# Statistics and Economics, Stress on Construction

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**STATISTICS AND ECONOMICS**

**Stress on Construction**

**SUMMARY**

*Impact of 2008 crises was visible in the whole world: GDP shrank; unemployment rose and many debts could not be paid. Crises in Croatia, unlike many other EU economies, prolonged although new political steps followed such as becoming a new EU member and getting a bigger opportunities.*

*Paper tackles problems of recent statistical findings, construction sector activities, political events where some findings may be useful for developing world.*

**STATISTICS AND ECONOMICS**

*STRESS ON CONSTRUCTION*

***Dedicated to***

*All those in problems*

*And those who are unemployed*

*And those who are minorities*

*And those who experienced war problems*

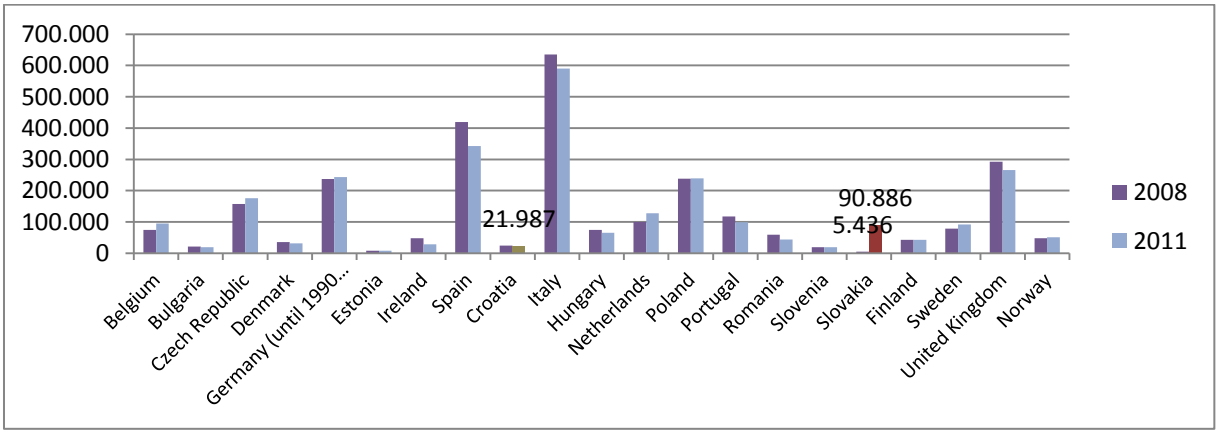
*And those whose future comes*

***Bless those who suffers theirs is Kingdom Of Heaven***

## 0. INTRODUCTION

No small number of papers tackled economic crises of 2008. Real estate bubble from USA was pointed out as one of triggers to serious economic and social problems in America and Europe as well. In addition many undeveloped countries in the world that do not have such a strong bonds to world banking or Stock Exchange system also bear consequences in the form of reduced help, unfavorable trade conditions, lower export possibilities to the most developed and at the same time having to cope with negative GHG emissions sourced from 40-90 degree north (see www esrl noaa.gov $CO_2$ film).

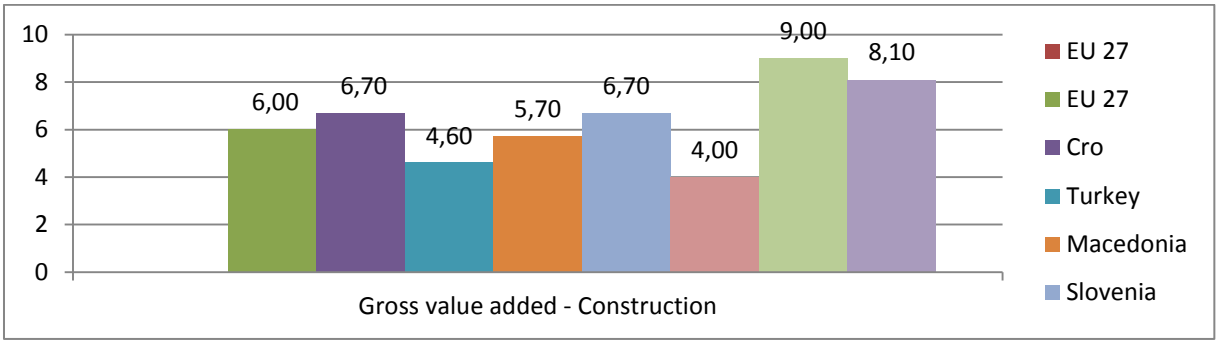
Number of enterprises in construction 2008/2011




*Picture 1*

Croatia is strongly linked to both USA (as NATO member) and EU (part of EU since July 2013). It felt crises of 2008 but did not as majority of European countries found its way to GDP growth again –or this part was slowed down. In that respect it proves that unrealistic expectations of EU funds, declining minority rights, or even worsening are not the way to deal with crises. Europe itself sees Croatia as potential „Greece „ theory that is substantiated with deficit and debt problems.

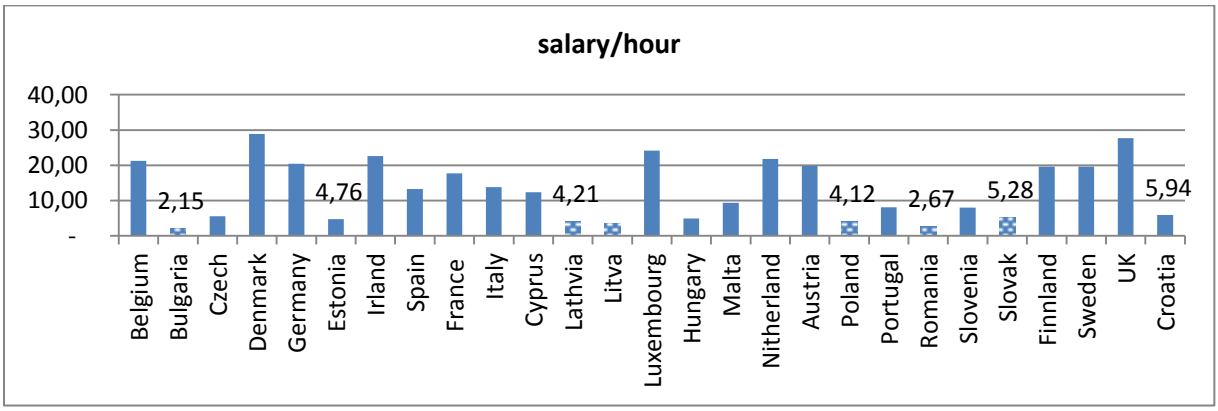
Gross value added 2011




*Picture 2*

Construction sector had a huge role in period before and after 1990 is , what is visible in fact that majority of Croatia people owns their apartments ( many were in state ownership with right to buy on social price way under market price), many new companies emerged , trade developed, and almost all parts of societies were involved in construction business( political party members build block of flats), church appear as investor, population legalize existing or new building constructions , etc. On the same time negative process occurred as large state building companies went bankrupt while could not compete with private sector and huge difference in treatment of work force ( ambiguous tax, social payments to Bosnian workers in minimum wage system)-pre crises period , barriers to foreign companies-workers- on local market that would reduce cost of service –after crises period.

Salary /Hour




*Picture 3*

This imbalances and ways to go forward is tried to be tackled in this paper.

## 1. BASICS OF CROATIA STATISTICS

From larger community of ex-Yugoslavia Croatia emerged in the small open economy. This means that many facts are determined on the larger market whether it is a word about European, USA or by strong emerging forces such as China, India, and Bangladesh.

Domestic exchange rate HRK is showing signs of strength/weakness toward the most influential currencies in the *Table1* determining the level of loans to population industry and entrepreneurs.

Strength of Kuna was visible until 2008 after weakens toward major currencies making loans in this currencies more expensive.

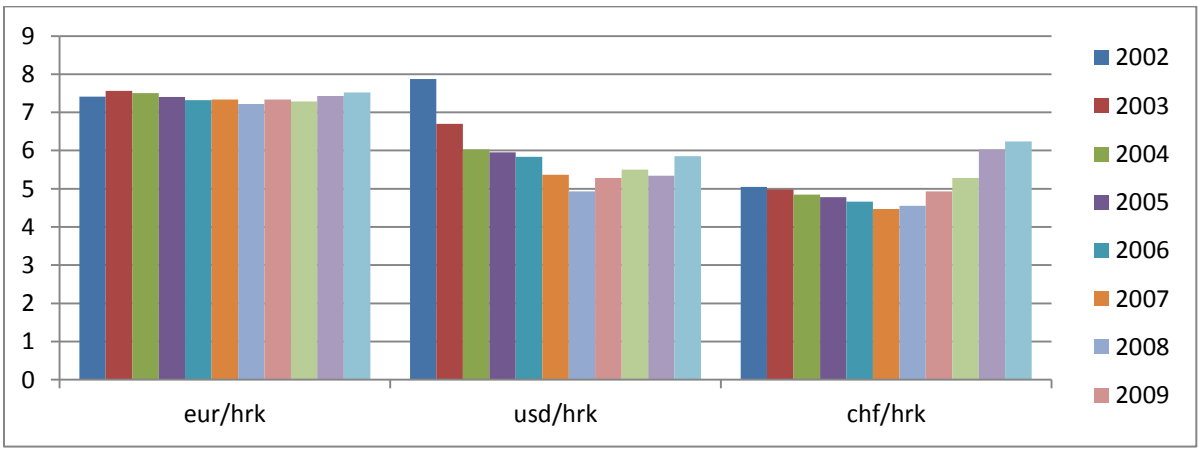
Exchange rates history

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| euro/hrk | 7,41 | 7,56 | 7,5 | 7,4 | 7,32 | 7,34 | 7,22 | 7,34 | 7,29 | 7,43 | 7,52 |
| usd/hrk | 7,87 | 6,7 | 6,03 | 5,95 | 5,84 | 5,37 | 4,93 | 5,28 | 5,5 | 5,34 | 5,85 |
| chf/hrk | 5,05 | 4,98 | 4,85 | 4,78 | 4,66 | 4,47 | 4,55 | 4,93 | 5,28 | 6,03 | 6,24 |

*Table 1*

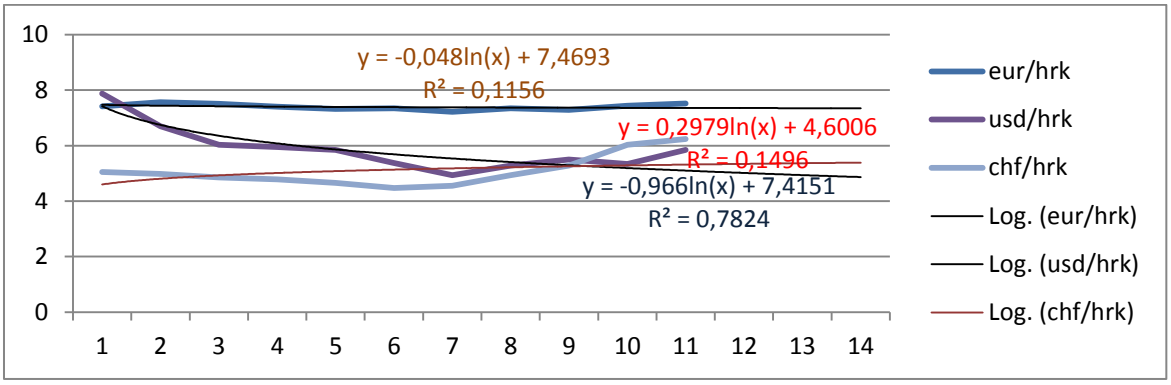
While EURO increased only to smaller degree rebound of Swiss currency is the mostly visible incorporating the fact that this is the escape currency of many speculators who try to find safe haven in the time of crises. Rate of USD has showed its own policy fluctuations, desire to outperform Europe on the world market and regain its position as world only solution.

History of exchange rates EUR/HRK; USD/HRK; CHF/HRK



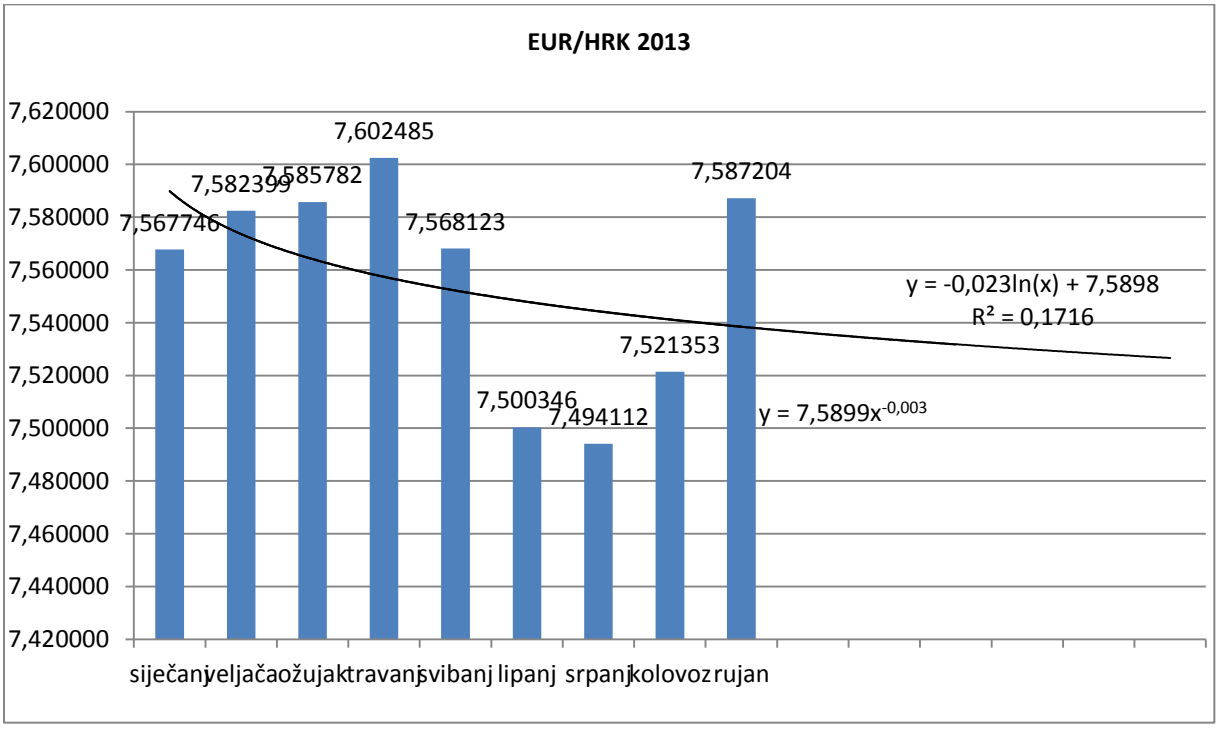
*Picture 4*

Exchange Currencies Trend



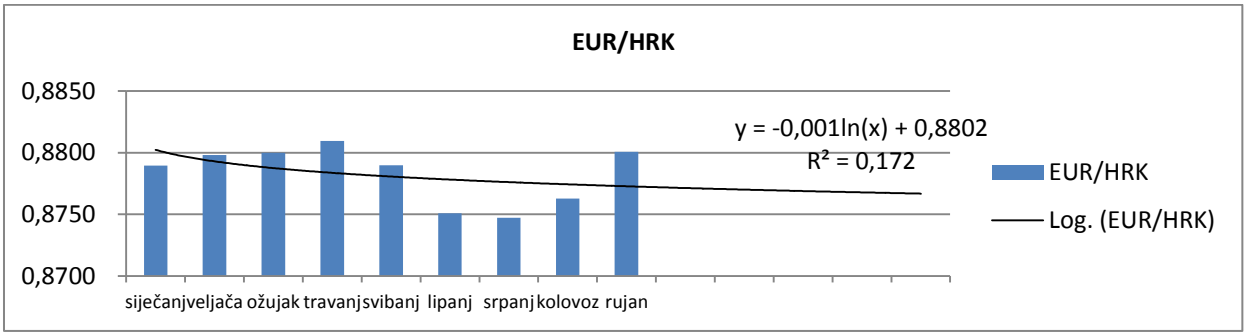

*Picture 5*

EURO / HRK 2013 (January-September 2013)



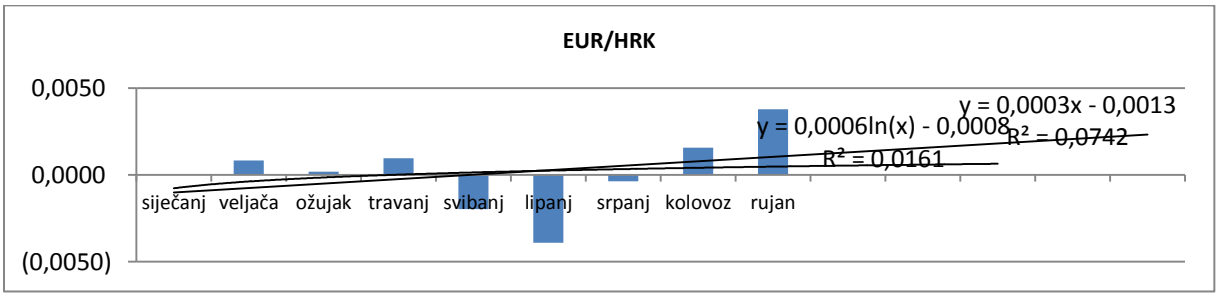

*Picture 6*

Currency EUR/HRK 2013 log form (January-September 2013)



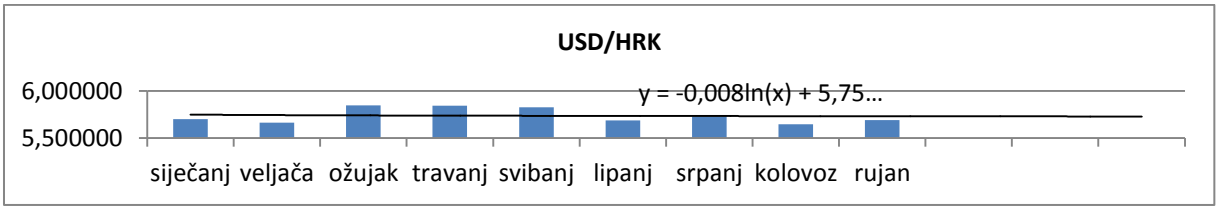

*Picture 7*

Currency EUR/HRK log diff



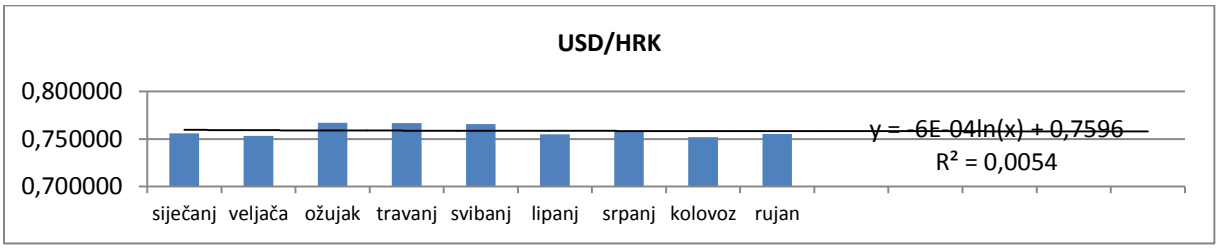

*Picture 8*

Currency USD/HRK 2013



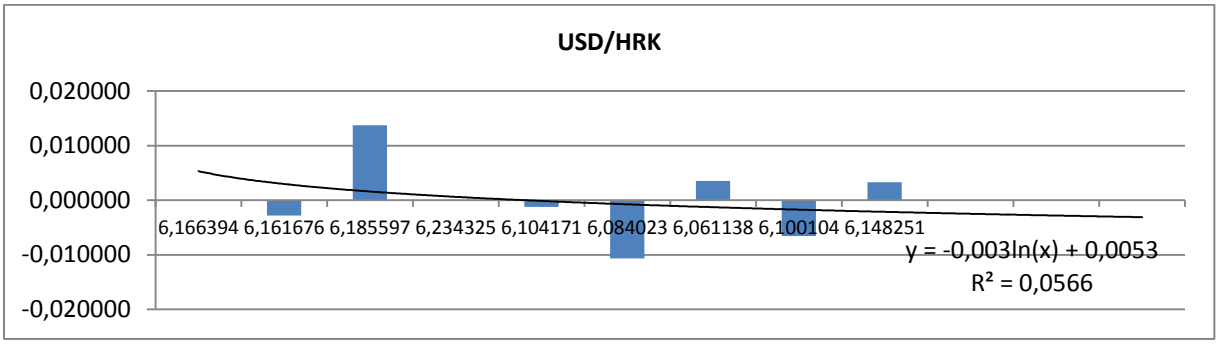

*Picture 9*

Currency USD/HRK log 2013 (January-September 2013)



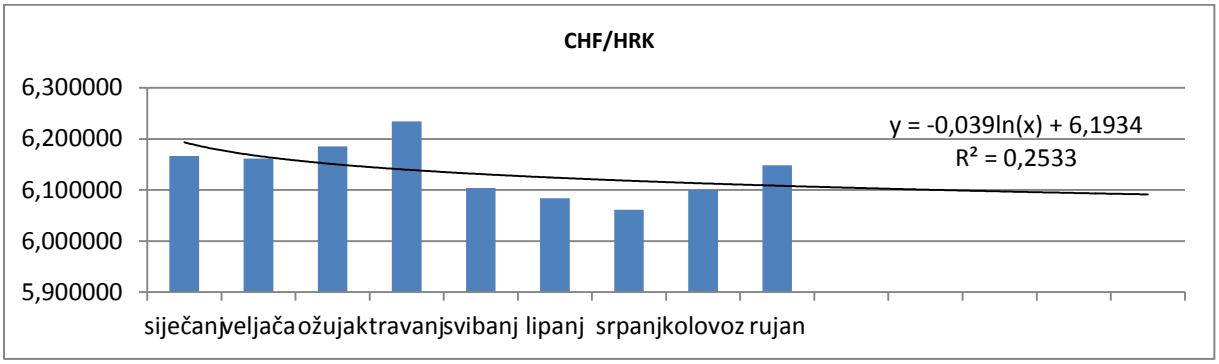
*Picture 10*

Currency USD/HRK log dif 2013



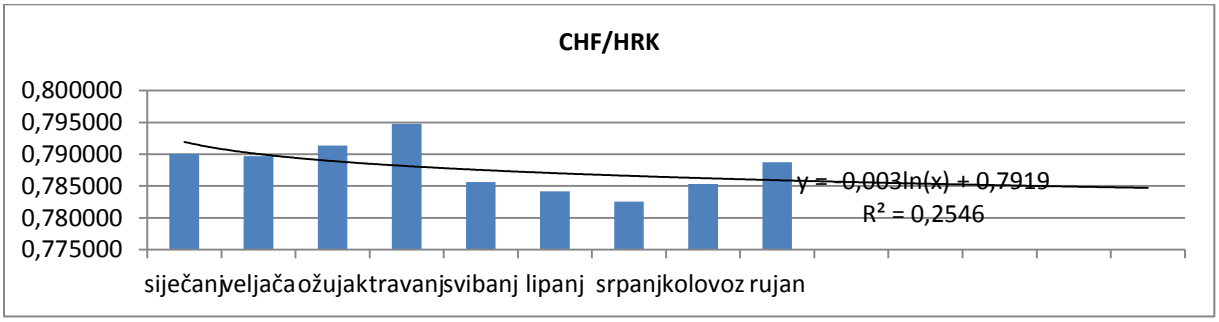

*Picture 11*

Currency CHF/HRK 2013 (January –September 2013)



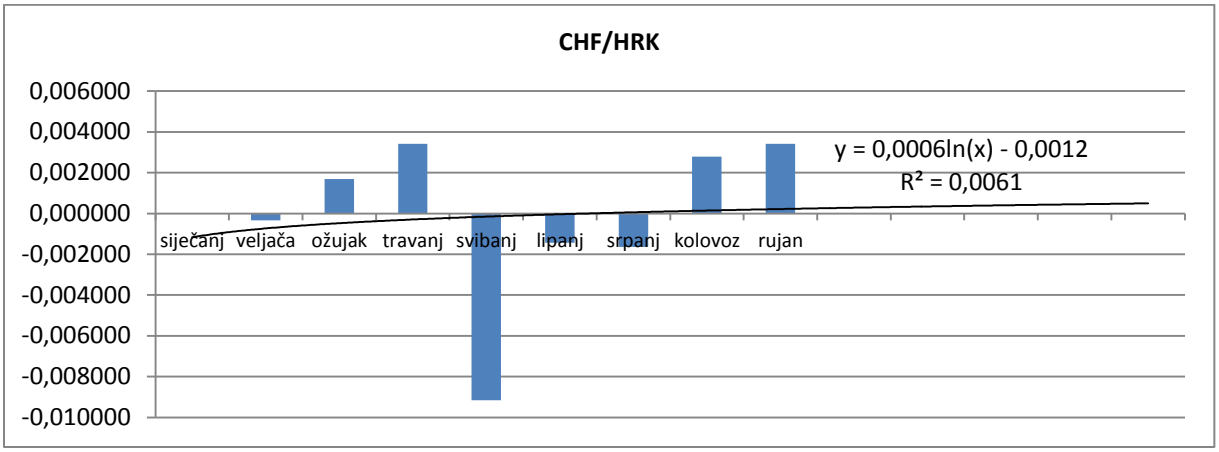

*Picture 12*

Currency CHF/HRK log 2013




*Picture 13*

Currency Exchange CHF/HRK log diff 2013




*Picture 14*

Openness of economy did not protect domestic producers so the level of trade with foreign countries significantly increased. This large upward trends of import was followed to some extend with export until 2008. After this period both export and import followed sharply decline with export regaining its strength and rising on bigger rate in relative terms.

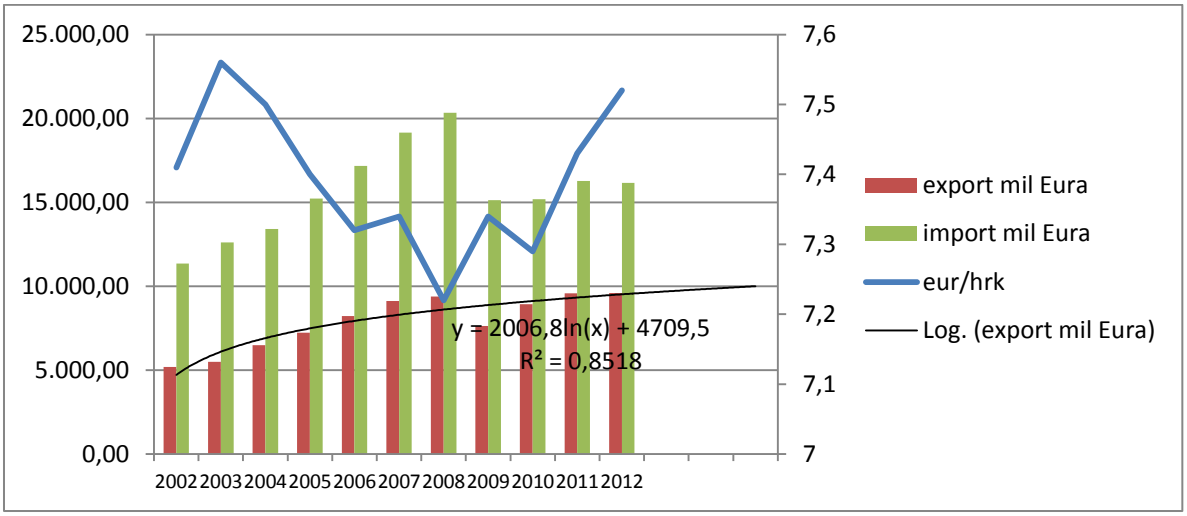
Export/Import Currency exchange / EUR

| | 2003 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| EUR/HRK | 7,56 | 7,34 | 7,22 | 7,34 | 7,29 | 7,43 | 7,52 |
| Export mil Euro | 5.495,78 | 9.117,15 | 9.398,97 | 7.630,66 | 8.939,72 | 9.582,16 | 9.609,22 |
| Import mil Euro | 12.617,4 | 19.154,34 | 20.333,64 | 15.138,47 | 15.185,90 | 16.281,1 | 16.163,7 |

*Table 2*

Currency exchange of 72-7,3 HRK/EUR gave importers stability and high value of HRK strength so import rose significantly in period of 2006-2008. This on the other hand did not help exporters making their goods more expensive on international markets.

Export/Import/Currency Exchange EUR/HRK




*Picture 15*

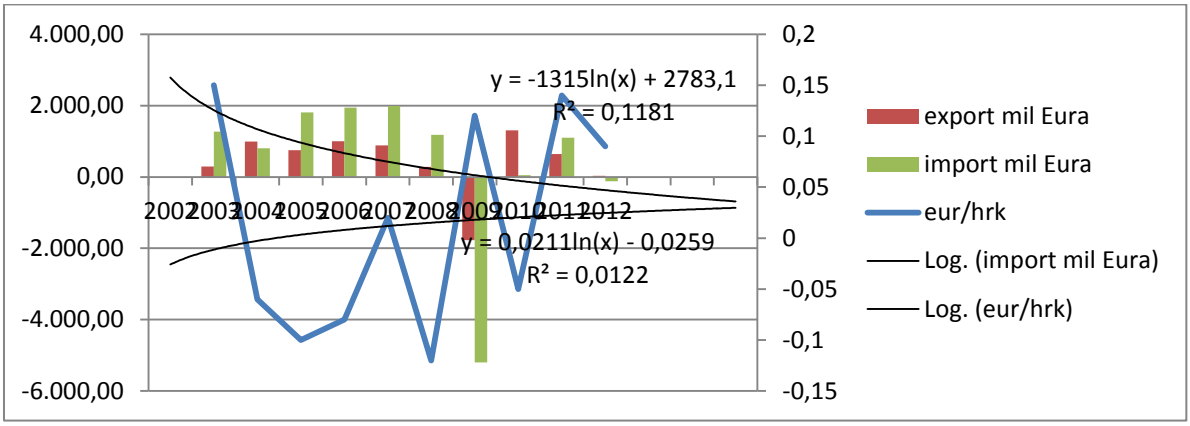
Log form of the same reasoning shows sharp decline after 2008 crises where 2011 brought rise of import and decline of export in comparison to the 2010.

Export Import log diff

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| EUR/HRK | 0,15 | -0,06 | -0,1 | -0,08 | 0,02 | -0,12 | 0,12 | -0,05 | 0,14 | 0,09 |
| Export mil EUR | 293,47 | 988,20 | 750,61 | 998,75 | 883,81 | 281,82 | -1.768,31 | 1.309,06 | 642,44 | 27,06 |
| Import mil EUR | 1.267,25 | 799,92 | 1.808,74 | 1.939,16 | 1.989,05 | 1.179,30 | -5.195,17 | 47,43 | 1.095,25 | -117,43 |

*Table 3*

Export Import log diff




*Picture16*

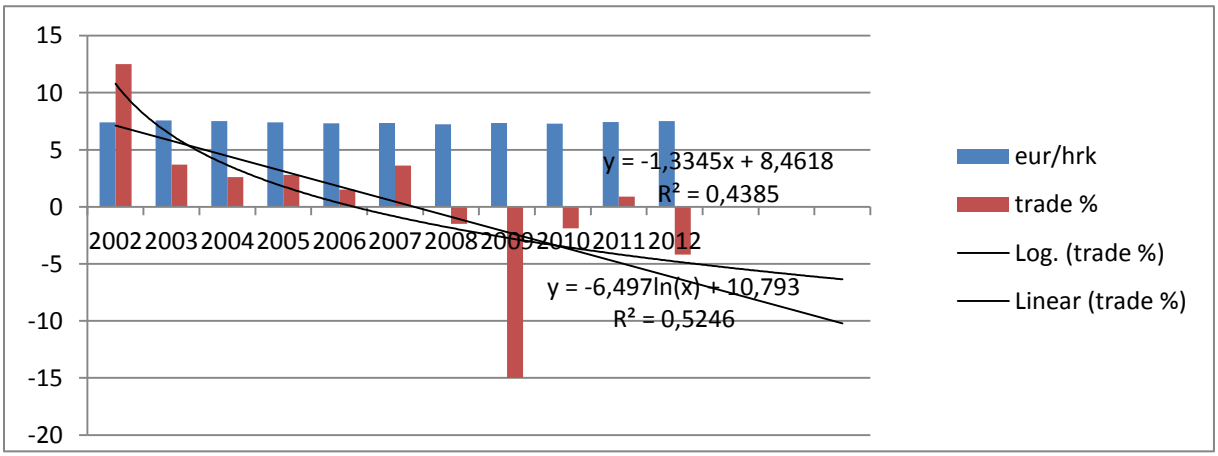
Sharp decline in the trade level in 2009 is clearly result of world economic crises that influenced Croatian economy. Economy regains its standard mostly due to tourism, infrastructure and administrative positions in the country but these measures were not enough for GDP to start to rise.

Trade %, EUR/HRK

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| EUR/HRK | 7,56 | 7,5 | 7,4 | 7,32 | 7,34 | 7,22 | 7,34 | 7,29 | 7,43 | 7,52 |
| Trade change % | 3,7 | 2,6 | 2,8 | 1,5 | 3,6 | -1,5 | -15 | -1,9 | 0,9 | -4,2 |

*Table 4*

Trade % currency EUR/HRK




*Picture 17*

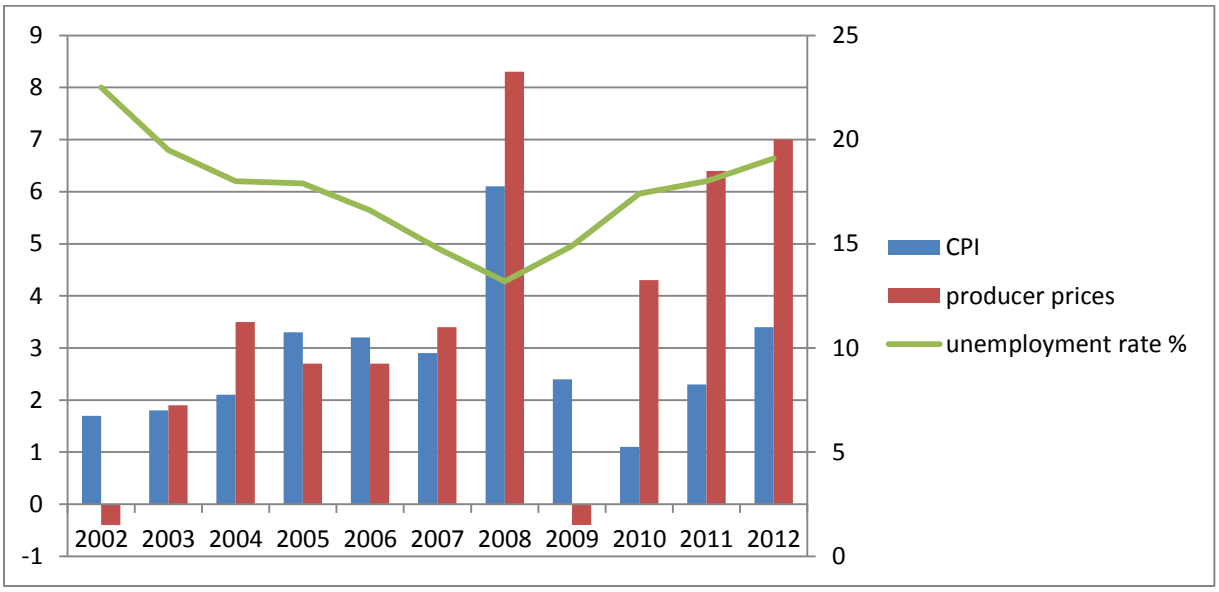
Prices reacted strongly upwards on 2008 crises. After market regain confidence in growth mostly due rebound of USA and Europe economies, prices in Croatia lowers but induce further rise of unemployment to current level of 19%.

Prices (CPI,Production prices), Rate of unemployment

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| CPI | 1,8 | 2,1 | 3,3 | 3,2 | 2,9 | 6,1 | 2,4 | 1,1 | 2,3 | 3,4 |
| Production prices | 1,9 | 3,5 | 2,7 | 2,7 | 3,4 | 8,3 | -0,4 | 4,3 | 6,4 | 7 |
| Unemployment rate % | 19,5 | 18 | 17,9 | 16,6 | 14,8 | 13,2 | 14,9 | 17,4 | 18 | 19,1 |

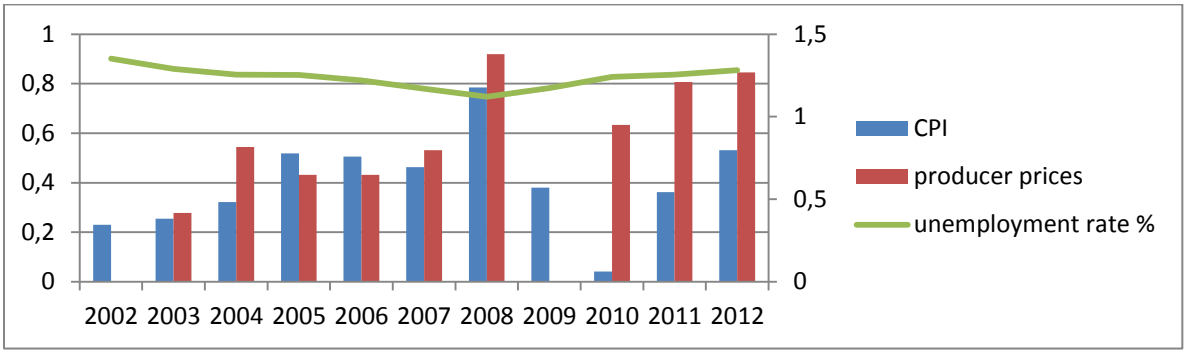
*Tables 5*

Prices (Producer/Consumer)



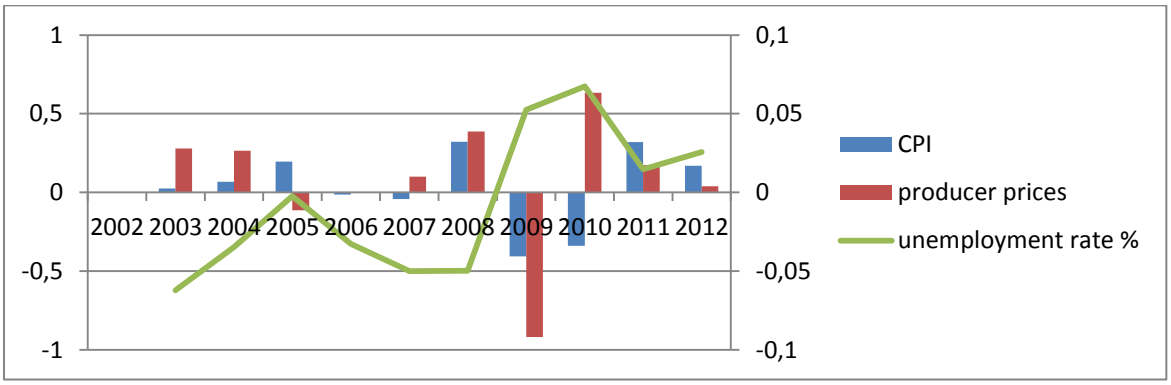

*Picture 18*

Unemployment Producer Prices Log form




*Picture 19*

Unemployment, Producer Prices Log diff form




*Picture 20*

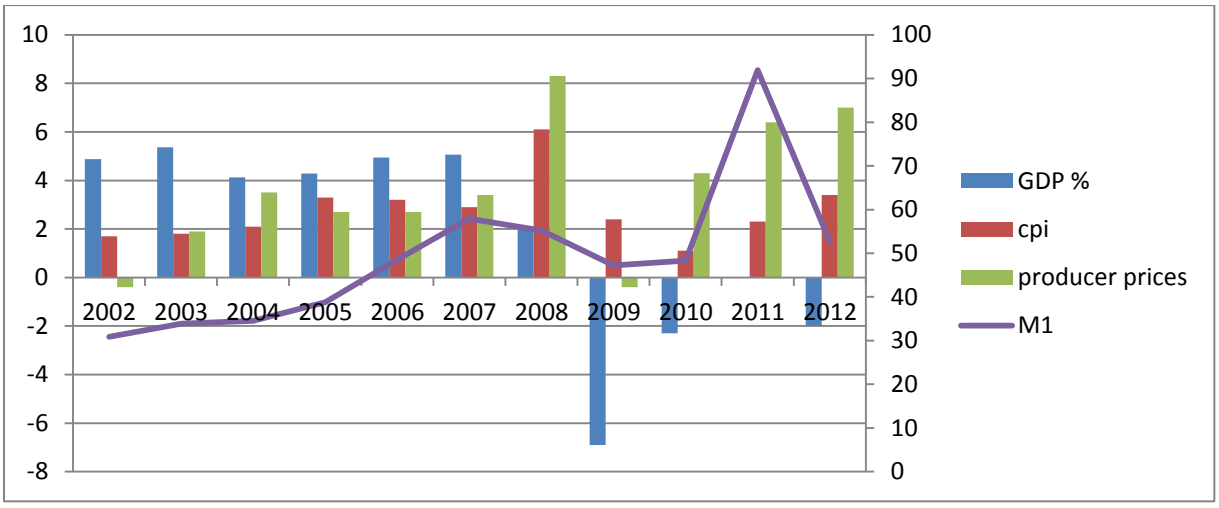
Along with change in price levels in period after 2008 level of M1 change also - money supply rose from 30 mrd HRK to 53 mrk HRK in recent periods.

Price change, GDP, M1

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| GDP % | 5,37 | 4,13 | 4,28 | 4,94 | 5,06 | 2,1 | -6,9 | -2,3 | 0 | -2 |
| CPI | 1,8 | 2,1 | 3,3 | 3,2 | 2,9 | 6,1 | 2,4 | 1,1 | 2,3 | 3,4 |
| Production prices change | 1,9 | 3,5 | 2,7 | 2,7 | 3,4 | 8,3 | -0,4 | 4,3 | 6,4 | 7 |
| M1 | 33,89 | 34,56 | 38,82 | 48,52 | 57,88 | 55,22 | 47,2 | 48,3 | 56 | 52,78 |

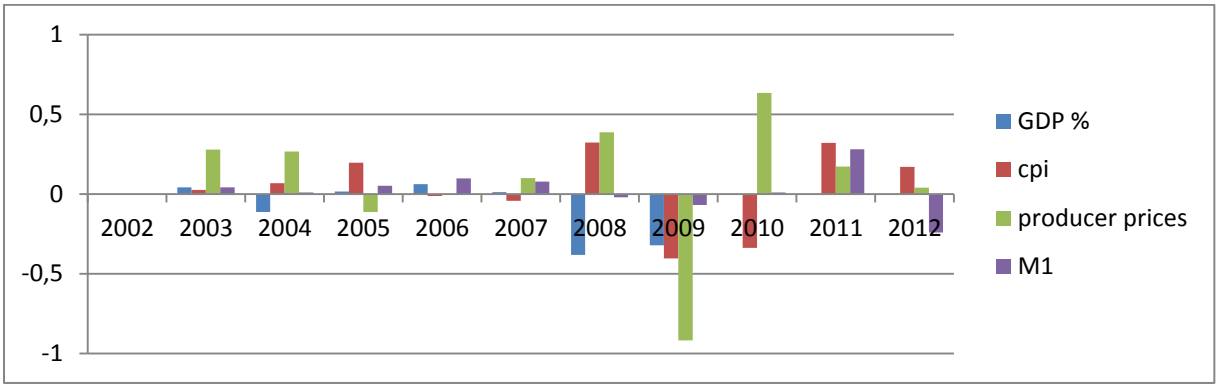
*Table 6*

Prices, GDP %, M1



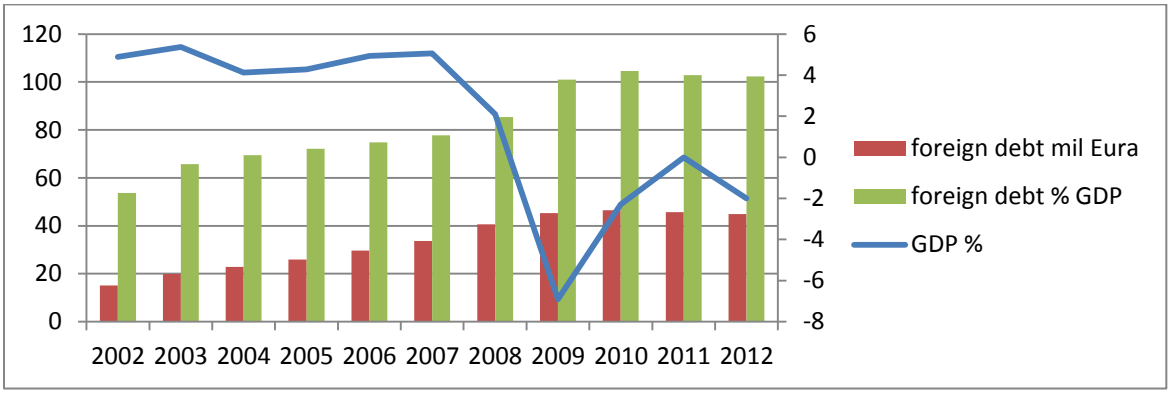

*Picture 21*

Price, GDP %, M1 log diff



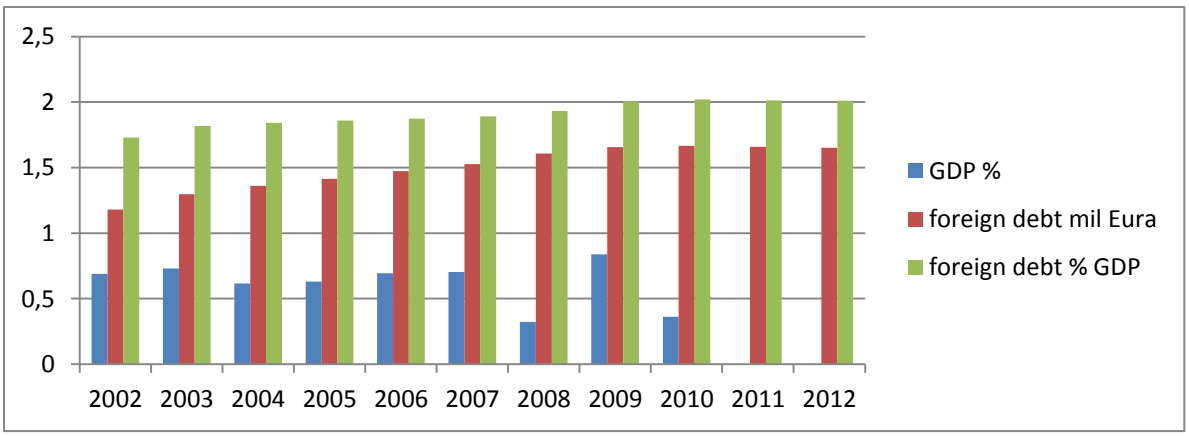

*Picture 22*

Foreign debt mil Eur, % GDP



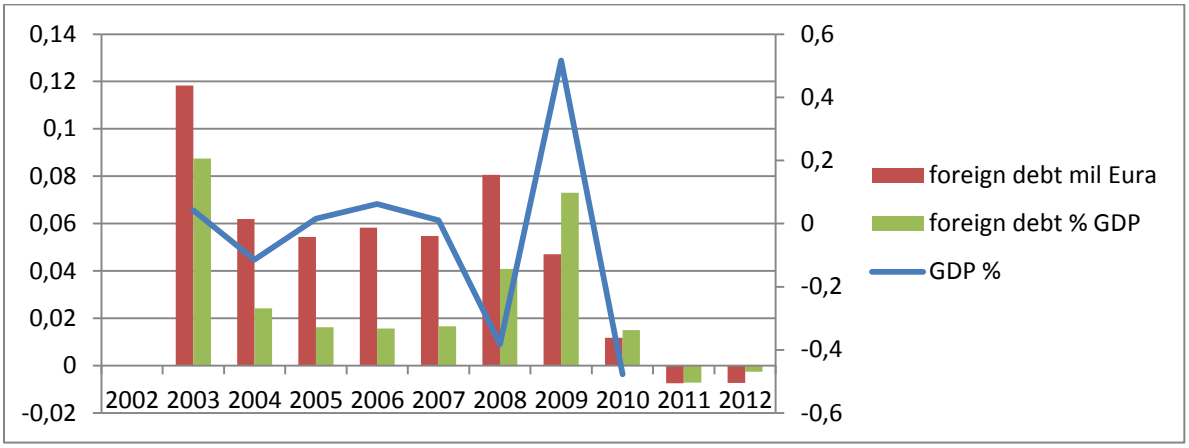

*Picture 23*

Foreign debt mil Eur, % GDP log form




*Picture 24*

Foreign debt mil EUR, % GDP log diff form




*Picture 25*

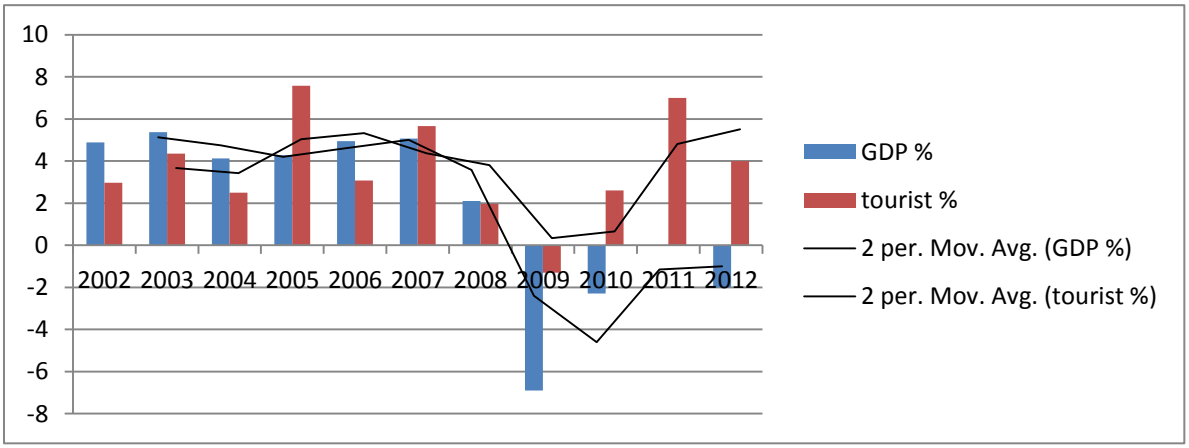
The main driving force is to be found in the tourist sector with positive numbers of tourist arrival and income.

Tourist % change, GDP %

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| GDP % | 5,37 | 4,13 | 4,28 | 4,94 | 5,06 | 2,1 | -6,9 | -2,3 | 0 | -2 |
| Tourist % | 4,35 | 2,49 | 7,58 | 3,08 | 5,66 | 1,96 | -1,3 | 2,6 | 7 | 4 |

*Table 7*

Tourist %, GDP %



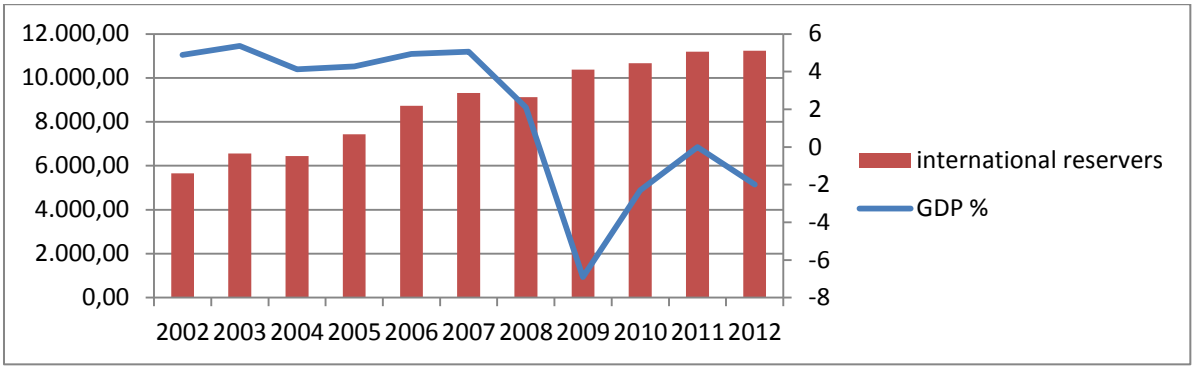

*Picture 26*

GDP %, International reserves

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|
| GDP % | 4,28 | 4,94 | 5,06 | 2,1 | -6,9 | -2,3 | 0 | -2 |
| International reserves EUR mil. | 7.438 | 8.725 | 9.307,3 | 9.121,0 | 10.375,80 | 10.660,30 | 11.194, | 11.235, |

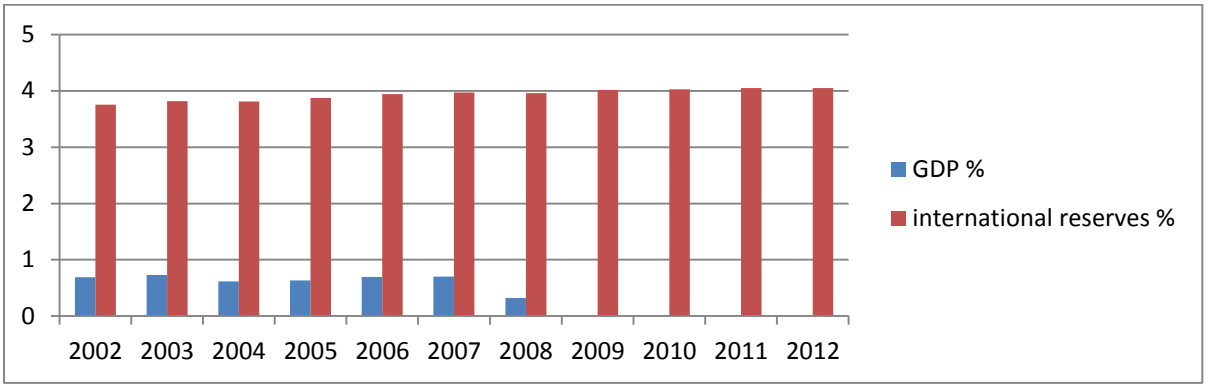
*Table 8*

International reserve, GDP growth




*Picture 27*

International reserve, GDP growth in log form




*Picture 28*

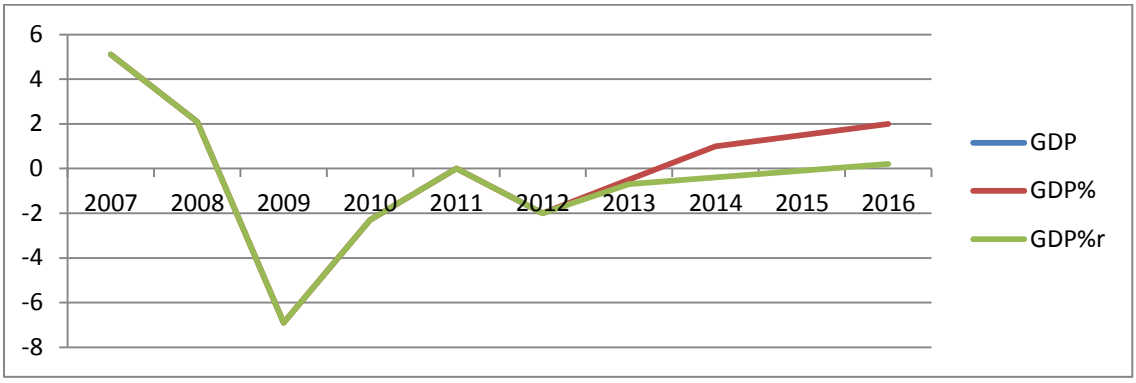
Further economic strategy is dependent upon many factors. Banks develop its own scenarios that would induce growth, promote optimism and are inclined toward bigger savings and investment as well as loan requirement in big infrastructure project or pointed at consumer credits.

The second line of opinion is more pessimistic or real and further prospect could lie on these paths with certain standard errors.

End result depends upon various factors: further decisions about privatization and success of its, concession of various properties, do money resources given to banks will induce right investment moves, efficiencies, labor policy, etc.

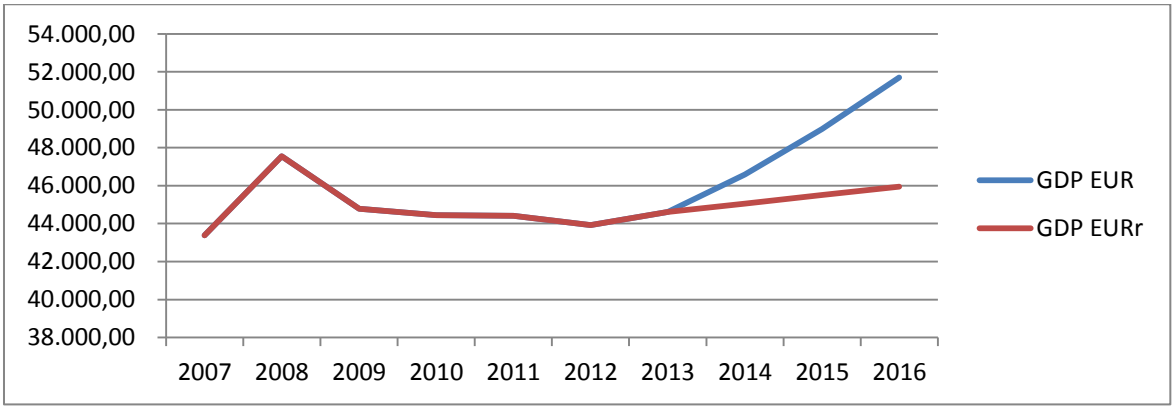
Possibilities are presented in graphs that follow:

GDP % growth 2 scenario –further possibilities



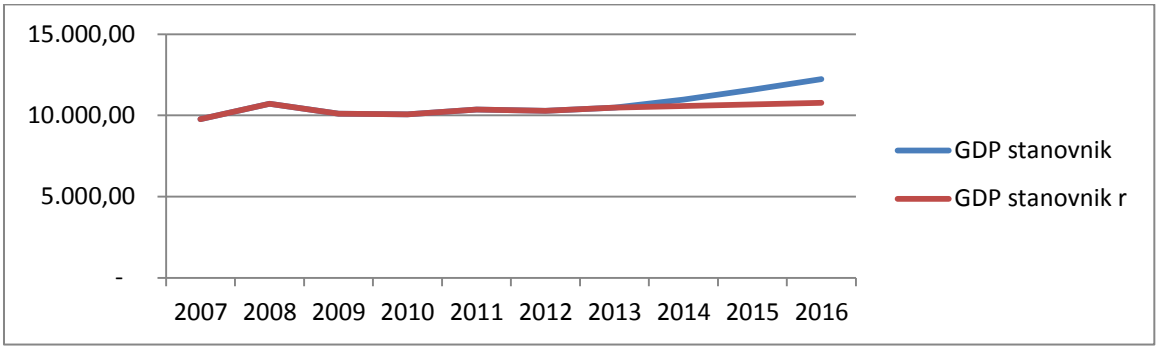

*Picture 29*

GDP m. EUR -possibilities



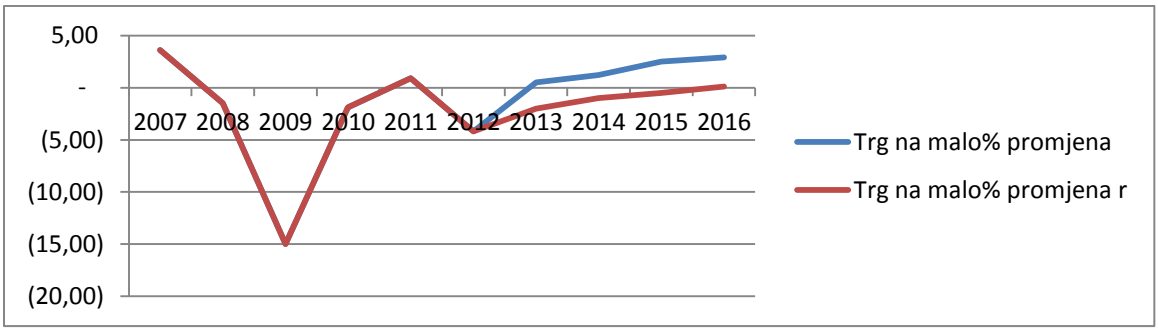

*Picture 30*

GDP / capita EUR -possibilities



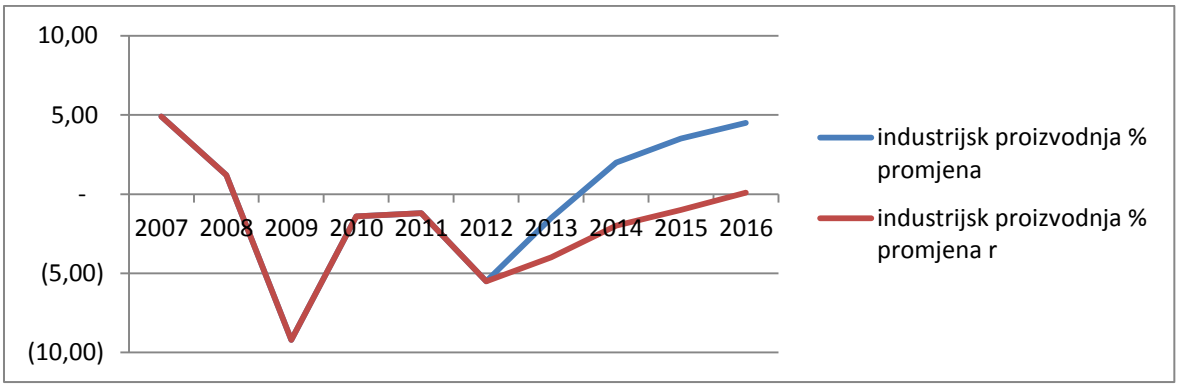

*Picture 31*

Trade % change -possibilities



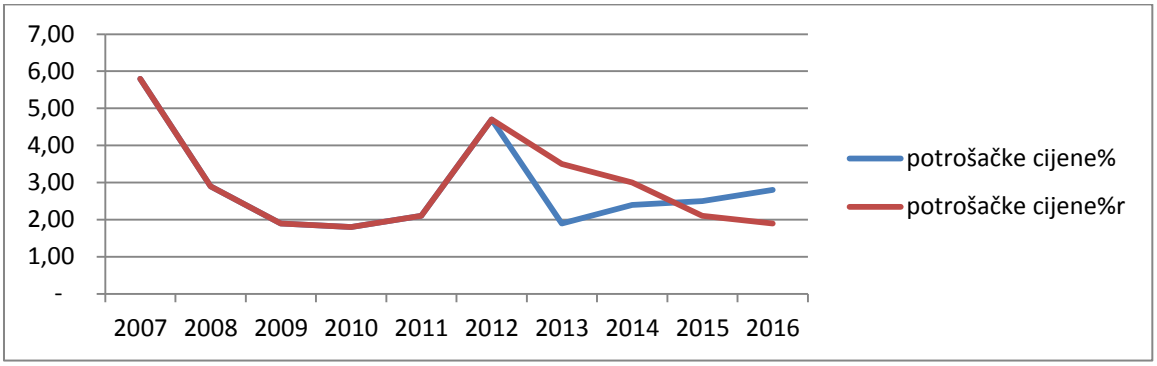

*Picture 32*

Industrial production % change -possibilities



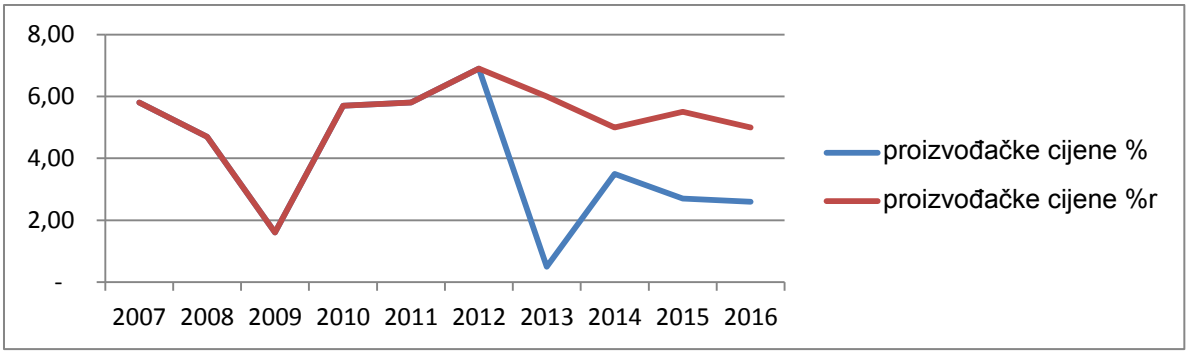

*Picture 33*

CPI -possibilities



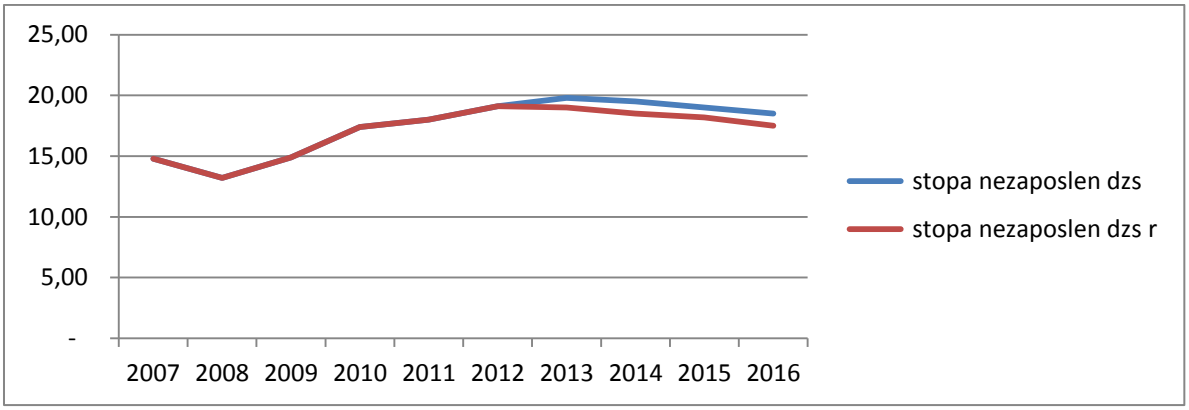

*Picture 34*

Producer prices -possibilities



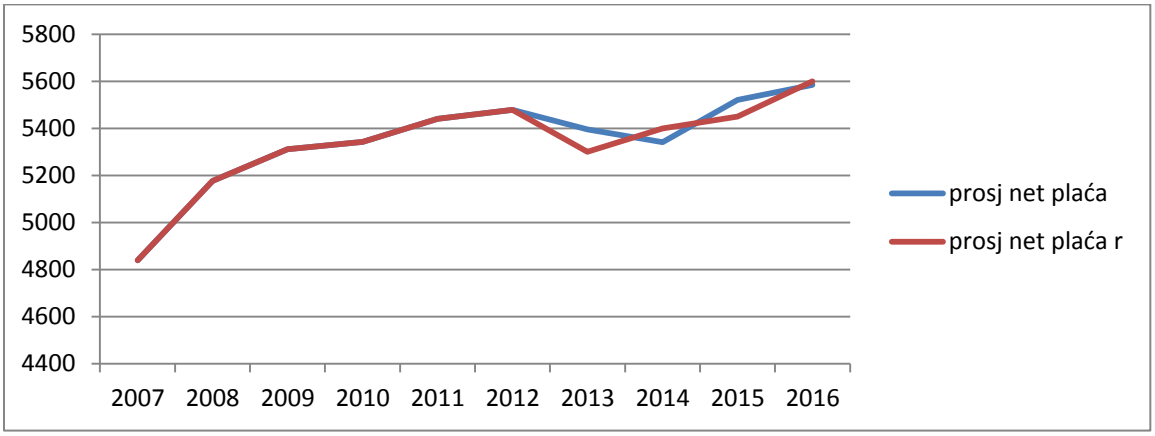

*Picture 35*

Rate of unemployed % -possibilities



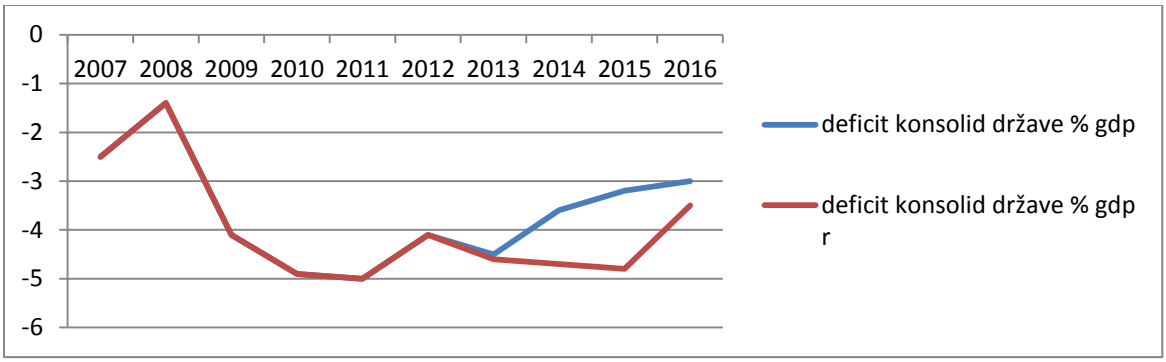

*Picture 36*

Average net salary -possibilities



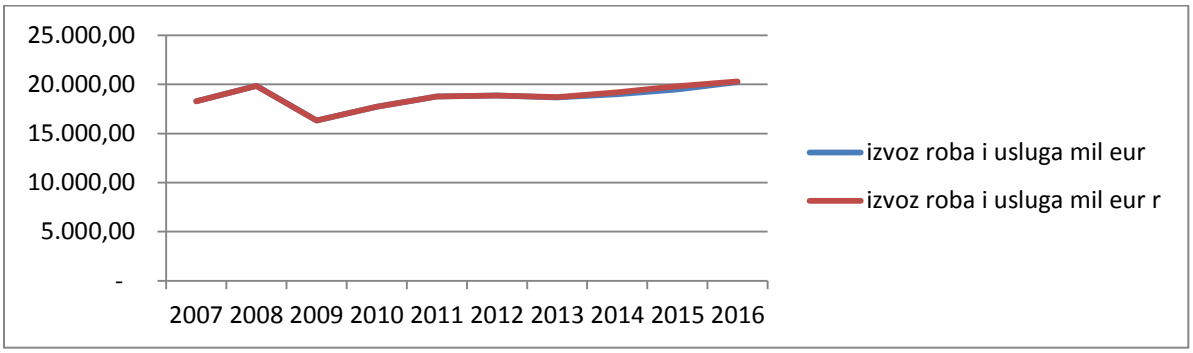

*Picture 37*

Deficit of consolidated state -possibilities



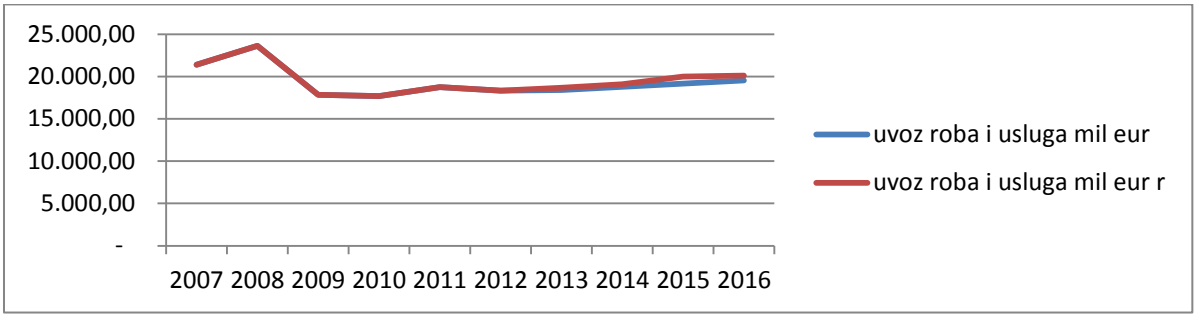

*Picture 38*

Export: goods and services -possibilities



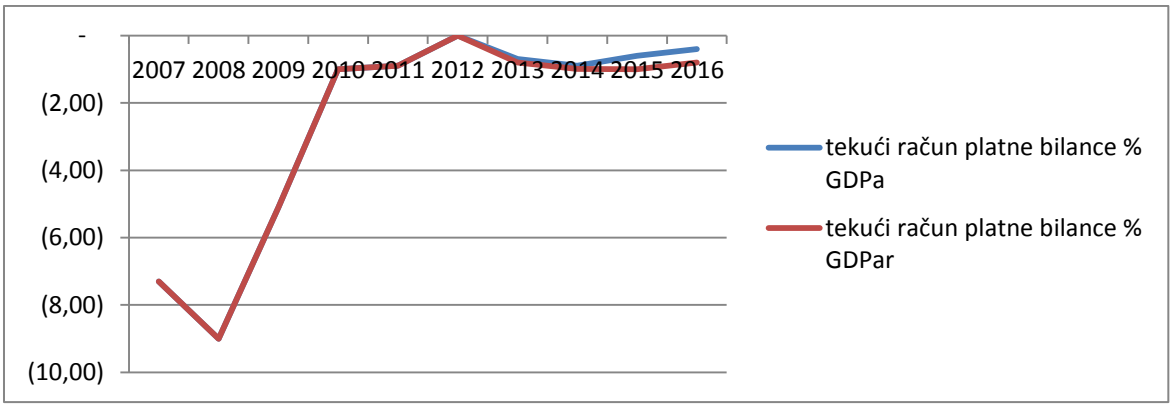

*Picture 39*

Import of goods and services -possibilities



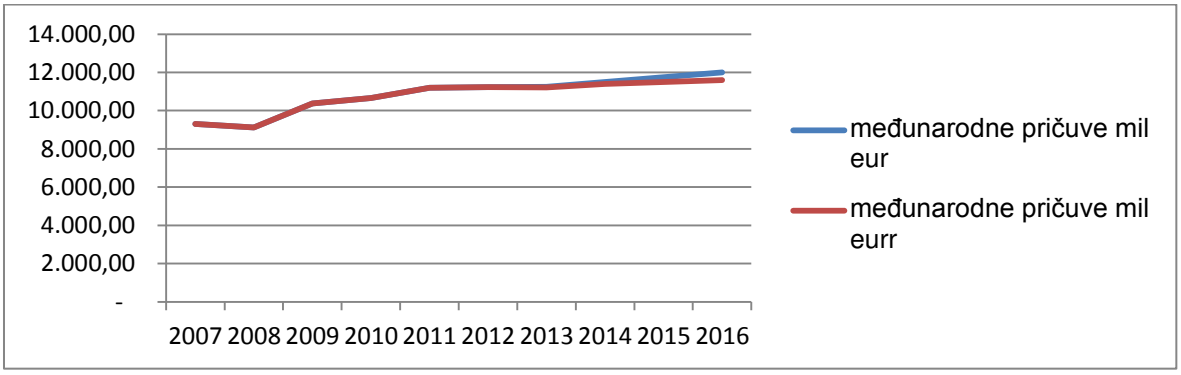

*Picture 40*

Current account Balance of Payment -possibilities



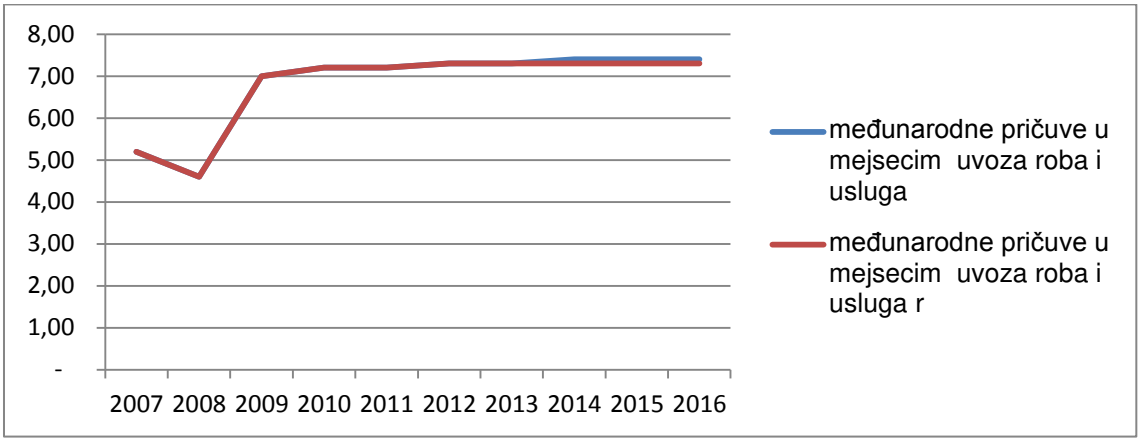

*Picture 41*

International reserves -possibilities



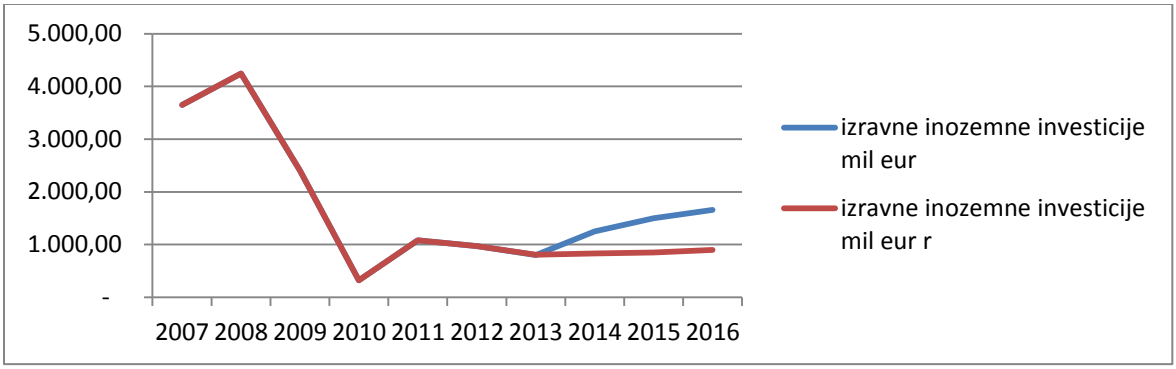

*Picture 42*

International reserves in months of import goods and services -possibilities



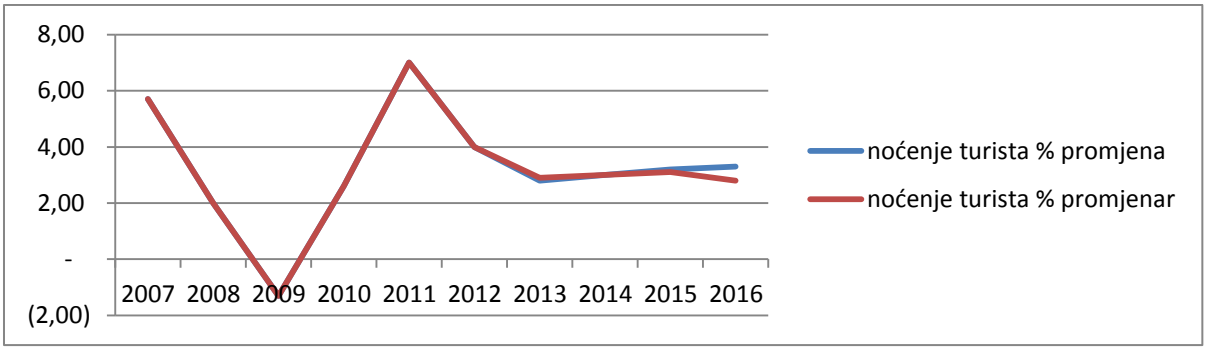

*Picture 43*

Direct foreign investment -possibilities



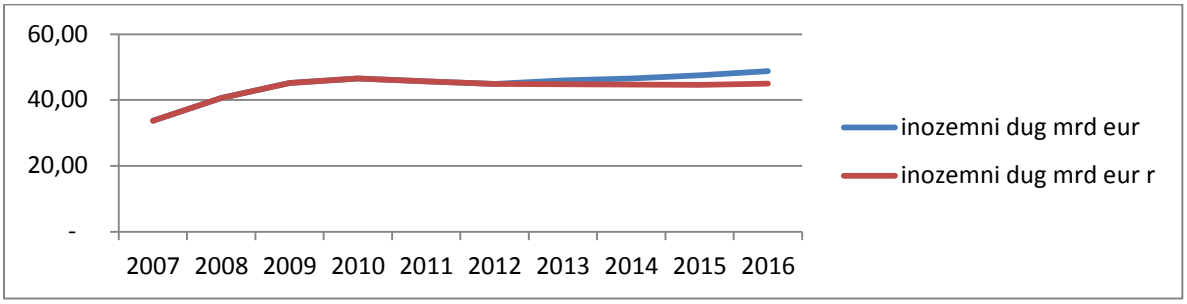

*Picture 44*

Tourist night spend % change -possibilities



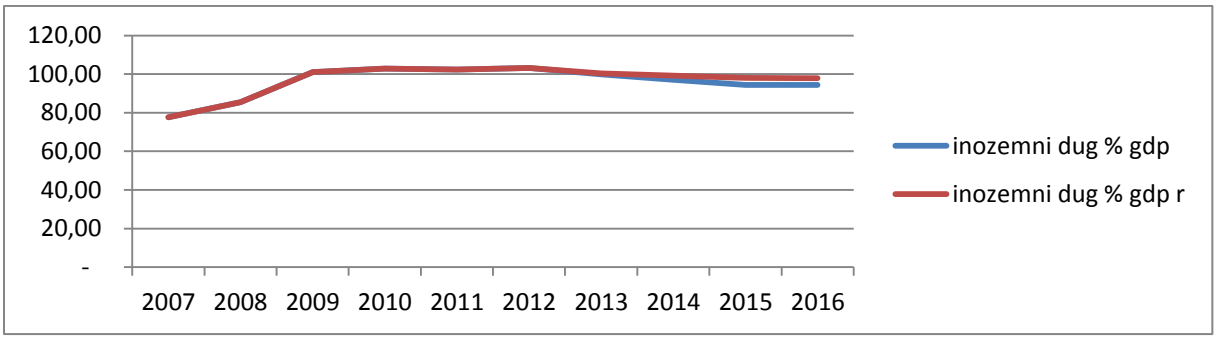

*Picture 45*

International debt mrd EUR –possibilities



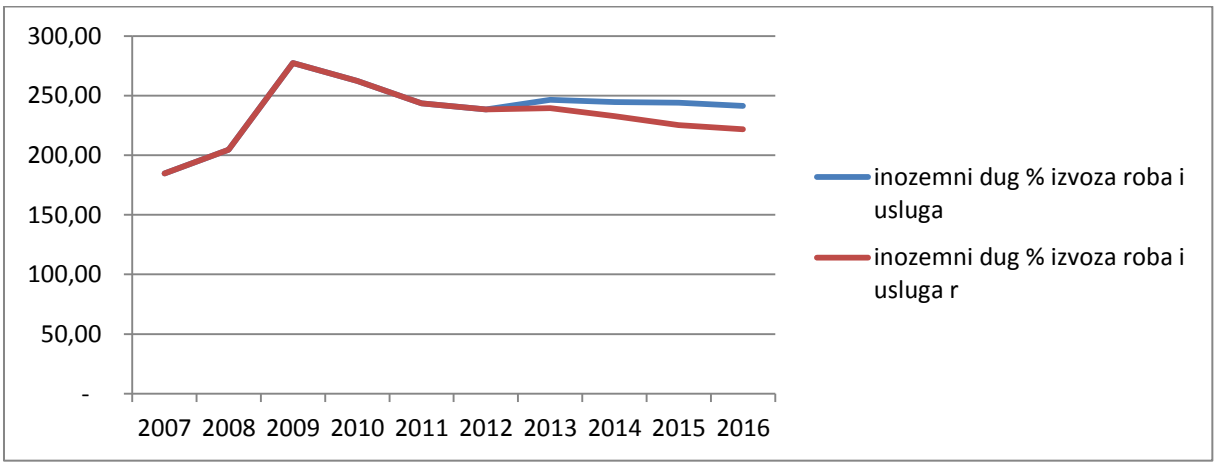

*Picture 46*

International debt % GDP -possibilities




*Picture 47*

International debt as % Export of goods and services -possibilities




*Picture 48*

## 2. DECISION MAKING PROCESSES

Some countries as Switzerland have a standard of decisions that are based on referendum questions and answers. It is after all one of the world richest country and questions are rationally put as Swiss are – laborious and profit oriented but still aware of social differences.

While modern western countries are proud with democratic past and this is the main argument in human relations in the last twenty years referendum as tools gain importance in newly democratic worlds as well. But is this tool used to show how advanced societies are, really tackles the most important issues to society as whole or is just there to encourage society giving them false community strength on cost of some not so important questions or God forbid people.

While being a part of economic and construction problems some aspects of decision making processes are tackled.

It is a way of informatics strength and relationship where

N=1.....$N_{min}$ number of people proposing referendum

K=1.....K total total number of population

A= anwer 1

B=answer 2

Besides computer as a tool and not using a paper some additional questions can be raised as follows: what is the....?

a) Right number of people needed to start the decision making process
b) Right question
c) Right to know all costs and be aware of them
d) Legal responsibility of unclear questions and answers; So many Laws and no right answer

a) In many countries minimum number of people is 20- 50 % of population to sign a petition in order for referendum to took place

No matter how big number of people is, the legal responsibility of each modern or not state is to protect minorities and right of each person. If this is not a case even 99 % of signatures make referendum only powers exercise and not a way neither for Government nor for legal authorities to deal with. Economic crises will not be solved with reducing rights of any groups. Also it is possible that referendum is started as question that is already understandable, needed to be firmly in current law, is already dealt with some other European country so some experience is useful to study prior –study and advice before costs are made, some referendum question can be a result of good paid marketing strategy from in or out of country, some can be start out of fun or illusion what is also only cost strategy without any reasonable solution or aim.

b) Right question

It is said that there is no such a thing as a wrong question and only answer can be without sense, vague or false. But question itself can take many forms. Some are more understandable, more popular than others, some provoke attention from all society groups and are strong in opposite opinions, others are grey and not suited for any discussion, while there are some questions that are ignored as people become older.

| Referendum question already asked –brought prosperity | Question already imposed that brought significant damage to community instead of growth | Never ask questions |
|---|---|---|
| | | |

c) Right to know all costs and be aware of them

This kind of questioner shows that number of people involved in referendum differs, quality of questions is varied also, and these facts are further incorporated in the total cost of referendum.

In Croatia for example cost of referendum is 48 mil. HRK

If put on saving account after 10 years they would bring

P= (48 mil HRK) $^{rt}$

Besides initial costs there is additional cost that could not be immediately recognized as such:

*-Number of tourist coming, reduced income from tourist, increased coming from opposite kind of tourist, trees destroyed due to paper needs etc.*

*-Legal insufficiency, not stabile country for investors etc.*

All recognized facts need to be put in equation and discounted to today's value and this at end is the right costs at first glance.

1) $\mathbf{C_{country} = a + (R - C)_{material} / (1+r)^{1} + \ldots\ldots\ldots\ldots (R - C)_{material} / (1+r)^{n} + (R - C)_{immaterial} / (1+r)^{1} + \ldots\ldots\ldots\ldots (R - C)_{immaterial} / (1+r)^{n}}$

Further to note is to realize that budget plan needs to be burdened with number of possible questions imposed by population of the country:

*Question 1…….n in a future budget*

What is further needed is to be aware that this question is not lock up in one country but also can travel across countries in another EU lands. What shall this referendum bring to country where originates and what are the possible outcomes for other regions inside EU? Positive or negative? Does this referendum bring additional cost to tax payers inside EU? In what way?

Does EU have legal explanation, are there opportunity for those unhappy with results to turn to High Judicial Powers in EU , is this question differently treated in different EU countries and what would be result if imposed on each country. Further to resolve is financing the question in EU - is it from EU tax payers and how many referendums EU budget can have.

Do this imbalances between EU state weakens EU and to what extent in relation to negotiation with trade agreement with USA, credit ratings of EU at for example S&P , is this question burdening trading relation with other land's in Africa and Asia while increasing the cost of service of EU countries and requiring lower prices from goods and services from other lands in order to finance all unsolved questions that can be numerous in number.

This is just a top of ice berg that is tackled and extended present value of all cost : EU budget costs, EU tax payers costs, reduced number of kindergartens, schools, educational, health institutions, image of EU on other continents and reduced or increased trading powers that comes with question.

2) $C_{Country+EU} = a + (R-C)_{material} / (1+r)^1 + \ldots\ldots\ldots\ldots (R-C)_{material} / (1+r)^n + (R-C)_{immaterial} / (1+r)^1 + \ldots (R-C)_{immaterial} / (1+r)^n + b + (R-C)_{EU} / (1+r)^1 + \ldots\ldots\ldots\ldots (R-C)_{EU} / (1+r)^n + e$

d) Legal responsibility of unclear questions and answers; So many Laws and no right answer

There are many referendum questions already firmly in the Law but are not visible to the public and only experts can explain their meaning. In this way they would prevent divisions in society, reduce cost and bring proper explanation what the Law maker means under certain definition or declaration. It can be case however where the will of people need to be taken into consideration but it is the obligation of Law maker to explain current position of Law, bring proposition, explore the topic in another countries especially in EU, while the question itself can be a topic for further Court Appeal and disagreements of certain groups. After results are presented some other ways to reduce cost of referendum can be reached. It can be however the Law maker that is under pressure of population and allow referendum as a means to takes responsibility away from them or to please the certain strong interest

groups. Law is often changeable toward strength of groups, lobbies, and prone to be less sensitive toward simple truth already incorporated in the Law. In that case Appeal to Higher Courts even in the case of referendum may be of interest to some Law makers in high instance such as EU Court.

## 3. CAPITAL LABOUR ENERGY AS STRANGE FACTORS TO MANAGE

Basic Cobb Douglas function of income is represented with relation of work and capital.

$$3)\ Y = c^{d} L^{1-d}$$

Extended form is often seen as energy added variable while it is more or less constant to the income relation

$$4)\ Y = c^{d} L^{1-d} + E$$

This basic forms in the last twenty years of constant research, many publishing papers presented different forms and relations and this equation is explored to details in all types of economic positions: boom, recession, rigid prices, rigid supply, etc. It is valid still to look again at the formula and try to find in each part of it relations that can be seen from a new angle and put a light into perspective of economic crises, and sector reasoning in respect to one country.

### 2.1. Capital

Capital is indeed very much related to the past values and this is basic step where to look at. Capital is building on itself and this is the most visible in large banking sector or growing number of conglomerates. Also crises teach that mergers happen the most often in recession years.

$$5)\ C = a + b\, C_{t-1}$$

Although capital itself explains later values without error term and explanation of constant that can took different forms and shapes this is far from statistical formula and is only significant in basic mathematical world.

**6) $C = a + b\,C_{t-1} + e$**

Investment teaching learns that capital is devalued each day strongly with inflation, not usage and only the dynamic form is actual value or additional values in economy of certain country.

In this respect formula is extended to dynamics:

**7) $C = a + b\,\frac{C\,t-1}{C\,T-2} + q\,C_{t-1} + e$**

And

**8) $C = a + b\,\frac{\partial\,C\,t-1}{\partial\,C\,t-2} + q\,C_{t-1} + e$**

This dynamics lacks many unexplained forms from macro economy, structural indexes from sector, and facts that influence each company individually.

In that respect a and e (constant and error) are represented with followings:

-Economy (boom, recession, stagnation, stagflation, small variable growth, small constant growth,etc)

-Financial variables ( inflation, inflation energy, inflation consumer goods, interest rate for different infrastructure projects, interest rates for housing projects, interest rates for the objects of special state interest ( such as energy projects , kindergartens, schools) , interest rates for new factories etc. )

Capital increase is influenced by micro or company level factors

**9) $\text{Capital}_{t} = a + \text{Capital asset}_{t-1} + \text{Capital liability}_{t-1} + e$**

**10)** $C_t = a+b*C_{t-1} + c_n$ **(** *Debt /Asset ratio Company+ Liquidity ratios+ Economic Factors+ Factor of Productivity+ Factors of prospects+ Occupation risk +Existence of Feasibility Studies+ Funds* **+***Possibility to issues stock +Possibility to increase numbers of owners* **+e ) +v**

It is also influenced by macro level variables such as:

**7)** $\textbf{Capital}_t = a+ b*\textbf{Capital}_{t-1} + c*$ **(** *Interest rate for loans commercial +Interest rate for construction projects + Inflation rate + Economy boom +Economy recession + Risk of country +Risk of region +Risk of business+ Exchange rate level+ Exchange rate prospects )+***e**

Company it on the asset sides finds much way to improve capital allocation, efficiency, years of usage, buying process, selling process etc.

**8)** $C_t = a+b* C_{t-1} + c$ **(** *Land ownership , commercial area, industrial area, out of town, center of town+e)* **+v**

**9)** $C_t = a+b* c_{t-1} + c$ *(Machine ownership ( small (wheelbarrow, tools, electrical tools, etc.) Mid-size (trucks, tractors) big (crane, digger) + d(Machine lease ( number of periods, price, type, insurance +d( Maintenance ( reparation costs, years of usage, amortization, way of usage +t)* **+v**

Capital also is improved by investing in immaterial ownership and property such as:

**10 )** $C_{t+1} = a+ C_{t-1}$ **+ immaterial ownership** *( number of patents, innovation potential, following latest technical knowledge, knowledge of different fields, knowing the right people , having rare skills on current market, credits on past performance , good marketing skills, excellent communication with suppliers , right approach to buyers + t)* **+e**

All these combined brings product that have price that is incorporated into capital calculation

This price can further be seen as

**11)** $C_{total} = a + c_{basic} * P_{basic} + c_{advanced} P_{basic} + c_{luxus} * P_{luxus} + e$

**12)** $C_{total} = a + C_{basic} *$ **P tariffs, discounts +** $C$ *advanced P tariffs, discounts + C luxus * P tariffs, discounts +e*

**13)** $C_{total} = a + C_{basic} * P_{buyer} + C_{advanced} P_{buyer} + C_{luxus} * P_{buyer} + e$

Each period of business is further advanced following core business successes and develops other activated that support, extend or expand core or other types businesses

**14)** $C_t = C_{t\text{-}1\ core\ business} + C_{t\text{-}1\ other\ activities} + e$

**15)** $C_{t\ other\ activites} = a + b *$ *C Lease of machines +c* C Services of certificates +d*C Inner procedure +e C * Reward to successful projects+ f* C making own material + g * C energy efficiency measures +e*

### 3.2. Labor

Labor skills and work is important part of construction activity. In that respect proper labor policy, putting the right man on the right place is not of extreme importance but additional requirements are often needed as physical strength, work on high ground, knowledge of many different aspects of work to be combined together, work with different people from architects to low level auxiliary stuff.

In order to make a quality work proper rewarding and hiring schemes should be employed.

In that respect following formula can express some of concerns that is given in company

16) L cost = L basic + L project based +e

17 ) L cos= L skilled + L unskilled +l L management + e

18 ) L hour work= a+ L hours regular +L hours out of 8 hour scheme + L holiday + L night + L weekend +e

19) L worker = a+ L regular work + L physical danger 1 + L physical danger 2 + L physical danger 3 +e

20 ) L management =a+ L profit from work + L number of contracts made + L number of contracts paid + L potential new jobs + L new job opportunities + e

21) L = L organizational competencies+ L Generic competences + L Specific type of knowledge +e

22) L organizational competences =a+b* knowledge + c*team work + d* education skill +e* credibility +f* loyalty to aim of society + v

23) L generic competences result oriented = a+ b*aim oriented*quantitative aims acheved+d* qualitative aims achieved+ f* information advances+ g* initiatives +h * management skills+ i*analytical skills +v

24) L generic competences cooperation = a+ b* cooperation*team work +d*monitoring +e* clear results +f* following schedule of work +v

25) L generic competences influence on others =a+b*initiatives +c* determination*strategic thinking +e*using opportunities +f* practical thinking +v

26) L generic competences informative skills =a+ b*defining the problem on right way +c*focus on problem +d*sensibility +e* research+ v

27) L generic competences management skills =a+ b*support others +c* team work in company +d* work with customers buyers potential customers +e*leading the team + f* excepting responsibility + +g* influence security on lower level workers in respect of responsibility knowledge competency +v

28) L generic competences analytical skills =a+ b*independent thinking + c*practical intelligence +d* analyzing problems*skill of planning +v

29) L specific knowledge = a+ b* knowledge+ c* skills+ f physical properties + g* responsibilities +v

30) L knowledge = a+ b*knowledge responsibility*leading the project +e* informatics + f*foreign languages +v

31) L skills = a+ b* management +c*information usage +d* management of risks +e*management of conflicts +f*leading the team +g mentoring +i *communication skills +z presentation skills +w quantitative thinking * data reading + t * physical fit+ y

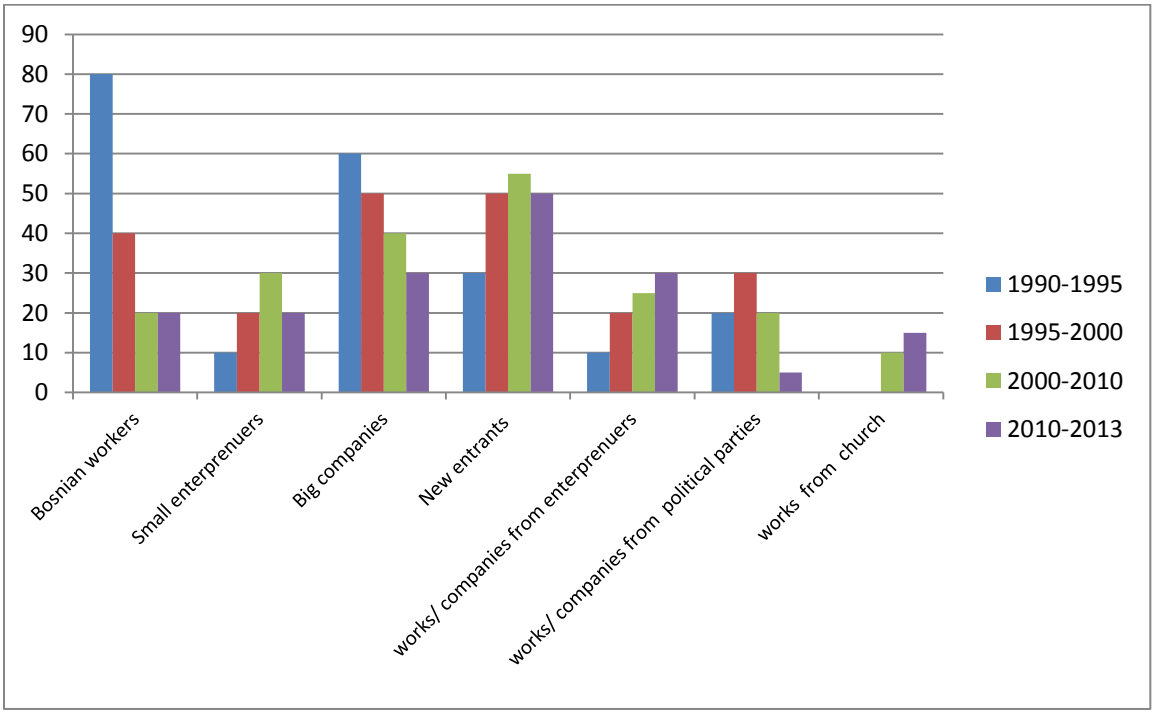
32) L personal other = L basic + L advanced ( *tact, diplomacy, confidentiality, self-sufficient work, work in stress, emotional stability, cooperatively, assertive behavior, social skills, energetic personality, persistence, hard work, endurance, practical personality, creativity, organizational skills, objective, kind, systematic ,precise, tidiness etc.)*+e

Work / jobs /Companies evolvement in Croatia after 1990 ies importance stress approx.

| | 1990-1995 | 1995-2000 | 2000-2010 | 2010-2013 |
|---|---|---|---|---|
| Bosnian workers | 80 | 40 | 20 | 20 |
| Small entrepreneurs | 10 | 20 | 30 | 20 |
| Big companies | 60 | 50 | 40 | 30 |
| New entrants | 30 | 50 | 55 | 50 |
| works/ companies from entrepreneurs | 10 | 20 | 25 | 30 |
| works/ companies from political parties members | 20 | 30 | 20 | 5 |
| works from church as investor | | | 10 | 15 |

*Table 9*

Work force in Croatia after 1990 ies




*Picture 49*

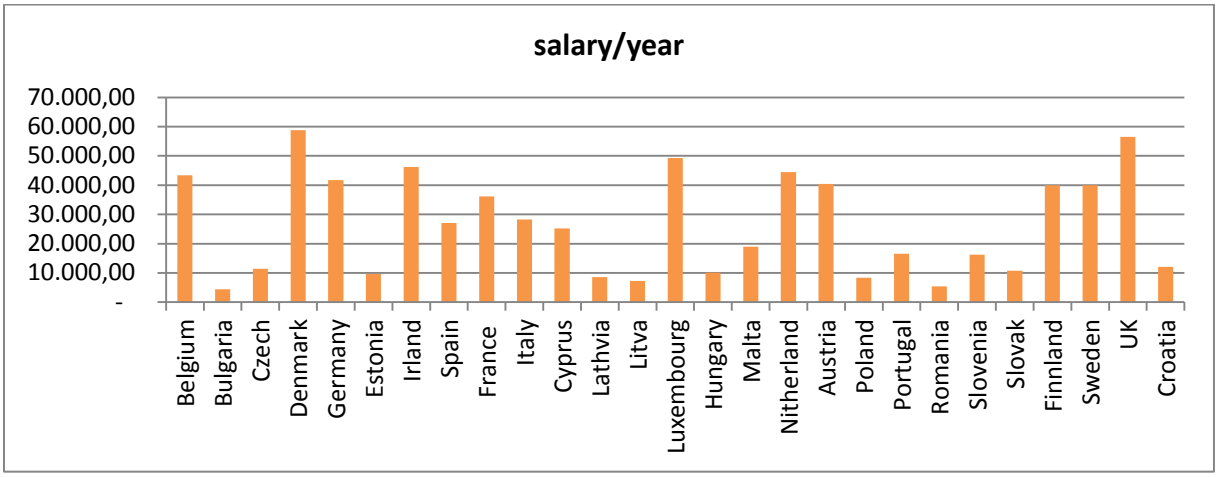
| | | |
|---|---|---|
| Bosnian workers | Biggest and the most popular physical labor force for long time; Employed also by foreign nationals in building houses in country ; With time after EU regulation smaller quantities of cheap labor force | Small companies in regular tendencies to underpay workers, do not pay or minimum wage taxes, insurance, or secure proper policy of work protection at spot; Bosnian workers employed in enterprenuaral companies -strong competing force with established companies that pay all fees and higher salaries ; |
| Small entrepreneurs | Rises in importance. Many work as subcontractors for big companies for one agency that is searching for a job; | Cannot do all potential jobs; must specialize; must be competitive than save on workers, etc. Have lower power potential in negotiation with buyers, suppliers, on market in general etc. |
| Big companies | Huge importance in building large infrastructure projects in beginning of 90 is ; with time competitive factors fades away | Although paid all fees for workers many lack basic ownership documents of investment due to unsolved problems in state; with time decreasing competitive power abroad ;lack of state support due to new entrants |
| New entrants | | |
| works/ companies from entrepreneurs | Entrepreneurs distributed its strength on all areas: small large buildings, trade, buying factories that previously were in state ownership with dubious effects later (smaller percentage are really successful) | Mixed success; First success on the back of cheap labor (Bosnian); cheap buying of state properties such as factories ; winning from credits from banks ; success from cooperation with state, services, banks other factors outside country that back up all successes and failures |
| works/ companies from political parties members | Political parties with its representatives recognize potential of earnings in sectors; over building approach led to low market evaluation of potentials and unused unsold properties | Large system of cooperation, under cooperation, small companies working for large ones, mixed labor force , no real insight where the workers came from and are they are paid properly |
| works from church | No activities until 2000 ies ; building for priests, nuns, old buildings repaired ; investment in new modern buildings ; | Employ companies elected in tenders; Old buildings as part of de nationalization process |

*Table 10:Work Jobs in Croatia after 1990 ies*

In comparison with other EU countries average salary in Croatia is bigger than in markets such as:Slovakia,Romania,Poland, Estonia,Bulgaria. This lowers competitive power and potentials in

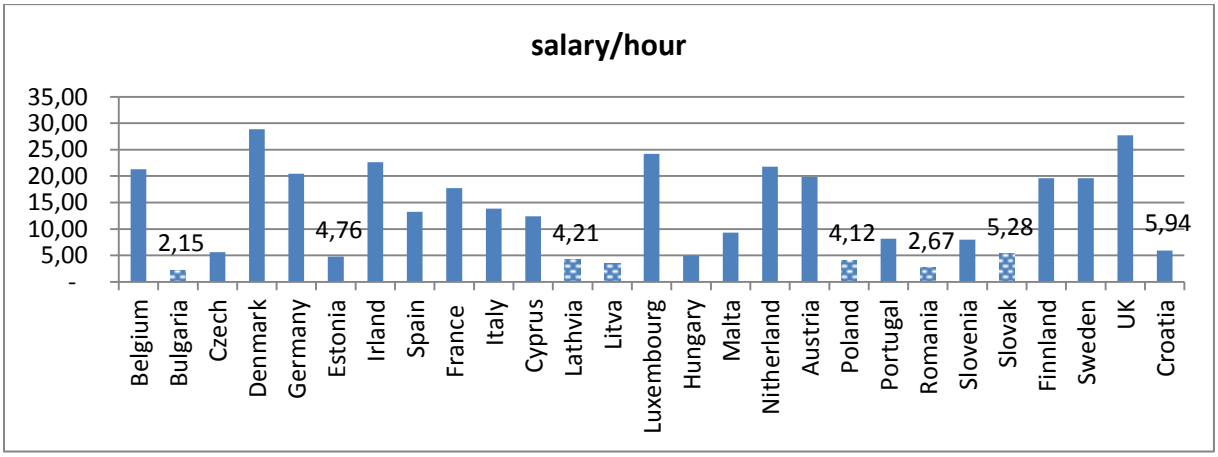
infrastructure projects done in EU. Specialization, competing salaries or other competitive advantage need to be considered.

Comparison of salaries in EU total / year




*Picture 50*

Comparison of salaries in EU salary/hour




*Picture 51*

### 3.3. Energy

As stated on the begins of the chapter energy influence total income of country by added to total capital and labor but in additive form .It means it does not influence directly but indirectly income .

Energy is important on the state level in many aspects: production support energy security, gives potential to export revenue, influence the development of other industries, import hinders security and requires additional measures of storage, obligatory storage, different ways of transport routs, etc.

On the level of company performance energy enters several important equation:

33) E = a1* Energy of building +a2* Energy of maintenance of building + a3*Energy efficiency obtained +a4*Energy efficiency that can be reached +e

34) E = a 1* Energy from renewable resources +a2*Energy from nonrenewable resources + e

35) E nonrenewable resources =a+a2* E price +a3* E quantities +a4* E emissions +e

36) E emissions = a+ b* $CO_2$ + c* $N_2O$ +d* $CH_4$

37) E non renewables = a+a2* E oil +a3* E gas + a4*E electricity + a5*E wood + a6*E coal + v

38) E renewables = a+ b2*E wind+ b3*E hydro +b4*E wind + b5*E solar + b6*E biomass +v

39) E mix resource= a+b1 *E wind +b2*W hydro +b3* E gas+ b4*W electrical +v

40) E mix t = a+ b1* E mix t-1 + b2* E efficiency measures +b3* Price energy efficiency measures +v

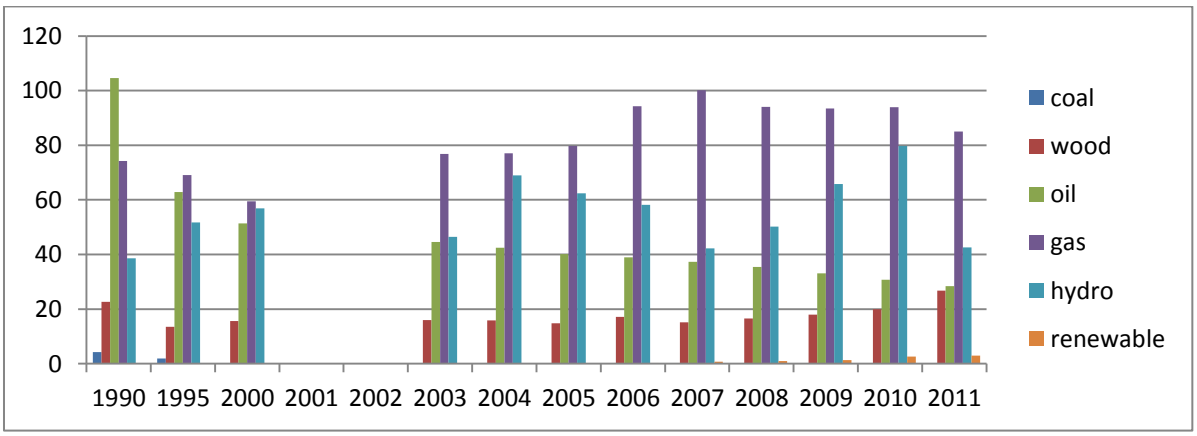
As presented in *Table 11* production of energy in Croatia declines. It was 244 PJ in1990 while reached 187PJ in 2011. By far the largest decrease is marked by oil industry, while gas, renewables and wood are rising. Hydro energy depends upon year and water potential.

Is Production of primary energy

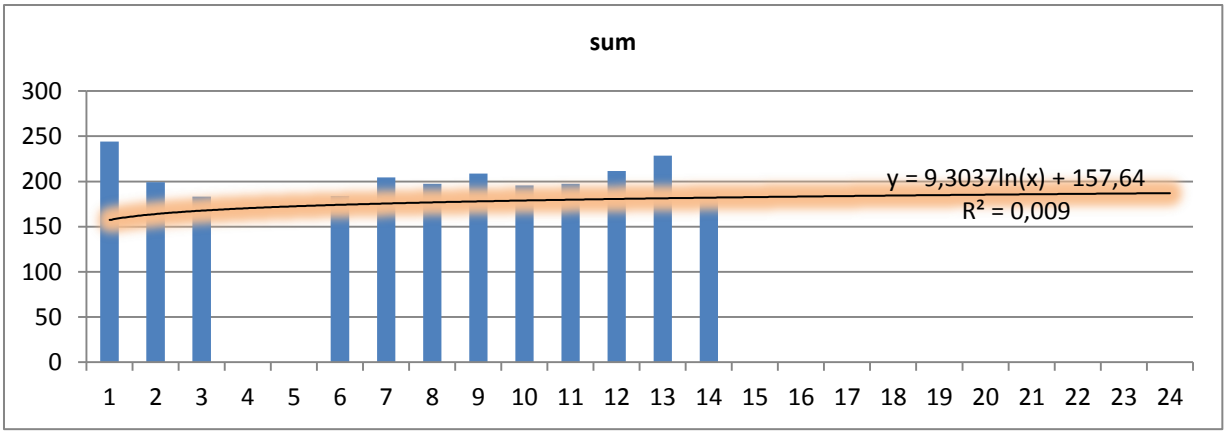
| PJ | coal | wood | oil | gas | hydro | renewable | sum |
|---|---|---|---|---|---|---|---|
| 1990 | 4,21 | 22,68 | 104,54 | 74,27 | 38,55 | | 244,25 |
| 1995 | 1,96 | 13,52 | 62,81 | 69,12 | 51,75 | | 199,16 |
| 2000 | | 15,64 | 51,35 | 59,4 | 56,93 | | 183,32 |
| 2001 | | | | | | | 0 |
| 2002 | | | | | | | 0 |
| 2003 | | 15,96 | 44,61 | 76,83 | 46,48 | | 183,88 |
| 2004 | | 15,86 | 42,44 | 77,08 | 69 | 0,02 | 204,4 |
| 2005 | | 14,77 | 40,11 | 79,76 | 62,4 | 0,2 | 197,24 |
| 2006 | | 17,18 | 38,9 | 94,27 | 58,18 | 0,24 | 208,77 |
| 2007 | | 15,11 | 37,27 | 100,12 | 42,21 | 0,71 | 195,42 |
| 2008 | | 16,58 | 35,42 | 94,05 | 50,19 | 1,003 | 197,28 |
| 2009 | | 17,97 | 33,07 | 93,5 | 65,77 | 1,34 | 211,64 |
| 2010 | | 19,96 | 30,69 | 93,88 | 79,71 | 2,63 | 228,62 |
| 2011 | | 26,74 | 28,37 | 85,02 | 42,59 | 2,97 | 187,42 |

*Table 11*

Production of primary energy




*Picture 52*




*Picture 53*

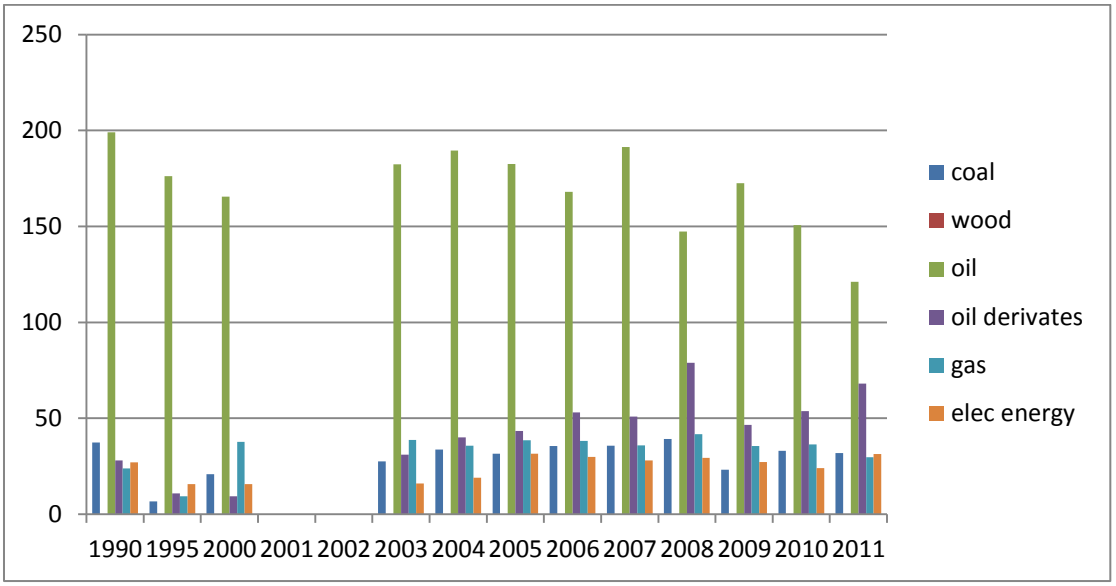
Lower import of energy is mainly due to reduce consumption of industries, different hydro potentials, energy efficiencies and reduction due to economic crises.

Import of energy

| | coal | wood | oil | oil derivate | gas | elec energy | renewable | sum |
|---|---|---|---|---|---|---|---|---|
| 1990 | 37,46 | | 198,97 | 27,99 | 23,95 | 27,08 | | 315,45 |
| 1995 | 6,76 | | 176,22 | 10,88 | 9,31 | 15,77 | | 218,94 |
| 2000 | 20,89 | | 165,57 | 9,31 | 37,67 | 15,79 | | 249,23 |
| 2003 | 27,54 | | 182,41 | 31,08 | 38,72 | 16,12 | | 295,87 |
| 2004 | 33,73 | | 189,49 | 40,01 | 35,82 | 19,07 | | 318,12 |
| 2005 | 31,51 | | 182,57 | 43,34 | 38,56 | 31,49 | | 327,47 |
| 2006 | 35,56 | | 167,96 | 53,1 | 38,3 | 29,93 | | 324,85 |
| 2007 | 35,69 | | 191,31 | 50,86 | 35,87 | 28,12 | | 341,85 |
| 2008 | 39,26 | 0,11 | 147,27 | 79,01 | 41,71 | 29,39 | | 336,63 |
| 2009 | 23,21 | 0,38 | 172,45 | 46,54 | 35,5 | 27,29 | | 305,37 |
| 2010 | 33,13 | 0,20 | 150,64 | 53,81 | 36,37 | 24,06 | | 298,2 |
| 2011 | 31,92 | 0,23 | 121,2 | 68,05 | 29,79 | 31,43 | | 282,61 |

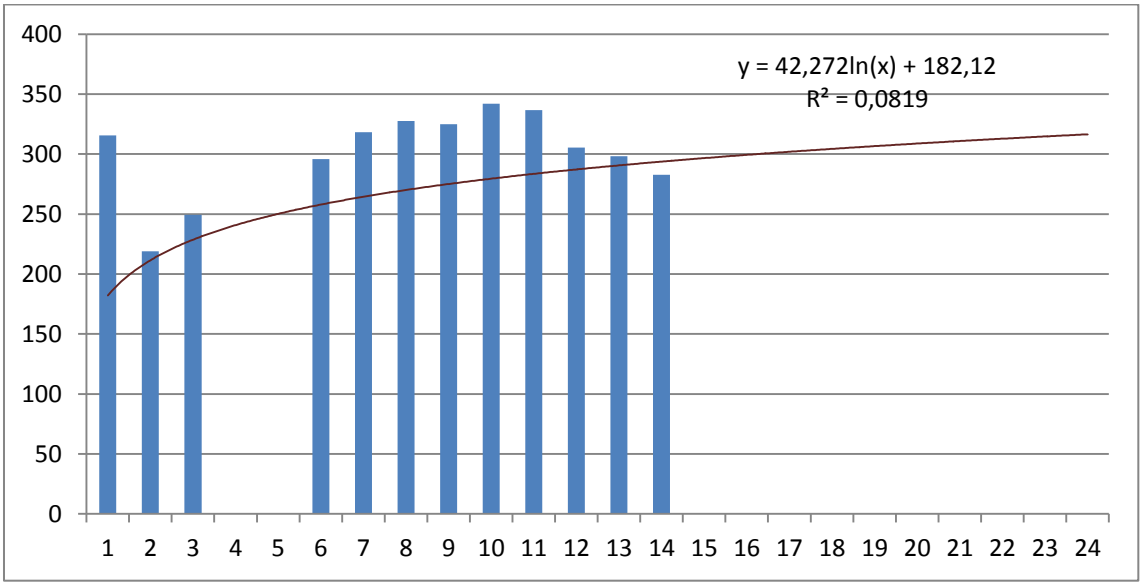
*Table 12*

Import of energy




*Picture 54*

Import of energy




*Picture 55*

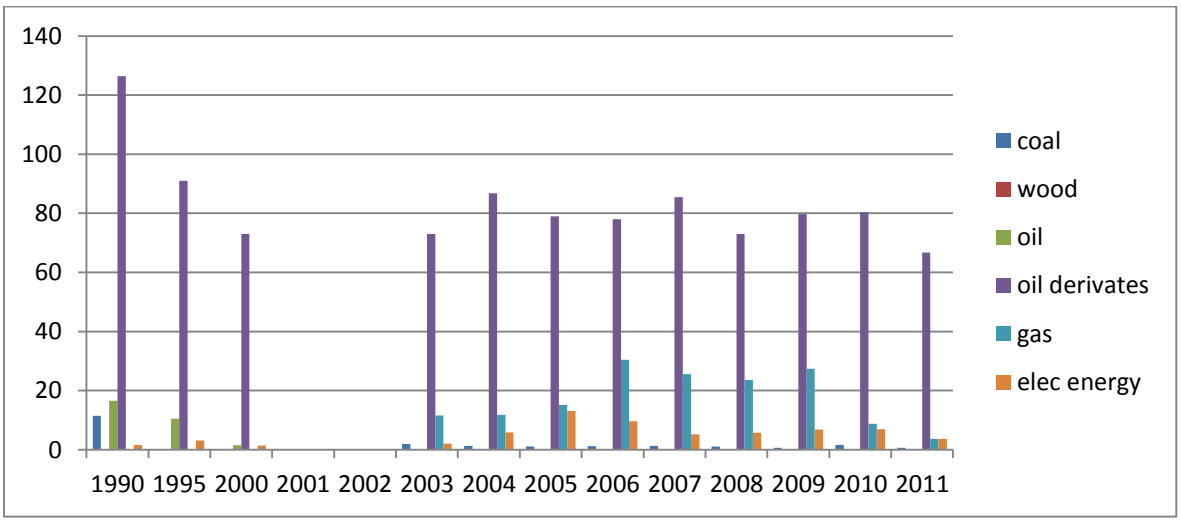
Export of energy was mainly impacted by oil derivatives but this market and potentials shrunk in 2011. Strong rise in wood export in 2010 and 2011.

Export of energy

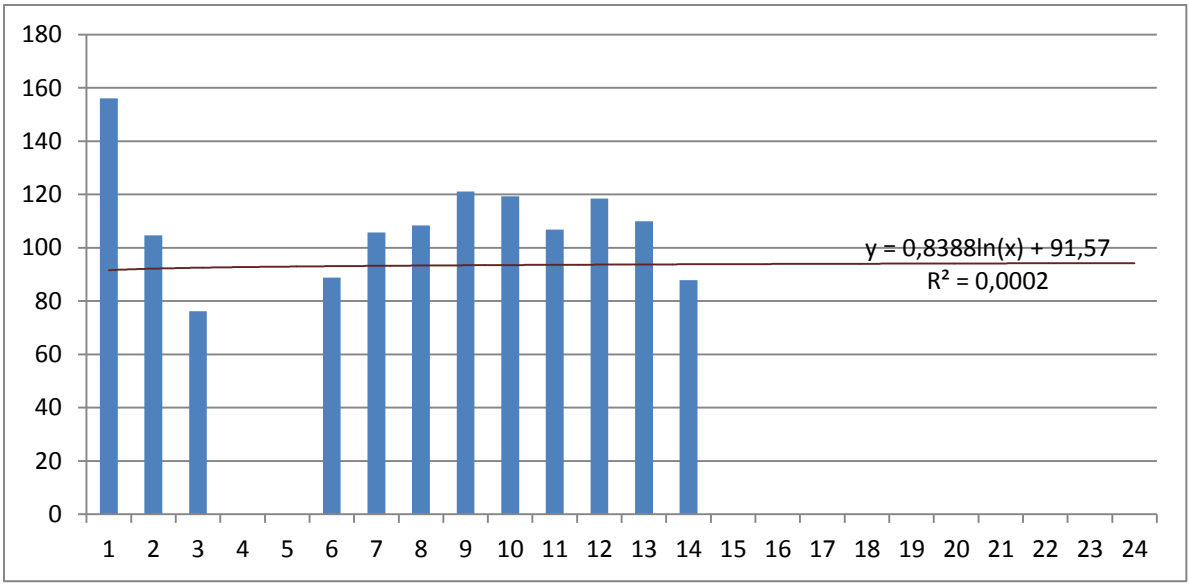
| | coal | wood | oil | oil derivate | gas | elec energy | renewable | sum |
|---|---|---|---|---|---|---|---|---|
| 1990 | 11,44 | | 16,53 | 126,41 | | 1,66 | | 156,04 |
| 1995 | 0,04 | | 10,48 | 90,94 | | 3,19 | | 104,65 |
| 2000 | 0,26 | | 1,48 | 73,01 | | 1,39 | | 76,14 |
| 2001 | | | | | | | | 0 |
| 2002 | | | | | | | | 0 |
| 2003 | 1,95 | | | 73,06 | 11,63 | 2,11 | | 88,75 |
| 2004 | 1,28 | | | 86,71 | 11,82 | 5,88 | | 105,69 |
| 2005 | 1,08 | | | 79 | 15,18 | 13,08 | | 108,34 |
| 2006 | 1,14 | 1,92 | | 77,95 | 30,45 | 9,69 | | 121,15 |
| 2007 | 1,29 | 1,86 | | 85,42 | 25,56 | 5,22 | | 119,35 |
| 2008 | 1,08 | 3,38 | | 73,02 | 23,66 | 5,71 | | 106,85 |
| 2009 | 0,69 | 3,84 | | 79,69 | 27,37 | 6,83 | | 118,43 |
| 2010 | 1,67 | 4,52 | | 80,34 | 8,79 | 6,9 | | 109,89 |
| 2011 | 0,69 | 7,92 | | 66,71 | 3,72 | 3,72 | | 87,83 |

*Table 13*

*Export energy*




*Picture 56*




*Picture 57*

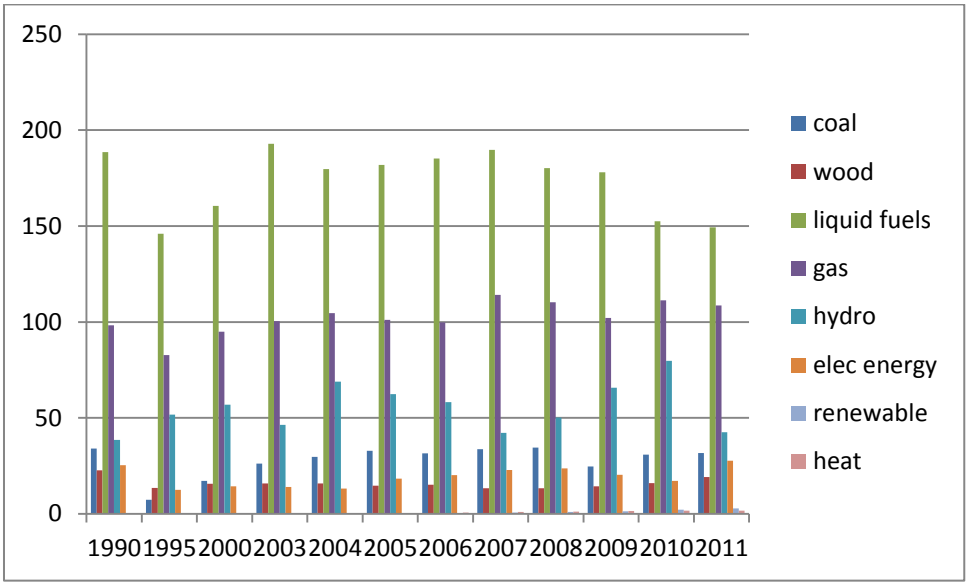
Energy consumption of 383PJ is largely due to liquid fuels 149PJ, gas 108PJ and hydro 42-79PJ.

Total energy consumption

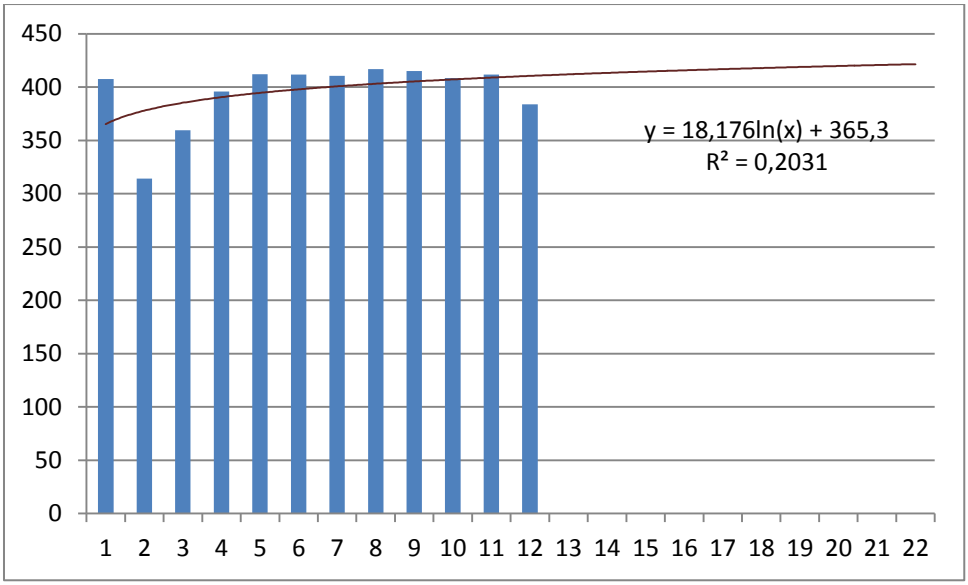
| | coal | wood | liquid fuels | gas | hydro | elec energy | renewable | heat | sum |
|---|---|---|---|---|---|---|---|---|---|
| 1990 | 34,07 | 22,68 | 188,57 | 98,22 | 38,55 | 25,42 | 0 | | 407,51 |
| 1995 | 7,42 | 13,52 | 146,03 | 82,77 | 51,75 | 12,59 | 0 | | 314,08 |
| 2000 | 17,15 | 15,64 | 160,52 | 94,98 | 56,93 | 14,4 | 0 | | 359,62 |
| 2003 | 26,18 | 15,96 | 192,85 | 100,45 | 46,48 | 14,01 | 0 | | 395,93 |
| 2004 | 29,7 | 15,86 | 179,62 | 104,66 | 69 | 13,19 | 0,02 | | 412,05 |
| 2005 | 32,95 | 14,77 | 181,88 | 101,06 | 62,4 | 18,441 | 0,2 | | 411,701 |
| 2006 | 31,61 | 15,28 | 185,15 | 99,86 | 58,18 | 20,24 | 0,24 | 0,64 | 410,56 |
| 2007 | 33,74 | 13,31 | 189,7 | 114,22 | 42,21 | 22,9 | 0,69 | 1,01 | 416,77 |
| 2008 | 34,65 | 13,38 | 180,15 | 110,22 | 50,19 | 23,68 | 0,97 | 1,25 | 414,9 |
| 2009 | 24,66 | 14,42 | 178,04 | 102,15 | 65,77 | 20,46 | 1,39 | 1,48 | 408,37 |
| 2010 | 30,92 | 16,05 | 152,54 | 111,37 | 79,71 | 17,15 | 2,24 | 1,76 | 411,73 |
| 2011 | 31,66 | 19,23 | 149,3 | 108,6 | 42,59 | 27,71 | 2,84 | 1,73 | 383,65 |

*Table 14*

*Energy consumption*




*Picture 58*




*Picture 59*

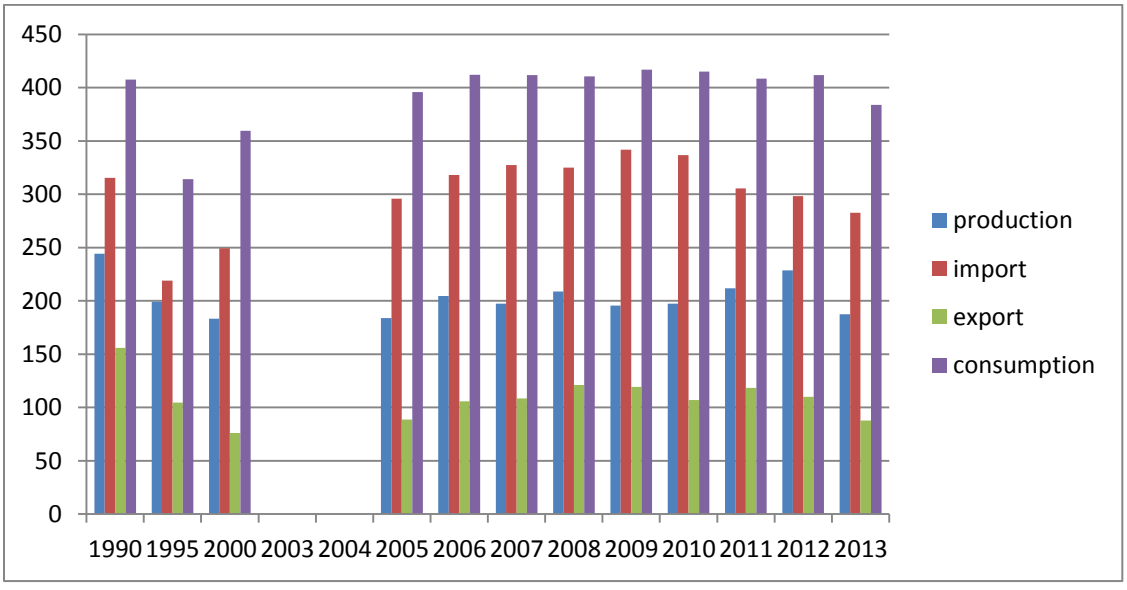
Total picture of macro energy production, import, export and consumption is presented in *Table 15*.

Croatia energy overall

| | Production | Import | Export | Consumption |
|---|---|---|---|---|
| 1990 | 244,25 | 315,45 | 156,04 | 407,51 |
| 1995 | 199,16 | 218,94 | 104,65 | 314,08 |
| 2000 | 183,32 | 249,23 | 76,14 | 359,62 |
| 2005 | 183,88 | 295,87 | 88,75 | 395,93 |
| 2006 | 204,4 | 318,12 | 105,69 | 412,05 |
| 2007 | 197,24 | 327,47 | 108,34 | 411,701 |
| 2008 | 208,77 | 324,85 | 121,15 | 410,56 |
| 2009 | 195,42 | 341,85 | 119,35 | 416,77 |
| 2010 | 197,28 | 336,63 | 106,85 | 414,9 |
| 2011 | 211,64 | 305,37 | 118,43 | 408,37 |
| 2012 | 228,62 | 298,2 | 109,89 | 411,73 |
| 2013 | 187,42 | 282,61 | 87,83 | 383,65 |

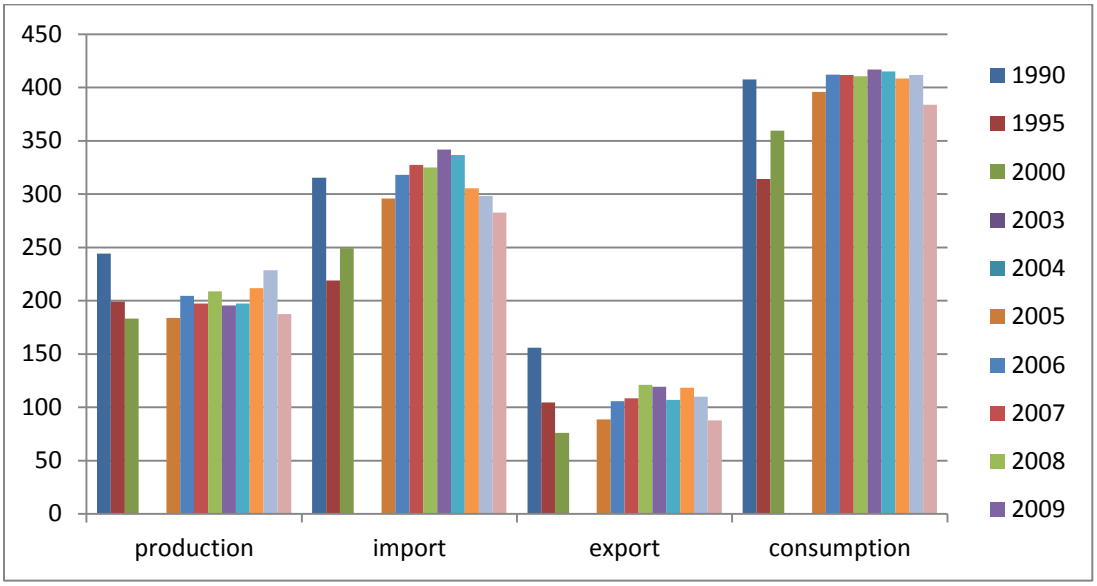
*Table 15*

Energy in Croatia :Production,Import,Export,Consumption in PJ




*Picture 60*

Energy in Croatia :Production,Import,Export,Consumption in PJ



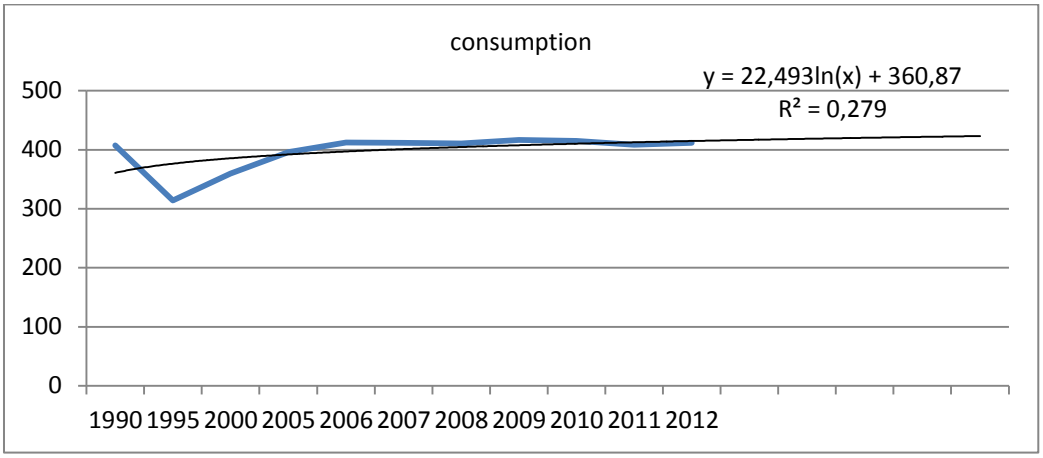

*Picture 61*

Energy sum consumption

| | Consumption |
|---|---|
| 1990 | 407,51 |
| 1995 | 314,08 |
| 2000 | 359,62 |
| 2005 | 395,93 |
| 2006 | 412,05 |
| 2007 | 411,701 |
| 2008 | 410,56 |
| 2009 | 416,77 |
| 2010 | 414,9 |
| 2011 | 408,37 |
| 2012 | 411,73 |

*Table 16*

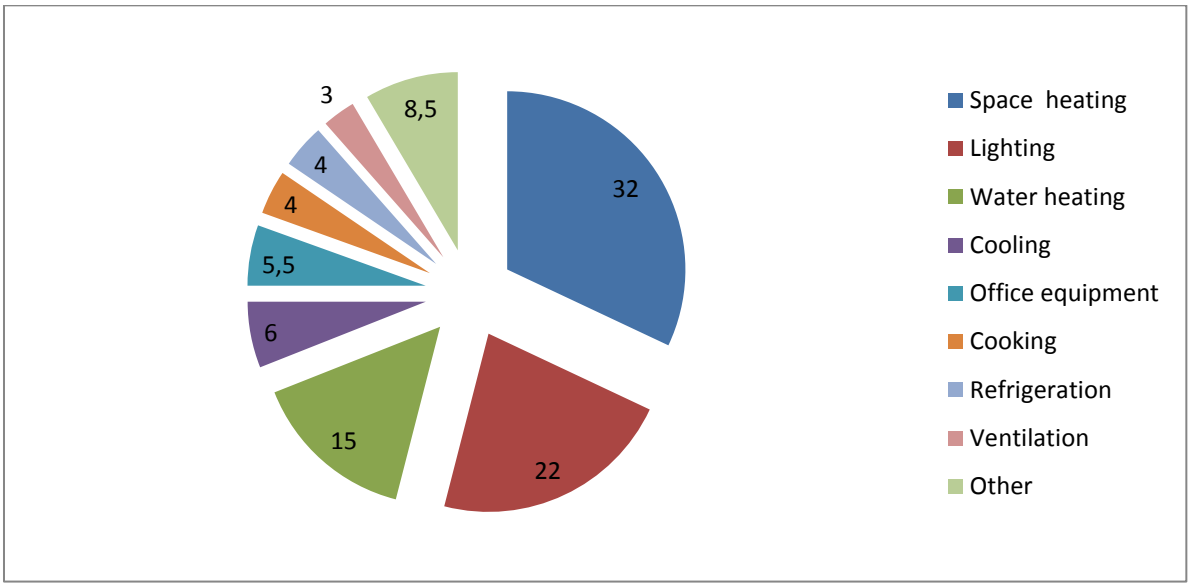
Energy Consumption - Sum PJ




Picture 62

While consumption of non renewable energy sources emits GHG emissions, EU legislation developed in favor of renewable sources as additional measure to bring energy security and lower harmful gases. This topic is especially important in construction sector while implies different approach to each problem: should think about different roof construction, materials that could sustain photovoltaic or other means of energy self-sufficiency and many others.

Renewable energy consideration




*Picture 63*

Today's clean technologies require additional attention not just from governments and consumers but also from producers, industry and construction. Phenomenon of global warning with rising temperatures due to emissions of certain gasses ( carbon dioxide, methane, nitrous oxide, water with fluorine bromine and chlorine) become primary force of development in many sectors :from energy to construction.

Energy sector drives one more important trend that is due to economic reasons. Life cycle costing of non-renewables has many advocates in world and it is the question of time when all cost shell be calculated and to some extent imputed to activities of certain sectors. This in turn raises economic costs further bringing innovative and research activities in foreground.

The third important factors why clean and renewable energy become important are the social reasons. There are more incentives to support the renewables in many aspects from governments in the form of subsidies, taxes on $CO_2$, obligatory energy certification that induce energy efficiency.

Although so called clean technologies do not avoid pollution entirely in production or working process it is still lower than in case of nonrenewable solutions. The potential advantages can be seen in the whole life cycle where operating and maintenance costs are lower than of classical system, efficiency measures lowers energy requirements, cost of decommission are lower and financing such projects are much cheaper if global natural advantages and disadvantages are taken into consideration.

Wind energy system converts the kinetic energy of moving air into electricity. This can be obtained either by central or isolated grid. Turbines can be very small from 50W to large 10 kW while isolated turbines are to 200 kW large. Largest turbines are installed on central grids and can reach capacity of 5MW. For this kind of technology wind source is of primary importance so right measurement is prerequisite to think about this technology when bringing additional appliance to home.

Although small hydro is not often attributed to classical construction business- some basic elements such as building the first phase can be done by construction companies. This kind of energy resource requires moving water that drives turbines into generator to give electricity. It can reach potential of 50 MW. Small hydro is also possible with capacity of 1 kW for small off grid applications.

Very popular on south is the photovoltaic system which drives energy of sun directly into electricity. It can be part of large array network or small of grid power on the roofs of houses, buildings.

Cooling and heating systems are of importance where biomass, biofuels, combined systems become more and more important. In that respect power systems can be reached with: wind turbines, hydro

turbines, photovoltaic systems, geothermal systems, fuel cells, gas turbines, gas turbines combined cycle, reciprocating engines, steam turbines other. Heating system is obtainable with: biomass heating system, solar air heating system, solar water heaters, and windows for passive solar heating, boilers, furnace, heaters and heat pumps.

Starting point is desire for GHG reduction and should be followed by calculation:

Delta GHG = $(e_{base}-e_{prop})\ E_{prop}\ (1-y)\ (1-e_{cr})$

$E_{base}$= ( $eCO_2$ GWP+ e $CH_4$ GWP $CH_4$ + e $N_2O$ GWP $n_2o$ ) 1/n 1/ 1-y

Where $CO_2$ =1; CH= 21; $N_2O$= 310.

Financial consideration of each solution is given as

**Y= a0+a1*X1+ a2*X2 + a3 *X3+ a4* X4 + a5* x5 +v**

*X1 Avoided cost of energy ; X2 Renewable obtained*

*X3 Capital costs ; X4 Annual costs*

*X5 Debt ratio ; X6 Debt interest ratios*

*X7 Debt term ; X8 GHG credit*

The equally important question is the one of electric price per house, apartment, building block etc.

P= a+ a1 * Y income per person +a2 *Y t-1 income per person + a3 * P electric price residential +a4* P electrical t-1+ a5* P gas price residential +a6* HDD (heating degree days) + a7* CHH (Cooling Degree days) + v

Long run income elasticity = (a1+a2) / (1-a3)

Short run price elasticity=a4

Long run price elasticity =(a3+a4)/(1-a1)

Short run price elasticity gas =a5

Long run price elasticity gas =a5/(1-a1)

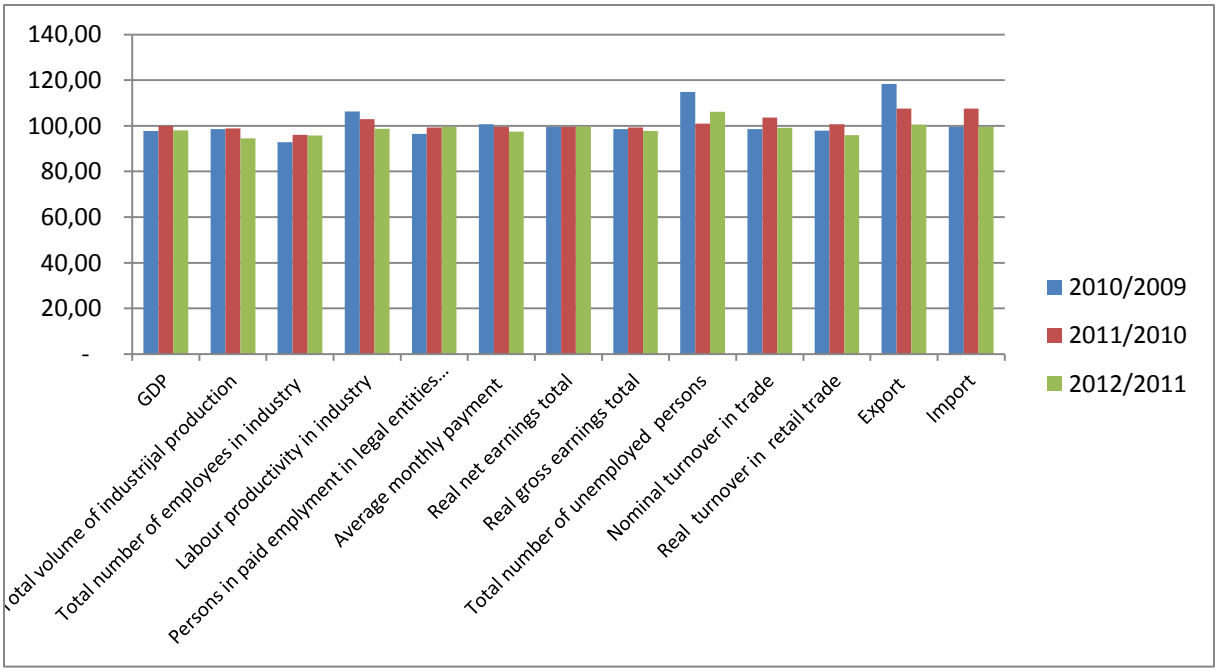
## 4. CONSTRUCTION SECTOR –2013 IS THE YEAR OF STATISTICS

To look economy more closely some year to year changes are observed. It is seen that 2012/2011 brought slowdown in many aspects of business relations.

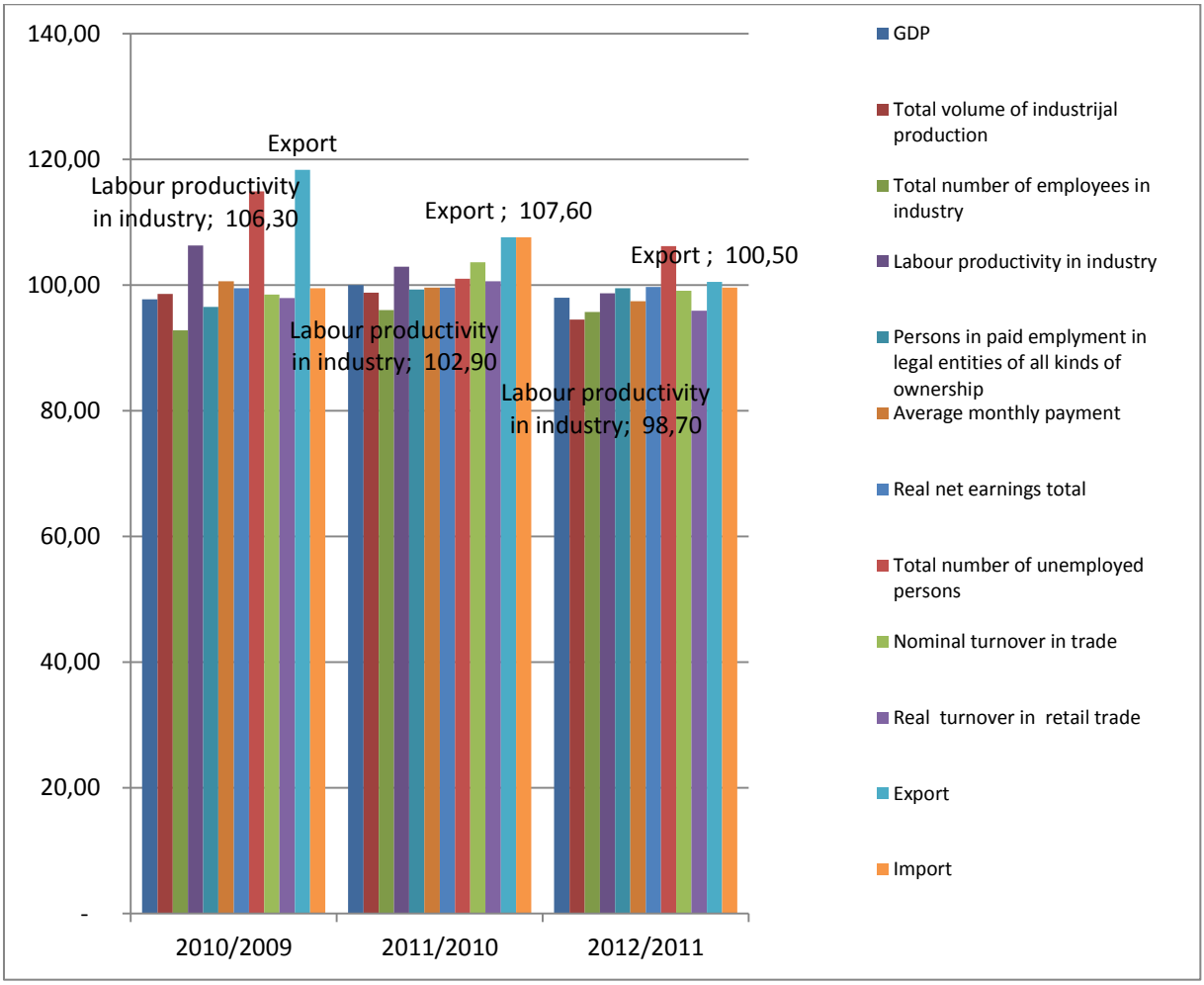
Overall facts Croatia

| | 2010/2009 | 2011/2010 | 2012/2011 |
|---|---|---|---|
| GDP | 97,70 | 100,00 | 98,00 |
| Total volume of industrial production | 98,60 | 98,80 | 94,50 |
| Total number of employees in industry | 92,80 | 96,00 | 95,70 |
| Labor productivity in industry | 106,30 | 102,90 | 98,70 |
| Persons in paid employment in legal entities of all kinds of ownership | 96,50 | 99,30 | 99,50 |
| Average monthly payment | 100,60 | 99,60 | 97,40 |
| Real net earnings total | 99,50 | 99,60 | 99,70 |
| Real gross earnings total | 98,50 | 99,20 | 97,70 |
| Total number of unemployed persons | 114,90 | 101,00 | 106,20 |
| Nominal turnover in trade | 98,50 | 103,60 | 99,10 |
| Real turnover in retail trade | 97,90 | 100,60 | 95,90 |
| Export | 118,30 | 107,60 | 100,50 |
| Import | 99,50 | 107,60 | 99,60 |

*Table 17*



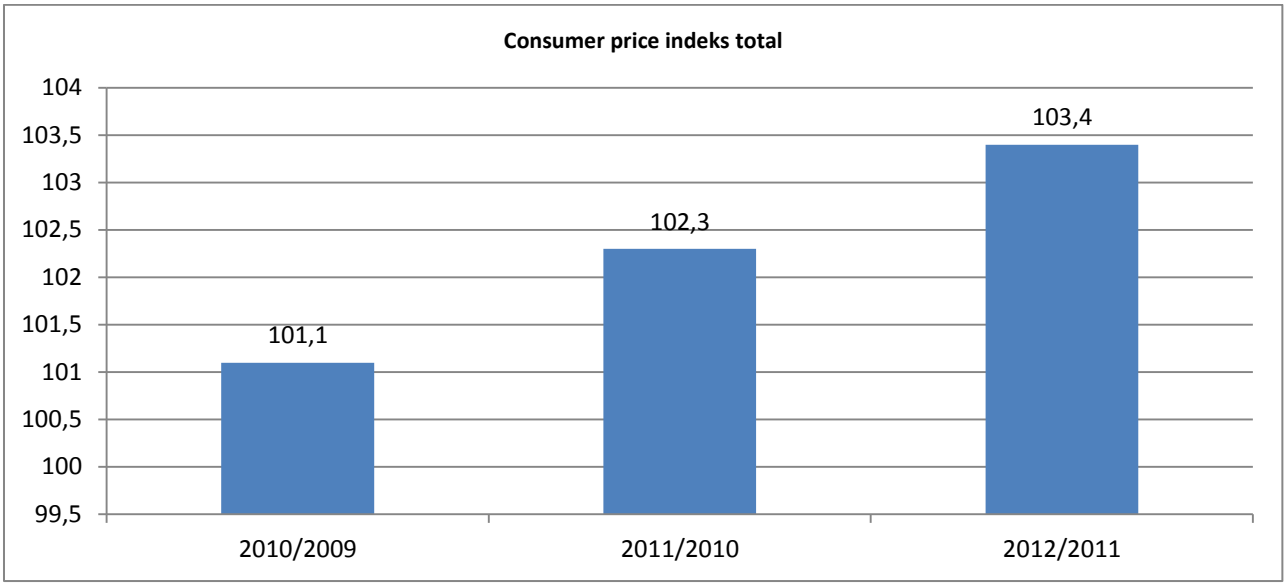

*Picture 64*




*Picture 65*

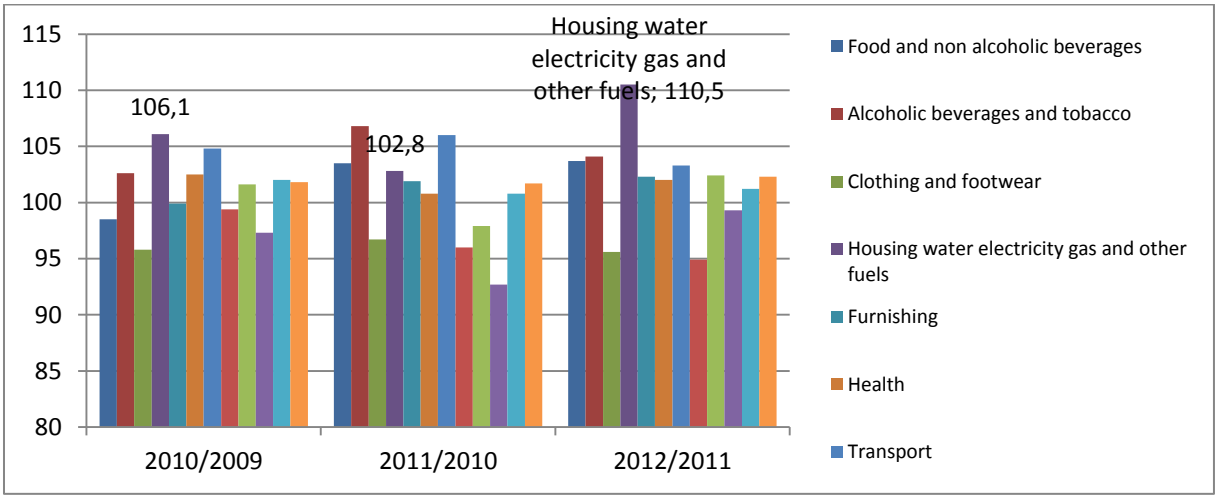
At the same time Consumer price index rises.

CPI



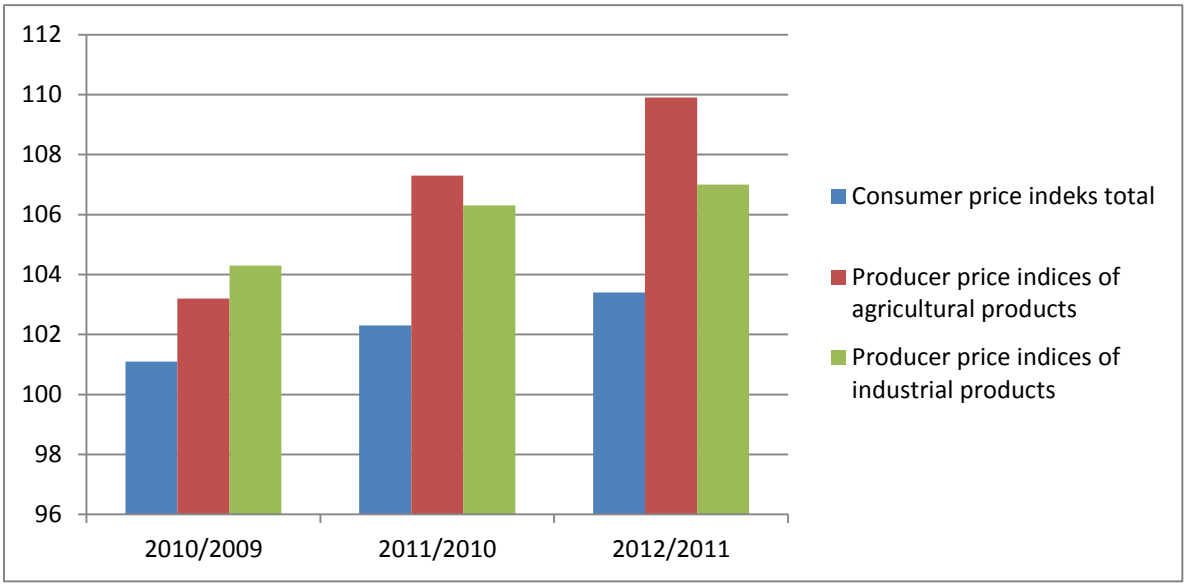

*Picture 66*

Price rise at sectorial level



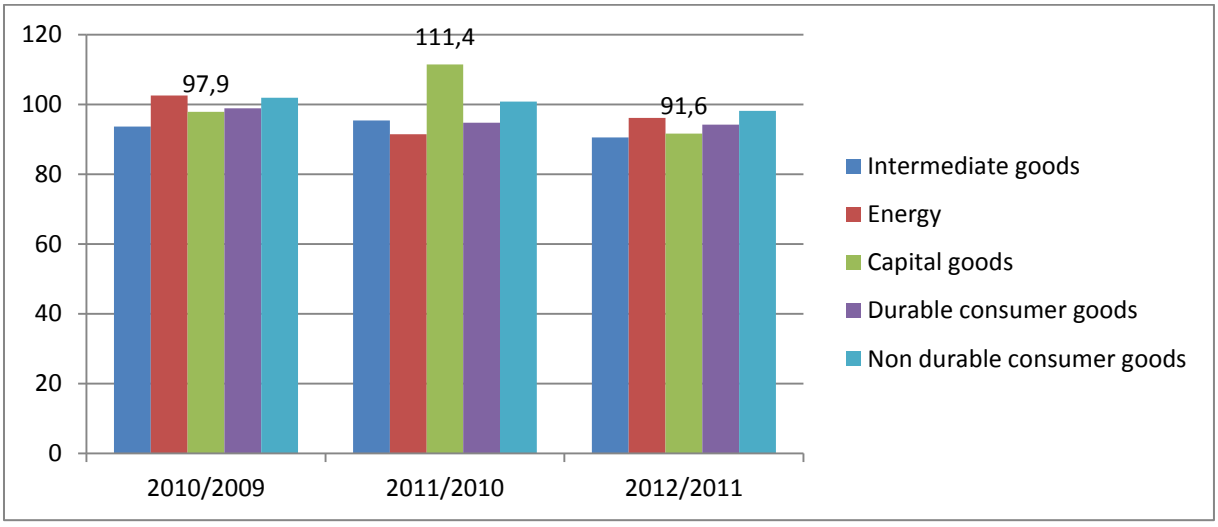

*Picture 67*

Difference exists at consumer price level, producer price of industrial and agricultural product. (The later rose highest).




*Picture 68*

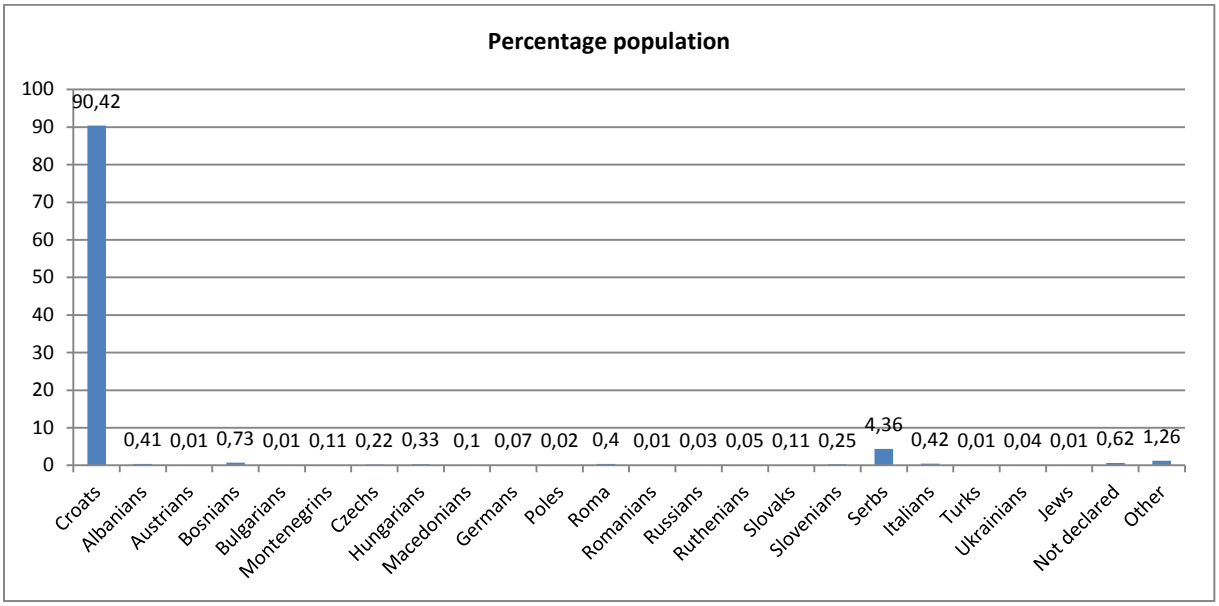
There is strong decline in price of capital goods in period 2011/2010 to 2012/2011.




*Picture 69*

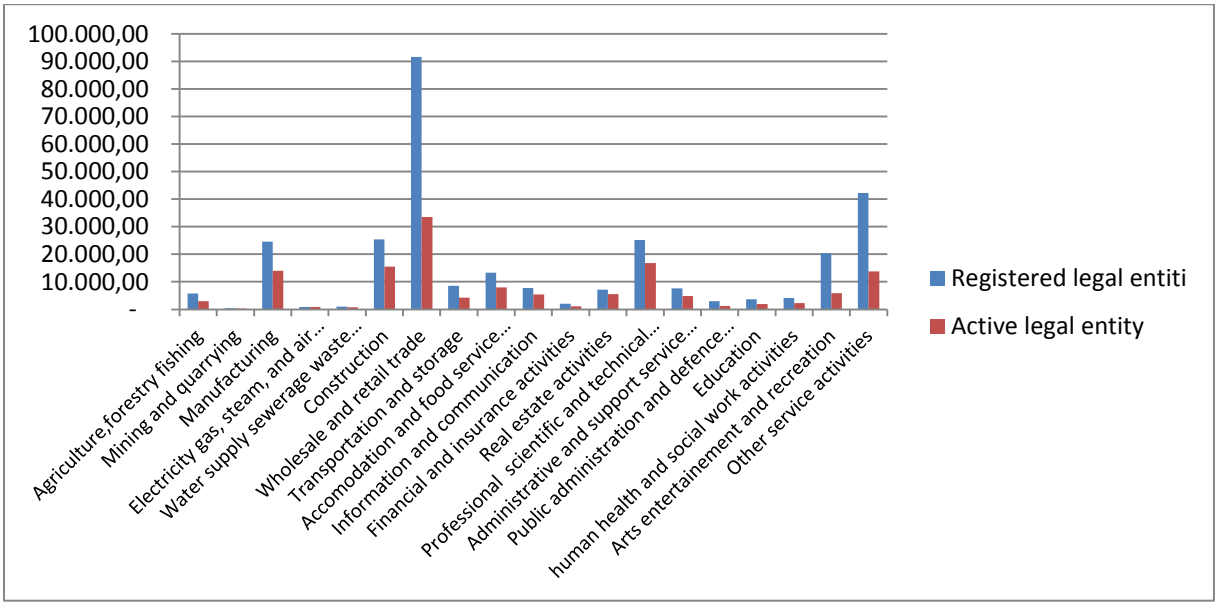
More than 90% of population belongs to majority group.

Nationalities in Croatia



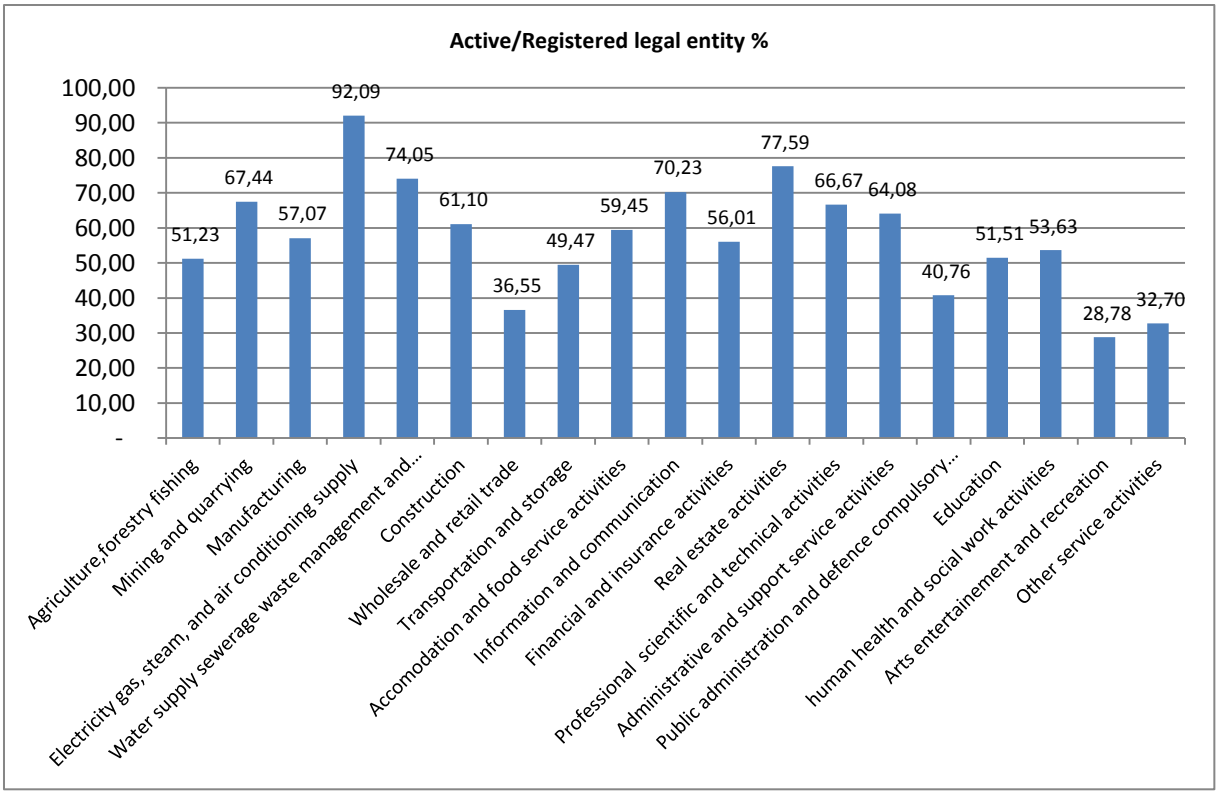

*Picture 70*

Slowdown is visible in number of active legal entities that are registered but really do not do some activity.




*Picture 71*

Activities and registered business varies across sector where in construction only 61% of registered businesses are active.



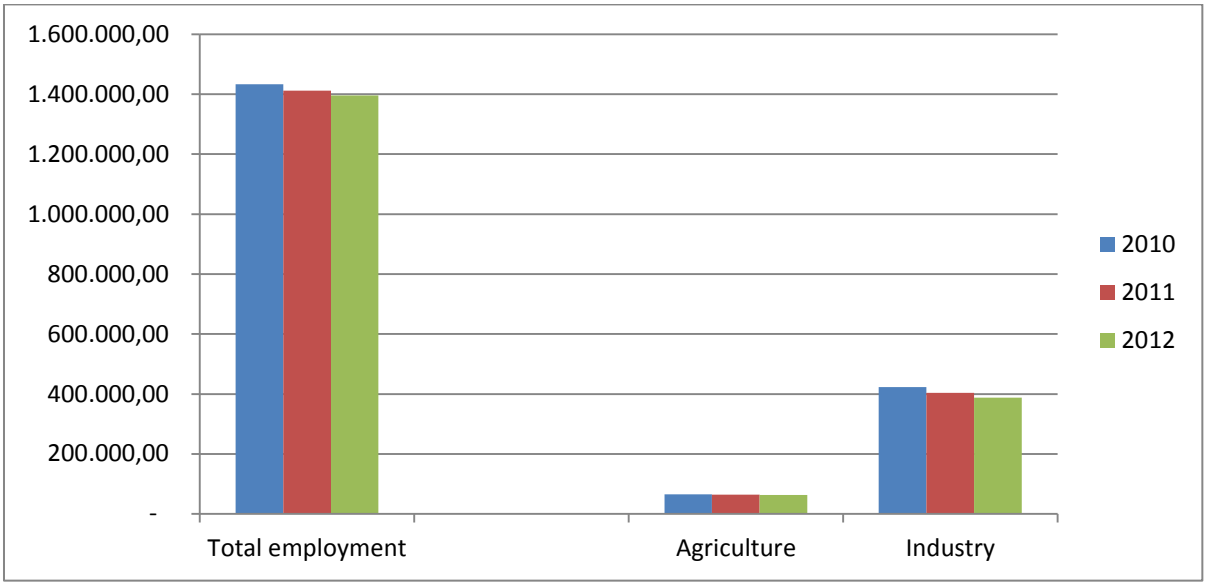

*Picture 72*

Employment varies also - crises brought new unemployed and number of employed decreased.

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Total employment | 1.432.454,00 | 1.411.238,00 | 1.395.116,00 |
| | | | |
| Agriculture | 65.543,00 | 64.772,00 | 63.267,00 |
| Industry | 423.204,00 | 404.150,00 | 387.774,00 |

*Table 18*

Employment

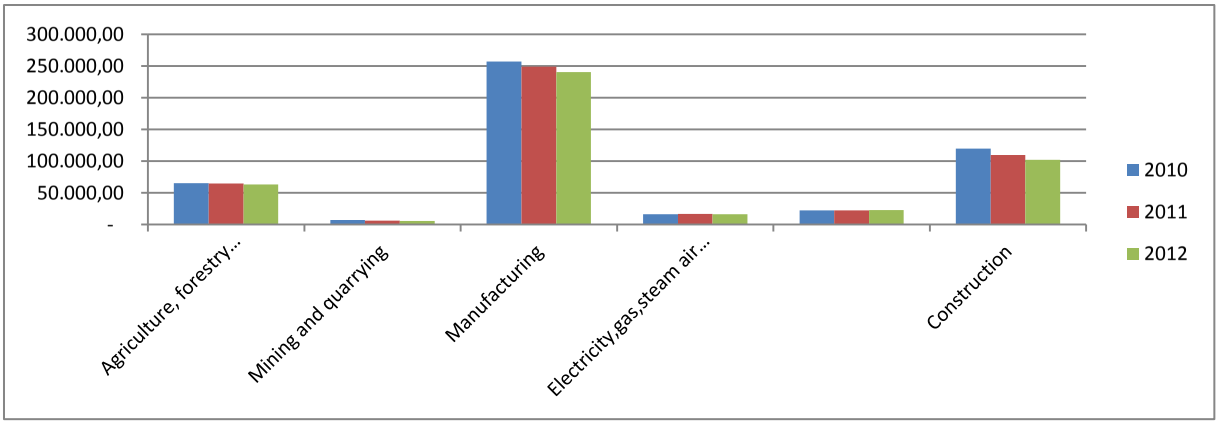



*Picture 73*

Declining trend is visible in large number of sectors except in monopolies, administrative etc.

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Agriculture, forestry, fishing | 65.543,00 | 64.772,00 | 63.267,00 |
| Mining and quarrying | 7.544,00 | 6.515,00 | 5.819,00 |
| Manufacturing | 256.842,00 | 248.805,00 | 240.483,00 |
| Electricity,gas,steam air conditioning | 16.614,00 | 16.635,00 | 16.537,00 |
| Water supply, sewerage waste management | 22.220,00 | 22.392,00 | 22.724,00 |
| Construction | 119.984,00 | 109.803,00 | 102.211,00 |

*Table 19*

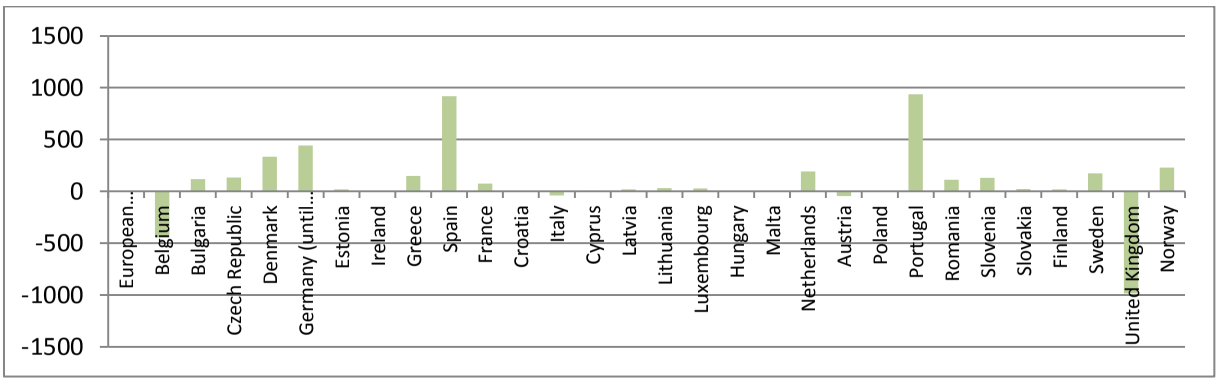



*Picture 74*

To compare situation in construction sector in Croatia some EU measures are presented.

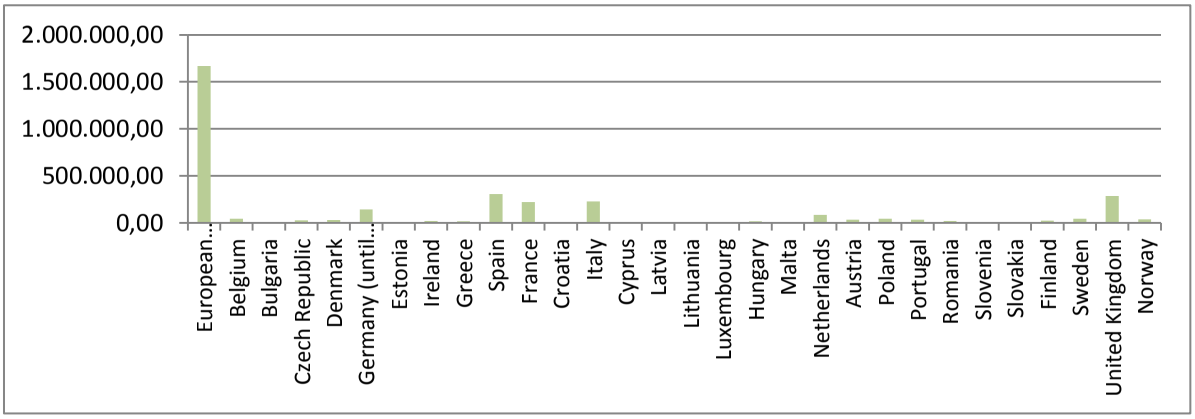
**Construction sector EU :**

Gross margin on goods for resale



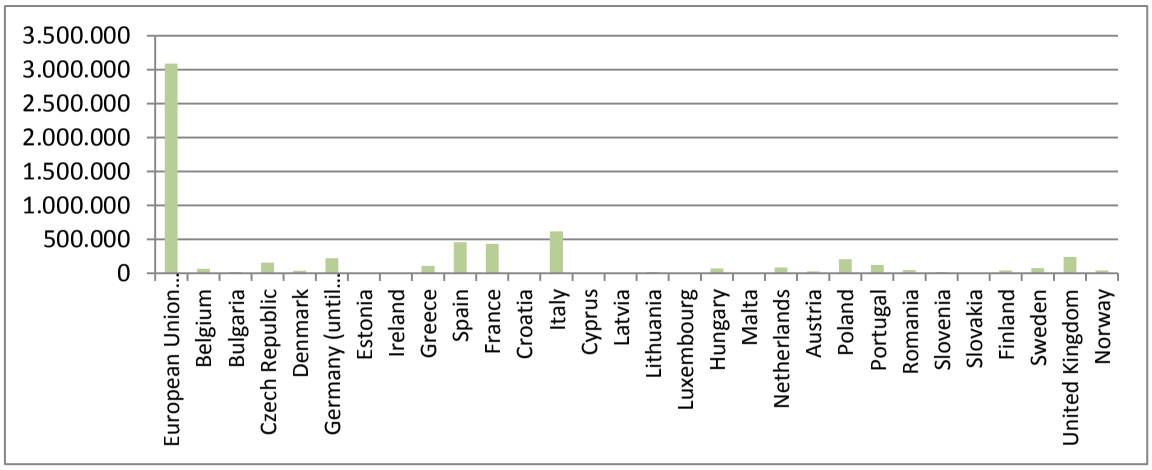

*Picture 75*

Turnover or gross premiums written



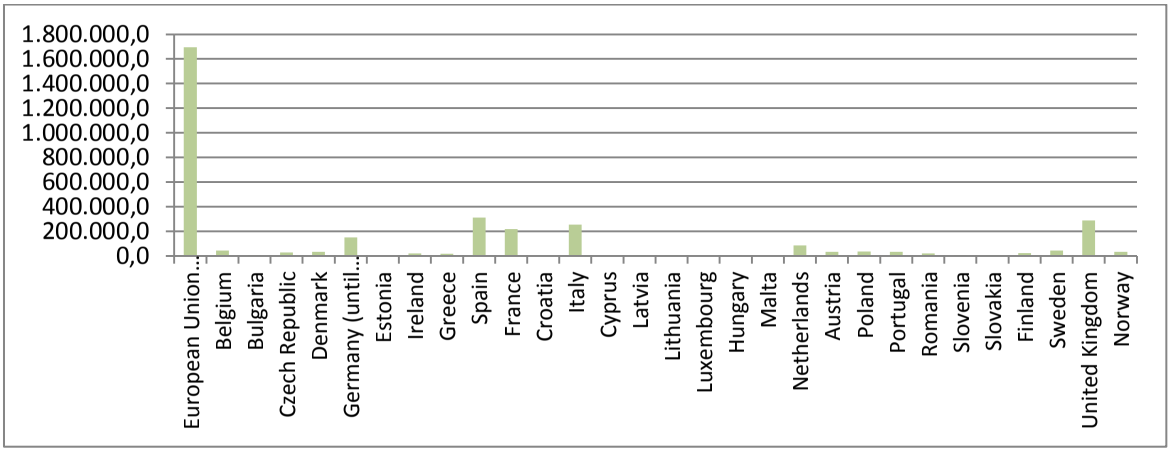

*Picture 76*

Number of enterprises



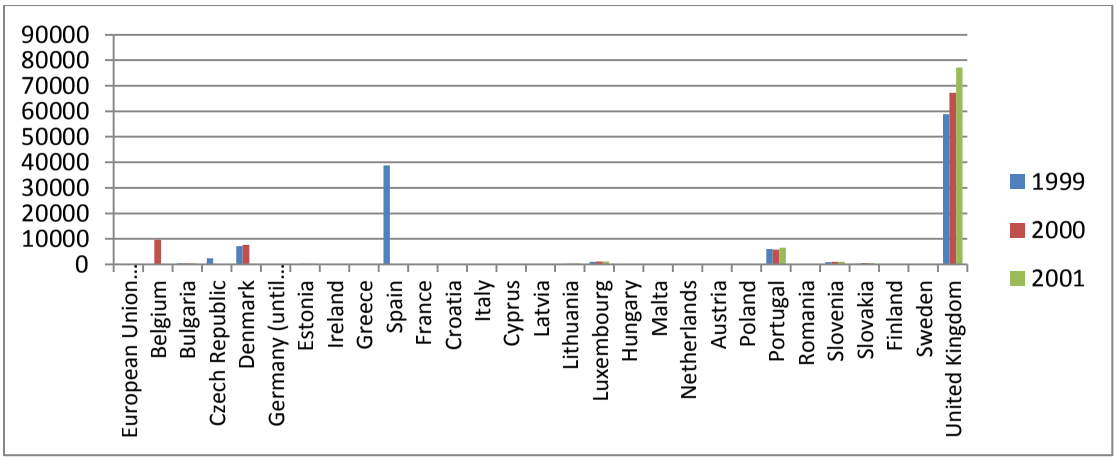

*Picture 77*

Production value



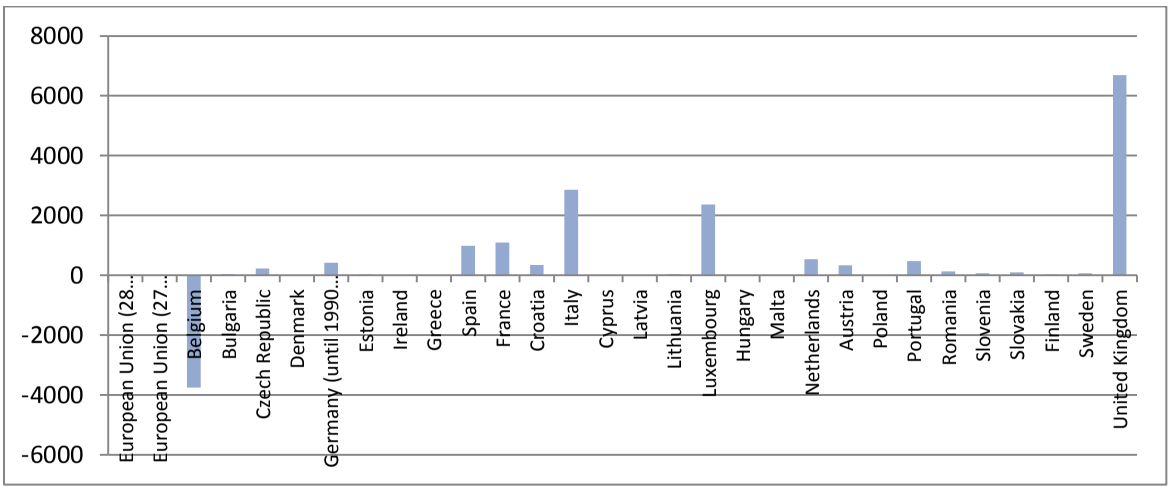

*Picture 78*

Value added at basic prices



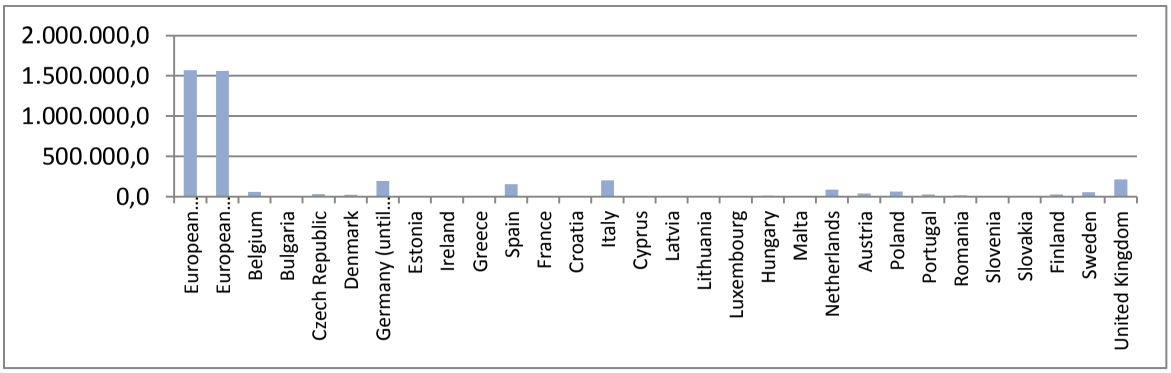

*Picture 79*

Gross margin on goods for resale



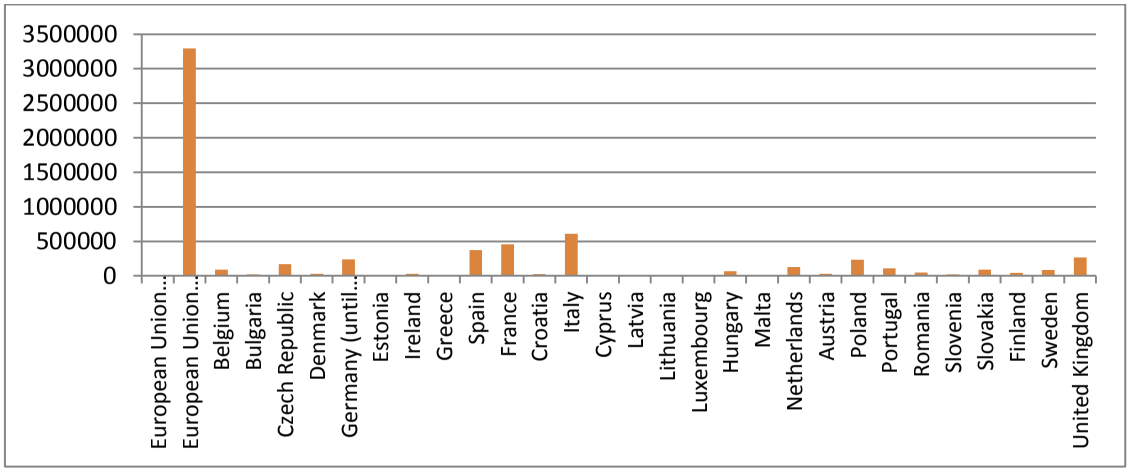

*Picture 80*

Turnover or gross premiums written



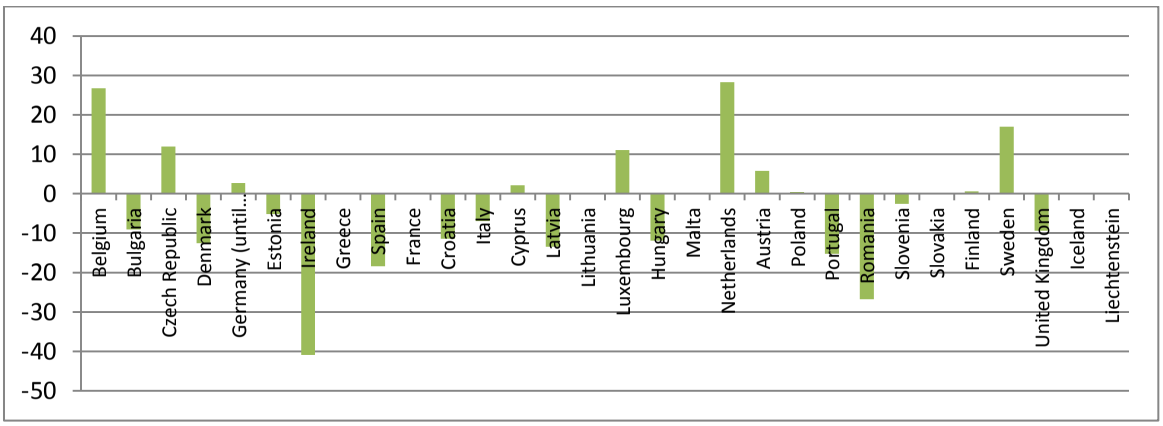

*Picture 81*

Number of enterprises



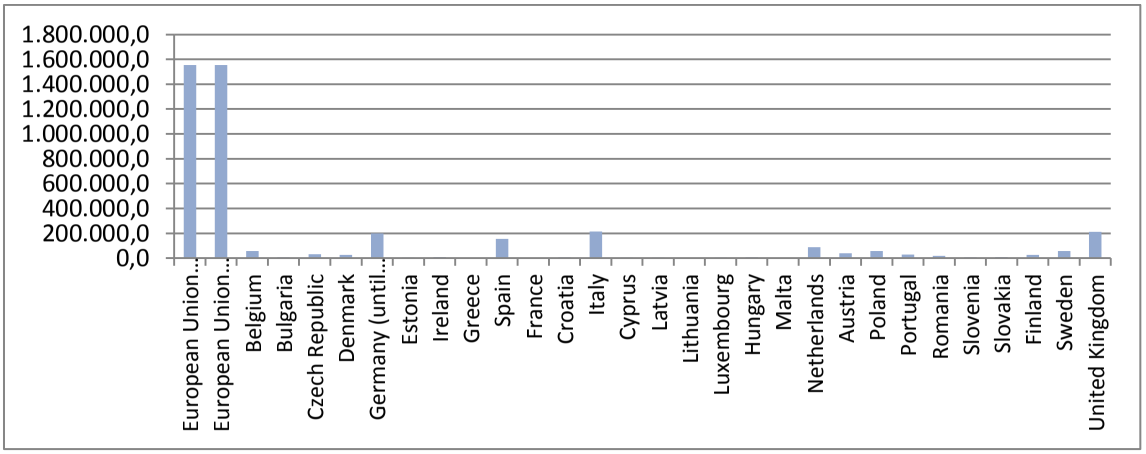

*Picture 82*

Number of enterprises 2008/ 2011 Slovakia 5965 /90 000 increase 1671 %



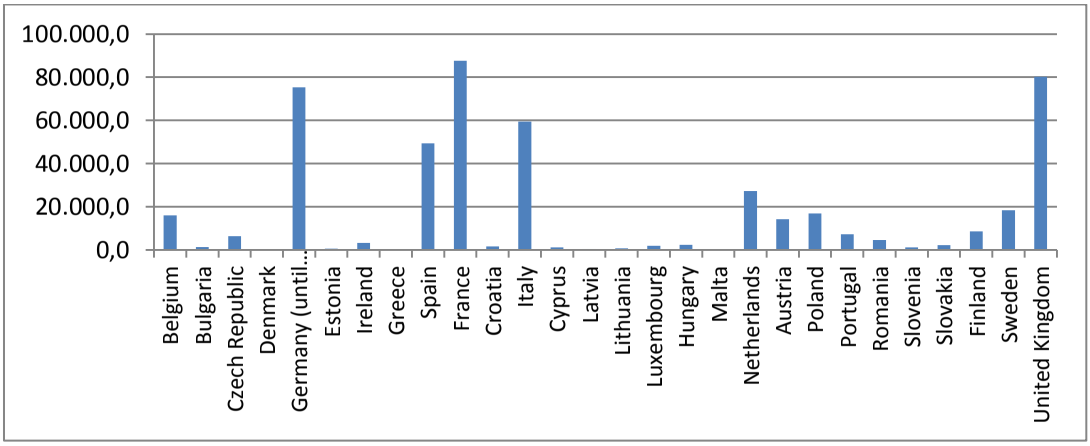

*Picture 83*

Production value




*Picture 84*

Value added at factor cost




*Picture 85*

## 5. CONSTRUCTION SECTOR TRY SOME NEW STEPS AS IRISH DANCE

### 6.1. Building certificates

Besides some classical building jobs consider new ways in your everyday business type of work: new way of possible approach to business thinking, ways to communicate with partners, developed new services, introduce different certification systems and keep in mind balanced score card in each aspect of business relation.

Certification in Croatia has been developed in the last few years in the process of EU accession, legislation regulation and as energy saving processes. The first phase in this process was legalization of objects. Under that expression is a process where the state needs to incorporate in its books all properties that have been build and put in the data base. This was and still is the long and hard way to go due to the fact it is an expensive process for population while large number of properties is not in the books. It is for example half of capital city Zagreb -new Zagreb – still in books as meadows and church properties(largely) while in reality there are many buildings there standing for thirty years. So, many old and new properties are not put in books properly.

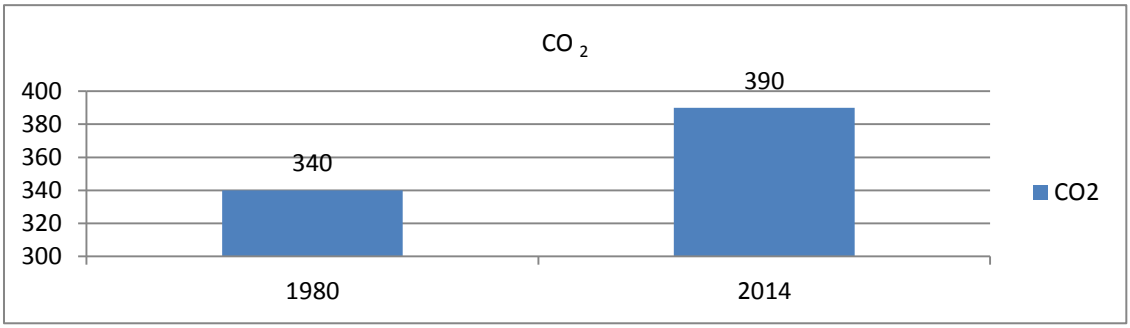
In this process small companies or part of construction property that are able to make architectonic plan suitable for business can obtain solid long term revenue and extremely high profit /ROE . This is in respect late process for many large companies from ex-Yugoslavia who sold many flats but many without papers- because they could not obtain permits. This is a way to start new processes in their companies and offer clear paper from start.

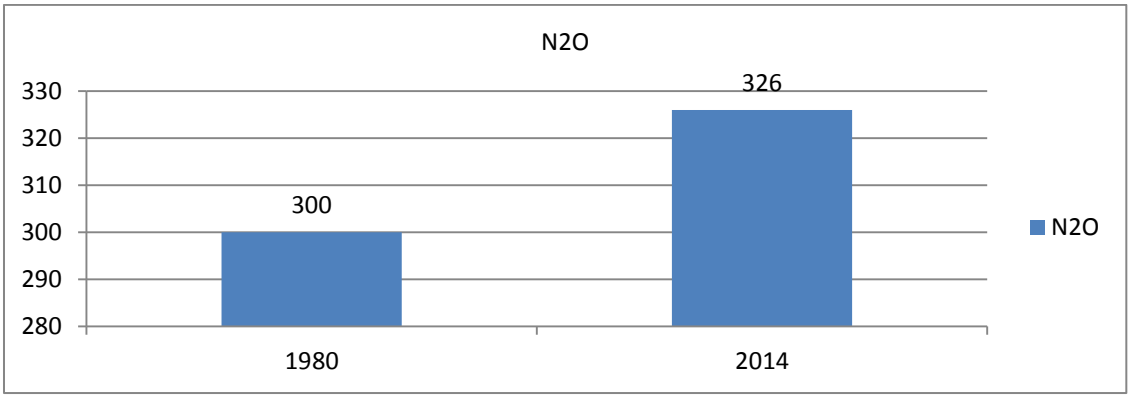
Another type of certification process is also costly to population, time consuming for the whole state and profitable for small groups equipped with knowledge of certification process and has rights certificates. It is a process of energy certification.

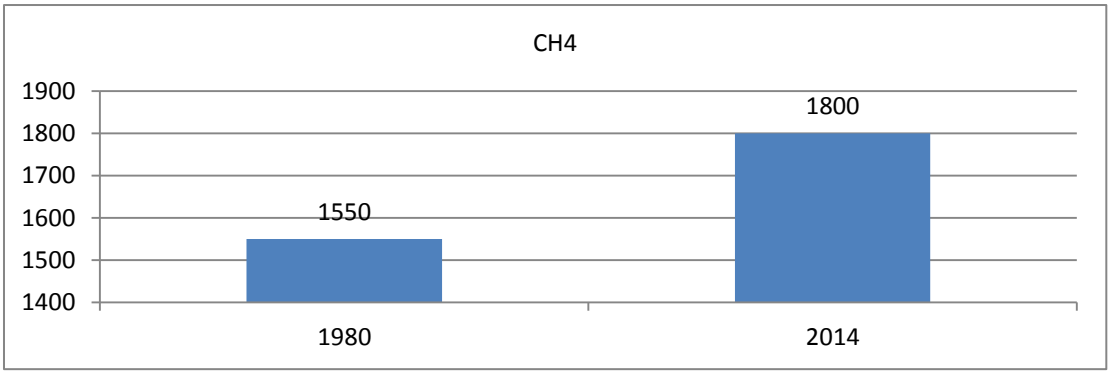
### 6.1.1. Energy certificates

It is not a secret that energy used today is mostly nonrenewable, costly, subject to high state policies and reasons for wars. Also, large negative impact of gases as by product of energy use is considered a topic of discussions $CO_2$ emissions rose significantly followed by other GHG gasses casing ozone layer to reduce its size and as a source of increase to harmful gases. Just last twenty years brought large rise of gases.

$CO_2$ on global scale



| | $CO_2$ | $SO_2$ | CO | NOx | Solid Particles |
|---|---|---|---|---|---|
| Fuel oil | 3,1 | 0,02 | 0,018 | 0,006 | |
| Gas | 2,3 | | 0,018 | 0,004 | |
| Wood | 3,7 | 0,005 | 0,01 | 0,0004 | 0,002 |
| Coal | 4,8 | 0,006 | 0,102 | 0,011 | 0,0014 |
| Peat | 4,3 | 0,013 | 0,01 | 0,0014 | 0,002 |

| | | $CO_2$ | $NO_x$ | CO | $SO_2$ |
|---|---|---|---|---|---|
| CHP | Gas | 290,00 | 0,50 | 0,37 | |
| | Fuel Oil | 389,00 | 0,75 | 3,77 | 2,51 |
| | Coal | 604,00 | 1,38 | 25,10 | 0,75 |
| | | | | | |
| General purpose boiler | Gas | 358,00 | 0,62 | 0,46 | |
| | Fuel Oil | 482,00 | 0,94 | 4,67 | 3,11 |
| | Coal | 747,00 | 1,71 | 31,10 | 0,94 |
| | Wood | 350,00 | 0,62 | 0,41 | |

Certification includes education, contracting a job, promoting activities, on spot research of property and putting the data in the state data base or documents. For industrial building certification followings should be examined and properly evaluated:

**Industrial building**:

*a) Type of building, type of building ownership, year of construction, constructor, year of last reconstruction, general remarks about condition.*

*b)Type of energy sources at spot, number of places to take over electrical energy, voltage at place of electricity download, number of places to take energy, (gas),(heating) other energy sources, number of places to take over water from public water supply system, energy and water paying the lump sum, paying according to real consumption.*

*c)Total number of floors, total area, net area, total gross area of floor ceiling , total heating cooling area, high levels, Spaces: working space, storage, corridors, energy plants, other .*

*d) Projects with remark planning area, production capacity, realized production, (months) number of unemployed employed in production: constant, grows, falls.*

*e) Climates data of places, Characteristics of building elements, Roof, Wall, floor.*

*f) Thickness of material, isolation, area of construction, coefficient of heating, (W/ $m^2$ k) remarks about current conditions, type of glass, type of window frame (wood, aluminum, PVC, steel, combination)*

*G) Way of heating: Central heating, central boiler, heating plant, central heating, single furnace,*

*Source of energy : fuel oil, UNP, wood, coal, electrical energy, natural gas, water aerated water, biomass, Boiler: number of aggregates, total installation , power, year of production, year of production –oil burner, Heat substation –thermal power substation, kWth, Contracted power t/h; MW;Year of production heat exchanger, Build in reconstruction; Is there automatic temperature regulation? Distribution of power at central heating, Radiators, floor heating, independent heaters*,etc

*h) Heating; Ventilation ( natural, local, central, ventilation, recuperation);System of heating and cooling (split system, multi split system, central system. );Warm water system of drinking water, system of electrical lightning; System of compressed air,-number of aggregates, total capacity ($m^3$ /min) working pressure in net kPa, determined pressure of all equipment (kPa) Installed power, electromotor in compressors (kW);Number of storage of compressed air, volume in storage ($m^3$) type of regulation, way of cooling of compressors , way of work; Industrial cooling system ;Total electrical power kWel;Total cooling power kWth;Year of production; Type of aggregates; Other places of energy consumption- kitchen- fridge, oven, washing machine, dryer etc.*

If this new service is introduced into company small pre-feasibility calculations can be made and considered where following results are reached:

*-Year of project 7 years*

*-Initial cost salary during employee end personnel or education existing*

*-Cost of current resources plus future project allocation*

*-Revenue of 400 HRK per unit of apartment*

Each year 2,3 $m^2$ mil new permits are asked. There are 4 mil people. If one company has only 1000 objects each 4 000HRK for 7 years income is additional value added to company assets. In this process new knowledge is gained about current infrastructure, new potentials of business and many new customers met that could express their needs from construction sector.

Result from analysis is as follows:

| | Production 2014 | Production 2020 |
|---|---|---|
| Utilities | 60.000,00 | 60.000,00 |
| Energy | 36.000,00 | 36.000,00 |
| Labor | 2.400.000,00 | 2.400.000,00 |
| FACTORY COSTS | 2.496.000,00 | 2.496.000,00 |
| Administrative costs | 5.000,00 | 5.000,00 |
| OPERATING COSTS | 2.501.000,00 | 2.501.000,00 |
| Depreciation | 5.000,00 | 5.000,00 |
| TOTAL PRODUCTION COSTS | 2.506.000,00 | 2.506.000,00 |
| COSTS OF PRODUCTS | 2.506.000,00 | 2.506.000,00 |
| Unit cost | 2.506,00 | 2.506,00 |
| Variable share (%) | 39,173982 | 39,173982 |

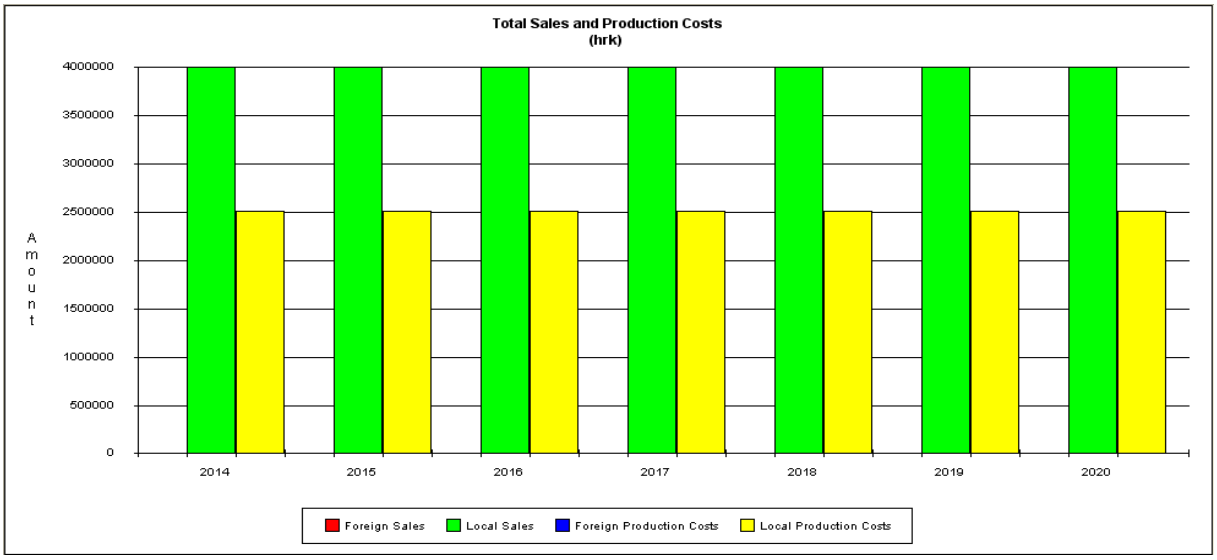
*Table 20*

| | Production 2014 | Production 2020 |
|---|---|---|
| Quantity produced | 1.000,00 | 1.000,00 |
| Quantity sold | 1.000,00 | 1.000,00 |
| Gross unit price (average) | 4.000,00 | 4.000,00 |
| Gross sales revenue | 4.000.000,00 | 4.000.000,00 |
| SALES REVENUE | 4.000.000,00 | 4.000.000,00 |

*Table 21*

| | Construction 2013 | Production 2014 | Production 2020 |
|---|---|---|---|
| TOTAL CASH INFLOW | 50.000,00 | 4.000.000,00 | 4.000.000,00 |
| Inflow funds | 50.000,00 | 0 | 0 |
| Inflow operation | 0 | 4.000.000,00 | 4.000.000,00 |
| Other income | 0 | 0 | 0 |
| TOTAL CASH OUTFLOW | 146.000,00 | 2.405.025,00 | 2.501.025,00 |
| Increase in fixed assets | 50.000,00 | 0 | 0 |
| Increase in current assets | 96.000,00 | -96.000,00 | 0 |
| Operating costs | 0 | 2.501.000,00 | 2.501.000,00 |
| Income (corporate) tax | 0 | 25 | 25 |
| SURPLUS (DEFICIT) | -96.000,00 | 1.594.975,00 | 1.498.975,00 |
| CUMULATIVE CASH BALANCE | -96.000,00 | 1.498.975,00 | 10.492.825,00 |
| Local surplus (deficit) | -96.000,00 | 1.594.975,00 | 1.498.975,00 |
| Local cumulative cash balance | -96.000,00 | 1.498.975,00 | 10.492.825,00 |
| Net flow of funds | 50.000,00 | 0 | 0 |

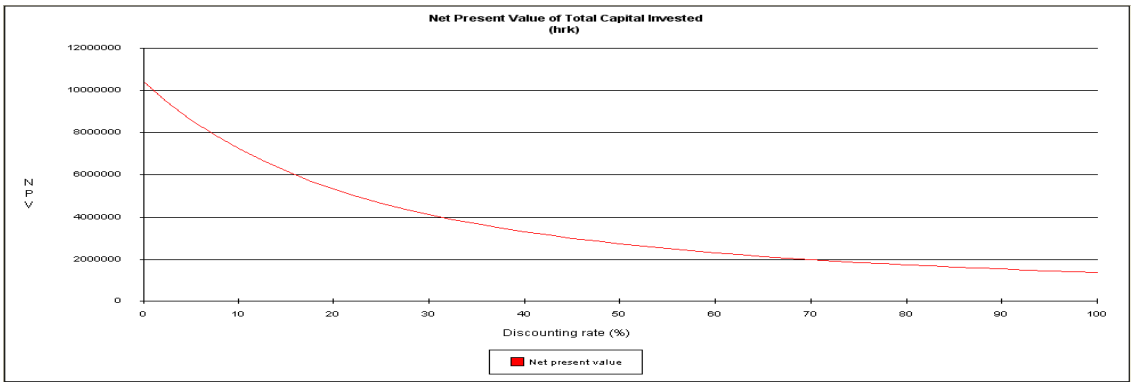
*Table 22*



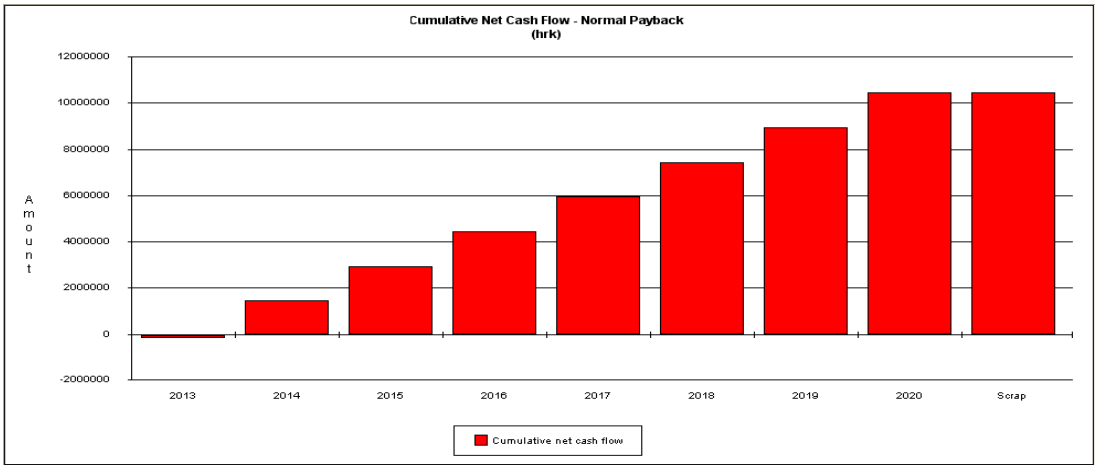

*Picture 86*

| | Construction 2013 | Production 2014 | Production 2015 | Production 2020 |
|---|---|---|---|---|
| TOTAL CASH INFLOW | 0 | 4.000.000,00 | 4.000.000,00 | 4.000.000,00 |
| Inflow operation | 0 | 4.000.000,00 | 4.000.000,00 | 4.000.000,00 |
| Other income | 0 | 0 | 0 | 0 |
| TOTAL CASH OUTFLOW | 146.000,00 | 2.405.025,00 | 2.501.025,00 | 2.501.025,00 |
| Increase in fixed assets | 50.000,00 | 0 | 0 | 0 |
| Increase in net working capital | 96.000,00 | -96.000,00 | 0 | 0 |
| Operating costs | 0 | 2.501.000,00 | 2.501.000,00 | 2.501.000,00 |
| Marketing costs | 0 | 0 | 0 | 0 |
| Income (corporate) tax | 0 | 25 | 25 | 25 |
| NET CASH FLOW | -146.000,00 | 1.594.975,00 | 1.498.975,00 | 1.498.975,00 |
| CUMULATIVE NET CASH FLOW | -146.000,00 | 1.448.975,00 | 2.947.950,00 | 10.442.825,00 |
| Net present value | -146.000,00 | 1.548.519,42 | 1.412.927,70 | 1.218.803,85 |
| Cumulative net present value | -146.000,00 | 1.402.519,42 | 2.815.447,12 | 9.286.242,28 |
| *NET PRESENT VALUE* | at 3,00% | 9.298.438,65 | | |
| *NORMAL PAYBACK* | at 0,00% | 1.09 years | 2014 | |
| *DYNAMIC PAYBACK* | at 3,00% | 1.09 years | 2014 | |
| *NPV RATIO* | 176,119746 | | | |
| *Net present values discounted to* | 122.013 | | | |

*Table 23*




*Picture 87*




*Picture 88*

Income statement

| | Production 2014 | Production 2020 |
|---|---|---|
| Sales revenue | 4.000.000,00 | 4.000.000,00 |
| Less variable costs | 981.700,00 | 981.700,00 |
| VARIABLE MARGIN | 3.018.300,00 | 3.018.300,00 |
| in % of sales revenue | 75,4575 | 75,4575 |
| Less fixed costs | 1.524.300,00 | 1.524.300,00 |
| OPERATIONAL MARGIN | 1.494.000,00 | 1.494.000,00 |
| in % of sales revenue | 37,35 | 37,35 |
| GROSS PROFIT FROM OPERATIONS | 1.494.000,00 | 1.494.000,00 |
| in % of sales revenue | 37,35 | 37,35 |
| GROSS PROFIT | 1.494.000,00 | 1.494.000,00 |
| Investment allowances | 0 | 0 |
| TAXABLE PROFIT | 1.494.000,00 | 1.494.000,00 |
| Income (corporate) tax | 25 | 25 |
| NET PROFIT | 1.493.975,00 | 1.493.975,00 |
| in % of sales revenue | 37,349375 | 37,349375 |
| RETAINED PROFIT | 1.493.975,00 | 1.493.975,00 |

*Table 24*

Balance sheet

| | 2013 | 2015 | 2019 | 2020 |
|---|---|---|---|---|
| TOTAL ASSETS | 146.000,00 | 3.133.950,00 | 9.109.850,00 | 10.603.825,00 |
| Total current assets | 96.000,00 | 3.093.950,00 | 9.089.850,00 | 10.588.825,00 |
| Total fixed assets, net of depreciation | 50.000,00 | 40.000,00 | 20.000,00 | 15.000,00 |
| TOTAL LIABILITIES | 146.000,00 | 3.133.950,00 | 9.109.850,00 | 10.603.825,00 |
| Total equity capital | 146.000,00 | 146.000,00 | 146.000,00 | 146.000,00 |
| Reserves, retained profit brought forward | | 1.493.975,00 | 7.469.875,00 | 8.963.850,00 |
| Retained profit | | 1.493.975,00 | 1.493.975,00 | 1.493.975,00 |
| Net worth | 146.000,00 | 3.133.950,00 | 9.109.850,00 | 10.603.825,00 |

*Table 25*

Break even

| | Production 2014 | Production 2020 |
|---|---|---|
| Sales revenue | 4.000.000,00 | 4.000.000,00 |
| Variable costs | 981.700,00 | 981.700,00 |
| Variable margin | 3.018.300,00 | 3.018.300,00 |
| Variable margin ratio (%) | 75,4575 | 75,4575 |
| Fixed costs | 1.524.300,00 | 1.524.300,00 |
| Break-even sales value | 2.020.077,53 | 2.020.077,53 |
| Break-even ratio (%) | 50,501938 | 50,501938 |
| Fixed costs coverage ratio | 1,980122 | 1,980122 |
| Fixed costs | 1.524.300,00 | 1.524.300,00 |
| Break-even sales value | 2.020.077,53 | 2.020.077,53 |
| Break-even ratio (%) | 50,501938 | 50,501938 |
| Fixed costs coverage ratio | 1,980122 | 1,980122 |

*Table 26*

| | Total construction | Total production | Total investment |
|---|---|---|---|
| Total fixed investment costs | 50.000,00 | 0 | 50.000,00 |
| Increase in net working capital | 96.000,00 | -96.000,00 | 0 |
| TOTAL INVESTMENT COSTS | 146.000,00 | -96.000,00 | 50.000,00 |

*Table 27*

| | First year 2014 | Reference year 2014 | Last year 2020 |
|---|---|---|---|
| SALES REVENUE | 4.000.000,00 | 4.000.000,00 | 4.000.000,00 |
| Factory costs | 2.496.000,00 | 2.496.000,00 | 2.496.000,00 |
| Administrative overhead costs | 5.000,00 | 5.000,00 | 5.000,00 |
| OPERATING COSTS | 2.501.000,00 | 2.501.000,00 | 2.501.000,00 |
| Depreciation | 5.000,00 | 5.000,00 | 5.000,00 |
| TOTAL PRODUCTION COSTS | 2.506.000,00 | 2.506.000,00 | 2.506.000,00 |
| COSTS OF PRODUCTS | 2.506.000,00 | 2.506.000,00 | 2.506.000,00 |
| GROSS PROFIT FROM OPERATIONS | 1.494.000,00 | 1.494.000,00 | 1.494.000,00 |
| GROSS PROFIT | 1.494.000,00 | 1.494.000,00 | 1.494.000,00 |
| TAXABLE PROFIT | 1.494.000,00 | 1.494.000,00 | 1.494.000,00 |
| Income (corporate) tax | 25 | 25 | 25 |
| NET PROFIT | 1.493.975,00 | 1.493.975,00 | 1.493.975,00 |

*Table 28*

### 6.1.2. ISO CERTIFICATION

Another type of certificates that is preferable to have is ISO 9001 14001 18001 that confirms that you follow procedures in the respect of documents, work process, protection at work for workers and environmental protection.

Although ISO certificates impose new ways of company thinking and working, it can be a strong competitive force on new markets. Still if not understood and used properly could not be a miracle of further developments. To say that many companies think about having this service outsourced by aiming better result qualities and lowering cost in company. However there are many pro and contra for having such a service inside a company – but gaining a certificate is good requirements for potential new jobs and opportunities.

| ISO FACTS | POSITIVE | NEGATIVE |
|---|---|---|
| | | |
| Have universal system in company | Good to have aim at quality | If not used and considered seriously its paper is of no importance. Serious thinking starts from management and ISO leader |
| Have intention to improve business | Constant control of action will lead to some form of process improvements | Intention can be good, even quality control exist regularly, but performance is still the same – probably ownership or some responsibility actions are not in order |
| Have certificate that give you advantage on domestic foreign markets | Certification is a sign of work, intention and gives you advantage | Only certification without other service potential or quality work cannot be a guarantee of job success |
| | | |
| ISO IN COMPANY | People are familiar with each other | Do not want to give any complaint or mark for improvement |

| | | |
|---|---|---|
| | People know the problems in the field and can understand better responses and problems | Audit can be influenced by management or first superior, main ISO officer who want for company to be presented without any problems (what is unrealistic even in the best working environments in the world) |
| | If good relation with management exist some obstacles can be improved and company better managed | Results are highly subjective |
| | Personal like / dislike | Personal like / dislike |
| | | |
| ISO STANDARDS proved by independent ISO COMPANY | More reliable, clear approach | People would not talk in front of strangers |
| | Experience from many audits and problems | Unification can sometimes overlook small but significant problem |
| | Good attitude to solve problems | Some negative marks can be due to negative imbalances inside in company not due to workers job and actual effort |

*Table 29*

ISO certification can be obtained for documents ISO 9 001, environmental management 14 001, and human management 18 001.

| ISO 9001 Number | ISO 9001 |
|---|---|
| 4.1/2,3 | General requirements |
| 4.2.2 | Book that regulates business processes |
| 4.2.3./4 | Documents |
| 5 | Responsibility of management |
| 5.1/2 | Commitment of management |
| 5.3/4 | Policy and aims of quality management |
| 5.5.3 | Internal communication |
| 5.6 | Management |
| 6/6.1 | Resources |
| 6.2/6.2.1 | Human resources |
| 6.2.2 | Competences |
| 6.3/6.4 | Infrastructure assets |
| 7/7.1 | Service realization |
| 7.2/7.2.1/7.2.2 | Processes directed toward buyer customer |
| 7.2.3 | Communication with customer |
| 7.3 | Development |
| 7.4 | Purchase of goods services |
| 7.5 | Services to customers |
| 7.5.2 | Process validation |
| 7.5.3 | Mark up |

| | |
|---|---|
| 7.5.4 | Ownership |
| 7.5.5 | Storage |
| 7.6 | Equipment for measurement |
| 8/8.1,8.2 | Measures analyses improvements |
| 8.2.2 | Internal audit |
| 8.2.3/4 | Audit and control of processes and services |
| 8.3 | Service not in line with expectations |
| 8.4/5 | Data analysis improvements |
| 8.5.2/3 | Corrective and preventive<br>measures |
| | Complaints reclamation |

*Table 30*

In ISO 18001 accents is put on people, education on possible endangered situation, strong importance is done on prevention, listing of all types of risk that can occur and try to establish probabilities of event, damage that can occur and present this line of happening and insure possible negative aspects of job

It is important at this aspect that all legal regulations are listed, people regularly informed about new requirements, documents and measurement that law maker asks and are properly done. Aim of this process should be strong in all types of jobs, and respected firmly especially if the worker is on job position with high risk on health. It is a task of ISO to take care about health conditions of all workers, organize health examinations and have all risks at job places listed, pre accident measures taken and controlled.

Internal audits should be done regularly, all records kept in line with law and company requirements and audit of health procedures strictly done. Measures such as exercise in the case of fire alarm or other type of accident need to be familiar to all who enters the work place.

ISO 14001 documents all type of environmental impacts that company have, or could done. Air, water, emissions, ground water, waste etc. need to be properly take care of, recycled, and documented in cost, investment sides. “Clean” or environmentally green purchase of goods is strongly advised.

### 6.1.3. EU FOND

Large number of projects is financed by EU funds. Proper preparation of documents, good understanding that social advantage and cooperation between or cross order is highly recommended is the first step in long process of obtaining a means from EU. As the several projects are financed through funds good reputation and experience for larger and more complex job opportunities are offered and in that line more revenue comes to company.

| **Description of project** | **Objective indicators** | **Sources** | **Assumptions** |
|---|---|---|---|
| | | | |
| 1 Purpose | | | |
| 2 General aim | | | |
| 3 Activities | | | |
| 4 Results | | | |
| **Description of projects** | **Indicators** | **Assumptions** | **Assumptions** |
| Project purpose | Objective Measures | Sources | Assumptions |
| Main aim of the project. Solve main problem Define general aim and purpose for all parties involved. | Quantitative way of measuring general aim | Where to find information | External factors that influence project but are outside the project Must be met to meet general aim |
| General aim | Objective measures | Sources of data | Assumptions |

| | | | |
|---|---|---|---|
| Wider aims: national, sectors ,based on policies, it is not achieved with project itself but with other project involvements | Quantitative way –measures to meet general aim | Where to find informations | |
| Activities | Means | Costs | Assumptions |
| Activities that have to be undertaken to reach results | Resources to work: goods, seminars, machines, education | Cost of project? How they are allocated? | External factors |
| Results | Ways to measure | Sources of work and data | Pre conditions |
| Tangible result of activities. Combination of results achieves the purpose of the project | Quantitative measures | Where to find informations? | External factors that influence project but are not inside the project Must be met |
| | | | PRE CONDITIONS |
| | | | Must be satisfied before project starts |

*Table 31*

| **Project description** | **Objective measures** | **Sources of data** | **Assumptions** |
|---|---|---|---|
| | | | |
| Aim | **Objective measures** | **Sources of data** | **Assumptions** |
| Better usage of tourist objects | How much tourist came before and after | Annual Financial Report of Tourist resort | Other revenue |
| General aim | New services restaurants, beds, etc. | **Sources of data** | **Assumptions** |
| Better economic situation of one village | Reduced unemployment | Data from statistical | |

| | | | |
|---|---|---|---|
| | Increased GDP | burros | |
| Activities: | Means | Costs | **Assumptions** |
| - do façade;<br>- do environment<br>-do new web page<br>-do marketing campaign in country outside<br>-educate personnel about tourist attraction, natural resources in region<br>-organize new games and entertainment activities | -Construction workers<br>-We specialist<br>-promoters<br>-History and food experts | Reports<br>Cost of construction | Construction company<br>marketing company<br>Personnel from current tourist objects |
| Results: | Objectively verifiable indicators | Sources | Assumption |
| -Better building's façade, look and energy efficiency.<br>-Developed brand of object<br>-Increased capacity<br>-Region is put on tourist map as important place | Façade made; Web advertisement; number of new tourist; tourist arrival; users of games ; tourist interested for education in region , food, history | Reports from accounting sector; web pages hit; other reports | Tourist industry developed in region. Existing buildings and personnel |

*Table 32*

### 6.2. Building the old

There are many old objects in Croatia some of whom are situated in the center of town and have protective cultural value. To improve tourist attraction, make better isolation, increase energy efficiency construction company can aim their activates at this kind of job.

Nevertheless this process is not without possible additional opportunities and dangers.

Material can be produced in country or imported from abroad. It can be bought at larger quantities and obtain discount at producers, or even work together on material specifications to improve at place and production process.

Classical list of material is listed below and that for area of 1 $m^2$. These quantities increase with each $m^2$.

Worker costs are added additionally and depend upon quality or constructor power at market. Company is offering special rates or not –on quantities- usually worker cost is the same as material. As from the table it is a higher on average than proposed material. Making $m^2$ valued 188 HRK per $m^2$. What is very expensive for conditions of average salaries.

| | Material HRK /1 $m^2$ | EUR/1 $m^2$ | Work HRK/$m^2$ | **Total HRK/$m^2$** |
|---|---|---|---|---|
| Styrofoam | 17,5 | 2,39726 | | |
| Glue | 20 | 2,739726 | | |
| Net glass | 4,6 | 0,630137 | | |
| Tiple | 2,5 | 0,342466 | | |
| Color | 1,5 | 0,205479 | | |
| End color | 25 | 3,424658 | | |
| Dowels | 71,1 | 9,739726 | | |
| | | | | |
| **Sum** | **71,1** | | **117,3** | **188,4** |

*Table 33*

This cost rise s with area of building, and this increase is presented in tables that follow.

| $m^2$ | Price without tax | TAX | Total HRK |
|---|---|---|---|
| 1 | 151,00 | 37,75 | 188,75 |
| 100 | 15.100,00 | 3.775,00 | 18.875,00 |
| 1.000 | 151.000,00 | 37.750,00 | 188.750,00 |
| 10.000 | 1.510.000,00 | 377.500,00 | 1.887.500,00 |
| 100.000 | 15.100.000,00 | 3.775.000,00 | 18.875.000,00 |
| 1.000.000 | 151.000.000,00 | 37.750.000,00 | 188.750.000,00 |

*Table 34*

| $m^2$ | Price without tax | TAX | Total EUR |
|---|---|---|---|
| 1 | 20,13 | 5,03 | 25,17 |
| 100 | 2.013,33 | 503,33 | 2.516,67 |
| 1.000 | 20.133,33 | 5.033,33 | 25.166,67 |
| 10.000 | 201.333,33 | 50.333,33 | 251.666,67 |
| 100.000 | 2.013.333,33 | 503.333,33 | 2.516.666,67 |
| 1.000.000 | 20.133.333,33 | 5.033.333,33 | 25.166.666,67 |

*Table 35*

Some additional savings can be obtained by reducing the thickness of Styrofoam where the highest difference on market is between 5-8 cm  Styrofoam which are the most required on market.

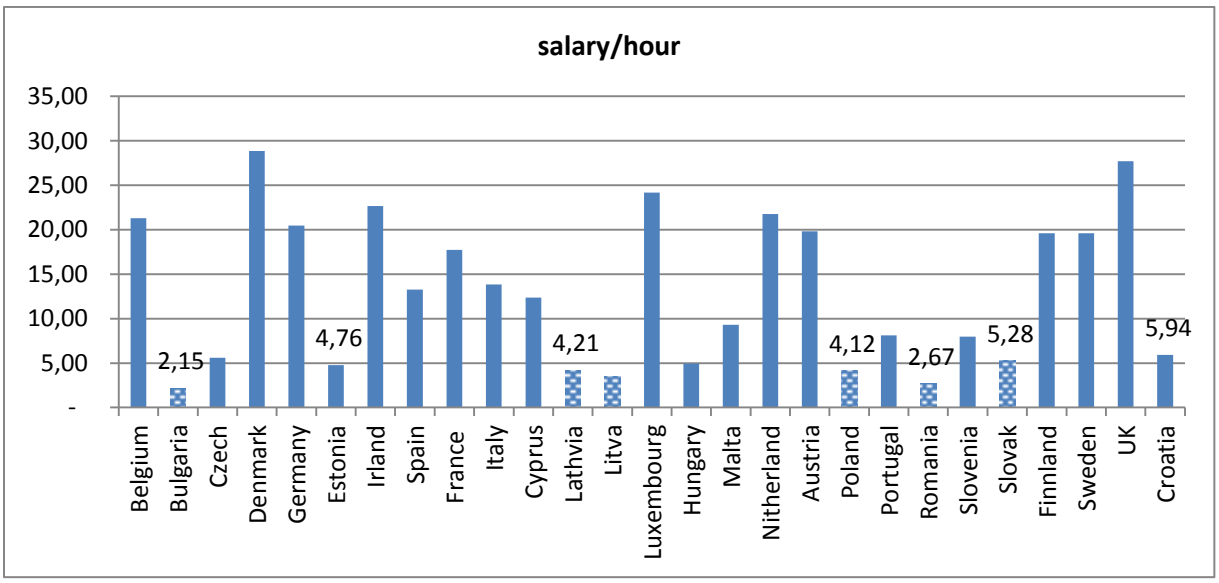
| | Min | Max | Diff Min Max | Diff Max |
|---|---|---|---|---|
| Styrofoam 5 | 165 | 170 | 5 | |
| Styrofoam 8 | 177 | 182 | 5 | 12 |
| Styrofoam 10 | 185 | 192 | 7 | 10 |

*Table  36*

| | days | hours | man | total man hours | price 4€ | price 20€ | price 10€ |
|---|---|---|---|---|---|---|---|
| Labour needed | 10 | 8 | 4 | 320 | 1.280,00 | 6.400,00 | 3.200,00 |
| | m2 | price | price $m^2$ | | | | |
| Labor $m^2$ Currently on the Croatian market | 350 | 15,6 | **5.460,00** | | | | |

*Table 37*

Salary/hour




*Picture 90*

### 6.3. Building the education

Education is important part of working process and learning. It does not stop with school end whether in respect of knowledge gaining or giving.

In the first part of learning is natural process in company that stretches from management till end worker. Each need to know about documents procedures, health hazard in each section of job and environmental implications of their activities. Besides obligatory education that is done inside the company and is largely related to actual success on domestic or foreign markets, improvements in current business strategy can be done if education is communicated with and for community.

Activities in community

| **Dialogue with community** | | |
|---|---|---|
| Schools | | |
| | Elementary school | One hour with pupils<br>Show them how to work models<br>Explain about construction work |
| | Secondary school | Process explanation<br>Basic of materials technology machinery |
| | University student | Large models In detail architecture study |
| Institutes | | Develop new construction models; Together at various contents; innovative solution in actual building process tide up with architectural design |
| Government institutions | Tax Policies, GIS offices; Land Registry; Cadaster; Strategic plan : | Making clear policy that is related to core or additional business; Closely cooperate with Government in area of new legislation, new job opportunities; clear paper; paying all taxes; ask for reduced taxes in the field etc. Do advices on construction strategy, GIS models , Plan of cities etc. |
| Banks | Types of credits;Types of payments; Possibility to finance projects | Many types of payments, guarantees, discounts for construction purposes and selling the new properties |

*Table 38*

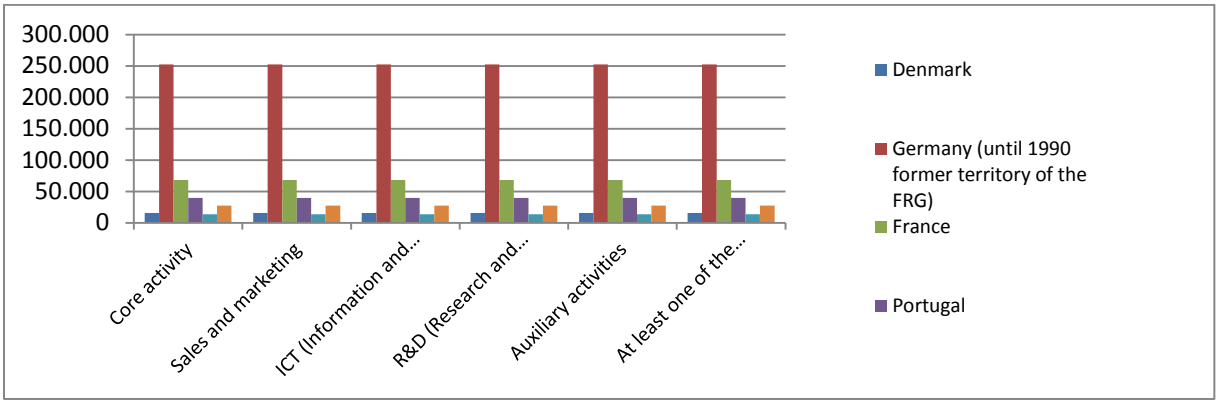
### 4.4.Building the lease

Interaction between company and community does not stop at education. It can be improved on each step of activities whether is it a word about buyer or customer but also stretches on industry that is involved in business of production and customer related relationships.

| Lease | | |
|---|---|---|
| | LEASE | |
| | Leases of workers | To citizens<br>To other industries<br>Other construction businesses |
| | Leases of machinery | Per hour per day Cost +taxes |
| | Insurance; Instructions for work; | Make sure insurance is paid and all instructions clearly understood<br>Only to adults |
| | Lease of both worker +machinery | Price list availability, good relation, "Honest" price, Thorough job<br>Advices ; Data base of potential customers ; typical jobs etc. |
| Industry<br>Cooperation with | | |
| | Industry of glass | What types of windows, discounts ,orders, common work on details, on improvements |
| | Industry of cement | Large orders, discounts, availability stocking storage services |
| | Industry of wood | Type of wood for certain customers, availability, accessibility , interoperation |
| | Steel industry | Material for construction, large order big discounts |
| | Industry colors, chemistry | Color for wood steel, base color – discounts, pre orders etc. |
| | Industry of furniture | Make apartment with kitchen at competitive market rates |

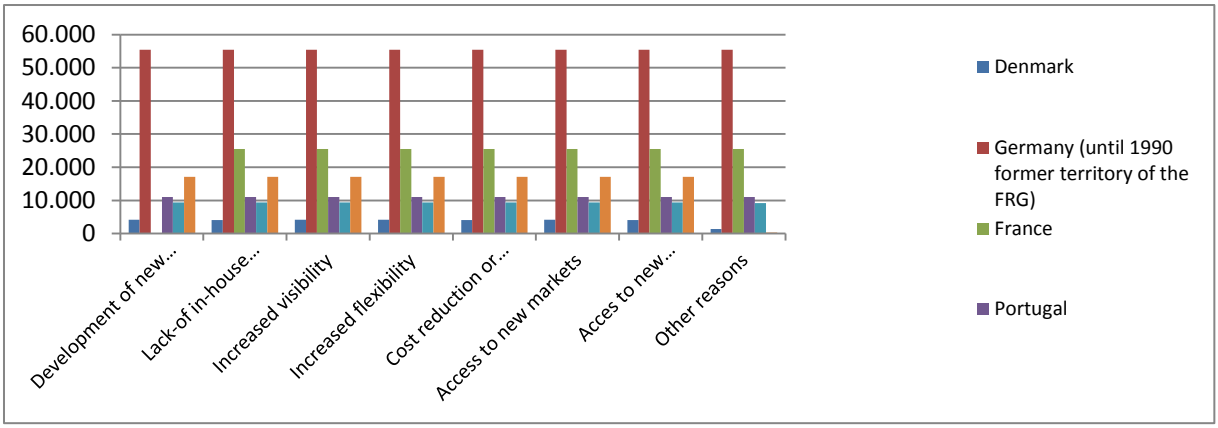
*Table 39*

Activities across areas



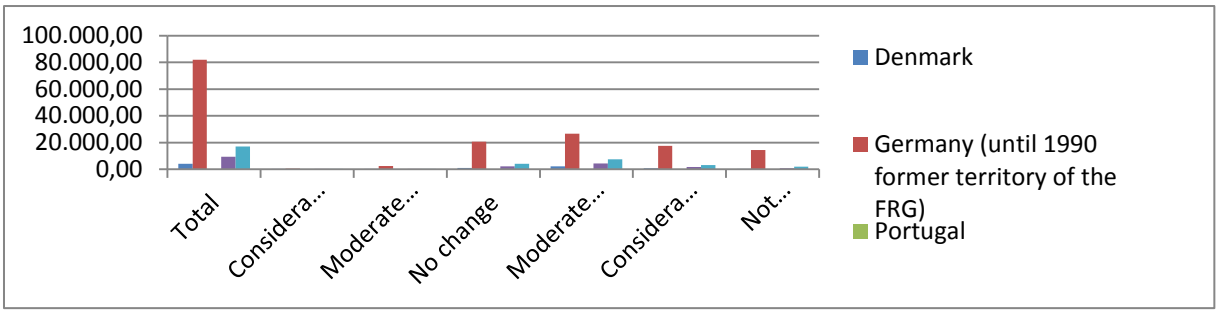

*Picture 91*

Reasons for enterprise relations related to core activity



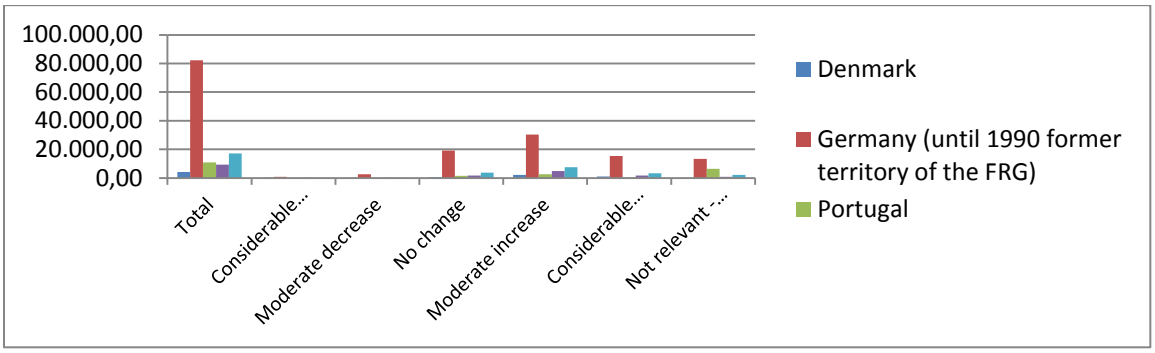

*Picture 92*

Impact of inter-enterprise relations on competitiveness during the past 3 years by enterprise activity



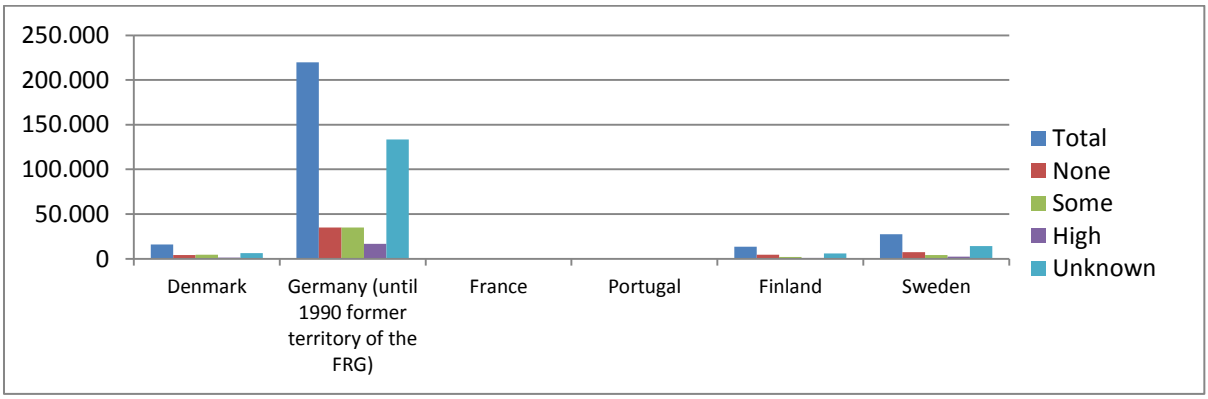

*Picture 93*

Expected impact of inter-enterprise relations on competitiveness during the next 3 years by enterprise activity




*Picture 94*

Perceived barriers preventing or obstructing inter-enterprise relations




*Picture 95*

## 6. TO CONCLUDE

A large number of western economies managed to rebound after 2008 crises making active steps in both monetary and to lesser extend fiscal measures. Croatia is still struggling with negative GDP growth and this is in spite of some positive news that becoming new EU country, in that way reaching new potentials of cooperation, promotion better financial and working conditions. Very variable strategy regarding tax policy and high frequency of law changes do not attract new investors but on contrary making a country a place of additional risk with equal or higher cost of labor, energy, community services overall.

Construction sector contributed to growth in respect of new building blocks, commercial centers and with further potential in renewing the old buildings. It also went through legal stages that suffered from yearly inefficiency in legalization process, introducing the energy efficiency certificate as obligatory part of housing. Lagging process is visible also in: employing workers early 90 is without paying all contributions undercut competitiveness of big construction companies, overcapacity in buildings, slow modernization in other types of activities: slow introduction of new technologies, saving measures at competitive market rate; low level of educational activities between schools institutes population and construction companies and not living the ISo's life in full sense are just a few of them.

How will future look will depend upon adjustment to EU standards, behaving on market terms lowering barriers to one who are able and willing to do job at lower rates, cooperation with suppliers and buyers on new innovative ways showing them a final job that is done with legal paper in cadaster, on energy efficient way and with various possibilities of discounts and payments. Construction sector can contribute to further economic growth if closely cooperates with educational institutions, and support and further develop domestic industries: steel, cement, glass, ceramic, etc.

***Literature:***


- www eurostat.com
- www dzs.hr
- www esrl.noaa.gov
- Energy in Croatia ,Ministry of Energy,Labor
- EU funds, web pages
- ISO ,web pages
- www business.hr;
- www seebiz.hr;
- www limun .hr
- www hgk.hr

# ANEX I

| | |
|---|---|
| A | Years |
| B | GDP % |
| C | Trade % |
| D | Industrial production % |
| E | Consumer prices % |
| F | Producer prices % |
| G | Unemplyoment rate % |
| H | Number of registered unemplyoed |
| I | Average net salary |
| J | Deficit consolidated bilance |
| K | Export mil EUR |
| L | Import mil EURa |
| M | Current account saldo mil EURa |
| N | Current account % GDP |
| O | International reservers |
| P | Toursit nights % change |
| R | Foreign debit mil EURa |
| S | Foreign debt % GDP |
| T | EUR/HRK |
| U | USD/HRK |
| V | CHF/HRK |
| Z | Money M1 |
| X | Total loan mrd kuna |
| Y | Deposit at business banks mrd kuna |

Estimated Correlation Matrix of Variables

**********

| | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| B | 1.0000 | .86094 | .97239 | .079461 | -.078783 | .26782 |
| C | .86094 | 1.0000 | .88732 | -.17313 | -.11312 | .58957 |
| D | .97239 | .88732 | 1.0000 | -.0056564 | -.13485 | .26044 |
| E | .079461 | -.17313 | -.0056564 | 1.0000 | .58802 | -.60502 |
| F | -.078783 | -.11312 | -.13485 | .58802 | 1.0000 | -.35556 |
| G | .26782 | .58957 | .26044 | -.60502 | -.35556 | 1.0000 |
| H | .28955 | .61933 | .29247 | -.60092 | -.40042 | .99509 |
| I | -.75260 | -.71074 | -.75225 | .28793 | .57102 | -.54658 |
| J | .29069 | .012338 | .24510 | .83580 | .29473 | -.64664 |
| K | -.42327 | -.45377 | -.43626 | .45337 | .75868 | -.60582 |
| L | -.087949 | -.32161 | -.11653 | .75149 | .64697 | -.84302 |
| M | -.037992 | .035716 | -.18408 | -.19693 | .015663 | .52282 |
| N | -.53814 | -.29885 | -.53760 | -.42771 | .31263 | .29121 |
| O | .15278 | .24308 | .14035 | .19109 | .79536 | -.012425 |
| P | .52978 | .53475 | .50209 | .015670 | .27587 | .25719 |
| R | -.80507 | -.75263 | -.79024 | .21745 | .54326 | -.54751 |
| S | -.84790 | -.76565 | -.83491 | .064526 | .48819 | -.41827 |
| T | .18817 | .22602 | .062872 | -.43921 | -.14729 | .67380 |
| U | .46564 | .68755 | .46208 | -.47588 | -.58059 | .88660 |
| V | -.46520 | -.16511 | -.52606 | -.24866 | .36902 | .43673 |
| Z | -.30637 | -.24484 | -.32349 | .20133 | .58161 | -.35693 |
| X | -.73555 | -.67696 | -.73275 | .26091 | .59583 | -.52913 |
| Y | -.74096 | -.65996 | -.73830 | .20742 | .61388 | -.46709 |

Estimated Correlation Matrix of Variables

**********

| | H | I | J | K | L | M |
|---|---|---|---|---|---|---|
| B | .28955 | -.75260 | .29069 | -.42327 | -.087949 | -.037992 |
| C | .61933 | -.71074 | .012338 | -.45377 | -.32161 | .035716 |
| D | .29247 | -.75225 | .24510 | -.43626 | -.11653 | -.18408 |
| E | -.60092 | .28793 | .83580 | .45337 | .75149 | -.19693 |
| F | -.40042 | .57102 | .29473 | .75868 | .64697 | .015663 |
| G | .99509 | -.54658 | -.64664 | -.60582 | -.84302 | .52282 |
| H | 1.0000 | -.57545 | -.60159 | -.62775 | -.83934 | .46749 |
| I | -.57545 | 1.0000 | .070743 | .90216 | .63537 | -.074907 |
| J | -.60159 | .070743 | 1.0000 | .29479 | .74139 | -.49737 |
| K | -.62775 | .90216 | .29479 | 1.0000 | .83034 | -.11609 |
| L | -.83934 | .63537 | .74139 | .83034 | 1.0000 | -.37730 |
| M | .46749 | -.074907 | -.49737 | -.11609 | -.37730 | 1.0000 |
| N | .23024 | .49063 | -.72987 | .36933 | -.18914 | .49092 |
| O | -.042986 | .41123 | .057842 | .66218 | .45050 | .027047 |
| P | .22403 | -.12202 | -.11764 | .11643 | .083352 | .37158 |
| R | -.57840 | .98921 | .0020013 | .86493 | .57515 | -.095815 |
| S | -.46106 | .95341 | -.19171 | .78805 | .41927 | .022675 |
| T | .61722 | -.40868 | -.59431 | -.45311 | -.63751 | .80925 |
| U | .91514 | -.79012 | -.33732 | -.82301 | -.81362 | .27276 |
| V | .37726 | .45369 | -.61153 | .32254 | -.19719 | .66676 |
| Z | -.39407 | .72142 | .0093651 | .77092 | .56470 | .17089 |
| X | -.55828 | .99583 | .052132 | .91459 | .63021 | -.061420 |
| Y | -.50004 | .98614 | -.012103 | .90545 | .57974 | -.026428 |

Estimated Correlation Matrix of Variables

**********

| | N | O | P | R | S | T |
|---|---|---|---|---|---|---|
| B | -.53814 | .15278 | .52978 | -.80507 | -.84790 | .18817 |
| C | -.29885 | .24308 | .53475 | -.75263 | -.76565 | .22602 |
| D | -.53760 | .14035 | .50209 | -.79024 | -.83491 | .062872 |
| E | -.42771 | .19109 | .015670 | .21745 | .064526 | -.43921 |
| F | .31263 | .79536 | .27587 | .54326 | .48819 | -.14729 |
| G | .29121 | -.012425 | .25719 | -.54751 | -.41827 | .67380 |
| H | .23024 | -.042986 | .22403 | -.57840 | -.46106 | .61722 |
| I | .49063 | .41123 | -.12202 | .98921 | .95341 | -.40868 |
| J | -.72987 | .057842 | -.11764 | .0020013 | -.19171 | -.59431 |
| K | .36933 | .66218 | .11643 | .86493 | .78805 | -.45311 |
| L | -.18914 | .45050 | .083352 | .57515 | .41927 | -.63751 |
| M | .49092 | .027047 | .37158 | -.095815 | .022675 | .80925 |
| N | 1.0000 | .43386 | .15030 | .53072 | .67373 | .38947 |
| O | .43386 | 1.0000 | .55281 | .35986 | .33856 | -.053307 |
| P | .15030 | .55281 | 1.0000 | -.19969 | -.18145 | .31864 |
| R | .53072 | .35986 | -.19969 | 1.0000 | .97845 | -.39670 |
| S | .67373 | .33856 | -.18145 | .97845 | 1.0000 | -.24091 |
| T | .38947 | -.053307 | .31864 | -.39670 | -.24091 | 1.0000 |
| U | -.16189 | -.28384 | .082989 | -.80036 | -.72968 | .50552 |
| V | .86963 | .43854 | .20369 | .45138 | .56525 | .46910 |
| Z | .37096 | .54323 | .33025 | .68997 | .65044 | -.22075 |
| X | .51743 | .44959 | -.11202 | .98930 | .95520 | -.39780 |
| Y | .59519 | .49009 | -.10004 | .98501 | .96656 | -.33195 |

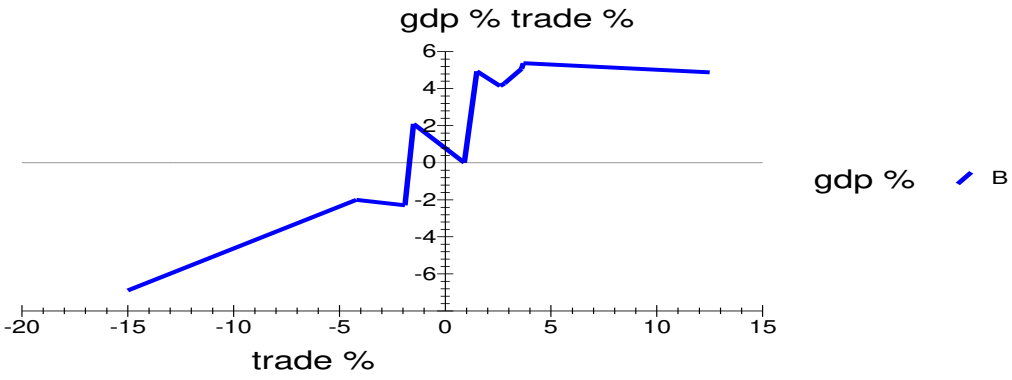
Estimated Correlation Matrix of Variables

**********

| | U | V | Z | X | Y |
|---|---|---|---|---|---|
| B | .46564 | -.46520 | -.30637 | -.73555 | -.74096 |
| C | .68755 | -.16511 | -.24484 | -.67696 | -.65996 |
| D | .46208 | -.52606 | -.32349 | -.73275 | -.73830 |
| E | -.47588 | -.24866 | .20133 | .26091 | .20742 |
| F | -.58059 | .36902 | .58161 | .59583 | .61388 |
| G | .88660 | .43673 | -.35693 | -.52913 | -.46709 |
| H | .91514 | .37726 | -.39407 | -.55828 | -.50004 |
| I | -.79012 | .45369 | .72142 | .99583 | .98614 |
| J | -.33732 | -.61153 | .0093651 | .052132 | -.012103 |
| K | -.82301 | .32254 | .77092 | .91459 | .90545 |
| L | -.81362 | -.19719 | .56470 | .63021 | .57974 |
| M | .27276 | .66676 | .17089 | -.061420 | -.026428 |
| N | -.16189 | .86963 | .37096 | .51743 | .59519 |
| O | -.28384 | .43854 | .54323 | .44959 | .49009 |
| P | .082989 | .20369 | .33025 | -.11202 | -.10004 |
| R | -.80036 | .45138 | .68997 | .98930 | .98501 |
| S | -.72968 | .56525 | .65044 | .95520 | .96656 |
| T | .50552 | .46910 | -.22075 | -.39780 | -.33195 |
| U | 1.0000 | .021477 | -.61412 | -.78645 | -.75439 |
| V | .021477 | 1.0000 | .45448 | .47696 | .53619 |
| Z | -.61412 | .45448 | 1.0000 | .75373 | .72146 |
| X | -.78645 | .47696 | .75373 | 1.0000 | .99335 |
| Y | -.75439 | .53619 | .72146 | .99335 | 1.0000 |

**********

# ANEX II


gdp % trade %
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2
0
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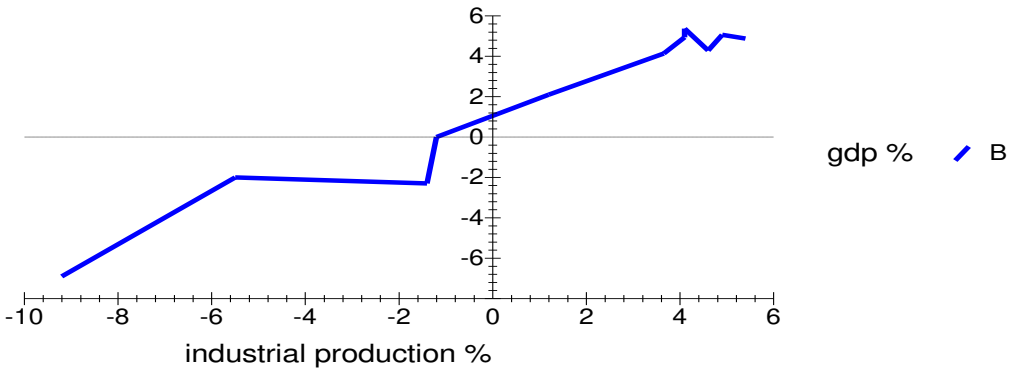
-4
-6
-20
-15
-10
-5
0
5
10
15
trade %
gdp %
B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4
2
0
-2
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-6
-10
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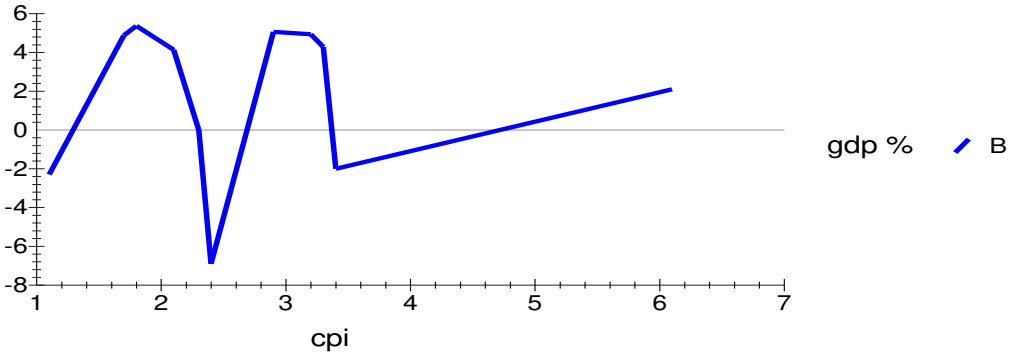
-6
-4
-2
0
2
4
6
industrial production %
gdp %
B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-6
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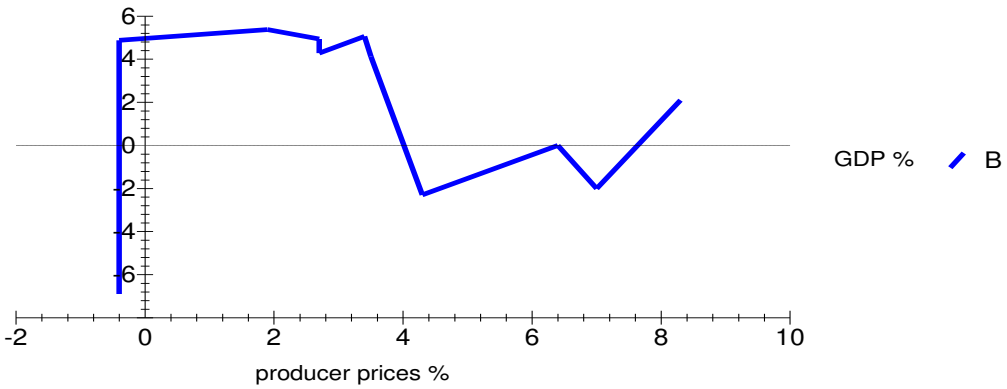
1
2
3
4
5
6
7
cpi
gdp %
B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-2
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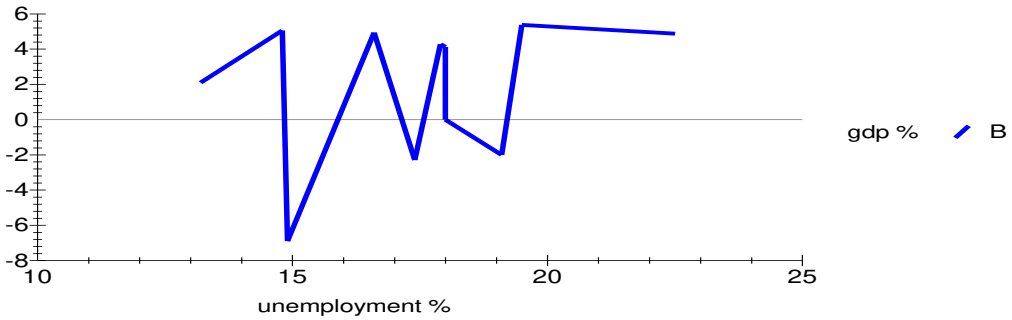
-6
-2
0
2
4
6
8
10
producer prices %
GDP %
B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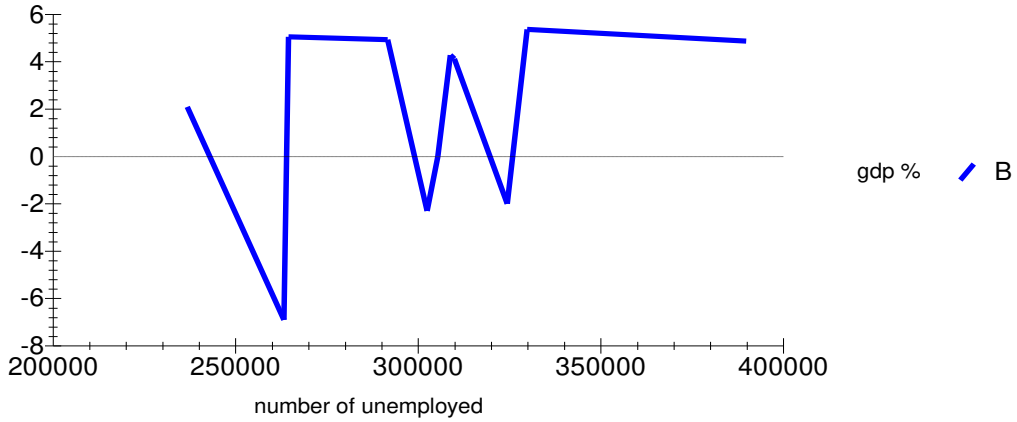
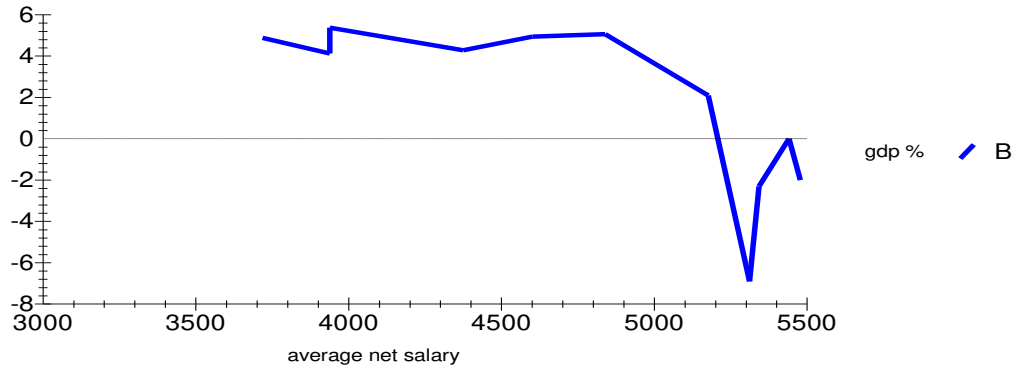
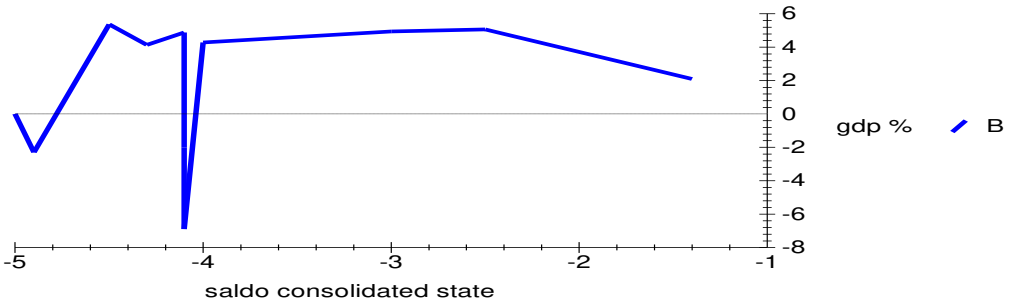
4
2
0
-2
-4
-6
-8
10
15
20
25
unemployment %
gdp %
B


6
4
2
0
-2
-4
-6
-8
200000
250000
300000
350000
400000
number of unemployed
gdp %
B


6
4
2
0
-2
-4
-6
-8
3000
3500
4000
4500
5000
5500
average net salary
gdp %
B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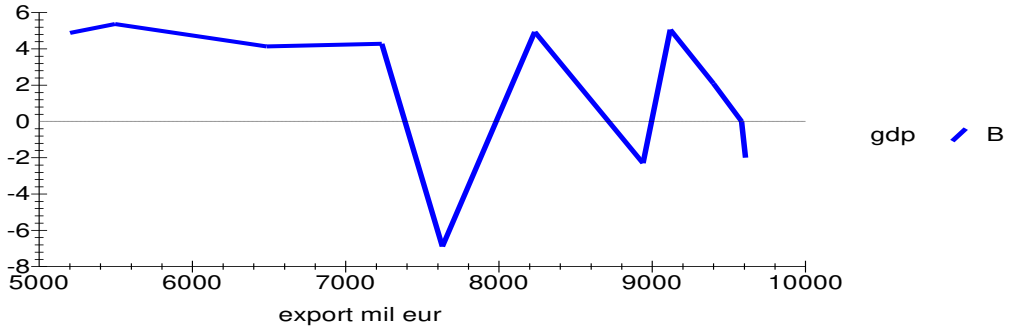
-2
-1
saldo consolidated state
gdp %
B


6
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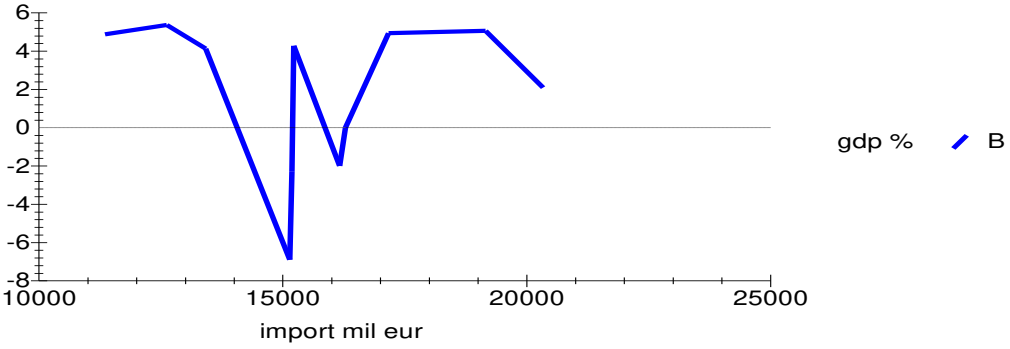
2
0
-2
-4
-6
-8
5000
6000
7000
8000
9000
10000
export mil eur
gdp
B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-6
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10000
15000
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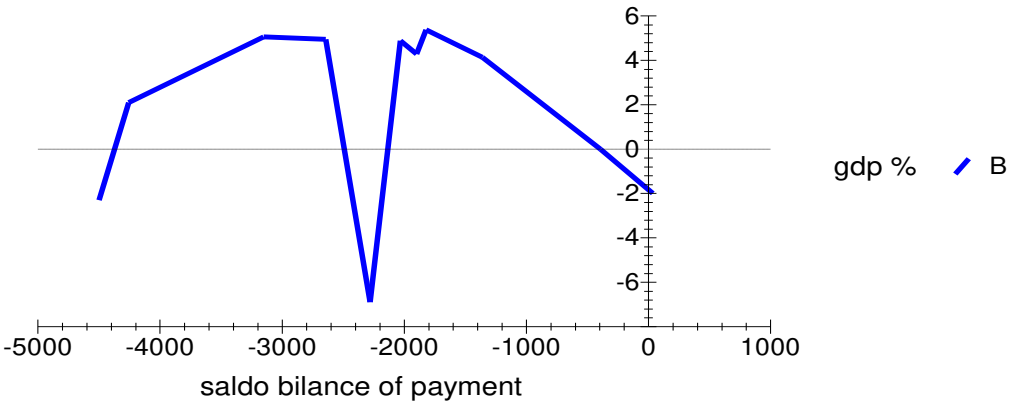
25000
import mil eur
gdp %
B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4
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-4000
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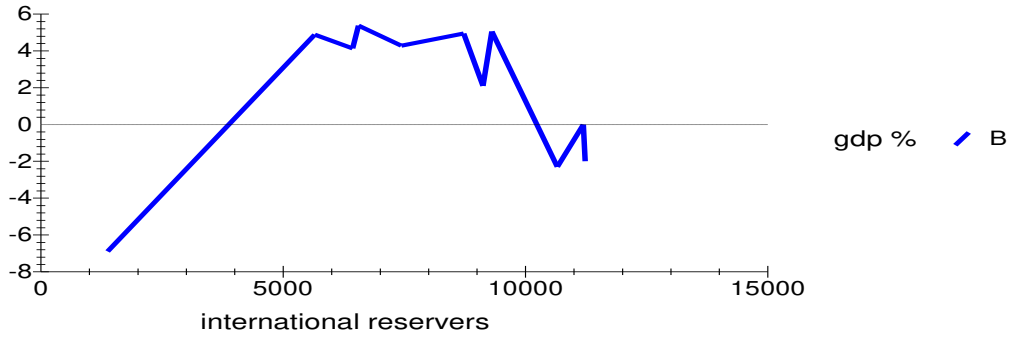
1000
saldo bilance of payment
gdp %
B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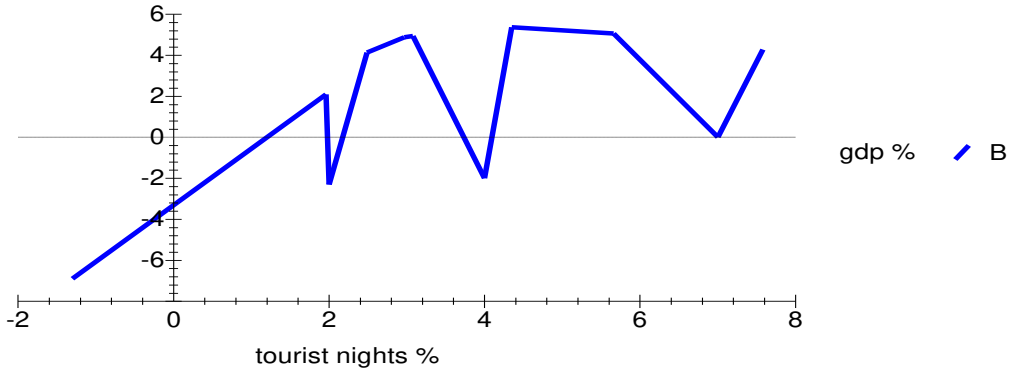
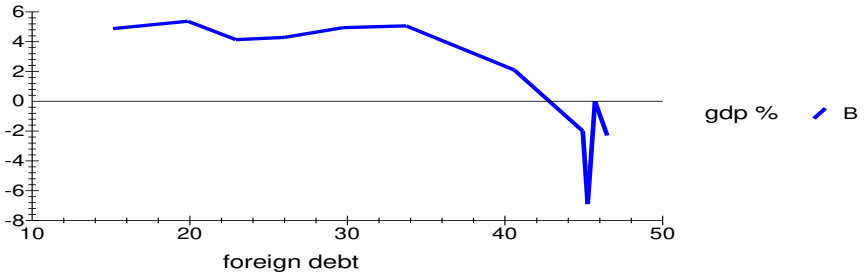
-4
-6
-8
0
5000
10000
15000
international reservers
gdp %
B


6
4
2
0
-2
-4
-6
-2
0
2
4
6
8
tourist nights %
gdp %
B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0
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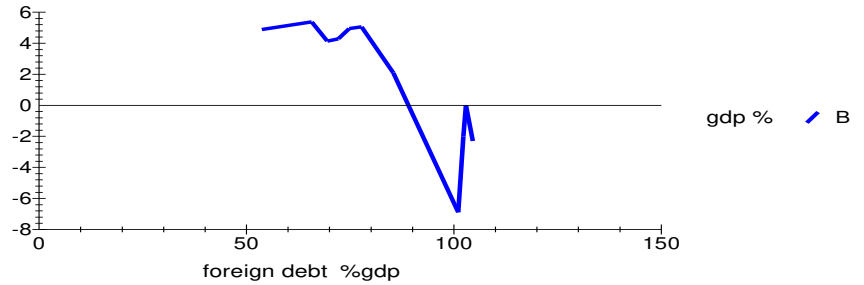
-4
-6
-8
10
20
30
40
50
foreign debt
gdp %
B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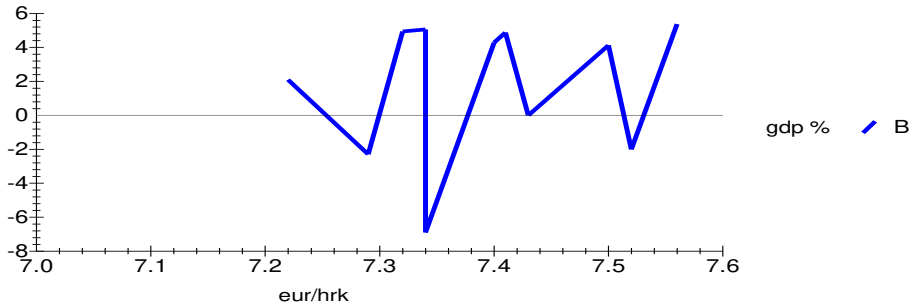
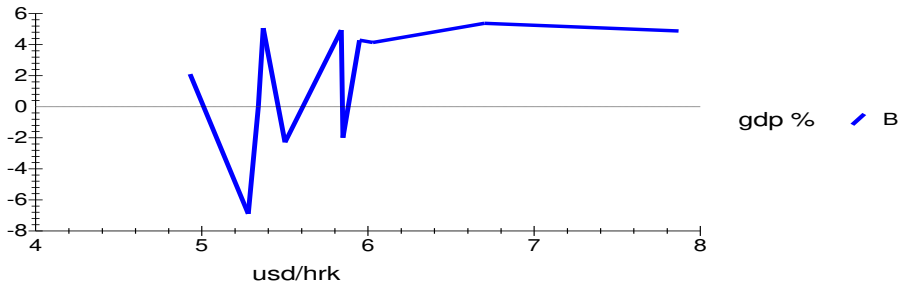
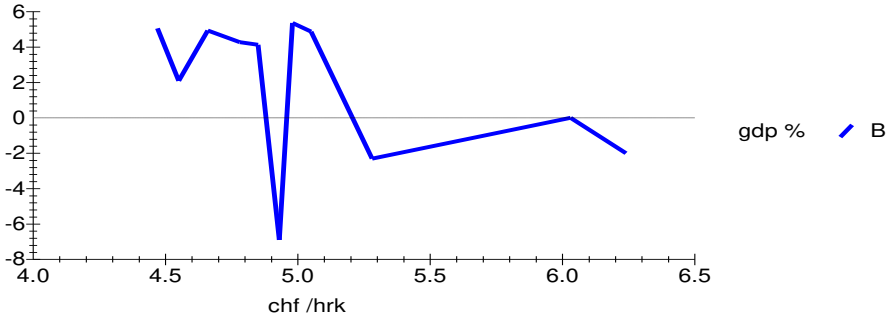
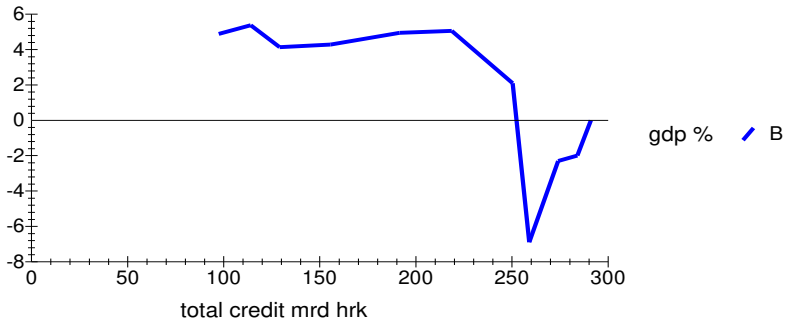
0
-2
-4
-6
-8
0
50
100
150
foreign debt %gdp
gdp %
B


6
4
2
0
-2
-4
-6
-8
7.0
7.1
7.2
7.3
7.4
7.5
7.6
eur/hrk
gdp %
B

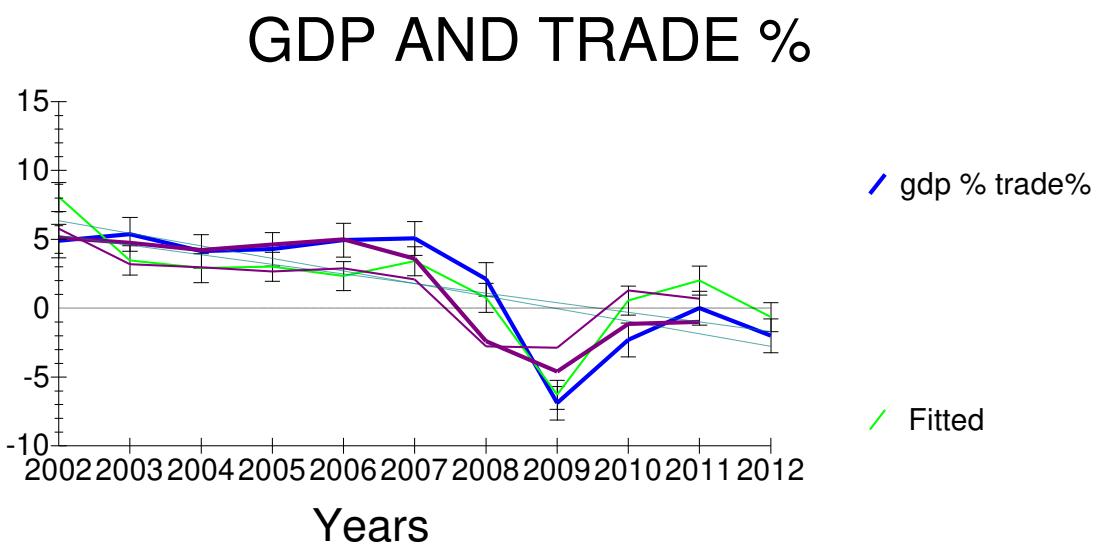

6
4
2
0
-2
-4
-6
-8
4
5
6
7
8
usd/hrk
gdp %
B

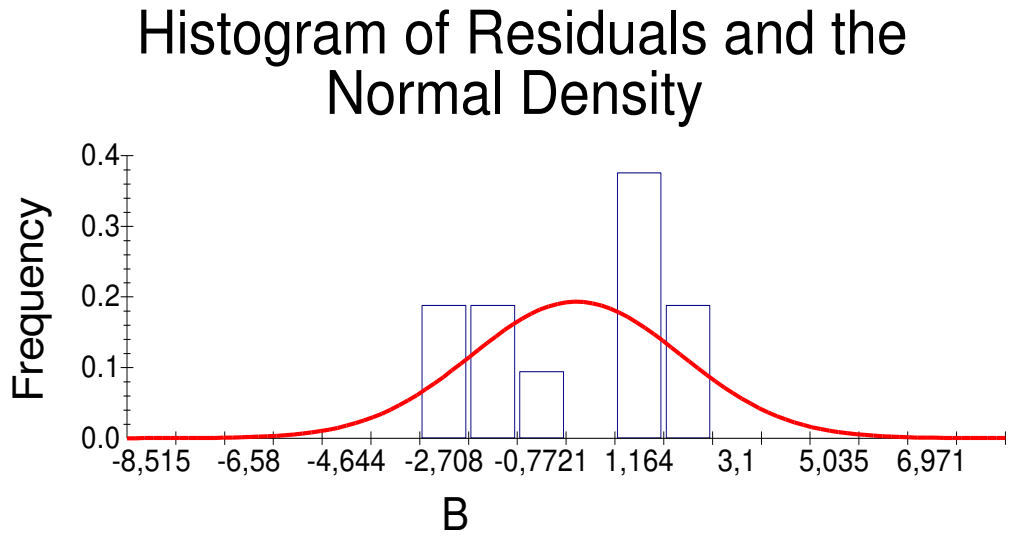

6
4
2
0
-2
-4
-6
-8
4.0
4.5
5.0
5.5
6.0
6.5
chf /hrk
gdp %
B


6
4
2
0
-2
-4
-6
-8
0
50
100
150
200
250
300
total credit mrd hrk
gdp %
B

# ANEX III

GDP / TRADE %


GDP AND TRADE %
15
10
5
0
-5
-10
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Years
gdp % trade%
Fitted


Histogram of Residuals and the Normal Density
Frequency
0.4
0.3
0.2
0.1
0.0
-8,515 -6,58 -4,644 -2,708 -0,7721 1,164 3,1 5,035 6,971
B

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 8.0719 | -3.1919 |
| 2003 | 5.3700 | 3.4739 | 1.8961 |
| 2004 | 4.1300 | 2.8992 | 1.2308 |
| 2005 | 4.2800 | 3.0037 | 1.2763 |
| 2006 | 4.9400 | 2.3244 | 2.6156 |
| 2007 | 5.0600 | 3.4217 | 1.6383 |
| 2008 | 2.1000 | .75693 | 1.3431 |
| 2009 | -6.9000 | -6.2968 | -.60319 |
| 2010 | -2.3000 | .54793 | -2.8479 |
| 2011 | 0.00 | 2.0109 | -2.0109 |
| 2012 | -2.0000 | -.65382 | -1.3462 |

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **1.5407** | **.65754** | **2.3431[.044]** |
| **C** | **.52250** | **.10291** | **5.0771[.001]** |

**********

R-Squared .74121 R-Bar-Squared .71246

S.E. of Regression 2.1753 F-stat. F( 1, 9) 25.7773[.001]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 42.5871 Equation Log-likelihood -23.0534

Akaike Info. Criterion -25.0534 Schwarz Bayesian Criterion -25.4513

DW-statistic .91899

**********

Diagnostic Tests

| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 1.8491[.174] | F( 1, 8)= 1.6165[.239] |
| B:Functional Form | CHSQ( 1)= 1.7629[.184] | F( 1, 8)= 1.5268[.252] |
| C:Normality | CHSQ( 2)= 1.1429[.565] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= 1.4519[.228] | F( 1, 9)= 1.3686[.272] |

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values

GDP INDUSTRIAL PRODUCTION

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **.98303** | **.30752** | **3.1967[.011]** |
| **D** | **.82128** | **.065699** | **12.5007[.000]** |

**********

R-Squared .94554 R-Bar-Squared .93949

S.E. of Regression .99786 F-stat. F( 1, 9) 156.2676[.000]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 8.9616 Equation Log-likelihood -14.4811

Akaike Info. Criterion -16.4811 Schwarz Bayesian Criterion -16.8790

DW-statistic 1.7185

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version * |
|---|---|---|

**********

| | | | |
|---|---|---|---|
| * | * | * | * |
| * A:Serial Correlation* | CHSQ( 1)= .7128E-3[.979]* | F( 1, 8)= .5184E-3[.982]* | |
| * | * | * | * |
| * B:Functional Form * | CHSQ( 1)= .12032[.729]* | F( 1, 8)= .088472[.774]* | |
| * | * | * | * |
| * C:Normality * | CHSQ( 2)= 1.0160[.602]* | Not applicable * | |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= 2.0479[.152]*F( 1, 9)= 2.0589[.185]*

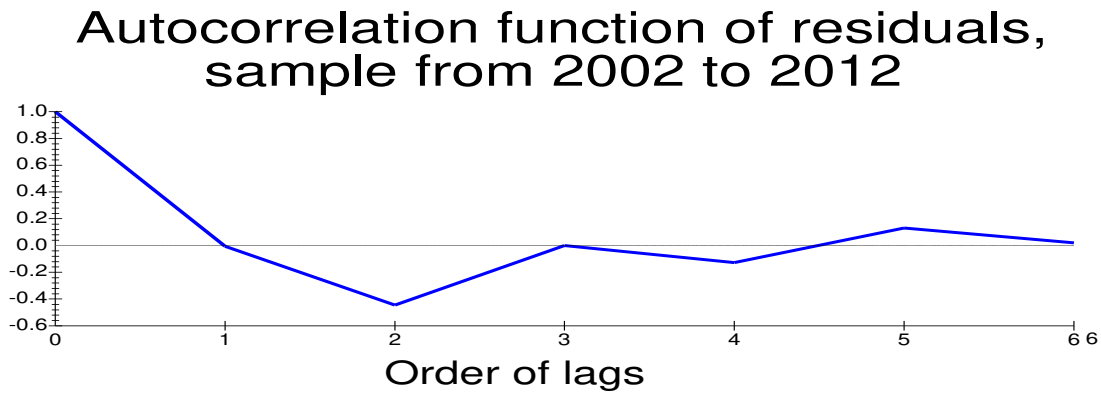
**********

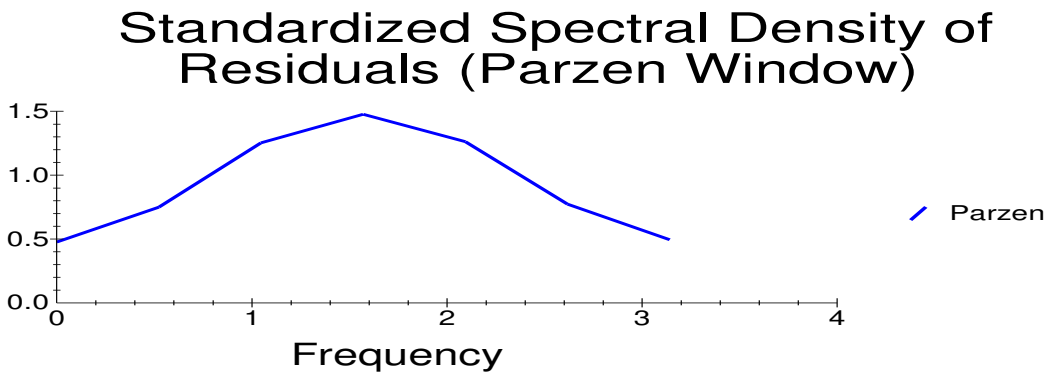
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON D

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 5.4179 | -.53794 |
| 2003 | 5.3700 | 4.3503 | 1.0197 |
| 2004 | 4.1300 | 3.9807 | .14930 |
| 2005 | 4.2800 | 4.7609 | -.48092 |
| 2006 | 4.9400 | 4.3503 | .58972 |
| 2007 | 5.0600 | 5.0073 | .052700 |
| 2008 | 2.1000 | 1.9686 | .13143 |
| 2009 | -6.9000 | -6.5727 | -.32727 |
| 2010 | -2.3000 | -.16676 | -2.1332 |
| 2011 | 0.00 | -.0024994 | .0024994 |
| 2012 | -2.0000 | -3.5340 | 1.5340 |

**********

GDP % TRADE % INDUSTRIAL PRODUCTION %

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **.97905** | **.33590** | **2.9147[.019]** |
| **C** | **-.0053756** | **.10856** | **-.049516[.962]** |
| **D** | **.82792** | **.15108** | **5.4799[.001]** |

**********

R-Squared .94556 R-Bar-Squared .93195

S.E. of Regression 1.0582 F-stat. F( 2, 8) 69.4748[.000]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 8.9589 Equation Log-likelihood -14.4794

Akaike Info. Criterion -17.4794 Schwarz Bayesian Criterion -18.0763

DW-statistic 1.7053

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= .2410E-4[.996] | *F( 1, 7)= .1534E-4[.997] | * |
| * B:Functional Form | *CHSQ( 1)= .12881[.720] | *F( 1, 7)= .082940[.782] | * |
| * C:Normality | *CHSQ( 2)= .98406[.611] | * Not applicable | * |

**********

* D:Heteroscedasticity*CHSQ( 1)= 2.0533[.152]*F( 1, 9)= 2.0655[.185]*

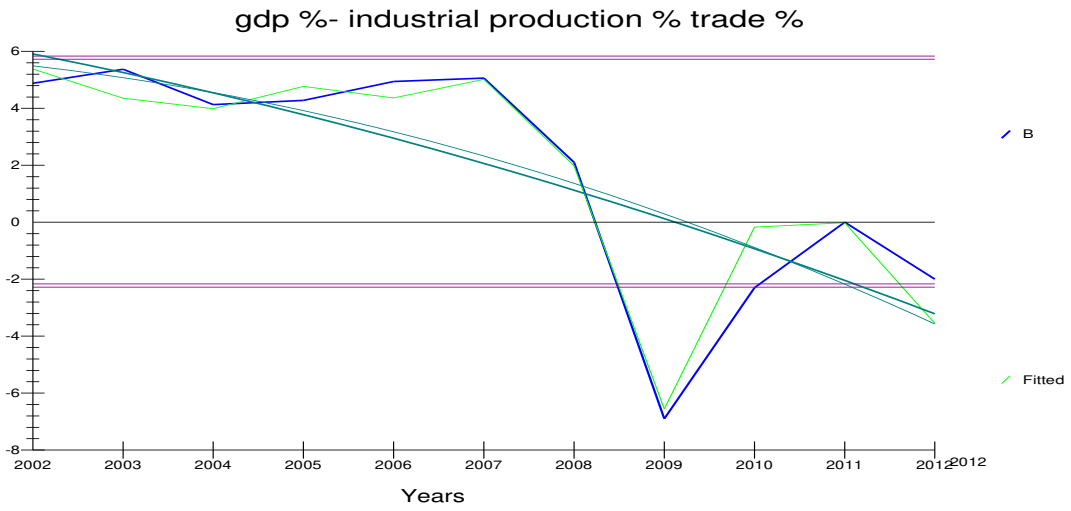
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON C D

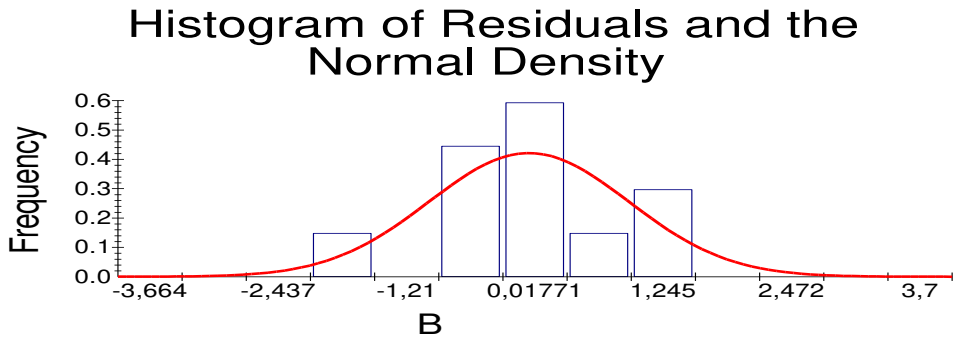
11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 5.3826 | -.50261 |
| 2003 | 5.3700 | 4.3536 | 1.0164 |
| 2004 | 4.1300 | 3.9870 | .14303 |
| 2005 | 4.2800 | 4.7724 | -.49242 |
| 2006 | 4.9400 | 4.3654 | .57455 |
| 2007 | 5.0600 | 5.0165 | .043509 |
| 2008 | 2.1000 | 1.9806 | .11939 |

| | | | |
|---|---|---|---|
| 2009 | -6.9000 | -6.5571 | **-.34285** |
| 2010 | -2.3000 | -.16982 | -2.1302 |
| 2011 | 0.00 | -.019287 | .019287 |
| 2012 | -2.0000 | -3.5519 | 1.5519 |

**********



CPI UNEMPLOYMENT

Ordinary Least Squares Estimation

**********

Dependent variable is E

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | 8.2312 | 2.4258 | 3.3932[.008] |
| G | -.31393 | .13771 | -2.2796[.049] |

**********

R-Squared .36605 R-Bar-Squared .29561

S.E. of Regression 1.1149 F-stat. F( 1, 9) 5.1968[.049]

Mean of Dependent Variable 2.7545 S.D. of Dependent Variable 1.3284

Residual Sum of Squares 11.1874 Equation Log-likelihood -15.7013

Akaike Info. Criterion -17.7013 Schwarz Bayesian Criterion -18.0992

DW-statistic 2.2074

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .40694[.524]* | F( 1, 8)= .30733[.594]* |
| * B:Functional Form * | CHSQ( 1)= 2.2267[.136]* | F( 1, 8)= 2.0304[.192]* |
| * C:Normality * | CHSQ( 2)= .29896[.861]* | Not applicable * |
| * D:Heteroscedasticity* | CHSQ( 1)= 3.7942[.051]* | F( 1, 9)= 4.7388[.057]* |

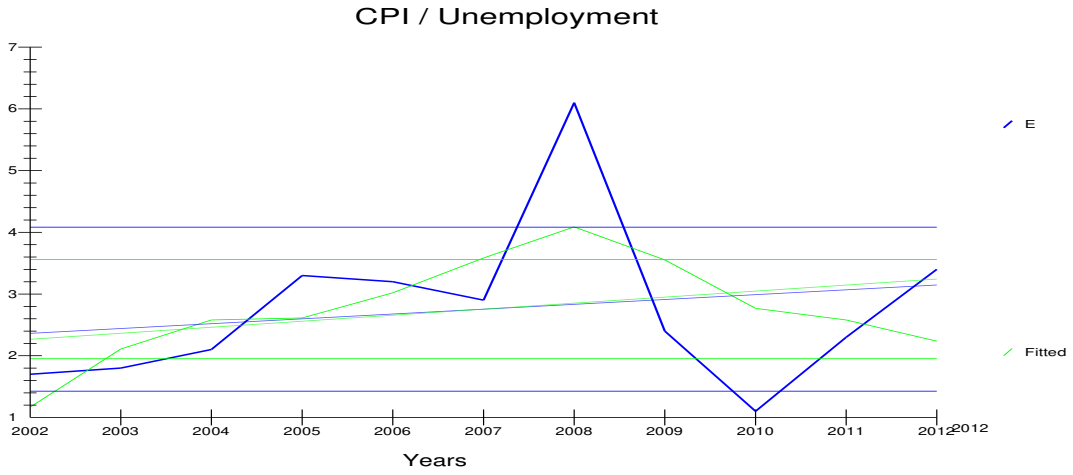
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of E on:

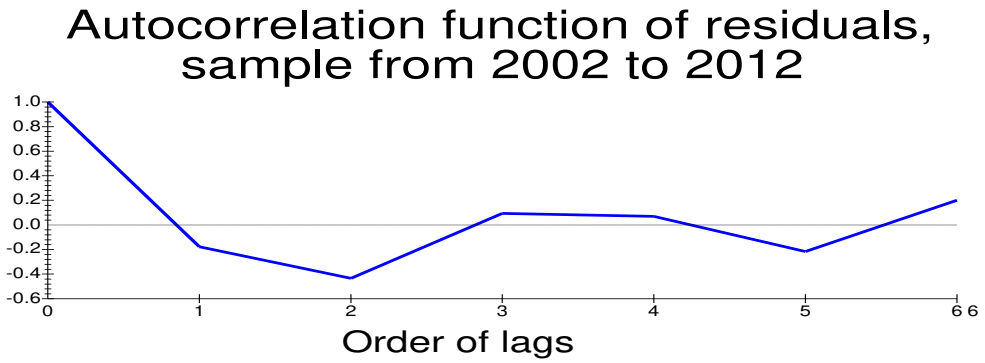
CON G

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 1.7000 | 1.1678 | .53223 |
| 2003 | 1.8000 | 2.1096 | -.30956 |
| 2004 | 2.1000 | 2.5805 | -.48046 |
| 2005 | 3.3000 | 2.6118 | .68815 |
| 2006 | 3.2000 | 3.0200 | .18004 |
| 2007 | 2.9000 | 3.5850 | -.68503 |
| 2008 | 6.1000 | 4.0873 | 2.0127 |
| 2009 | 2.4000 | 3.5536 | -1.1536 |
| 2010 | 1.1000 | 2.7688 | -1.6688 |

| | | | |
|---|---|---|---|
| 2011 | 2.3000 | 2.5805 | -.28046 |
| 2012 | 3.4000 | 2.2351 | 1.1649 |




PRODUCTION PRICES UNEMPLOYMENT

Ordinary Least Squares Estimation

**********

Dependent variable is F

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | 10.3716 | 6.0073 | 1.7265[.118] |
| G | -.38920 | .34103 | -1.1413[.283] |

**********

R-Squared .12642 R-Bar-Squared .029359

S.E. of Regression 2.7610 F-stat. F( 1, 9) 1.3025[.283]

Mean of Dependent Variable 3.5818 S.D. of Dependent Variable 2.8024

Residual Sum of Squares 68.6076 Equation Log-likelihood -25.6761

Akaike Info. Criterion -27.6761 Schwarz Bayesian Criterion -28.0740

DW-statistic 1.8201

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

* * * *

* A:Serial Correlation*CHSQ( 1)= .053529[.817]*F( 1, 8)= .039120[.848]*

* * * *

* B:Functional Form *CHSQ( 1)= .20295[.652]*F( 1, 8)= .15038[.708]*

* * * *

* C:Normality *CHSQ( 2)= .11372[.945]* Not applicable *

* * * *

* D:Heteroscedasticity*CHSQ( 1)= .88358[.347]*F( 1, 9)= .78607[.398]*

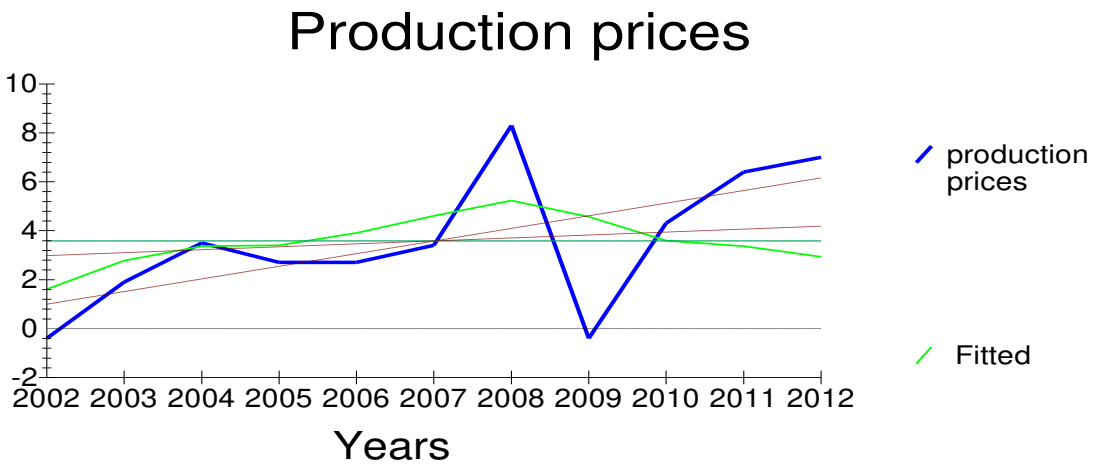
**********

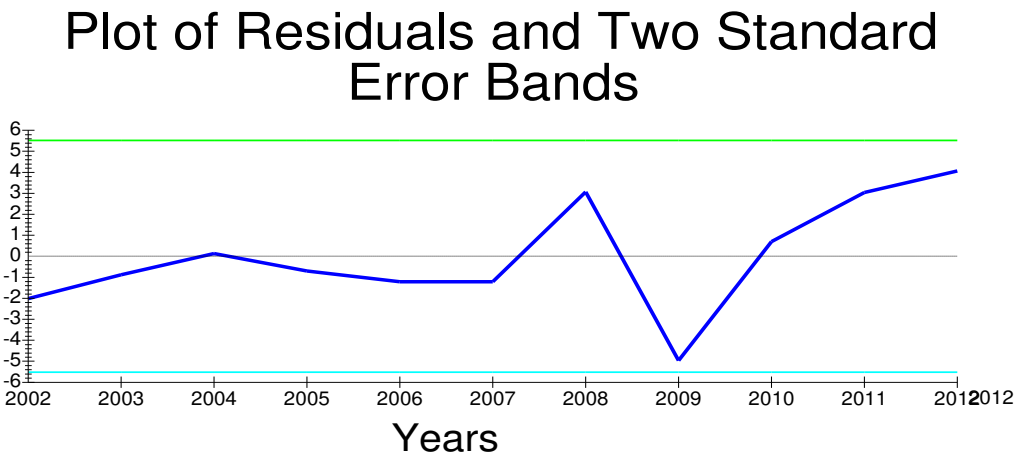
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






**CPI PRODUCTION PRICES**

Ordinary Least Squares Estimation

**********

Dependent variable is E

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | 1.7562 | .57112 | 3.0749[.013] |
| F | .27874 | .12781 | 2.1809[.057] |

**********

R-Squared .34576 R-Bar-Squared .27307

S.E. of Regression 1.1326 F-stat. F( 1, 9) 4.7565[.057]

Mean of Dependent Variable 2.7545 S.D. of Dependent Variable 1.3284

Residual Sum of Squares 11.5455 Equation Log-likelihood -15.8745

Akaike Info. Criterion -17.8745 Schwarz Bayesian Criterion -18.2724

DW-statistic 1.3550

**********

Diagnostic Tests

**********

| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 1.6047[.205] | F( 1, 8)= 1.3664[.276] |
| B:Functional Form | CHSQ( 1)= 2.8497[.091] | F( 1, 8)= 2.7971[.133] |
| C:Normality | CHSQ( 2)= .061576[.970] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= 3.9434[.047] | F( 1, 9)= 5.0293[.052] |

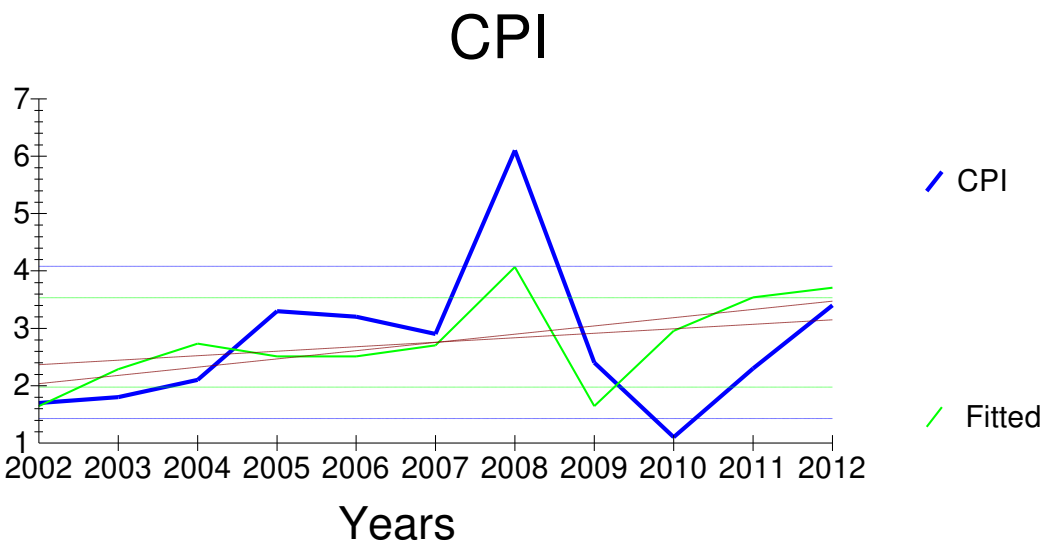
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of E on:

CON F

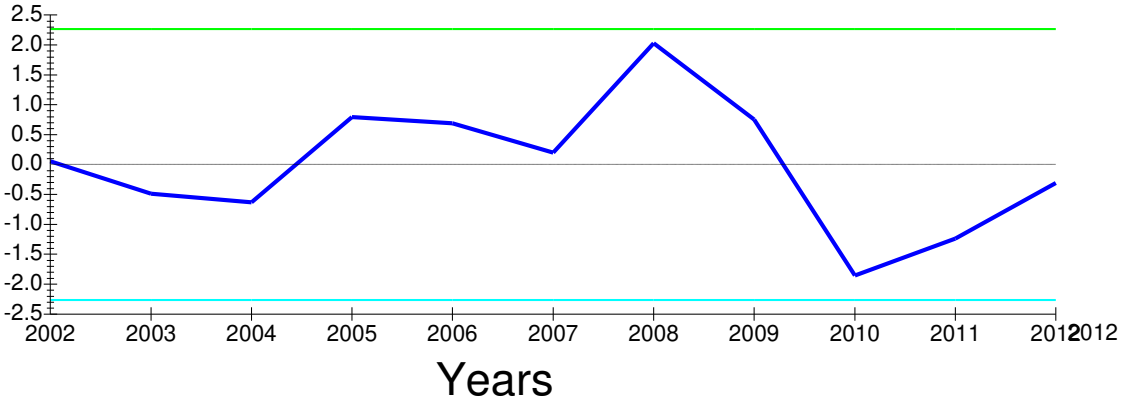
11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 1.7000 | 1.6447 | .055330 |
| 2003 | 1.8000 | 2.2858 | -.48576 |
| 2004 | 2.1000 | 2.7317 | -.63174 |
| 2005 | 3.3000 | 2.5088 | .79125 |
| 2006 | 3.2000 | 2.5088 | .69125 |
| 2007 | 2.9000 | 2.7039 | .19613 |
| 2008 | 6.1000 | 4.0697 | 2.0303 |
| 2009 | 2.4000 | 1.6447 | .75533 |
| 2010 | 1.1000 | 2.9547 | -1.8547 |
| 2011 | 2.3000 | 3.5401 | -1.2401 |
| 2012 | 3.4000 | 3.7073 | -.30732 |

**********

# Plot of Residuals and Two Standard Error Bands




UNEMPLYOMENT TRADE

Ordinary Least Squares Estimation

**********

Dependent variable is H

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **300678.4** | **10121.9** | **29.7058[.000]** |
| **C** | **3748.9** | **1584.2** | **2.3665[.042]** |

**********

R-Squared .38357 R-Bar-Squared .31508

S.E. of Regression 33485.4 F-stat. F( 1, 9) 5.6003[.042]

Mean of Dependent Variable 302382.5 S.D. of Dependent Variable 40460.9

Residual Sum of Squares 1.01E+10 Equation Log-likelihood -129.1121

Akaike Info. Criterion -131.1121 Schwarz Bayesian Criterion -131.5100

DW-statistic .98842

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * | F Version | * |
|---|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 2.2111[.137]* | F( 1, 8)= | 2.0126[.194]* | |
| * B:Functional Form * | CHSQ( 1)= 2.4969[.114]* | F( 1, 8)= | 2.3491[.164]* | |
| * C:Normality * | CHSQ( 2)= .71560[.699]* | Not applicable | * | |
| * D:Heteroscedasticity* | CHSQ( 1)= .21196[.645]* | F( 1, 9)= | .17683[.684]* | |

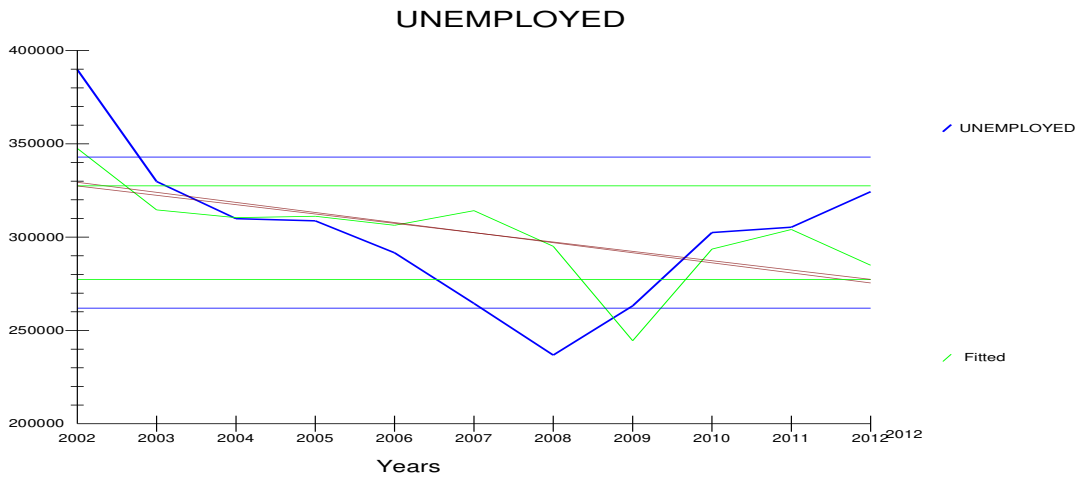
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

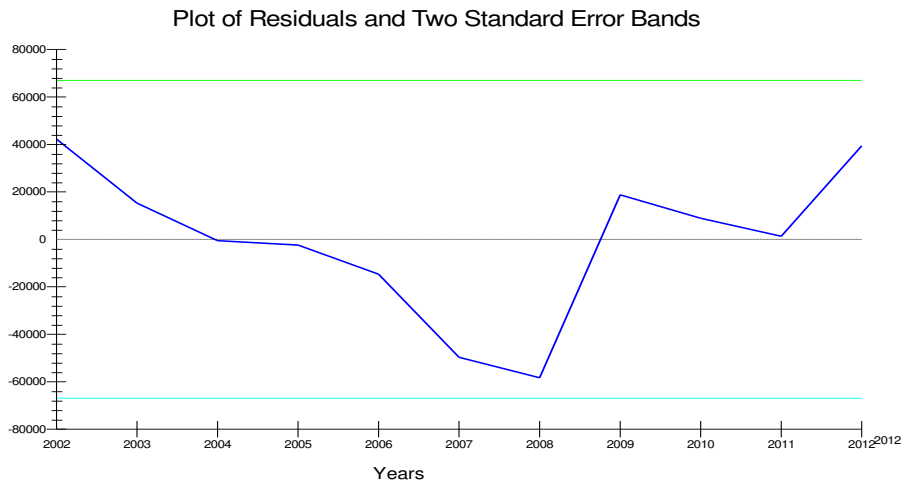
Based on OLS regression of H on:

CON C

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 389740.0 | 347540.1 | 42199.9 |
| 2003 | 329799.0 | 314549.5 | 15249.5 |
| 2004 | 309875.0 | 310425.6 | -550.6332 |
| 2005 | 308739.0 | 311175.4 | -2436.4 |
| 2006 | 291616.0 | 306301.8 | -14685.8 |
| 2007 | 264446.0 | 314174.6 | -49728.6 |
| 2008 | 236741.0 | 295055.0 | -58314.0 |
| 2009 | 263174.0 | 244444.3 | 18729.7 |
| 2010 | 302425.0 | 293555.4 | 8869.6 |
| 2011 | 305329.0 | 304052.4 | 1276.6 |
| 2012 | 324323.0 | 284932.8 | 39390.2 |




**UNEMPLYOMENT CPI**

Ordinary Least Squares Estimation

**********

Dependent variable is H

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **352797.8** | **24603.1** | **14.3395[.000]** |
| **E** | **-18302.6** | **8115.0** | **-2.2554[.051]** |

**********

R-Squared .36111 R-Bar-Squared .29012

S.E. of Regression 34090.1 F-stat. F( 1, 9) 5.0868[.051]

Mean of Dependent Variable 302382.5 S.D. of Dependent Variable 40460.9

Residual Sum of Squares 1.05E+10 Equation Log-likelihood -129.3090

Akaike Info. Criterion -131.3090 Schwarz Bayesian Criterion -131.7069

DW-statistic 1.0030

**********

Diagnostic Tests

```
**************************************************************************
*  Test Statistics  *      LM Version      *       F Version       *
**************************************************************************
*                   *                      *                      *
* A:Serial Correlation*CHSQ(  1)=  .65723[.418]*F(  1,  8)=  .50836[.496]*
*                   *                      *                      *
* B:Functional Form  *CHSQ(  1)= .029620[.863]*F(  1,  8)= .021600[.887]*
*                   *                      *                      *
*  C:Normality      *CHSQ(  2)=  .64801[.723]*     Not applicable     *
*                   *                      *                      *
* D:Heteroscedasticity*CHSQ(  1)=  1.2236[.269]*F(  1,  9)=  1.1265[.316]*
**************************************************************************
```

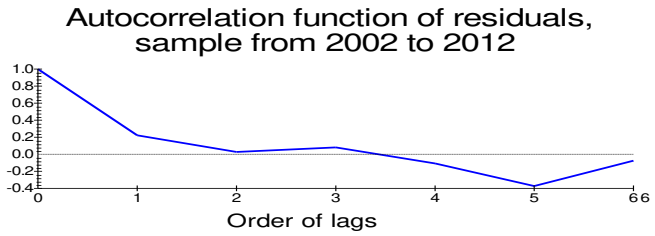
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


UNEMPLOYMENT CPI
400000
350000
300000
250000
200000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Years
UNEMPLOYMENT
Fitted


Autocorrelation function of residuals,
sample from 2002 to 2012
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
0
1
2
3
4
5
6
6
Order of lags

**********

Based on OLS regression of H on:

CON E

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 389740.0 | 321683.4 | 68056.6 |
| 2003 | 329799.0 | 319853.1 | 9945.9 |
| 2004 | 309875.0 | 314362.3 | -4487.3 |
| 2005 | 308739.0 | 292399.2 | 16339.8 |
| 2006 | 291616.0 | 294229.5 | -2613.5 |
| 2007 | 264446.0 | 299720.3 | -35274.3 |
| 2008 | 236741.0 | 241151.9 | -4410.9 |
| 2009 | 263174.0 | 308871.6 | -45697.6 |
| 2010 | 302425.0 | 332665.0 | -30240.0 |
| 2011 | 305329.0 | 310701.8 | -5372.8 |
| 2012 | 324323.0 | 290568.9 | 33754.1 |

**********

**UNEMPLOYMENT PRODUCTION PRICES**

Ordinary Least Squares Estimation

**********

Dependent variable is H

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **323089.7** | **19706.5** | **16.3951[.000]** |
| **F** | **-5781.2** | **4409.9** | **-1.3110[.222]** |

**********

R-Squared .16034 R-Bar-Squared .067042

S.E. of Regression 39081.0 F-stat. F( 1, 9) 1.7186[.222]

Mean of Dependent Variable 302382.5 S.D. of Dependent Variable 40460.9

Residual Sum of Squares 1.37E+10 Equation Log-likelihood -130.8120

Akaike Info. Criterion -132.8120 Schwarz Bayesian Criterion -133.2099

DW-statistic .64480

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 2.7825[.095]* | F( 1, 8)= 2.7089[.138]* |
| * B:Functional Form * | CHSQ( 1)= .025203[.874]* | F( 1, 8)= .018371[.896]* |
| * C:Normality * | CHSQ( 2)= .20964[.900]* | Not applicable * |
| * D:Heteroscedasticity* | CHSQ( 1)= 2.4346[.119]* | F( 1, 9)= 2.5581[.144]* |

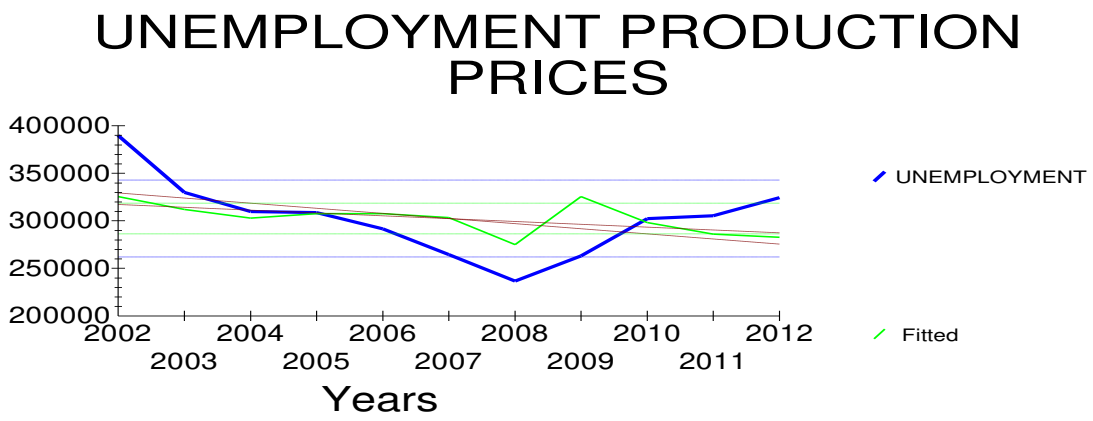
**********

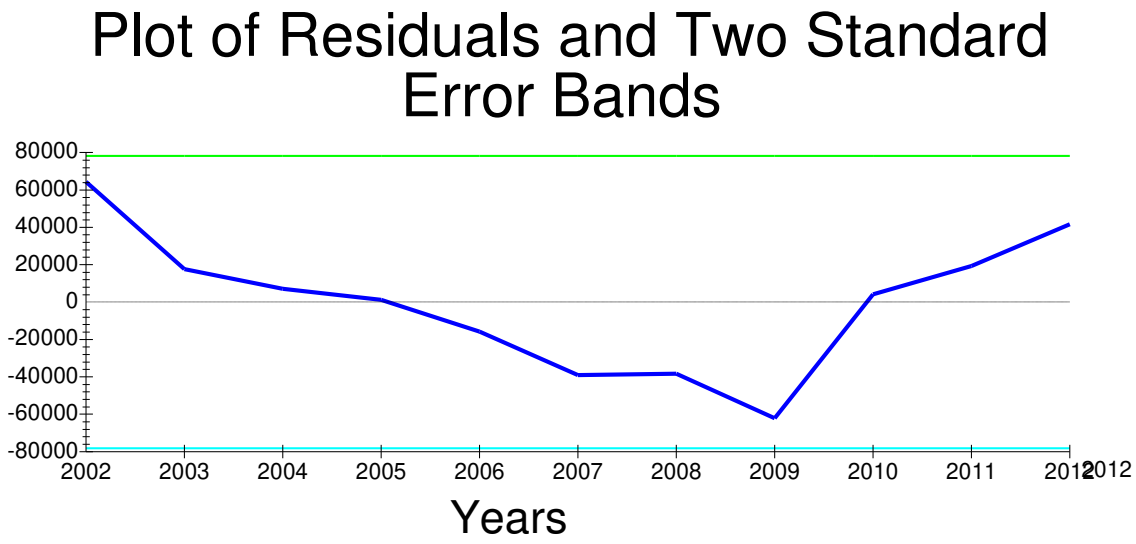
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of H on:

CON F

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 389740.0 | 325402.1 | 64337.9 |
| 2003 | 329799.0 | 312105.4 | 17693.6 |
| 2004 | 309875.0 | 302855.5 | 7019.5 |
| 2005 | 308739.0 | 307480.4 | 1258.6 |
| 2006 | 291616.0 | 307480.4 | -15864.4 |
| 2007 | 264446.0 | 303433.6 | -38987.6 |
| 2008 | 236741.0 | 275105.7 | -38364.7 |
| 2009 | 263174.0 | 325402.1 | -62228.1 |
| 2010 | 302425.0 | 298230.5 | 4194.5 |
| 2011 | 305329.0 | 286090.0 | 19239.0 |
| 2012 | 324323.0 | 282621.3 | 41701.7 |

**UNEMPLOYMENT GDP %**

Ordinary Least Squares Estimation

**********

Dependent variable is H

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | 297247.1 | 13546.9 | 21.9421[.000] |
| B | 2888.0 | 3182.3 | .90752[.388] |

**********

R-Squared .083838 R-Bar-Squared -.017958

S.E. of Regression 40822.5 F-stat. F( 1, 9) .82359[.388]

Mean of Dependent Variable 302382.5 S.D. of Dependent Variable 40460.9

Residual Sum of Squares 1.50E+10 Equation Log-likelihood -131.2915

Akaike Info. Criterion -133.2915 Schwarz Bayesian Criterion -133.6894

DW-statistic .63810

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|

**********

| | | |
|---|---|---|
| * A:Serial Correlation*CHSQ( 1)= 3.2954[.069]* | F( 1, 8)= 3.4217[.102]* | |
| * B:Functional Form *CHSQ( 1)= .0051421[.943]* | F( 1, 8)= .0037414[.953]* | |
| * C:Normality *CHSQ( 2)= .082546[.960]* | Not applicable * | |
| * D:Heteroscedasticity*CHSQ( 1)= .85632[.355]* | F( 1, 9)= .75977[.406]* | |

**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


Residuals and Fitted Values of Regression

**********

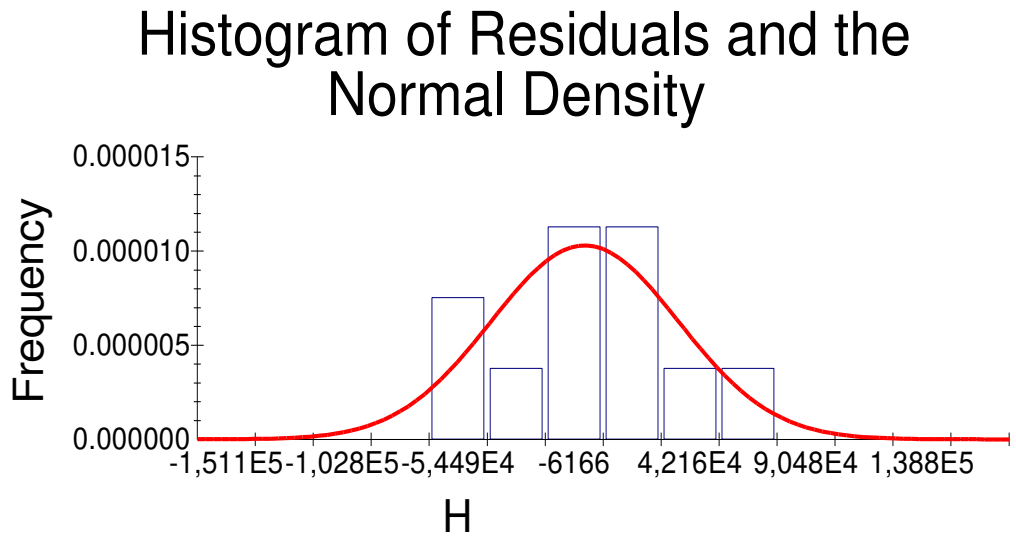
Based on OLS regression of H on:

CON B

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 389740.0 | 311340.4 | 78399.6 |
| 2003 | 329799.0 | 312755.5 | 17043.5 |
| 2004 | 309875.0 | 309174.4 | 700.5974 |
| 2005 | 308739.0 | 309607.6 | -868.5961 |
| 2006 | 291616.0 | 311513.6 | -19897.6 |
| 2007 | 264446.0 | 311860.2 | -47414.2 |
| 2008 | 236741.0 | 303311.9 | -66570.9 |
| 2009 | 263174.0 | 277320.2 | -14146.2 |
| 2010 | 302425.0 | 290604.8 | 11820.2 |
| 2011 | 305329.0 | 297247.1 | 8081.9 |
| 2012 | 324323.0 | 291471.2 | 32851.8 |




**NET WAGES GDP %**

Ordinary Least Squares Estimation

**********

Dependent variable is I

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **4960.6** | **152.9219** | **32.4386[.000]** |
| **B** | **-123.1714** | **35.9223** | **-3.4288[.008]** |

**********

R-Squared .56641 R-Bar-Squared .51823

S.E. of Regression 460.8189 F-stat. F( 1, 9) 11.7568[.008]

Mean of Dependent Variable 4741.5 S.D. of Dependent Variable 663.9125

Residual Sum of Squares 1911186 Equation Log-likelihood -81.9677

Akaike Info. Criterion -83.9677 Schwarz Bayesian Criterion -84.3656

DW-statistic 1.0273

**********

Diagnostic Tests

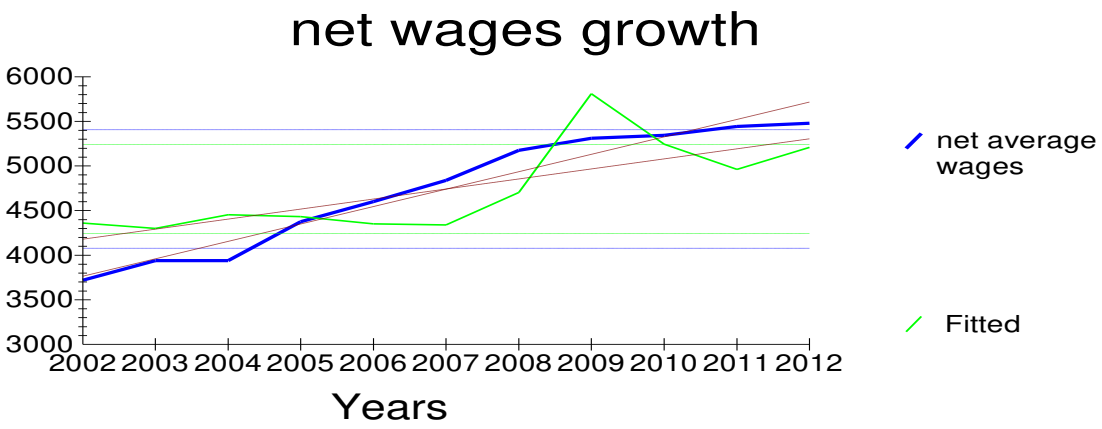
| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 1.8486[.174] | F( 1, 8)= 1.6160[.239] |
| B:Functional Form | CHSQ( 1)= 3.8928[.048] | F( 1, 8)= 4.3819[.070] |
| C:Normality | CHSQ( 2)= 1.1510[.562] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= .10988[.740] | F( 1, 9)= .090808[.770] |

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of I on:

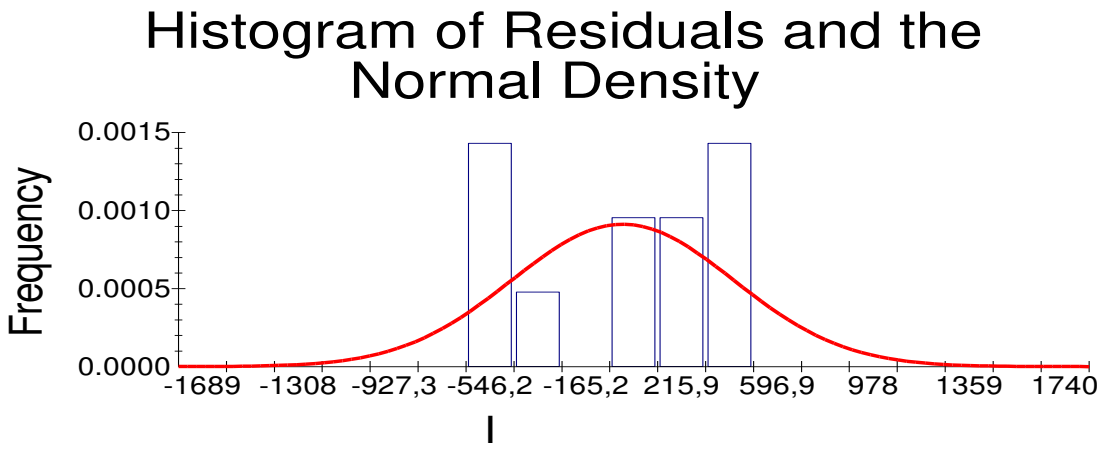
CON B

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 3718.0 | 4359.5 | -641.4900 |
| 2003 | 3938.0 | 4299.1 | -361.1360 |
| 2004 | 3938.0 | 4451.9 | -513.8686 |
| 2005 | 4375.0 | 4433.4 | -58.3929 |
| 2006 | 4601.0 | 4352.1 | 248.9003 |
| 2007 | 4839.0 | 4337.3 | 501.6808 |
| 2008 | 5176.0 | 4701.9 | 474.0934 |
| 2009 | 5311.0 | 5810.4 | -499.4497 |
| 2010 | 5342.0 | 5243.9 | 98.1390 |
| 2011 | 5441.0 | 4960.6 | 480.4333 |
| 2012 | 5478.0 | 5206.9 | 271.0904 |

**********




**NET WAGES INDUSTRIAL PRODUCTION %**

Ordinary Least Squares Estimation

**********

Dependent variable is I

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **4842.2** | **142.1009** | **34.0759[.000]** |
| **D** | **-103.9812** | **30.3586** | **-3.4251[.008]** |

**********

R-Squared .56587 R-Bar-Squared .51764

S.E. of Regression 461.1030 F-stat. F( 1, 9) 11.7313[.008]

Mean of Dependent Variable 4741.5 S.D. of Dependent Variable 663.9125

Residual Sum of Squares 1913544 Equation Log-likelihood -81.9745

Akaike Info. Criterion -83.9745 Schwarz Bayesian Criterion -84.3724

DW-statistic 1.1599

**********

Diagnostic Tests

| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 1.7700[.183] | F( 1, 8)= 1.5341[.251] |
| B:Functional Form | CHSQ( 1)= 4.3520[.037] | F( 1, 8)= 5.2370[.051] |
| C:Normality | CHSQ( 2)= 1.2678[.531] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= .20174[.653] | F( 1, 9)= .16814[.691] |

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


Residuals and Fitted Values of Regression

**********

Based on OLS regression of I on:

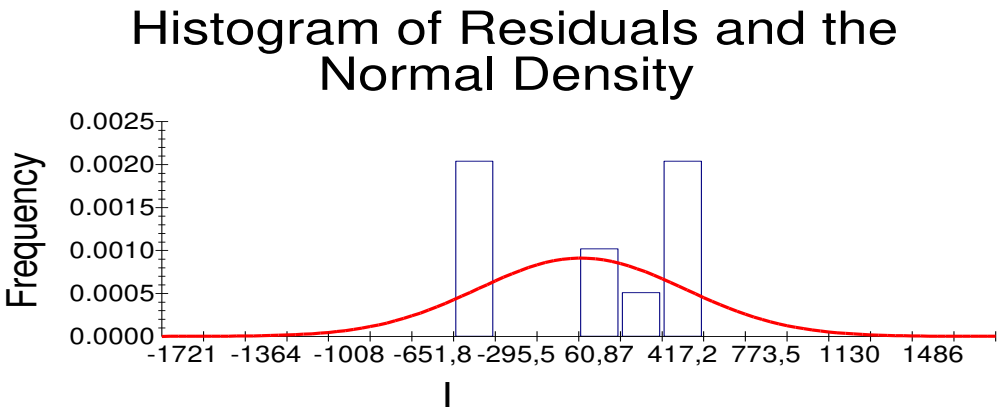
CON D

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 3718.0 | 4280.7 | -562.7198 |
| 2003 | 3938.0 | 4415.9 | -477.8953 |
| 2004 | 3938.0 | 4462.7 | -524.6868 |
| 2005 | 4375.0 | 4363.9 | 11.0953 |
| 2006 | 4601.0 | 4415.9 | 185.1047 |
| 2007 | 4839.0 | 4332.7 | 506.2896 |
| 2008 | 5176.0 | 4717.4 | 458.5593 |
| 2009 | 5311.0 | 5798.8 | -487.8449 |
| 2010 | 5342.0 | 4987.8 | 354.2082 |
| 2011 | 5441.0 | 4967.0 | 474.0045 |
| 2012 | 5478.0 | 5414.1 | 63.8854 |

**********


Histogram of Residuals and the Normal Density
Frequency
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-1721
-1364
-1008
-651,8
-295,5
60,87
417,2
773,5
1130
1486
I

SALDO FROM CONSOLIDATED BILANCE /TRADE %

Ordinary Least Squares Estimation

**********

Dependent variable is C

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | .74387 | 8.0994 | .091843[.929] |
| J | .075956 | 2.0519 | .037018[.971] |

**********

| | | | |
|---|---|---|---|
| R-Squared | .1522E-3 | R-Bar-Squared | -.11094 |
| S.E. of Regression | 7.0452 | F-stat. F( 1, 9) | .0013703[.971] |
| Mean of Dependent Variable | .45455 | S.D. of Dependent Variable | 6.6842 |
| Residual Sum of Squares | 446.7193 | Equation Log-likelihood | -35.9805 |
| Akaike Info. Criterion | -37.9805 | Schwarz Bayesian Criterion | -38.3784 |
| DW-statistic | 1.1098 | | |

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= .84197[.359] | *F( 1, 8)= .66310[.439]* |
| * B:Functional Form | *CHSQ( 1)= .090190[.764] | *F( 1, 8)= .066135[.804]* |
| * C:Normality | *CHSQ( 2)= 1.6806[.432]* | Not applicable * |

*  *  *  *

* D:Heteroscedasticity*CHSQ(  1)=  .26269[.608]*F(  1,  9)=  .22019[.650]*

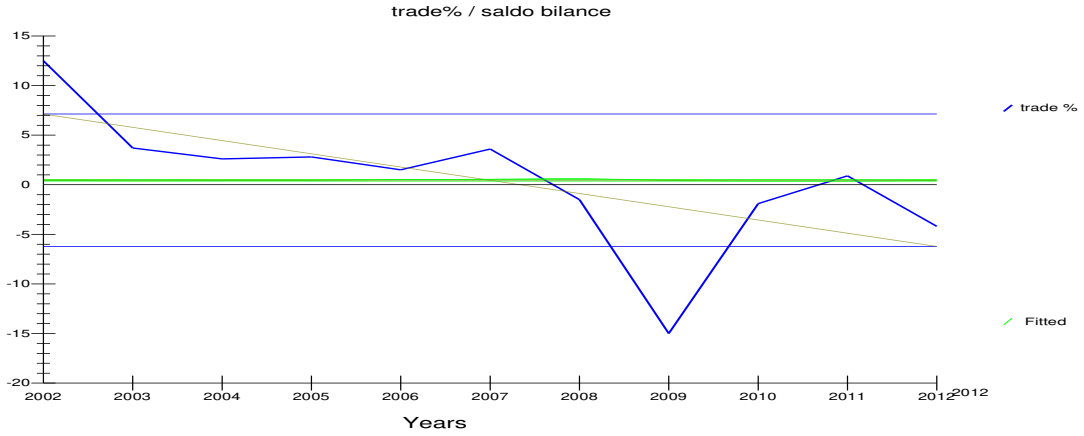
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on  OLS regression of C on:

CON  J

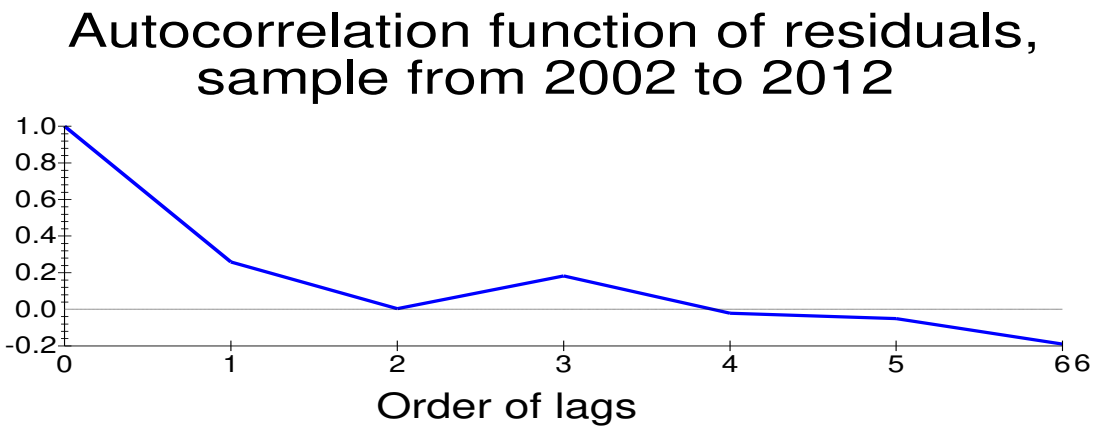
11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 12.5000 | .43245 | 12.0676 |
| 2003 | 3.7000 | .40207 | 3.2979 |
| 2004 | 2.6000 | .41726 | 2.1827 |
| 2005 | 2.8000 | .44004 | 2.3600 |
| 2006 | 1.5000 | .51600 | .98400 |

| | | | |
|---|---|---|---|
| 2007 | 3.6000 | .55398 | 3.0460 |
| 2008 | -1.5000 | .63753 | -2.1375 |
| 2009 | -15.0000 | .43245 | -15.4324 |
| 2010 | -1.9000 | .37168 | -2.2717 |
| 2011 | .90000 | .36409 | .53591 |
| 2012 | -4.2000 | .43245 | -4.6324 |

**********



**SALDO CONSOLIDATED BALANCE/ INDUSTRIAL PRODUCTIN %**

Ordinary Least Squares Estimation

**********

Dependent variable is J

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-3.8627** | **.34195** | **-11.2961[.000]** |
| **D** | **.055407** | **.073055** | **.75842[.468]** |

**********

R-Squared .060072 R-Bar-Squared -.044364

S.E. of Regression 1.1096 F-stat. F( 1, 9) .57520[.468]

Mean of Dependent Variable -3.8091 S.D. of Dependent Variable 1.0858

Residual Sum of Squares 11.0809 Equation Log-likelihood -15.6486

Akaike Info. Criterion -17.6486 Schwarz Bayesian Criterion -18.0465

DW-statistic .94963

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 3.4729[.062] | *F( 1, 8)= 3.6911[.091] | * |
| * B:Functional Form | *CHSQ( 1)= .059821[.807] | *F( 1, 8)= .043744[.840] | * |
| * C:Normality | *CHSQ( 2)= 2.2317[.328] | * Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= .11804[.731]*F( 1, 9)= .097625[.762]*

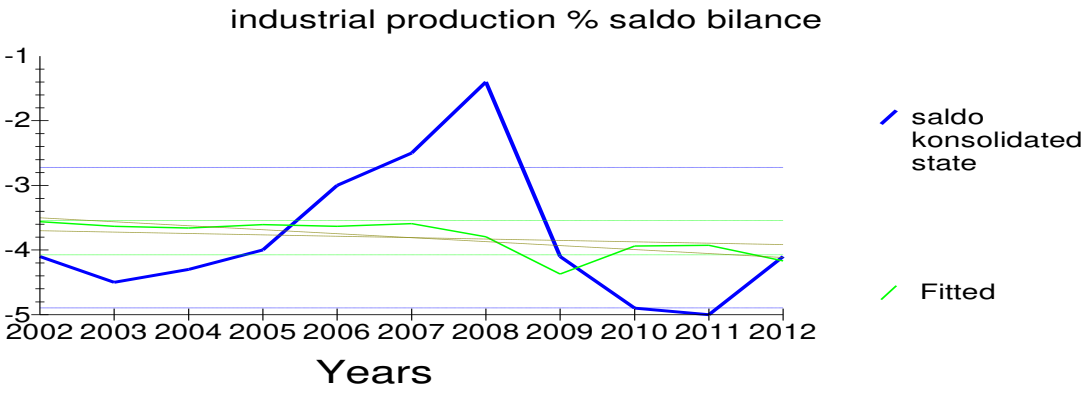
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of J on:

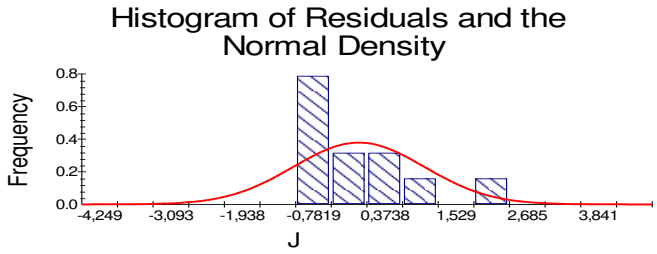
CON D

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | -4.1000 | -3.5635 | -.53646 |
| 2003 | -4.5000 | -3.6356 | -.86443 |
| 2004 | -4.3000 | -3.6605 | -.63950 |
| 2005 | -4.0000 | -3.6079 | -.39214 |
| 2006 | -3.0000 | -3.6356 | .63557 |
| 2007 | -2.5000 | -3.5912 | 1.0912 |
| 2008 | -1.4000 | -3.7962 | 2.3962 |
| 2009 | -4.1000 | -4.3725 | .27248 |
| 2010 | -4.9000 | -3.9403 | -.95970 |
| 2011 | -5.0000 | -3.9292 | -1.0708 |
| 2012 | -4.1000 | -4.1675 | .067471 |

**********




**GDP / EXPORT**

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **10.1532** | **6.0887** | **1.6676[.130]** |
| **K** | **-.0010598** | **.7562E-3** | **-1.4015[.195]** |

**********

R-Squared .17916 R-Bar-Squared .087951

S.E. of Regression 3.8741 F-stat. F( 1, 9) 1.9643[.195]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 135.0803 Equation Log-likelihood -29.4022

Akaike Info. Criterion -31.4022 Schwarz Bayesian Criterion -31.8001

DW-statistic 1.3295

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

* * * *

* A:Serial Correlation*CHSQ( 1)= 1.1791[.278]*F( 1, 8)= .96048[.356]*

* * * *

* B:Functional Form *CHSQ( 1)= .32463[.569]*F( 1, 8)= .24328[.635]*

* * * *

* C:Normality *CHSQ( 2)= 3.7644[.152]* Not applicable *

* * * *

* D:Heteroscedasticity*CHSQ( 1)= .42529[.514]*F( 1, 9)= .36196[.562]*

**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values

Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

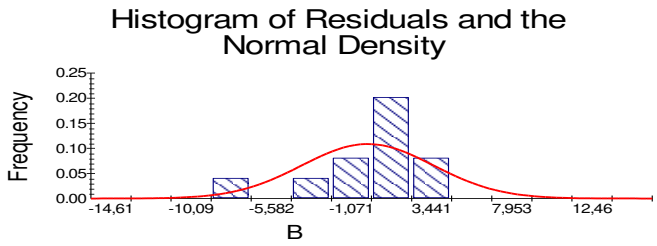
CON K

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 4.6398 | .24016 |
| 2003 | 5.3700 | 4.3288 | 1.0412 |
| 2004 | 4.1300 | 3.2815 | .84845 |
| 2005 | 4.2800 | 2.4861 | 1.7939 |
| 2006 | 4.9400 | 1.4276 | 3.5124 |
| 2007 | 5.0600 | .49095 | 4.5691 |
| 2008 | 2.1000 | .19228 | 1.9077 |
| 2009 | -6.9000 | 2.0663 | -8.9663 |
| 2010 | -2.3000 | .67899 | -2.9790 |
| 2011 | 0.00 | -.0018613 | .0018613 |
| 2012 | -2.0000 | -.030539 | -1.9695 |

**********



**GDP / IMPORT**

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **3.8796** | **8.0372** | **.48271[.641]** |
| **L** | **-.1344E-3** | **.5073E-3** | **-.26487[.797]** |

**********

R-Squared .0077350 R-Bar-Squared -.10252

S.E. of Regression 4.2595 F-stat. F( 1, 9) .070157[.797]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 163.2897 Equation Log-likelihood -30.4453

Akaike Info. Criterion -32.4453 Schwarz Bayesian Criterion -32.8432

DW-statistic .83314

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version * |
|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 3.3984[.065]* | F( 1, 8)= 3.5766[.095]* |
| * B:Functional Form * | CHSQ( 1)= 2.6507[.104]* | F( 1, 8)= 2.5399[.150]* |
| * C:Normality * | CHSQ( 2)= 1.8626[.394]* | Not applicable * |

* D:Heteroscedasticity*CHSQ( 1)= .0074639[.931]*F( 1, 9)= .0061109[.939]*

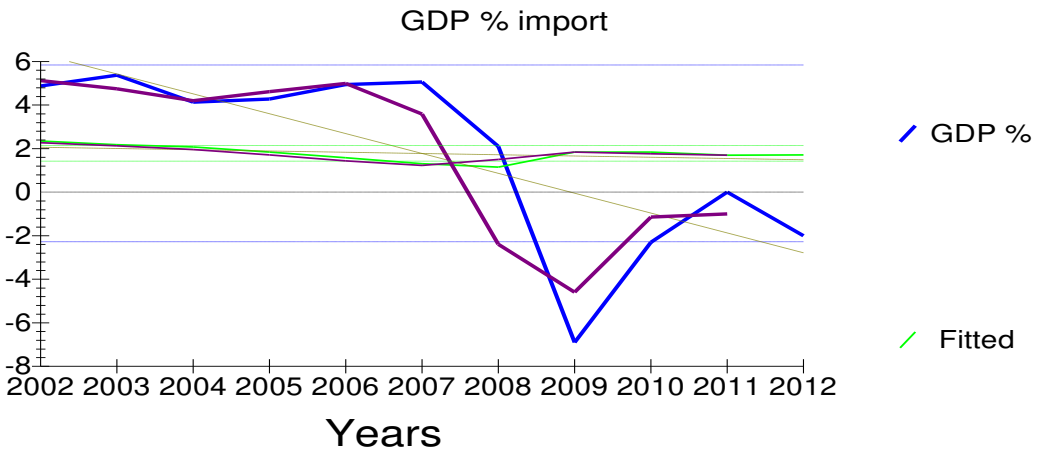
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON L

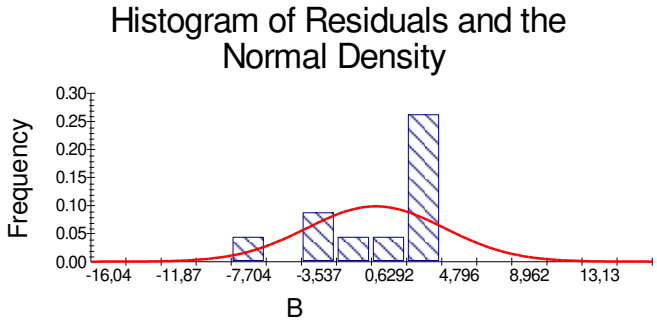
11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 2.3545 | 2.5255 |
| 2003 | 5.3700 | 2.1842 | 3.1858 |
| 2004 | 4.1300 | 2.0768 | 2.0532 |
| 2005 | 4.2800 | 1.8337 | 2.4463 |
| 2006 | 4.9400 | 1.5732 | 3.3668 |
| 2007 | 5.0600 | 1.3059 | 3.7541 |
| 2008 | 2.1000 | 1.1474 | .95258 |
| 2009 | -6.9000 | 1.8455 | -8.7455 |
| 2010 | -2.3000 | 1.8391 | -4.1391 |

| | | | |
|---|---|---|---|
| 2011 | 0.00 | 1.6920 | -1.6920 |
| 2012 | -2.0000 | 1.7077 | -3.7077 |

**********




**GDP % INTERNATIONAL RESERVES**

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| **Regressor** | **Coefficient** | **Standard Error** | **T-Ratio[Prob]** |
|---|---|---|---|
| **CON** | **.088202** | **3.8602** | **.022849[.982]** |
| **O** | **.2120E-3** | **.4571E-3** | **.46380[.654]** |

**********

R-Squared .023343 R-Bar-Squared -.085175

S.E. of Regression 4.2259 F-stat. F( 1, 9) .21511[.654]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 160.7212 Equation Log-likelihood -30.3581

Akaike Info. Criterion -32.3581 Schwarz Bayesian Criterion -32.7560

DW-statistic .49858

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 6.5203[.011]* | F( 1, 8)= 11.6442[.009]* | |
| * B:Functional Form * | CHSQ( 1)= 9.8994[.002]* | F( 1, 8)= 71.9577[.000]* | |
| * C:Normality * | CHSQ( 2)= 1.3494[.509]* | Not applicable | * |
| * D:Heteroscedasticity* | CHSQ( 1)= 2.0549[.152]* | F( 1, 9)= 2.0675[.184]* | |

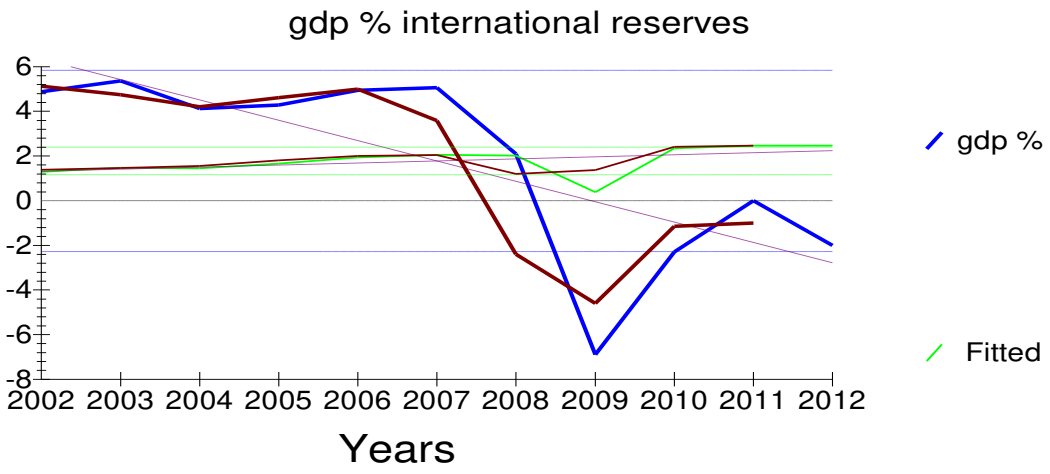
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

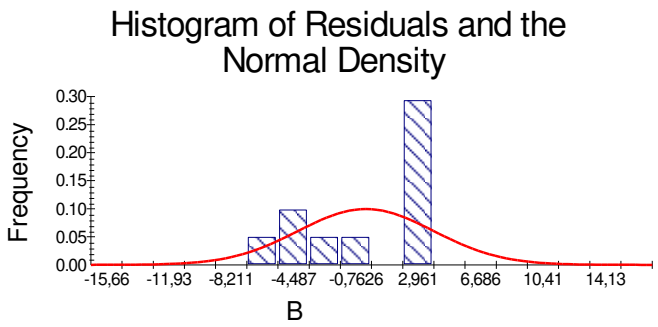
CON O

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 1.2861 | 3.5939 |
| 2003 | 5.3700 | 1.4775 | 3.8925 |
| 2004 | 4.1300 | 1.4525 | 2.6775 |
| 2005 | 4.2800 | 1.6649 | 2.6151 |
| 2006 | 4.9400 | 1.9377 | 3.0023 |
| 2007 | 5.0600 | 2.0611 | 2.9989 |
| 2008 | 2.1000 | 2.0217 | .078331 |
| 2009 | -6.9000 | .37967 | -7.2797 |
| 2010 | -2.3000 | 2.3479 | -4.6479 |
| 2011 | 0.00 | 2.4611 | -2.4611 |
| 2012 | -2.0000 | 2.4698 | -4.4698 |

**********




**INTERNATIONAL RESERVERS/UNEMPLOYMENT RATE ; FOREIGN DEBT**

Ordinary Least Squares Estimation

**********

Dependent variable is O

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| CON | -1565.6 | 9840.4 | -.15910[.878] |
| G | 301.0674 | 437.4157 | .68829[.511] |
| R | 127.3006 | 96.7054 | 1.3164[.225] |

**********

R-Squared .17817 R-Bar-Squared -.027290

S.E. of Regression 2963.4 F-stat. F( 2, 8) .86717[.456]

Mean of Dependent Variable 7972.4 S.D. of Dependent Variable 2923.8

Residual Sum of Squares 7.03E+07 Equation Log-likelihood -101.7919

Akaike Info. Criterion -104.7919 Schwarz Bayesian Criterion -105.3888

DW-statistic 2.1737

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

* * * *

* A:Serial Correlation*CHSQ( 1)= .16696[.683]*F( 1, 7)= .10789[.752]*

* * * *

* B:Functional Form *CHSQ( 1)= 4.1274[.042]*F( 1, 7)= 4.2039[.079]*

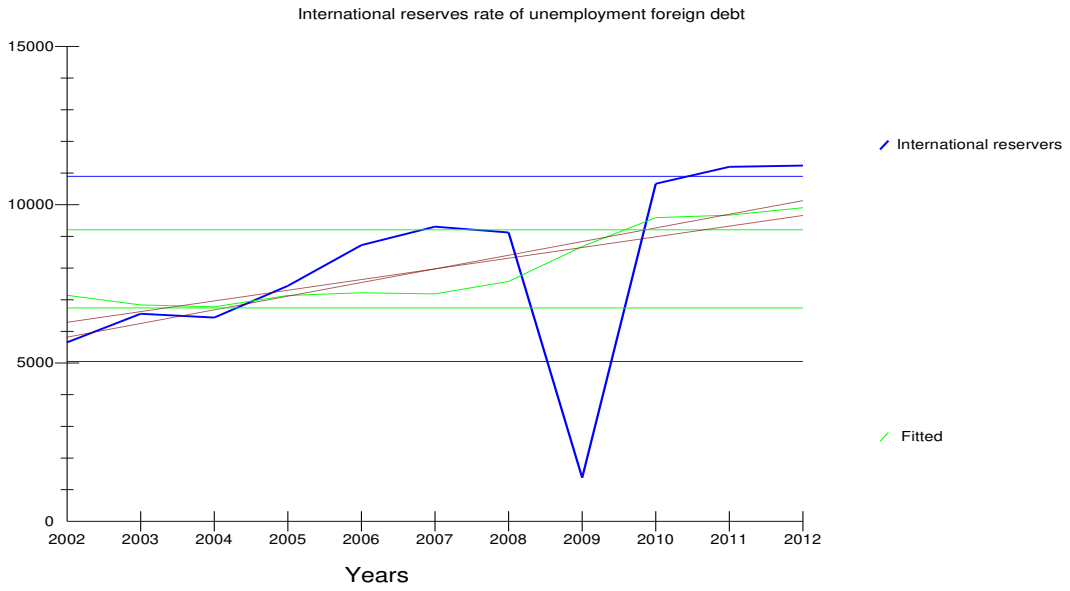
* * * *

* C:Normality *CHSQ( 2)= 13.3710[.001]* Not applicable *

* * * *

* D:Heteroscedasticity*CHSQ( 1)= .34018[.560]*F( 1, 9)= .28721[.605]*

**********



**FOREIGN DEBT % GDP %**

Ordinary Least Squares Estimation

**********

Dependent variable is S

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **89.2664** | **3.2746** | **27.2602[.000]** |
| **B** | **-3.6907** | **.76923** | **-4.7980[.001]** |

**********

R-Squared .71893 R-Bar-Squared .68770

S.E. of Regression 9.8678 F-stat. F( 1, 9) 23.0206[.001]

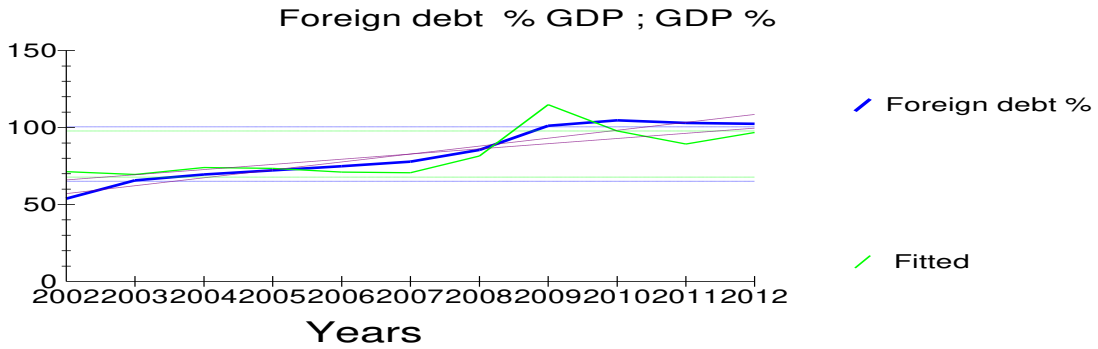
Mean of Dependent Variable 82.7036 S.D. of Dependent Variable 17.6577

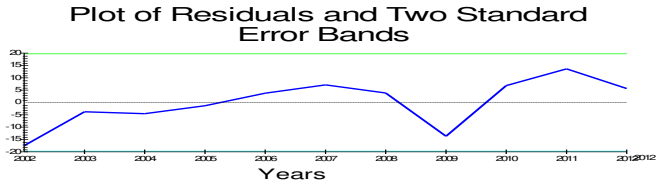
Residual Sum of Squares 876.3591 Equation Log-likelihood -39.6867

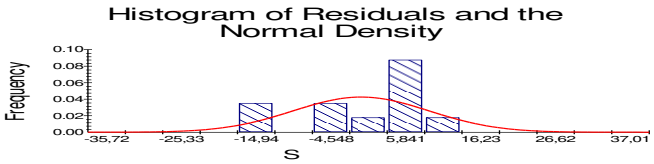
Akaike Info. Criterion -41.6867 Schwarz Bayesian Criterion -42.0846

DW-statistic 1.2434

**********






**FOREIGN DEBT % GDP / INTERNATIONAL RESERVES**

Ordinary Least Squares Estimation

**********

Dependent variable is S

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **66.4026** | **15.9980** | **4.1507[.002]** |
| **O** | **.0020447** | **.0018942** | **1.0794[.308]** |

**********

R-Squared .11463 R-Bar-Squared .016251

S.E. of Regression 17.5136 F-stat. F( 1, 9) 1.1652[.308]

Mean of Dependent Variable 82.7036 S.D. of Dependent Variable 17.6577

Residual Sum of Squares 2760.6 Equation Log-likelihood -45.9974

Akaike Info. Criterion -47.9974 Schwarz Bayesian Criterion -48.3953

DW-statistic .51592

**********

Diagnostic Tests

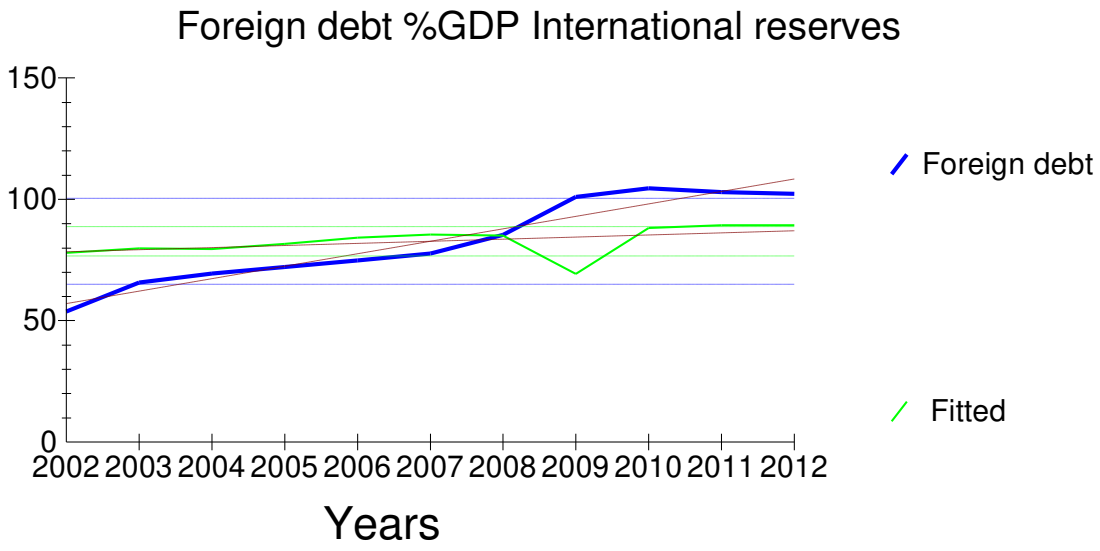
| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 5.4406[.020] | F( 1, 8)= 7.8290[.023] |
| B:Functional Form | CHSQ( 1)= 9.8271[.002] | F( 1, 8)= 67.0283[.000] |
| C:Normality | CHSQ( 2)= .66866[.716] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= 5.8118[.016] | F( 1, 9)= 10.0816[.011] |

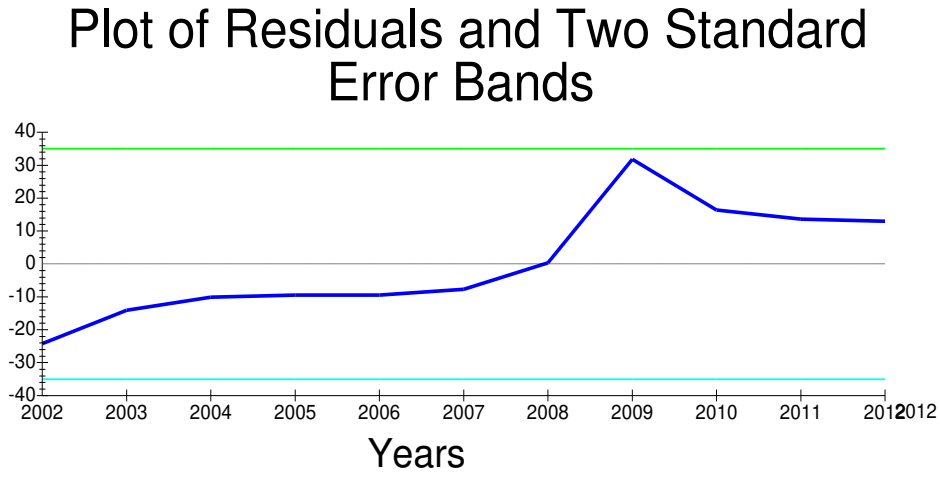
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


Foreign debt %GDP International reserves
150
100
50
0
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Years
Foreign debt
Fitted


Plot of Residuals and Two Standard Error Bands
40
30
20
10
0
-10
-20
-30
-40
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2012
Years

**FOREIGN DEBT % GDP / E UR/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is S

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **384.4348** | **405.2318** | **.94868[.368]** |
| **T** | **-40.8096** | **54.8032** | **-.74466[.475]** |

**********

R-Squared .058037 R-Bar-Squared -.046626

S.E. of Regression 18.0647 F-stat. F( 1, 9) .55451[.475]

Mean of Dependent Variable 82.7036 S.D. of Dependent Variable 17.6577

Residual Sum of Squares 2937.0 Equation Log-likelihood -46.3382

Akaike Info. Criterion -48.3382 Schwarz Bayesian Criterion -48.7361

DW-statistic .27359

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 5.5558[.018] | *F( 1, 8)= 8.1639[.021] | * |
| * B:Functional Form | *CHSQ( 1)= .010288[.919] | *F( 1, 8)= .0074895[.933] | * |
| * C:Normality | *CHSQ( 2)= .65470[.721] | * Not applicable | * |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= .86013[.354]*F( 1, 9)= .76344[.405]*

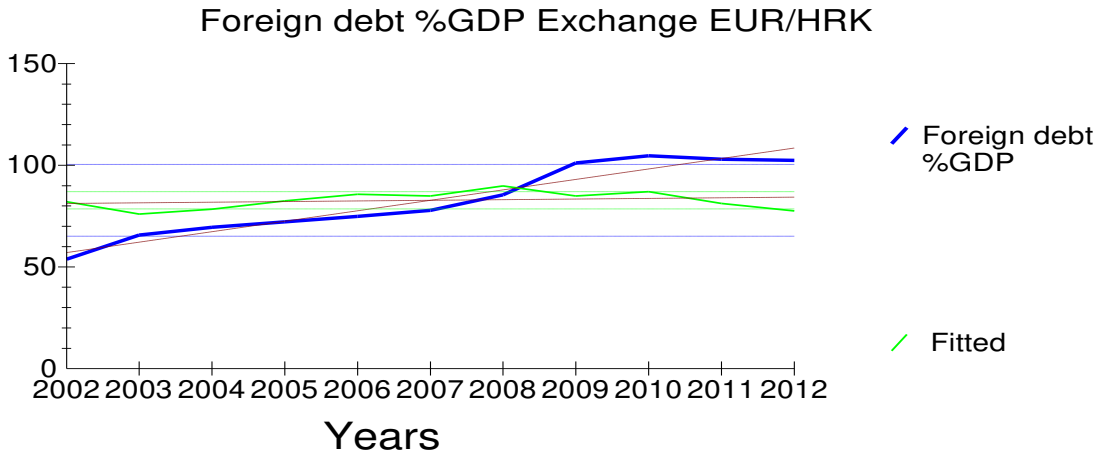
**********

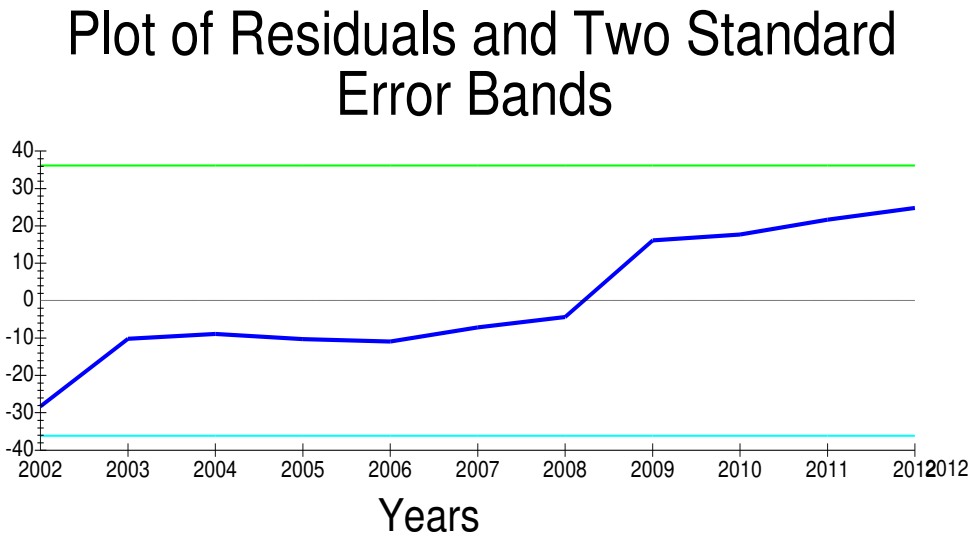
A:Lagrange multiplier test of residual serial correlation

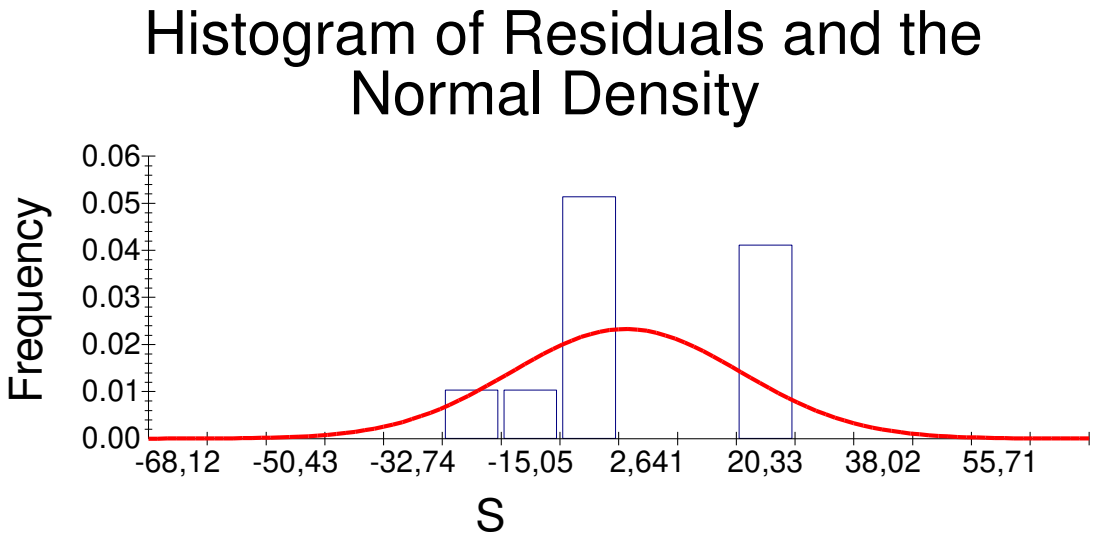
B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






**GDP % / EUR /HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-52.3651** | **94.2084** | **-.55584[.592]** |
| **T** | **7.3230** | **12.7407** | **.57477[.580]** |

**********

R-Squared .035407 R-Bar-Squared -.071770

S.E. of Regression 4.1997 F-stat. F( 1, 9) .33036[.580]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 158.7359 Equation Log-likelihood -30.2897

Akaike Info. Criterion -32.2897 Schwarz Bayesian Criterion -32.6876

DW-statistic .87329

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 2.8164[.093]* | F( 1, 8)= 2.7533[.136]* | |
| * B:Functional Form * | CHSQ( 1)= .040306[.841]* | F( 1, 8)= .029422[.868]* | |
| * C:Normality * | CHSQ( 2)= 1.6407[.440]* | Not applicable | * |
| * D:Heteroscedasticity* | CHSQ( 1)= .36579[.545]* | F( 1, 9)= .30958[.592]* | |

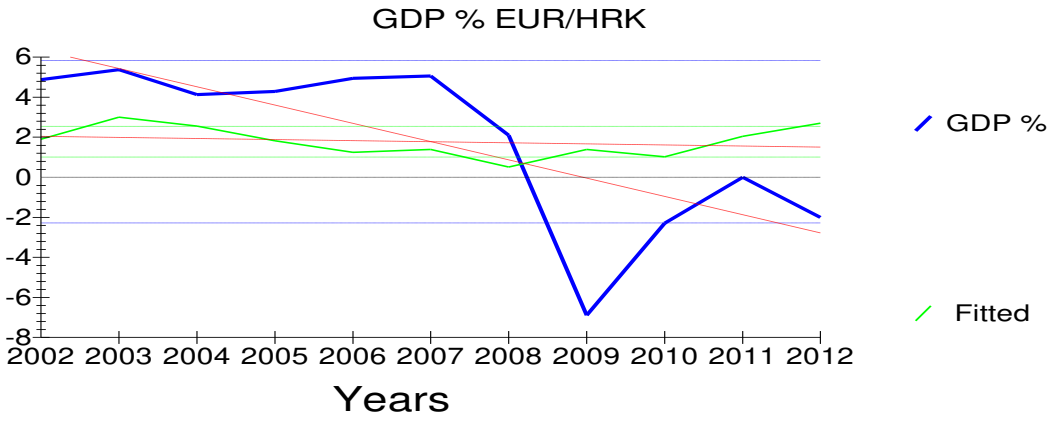
**********

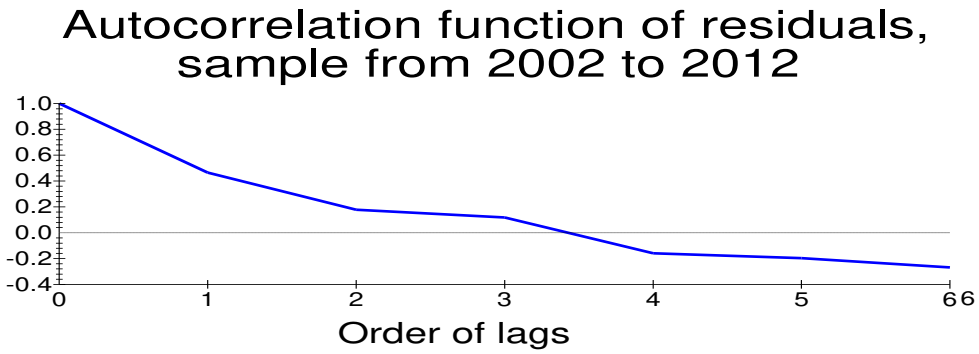
A:Lagrange multiplier test of residual serial correlation

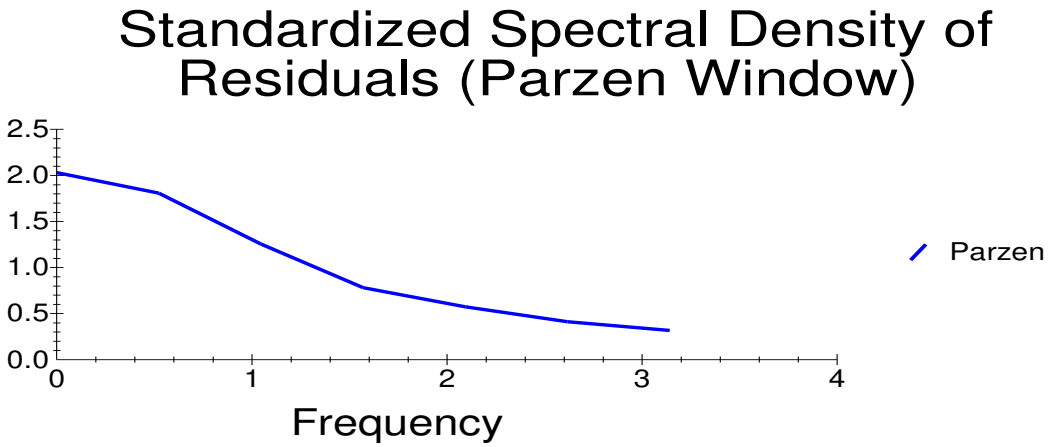
B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON T

11 observations used for estimation from 2002 to 2012

**********

Observation Actual Fitted Residual

| | | | |
|---|---|---|---|
| 2002 | 4.8800 | 1.8980 | 2.9820 |
| 2003 | 5.3700 | 2.9965 | 2.3735 |
| 2004 | 4.1300 | 2.5571 | 1.5729 |
| 2005 | 4.2800 | 1.8248 | 2.4552 |
| 2006 | 4.9400 | 1.2389 | 3.7011 |
| 2007 | 5.0600 | 1.3854 | 3.6746 |
| 2008 | 2.1000 | .50665 | 1.5934 |
| 2009 | -6.9000 | 1.3854 | -8.2854 |
| 2010 | -2.3000 | 1.0193 | -3.3193 |
| 2011 | 0.00 | 2.0445 | -2.0445 |
| 2012 | -2.0000 | 2.7035 | -4.7035 |

**********

**IMORT MIL EUR / EUR/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is L

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **135703.2** | **48371.3** | **2.8055[.021]** |
| **T** | **-16238.8** | **6541.7** | **-2.4824[.035]** |

**********

R-Squared .40641 R-Bar-Squared .34046

S.E. of Regression 2156.3 F-stat. F( 1, 9) 6.1621[.035]

Mean of Dependent Variable 15639.4 S.D. of Dependent Variable 2655.2

Residual Sum of Squares 4.18E+07 Equation Log-likelihood -98.9424

Akaike Info. Criterion -100.9424 Schwarz Bayesian Criterion -101.3403

DW-statistic 1.0613

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .72253[.395]* | F( 1, 8)= .56242[.475]* | |
| * B:Functional Form * | CHSQ( 1)= 1.0100[.315]* | F( 1, 8)= .80881[.395]* | |
| * C:Normality * | CHSQ( 2)= .43632[.804]* | Not applicable | * |

**********

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= .040348[.841]*F( 1, 9)= .033134[.860]*

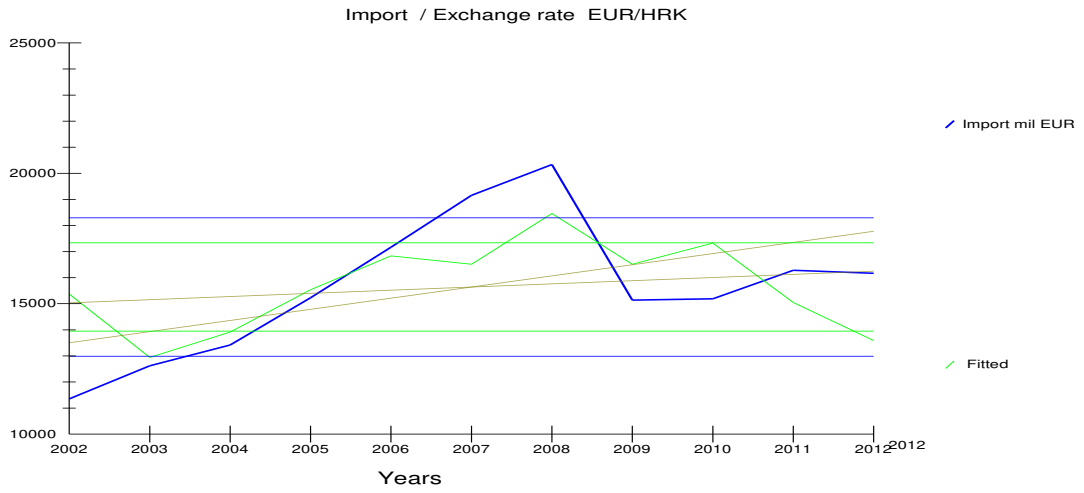
**********

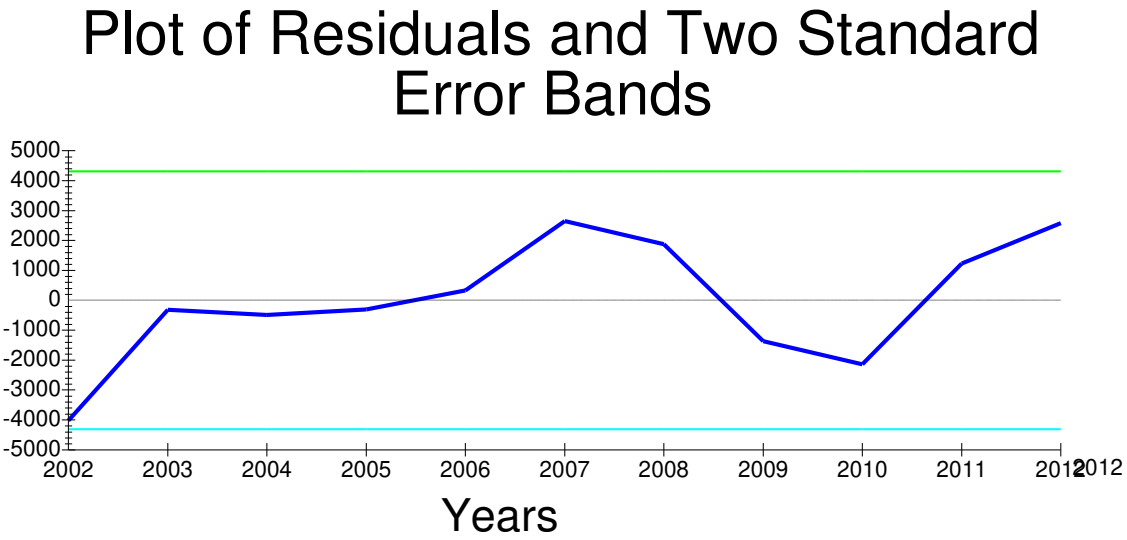
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of L on:

CON T

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 11350.2 | 15373.7 | -4023.5 |
| 2003 | 12617.5 | 12937.9 | -320.4145 |
| 2004 | 13417.4 | 13912.2 | -494.8220 |
| 2005 | 15226.1 | 15536.1 | -309.9613 |
| 2006 | 17165.3 | 16835.2 | 330.0952 |
| 2007 | 19154.3 | 16510.4 | 2643.9 |
| 2008 | 20333.6 | 18459.1 | 1874.6 |
| 2009 | 15138.5 | 16510.4 | -1371.9 |
| 2010 | 15185.9 | 17322.4 | -2136.5 |
| 2011 | 16281.1 | 15048.9 | 1232.2 |
| 2012 | 16163.7 | 13587.4 | 2576.3 |

**********

**IMPORT MIL EUR / USD/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is L

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **31245.6** | **3749.5** | **8.3332[.000]** |
| **U** | **-2654.9** | **632.3890** | **-4.1983[.002]** |

**********

R-Squared .66198 R-Bar-Squared .62442

S.E. of Regression 1627.2 F-stat. F( 1, 9) 17.6255[.002]

Mean of Dependent Variable 15639.4 S.D. of Dependent Variable 2655.2

Residual Sum of Squares 2.38E+07 Equation Log-likelihood -95.8455

Akaike Info. Criterion -97.8455 Schwarz Bayesian Criterion -98.2434

DW-statistic 1.2894

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 1.2390[.266]* | F( 1, 8)= 1.0154[.343]* | |
| * B:Functional Form * | CHSQ( 1)= 1.7473[.186]* | F( 1, 8)= 1.5108[.254]* | |
| * C:Normality * | CHSQ( 2)= .87888[.644]* | Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= 3.3033[.069]*F( 1, 9)= 3.8627[.081]*

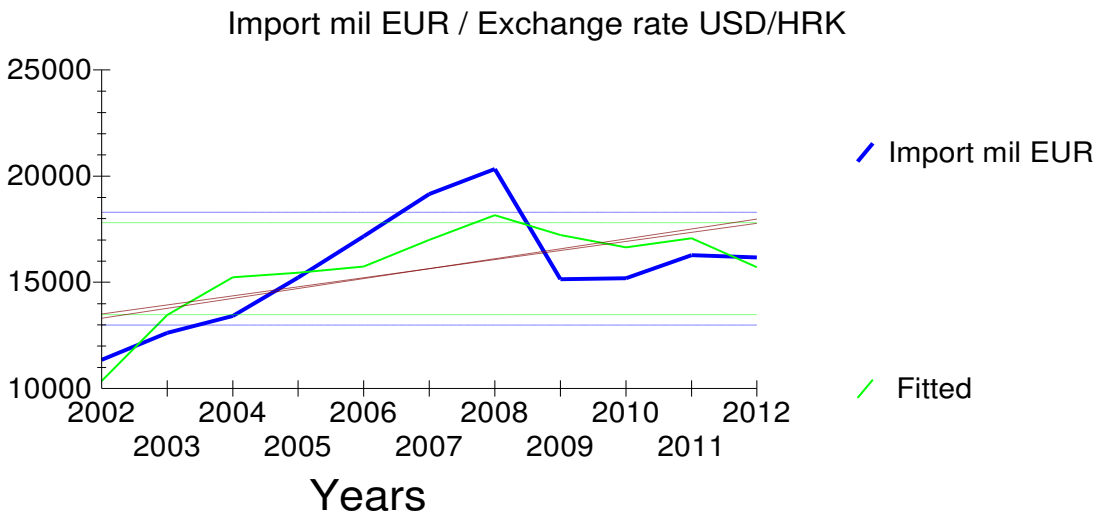
**********

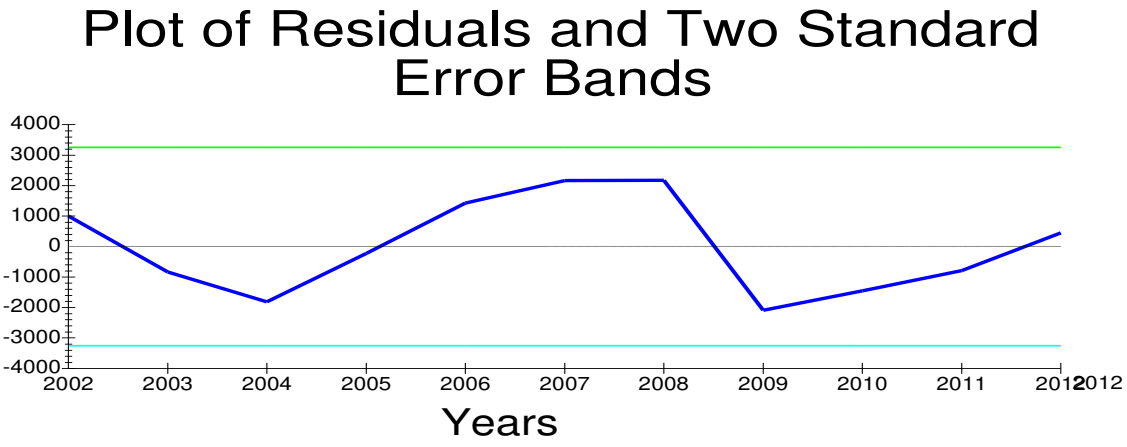
A:Lagrange multiplier test of residual serial correlation

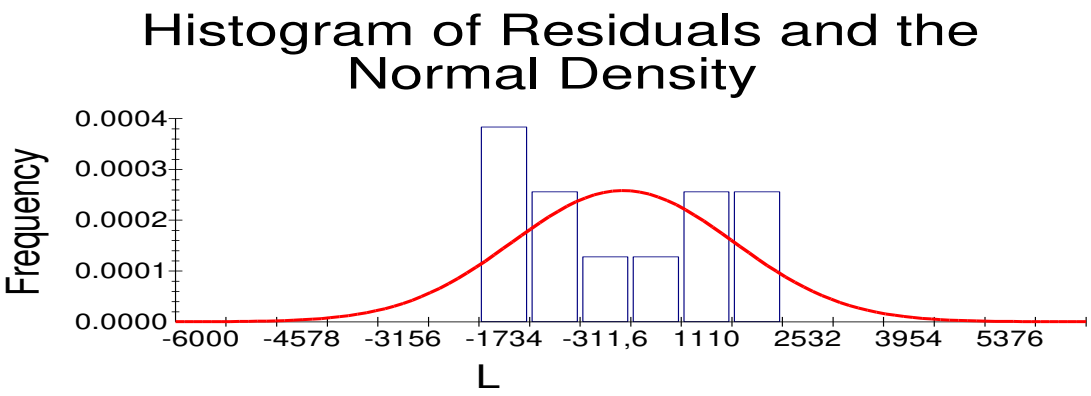
B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






Residuals and Fitted Values of Regression

**********

Based on OLS regression of L on:

CON U

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 11350.2 | 10351.3 | 998.9454 |
| 2003 | 12617.5 | 13457.6 | -840.0825 |
| 2004 | 13417.4 | 15236.4 | -1819.0 |
| 2005 | 15226.1 | 15448.8 | -222.6262 |
| 2006 | 17165.3 | 15740.8 | 1424.5 |
| 2007 | 19154.3 | 16988.6 | 2165.7 |
| 2008 | 20333.6 | 18156.8 | 2176.8 |
| 2009 | 15138.5 | 17227.6 | -2089.1 |
| 2010 | 15185.9 | 16643.5 | -1457.6 |
| 2011 | 16281.1 | 17068.3 | -787.1186 |
| 2012 | 16163.7 | 15714.3 | 449.4699 |

**********

**EXPORT MIL EURA / EUR/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is K

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **59974.0** | **34151.9** | **1.7561[.113]** |
| **T** | **-7042.7** | **4618.7** | **-1.5248[.162]** |

**********

R-Squared .20531 R-Bar-Squared .11701

S.E. of Regression 1522.4 F-stat. F( 1, 9) 2.3251[.162]

Mean of Dependent Variable 7902.5 S.D. of Dependent Variable 1620.2

Residual Sum of Squares 2.09E+07 Equation Log-likelihood -95.1134

Akaike Info. Criterion -97.1134 Schwarz Bayesian Criterion -97.5113

DW-statistic .41023

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 4.1424[.042]* | F( 1, 8)= 4.8324[.059]* | |
| * B:Functional Form * | CHSQ( 1)= .073516[.786]* | F( 1, 8)= .053826[.822]* | |
| * C:Normality * | CHSQ( 2)= .10168[.950]* | Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= 2.6584[.103]*F( 1, 9)= 2.8683[.125]*

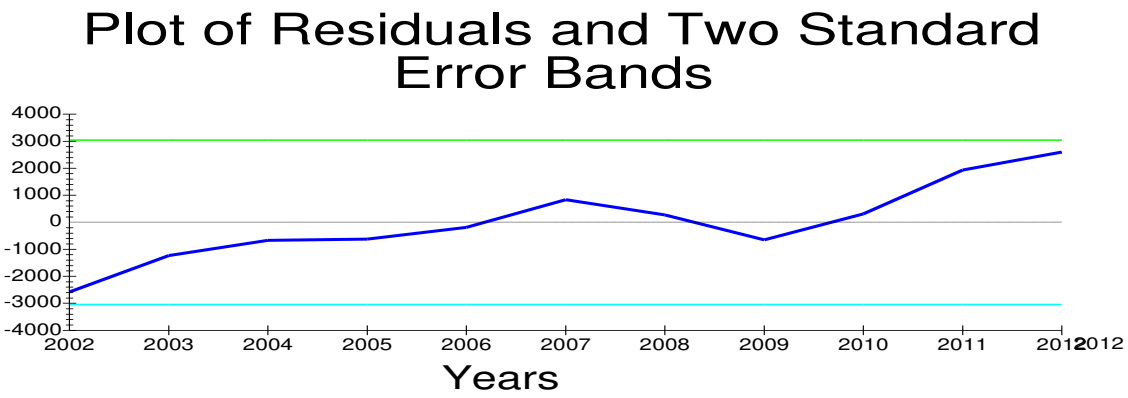
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of K on:

CON T

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 5202.3 | 7787.3 | -2585.0 |
| 2003 | 5495.8 | 6730.9 | -1235.1 |
| 2004 | 6484.0 | 7153.4 | -669.4637 |
| 2005 | 7234.6 | 7857.7 | -623.1271 |
| 2006 | 8233.3 | 8421.1 | -187.7959 |
| 2007 | 9117.1 | 8280.3 | 836.8688 |

| | | | |
|---|---|---|---|
| 2008 | 9399.0 | 9125.4 | 273.5607 |
| 2009 | 7630.7 | 8280.3 | -649.6212 |
| 2010 | 8939.7 | 8632.4 | 307.3021 |
| 2011 | 9582.2 | 7646.4 | 1935.7 |
| 2012 | 9609.2 | 7012.6 | 2596.6 |

**********

**EXPORT MIL EURA/ USD/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is K

11 observations used for estimation from 2002 to 2012

**********

| **Regressor** | **Coefficient** | **Standard Error** | **T-Ratio[Prob]** |
|---|---|---|---|
| **CON** | **17535.3** | **2235.3** | **7.8447[.000]** |
| **U** | **-1638.7** | **377.0026** | **-4.3468[.002]** |

**********

R-Squared .67735 R-Bar-Squared .64150

S.E. of Regression 970.0741 F-stat. F( 1, 9) 18.8943[.002]

Mean of Dependent Variable 7902.5 S.D. of Dependent Variable 1620.2

Residual Sum of Squares 8469394 Equation Log-likelihood -90.1557

Akaike Info. Criterion -92.1557 Schwarz Bayesian Criterion -92.5536

DW-statistic 1.0641

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

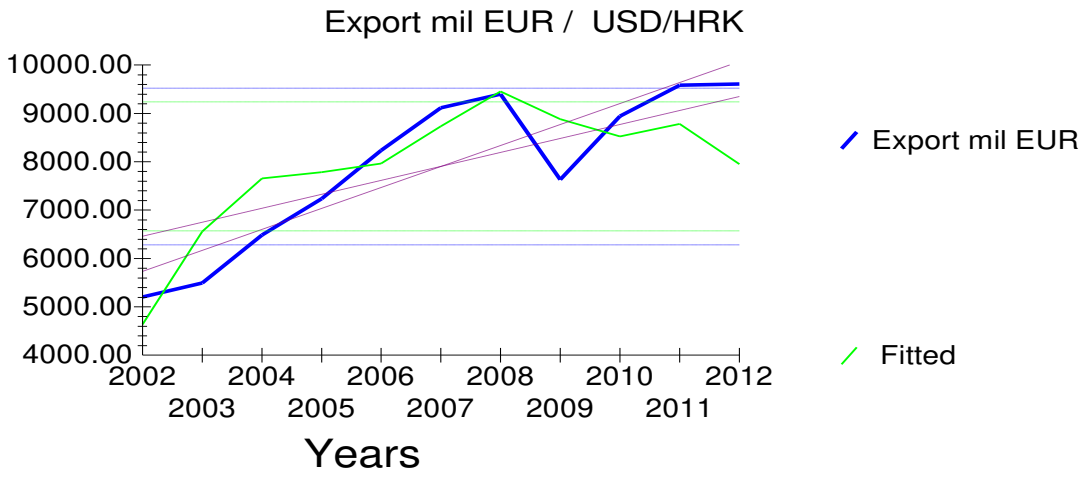
```
*            *            *            *
* A:Serial Correlation*CHSQ(  1)=  1.3991[.237]*F(  1,  8)=  1.1658[.312]*
*            *            *            *
* B:Functional Form  *CHSQ(  1)=  .42776[.513]*F(  1,  8)=  .32369[.585]*
*            *            *            *
* C:Normality       *CHSQ(  2)=  .35979[.835]*      Not applicable      *
*            *            *            *
* D:Heteroscedasticity*CHSQ(  1)=  .074684[.785]*F(  1,  9)=  .061523[.810]*
********************************************************************************
```

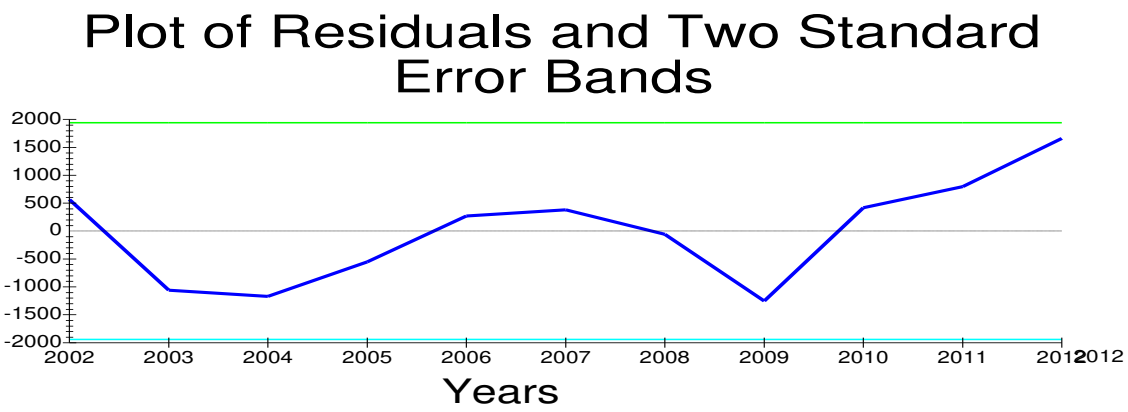
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






Residuals and Fitted Values of Regression

**********

Based on OLS regression of K on:

CON U

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 5202.3 | 4638.5 | 563.8448 |
| 2003 | 5495.8 | 6555.8 | -1060.0 |
| 2004 | 6484.0 | 7653.7 | -1169.8 |
| 2005 | 7234.6 | 7784.8 | -550.2533 |
| 2006 | 8233.3 | 7965.1 | 268.2354 |
| 2007 | 9117.1 | 8735.3 | 381.8383 |
| 2008 | 9399.0 | 9456.4 | -57.3867 |
| 2009 | 7630.7 | 8882.8 | -1252.1 |
| 2010 | 8939.7 | 8522.3 | 417.4443 |
| 2011 | 9582.2 | 8784.5 | 797.6861 |
| 2012 | 9609.2 | 7948.7 | 1660.5 |

**********

**EUR/HRK / USD/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is T

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **7.0130** | **.21845** | **32.1034[.000]** |
| **U** | **.064760** | **.036843** | **1.7577[.113]** |

**********

R-Squared .25556 R-Bar-Squared .17284

S.E. of Regression .094802 F-stat. F( 1, 9) 3.0896[.113]

Mean of Dependent Variable 7.3936 S.D. of Dependent Variable .10424

Residual Sum of Squares .080887 Equation Log-likelihood 11.4109

Akaike Info. Criterion 9.4109 Schwarz Bayesian Criterion 9.0130

DW-statistic 1.4331

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= .15500[.694] | *F( 1, 8)= .11434[.744] | * |
| * B:Functional Form | *CHSQ( 1)= 5.1853[.023] | *F( 1, 8)= 7.1342[.028] | * |
| * C:Normality | *CHSQ( 2)= .98972[.610] | * Not applicable | * |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= 1.8150[.178]*F( 1, 9)= 1.7785[.215]*

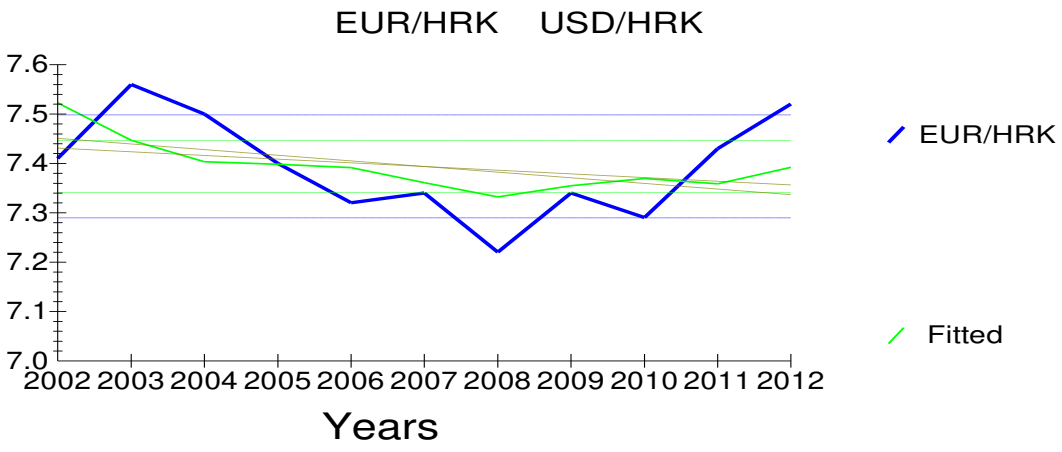
**********

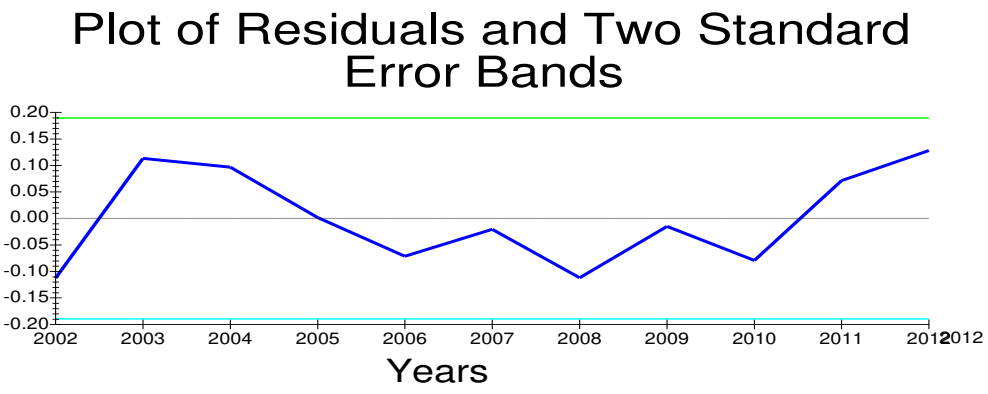
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of T on:

CON U

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 7.4100 | 7.5226 | -.11263 |
| 2003 | 7.5600 | 7.4469 | .11314 |
| 2004 | 7.5000 | 7.4035 | .096532 |
| 2005 | 7.4000 | 7.3983 | .0017127 |
| 2006 | 7.3200 | 7.3912 | -.071164 |
| 2007 | 7.3400 | 7.3607 | -.020727 |
| 2008 | 7.2200 | 7.3322 | -.11223 |
| 2009 | 7.3400 | 7.3549 | -.014898 |
| 2010 | 7.2900 | 7.3691 | -.079145 |
| 2011 | 7.4300 | 7.3588 | .071216 |
| 2012 | 7.5200 | 7.3918 | .12819 |

**********

**EUR/HRK CHF/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is T

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **6.9613** | **.27291** | **25.5078[.000]** |
| **V** | **.085204** | **.053470** | **1.5935[.146]** |

**********

R-Squared .22005 R-Bar-Squared .13339

S.E. of Regression .097036 F-stat. F( 1, 9) 2.5393[.146]

Mean of Dependent Variable 7.3936 S.D. of Dependent Variable .10424

Residual Sum of Squares .084745 Equation Log-likelihood 11.1547

Akaike Info. Criterion 9.1547 Schwarz Bayesian Criterion 8.7568

DW-statistic .97777

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 3.4620[.063] | *F( 1, 8)= 3.6741[.092] | * |
| * B:Functional Form | *CHSQ( 1)= .31548[.574] | *F( 1, 8)= .23621[.640] | * |
| * C:Normality | *CHSQ( 2)= .42512[.809] | * Not applicable | * |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= .36256[.547]*F( 1, 9)= .30675[.593]*

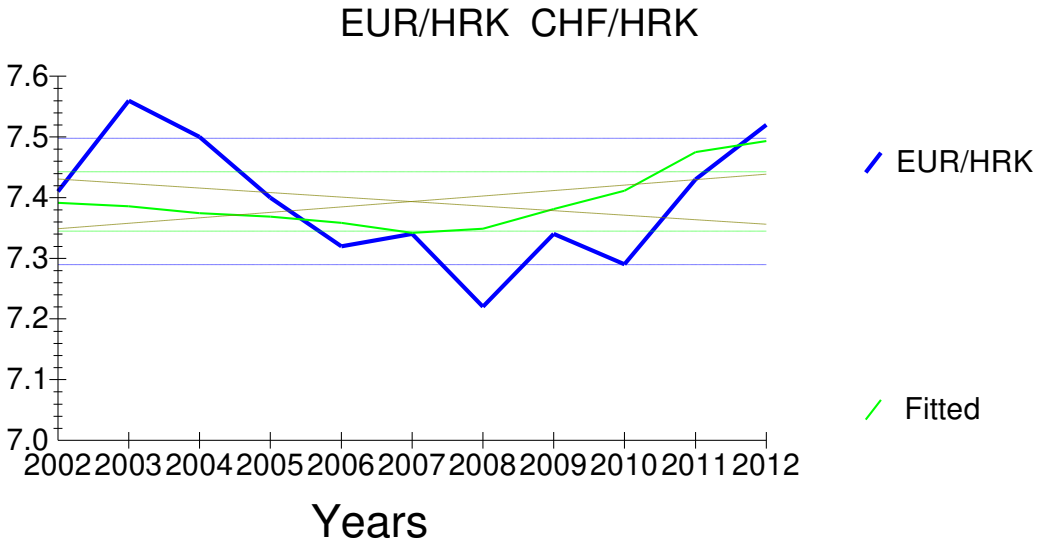
**********

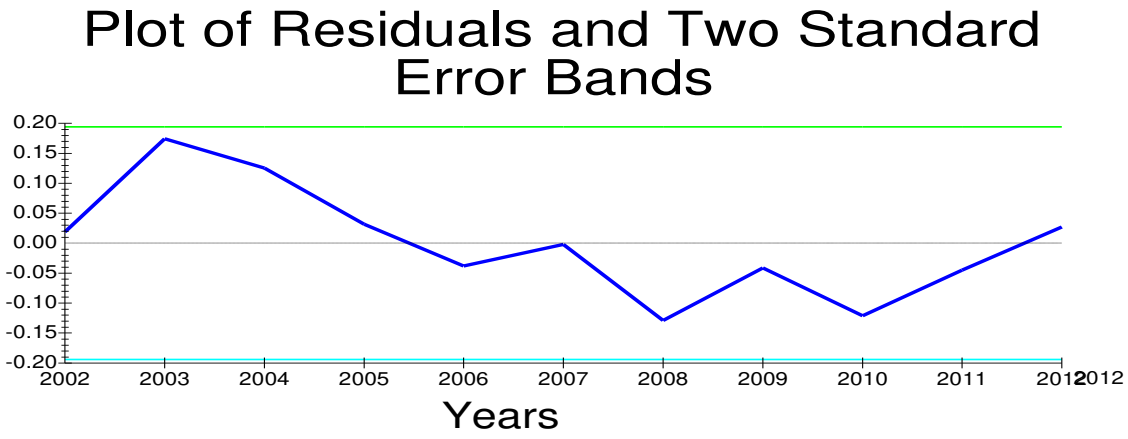
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of T on:

CON V

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 7.4100 | 7.3915 | .018455 |
| 2003 | 7.5600 | 7.3856 | .17442 |
| 2004 | 7.5000 | 7.3745 | .12550 |
| 2005 | 7.4000 | 7.3685 | .031460 |
| 2006 | 7.3200 | 7.3583 | -.038315 |
| 2007 | 7.3400 | 7.3421 | -.0021265 |
| 2008 | 7.2200 | 7.3489 | -.12894 |
| 2009 | 7.3400 | 7.3813 | -.041320 |
| 2010 | 7.2900 | 7.4111 | -.12114 |
| 2011 | 7.4300 | 7.4750 | -.045045 |
| 2012 | 7.5200 | 7.4929 | .027062 |

**********

**MONEY M1/ GDP % FOREIGN DEBT MIL EUR O**

Ordinary Least Squares Estimation

**********

Dependent variable is Z

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-17.1502** | **19.3901** | **-.88448[.402]** |
| **B** | **2.9014** | **1.4402** | **2.0147[.079]** |
| **R** | **1.8088** | **.50449** | **3.5854[.007]** |

**********

R-Squared .65241 R-Bar-Squared .56552

S.E. of Regression 10.9588 F-stat. F( 2, 8) 7.5079[.015]

Mean of Dependent Variable 48.9055 S.D. of Dependent Variable 16.6255

Residual Sum of Squares 960.7555 Equation Log-likelihood -40.1924

Akaike Info. Criterion -43.1924 Schwarz Bayesian Criterion -43.7892

DW-statistic 2.9652

**********

**TOTAL LOAN / INDUSTRIAL PRODUCTION %**

Ordinary Least Squares Estimation

**********

Dependent variable is X

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **216.5259** | **15.9042** | **13.6144[.000]** |
| **D** | **-10.9760** | **3.3978** | **-3.2303[.010]** |

**********

R-Squared .53692 R-Bar-Squared .48547

S.E. of Regression 51.6075 F-stat. F( 1, 9) 10.4351[.010]

Mean of Dependent Variable 205.8991 S.D. of Dependent Variable 71.9460

Residual Sum of Squares 23970.0 Equation Log-likelihood -57.8850

Akaike Info. Criterion -59.8850 Schwarz Bayesian Criterion -60.2829

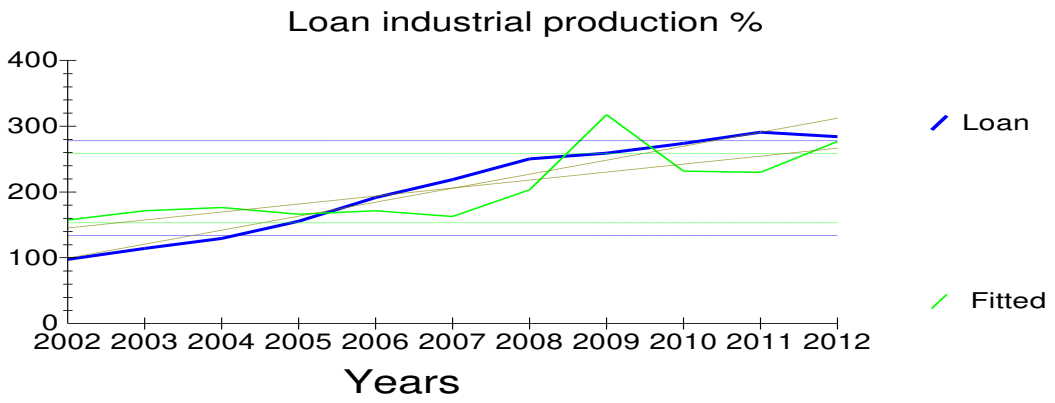
DW-statistic 1.1818

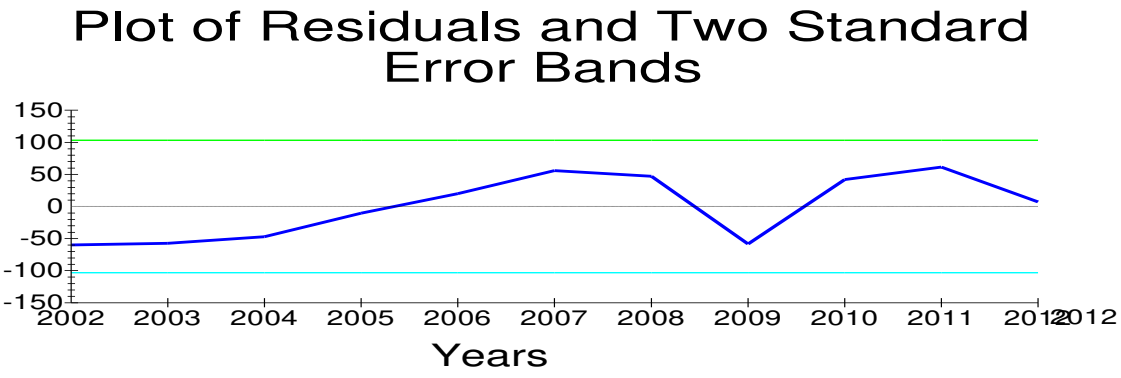
**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 1.7456[.186]* | F( 1, 8)= 1.5090[.254]* |
| * B:Functional Form * | CHSQ( 1)= 4.9848[.026]* | F( 1, 8)= 6.6295[.033]* |




Residuals and Fitted Values of Regression

**********

Based on OLS regression of X on:

CON D

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 97.4500 | 157.2553 | -59.8053 |
| 2003 | 114.0400 | 171.5241 | -57.4841 |
| 2004 | 129.1500 | 176.4633 | -47.3133 |
| 2005 | 155.6600 | 166.0361 | -10.3761 |

| | | | |
|---|---|---|---|
| 2006 | 191.5300 | 171.5241 | 20.0059 |
| 2007 | 218.6700 | 162.7433 | 55.9267 |
| 2008 | 250.3800 | 203.3546 | 47.0254 |
| 2009 | 259.0100 | 317.5055 | -58.4955 |
| 2010 | 274.0000 | 231.8924 | 42.1076 |
| 2011 | 291.0000 | 229.6971 | 61.3029 |
| 2012 | 284.0000 | 276.8941 | 7.1059 |

**********

**GDP % / TOURIST NIGHTS %**

Ordinary Least Squares Estimation

**********

Dependent variable is B

11 observations used for estimation from 2002 to 2012

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-1.3063** | **1.9761** | **-.66105[.525]** |
| **P** | **.85271** | **.45504** | **1.8739[.094]** |

**********

R-Squared .28067 R-Bar-Squared .20075

S.E. of Regression 3.6267 F-stat. F( 1, 9) 3.5117[.094]

Mean of Dependent Variable 1.7782 S.D. of Dependent Variable 4.0566

Residual Sum of Squares 118.3745 Equation Log-likelihood -28.6761

Akaike Info. Criterion -30.6761 Schwarz Bayesian Criterion -31.0740

DW-statistic .75005

**********

Diagnostic Tests

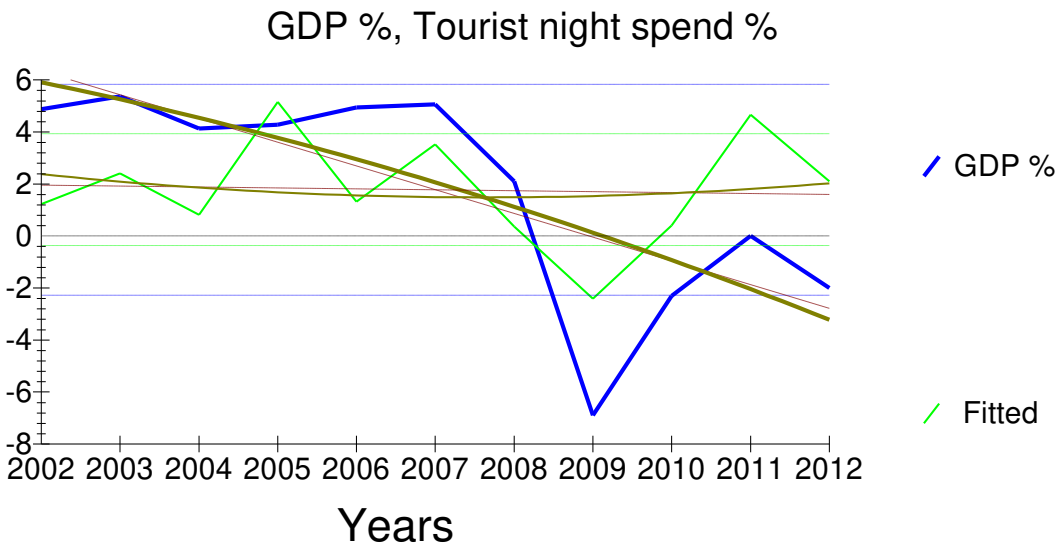
| Test Statistics | LM Version | F Version |
|---|---|---|
| A:Serial Correlation | CHSQ( 1)= 3.2379[.072] | F( 1, 8)= 3.3371[.105] |
| B:Functional Form | CHSQ( 1)= 3.9939[.046] | F( 1, 8)= 4.5605[.065] |
| C:Normality | CHSQ( 2)= 1.3369[.513] | Not applicable |
| D:Heteroscedasticity | CHSQ( 1)= .077509[.781] | F( 1, 9)= .063867[.806] |

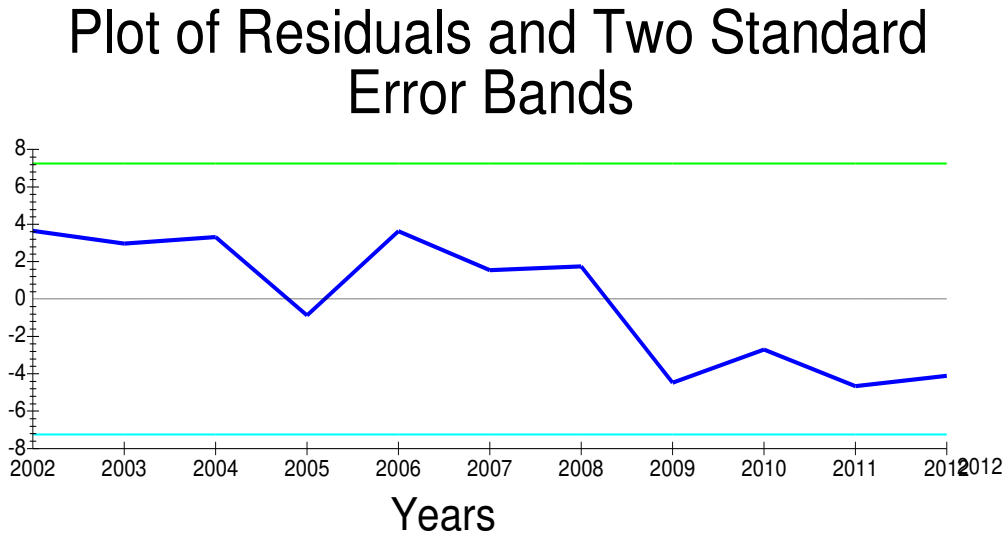
A:Lagrange multiplier test of residual serial correlation

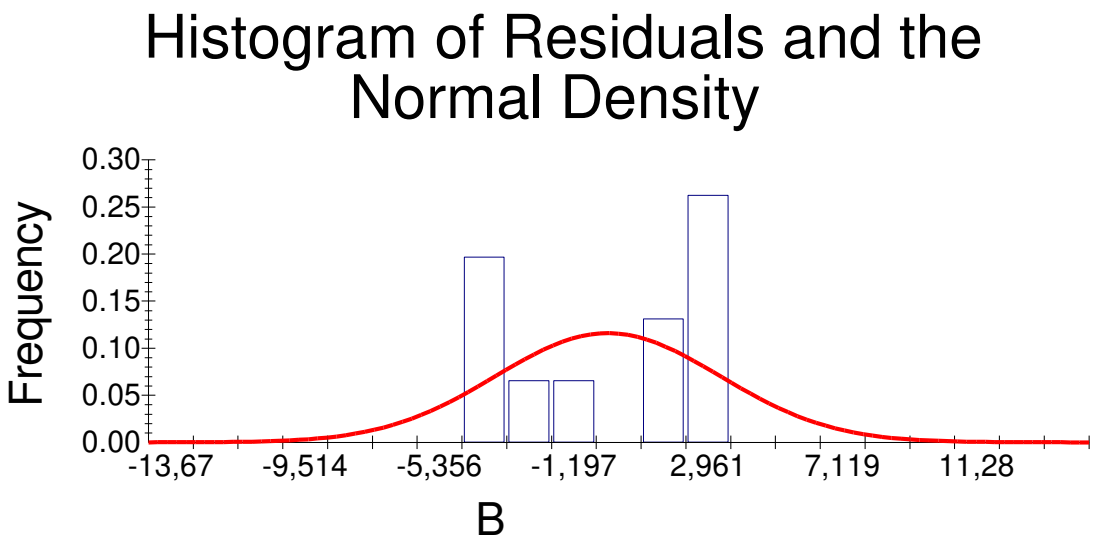
B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


GDP %, Tourist night spend %
6
4
2
0
-2
-4
-6
-8
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Years
GDP %
Fitted


Plot of Residuals and Two Standard Error Bands
8
6
4
2
0
-2
-4
-6
-8
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Years




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON P

11 observations used for estimation from 2002 to 2012

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4.8800 | 1.2262 | 3.6538 |
| 2003 | 5.3700 | 2.4030 | 2.9670 |
| 2004 | 4.1300 | .81694 | 3.3131 |
| 2005 | 4.2800 | 5.1572 | -.87725 |
| 2006 | 4.9400 | 1.3200 | 3.6200 |
| 2007 | 5.0600 | 3.5200 | 1.5400 |
| 2008 | 2.1000 | .36501 | 1.7350 |
| 2009 | -6.9000 | -2.4148 | -4.4852 |
| 2010 | -2.3000 | .39911 | -2.6991 |
| 2011 | 0.00 | 4.6627 | -4.6627 |
| 2012 | -2.0000 | 2.1045 | -4.1045 |

**********

# ANEX IV

**Active population / Employment construction**

Ordinary Least Squares Estimation

**********

Dependent variable is T

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **1568743** | **56431.4** | **27.7991[.000]** |
| **V** | **1.4812** | **.46747** | **3.1686[.013]** |

**********

R-Squared .55654 R-Bar-Squared .50111

S.E. of Regression 18682.6 F-stat. F( 1, 8) 10.0401[.013]

Mean of Dependent Variable 1746569 S.D. of Dependent Variable 26450.5

Residual Sum of Squares 2.79E+09 Equation Log-likelihood -111.4271

Akaike Info. Criterion -113.4271 Schwarz Bayesian Criterion -113.7297

DW-statistic 1.0653

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * | F Version | * |
|---|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .52811[.467]* | | F( 1, 7)= .39029[.552]* | |
| * B:Functional Form * | CHSQ( 1)= 5.8243[.016]* | | F( 1, 7)= 9.7635[.017]* | |
| * C:Normality * | CHSQ( 2)= .86907[.648]* | | Not applicable | * |
| * D:Heteroscedasticity* | CHSQ( 1)= 3.6683[.055]* | | F( 1, 8)= 4.6348[.063]* | |

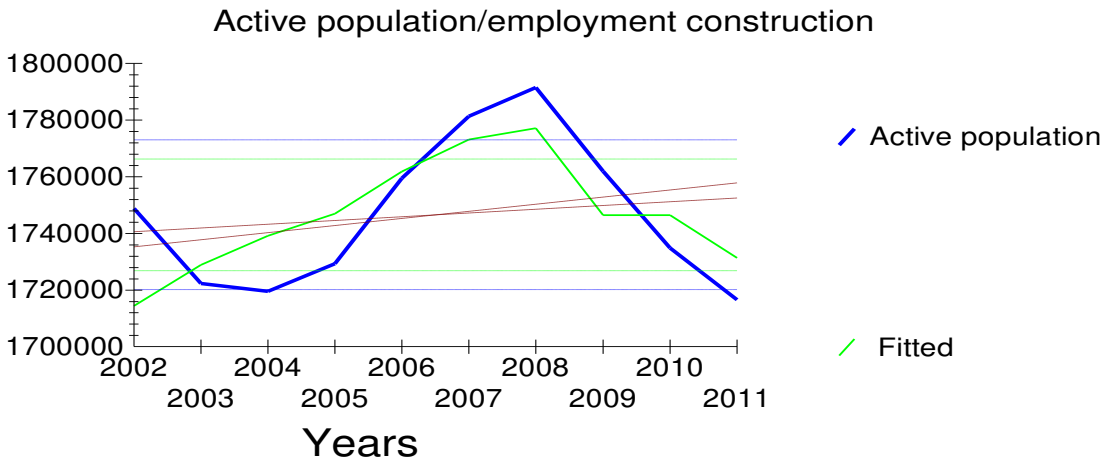
**********

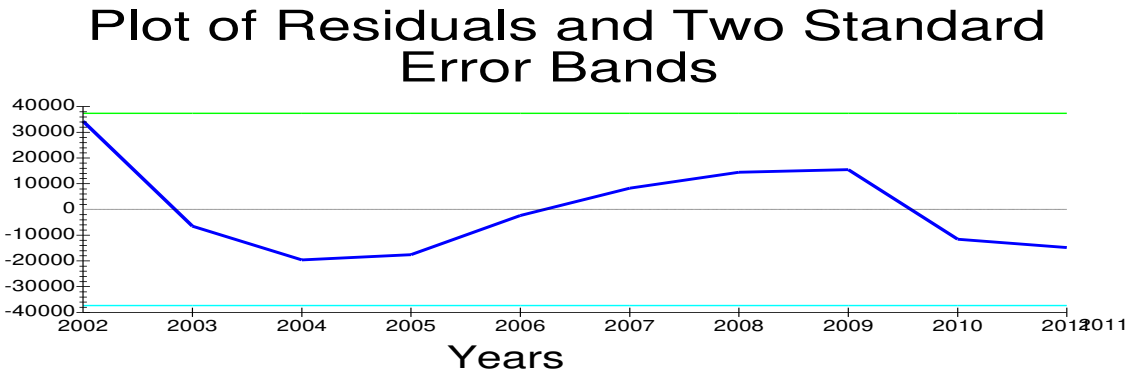
A:Lagrange multiplier test of residual serial correlation

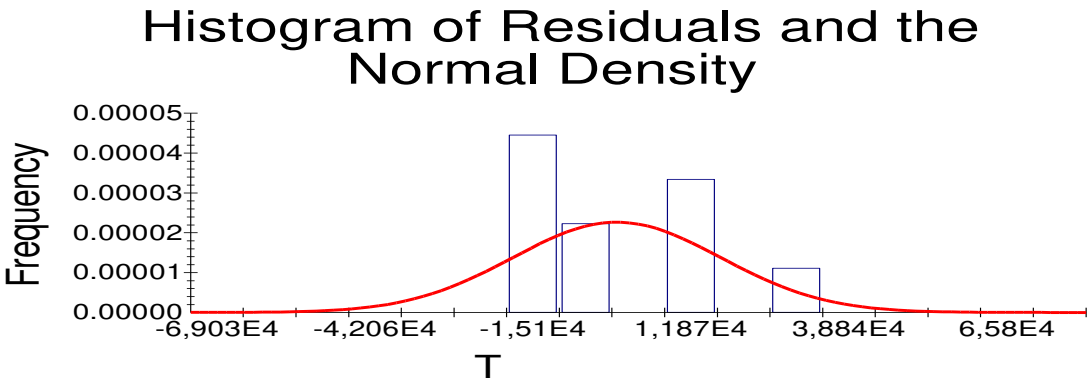
B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values






Residuals and Fitted Values of Regression

**********

Based on OLS regression of T on:

CON V

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 1748756 | 1714413 | 34342.9 |
| 2003 | 1722313 | 1728865 | -6552.5 |
| 2004 | 1719509 | 1739101 | -19591.8 |
| 2005 | 1729312 | 1746920 | -17608.2 |
| 2006 | 1759492 | 1761858 | -2366.4 |
| 2007 | 1781357 | 1773120 | 8236.8 |
| 2008 | 1791546 | 1777094 | 14451.6 |
| 2009 | 1761958 | 1746467 | 15491.1 |
| 2010 | 1734879 | 1746467 | -11587.9 |
| 2011 | 1716571 | 1731387 | -14815.5 |

**********

**ACTIVE POPULATION / UNEMPLOYMENT**

Ordinary Least Squares Estimation

**********

Dependent variable is T

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **1858182** | **54511.5** | **34.0879[.000]** |
| **U** | **-.37181** | **.18002** | **-2.0654[.073]** |

**********

R-Squared .34779 R-Bar-Squared .26626

S.E. of Regression 22657.1 F-stat. F( 1, 8) 4.2660[.073]

Mean of Dependent Variable 1746569 S.D. of Dependent Variable 26450.5

Residual Sum of Squares 4.11E+09 Equation Log-likelihood -113.3560

Akaike Info. Criterion -115.3560 Schwarz Bayesian Criterion -115.6586

DW-statistic 1.0021

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|

**********

| | | |
|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .83793[.360] | *F( 1, 7)= .64020[.450]* |
| * B:Functional Form * | CHSQ( 1)= 7.2409[.007] | *F( 1, 7)= 18.3706[.004]* |

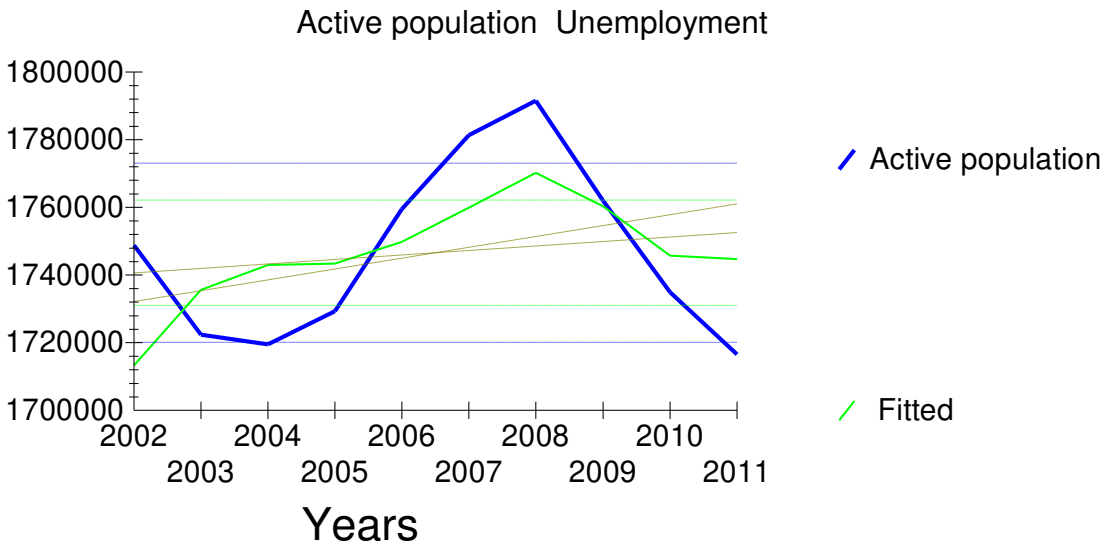
```
*          *          *          *
* C:Normality      *CHSQ(  2)=  .74279[.690]*      Not applicable      *
*          *          *          *
* D:Heteroscedasticity*CHSQ(  1)=  3.1990[.074]*F(  1,  8)=  3.7630[.088]*
********************************************************************************
```

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of T on:

CON U

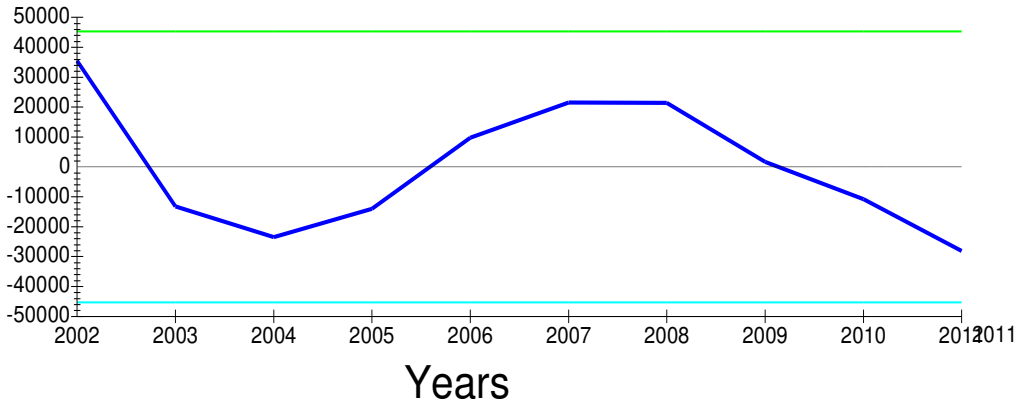
10 observations used for estimation from 2002 to 2011

**********

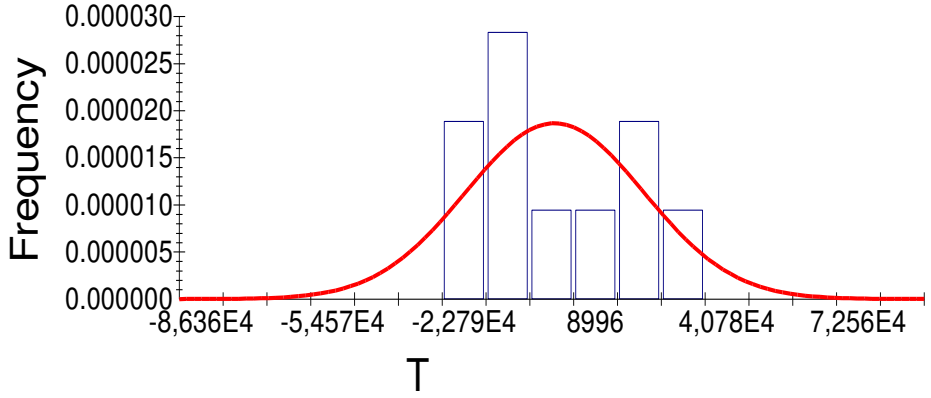
| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 1748756 | 1713273 | 35482.7 |
| 2003 | 1722313 | 1735560 | -13247.1 |
| 2004 | 1719509 | 1742968 | -23459.0 |
| 2005 | 1729312 | 1743391 | -14078.7 |
| 2006 | 1759492 | 1749757 | 9735.2 |
| 2007 | 1781357 | 1759858 | 21499.0 |
| 2008 | 1791546 | 1770160 | 21386.3 |
| 2009 | 1761958 | 1760332 | 1626.3 |
| 2010 | 1734879 | 1745738 | -10858.9 |
| 2011 | 1716571 | 1744657 | -28085.7 |

**********

# Plot of Residuals and Two Standard Error Bands




# Histogram of Residuals and the Normal Density



**Employment construction / unemployment**

Ordinary Least Squares Estimation

**********

Dependent variable is V

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **204034.5** | **16080.4** | **12.6884[.000]** |
| **U** | **-.27976** | **.053103** | **-5.2683[.001]** |

**********

R-Squared .77625 R-Bar-Squared .74829

S.E. of Regression 6683.7 F-stat. F( 1, 8) 27.7549[.001]

Mean of Dependent Variable 120053.1 S.D. of Dependent Variable 13321.7

Residual Sum of Squares 3.57E+08 Equation Log-likelihood -101.1479

Akaike Info. Criterion -103.1479 Schwarz Bayesian Criterion -103.4505

DW-statistic 1.4384

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .39478[.530]* | F( 1, 7)= .28771[.608]* | |
| * B:Functional Form * | CHSQ( 1)= .54785[.459]* | F( 1, 7)= .40572[.544]* | |
| * C:Normality * | CHSQ( 2)= .61280[.736]* | Not applicable * | |

* D:Heteroscedasticity*CHSQ( 1)= 1.3368[.248]*F( 1, 8)= 1.2344[.299]*

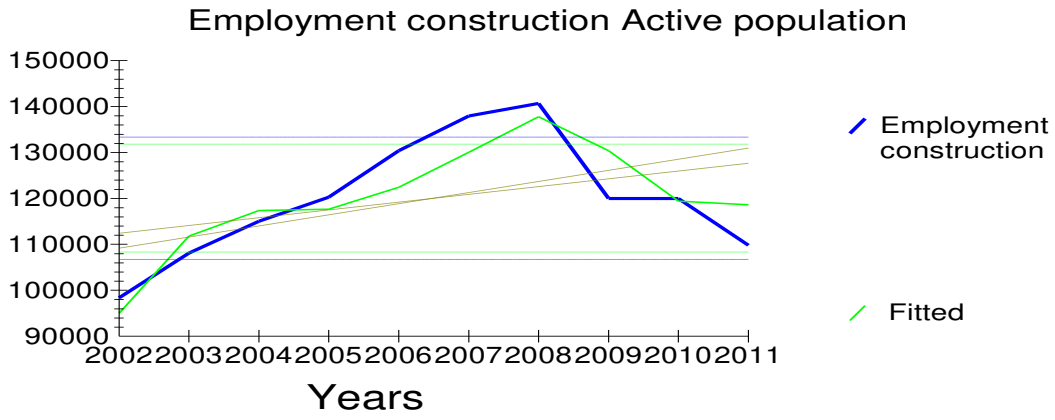
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of V on:

CON U

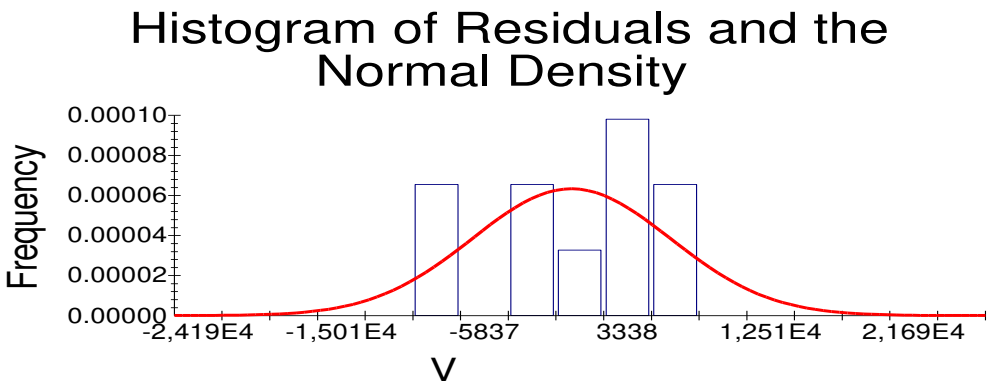
10 observations used for estimation from 2002 to 2011

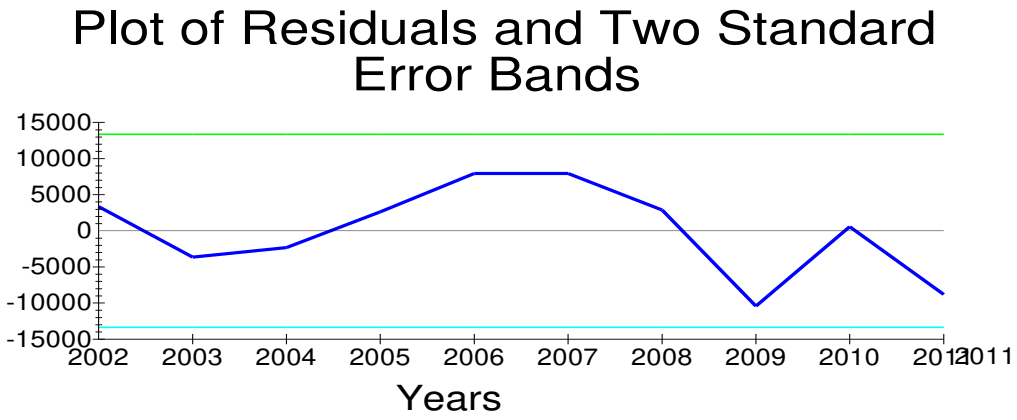
**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 98344.0 | 94999.9 | 3344.1 |
| 2003 | 108101.0 | 111769.4 | -3668.4 |
| 2004 | 115011.0 | 117343.3 | -2332.3 |
| 2005 | 120290.0 | 117661.4 | 2628.6 |
| 2006 | 130375.0 | 122451.5 | 7923.5 |
| 2007 | 137978.0 | 130052.1 | 7925.9 |

| | | | |
|---|---|---|---|
| 2008 | 140661.0 | 137803.4 | 2857.6 |
| 2009 | 119984.0 | 130408.5 | -10424.5 |
| 2010 | 119984.0 | 119427.6 | 556.4473 |
| 2011 | 109803.0 | 118614.0 | -8811.0 |

**********



**Salary gross construction/ average gross salary**

Ordinary Least Squares Estimation

**********

Dependent variable is X

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **508.5996** | **328.3504** | **1.5490[.160]** |
| **Z** | **.76674** | **.048149** | **15.9244[.000]** |

**********

R-Squared .96942 R-Bar-Squared .96559

S.E. of Regression 133.0320 F-stat. F( 1, 8) 253.5875[.000]

Mean of Dependent Variable 5694.3 S.D. of Dependent Variable 717.2048

Residual Sum of Squares 141580.0 Equation Log-likelihood -61.9796

Akaike Info. Criterion -63.9796 Schwarz Bayesian Criterion -64.2821

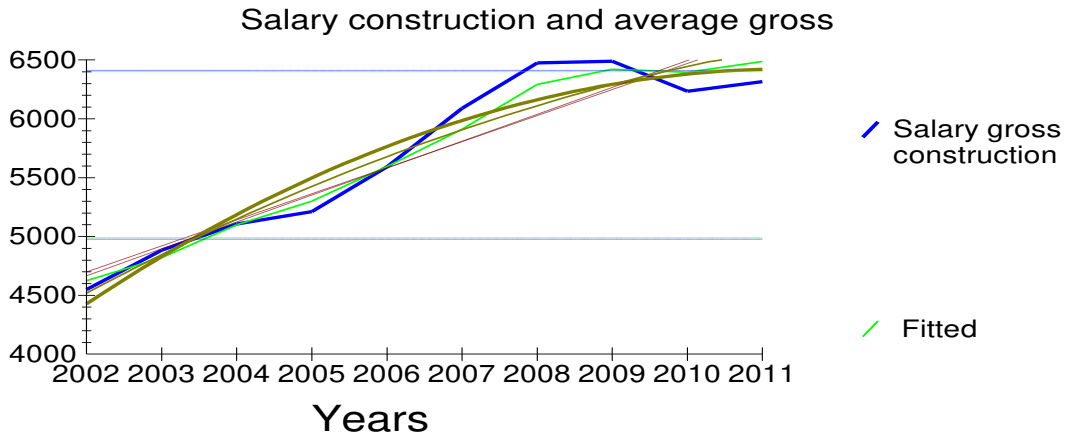
DW-statistic .96216

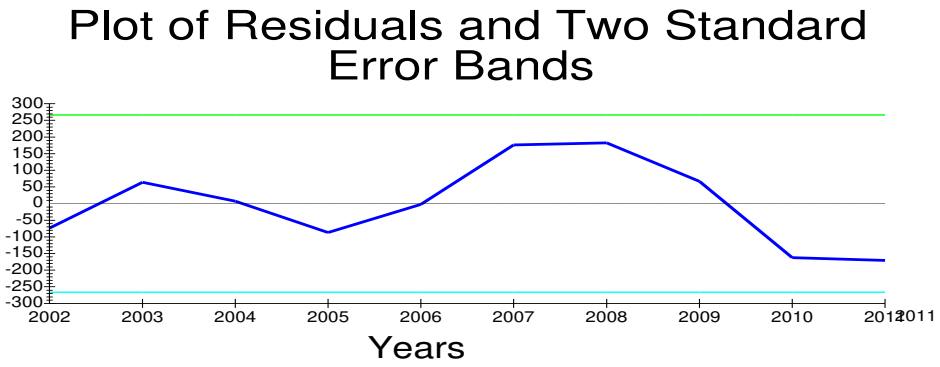
**********

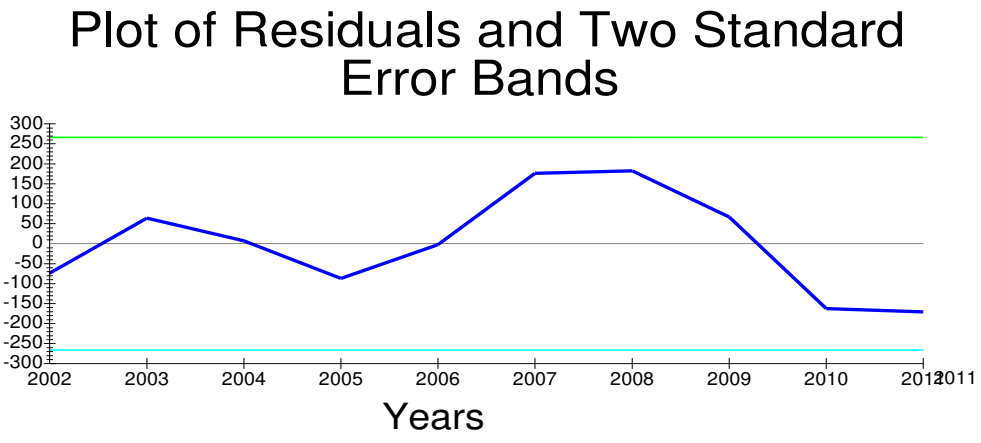
Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 2.1897[.139] | *F( 1, 7)= 1.9625[.204]* |
| * B:Functional Form | *CHSQ( 1)= 1.1443[.285] | *F( 1, 7)= .90452[.373]* |
| * C:Normality | *CHSQ( 2)= .55282[.759]* | Not applicable * |
| * D:Heteroscedasticity | *CHSQ( 1)= 4.5238[.033] | *F( 1, 8)= 6.6086[.033]* |


Salary construction and average gross
6500
6000
5500
5000
4500
4000
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years
Salary gross construction
Fitted


Plot of Residuals and Two Standard Error Bands
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years


Plot of Residuals and Two Standard Error Bands
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years

Residuals and Fitted Values of Regression

**********

Based on OLS regression of X on:

CON Z

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4549.0 | 4622.9 | -73.9326 |
| 2003 | 4884.0 | 4820.0 | 64.0149 |
| 2004 | 5105.0 | 5097.5 | 7.4546 |
| 2005 | 5212.0 | 5299.2 | -87.1983 |
| 2006 | 5593.0 | 5595.2 | -2.1604 |
| 2007 | 6088.0 | 5911.8 | 176.1755 |
| 2008 | 6475.0 | 6292.9 | 182.1052 |
| 2009 | 6488.0 | 6420.9 | 67.0594 |
| 2010 | 6234.0 | 6396.4 | -162.4049 |
| 2011 | 6315.0 | 6486.1 | -171.1136 |

**********

**SALARY GROSS CONSTRUCTION/ EMPLOYMENT CONSTRUCTION**

Ordinary Least Squares Estimation

**********

Dependent variable is X

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **1706.8** | **1808.3** | **.94384[.373]** |
| **V** | **.033215** | **.014980** | **2.2172[.057]** |

**********

R-Squared .38062 R-Bar-Squared .30320

S.E. of Regression 598.6843 F-stat. F( 1, 8) 4.9162[.057]

Mean of Dependent Variable 5694.3 S.D. of Dependent Variable 717.2048

Residual Sum of Squares 2867383 Equation Log-likelihood -77.0210

Akaike Info. Criterion -79.0210 Schwarz Bayesian Criterion -79.3236

DW-statistic .30844

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 7.2156[.007] | *F( 1, 7)= 18.1398[.004]* |
| * B:Functional Form | *CHSQ( 1)= .69214[.405] | *F( 1, 7)= .52053[.494]* |
| * C:Normality | *CHSQ( 2)= 1.4191[.492]* | Not applicable * |
| * D:Heteroscedasticity | *CHSQ( 1)= 1.7031[.192] | *F( 1, 8)= 1.6422[.236]* |

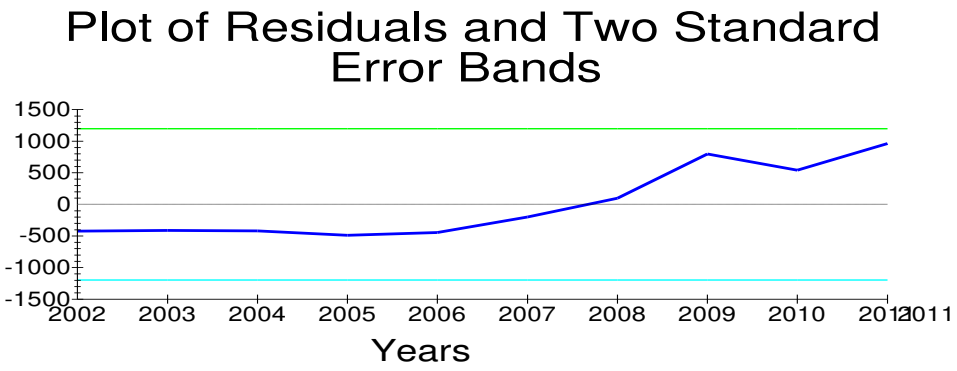
**********

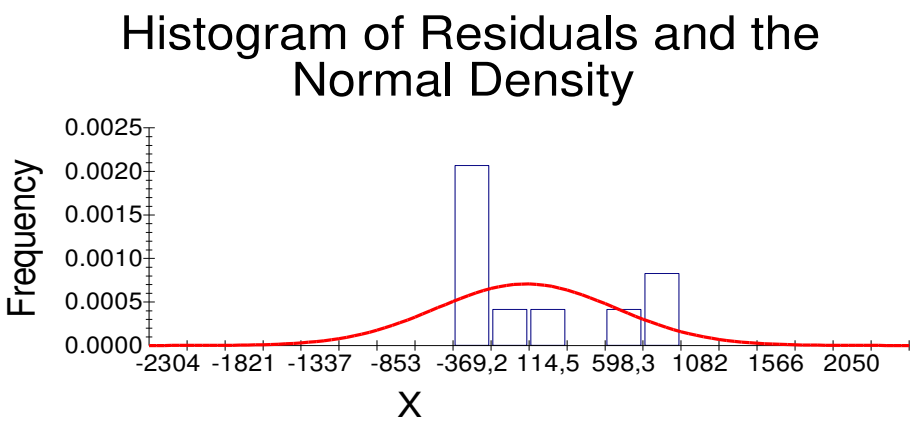
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of X on:

CON V

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4549.0 | 4973.2 | -424.2424 |
| 2003 | 4884.0 | 5297.3 | -413.3166 |
| 2004 | 5105.0 | 5526.8 | -421.8290 |
| 2005 | 5212.0 | 5702.2 | -490.1685 |
| 2006 | 5593.0 | 6037.1 | -444.1371 |
| 2007 | 6088.0 | 6289.7 | -201.6671 |
| 2008 | 6475.0 | 6378.8 | 96.2183 |
| 2009 | 6488.0 | 5692.0 | 795.9951 |
| 2010 | 6234.0 | 5692.0 | 541.9951 |
| 2011 | 6315.0 | 5353.8 | 961.1523 |

**********

**SALARY GROSS CONSTRUCTION / GDP MIL USD**

Ordinary Least Squares Estimation

**********

Dependent variable is X

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **3616.5** | **130.1071** | **27.7966[.000]** |
| **Y** | **.043922** | **.0026173** | **16.7816[.000]** |

**********

R-Squared .97238 R-Bar-Squared .96893

S.E. of Regression 126.4293 F-stat. F( 1, 8) 281.6230[.000]

Mean of Dependent Variable 5694.3 S.D. of Dependent Variable 717.2048

Residual Sum of Squares 127875.0 Equation Log-likelihood -61.4705

Akaike Info. Criterion -63.4705 Schwarz Bayesian Criterion -63.7731

DW-statistic 2.7514

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 1.7257[.189] | *F( 1, 7)= 1.4599[.266] | * |
| * B:Functional Form | *CHSQ( 1)= 3.9023[.048] | *F( 1, 7)= 4.4798[.072] | * |
| * C:Normality | *CHSQ( 2)= .011086[.994] | * Not applicable | * |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= 1.6417[.200]*F( 1, 8)= 1.5714[.245]*

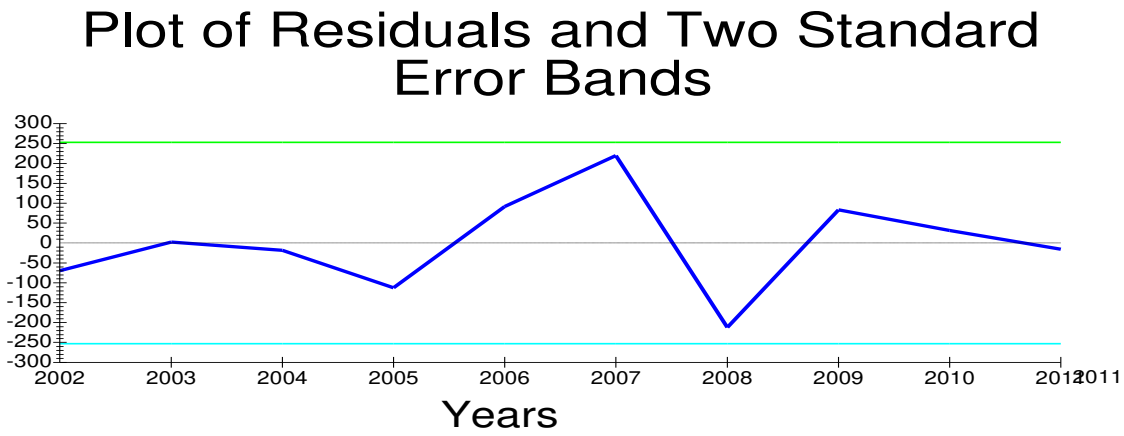
**********

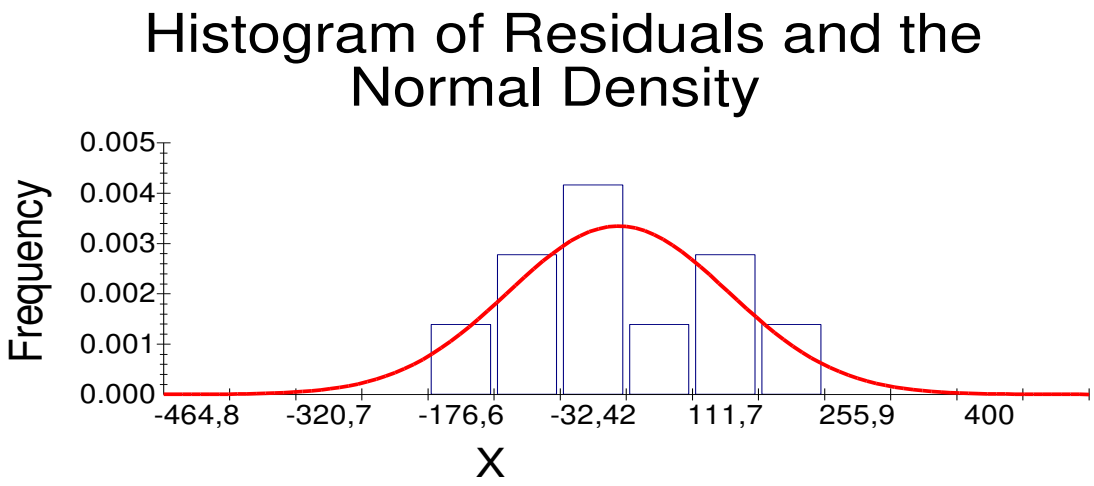
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




**EMPLOYMENT CONSTRUCTION CON GDP MIL USD**

Ordinary Least Squares Estimation

**********

Dependent variable is V

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **96584.3** | **11636.6** | **8.3001[.000]** |
| **Y** | **.49611** | **.23409** | **2.1194[.067]** |

**********

R-Squared .35957 R-Bar-Squared .27952

S.E. of Regression 11307.6 F-stat. F( 1, 8) 4.4917[.067]

Mean of Dependent Variable 120053.1 S.D. of Dependent Variable 13321.7

Residual Sum of Squares 1.02E+09 Equation Log-likelihood -106.4060

Akaike Info. Criterion -108.4060 Schwarz Bayesian Criterion -108.7086

DW-statistic .62475

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

* * * *

* A:Serial Correlation*CHSQ( 1)= 4.5362[.033]*F( 1, 7)= 5.8115[.047]*

* * * *

* B:Functional Form *CHSQ( 1)= 1.5115[.219]*F( 1, 7)= 1.2465[.301]*

* * * *

* C:Normality *CHSQ( 2)= .46206[.794]* Not applicable *

* * * *

* D:Heteroscedasticity*CHSQ( 1)= 1.3212[.250]*F( 1, 8)= 1.2179[.302]*

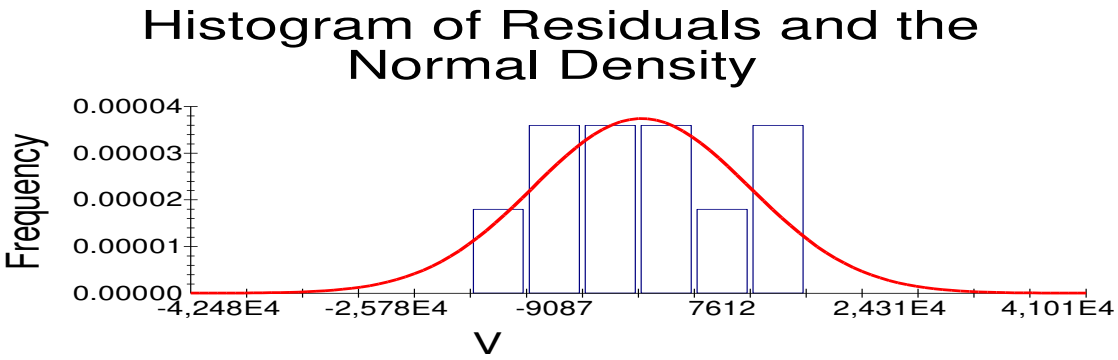
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




Residuals and Fitted Values of Regression

**********

Based on OLS regression of V on:

CON Y

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 98344.0 | 107901.6 | -9557.6 |
| 2003 | 108101.0 | 110876.8 | -2775.8 |
| 2004 | 115011.0 | 113606.0 | 1405.0 |
| 2005 | 120290.0 | 115874.2 | 4415.8 |
| 2006 | 130375.0 | 117875.0 | 12500.0 |
| 2007 | 137978.0 | 122017.1 | 15960.9 |
| 2008 | 140661.0 | 131272.6 | 9388.4 |
| 2009 | 119984.0 | 128076.6 | -8092.6 |
| 2010 | 119984.0 | 125792.5 | -5808.5 |
| 2011 | 109803.0 | 127238.7 | -17435.7 |

**********

**GDP MIL USD /CAPITAL GOODS**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **95137.8** | **63463.3** | **1.4991[.172]** |
| **O** | **-459.9280** | **608.1583** | **-.75626[.471]** |

**********

R-Squared .066722 R-Bar-Squared -.049938

S.E. of Regression 16498.9 F-stat. F( 1, 8) .57193[.471]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 2.18E+09 Equation Log-likelihood -110.1842

Akaike Info. Criterion -112.1842 Schwarz Bayesian Criterion -112.4868

DW-statistic .33845

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|

**********

| | | |
|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 5.4173[.020] | *F( 1, 7)= 8.2750[.024]* |
| * B:Functional Form | *CHSQ( 1)= .63809[.424] | *F( 1, 7)= .47710[.512]* |

| | | | |
|---|---|---|---|
| * C:Normality | *CHSQ( 2)= .60938[.737]* | Not applicable | * |
| * D:Heteroscedasticity | *CHSQ( 1)= .10721[.743]* | F( 1, 8)= .086699[.776]* | |

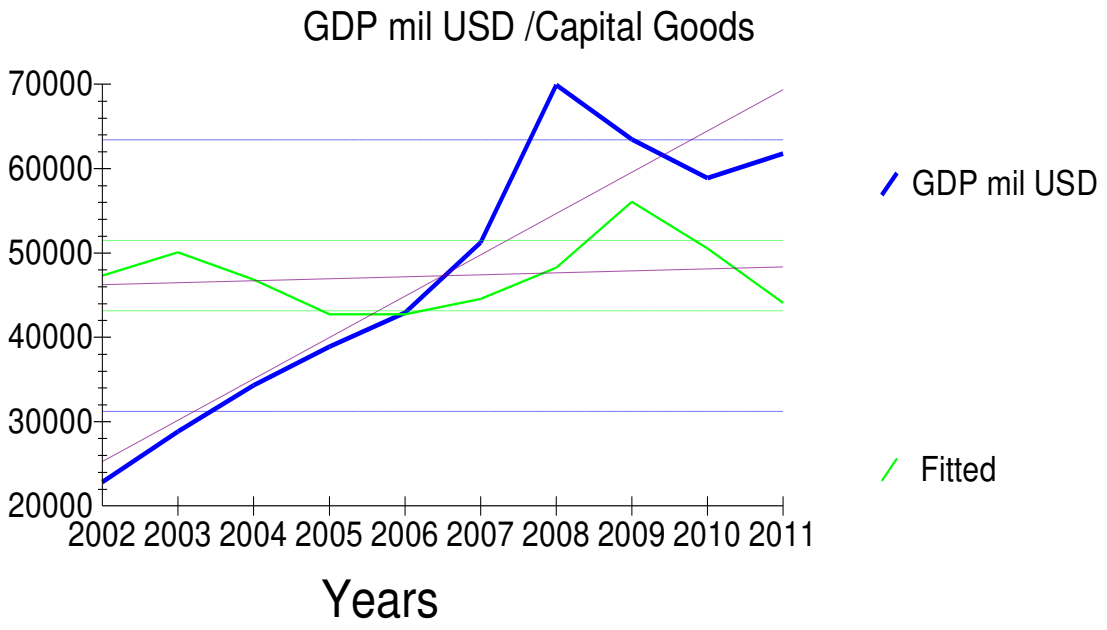
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

CON O

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 47305.3 | -24493.3 |
| 2003 | 28809.0 | 50064.9 | -21255.9 |
| 2004 | 34310.0 | 46845.4 | -12535.4 |
| 2005 | 38882.0 | 42706.0 | -3824.0 |
| 2006 | 42915.0 | 42706.0 | 208.9799 |
| 2007 | 51264.0 | 44545.7 | 6718.3 |
| 2008 | 69920.0 | 48225.2 | 21694.8 |
| 2009 | 63478.0 | 56043.9 | 7434.1 |
| 2010 | 58874.0 | 50524.8 | 8349.2 |
| 2011 | 61789.0 | 44085.8 | 17703.2 |

**********

**GDP MIL USD / INDUSTRIAL PRODUCTION**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **274409.5** | **89173.8** | **3.0772[.015]** |
| **N** | **-2241.9** | **879.4027** | **-2.5493[.034]** |

**********

R-Squared .44824 R-Bar-Squared .37927

S.E. of Regression 12686.0 F-stat. F( 1, 8) 6.4991[.034]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 1.29E+09 Equation Log-likelihood -107.5562

Akaike Info. Criterion -109.5562 Schwarz Bayesian Criterion -109.8588

DW-statistic 1.1414

**********

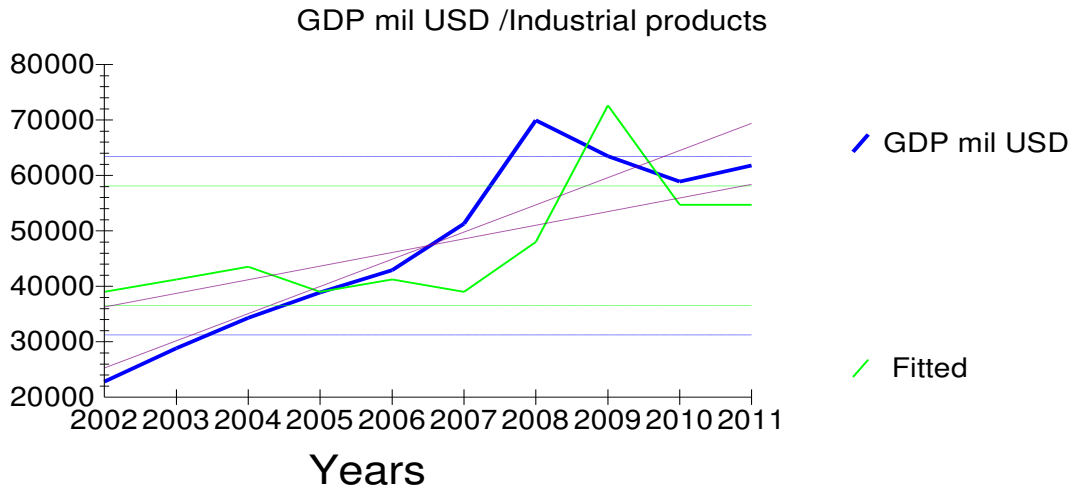
Diagnostic Tests

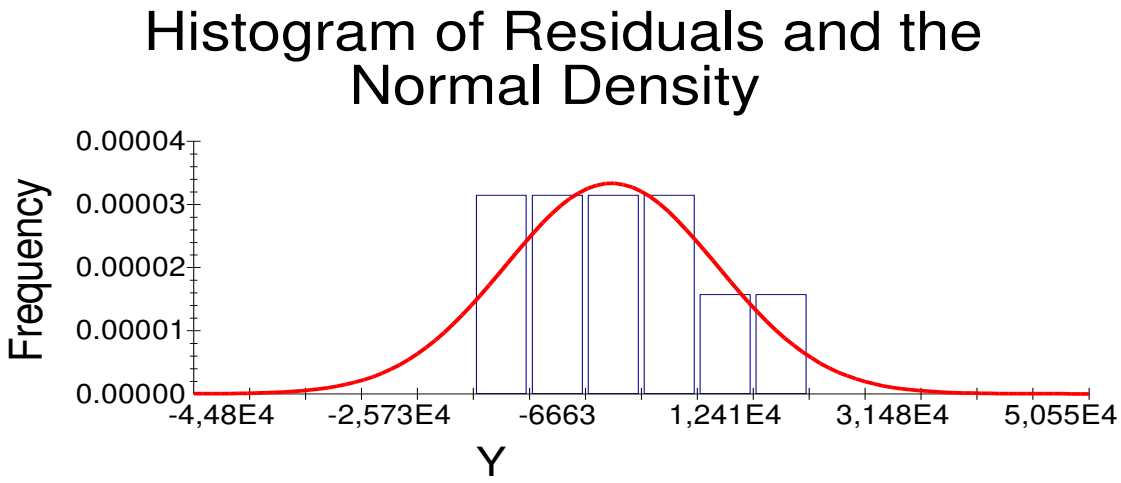
**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 1.7079[.191]* | F( 1, 7)= 1.4417[.269]* | |
| * B:Functional Form * | CHSQ( 1)= 2.4921[.114]* | F( 1, 7)= 2.3235[.171]* | |
| * C:Normality * | CHSQ( 2)= .47321[.789]* | Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= .17254[.678]*F( 1, 8)= .14046[.718]*

**********



Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

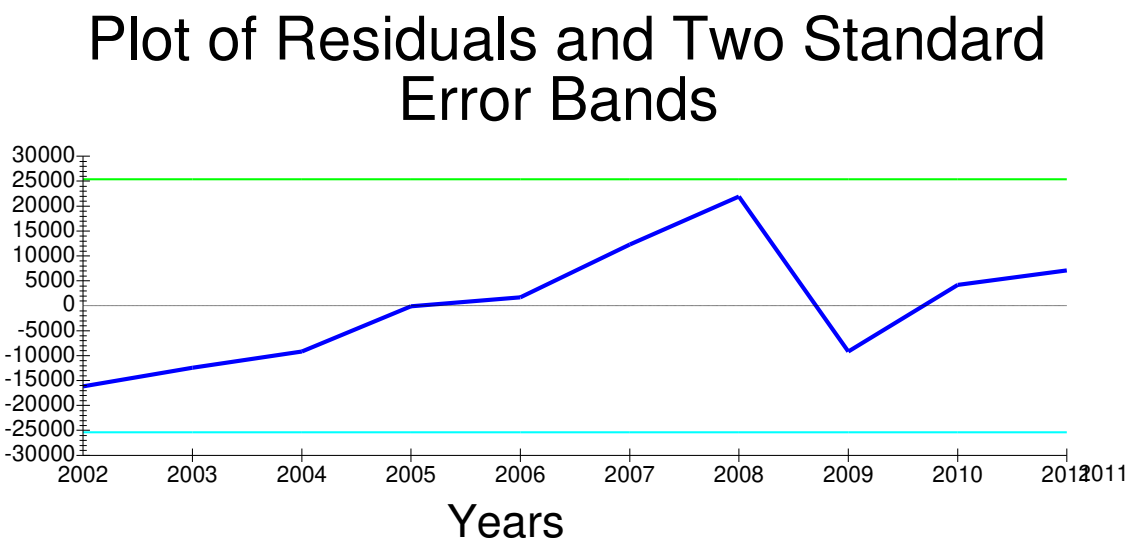
CON N

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 39010.3 | -16198.3 |
| 2003 | 28809.0 | 41252.2 | -12443.2 |
| 2004 | 34310.0 | 43494.1 | -9184.1 |
| 2005 | 38882.0 | 39010.3 | -128.2787 |
| 2006 | 42915.0 | 41252.2 | 1662.8 |
| 2007 | 51264.0 | 39010.3 | 12253.7 |
| 2008 | 69920.0 | 47977.9 | 21942.1 |
| 2009 | 63478.0 | 72638.7 | -9160.7 |
| 2010 | 58874.0 | 54703.6 | 4170.4 |
| 2011 | 61789.0 | 54703.6 | 7085.4 |

**********



**CPI / UNEMPLOYMENT**

Ordinary Least Squares Estimation

**********

Dependent variable is L

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **109.4102** | **2.8484** | **38.4117[.000]** |
| **U** | **-.2369E-4** | **.9406E-5** | **-2.5181[.036]** |

**********

R-Squared .44215 R-Bar-Squared .37242

S.E. of Regression 1.1839 F-stat. F( 1, 8) 6.3408[.036]

Mean of Dependent Variable 102.3000 S.D. of Dependent Variable 1.4944

Residual Sum of Squares 11.2128 Equation Log-likelihood -14.7617

Akaike Info. Criterion -16.7617 Schwarz Bayesian Criterion -17.0643

DW-statistic 2.6593

**********

Diagnostic Tests

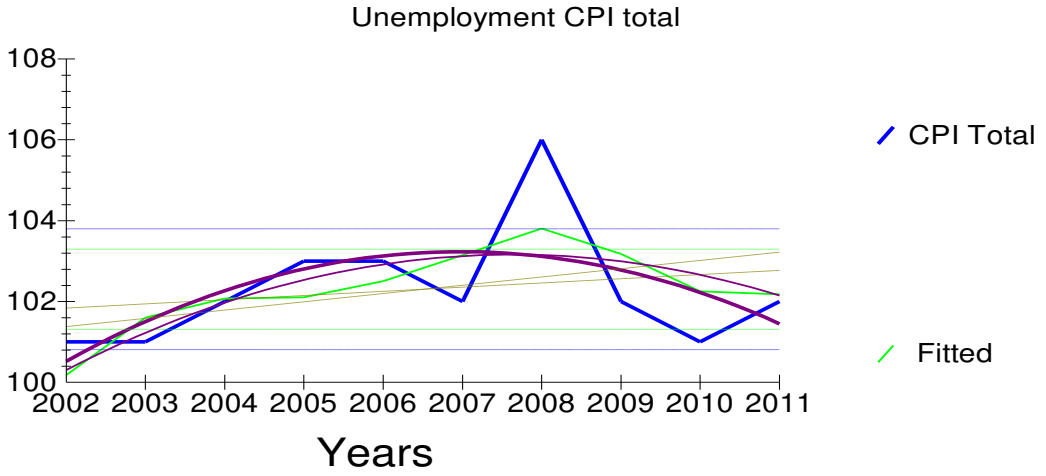
**********

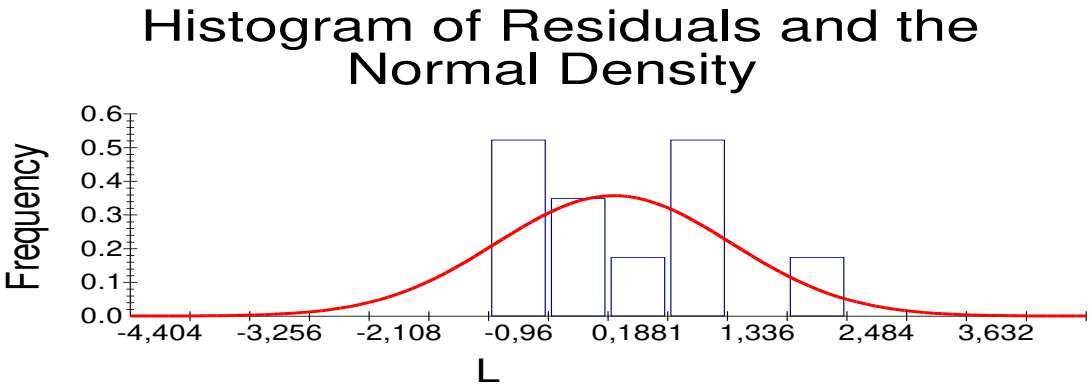
| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|

**********

| | | | |
|---|---|---|---|
| * | * | * | * |
| * A:Serial Correlation* | CHSQ( 1)= 1.3130[.252]* | F( 1, 7)= 1.0580[.338]* | |
| * | * | * | * |
| * B:Functional Form * | CHSQ( 1)= 2.5338[.111]* | F( 1, 7)= 2.3756[.167]* | |

```
*          *          *          *
* C:Normality      *CHSQ(  2)=  .66485[.717]*     Not applicable     *
*          *          *          *
* D:Heteroscedasticity*CHSQ(  1)=  3.7334[.053]*F(  1,  8)=  4.7661[.061]*
********************************************************************************
A:Lagrange multiplier test of residual serial correlation
```



Residuals and Fitted Values of Regression

**********

Based on OLS regression of L on:

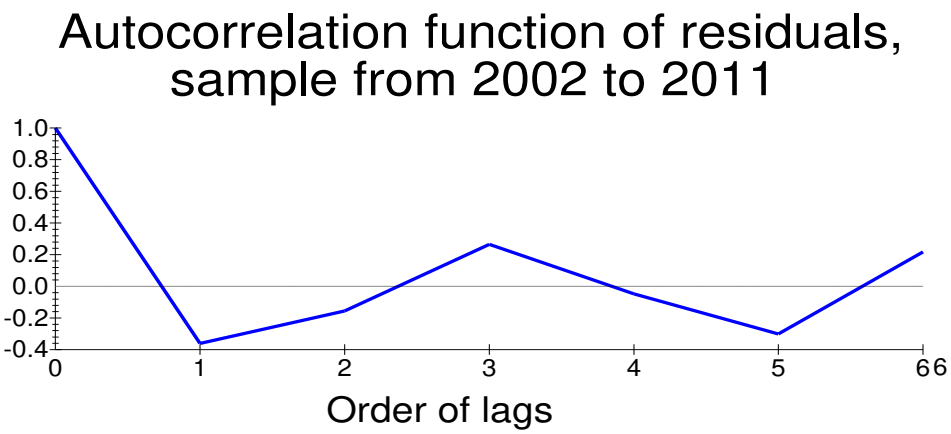
CON U

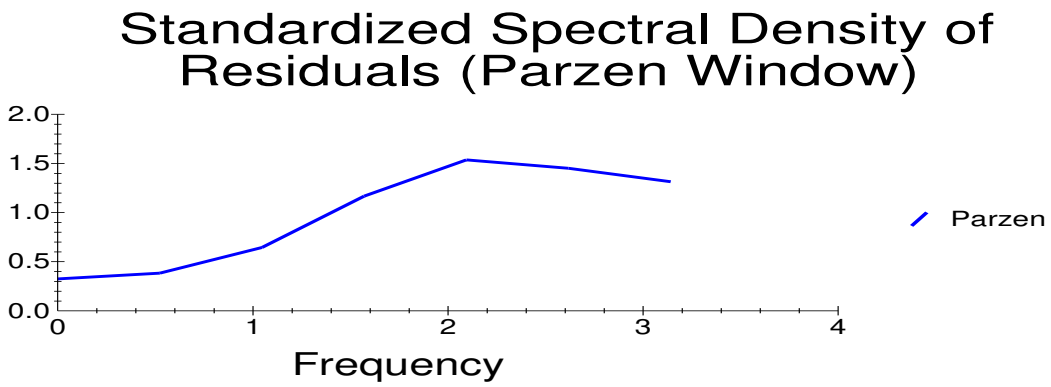
10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 101.0000 | 100.1789 | .82110 |
| 2003 | 101.0000 | 101.5987 | -.59867 |
| 2004 | 102.0000 | 102.0706 | -.070580 |
| 2005 | 103.0000 | 102.0975 | .90249 |
| 2006 | 103.0000 | 102.5031 | .49694 |
| 2007 | 102.0000 | 103.1466 | -1.1466 |
| 2008 | 106.0000 | 103.8028 | 2.1972 |
| 2009 | 102.0000 | 103.1767 | -1.1767 |
| 2010 | 101.0000 | 102.2470 | -1.2470 |
| 2011 | 102.0000 | 102.1782 | -.17816 |

**********






**CPI ELECTRICITY HOUSING / UNEMPLOYMENT**

Ordinary Least Squares Estimation

**********

Dependent variable is M

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **109.6863** | **4.2543** | **25.7822[.000]** |
| **U** | **-.1928E-4** | **.1405E-4** | **-1.3720[.207]** |

**********

R-Squared .19048 R-Bar-Squared .089287

S.E. of Regression 1.7683 F-stat. F( 1, 8) 1.8824[.207]

Mean of Dependent Variable 103.9000 S.D. of Dependent Variable 1.8529

Residual Sum of Squares 25.0143 Equation Log-likelihood -18.7737

Akaike Info. Criterion -20.7737 Schwarz Bayesian Criterion -21.0763

DW-statistic 3.0445

**********

Diagnostic Tests

**********

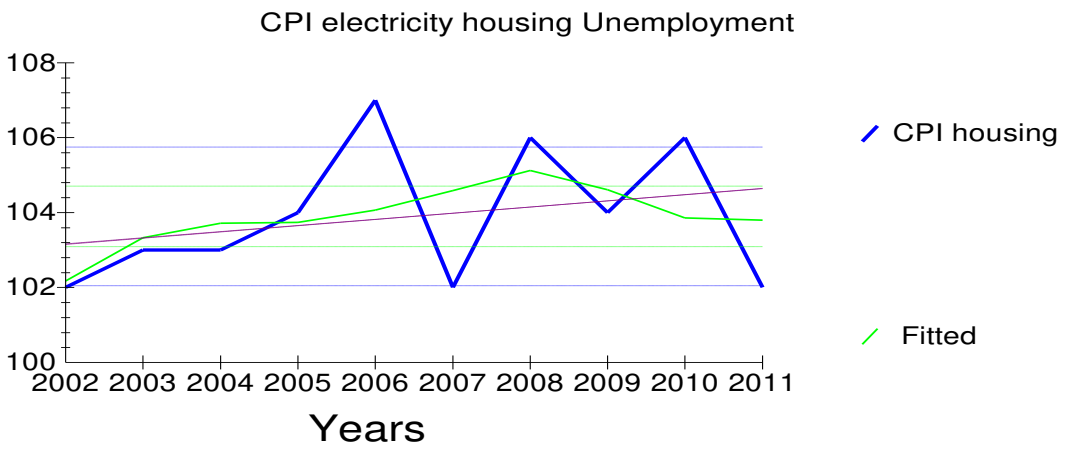
```
*  Test Statistics *      LM Version      *       F Version       *
********************************************************************************
                        *           *             *             *
* A:Serial Correlation*CHSQ(  1)=  4.0327[.045]*F(  1,  7)=  4.7307[.066]*
                        *           *             *             *
* B:Functional Form  *CHSQ(  1)= .037643[.846]*F(  1,  7)= .026450[.875]*
                        *           *             *             *
*  C:Normality       *CHSQ(  2)=  .29080[.865]*     Not applicable     *
                        *           *             *             *
* D:Heteroscedasticity*CHSQ(  1)=  .79963[.371]*F(  1,  8)=  .69531[.429]*
********************************************************************************
```

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



**EMPLOYMENT CONSTRUCTION/ CPI TOTAL**

Ordinary Least Squares Estimation

**********

Dependent variable is V

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-524898.5** | **227960.4** | **-2.3026[.050]** |
| **L** | **6304.5** | **2228.1** | **2.8295[.022]** |

**********

R-Squared .50019 R-Bar-Squared .43771

S.E. of Regression 9989.4 F-stat. F( 1, 8) 8.0061[.022]

Mean of Dependent Variable 120053.1 S.D. of Dependent Variable 13321.7

Residual Sum of Squares 7.98E+08 Equation Log-likelihood -105.1665

Akaike Info. Criterion -107.1665 Schwarz Bayesian Criterion -107.4691

DW-statistic 1.5429

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= .10045[.751]* | F( 1, 7)= .071029[.798]* | |
| * B:Functional Form * | CHSQ( 1)= .57006[.450]* | F( 1, 7)= .42316[.536]* | |
| * C:Normality * | CHSQ( 2)= .92658[.629]* | Not applicable * | |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= .65464[.418]*F( 1, 8)= .56040[.476]*

**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values


Residuals and Fitted Values of Regression

**********

Based on OLS regression of V on:

CON  L

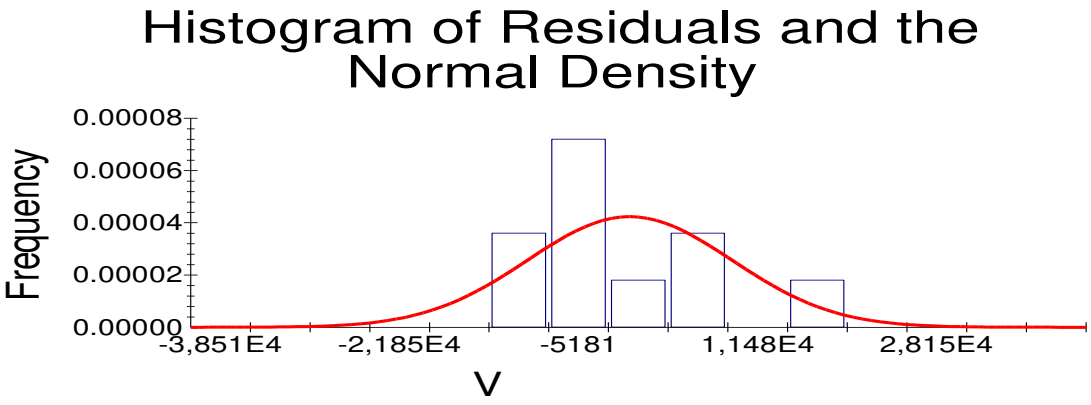
10 observations used for estimation from 2002 to 2011

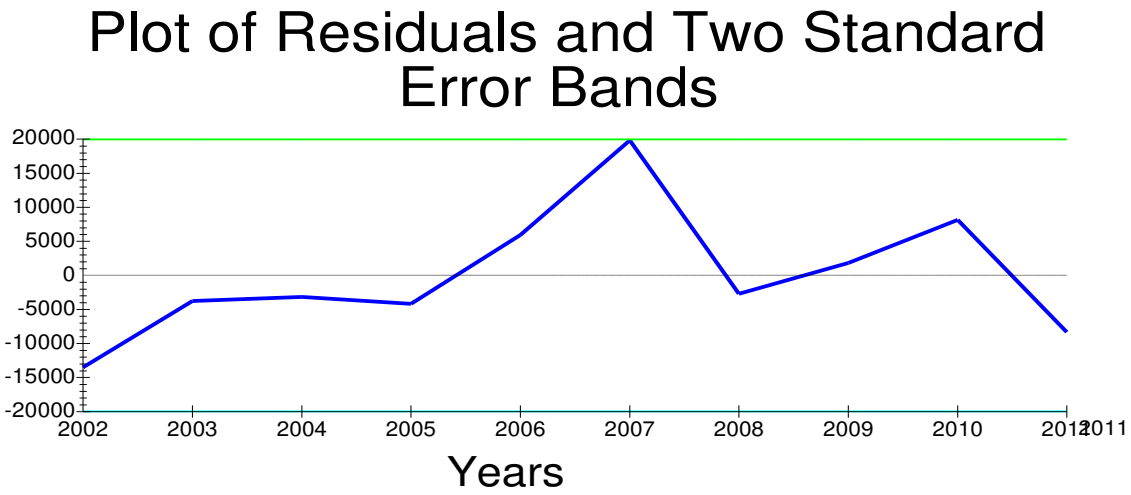
**********

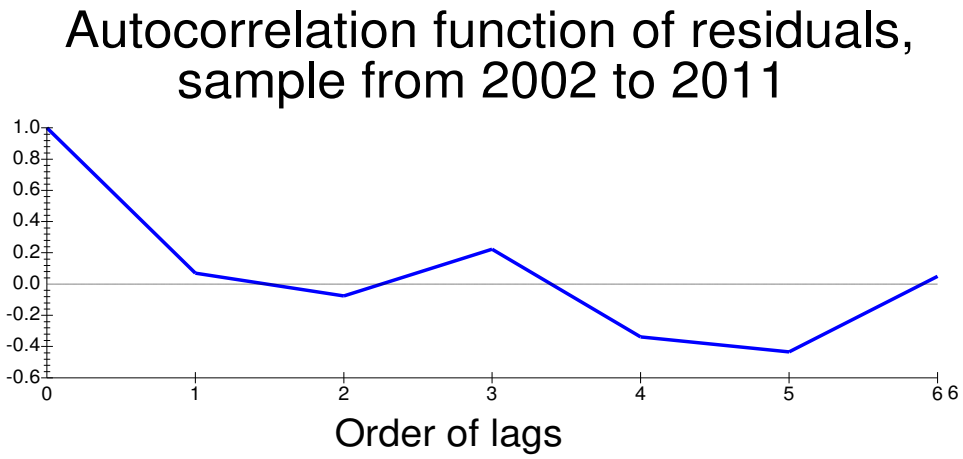
| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 98344.0 | 111857.2 | -13513.2 |
| 2003 | 108101.0 | 111857.2 | -3756.2 |
| 2004 | 115011.0 | 118161.7 | -3150.7 |
| 2005 | 120290.0 | 124466.3 | -4176.3 |

| | | | |
|---|---|---|---|
| 2006 | 130375.0 | 124466.3 | 5908.7 |
| 2007 | 137978.0 | 118161.7 | 19816.3 |
| 2008 | 140661.0 | 143379.8 | -2718.8 |
| 2009 | 119984.0 | 118161.7 | 1822.3 |
| 2010 | 119984.0 | 111857.2 | 8126.8 |
| 2011 | 109803.0 | 118161.7 | -8358.7 |

**********






**EMPLOYMENT CONSTRUCTION / CPI HOUSING ELECTRICITY GAS**

Ordinary Least Squares Estimation

**********

Dependent variable is V

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-273711.4** | **224462.9** | **-1.2194[.257]** |
| **M** | **3789.8** | **2160.1** | **1.7545[.117]** |

**********

R-Squared .27787 R-Bar-Squared .18760

S.E. of Regression 12007.3 F-stat. F( 1, 8) 3.0783[.117]

Mean of Dependent Variable 120053.1 S.D. of Dependent Variable 13321.7

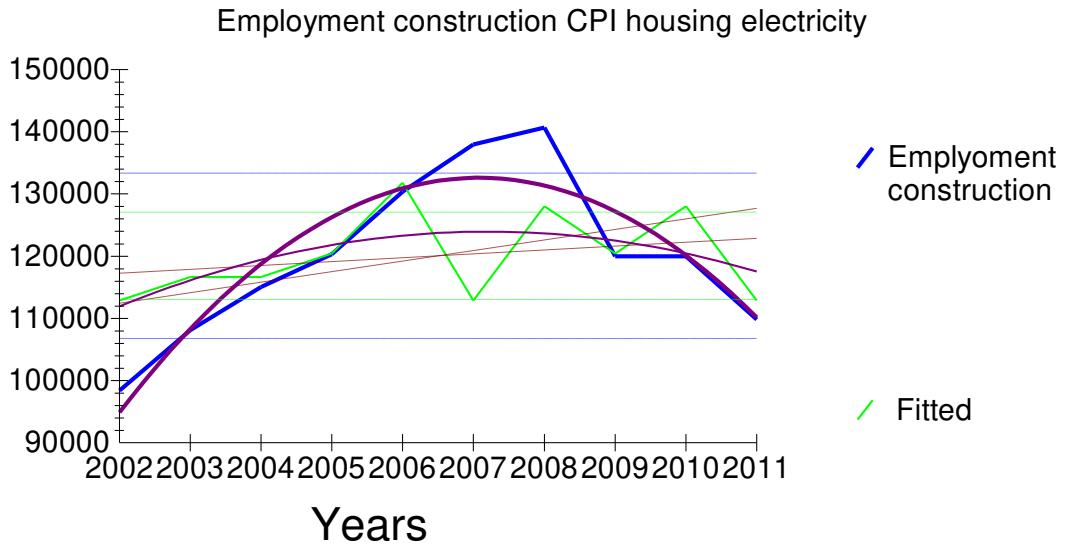
Residual Sum of Squares 1.15E+09 Equation Log-likelihood -107.0064

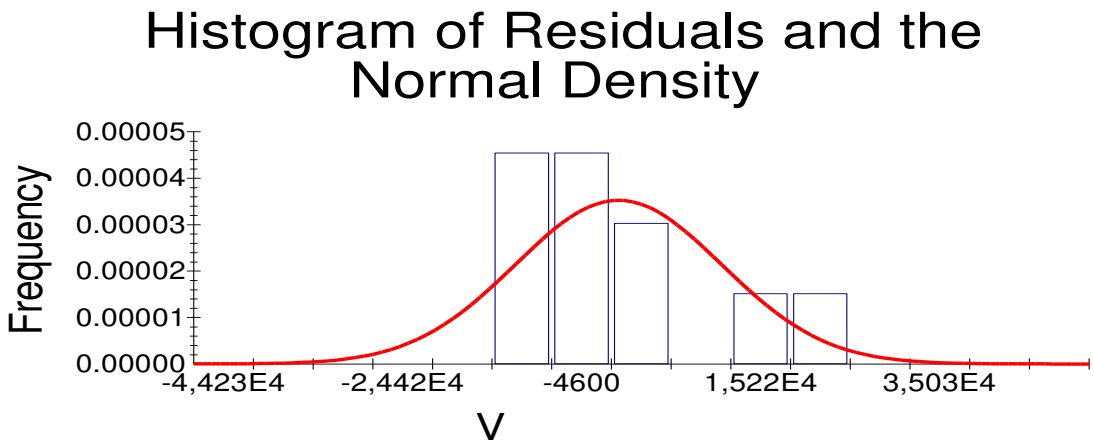
Akaike Info. Criterion -109.0064 Schwarz Bayesian Criterion -109.3090

DW-statistic 1.0419

**********

**********


Employment construction CPI housing electricity
150000
140000
130000
120000
110000
100000
90000
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years
Emplyoment construction
Fitted


Histogram of Residuals and the Normal Density
Frequency
0.00005
0.00004
0.00003
0.00002
0.00001
0.00000
-4,423E4
-2,442E4
-4600
1,522E4
3,503E4
V

Residuals and Fitted Values of Regression

**********

Based on OLS regression of V on:

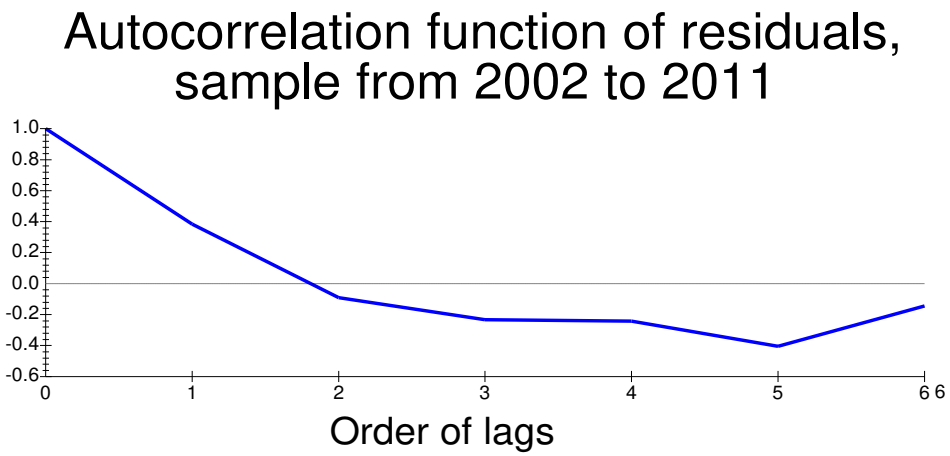
CON M

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 98344.0 | 112852.4 | -14508.4 |
| 2003 | 108101.0 | 116642.2 | -8541.2 |
| 2004 | 115011.0 | 116642.2 | -1631.2 |
| 2005 | 120290.0 | 120432.1 | -142.0841 |
| 2006 | 130375.0 | 131801.6 | -1426.6 |
| 2007 | 137978.0 | 112852.4 | 25125.6 |
| 2008 | 140661.0 | 128011.8 | 12649.2 |
| 2009 | 119984.0 | 120432.1 | -448.0841 |
| 2010 | 119984.0 | 128011.8 | -8027.8 |
| 2011 | 109803.0 | 112852.4 | -3049.4 |

**********




**GDP MIL USD / BUIDLING TOTAL $m^2$**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **85971.1** | **25989.1** | **3.3080[.011]** |
| **F** | **-.0083356** | **.0055079** | **-1.5134[.169]** |

**********

R-Squared .22257 R-Bar-Squared .12539

S.E. of Regression 15058.4 F-stat. F( 1, 8) 2.2904[.169]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 1.81E+09 Equation Log-likelihood -109.2706

Akaike Info. Criterion -111.2706 Schwarz Bayesian Criterion -111.5732

DW-statistic .51130

**********

Diagnostic Tests

**********

* Test Statistics * LM Version * F Version *

**********

* * * *

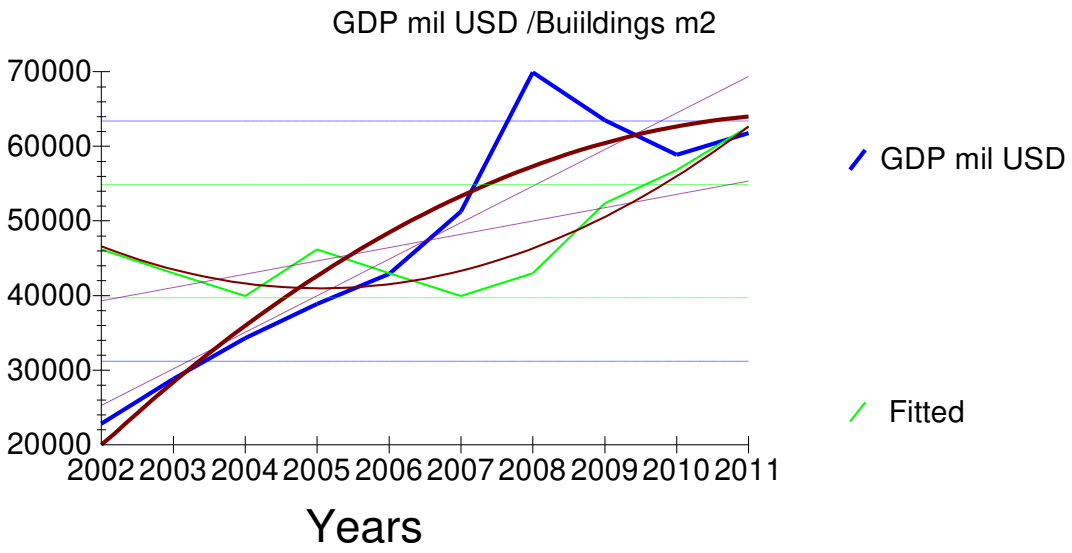
* A:Serial Correlation*CHSQ( 1)= 4.5981[.032]*F( 1, 7)= 5.9583[.045]*

* * * *

* B:Functional Form *CHSQ( 1)= .16869[.681]*F( 1, 7)= .12011[.739]*

* * * *

* C:Normality *CHSQ( 2)= .13549[.934]* Not applicable *




Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

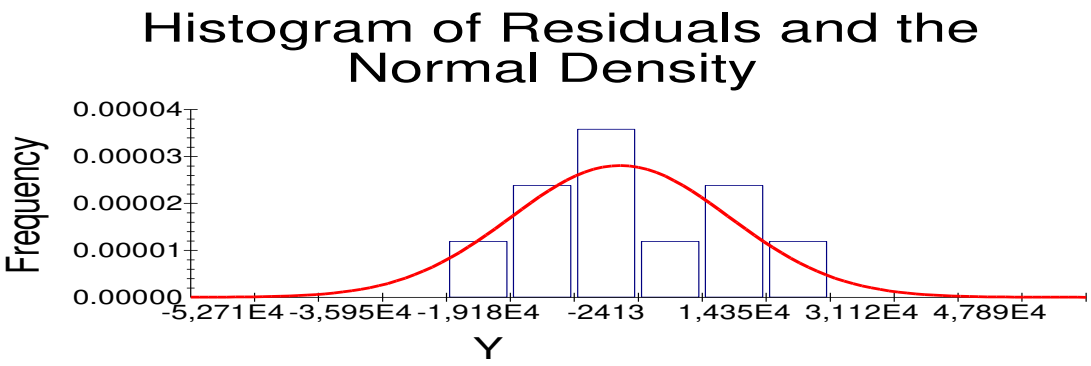
CON F

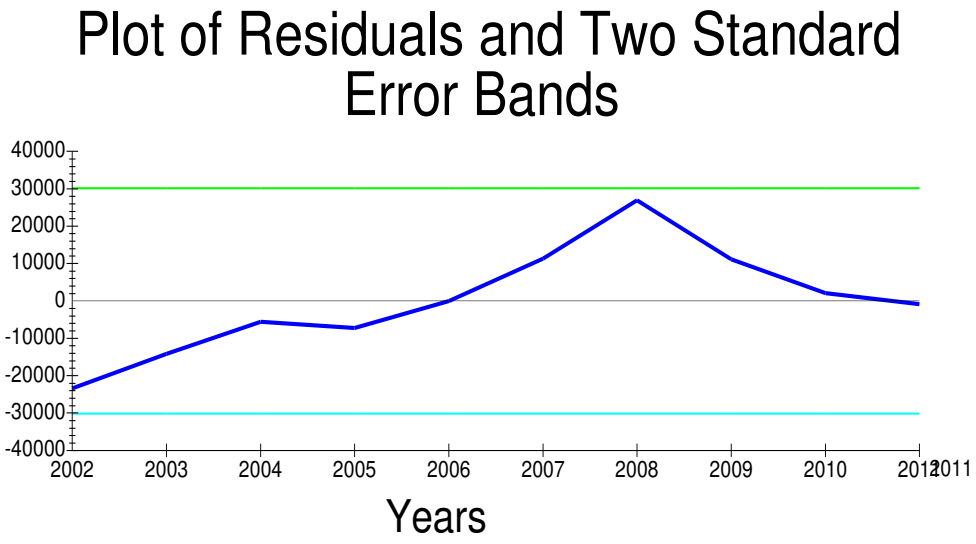
10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 46183.1 | -23371.1 |
| 2003 | 28809.0 | 42997.1 | -14188.1 |
| 2004 | 34310.0 | 39917.2 | -5607.2 |
| 2005 | 38882.0 | 46183.1 | -7301.1 |
| 2006 | 42915.0 | 42997.1 | -82.1378 |
| 2007 | 51264.0 | 39917.2 | 11346.8 |
| 2008 | 69920.0 | 42991.1 | 26928.9 |
| 2009 | 63478.0 | 52388.6 | 11089.4 |
| 2010 | 58874.0 | 56833.3 | 2040.7 |
| 2011 | 61789.0 | 62645.1 | -856.0979 |

**********






**GDP MIL USD / MOTORWAY**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **-4855.0** | **7288.8** | **-.66610[.524]** |
| **I** | **58.6137** | **7.9001** | **7.4194[.000]** |

**********

R-Squared .87311 R-Bar-Squared .85725

S.E. of Regression 6083.6 F-stat. F( 1, 8) 55.0470[.000]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 2.96E+08 Equation Log-likelihood -100.2072

Akaike Info. Criterion -102.2072 Schwarz Bayesian Criterion -102.5098

DW-statistic 1.3114

**********

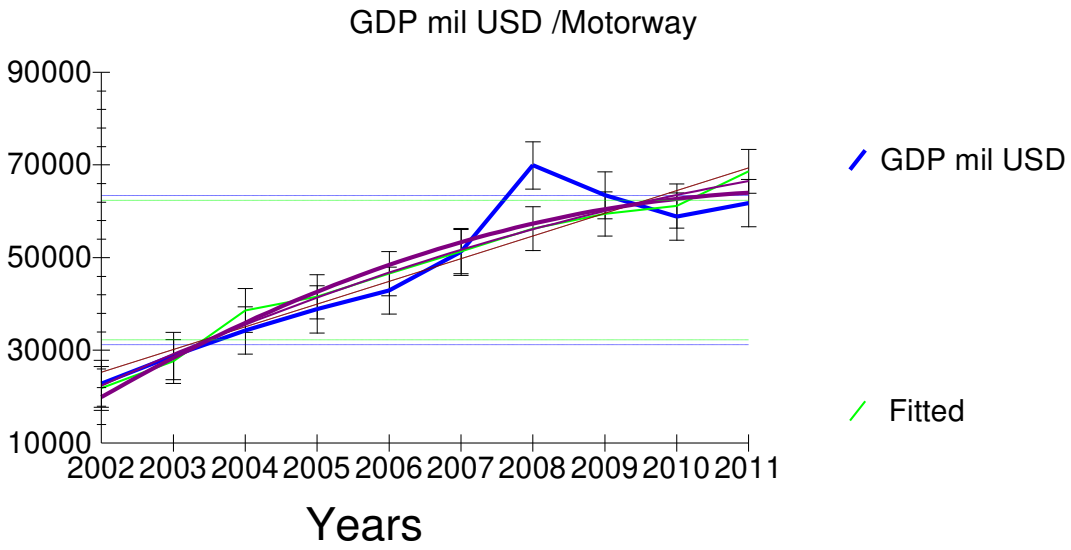
Diagnostic Tests

**********

| * Test Statistics * | LM Version | * | F Version | * |
|---|---|---|---|---|

**********

| * | * | * | * |
|---|---|---|---|




Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

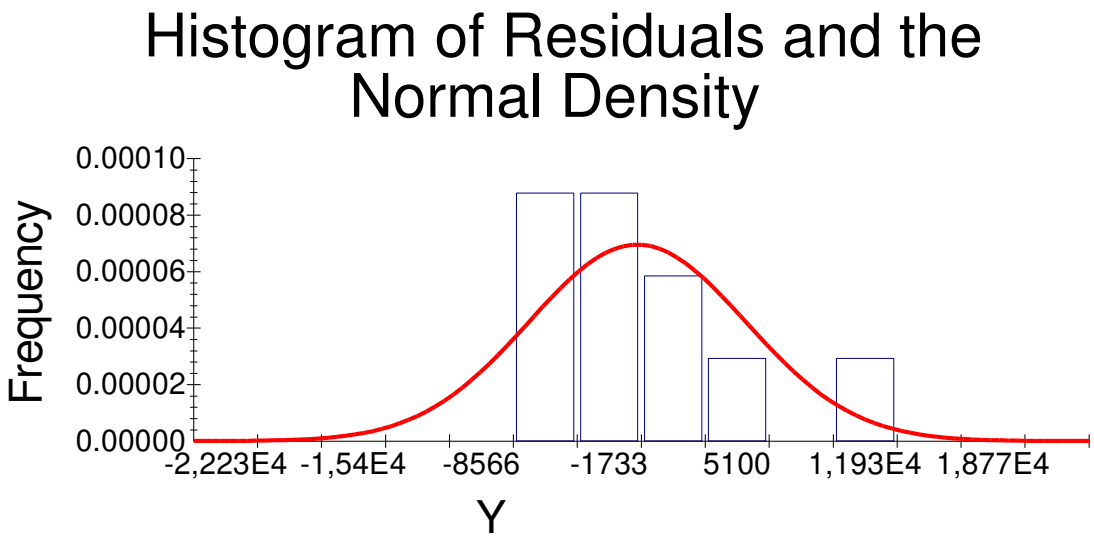
CON I

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 21814.2 | 997.7883 |
| 2003 | 28809.0 | 27617.0 | 1192.0 |
| 2004 | 34310.0 | 38636.3 | -4326.3 |
| 2005 | 38882.0 | 41567.0 | -2685.0 |
| 2006 | 42915.0 | 46549.2 | -3634.2 |
| 2007 | 51264.0 | 51355.5 | -91.5051 |
| 2008 | 69920.0 | 56279.1 | 13640.9 |
| 2009 | 63478.0 | 59444.2 | 4033.8 |
| 2010 | 58874.0 | 61144.0 | -2270.0 |
| 2011 | 61789.0 | 68646.5 | -6857.5 |

**********



BUILDINGS TOTAL $m^2$ / RESIDENTIAL $m^2$ NON RESIDENTIAL $m^2$

Ordinary Least Squares Estimation

**********

Dependent variable is F

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **193.4413** | **240.0250** | **.80592[.447]** |
| **G** | **.99994** | **.1436E-3** | **6961.9[.000]** |
| **H** | **1.0000** | **.1885E-3** | **5306.5[.000]** |

**********

R-Squared 1.00000 R-Bar-Squared 1.00000

S.E. of Regression 138.9704 F-stat. F( 2, 7) 1.94E+08[.000]

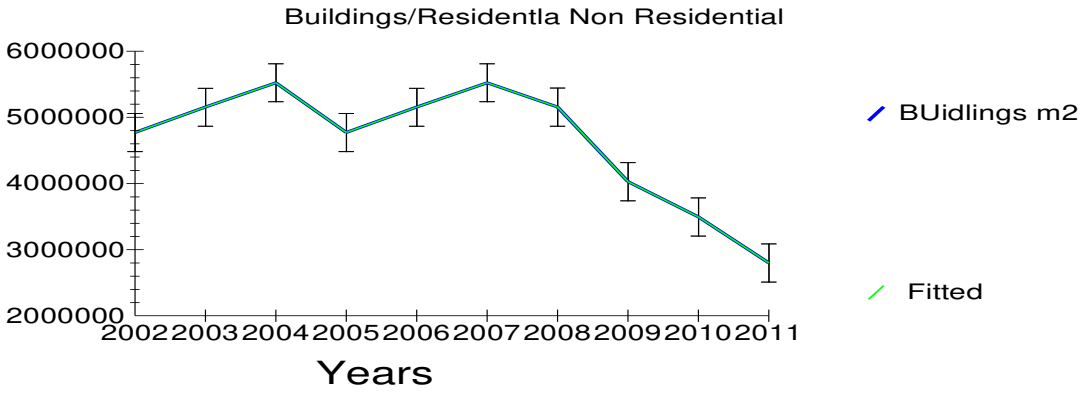
Mean of Dependent Variable 4638609 S.D. of Dependent Variable 911318.9

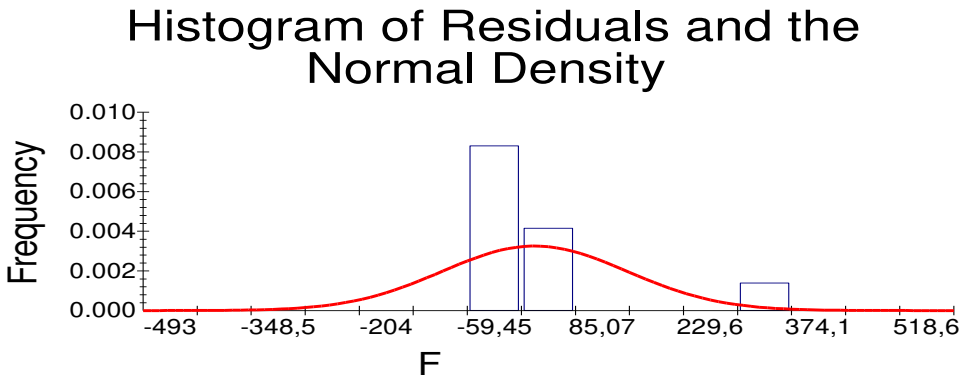
Residual Sum of Squares 135189.5 Equation Log-likelihood -61.7486

Akaike Info. Criterion -64.7486 Schwarz Bayesian Criterion -65.2025

DW-statistic 2.3069

**********


Buildings/Residentla Non Residential
6000000
5000000
4000000
3000000
2000000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Years
BUidlings m2
Fitted


Histogram of Residuals and the Normal Density
Frequency
0.010
0.008
0.006
0.004
0.002
0.000
-493
-348,5
-204
-59,45
85,07
229,6
374,1
518,6
F

**GDP MIL USD / EXPORT MIL USD IMPORT MIL USD**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **15003.5** | **19463.3** | **.77086[.466]** |
| **B** | **10.7060** | **5.6674** | **1.8890[.101]** |
| **C** | **-3.4319** | **2.7807** | **-1.2342[.257]** |

**********

R-Squared .43393 R-Bar-Squared .27219

S.E. of Regression 13736.7 F-stat. F( 2, 7) 2.6830[.136]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 1.32E+09 Equation Log-likelihood -107.6842

Akaike Info. Criterion -110.6842 Schwarz Bayesian Criterion -111.1381

DW-statistic 1.0960

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 3.2592[.071] | *F( 1, 6)= 2.9011[.139] | * |
| * B:Functional Form | *CHSQ( 1)= 1.5690[.210] | *F( 1, 6)= 1.1166[.331] | * |
| * C:Normality | *CHSQ( 2)= 2.4969[.287] | * Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= .44257[.506]*F( 1, 8)= .37045[.560]*

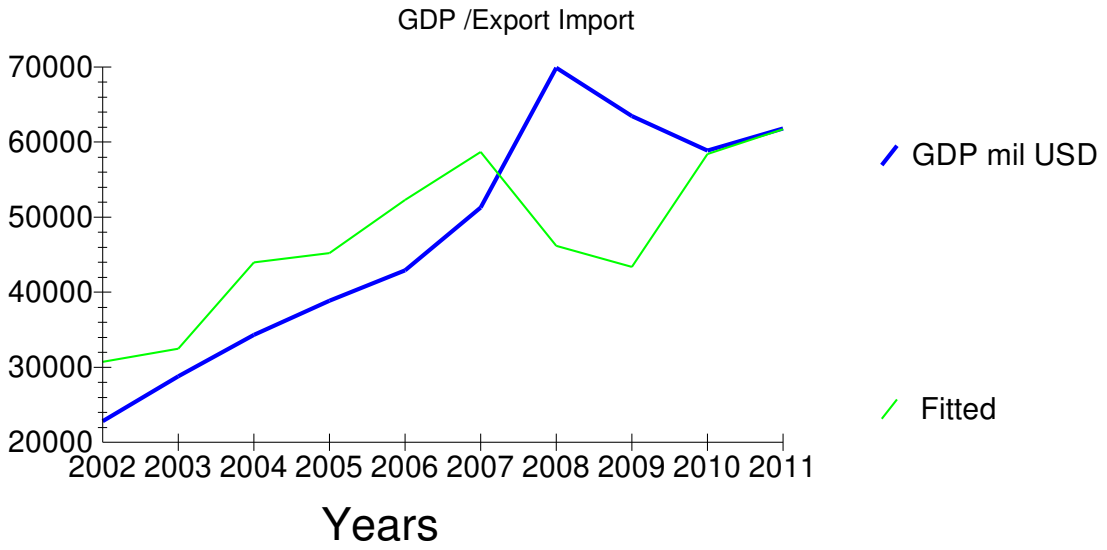
**********

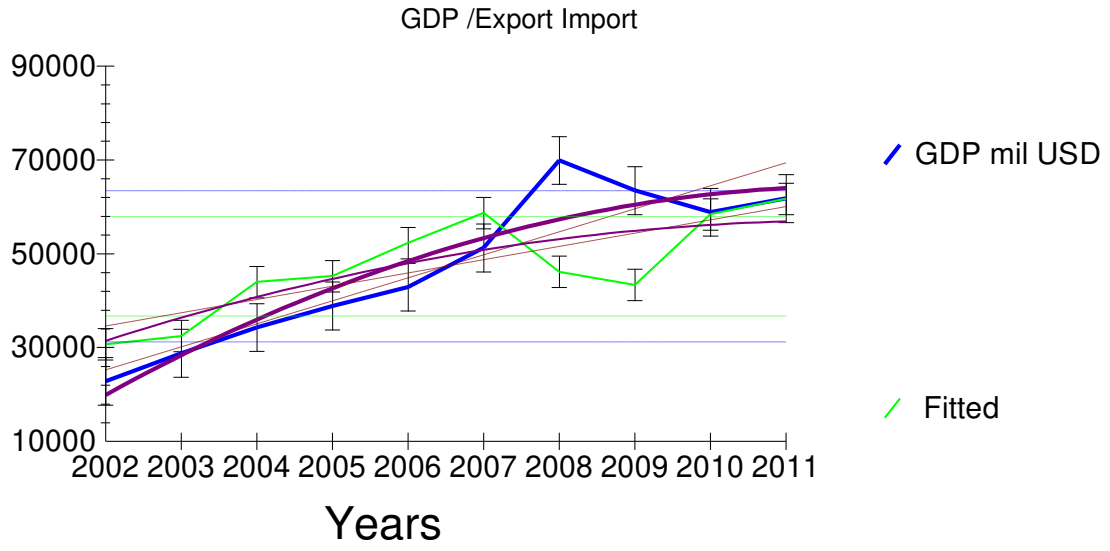
A:Lagrange multiplier test of residual serial correlation

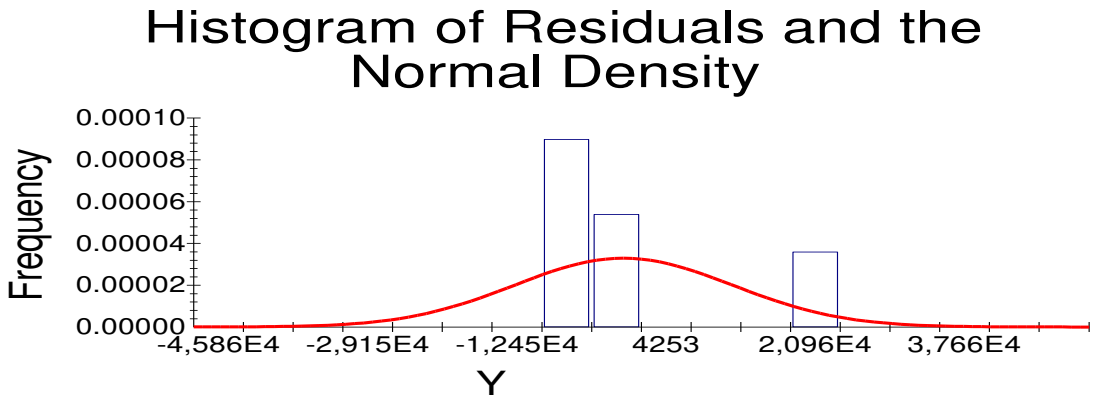
B:Ramsey's RESET test using the square of the fitted values

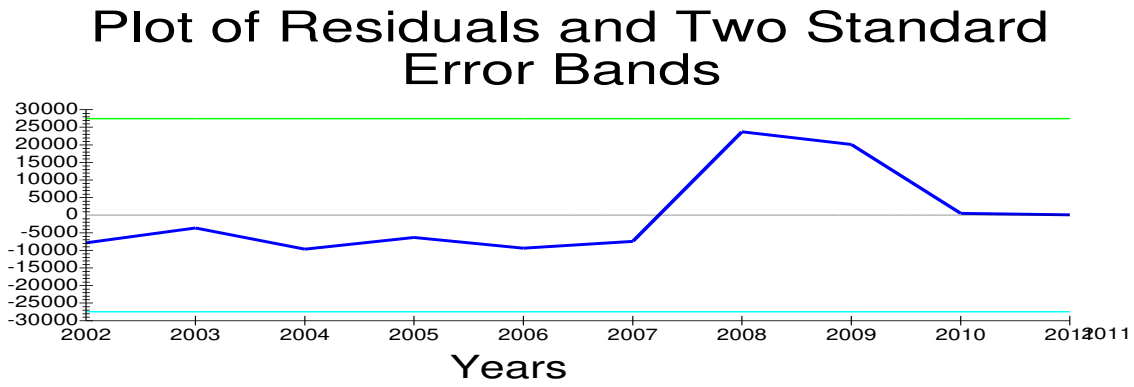
C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




GDP /Export Import
90000
70000
50000
30000
10000
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years
GDP mil USD
Fitted


Histogram of Residuals and the Normal Density
Frequency
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
-4,586E4
-2,915E4
-1,245E4
4253
2,096E4
3,766E4
Y


Plot of Residuals and Two Standard Error Bands
30000
25000
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
-25000
-30000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Years

Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

CON B C

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 30709.1 | -7897.1 |
| 2003 | 28809.0 | 32477.9 | -3668.9 |
| 2004 | 34310.0 | 43976.2 | -9666.2 |
| 2005 | 38882.0 | 45231.6 | -6349.6 |
| 2006 | 42915.0 | 52307.4 | -9392.4 |
| 2007 | 51264.0 | 58687.7 | -7423.7 |
| 2008 | 69920.0 | 46179.1 | 23740.9 |
| 2009 | 63478.0 | 43375.8 | 20102.2 |
| 2010 | 58874.0 | 58394.3 | 479.7139 |
| 2011 | 61789.0 | 61714.0 | 75.0198 |

**********

**EXPORT MIL USD / EUR/HRK USD/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is B

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **43666.0** | **30201.1** | **1.4458[.191]** |
| **P** | **-3072.6** | **4268.0** | **-.71991[.495]** |
| **R** | **-2127.6** | **884.9266** | **-2.4042[.047]** |

**********

R-Squared .55872 R-Bar-Squared .43264

S.E. of Regression 1594.1 F-stat. F( 2, 7) 4.4315[.057]

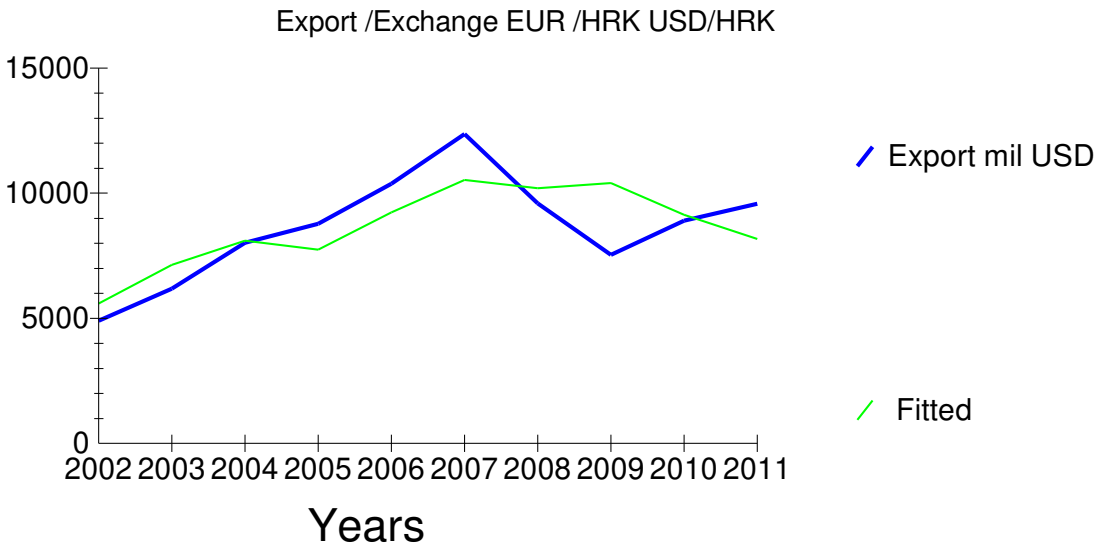
Mean of Dependent Variable 8622.1 S.D. of Dependent Variable 2116.3

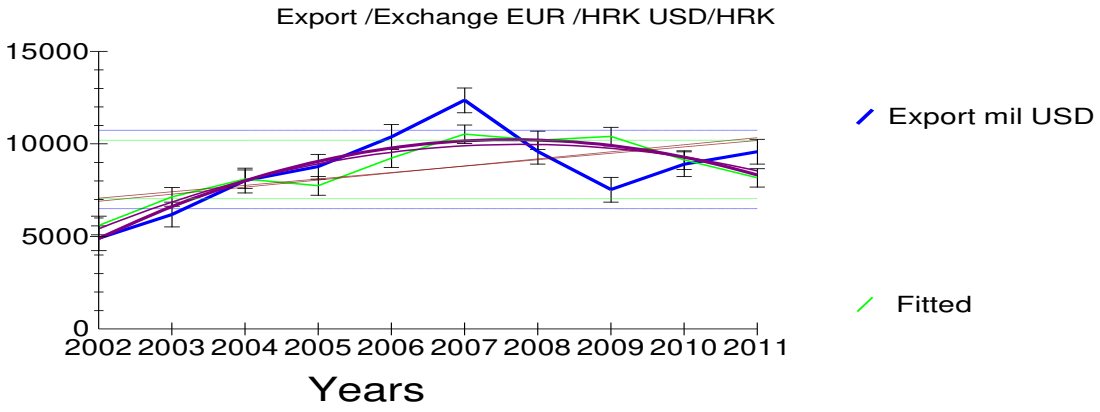
Residual Sum of Squares 1.78E+07 Equation Log-likelihood -86.1467

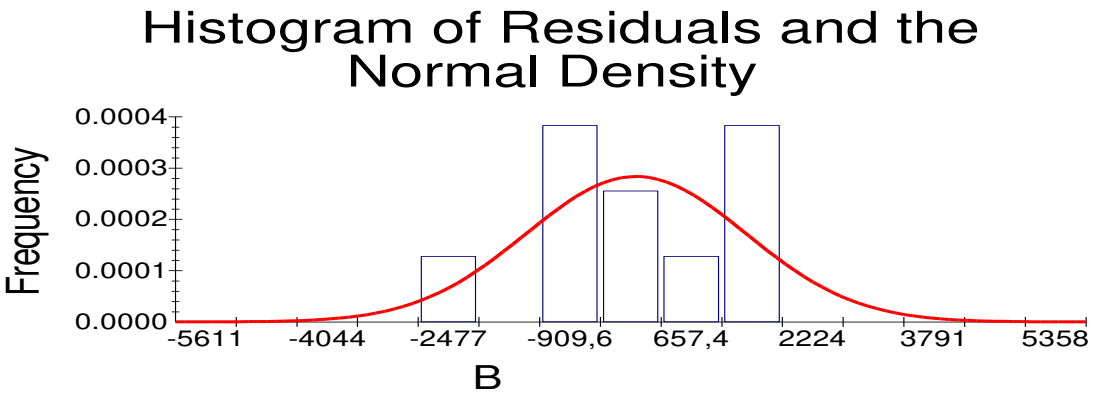
Akaike Info. Criterion -89.1467 Schwarz Bayesian Criterion -89.6006

DW-statistic 1.3097

**********


Export /Exchange EUR /HRK USD/HRK
15000
10000
5000
0
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years
Export mil USD
Fitted


Export /Exchange EUR /HRK USD/HRK
15000
10000
5000
0
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Years
Export mil USD
Fitted




Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

CON P R

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4904.0 | 5593.8 | -689.8475 |
| 2003 | 6187.0 | 7140.0 | -953.0141 |
| 2004 | 8022.0 | 8099.8 | -77.8006 |
| 2005 | 8773.0 | 7735.6 | 1037.4 |
| 2006 | 10377.0 | 9232.0 | 1145.0 |
| 2007 | 12360.0 | 10527.4 | 1832.6 |
| 2008 | 9585.0 | 10196.4 | -611.4385 |
| 2009 | 7529.0 | 10397.4 | -2868.4 |
| 2010 | 8902.0 | 9130.3 | -228.3269 |
| 2011 | 9582.0 | 8168.3 | 1413.7 |

**********

**IMPORT / EUR/HRK USD/HRK**

Ordinary Least Squares Estimation

**********

Dependent variable is C

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **93180.3** | **64911.4** | **1.4355[.194]** |
| **P** | **-7101.3** | **9173.2** | **-.77414[.464]** |
| **R** | **-3992.8** | **1902.0** | **-2.0993[.074]** |

**********

R-Squared .50924 R-Bar-Squared .36902

S.E. of Regression 3426.2 F-stat. F( 2, 7) 3.6318[.083]

Mean of Dependent Variable 17485.0 S.D. of Dependent Variable 4313.3

Residual Sum of Squares 8.22E+07 Equation Log-likelihood -93.7981

Akaike Info. Criterion -96.7981 Schwarz Bayesian Criterion -97.2520

DW-statistic .98142

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version * |
|---|---|---|

**********

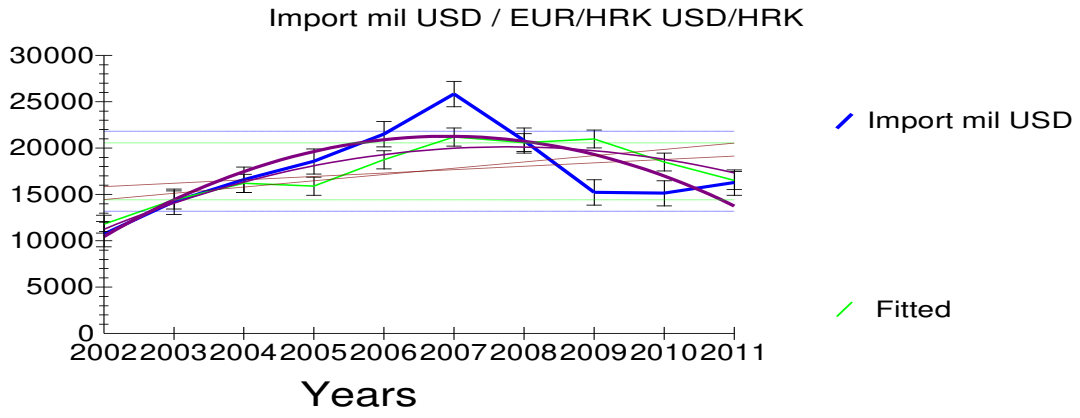
* * * *

* A:Serial Correlation*CHSQ( 1)= 3.0450[.081]*F( 1, 6)= 2.6268[.156]*

* * * *

* B:Functional Form *CHSQ( 1)= .24337[.622]*F( 1, 6)= .14967[.712]*

* * * *




Residuals and Fitted Values of Regression

**********

Based on OLS regression of C on:

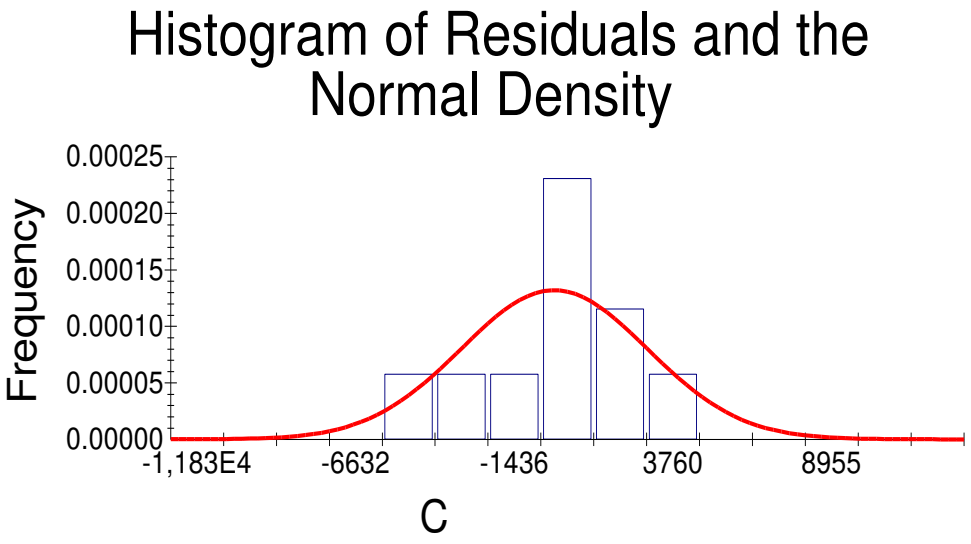
CON P R

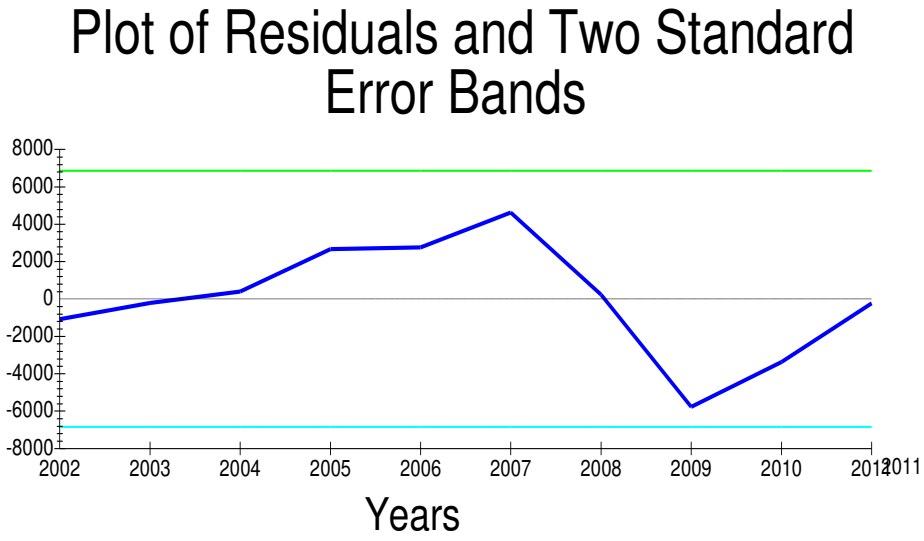
10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 10722.0 | 11797.9 | -1075.9 |
| 2003 | 14209.0 | 14419.2 | -210.2158 |
| 2004 | 16583.0 | 16193.7 | 389.2581 |
| 2005 | 18560.0 | 15897.4 | 2662.6 |
| 2006 | 21502.0 | 18745.7 | 2756.3 |
| 2007 | 25829.0 | 21203.5 | 4625.5 |
| 2008 | 20817.0 | 20595.8 | 221.2486 |
| 2009 | 15220.0 | 20986.2 | -5766.2 |
| 2010 | 15127.0 | 18501.5 | -3374.5 |
| 2011 | 16281.0 | 16509.1 | -228.1459 |

**********


Histogram of Residuals and the Normal Density
Frequency
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
-1,183E4
-6632
-1436
3760
8955
C


Plot of Residuals and Two Standard Error Bands
8000
6000
4000
2000
0
-2000
-4000
-6000
-8000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Years

**EXPORT / GDP**

Ordinary Least Squares Estimation

**********

Dependent variable is B

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **5156.1** | **1917.8** | **2.6885[.028]** |
| **Y** | **.073269** | **.038579** | **1.8992[.094]** |

**********

R-Squared .31076 R-Bar-Squared .22460

S.E. of Regression 1863.6 F-stat. F( 1, 8) 3.6069[.094]

Mean of Dependent Variable 8622.1 S.D. of Dependent Variable 2116.3

Residual Sum of Squares 2.78E+07 Equation Log-likelihood -88.3762

Akaike Info. Criterion -90.3762 Schwarz Bayesian Criterion -90.6788

DW-statistic 1.0558

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|
| * A:Serial Correlation* | CHSQ( 1)= 1.8424[.175]* | F( 1, 7)= 1.5810[.249]* | |
| * B:Functional Form * | CHSQ( 1)= 5.6887[.017]* | F( 1, 7)= 9.2363[.019]* | |
| * C:Normality * | CHSQ( 2)= .74524[.689]* | Not applicable | * |

* D:Heteroscedasticity*CHSQ( 1)= .1137E-6[1.00]*F( 1, 8)= .9098E-7[1.00]*

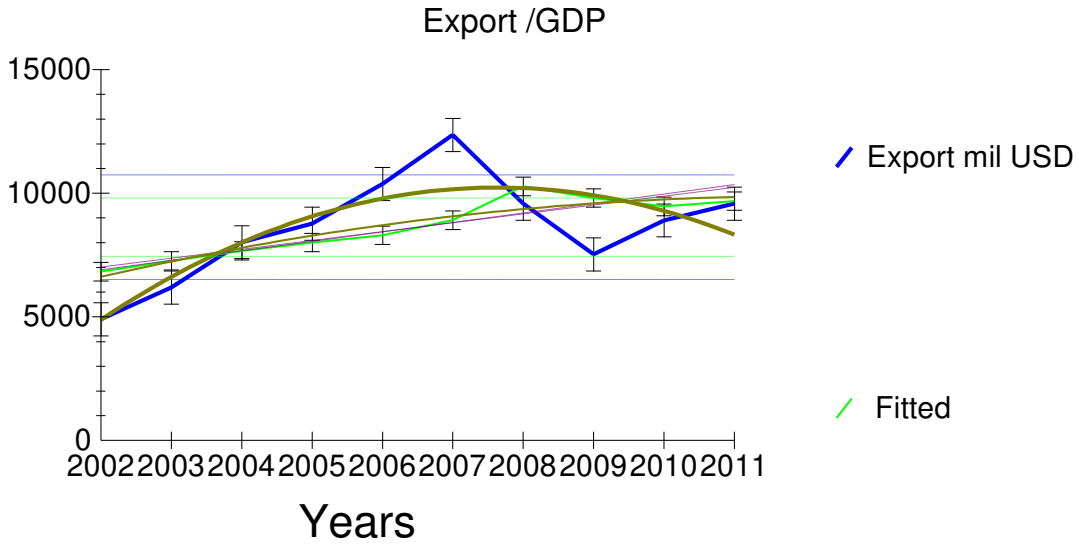
**********

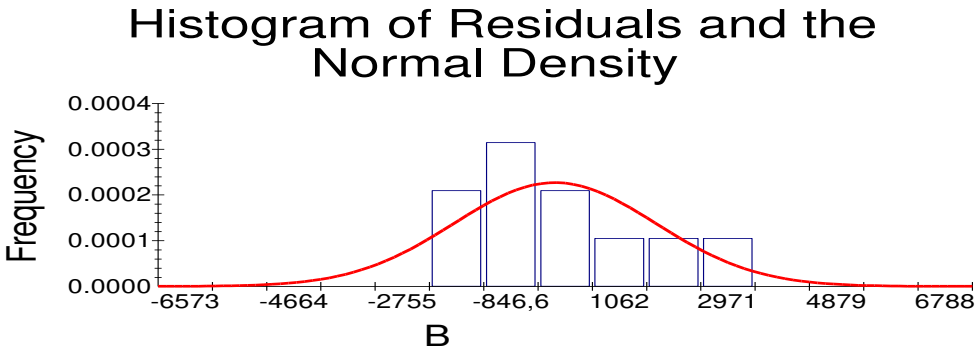
A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values



Residuals and Fitted Values of Regression

**********

Based on OLS regression of B on:

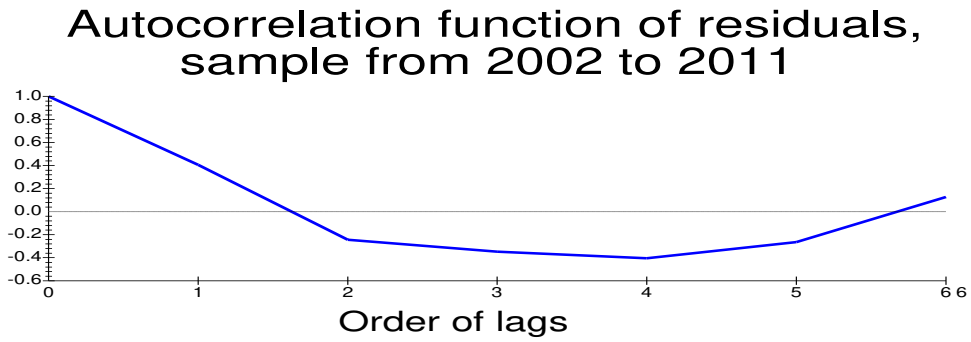
CON Y

10 observations used for estimation from 2002 to 2011

**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 4904.0 | 6827.5 | -1923.5 |
| 2003 | 6187.0 | 7266.9 | -1079.9 |
| 2004 | 8022.0 | 7669.9 | 352.0587 |
| 2005 | 8773.0 | 8004.9 | 768.0707 |
| 2006 | 10377.0 | 8300.4 | 2076.6 |
| 2007 | 12360.0 | 8912.2 | 3447.8 |
| 2008 | 9585.0 | 10279.1 | -694.0670 |
| 2009 | 7529.0 | 9807.1 | -2278.1 |
| 2010 | 8902.0 | 9469.7 | -567.7325 |
| 2011 | 9582.0 | 9683.3 | -101.3130 |

**********



**IMPORT CON GDP**

Ordinary Least Squares Estimation

**********

Dependent variable is C

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **12653.8** | **4352.4** | **2.9073[.020]** |
| **Y** | **.10213** | **.087555** | **1.1664[.277]** |

**********

R-Squared .14535 R-Bar-Squared .038523

S.E. of Regression 4229.4 F-stat. F( 1, 8) 1.3606[.277]

Mean of Dependent Variable 17485.0 S.D. of Dependent Variable 4313.3

Residual Sum of Squares 1.43E+08 Equation Log-likelihood -96.5718

Akaike Info. Criterion -98.5718 Schwarz Bayesian Criterion -98.8744

DW-statistic .73667

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version * | F Version * |
|---|---|---|
| * A:Serial Correlation | *CHSQ( 1)= 3.5855[.058] | *F( 1, 7)= 3.9128[.088]* |
| * B:Functional Form | *CHSQ( 1)= 3.4048[.065] | *F( 1, 7)= 3.6138[.099]* |
| * C:Normality | *CHSQ( 2)= .97876[.613]* | Not applicable * |

*  *  *  *

* D:Heteroscedasticity*CHSQ( 1)= .024265[.876]*F( 1, 8)= .019459[.893]*

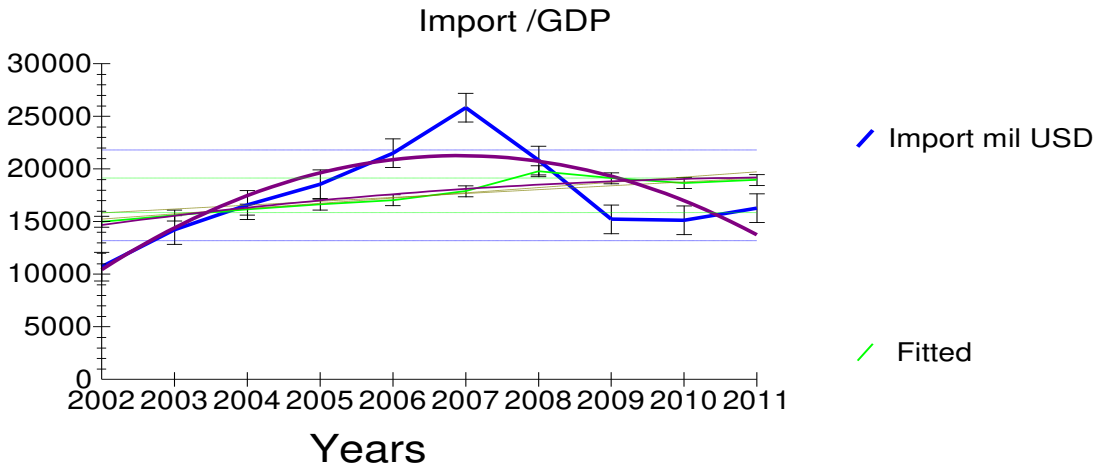
**********

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values




**********

Based on OLS regression of C on:

CON  Y

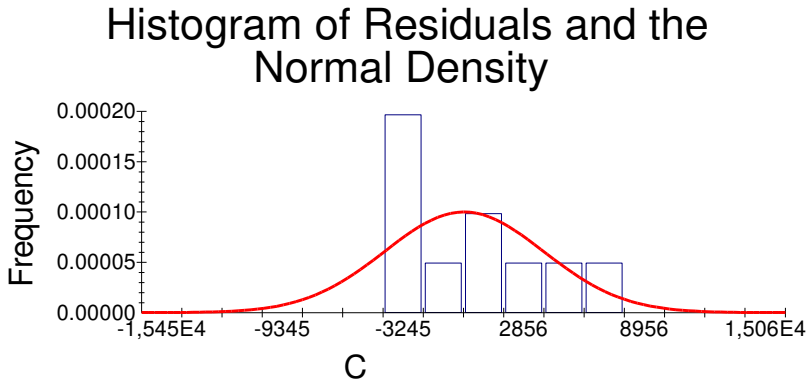
10 observations used for estimation from 2002 to 2011

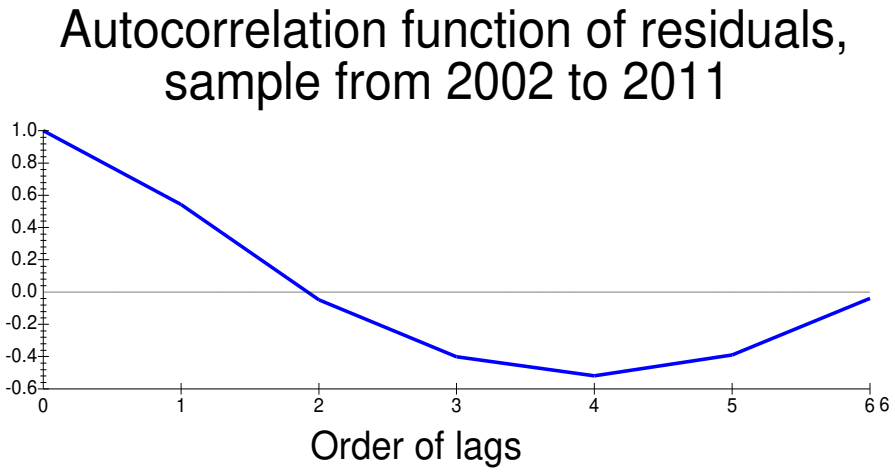
**********

| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 10722.0 | 14983.5 | -4261.5 |
| 2003 | 14209.0 | 15596.0 | -1387.0 |
| 2004 | 16583.0 | 16157.8 | 425.1957 |
| 2005 | 18560.0 | 16624.7 | 1935.3 |
| 2006 | 21502.0 | 17036.6 | 4465.4 |
| 2007 | 25829.0 | 17889.3 | 7939.7 |

| | | | |
|---|---|---|---|
| 2008 | 20817.0 | 19794.6 | 1022.4 |
| 2009 | 15220.0 | 19136.7 | -3916.7 |
| 2010 | 15127.0 | 18666.5 | -3539.5 |
| 2011 | 16281.0 | 18964.2 | -2683.2 |

**********



**GDP INDUSTRIAL PRODUCTION**

Ordinary Least Squares Estimation

**********

Dependent variable is Y

10 observations used for estimation from 2002 to 2011

**********

| Regressor | Coefficient | Standard Error | T-Ratio[Prob] |
|---|---|---|---|
| **CON** | **274409.5** | **89173.8** | **3.0772[.015]** |
| **N** | **-2241.9** | **879.4027** | **-2.5493[.034]** |

**********

R-Squared .44824 R-Bar-Squared .37927

S.E. of Regression 12686.0 F-stat. F( 1, 8) 6.4991[.034]

Mean of Dependent Variable 47305.3 S.D. of Dependent Variable 16101.8

Residual Sum of Squares 1.29E+09 Equation Log-likelihood -107.5562

Akaike Info. Criterion -109.5562 Schwarz Bayesian Criterion -109.8588

DW-statistic 1.1414

**********

Diagnostic Tests

**********

| * Test Statistics * | LM Version | * F Version | * |
|---|---|---|---|

**********

| | | | |
|---|---|---|---|
| * | * | * | * |
| * A:Serial Correlation* | CHSQ( 1)= 1.7079[.191]* | F( 1, 7)= 1.4417[.269]* | |
| * | * | * | * |
| * B:Functional Form * | CHSQ( 1)= 2.4921[.114]* | F( 1, 7)= 2.3235[.171]* | |

```
*            *            *            *
* C:Normality      *CHSQ(  2)=  .47321[.789]*     Not applicable     *
*            *            *            *
* D:Heteroscedasticity*CHSQ(  1)=  .17254[.678]*F(  1,  8)=  .14046[.718]*
********************************************************************************
```

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values

Residuals and Fitted Values of Regression

**********

Based on OLS regression of Y on:

CON N

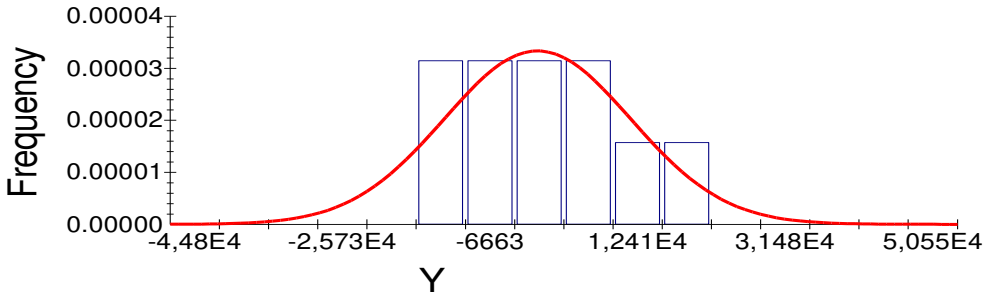
10 observations used for estimation from 2002 to 2011

**********

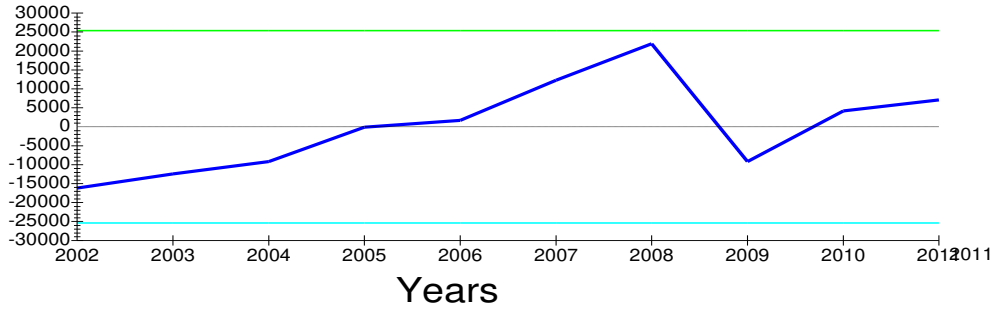
| Observation | Actual | Fitted | Residual |
|---|---|---|---|
| 2002 | 22812.0 | 39010.3 | -16198.3 |
| 2003 | 28809.0 | 41252.2 | -12443.2 |
| 2004 | 34310.0 | 43494.1 | -9184.1 |
| 2005 | 38882.0 | 39010.3 | -128.2787 |
| 2006 | 42915.0 | 41252.2 | 1662.8 |
| 2007 | 51264.0 | 39010.3 | 12253.7 |
| 2008 | 69920.0 | 47977.9 | 21942.1 |
| 2009 | 63478.0 | 72638.7 | -9160.7 |
| 2010 | 58874.0 | 54703.6 | 4170.4 |
| 2011 | 61789.0 | 54703.6 | 7085.4 |

**********

## Histogram of Residuals and the Normal Density




## Plot of Residuals and Two Standard Error Bands




## Autocorrelation function of residuals, sample from 2002 to 2011