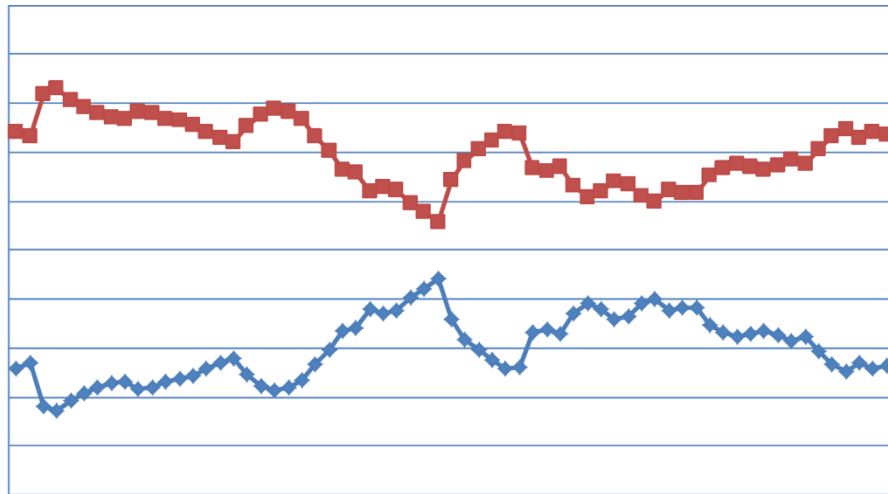




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A Defence Economics View on a US Exit from NATO (1949-2015)

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1. Introduction
2. Burden sharing in NATO: theories and evidence
3. Methodology
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5. Conclusions



Aim: Discussing the possibility for the US to exit NATO on the short term.

Means: cost benefit analysis.

First: Literature review, operationalizing costs and benefits to explain burden sharing behaviour of NATO member states.

Second: Empirical research: member states' burden sharing behaviour over the period 1949-2015 (special attention for 1990-2015).



1949: 12 member states, 1950s (Greece, Turkey, West Germany), 1982 Spain.

Since 1990 eastward expansion: 1999 (Hungary, Czech Republic, Poland), 2004 (Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, Slovenia), 2009 (Albania, Croatia).

Out-of area missions: 2003 (International Security Force in Afghanistan), 2011 (Operation Unified Protector).

Since “hot summer of 2014” attention turns to Europe again, commitment to spend a minimum of 2% of GDP.



Traditional measure for burden sharing: D/GDP

NATO-doctrine: 1950-1967 (mutual) assured destruction

Olson & Zeckhauser (1966) NATO as provider of a pure public good “deterrence”.

Hypothesis: larger wealthier nations (in particular US) share a disproportionate part of the costs, smaller nations are inclined to opt for a free-ride.

Empirical evidence supports the hypothesis over this period



NATO-doctrine: 1967-1990 flexible response

Sandler et al: a more comprehensive theoretical representation of alliance behaviour, the Joint Product Model.

Implication: Defence spending can contribute to multiple outputs: (im)pure public benefits and country specific private benefits.

Hypothesis: if private benefits increase in importance, the willingness of allies to allocate resources to defence will increase.

Burden sharing in NATO: theories and evidence

NATO-doctrine: 1967-1990 flexible response

Over this period: research on testing NATO allies' defence burdens versus derived benefits.

Sandler and Forbes (1980): Average Benefit Share (ABS) to reflect individual NATO countries' share in total defence benefits and compared this measure to a burden sharing index (BSI) reflecting the country's actual share in NATO's total defence expenditures.

Proxy for ABS was computed as the simple average of each ally's share in NATO GDP, its' share in NATO population, and its' share in NATO exposed borders.



For 1970-1999, Sandler et al. conclude a match between NATO defence burdens and derived benefits, except for the US defence build-up during the Reagan administration in the early 1980s.

Solomon (2004) argues the concept of an exposed border to be irrelevant for a number of reasons.

His empirical findings over the same period point into a different direction, except for the year 1980 when no significant differences between burdens and benefits were found.



Finally, in a recent paper Sandler and Shimizu (2014) researching the burden-benefit-model for the period 1990-2010 find:

Evidence is beginning to emerge for the first time since 1975 that the rich allies are shouldering more of the burden for the poor allies. Evidence of this exploitation starts to show up around 2005 and is present in 2010.

Methodology



TABLE 1 Summary of burden sharing measures

Variable	Measurement	Source	Exhibit
NATO expenditures	% of NATO total expenditures (Based on current US\$)	NATO (1949-2015e)	Figure 1
GDP_ABS	Gross Domestic Product (Current US\$ billion)	Trading economics (2000-2015)	TABLE 2, 2a
GDP_REL	Gross Domestic Product (As a % of NATO GDP)	NATO (1949-2015e) Trading economics (2000-2015e)	TABLE 3
POP_ABS	Allies' inhabitants (Millions of people)	Trading economics (2000-2015e)	TABLE 2, 2a
POP_REL	Allies' inhabitants (As a % of NATO population)	NATO (1949-2015e) Trading economics (2000-2013)	TABLE 3
AREA_ABS	Allies' territory (In 000 skm2)	CIA (2015)	TABLE 2,2a
AREA_REL	Allies' territory as a % of NATO area	CIA (2015)	TABLE 3
DEF_ABS	Allies' Defence expenditures Current US\$ million	NATO (1949-2015e)	TABLE 2,2a
DEF_REL	Allies Defence Expenditures as a % of NATO military spending	NATO (1949-2015e)	TABLE 3
ABS	Allies' Average Benefit Share (GDP_REL + POP_REL + AREA_REL)/3	Own calculations	TABLE 4
BSI	Allies' Burden Share Index DEF_REL	Own calculations	TABLE 4
NB	Allies' Net Benefit ABS -BSI	Own calculations	TABLE 4,5,6

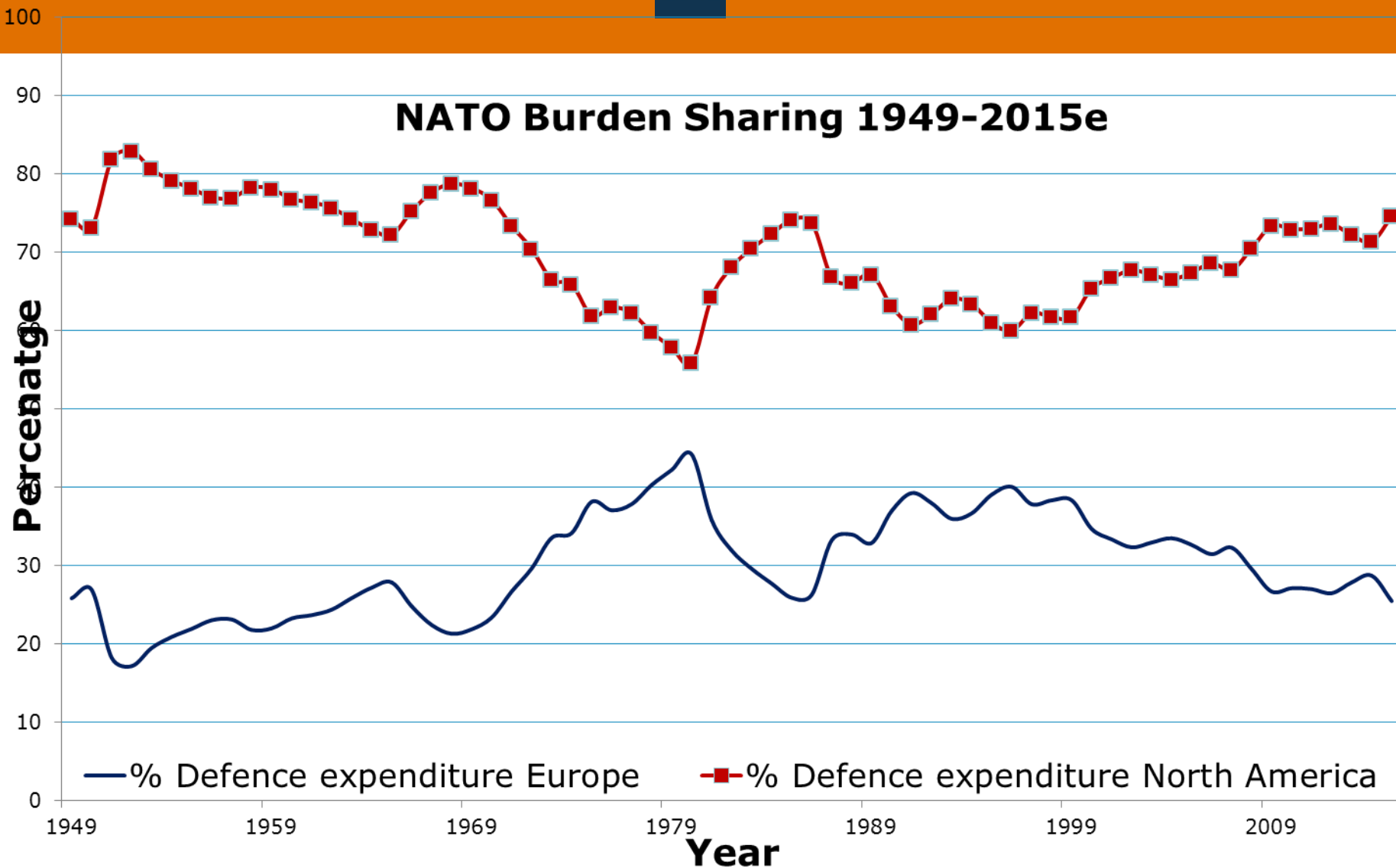


TABLE 1 NATO in Figures (2015e)

Country	GDP_ABS	POP_ABS	AREA_ABS	DEF_ABS
Albania	13	3	28,748	130
Belgium	533	11	30,528	4,036
Bulgaria	56	7	110,879	523
Croatia	57	4	56,594	631
Czech Rep	206	11	78,867	1,899
Denmark	342	6	43,094	3,267
Estonia	26	1	45,228	442
France	2,829	66	551,500	42,100
Germany	3,853	81	357,022	37,531
Greece	238	11	131,957	4,581
Hungary	137	10	93,028	1,041
Italy	2,144	61	301,340	17,536
Latvia	32	2	64,589	272
Lithuania	48	3	65,300	456
Luxembourg	60	1	2,586	270
Netherlands	870	17	41,453	8,592
Norway	500	5	323,802	6,077
Poland	548	38	312,685	10,301
Portugal	230	10	92,090	2,676
Romania	199	20	238,391	2,223
Slovakia	100	5	49,035	859
Slovenia	49	2	20,273	349
Spain	1,404	46	505,370	10,381
Turkey	800	78	783,562	12,425
United Kingdom	2,942	65	243,610	58,529
Canada	1,787	36	9,984,670	15,634
United States	17,419	319	9,826,675	649,931

**TABLE 2A NATO in Figures (2015e)**

Country	GDP_ABS	POP_ABS	AREA_ABS	DEF_ABS
Belgium	533	11	30,528	4,036
Denmark	342	6	43,094	3,267
France	2,829	66	551,500	42,100
Italy	2,144	61	301,340	17,536
Luxembourg	60	1	2,586	270
Netherlands	870	17	41,453	8,592
Norway	500	5	323,802	6,077
Portugal	230	10	92,090	2,676
United Kingdom	2,942	65	243,610	58,529
Europe	18,215	564	4,284,392	227,172
Canada	1,787	36	9,984,670	15,634
United States	17,419	319	9,826,675	649,931
North America	19,206	355	19,811,345	665,565



TABLE 3 Allies' Percentage Share in NATO's Total for each Variable (2015e)

Country	GDP_REL	POP_REL	AREA_REL	DEF_REL
Belgium	1.43	1.21	0.13	0.45
Denmark	0.91	0.62	0.18	0.37
France	7.56	7.19	2.26	4.72
Italy	5.73	6.62	1.24	1.96
Luxembourg	0.16	0.06	0.01	0.03
Netherlands	2.32	1.84	0.17	0.96
Norway	1.34	0.56	1.33	0.68
Portugal	0.61	1.13	0.38	0.30
Romania	0.53	2.16	0.98	0.25
United Kingdom	7.86	7.05	1.00	6.56
Canada	4.77	3.88	40.95	1.75
United States	46.55	34.70	40.30	72.80



TABLE 4 Contribution to NATO's Burdens and Benefits (2015e)

Country	ABS	BSI	NB
Belgium	0.93	0.45	0.48
Denmark	0.57	0.37	0.20
France	5.67	4.72	0.95
Italy	4.53	1.96	2.57
Luxembourg	0.08	0.03	0.05
Netherlands	1.44	0.96	0.48
Norway	1.08	0.68	0.40
Portugal	0.71	0.30	0.41
United Kingdom	5.30	6.56	-1.26
Canada	16.54	1.75	14.79
United States	40.52	72.80	-32.29



TABLE 5 Development Net Benefit NATO Countries 1990-2015e (Sandler and Forbes)

Country	1990	1995	2000	2005	2010	2013	2014	2015e
Belgium	0.09	0.11	0.25	0.36	0.39	0.40	0.38	0.48
Denmark	0.11	-0.02	0.09	0.13	0.15	0.12	0.14	0.20
France	-1.91	-3.61	-1.33	-1.11	0.63	0.57	0.21	0.95
Italy	1.23	1.34	0.22	0.48	1.80	2.07	1.96	2.57
Luxembourg	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05
Netherlands	0.03	-0.14	0.19	0.22	0.37	0.40	0.36	0.48
Norway	0.29	0.20	0.31	0.32	0.36	0.38	0.33	0.40
Portugal	0.30	0.12	0.32	0.36	0.40	0.39	0.40	0.41
United Kingdom	-2.15	-1.71	-2.03	-1.80	-1.05	-0.86	-1.86	-1.26
Europe	2.89	1.71	6.33	10.72	16.32	16.33	14.33	17.50
Canada	14.98	14.92	14.76	14.47	14.55	14.89	14.70	14.79
United States	-17.87	-16.63	-21.09	-25.19	-30.87	-31.22	-29.03	-32.29
North America	-2.89	-1.71	-6.33	-10.72	-16.32	-16.33	-14.33	-17.50



TABLE 6 Development Net Benefit NATO Countries 1990-2015e (Solomon)

Country	1990	1995	2000	2005	2010	2013	2014	2015e
Belgium	0.53	0.57	0.64	0.75	0.79	0.79	0.78	0.87
Denmark	0.34	0.21	0.29	0.33	0.35	0.32	0.34	0.40
France	0.18	-1.53	0.41	0.65	2.38	2.27	1.94	2.66
Italy	3.52	3.42	2.05	2.29	3.54	3.72	3.61	4.21
Luxembourg	0.05	0.06	0.06	0.06	0.08	0.08	0.08	0.08
Netherlands	0.69	0.55	0.82	0.87	1.02	1.03	1.00	1.12
Norway	0.08	-0.03	0.08	0.13	0.22	0.27	0.22	0.27
Portugal	0.64	0.47	0.51	0.55	0.59	0.56	0.57	0.57
United Kingdom	0.18	0.49	0.20	0.44	0.94	1.16	0.20	0.90
Europe	15.26	14.35	18.61	23.02	28.62	28.30	26.46	29.60
Canada	2.22	2.04	1.96	2.09	2.35	2.76	2.54	2.58
United States	-17.48	-16.38	-20.56	-25.10	-30.97	-31.06	-29.00	-32.18
North America	-15.26	-14.35	-18.61	-23.02	-28.62	-28.30	-24.46	-29.60



Results

Will US leave in the short run?

Cost-benefit-analyses on the basis of the burden benefit model

The US should check out and leave as soon as possible.

However....



Results

Myopic view

1. Distribution has never been equal, so why leave now?
2. Do wealth, population and area represent the most relevant benefits for the US?
3. An exit –probably- would lead to a more competitive Europe investing in an European Defence Industry.
4. US operates on a global scale, European allies primarily operate in NATO. US defence expenditures should not be attributed to NATO only.
5. An US exit would impact other international issues. This would probably harm US interests as well.
6. With Russia back as a force to be reckoned with, NATO's once core raison d'être has again gained validity.



Conclusions

- US is a massively overcontributing member state when measured by the burden-benefit-model
- However, the exact benefits derived by the US are probably manifold.
- It seems recommendable to go out and get a grasp on these benefits, if only to make clear to apparently free-riding NATO members that this “deal” may be penny-wise and pound-foolish.