



A Marshall Plan for Hellas: No one puts new wine in old wineskins

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Outline of the presentation

- ✿ **The new and old Marshall Plan in the light of the parable of the new wine in old wineskins**
- ✿ **The Troika Financial Assistance Programs to Greece, Ireland, Spain and Portugal:
A revelation of the European misery and the insatiable appetite of the German elite for control over the continent**
- ✿ **The Greek economy before 2010**
- ✿ **The statistical “anomalies” of 2010**
- ✿ **Public debt accumulation in Greece and the “sustainability” of the Troika’s fiscal policies**
- ✿ **The way out? Definitely not by a “Real” MP**

☀ The new and old Marshall Plan in the light of: the parable of the new wine in old wineskins

☀ “or else the new wine will burst the wineskins and be spilled, and the wineskins will be ruined. But new wine must be put into new wineskins, and both are preserved”

☀ the old wine: 1948 Western European conditions

☀ Western Europe had:

- skilled labor
- customs of a commercial and industrial society
- entrepreneurial culture
- rule of law and property rights had a long history

But . . . we must not forget that . . .

☀ The old Marshall Plan (MP):

- ☀ was “kind of” free money (the term was that the American dollars had to be used exclusively for American goods transported by American ships only)
- ☀ was made possible through huge propaganda efforts to persuade the American public and the American Parliament to agree on the \$13 billion assistance out of the American budget, part of which was going to Germany, the fascist enemy
- ☀ was not conclusively responsible for W. Europe’s re-growth

The following table shows the distribution of the MP aid

country	1948/49 \$mill	1949/50 \$mill	1950/51 \$mill	Σύνολο \$mill
<u>Austria</u>	232	166	70	488
<u>Belgium, Lux</u>	195	222	360	777
<u>France</u>	1085	691	520	2296
<u>WGermany</u>	510	438	500	1448
<u>Denmark</u>	103	87	195	385
<u>Switzerland</u>	—	—	250	250
<u>Hellas</u>	175	156	45	366
<u>UK</u>	1316	921	1060	3297
<u>Ireland</u>	88	45	—	133
<u>Iceland</u>	6	22	15	43
<u>Italy, Trieste</u>	594	405	205	1204
<u>Norway</u>	82	90	200	372
<u>Holland</u>	471	302	355	1128
<u>Portugal</u>	—	—	70	70
<u>Sweden</u>	39	48	260	347
Totals	4,924	3,652	4,155	12,731

✿ Research on the relationship between the aid granted and the subsequently achieved growth was revealed to be **negative**

✿ In the Greek case, the 1948-51 Marshall Plan was not so effective as it was expected to be: during the 1950's some important electricity production units were created and also the agricultural infrastructure was substantially improved, but corruption of the Greek politicians lead to the so called “frozen funds”. It is noted that the law 1608/1950 about embezzlement of public money was introduced by the MP Committee and enforced against the then corrupted Greek politicians!

✿ It is noted that this law, entailing life imprisonment, has been used against the president of ELSTAT for falsifying the country's public debt and deficit for the year 2009. Eurostat may also be found legally responsible for the same economic crime against Greece.

Let us see how the 1948 MP compares to later, “kind of”, MPs made available to developing countries

✿ The \$13 billion in cash goods is actually dwarfed by subsequent MPs

So,

**what about the massive
foreign aid made available after WWII?**

Since world war II and until 2000, the US alone had given **\$1 trillion** in foreign aid to countries around the world. **The result?** According to the UN, **70 countries**, aid recipients all, **resulted poorer in 2000 than in 1980**, and an incredible **43** got worse off than in 1970^[1].

^[1] *NATO's Empty Victory: A postmortem on the Balkan war, 2000*, edited by Ted Galen Carpenter.

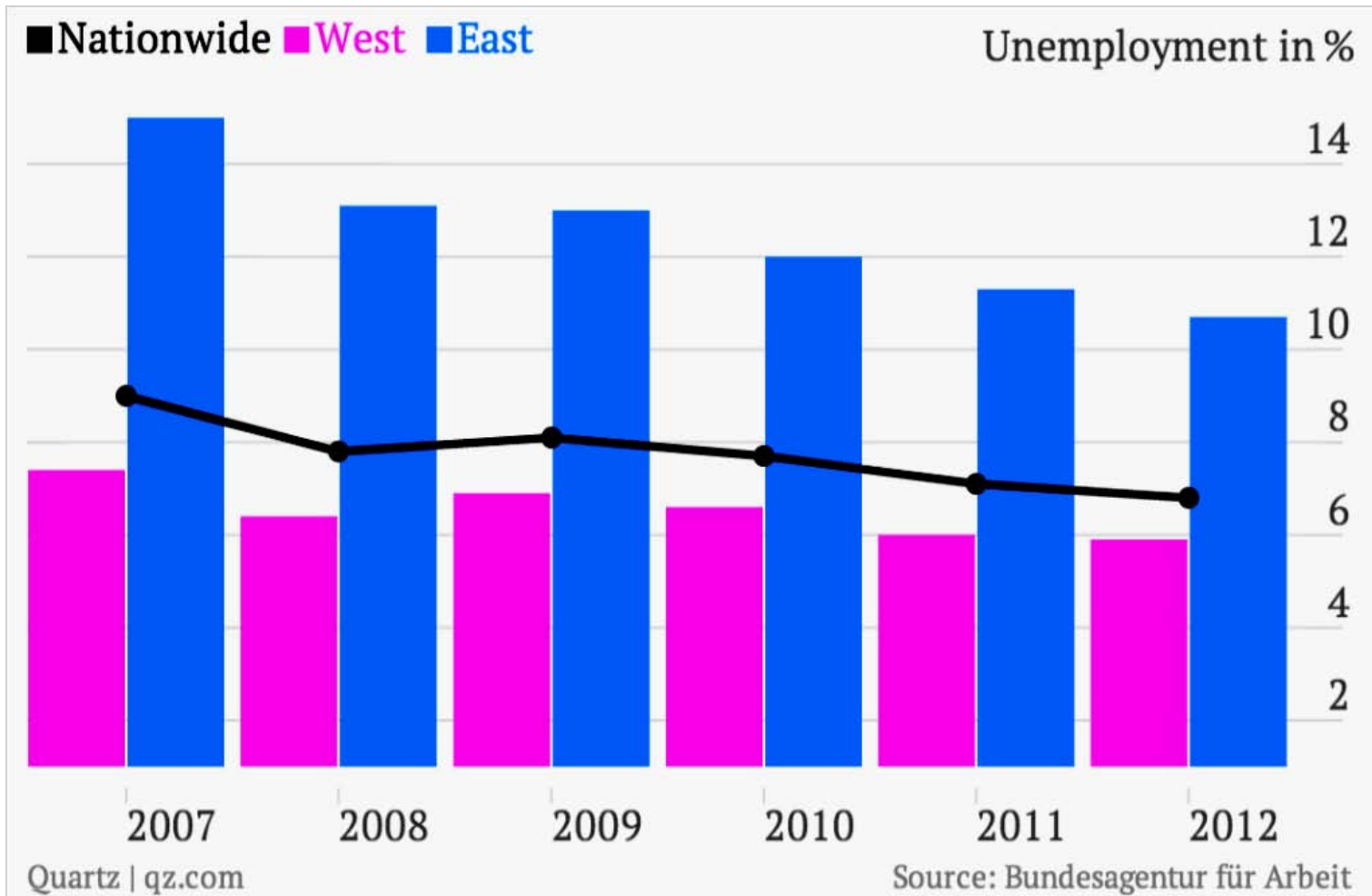
What about W. Germany, who launched its own massive Marshall Plan to rebuild its Eastern part?

Between 1990 and 2009 the Western part of Germany has provided its Eastern part with €1.3 trillion (\$1.9 trillion) [2]

**However, after 23 years of financial support
The results are a disappointment:**

- **uncompetitive industry**
- **unemployment**
- **social backwardness** (see the next two diagrams comparing the Western and Eastern part of Germany)

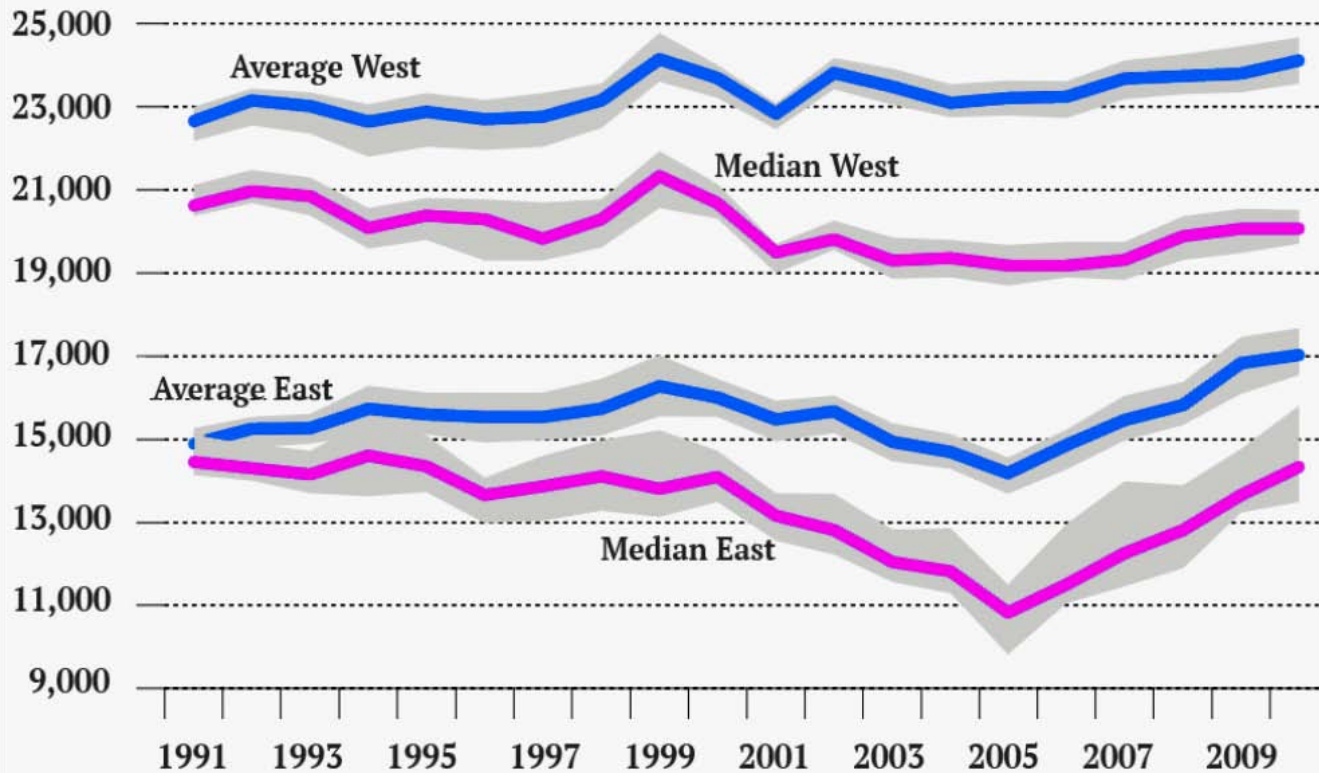
[2] Wall Street Journal, 8 November 2009, “Twenty years of stimulus for East Germany” by Wolfgang Hummel.



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German Real Household Income, East and West

in €



Market income including a notional employer's contribution for public servants.
The grey shading shows 95% confidence bands.

Quartz

Source: DIW Berlin

✿ why foreign aid, or “kind of”, repeated MPs have failed?

- ✿ corruption of the governments and the local elites**
- ✿ lack of human capital skills**
- ✿ weak educational systems**
- ✿ lack of the appropriate business mentality**
- ✿ oppression and suppression of peoples**
- ✿ historically existing mistrust to foreign investments**
- ✿ oligarchic and autocratic political systems**

✿ The new wine today: 2014 digital conditions

✿ **Propaganda cannot be so effective today as it was in 1948. The reason? Information society and electronic social networks**

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✿ **The socio-economic setting has today very closely come up to what Carley (2000)^[3] described as “intelligent space”**

✿ **As space becomes more and more intelligent, people’s infospheres (see next transparency) are getting enlarged**

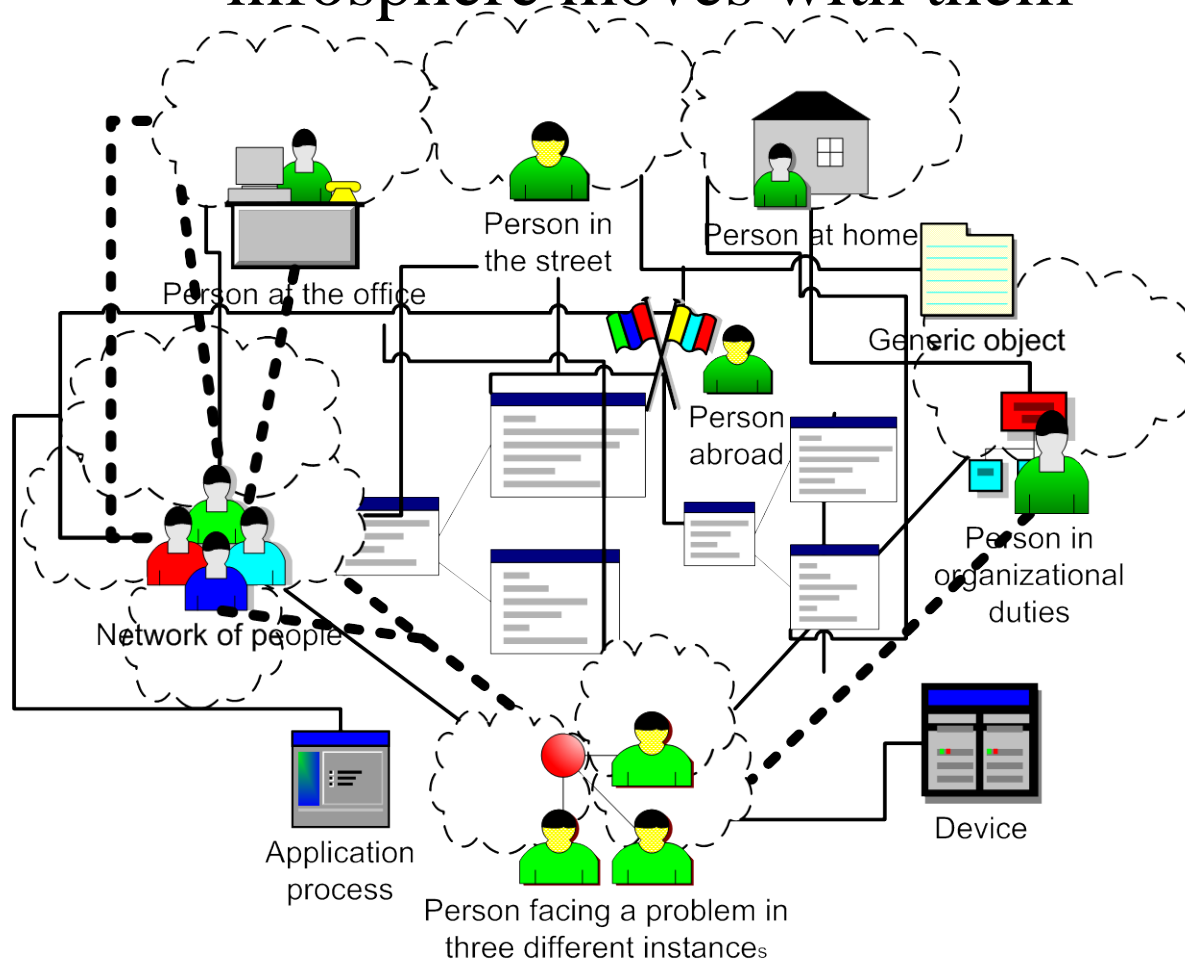
[3] Kathleen M. Carley “Smart Agents and Organizations of the future”

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.202.1587&rep=rep1&type=pdf>

Infosphere is the information sphere surrounding an individual

It includes computers, various instruments, knowledge acquired through interaction with various socioeconomic agents, and information made available by the individual's working and other environment

It is emphasized that when people move, their
infosphere moves with them

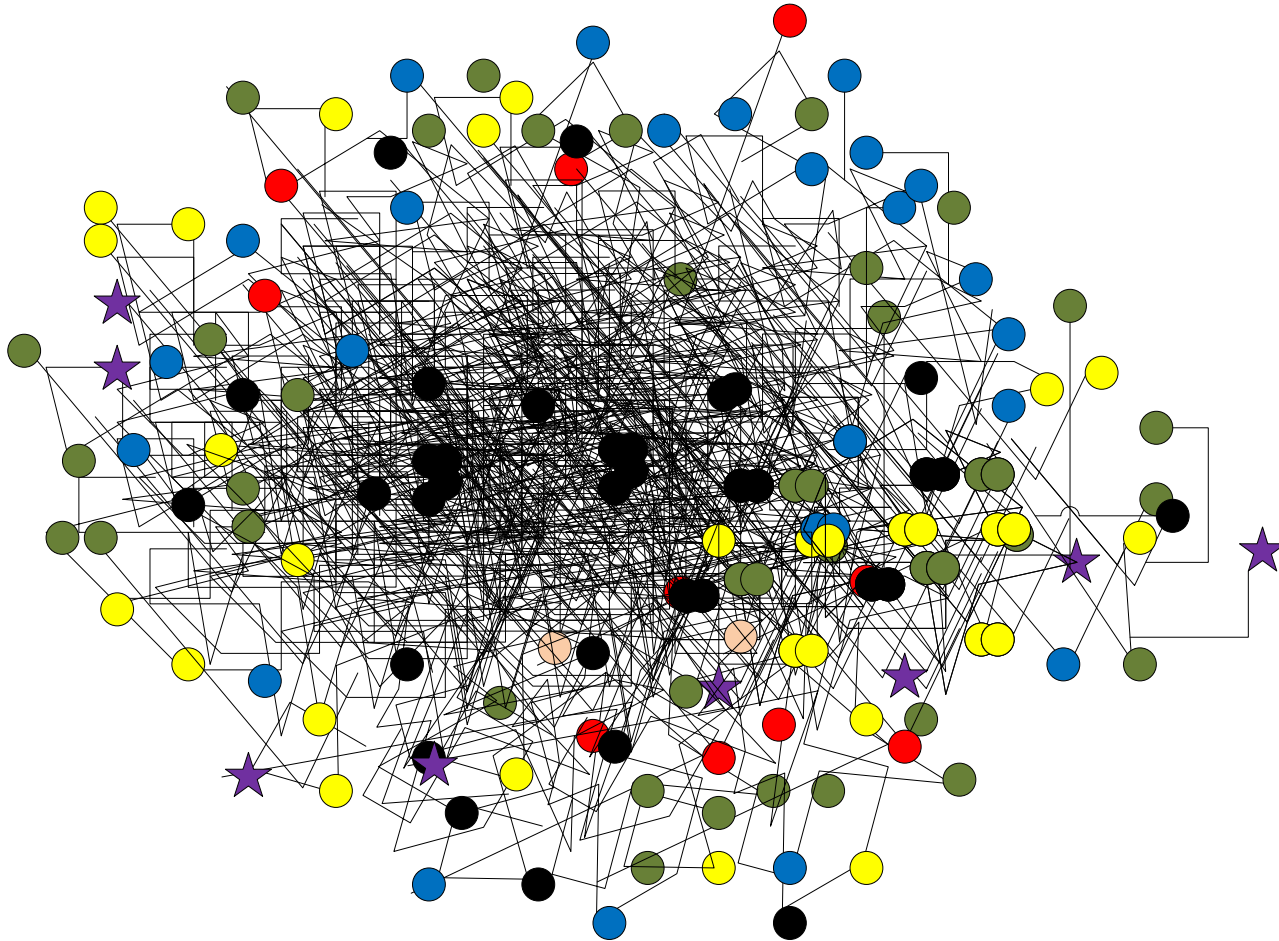


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Figure 1: Intelligent space and infospheres (Georganta 2013)^[4]

[4] Zoe Georganta, 2013. "The Dynamics of Greece's Public Debt: An Econophysics Framework", 2nd International Conference on Econophysics, Kavala-Greece.

**Figure 2: Interactions among the agents of the digital economy
(Georganta and Sfakianakis, 2010)^[5]**



The circulation of information is towards all directions and difficult to describe

[5] Zoe Georganta and Kostas Sfakianakis, 2010. “New Economic Structure: Internet vs. traditional Economy in Greece, 2003-2006”, University of Macedonia, Greece.

What has now triggered the merits of a “New Marshall Plan” for the Eurozone and more specifically **for Greece?**

The answer is simple:
The reality of statistical observation that the imposed strict German recipe of austerity measures simply **does not work**

Let us see the essence of the Troika Austerity (so called “financial assistance”) to southern Eurozone countries and Ireland.

The Troika Financial Assistance Programs to Greece, Ireland, Spain and Portugal:

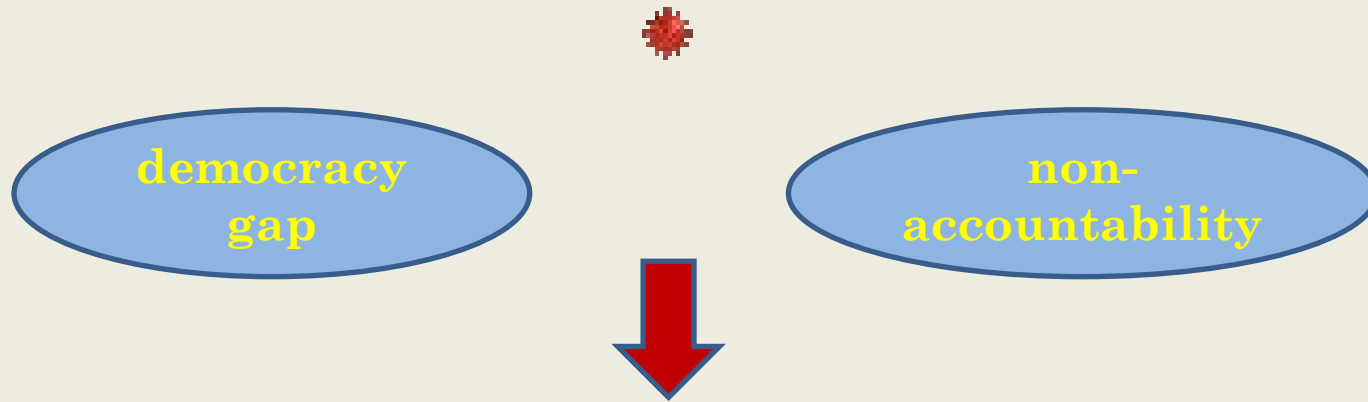
Nothing more than a revelation of:

- (1) the insatiable appetite of the German elite for
the continent's control, and**
- (2) the incompetence, inferiority complex and
misery of the rest of West Europe**

why the European idea is walking the wrong road



why the European idea is walking the wrong road?



A new European 'super-state' is being thrust *top-down* upon Europeans
instead of
a democratic consent and bottom-up involvement
from the citizens of independent states (Charles Moore)

**Table 1:
Overview of disbursements provided to Greece, Ireland, Portugal and Spain by the euro area, EFSF* and IMF (in euro billion)**

Disbursement Date	EU, ESM, EFSM, EFSF**	IMF	TOTAL
Greece (May 2010-Dec. 2013)	186.5	28.48	214.98
Ireland (Jan. 2011-Dec. 2013)	39.4	19.5	58.9
Portugal (May 2011-Dec. 2013)	46.9	24.7	71.6
Spain (June 2012-Dec. 2013)	41.3	technical	41.3
TOTAL 2010	314.1	72.68	386.78


***EFSF(European Financial Stability Facility), EFSM(European Financial Stabilization Mechanism), ESM(European Stability Mechanism)**

**** For Greece, see Table 2 for details**

Source: Own arrangement from the European Commission various Reports on *Financial assistance* to the above countries

A polite reminder to W. Europeans The Greek Case I

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- **Greek populace has been carrying ugly memories of foreign intervention, see:**

- **Greece's national anthem** (see next slide)
- **Greece has missed the Renaissance, the Enlightenment, and the industrial revolution because of the four hundred years of the Ottoman Yoke**
- **Greece has through ages been played, cheated and broken by the Big (not Great) European Powers, but SHE still stands upright**

Part of the Greece's National Anthem

Hymn to Freedom

from verse 9

...
you went to foreign lands
asking for their stronger hands.

from verse 10

You walked the road lone,
took the road back alone,
...

verse 11

Some have cried in your arms,
but relief, relief was none,
some have promised their hand,
and the cheating was that hard.

verse 12

Some alas! In your deep pain,
were so happy so many,
“go, go, beg your sons,
go”, shouted the harsh.

The Greek Case II

- **Greece has fought against the Nazi Germany loosing the one out of seven of its populace, only second in Europe after the Russians (one out of five)**
- **Greece has suffered continuous infiltration by bribery instigated by Greece's allies to take vulnerable light-conscience individuals on their side**
- **Greece has very recently been treated unfairly and unlawfully by the Bureaucracy of Brussels and Luxemburg, specifically by the European Commission and Eurostat, who have not respected the European Law (article 17 of the EU) and they are also legally responsible for the falsification of the 2009 data for the public debt and deficit, being in close collaboration with corrupted Greek politicians**

The Greek economy before 2010

The following tables (4 slides) come from the EU source:

IP/08/1617 Brussels, 3 November 2008. Autumn economic forecast 2008-2010

AUTUMN 2008 FORECASTS

MAIN ECONOMIC INDICATORS 1992 - 2010

(a) GDP at constant prices (annual % change)

	5-year averages							Estimates 2008	Forecasts 2009	Scenario unchanged policies 2010	
	1992-96	1997-01	2002-06	2004	2005	2006	2007				
BE	1.5	2.6	2.1	3.0	1.8	3.0	2.8	1.4	0.1	0.9	BE
DE	1.4	2.1	0.9	1.2	0.8	3.0	2.5	1.7	0.0	1.0	DE
IE	5.9	9.1	5.5	4.7	6.4	5.7	6.0	-1.6	-0.9	2.4	IE
EL	1.1	3.8	4.3	4.9	2.9	4.5	4.0	3.1	2.5	2.6	EL
ES	1.5	4.4	3.3	3.3	3.6	3.9	3.7	1.3	-0.2	0.5	ES
FR	1.2	3.0	1.7	2.5	1.9	2.2	2.2	0.9	0.0	0.8	FR
IT	1.2	2.0	0.9	1.5	0.6	1.8	1.5	0.0	0.0	0.6	IT
CY	5.5	4.2	3.3	4.2	3.9	4.1	4.4	3.7	2.9	3.2	CY
LU	2.6	6.3	4.4	4.5	5.2	6.4	5.2	2.5	1.2	2.3	LU
MT	5.0	3.4	2.0	1.1	3.5	3.1	3.7	2.4	2.0	2.2	MT
NL	2.5	3.7	1.6	2.2	2.0	3.4	3.5	2.3	0.4	0.9	NL
AT	1.8	2.6	2.2	2.5	2.9	3.4	3.1	1.9	0.6	1.3	AT
PT	1.6	3.8	0.7	1.5	0.9	1.4	1.9	0.5	0.1	0.7	PT
SI	2.0	4.2	4.3	4.3	4.3	5.9	6.8	4.4	2.9	3.7	SI
SK	-	2.7	5.9	5.2	6.5	8.5	10.4	7.0	4.9	5.5	SK
FI	1.3	4.6	3.0	3.7	2.8	4.9	4.5	2.4	1.3	2.0	FI
€ area	1.5	2.8	1.7	2.2	1.7	2.9	2.7	1.2	0.1	0.9	€ area

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The Greek economy before 2010: Gross fixed capital formation

(b) Gross fixed capital formation in equipment (annual % change)

	5-year averages							Estimates	Forecasts	Scenario unchanged policies 2010	
	1992-96	1997-01	2002-06	2004	2005	2006	2007				
BE	-0.5	6.2	2.0	7.5	5.4	5.1	8.2	6.4	-1.8	0.9	BE
DE	-2.9	6.3	2.9	4.6	6.0	11.1	6.9	5.4	-4.4	0.3	DE
IE	8.9	10.0	5.6	9.5	21.7	-4.5	14.1	-20.0	0.0	2.0	IE
EL	7.4	10.9	10.7	12.7	-1.0	14.2	9.1	8.0	5.3	5.8	EL
ES	-0.1	9.1	5.1	5.1	9.2	10.2	10.0	0.8	-5.2	-0.9	ES
FR	0.8	7.6	1.2	2.3	3.2	2.8	5.8	2.1	-2.1	0.2	FR
IT	0.1	5.2	0.9	3.0	1.3	3.5	-0.1	-0.7	-1.4	0.4	IT
CY	-	5.3	4.3	16.1	-5.6	15.5	4.9	5.0	1.3	1.0	CY
LU	-4.2	11.0	2.2	20.8	4.6	2.5	22.2	2.5	-3.0	1.5	LU
MT	-	-	-	-	-	-	-	-	-	-	MT
NL	5.6	6.1	2.8	-2.5	3.2	14.1	8.7	8.6	-5.0	-0.9	NL
AT	2.9	2.9	0.5	-1.8	6.9	-0.8	5.9	2.8	-1.5	0.4	AT
PT	1.1	9.1	-0.1	5.2	1.0	7.3	8.2	3.8	-3.8	0.5	PT
SI	9.7	11.8	8.0	9.0	5.4	15.2	9.3	8.8	3.0	5.0	SI
SK	-	1.8	4.4	3.5	22.0	-6.3	4.2	6.4	4.8	5.9	SK
FI	-1.4	6.7	1.2	0.4	-0.2	4.1	11.5	2.0	0.7	2.1	FI
€area	-	6.9	2.5	3.6	4.7	7.0	6.3	2.7	-2.9	0.5	€area

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The Greek economy before 2010: General government deficit/surplus

AUTUMN 2008 FORECASTS

MAIN ECONOMIC INDICATORS 1992 - 2010

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(g) General government net lending (+) or borrowing (-) (as a % of GDP) (1)

	5-year averages							Estimates 2008	Forecasts 2009	Scenario unchanged policies 2010	
	1992-96	1997-01	2002-06	2004	2005	2006	2007				
BE	-5.4	-0.6	-0.5	-0.2	-2.6	0.3	-0.3	-0.5	-1.4	-1.8	BE
DE	-3.0	-1.6	-3.3	-3.8	-3.3	-1.5	-0.2	0.0	-0.2	-0.5	DE
IE	-1.7	2.4	1.2	1.4	1.7	3.0	0.2	-5.5	-6.8	-7.2	IE
EL	-9.8	-4.2	-5.2	-7.5	-5.1	-2.8	-3.5	-2.5	-2.2	-3.0	EL
ES	-5.6	-1.9	0.4	-0.3	1.0	2.0	2.2	-1.6	-2.9	-3.2	ES
FR	-4.9	-2.1	-3.2	-3.6	-2.9	-2.4	-2.7	-3.0	-3.5	-3.8	FR
IT	-8.3	-2.2	-3.5	-3.5	-4.3	-3.4	-1.6	-2.5	-2.6	-2.1	IT
CY	-	-	-3.7	-4.1	-2.4	-1.2	3.5	1.0	0.7	0.6	CY
LU	1.6	4.5	0.5	-1.2	-0.1	1.3	3.2	2.7	1.3	0.5	LU
MT	-	-7.6	-5.0	-4.7	-2.8	-2.3	-1.8	-3.8	-2.7	-2.5	MT
NL	-3.3	0.0	-1.3	-1.7	-0.3	0.6	0.3	1.2	0.5	0.1	NL
AT	-4.1	-1.6	-1.9	-4.4	-1.5	-1.5	-0.4	-0.6	-1.2	-1.4	AT
PT	-4.7	-3.4	-3.8	-3.4	-6.1	-3.9	-2.6	-2.2	-2.8	-3.3	PT
SI	-	-2.9	-2.0	-2.2	-1.4	-1.2	0.5	-0.2	-0.7	-0.5	SI
SK	-	-7.6	-3.9	-2.3	-2.8	-3.5	-1.9	-2.3	-2.2	-2.5	SK
FI	-5.8	2.8	3.2	2.4	2.9	4.1	5.3	5.1	3.6	2.4	FI
€ area	-5.0	-1.6	-2.5	-2.9	-2.5	-1.3	-0.6	-1.3	-1.8	-2.0	€ area

The Greek economy before 2010: General government debt

(h) General government gross debt (as a % of GDP)

	2001	2002	2003	2004	2005	2006	2007	Estimates 2008	Forecasts 2009	Scenario unchanged policies 2010
BE	106.5	103.4	98.6	94.3	92.1	87.8	83.9	86.5	86.1	85.6
DE	58.8	60.3	63.8	65.6	67.8	67.6	65.1	64.3	63.2	61.9
IE	35.5	32.2	31.1	29.4	27.3	24.7	24.8	31.6	39.2	46.2
EL	102.9	101.5	97.8	98.6	98.8	95.9	94.8	93.4	92.2	91.9
ES	55.5	52.5	48.7	46.2	43.0	39.6	36.2	37.5	41.1	44.4
FR	56.2	58.2	62.9	64.9	66.4	63.6	63.9	65.4	67.7	69.9
IT	108.8	105.7	104.4	103.8	105.9	106.9	104.1	104.1	104.3	103.8
CY	60.7	64.6	68.9	70.2	69.1	64.6	59.5	48.2	44.7	41.3
LU	6.5	6.5	6.2	6.3	6.1	6.6	7.0	14.1	14.6	14.5
MT	62.1	60.1	69.3	72.1	69.9	63.9	62.2	63.1	63.2	63.1
NL	50.7	50.5	52.0	52.4	51.8	47.4	45.7	48.2	47.0	45.9
AT	67.0	66.4	65.4	64.8	63.7	62.0	59.5	57.4	57.1	56.9
PT	52.9	55.5	56.9	58.3	63.6	64.7	63.6	64.3	65.2	66.6
SI	27.4	28.1	27.5	27.2	27.0	26.7	23.4	21.8	21.1	20.1
SK	48.9	43.4	42.4	41.4	34.2	30.4	29.4	28.8	29.0	29.3
FI	42.3	41.3	44.3	44.1	41.3	39.2	35.1	31.6	30.2	29.8
€ area	68.0	67.8	69.1	69.5	70.0	68.3	66.1	66.6	67.2	67.6

✿ The statistical alchemies of 2010

- ➡ **The year 2010: the year of intentional unlawful falsification of the debt numbers of 2009. Eurostat is directly responsible**
- ➡ **The 7-Member Board of ELSTAT* was abolished**
- ➡ **ELSTAT was transformed into a One-Person-Authority:**
 - The only such case in Europe, and not only,
 - thus in practice abolishing ELSTAT's independence
- ➡ **Consequence: non-accountability and serious Violation of ESA95 European Regulations leading to huge artificial augmentation of public debt by €29 bill. In 2009**

* ELSTAT: Hellenic Statistics Authority

✿ The statistical alchemies of 2010: what happened

- ➡ **Ad hoc reclassification of Economic Units into the General Government Sector, unloading of their debt on general government, and next year reclassifying them back into the non-financial sector where they have always belonged**
- ➡ **Unlawful labeling of revenues as cost**
- ➡ **Billions of euros which nobody paid and nobody received were added to government debt**
- ➡ **Illegal retrospective classification of a 2001 swap value of €21 bill. into the General Government**
- ➡ **Statistically wrong revision of GDP downwards**

✿ What followed the disclosure of the statistical “anomaly”

- ➡ the Greek Justice System undertook ipso jure an investigation by examining hard evidence
- ➡ A year afterwards, the verdict of Economic Crime Prosecutors charged the chair of ELSTAT of national treason and called for a Court Hearing
- ➡ Since then, Eurostat and Brussels have been trying hard to intervene and influence the Greek government to whitewash the case. They have been doing it by mere assertion and not by statistical evidence, through conferences, letters of intervention, Press interviews and so on.
- ➡ The chair of ELSTAT is still in his position! But...

Public debt accumulation in Greece and the “sustainability” of the Troika’s fiscal policies

	Public debt measured before 2010 (€mill) and p/c of GDP	Public debt rev./calculated by Eurostat -ELSTAT p/c of GDP	Public deficit measured before 2010(€mill) and p/c of GDP	Public deficit rev./calculated by Eurostat-ELSTAT p/c of GDP
2007	216,362 94.8	107.4	8,272 3.8	6.5
2008	237,181 97.6	112.9	12,195 5.0	9.8
2009		129.7		15.6
2010		148.3		10.7
2011		170.6		9.4
2012		156.9		9.0
2013		175.5		2.1

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The following table is the most recent EDP (Excessive deficit procedure) table Certified by ELSTAT and Eurostat. It contains unexplainable numbers.

Table 1: Reporting of government deficit/surplus and debt levels and provision of associated data

Member state: GREECE Data are in ... (millions of units of national currency) Date: 09/10/2013	ESA 95 codes	Year				
		2009	2010	2011	2012	2013
		half-finalized	half-finalized	half-finalized	half-finalized	planned
Net borrowing (-)/ net lending (+)	EDP B.9					
General government	S.13	-36,166	-23,715	-19,869	-17,414	-3,886
- Central government	S.1311	-35,543	-26,185	-18,839	-15,876	-11,061
- State government	S.1312	M	M	M	M	M
- Local government	S.1313	-84	-569	496	693	1,319
- Social security funds	S.1314	-539	3,039	-1,526	-2,231	5,856
		(1)	(1)	(1)	(1)	planned
General government consolidated gross debt						
Level at nominal value outstanding at end of year		299,690	329,514	355,141	303,928	321,000
<i>By category:</i>						
Currency and deposits	AF.2	1,477	1,005	820	774	
Securities other than shares, exc. financial derivatives	AF.33	253,622	253,433	251,998	93,614	
Short-term	AF.331	10,820	9,121	11,844	16,516	
Long-term	AF.332	242,802	244,312	240,154	77,098	
Loans	AF.4	44,591	75,076	102,323	209,540	
Short-term	AF.41	1,515	2,765	2,620	2,207	
Long-term	AF.42	43,076	72,311	99,703	207,333	
General government expenditure on:						
Gross fixed capital formation	P.51	7,260	5,045	3,585	3,543	L
Interest (consolidated)	EDP D.41	11,976	12,855	14,888	9,643	L
<i>p.m.: Interest (consolidated)</i>	<i>D.41 (uses)</i>	11,918	13,193	15,017	9,705	L
Gross domestic product at current market prices	B.1*g	231,081	222,151	208,532	193,749	182,911

(1) Please indicate status of data: estimated, half-finalized, final.

2013/04/14

Sustainability of Troika's fiscal policies

The findings of extensive quantitative research[*] are the following:

1. In order to achieve the 2020 target of 120% of debt/GDP ratio, the GDP yearly growth has to be in the range of 6-8% and the today's debt has to be haircut by at least 50% with a corresponding drastic reduction of interest rate.
2. It is noted that the 2009 public deficit was predicted by Eurostat as 2.2% of GDP (slide 26) and the public debt as 92.2% of GDP. Eurostat's unlawful augmentation in 2010 for the year 2009 was 15.6% and 129% respectively, apparently aiming at Troika's intrusion into Greece and Southern Europe.

[*] see slides 38, 39 and 40 for some hints on the methodology

The way out?

**Definitely not by a “Real” MP
because a real MP is not feasible today. The
suggestion of an MP for Greece, and/or for
the Eurozone, is considered as a
communicative pre-EU-elections trick.**

Then what?





- ✿ **A new development model is needed for Greece, centered on industry and innovation in the digital age.**
- ✿ **Once the Greek Justice system finalizes the Court Case for the falsification of the debt and deficit data, the case has to be brought to the European Court of Law and maybe to a higher level of Justice. Greece has to be compensated for the criminal destruction of its economic and social base, a unique phenomenon in peaceful times.**
- ✿ **The deeply corrupted Greek government has to be replaced by honest and democratically accountable politicians.**



- **Enforcement of the European Treaties for the ethical values of European peoples which have been violated by the Brussels and Lux bureaucrats.**
- **Enforcement of the European Treaties (especially articles 2, 3, 7 of the TEU) regarding in particular the human rights, human dignity, justice, democracy all of which have been brutally violated in Greece by her government and by the Brussels and Lux bureaucrats.**
- **The public debt has to return to its pre-2010 true measured levels.**

Thank you
for your attention

Sustainability of fiscal policies and Fiscal Reaction Functions: Methodology

By using the budget identity of government:

$$D_t = D_{t-1} + i_t D_{t-1} - B_t$$

Which becomes:

$$\left(\frac{B}{Y}\right)_t = \frac{(r_t - g_t)}{(1 + g_t)} \left(\frac{D}{Y}\right)_{t-1}$$

Sustainability of fiscal policies and Fiscal Reaction Functions: Methodology

● where t denotes time, D denotes public debt, i denotes nominal interest rate on government bonds and B denotes the primary balance, i.e. the budget balance excluding interest payments.

● nominal GDP is denoted as Y , real interest rate denoted as r , and real economic growth rate denoted as g

● if the government decides to keep its public debt/GDP ratio constant, it would implement the following rule:

Sustainability of Public Debt and Fiscal Reaction Functions: Methodology

$$\left(\frac{B}{Y}\right)_t^{\text{required}} = \frac{(r_t - g_t)}{(1 + g_t)} \left(\frac{D}{Y}\right)_{t-1} = \alpha_t^* \left(\frac{D}{Y}\right)_{t-1}$$

This is the required fiscal reaction function and can be compared to the actual behavioral relationship. So, we estimate the following:

$$\left(\frac{B}{Y}\right)_t^{\text{actual}} = \alpha_t \left(\frac{D}{Y}\right)_{t-1} + \varepsilon_t$$