addition in investing additions economic growing by 0. 364 % . The coefficient of rising prices is non consistent with the theoretical literature since it has a positive mark.

Furthermore, rising prices turns out to be undistinguished for the selected states for the period 1995-2004. Mubarik (2005) stated that low degree of rising prices is normally undistinguished and besides postulates a positive relationship between involvement rates and economic growing. When involvement rates rise, economic growing is assumed to be increasing every bit good since there would be inducements to bring forth more goods and services. As per our empirical consequence, involvement rate has a positive

value as expected. However, it is found to be undistinguished. The overall theoretical account is good since the F-statistic is important.

4. 5. 3 Regression (2)

In our original theoretical account, we showed how the undermentioned variables of involvement viz. household debt, family nest eggs, ingestion, investing, rising prices, involvement rates had their several impact on economic growing. We now augment our original theoretical account to prove if family nest eggs still have a negative impact on economic growing as it is contradictory to economic literature. We now add a new variable of involvement viz. Openness and our new arrested development theoretical account becomes:

$GDP_{it} = 4.65 - 0.18HS_{it} - 0.04HD_{it} - 0.22 C_{it} + 0.37 I_{it} + 0.02P_{it} + 0.12 R_{it} + 0.04O_{it} + U_{it}$ ... ... (2)

Table 4. 5. 3: Consequences for arrested development (2)

Dependant variable: GDP

Fixed Effectss

Random Effectss

Household Savingss

-0. 178*

(0. 089)

-0. 124***

(0. 034)

Household Debt

-0. 039***

(0. 010)

-0. 031***

(0. 007)

Consumption

-0. 222***

(0. 100)

0. 020

(0. 033)

Investing

0. 366***

(0. 111)

0. 158***

(0. 042)

Inflation

0. 018***

(0. 008)

-0. 006

(0. 007)

Rate of involvement

0. 122***

(0. 054)

0. 086*

(0. 045)

Openness

0. 043*

(0. 024)

0. 013***

(0. 005)

Changeless

4. 652

(6. 712)

-0. 427

(2. 619)

R2 (Within)

0. 2439

0. 1632

F-statistic

F (7, 218) = 9. 06

Notes to Postpone 4. 5. 3

Data is collected for a sample of 25 states over the period 1995 to 2004. The family nest egg rate is calculated as sum disposable income less family spendings as portion of disposable income. The family debt to GDP ratio is calculated as the ratio of primary balances to GDP divided by 100. The ingestion portion to GDP is the portion of GDP devoted to consumption comparative to current priced end product. The investing portion to GDP the portion of GDP devoted to investing relation to current priced end product. Inflation is the existent rate of rising prices after accommodation. The rate of involvement is the involvement on nest eggs. Openness is the entire trade as a % of GDP and is calculated by imports plus exports divided by GDP.

Robust criterion mistakes are in parentheses ***: 1 % significance degree **: 5 % significance degree *: 10 % significance degree. Valuess in (…) represent standard mistakes

Table 4. 5. 4: Hausman Specification Test for arrested development (2)

GDP

Coefficients-Fixed Effectss

Coefficients-Random Effectss

Difference

Household Savingss

-0. 178

-0. 124

-0. 054

Household Debt

-0. 039

-0. 031

-0. 008

Consumption

-0. 222

0. 020

-0. 242

Investing

0. 366

0. 158

0. 208

Inflation

0. 018

-0. 006

0. 024

Rate of involvement

0. 122

0. 086

0. 036

Openness

0. 043

0. 013

0. 03

Beginning: Writer ' s Calculation

? 2 (7) = a", 45. 99a",

Notes to postpone 4. 5. 4 Data is collected for a sample of 25 states over the period 1995 to 2004. The family nest egg rate is calculated as sum disposable income less family spendings as portion of disposable income. The family debt to GDP ratio is calculated as the ratio of primary balances to GDP divided by 100. The ingestion portion to GDP is the portion of GDP devoted to consumption comparative to current priced end product. The investing portion to GDP the portion of GDP devoted to investing relation to current priced end product. Inflation is the existent rate of rising prices after accommodation. The rate of involvement is the involvement on nest eggs. Openness is the entire trade as a % of GDP and is calculated by imports plus exports divided by GDP.

Here besides the void hypothesis is discarded and therefore analysis of the arrested development will be based be the fixed consequence theoretical account.

4. 5. 3. 1 Findingss based on arrested development (2)

In arrested development (1) , the consequence of 6 different variables on economic growing was analyzed. In this arrested development, the variable openness will be added. All variables are important at 1 % degree while the changeless term is still undistinguished. It can be seen that R2 is about 0. 2439 significance that 24. 39 % of fluctuation in GDP can be explained by these variables.

Savingss is important at 1 % degree but still have a negative mark. Hence the empirical consequences show that 1 % addition in nest eggs lead to fall

in economic growing by 0. 18 % . Debt is important at 1 % degree and as expected has a negative value. This negative coefficient suggests that a 1 % addition in debt will diminish economic growing by 0. 04 % . Consumption remains important at 1 % degree and still has a negative coefficient. Hence a 1 % addition in ingestion leads to a autumn in economic growing by 0. 22 %

Investing is important at the 1 % degree and still has a positive value in line with the theoretical background. It shows a high t-value of 6. 03. Fixed consequence trials province that the higher the t-value of an independent variable, the more relevant it is in relation with the dependent 1. Hence a 1 % addition in investing additions economic growing by 0. 37 % in the selected states. The empirical consequences on rising prices and involvement rate are now important.

Inflation is important at the 10 % degree but still has a positive coefficient. Harmonizing to our empirical consequence, a 1 % addition in rising prices additions growing by 0. 02 % . However, this determination contradicts the theoretical literature where rising prices and economic growing are reciprocally linked. As per the empirical findings, involvement is important at 1 % degree and has a positive coefficient. Therefore 1 % addition in involvement rate leads to an addition in GDP by 0. 12 % . Trade openness (O) was measured by summing up value of exports and imports and spliting it with GDP. Openness is the easiness with which investors can travel capital in and out of a state. Furthermore Openness accelerates economic growing. Sachs and Warner (1995) found that openness to merchandise is associated with growing.

As openness to merchandise is an of import subscriber to economic growing, its coefficient is expected to be positive. In our instance, openness is found to be important at 1 % degree and has a positive value. The empirical consequence show that a 1 % addition in openness additions economic growing by 0. 04 % in the 25 selected states. The overall theoretical account is good since the F-statistic is important.

4. 5. 4 Decision

Though the theoretical account was augmented with openness as a new variable, family nest eggs still have a negative impact on economic growing which is non consistent with the economic background. When family nest eggs additions by 1 % , economic growing falls by 0. 19 % and 0. 18 % severally in theoretical account 1 and 2.

Furthermore, in both instances household debt has an indirect impact on economic growing which hold true under theoretical background.

Among developed states, the USA has a comparative advantage comparative to Europe and Japan. Among emerging and developing, it is Asia which is predating the list. There is besides sustainable growing in Latin American and other emerging states but it still has a batch to travel compared to other emerging European states.

Hence, in the selected states growing falls due to the opposite relationship of family nest eggs and household debt with economic growing over the period 1995-2004.