

Testing money
demand equation,
econometrics
assignment, sas



Testing Money Demand Equation, Econometrics Assignment, SAS Table of Contents Testing Money Demand Equation, Econometrics Assignment, SAS Table of Contents2

Question 13

Question 27

References10

Appendix11

Question 1

Introduction

The money market equation is a link between a few essential macroeconomic factors which indicates the aggregate demand of money in an economy over a considerable period of time. However, the form of the equation is purely a general one, which need not hold in the context of each and every economy. The present case study involves the situation in USA, and is aimed at examining the factors which affect the economy-wide demand for money.

The Model

The model that has to be estimated in the present context is depicted underneath.

$$m_t - p_t = \gamma y_t - \alpha i_t + u_{mt}$$

Where, m_t = natural logarithm of the US demand for money,

p_t = natural logarithm of US CPI,

y_t = natural logarithm of US output and

i_t = US nominal rate of interest on 90-days Treasury Bills.

All the variables have been retrieved from the archives of New York

University, in the form defined above. The data being collected are quarterly
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in nature beginning from the 3rd quarter of 1981 and ending at the 4th quarter of 2009.

Estimation Results

Estimation of the aforementioned model on the basis of the empirical data is,

$$mt - pt = 1.3253 yt - 0.0962 it$$

(12.27) (3.61)

The figures in parentheses are the estimated Student's t-statistic values respectively.

To interpret whether variations in dependent variable, ($mt - pt$) is explained or not, explanatory powers of each of the two independent variables have to be considered. If the Student's statistics of the respective estimated coefficients are found to be greater than the tabulated value at the given degrees of freedom, the corresponding variable is considered to be significantly explaining variations in the model and vice-versa.

At 107 degrees of freedom, tabulated t-statistic is 1.99, which is lower than the estimated values in either case. Hence, each one of the two variables is found to be significantly explaining variations in the dependent variable so that variation in the model is perfectly explained.

Plotting the time-series graph of nominal rate of interest on 90-days US Treasury Bills reveals a gradually decreasing trend.

Conclusion

Money demand in excess of the general price level is found to be highly dependent on income and rate of interest in context of the US economy. The dependence is found to be in line with that of theory which says that demand for money is directly related to income but inversely related to the rate of <https://assignbuster.com/testing-money-demand-equation-econometrics-assignment-sas/>

interest. Moreover, the rate of interest in the nation is also gradually falling over time, revealing that the money demand in the nation is rising actually. A rise in money demand is actually a positive sign for economies which had been engulfed in a recession, since that implies a rise in aggregate demand and thus rise in national income. Hence it could be said that the US economy is actually at the verge of experiencing boom. In fact, a rising income will attract investors from all over the world thus ensure the nation a consistent period of boom.

Question 2

Introduction

The model to be estimated here is,

$$\ln P_t = \beta_0 + \beta_1 t + e_t$$

Where, P_t = US price level or CPI and

t = Time.

Estimation

Using the data from the above question, the model being estimated is as follows,

$$\ln P_t = 1.53799 - 0.00703 t + e_t$$

(26.21) (7.79)

Since the number of observations is the same as that in the previous case, the degrees of freedom are equal to 107. So, using the rule mentioned above it can be said that both the intercept and time factor can explain variations in the dependent variable significantly.

Plotting the rate of inflation ($\ln P_t - \ln P_{t-1}$) against time, depicts the following graph which is symbolic of a fluctuating rate of inflation in the economy.

Conclusion

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The model being estimated shows a significant relationship of price with time. According to the model being estimated, time draws only a negligible effect on the rate of inflation in the economy. It has been found that inflation rate falls by less than 1% per unit of time. This is a rather positive sign given that the inflation is considered as one of the most depressing of all economic malice. However, the problem is that, time cannot be considered as a considerable determinant of inflation, as is suggestive from the coefficient of the estimated model. In fact, this is the case with most of the cases as is evident from the estimated level of significance or p-value.

References

Heboyan, V. (n. d.) ' Beginner's Guide to SAS and STATA Software' USA: The University of Georgia

Appendix

Dataset

Time

y

p

m

i

1981 Q3

7. 321189

2. 235376

-1. 74297

14. 44

1981 Q4

7. 319307

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2. 261763

-1. 69827

11. 03

1982 Q1

7. 317275

1. 791759

-1. 61445

12. 22

1982 Q2

7. 307643

1. 223775

-1. 56065

11. 75

1982 Q3

7. 301017

2. 014903

-1. 53248

9. 76

1982 Q4

7. 298609

1. 386294

-1. 50508

8. 03

1983 Q1

7. 315601

1. 064711

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-1. 47403

7. 70

1983 Q2

7. 323774

1. 386294

-1. 43548

7. 94

1983 Q3

7. 33342

1. 504077

-1. 41469

9. 03

1983 Q4

7. 336978

1. 609438

-1. 36258

8. 66

1984 Q1

7. 386758

1. 435085

-1. 32803

8. 85

1984 Q2

7. 394647

1. 481605

-1. 34707

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9. 87

1984 Q3

7. 408847

1. 308333

-1. 43129

10. 35

1984 Q4

7. 402408

1. 386294

-1. 25527

9. 22

1985 Q1

7. 401987

1. 20896

-1. 24827

8. 33

1985 Q2

7. 432287

1. 386294

-1. 26231

7. 93

1985 Q3

7. 426961

1. 252763

-1. 2694

7. 47

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1985 Q4

7. 42541

1. 163151

-1. 24133

7. 15

1986 Q1

8. 178759

1. 163151

-1. 20397

6. 97

1986 Q2

8. 205885

#NUM!

-1. 15836

6. 15

1986 Q3

8. 210633

1. 064711

-1. 13631

5. 50

1986 Q4

8. 210034

1. 115142

-1. 1178

5. 17

1987 Q1

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8. 23333

1. 193922

-1. 08471

5. 43

1987 Q2

8. 234738

1. 446919

-1. 07002

5. 89

1987 Q3

8. 244991

1. 386294

-1. 05555

6. 01

1987 Q4

8. 246434

1. 435085

-1. 01888

5. 85

1988 Q1

8. 270435

1. 308333

-1. 01611

5. 70

1988 Q2

8. 279563

<https://assignbuster.com/testing-money-demand-equation-econometrics-assignment-sas/>

1. 423108

-1. 00512

6. 33

1988 Q3

8. 293016

1. 568616

-1. 00239

7. 21

1988 Q4

8. 292888

1. 609438

-0. 9835

7. 67

1989 Q1

8. 318498

1. 526056

-0. 97286

8. 69

1989 Q2

8. 322394

1. 774952

-0. 95711

8. 36

1989 Q3

8. 327247

1. 470176

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-0. 94675

7. 78

1989 Q4

8. 329047

1. 386294

-0. 9213

7. 43

1990 Q1

8. 330795

1. 589235

-0. 88431

7. 67

1990 Q2

8. 349009

1. 386294

-0. 86038

7. 73

1990 Q3

8. 335854

1. 740466

-0. 84397

7. 31

1990 Q4

8. 33329

2. 04122

-0. 79851

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6. 88

1991 Q1

8. 329957

1. 360977

-0. 75078

5. 76

1991 Q2

8. 328681

1. 029619

-0. 71539

5. 58

1991 Q3

8. 330223

1. 163151

-0. 69917

5. 54

1991 Q4

8. 327657

1. 163151

-0. 68916

4. 70

1992 Q1

8. 501878

1. 098612

-0. 67139

3. 93

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1992 Q2

8. 506297

1. 193922

-0. 64436

3. 87

1992 Q3

8. 498913

1. 098612

-0. 6199

3. 20

1992 Q4

8. 498979

1. 131402

-0. 58699

3. 07

1993 Q1

8. 531962

1. 098612

-0. 56387

3. 09

1993 Q2

8. 530835

1. 163151

-0. 53957

3. 05

1993 Q3

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8. 525808

0. 97456

-0. 51751

3. 12

1993 Q4

8. 541876

1. 098612

-0. 48289

3. 14

1994 Q1

8. 577129

1. 064711

-0. 45887

3. 39

1994 Q2

8. 580308

1. 131402

-0. 42771

4. 18

1994 Q3

8. 579514

1. 193922

-0. 37542

4. 63

1994 Q4

8. 581568

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1. 163151

-0. 35667

5. 66

1995 Q1

8. 616155

1. 147402

-0. 28902

6. 25

1995 Q2

8. 614547

1. 193922

-0. 26266

5. 83

1995 Q3

8. 612225

1. 064711

-0. 22565

5. 47

1995 Q4

8. 615297

0. 955511

-0. 14272

5. 23

1996 Q1

8. 835576

1. 029619

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-0. 0823

4. 79

1996 Q2

8. 837488

1. 223775

-0. 02532

5. 06

1996 Q3

8. 839308

0. 993252

0. 044973

5. 23

1996 Q4

8. 839437

1. 098612

0. 117783

5. 13

1997 Q1

8. 868526

1. 098612

0. 122218

5. 10

1997 Q2

8. 875439

0. 916291

0. 118672

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5. 50

1997 Q3

8. 877127

0. 788457

0. 120446

5. 29

1997 Q4

8. 880262

0. 916291

0. 151862

5. 20

1998 Q1

8. 908419

0. 604316

0. 188966

5. 09

1998 Q2

8. 912196

0. 470004

0. 223943

5. 13

1998 Q3

8. 924883

0. 693147

0. 260054

5. 04

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1998 Q4

8. 926684

0. 641854

0. 301585

4. 19

1999 Q1

8. 961254

0. 641854

0. 349247

4. 38

1999 Q2

8. 967967

0. 993252

0. 397433

4. 52

1999 Q3

8. 967144

0. 788457

0. 4389

4. 87

1999 Q4

9. 087082

0. 936093

0. 499562

5. 06

2000 Q1

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9. 126437

0. 916291

0. 530628

5. 71

2000 Q2

9. 136344

1. 163151

0. 557327

6. 19

2000 Q3

9. 141448

1. 064711

0. 589452

6. 04

2000 Q4

9. 141772

1. 098612

0. 622725

6. 06

2001 Q1

9. 160921

0. 993252

0. 630207

4. 82

2001 Q2

9. 159085

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1. 115142

0. 640801

3. 65

2001 Q3

9. 146021

0. 875469

0. 65752

3. 31

2001 Q4

9. 140397

0. 470004

0. 616806

1. 86

2002 Q1

9. 153791

0. 336472

0. 622725

1. 80

2002 Q2

9. 167787

1. 098612

0. 633928

2. 07

2002 Q3

9. 151103

0. 693147

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0. 656483

1. 74

2002 Q4

9. 151624

0. 832909

0. 680568

1. 37

2003 Q1

9. 176066

0. 916291

0. 706557

1. 28

2003 Q2

9. 17435

0. 693147

0. 734289

1. 26

2003 Q3

9. 175892

0. 438255

0. 765468

1. 05

2003 Q4

9. 181658

0. 788457

0. 790274

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1. 06

2004 Q1

9. 294081

0. 530628

0. 820661

1. 13

2004 Q2

9. 294275

1. 064711

0. 853564

1. 37

2004 Q3

9. 290232

1. 098612

0. 885832

1. 83

2004 Q4

9. 290713

0. 936093

0. 930194

2. 29

2005 Q1

9. 326358

0. 765468

0. 963937

2. 92

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2005 Q2

9. 324778

1. 193922

0. 989169

3. 40

2005 Q3

9. 319186

1. 03354

0. 996949

3. 81

2005 Q4

9. 318411

1. 360977

0. 992881

4. 25

2006 Q1

9. 348874

0. 693147

0. 995102

4. 61

2006 Q2

9. 351358

1. 223775

1. 001367

4. 99

2006 Q3

<https://assignbuster.com/testing-money-demand-equation-econometrics-assignment-sas/>

9. 34369

1. 280934

1. 020651

5. 20

2006 Q4

9. 342293

#NUM!

1. 056748

5. 00

2007 Q1

9. 370353

0. 882871

1. 09293

4. 98

2007 Q2

9. 363716

1. 435085

1. 1036

4. 94

2007 Q3

9. 353914

0. 947235

1. 147402

4. 85

2007 Q4

9. 355206

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1. 098612

1. 176807

3. 91

2008 Q1

9. 373743

1. 248468

1. 205372

2. 25

2008 Q2

9. 370316

1. 252763

1. 22142

1. 67

2008 Q3

9. 368522

1. 667707

1. 25704

1. 88

2008 Q4

9. 36546

#NUM!

1. 28813

0. 71

2009 Q1

9. 345254

#NUM!

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1. 319887

0. 29

2009 Q2

9. 33569

-0. 35667

1. 325217

0. 29

2009 Q3

9. 469358

0. 875469

1. 31184

0. 34

2009 Q4

9. 471484

0. 719695

1. 301009

0. 22

How to use SAS to run a regression?

Import the dataset from Excel as a first step through, File → Import Data.

Select the mode of workbook from which to be imported, provide the name of the workbook (Question) and then name of the member if necessary.

The dataset is stored in the ‘ library’.

To undergo regression, type the following command in the Editor box.

Click on Run in the menu bar and then on Submit. This provides the regression result in the Log box.

Question 1

Question 2