Confusion of forecasts (and) forecasts of confusion in energy sector

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PRELIMINARY COMMUNICATION

By analyzing forecasts of total energy consumption, and particularly oil consumption, in the present crises time the author came to conclusion, partly based on previous analyses of movements in energy consumption, that there is an evident discrepancy between current trends and previous forecasts.
The discrepancy is stemming from slow down in energy consumption on one side, partly resulting from more efficient energy use, instigated for different reasons which are not specifically analyzed here, and economic reasons on the other side, which are very heterogeneous: "overheated demand" led to high energy consumption in previous period, but eventually it paved the way to economic crises, the cause roots of which have not been eliminated and the crises persists, so we cannot expect fast recovery and return of consumption on pre-crises level in the near future.
The author substantiates his thesis with the data in the scope sufficient to prove his statements.

Key words: GDP, energy, oil, correlation

1. INTRODUCTION

In the science of economics, GDP indicator (denoting total value of goods produced and services rendered by a country during the year), or a slightly different GNP (gross national product), is generally used not only to indicate overall economic strength of a country but also as a reference for other economic trends.

However, the universal value of GDP indicator can be misleading, particularly in 'static' analyses, while in ždynamic' analyses, at constant prices, it is an unavoidable tool. Possible differences in interpretations usually stem from incomplete or ambiguous data. Namely, GDP does not specify the availability of the generated value indicated by GDP. Consequently, the indicator should be adjusted – decreased for the value of obtained loans (which enabled creation of new values) and also, it should be increased for the value of loan repayment (provisions for repayment of loans but not funds earmarked for creation of new value), if we want to get a more realistic view of economic strength of an observed object of analysis (a country, region...). If such approach is not followed, a country with rising GDP (according to first definition) but high indebtedness, could be proclaimed successful.

GDP movement is usually taken as a reference indicator in energy demand forecasts and particularly in various forecasts in oil industry. As a pattern, total primary energy demand growth is slower than GDP growth (with variations: world as a whole, group of countries according to their development, etc.). Similar pattern appears also in forecasts on oil and gas demand, particularly in the last decade: oil demand is growing slower than total primary energy demand, while natural gas demand is growing slightly faster. For the purpose of this analysis it is not necessary to give more precise ponder of the term "slightly".

2. THE AGE OF UNCERTAINTY

The so called "oil shocks" of the past showed that global economy was not immune to various external influences (the lesson from the past has not been learned: the Great Depression in 1929 has been forgotten). Speculations with oil prices, but other commodities too, with the support of the so called žfree capital' and commodity exchanges (including NYMEX), pointed to the fact that the former rule of the game according to which all phenomena can be explained with balance or imbalance of demand and supply, became unsustainable, because in modern times (we could say from the time when exchanges started to play their current role) such assumption has limited value. Reason: demand and supply are not independent, primary measures, they are a resultant of heterogeneous impacts, among which speculations on exchanges have had significant impact, (but again, speculations represent a bunch of different interests, frequently even hidden political games).

Following the break down of the value system which takes for granted the perfection of capitalist (conservative) liberalism of the US type, (again I repeat, the lesson from 1929 has not been learned) and state intervention (the USA in the first place) with printing money for the state itself, the question what GDP really represents seems more than justified (injection of paper money into economic flows of indebted country – the US state deficit accounts for 87% of GDP[13] – new billions of dollars were injected into the economy). On one side it leads to creation of false values and on the other side it leads to subjugation of other countries unable to parry with similar measures. The most adequate economic term for such measure is protectionism, more precisely, state protectionism.

In such a context, all forecasts of an economic activity, even short-term forecasts, become quite uncertain, changing from month to month as indicated in Table 1 – the compilation of data by a reliable source – IMF. In such

Table 1. Forecast of GDP movement

MOMR[2] m/year	Year	WORLD	OECD	USA	JAPAN	EURO- ZONE	CHINA	INDIA
01/2009	2008	3.4	1.2	1.2	0.1	1.0	9.5	6.9
	2009	1.3	-1.0	-1.5	-1.9	-0.9	7.0	5.8
02/2009	2008	3.3	1.2	1.3	0.0	1.0	9.0	6.0
	2009	0.4	-1.7	-1.7	-3.1	-1.9	6.5	5.0
03/ 2009	2008	3.1	0.9	1.1	-0.7	0.8	9.0	6.6
	2009	-0.2	-2.52	-2.3	-5.5	-2.4	6.5	5.0
04/ 2009	2008	3.1	0.9	1.1	-0.6	0.8	9.0	6.0
	2009	-0.8	-3.1	-2.6	-6.1	-3.0	6.5	5.0
05/2009	2008	3.1	0.9	1.1	-0.6	0.9	9.0	6.0
	2009	-1.4	-3.8	-2.8	-6.4	-4.2	6.5	5.0
06/2009	2008	3.1	0.9	1.1	-0.7	0.9	9.0	6.7
	2009	-1.3	-3.8	-2.8	-6.4	-4.2	7.0	5.7
07/2009	2009	-1.4	-3.9	-2.7	-6.4	-4.6	7.0	5.7
	2010	2.3	0.7	1.2	0.9	-0.4	7.5	6.5
08/2009	2009	-1.4	-3.9	-2.8	-6.0	-4.6	7.2	6.0
	2010	2.4	0.7	1.2	1.1	-0.4	8.0	6.5
09/2009	2009	-1.2	-3.6	-2.7	-5.3	-4.1	7.5	6.0
	2010	2.5	0.9	1.3	1.2	-0.1	8.0	6.5
10/2009	2009	-1.2	-3.9	-2.7	-5.6	-4.1	8.0	5.6
	2010	2.7	1.0	1.3	1.3	0.0	8.5	6.5
11/2009	2009	-1.1	-3.5	-2.5	-5.6	-4.0	8.0	5.6
	2010	2.9	1.2	1.4	1.1	0.5	8.5	6.5
12/2009	2009	-1.1	-3.4	-2.5	-5.3	-3.9	8.0	5.6
	2010	2.9	1.3	1.6	1.1	0.6	8.5	6.5
1/ 2010	2009	-1.1	-3.4	-2.6	-5.3	-3.9	8.0	6.2
	2010	3.1	1.4	1.9	1.1	-0.6	8.8	6.7

Source: IMF – compilation of data from „Monthly Oil Market Report", Jan. 2009 to Jan. 2010

circumstances long-term forecasts, for twenty years, or longer than ten years, can indicate only a trend.

When analysing the above data, we should also remember that all economic crises in the past, regardless what caused them, protruded for some time and that recovery evolved in different ways, but slowly. This remark is important for the assessment of GDP growth potentials and then for forecast of energy consumption.

3. LESSONS FROM PREVIOUS ENERGY CONSUMPTION FORECASTS

The events that took place in global oil industry in 1973, which were inadequately named 'crises' but it was really 'oil shock', in the author's opinion, were more significant than it was considered at that time, but unfortunately even later. Namely, then the oil became a commodity, rather than colonial good as it had been considered before that. It had its price as a commodity and was subject to all postulates of economical use. After significant drop in oil consumption in 1973, the drop in consumption of all other primary energy sources followed, i.e. we witnessed a decline of total final energy consumption. Therefore we can say that only after 1980, despite some misinterpretations even after that period by expert and scientific groups, complex energy analyses, including forecasts, adopted scientific approach in surveys, primarily correlation analyses. At first sight it may seem too bold approach, but it has proved justified in the papers published in Nafta[6] journal.

A few data that follow, had been previously quoted in the original text published by the author under the title „New Energy Era?"[7] with comments and references to literature quoted there.

At that time the forecasts quoted the following numbers (here I quote the original table without any comment and quoted sources.)[6]

The first group of data on primary energy consumption according to BP (only „commercial energy" – documented by trading records) for the period 2000 – 2008 point to average annual growth in primary energy[2] consumption of 2.52% and oil of only 1.26%.

Without any further comment on the basis of the forecast, here we would only quote that relatively high growth

Table 2. Average annual growth in primary energy and oil consumption

	PRIMARY ENERGY		OIL	
SOURCE	1980 - 1990	1990 – 2000	1980 – 1990	1990 - 2000
ENERGY	1.89%	---	0.29%	---
WETO	---	1.40%	---	1.50%
BP	0.97%	2.01%	0.44%	1.21%

Table 3. Forecast of primary energy and oil consumption

Average annual growth rate - primary energy / oil						
	2000 - 2010		2010 - 2020		2010 – 2020	
SOURCE	PRIMARY ENERGY	OIL	PRIMARY ENERGY	OIL	PRIMARY ENERGY	OIL
WETO	1.97	1.91	1.88	1.84	1.64	1.43
US - DOE	2.34	2.28	2.19	2.14	---	---
IEA	1.96	2.01	1.79	1.82	---	---
WECA A-2	1.84	1.44	1.81	0.97	1.82	0.81

of total primary energy consumption most probably stems from non-commercial energy consumption that had not been previously recorded, particularly in undeveloped countries whose development was accompanied by increased energy consumption (vegetal waste, wood and other substances). Slow down in oil consumption was expected (more elaborated in reference no. 3).

Of course, the above data do not include the crises year 2009 and the effects of disturbances which became even deeper and dragged on into 2010. According to still incomplete data published by IEA, in 2008 oil consumption dropped to 86.2 m bbl/d while in 2009 it was even lower at 84.9 m bbl/d (index 98.49%)[4] indicating that there is no ground for prospects of fast recovery. However, it is likely that even the above data are not accurate: by the end of December 2008, oil (and derivatives) reserves in member countries amounted to (original data) 4 228 m bbl which was sufficient for covering 91-day consumption and by the end of September 2009 the reserves were 4 334 m bbl, covering 94-day consumption[4], which suggests that the consumption was even lower than the above quoted figure (84.9 m bbl/d).

Unfavourable news on global economic trends in the first two months of 2010, accompanied by lessons from past crises, do not provide any grounds for hopes of fast recovery announced by some. The reasons of such prediction are elaborated in more detail in the next section.

4. SYNERGY OF ABSURDITIES

4.1. Absurdities related to GDP indicators

Among the other data, Table 1 quotes IMF's forecast of GDP from January 2009, which indicated global decline of GDP by 1.1% in 2009, but the forecast for 2010 showed expected growth of 3.1% (the 2008 level according to the same source).

Notwithstanding the authority of IMF as institution that prepares such forecasts, the author warned that such optimism is unfounded (economic crises are rarely short-term and recovery is not simple…), on top of communicating vessels phenomena – it is impossible to be an isolated island with independent development in the modern global world. Development of a country depends on the ability of other countries to absorb its exported goods. Then, it is the nature of GDP as indicator – increase of GDP based on taken loans – will only delay facing the reality of economic position of a country – and it certainly is one of the basic macroeconomic postulates and one of unavoidable principles of macroeconomic analysis.

Regardless motives for a changed approach in the IEA's report of 11 December 2009[3] entitled "Reviewing the Medium-Term Horizon", a new approach to forecast of GDP growth was published (with parallel oil demand forecast – to be elaborated in more detail further in the text).

Before quoting the data it is necessary to provide an explanation on 'higher' scenario, although the explanation quoted in the section on oil demand forecast is based on the programme of "economic and fiscal incentives for stimulating GDP growth in the period 2009/2010". As for the "lower" GDP growth scenario, there is no explanation for this variant.

In addition to the above „contradictio in adiecto" data, I would quote only the other two (out of numerous data available in professional sources), the one on excessive optimism at the time when we are flooded with the news on ongoing recession (banks, housing loans, car sales decline, etc.) referring to the USA, and the other data refers to real meaning of published figures (substantiated by relentless data) regarding situation in Croatia.

Hence, according to a reliable source[10] after average annual GDP growth rate in the period 1990-2000 (1990 –

Table 4. Macro projection of gdp growth in the forthcoming period (in %)

Source	2008	2009	2010	2011	2012	2013	2014
IMF	3.1	-1.1	3.1	…	…	…	…
Higher scen.[7]	2.9	-1.2	3.1	4.2	4.4	4.5	4.5
Lower scen.[7]	2.9	-1.2	2.1	2.8	3.0	3.0	3.0

USD 8 033.9 bn, 2000 – USD 11 226.0 bn (recalculated in USD from 2005), of 3.39%, and in the period from 2000 and 2005 (from USD 22 226.0 bn to USD 12 638.4 bn) of 2.39%, in the forthcoming period (with estimate for 2009 and forecast for 2010) the annual change would be as follows:

2006 : 2005 (12 976.2 : 12 638.4) 2.67%
2007 : 2006 (13 254.1 : 12 976.2) 2.14%
2008 : 2007 (13 312.2 : 13 254,1) 0.44%
2009 : 2008 (13 177.4 : 13 312.2) - 1.01%
2010 : 2009 (13 572.8 : 13 177.4) 3.00%

The main feature of the above quoted data (but also the other available data not mentioned here) is that the most significant institutions (the IMF, to a lesser extent IAE and US government institutions) publish very optimistic forecasts which do not take sufficiently into account the economic crises from 2009 but which extended into 2010, and with this unfounded optimism they promise happier future to the world and themselves.

Yet, some information, that will be indicated further in the text, point to lower consumption of energy in the future and warn about slow down in economic development in the near future.

The other example is the case of the Republic of Croatia and indicators of its GDP growth according to Institute for Economic Surveys[1], Vienna, which point to disastrous consequences of GDP decline and sluggish recovery in the forthcoming period.

Accordingly, in 2013 the GDP should grow (without increase of external debt) by 2.8% and then it would actually reach the 2008 level.

No comment here!

4.2.0. in the energy sector .....

As mentioned before there is a strong correlation between GDP movement and energy consumption of an individual country, or world as a whole, however this correlation can be influenced by extraordinary events (crises, blockades, wars...). The changes in correlation between GDP movement and oil consumption are even more conspicuous. Apart from global changes such as dramatic decline of heavy fuel oil consumption which is replaced by natural gas (or processed to obtain lighter derivates), growing consumption of middle distillates (diesel fuel) and relative stagnation of gasoline consumption due to improved diesel engines, introduction of bio components in motor fuels and other influences, prices of fuels in the first place, all these factors impacted the development of oil consumption as a whole and individual derivates. Hence, this correlation is weaker as is the correlation between consumption of total primary energy and oil.

Table 5. Projection of GDP movement in Croatia

Index, 2008 = 100			
Year	Yearly change	Calculation	Final value
2009	- 6%	…	94
2010	- 1%	94 – 0.94	= 93.06
2011	+ 2%	93.06 + 1.86	= 94.92
2012	+ 2.5%	94.92 + 2.37	= 97.29

Illustration of correlation between GDP and oil demand is presented in Figure 1 taken from the IAE[5] monthly report.

Correlations between total primary energy demand and oil demand, as well as demand growth projections for these two segments are presented in tables 2 and 3 (including inconsistencies between the two quoted sources). However, the data indicating that in the period 2000 – 2008 average annual demand growth rate of "commercial" (primary) energy was 2.52%, and average oil demand growth rate was 1.26% – half of primary energy demand growth rate, represent a benchmark for assessment of realistic growth of the other segment, but also for measuring how realistic GDP growth projection is.

During 2009, the crises year, total energy demand forecasts, and particularly oil demand forecasts, were under the influence of different views, philosophies and ideologies, even one-sided approaches instigated by crises which has its deep roots in social aspects, however fur-

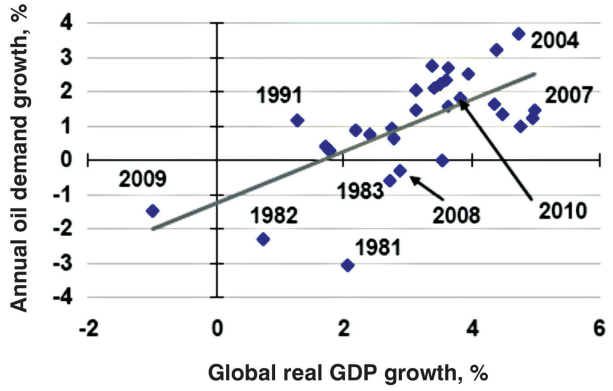

Fig. 1. Real GDP growth vs. oil demand growth
Sl.1. Realni rast GDP u odnosu na potražnju nafte

Table 6. Changes in global oil demand in 2009 and 2010

	(in mil. bbl/d)	
	2009	2010
IEA June 2009	83.3	…
IEA August 2009	83.9	85.3
IEA October 2009	84.6	86.1
IEA December 2009	84.31 (84.9)	85.13 (85.9 – 86.3)
IEA January 2010	84.9	86.3
IEA February 2010	84.9	86.5

(data in the brackets refer to higher or lower GDP scenario – Figure 2 and relation with Table 4)

Table 7. Forecast of oil derivatives consumption in China

	(in mil. bbl/d, % = increase y-o-y)		
	2008	2009	2010
June 2009	7.889 (4.3%)	7.860 (-0.4%)	…
August 2009	7.892	8.117 (2.8%)	8.439 (4.0%)
October 2009	7.892	8.226 (5.1%)	8.637 (4.1%)
December 2009	7.892	8.413 (6.6%)	8.718 (3.6%)
January 2010	7.892	8.464 (7.2%)	8.824 (4.3%)
February 2010	7.892	8.500 (7.7%)	8.900 (4.7%)

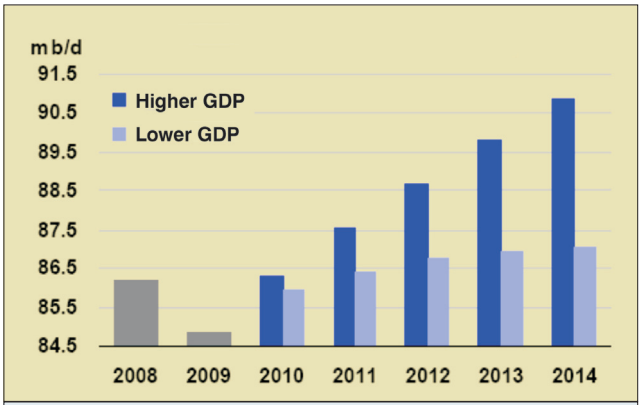

Fig. 2. Global Demand: GDP Sensitivity
Sl. 2. Potražnja u svijetu: Ovisnost o GDP

ther elaboration of these aspects is not within the scope of this paper.

This statement will be substantiated with two series of data, but the changes referring to China should be probably explained with specific features of China as a fast developing country, but also as a country with very specific economic system.

Table 6 indicates global demand forecasts in million of barrels per day according to Oil Market Report for 2009 and 2010 issued for particular month during 2009/2010.

The data on China refer to total forecast of total oil derivatives consumption.

The data referring to China illustrate ambiguities in understanding of development and directions of Chinese economy development. Namely, frequently we could find information, even in magazines presuming to be 'professional', about continuous high growth rate of Chinese economy, and particularly oil and derivatives consumption growth rate, of 8% or even higher.

4.2.1 ... and in the fringe areas of energy sector

As mentioned before, the energy industry covers a wide area, and numerous links between segments of the industry and the environment are so strong that the world cannot function without energy. Previous surveys, well-known in the energy sector, pointed to two areas which were frequently neglected. One is the share of energy industry in total economy. According to the data, in the 1980s energy sector participated with approximately 60%[11] in total economy (in 1979 this share in former Yugoslavia was 62.497%) (the author is not acquainted with later reviews on this subject). The other pointed to reversible relation between a wealth of a nation and energy consumption.[8]

Even less scientific discussions covered the topic of consequences of diesel engines improvements and their effect on the structure of demand for motor fuels on one side, and their impacts on building new or upgrading existing refinery units in order to produce more diesel, on the other side. Today, when we talk more about "transport fuels" and their share in total refining output (about 65%), more attention is also paid to the role of bio fuels (Figure 3). The use of bio fuels contributes to self-sufficiency – oil importing countries are less dependant on oil exporting countries. Also, in combination with high crude oil prices, the research for alternative fuels has contributed to more extensive exploitation of some previously under-valued unconventional resources such as oil sands and oil/gas shales, but also application of Fisher-Tropsch process for production of high quality refining and petrochemical products.

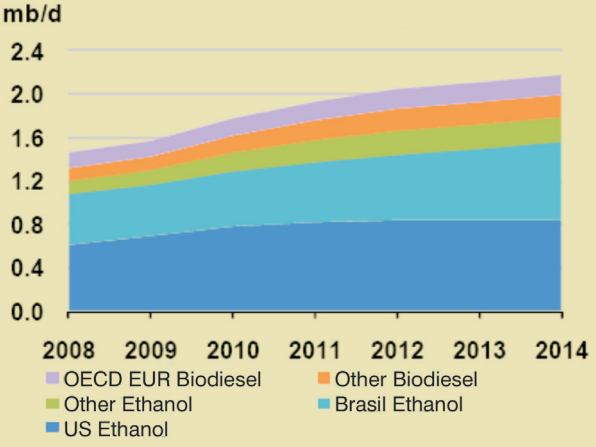

Fig. 3. Global Biofuels Supply
Sl. 3. Ukupna raspoloživost biogoriva u svijetu

Probably in the context of these considerations we could also mention the 'peak oil' issue. Namely, there are so many non-scientific, popular views about oil reserves, production and possible recovery of oil, and these topics are more widely discussed by non-professionals than by professional circles. The proof for that are numerous discussions on Hubbert's peak oil curve, or a recent example of: "The battle for the last intact oil" (Falkland islands).[12]

In addition to that we can mention popular discussions, round tables on energy topics and impact of energy issues on overall economy, "expert" views of so called "politicians by profession" – but in fact proponents of (unproved and non-provable) advantages of certain ideologies, policies and views, the proclamation of which comes down to personal advantages, behaviour of compromised politicians as half-schooled individuals (axis of evil extends from Indonesia to Iraq), then, the age of uncertainty becomes a reality. But there is always the question: "Why?" …"Who needs it?"

The answer can be provided only by science. And scientific approach in certain area includes also forecasts based on facts, not proclamations. Then we come to a question whether individual institutions, regardless their reputable name, which in the past failed to provide reliable forecasts, do really merit (scientific) credibility. This dilemma is accompanied by another one: do epigones (imitators, copyists) deserve to be called "scientists"?

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