Oil prices and stagflation
Who is free from stagflation?

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1. The issues at stake
2. Empirical evidence
3. Model of analysis
4. Simulations
5. Conclusions

Outline

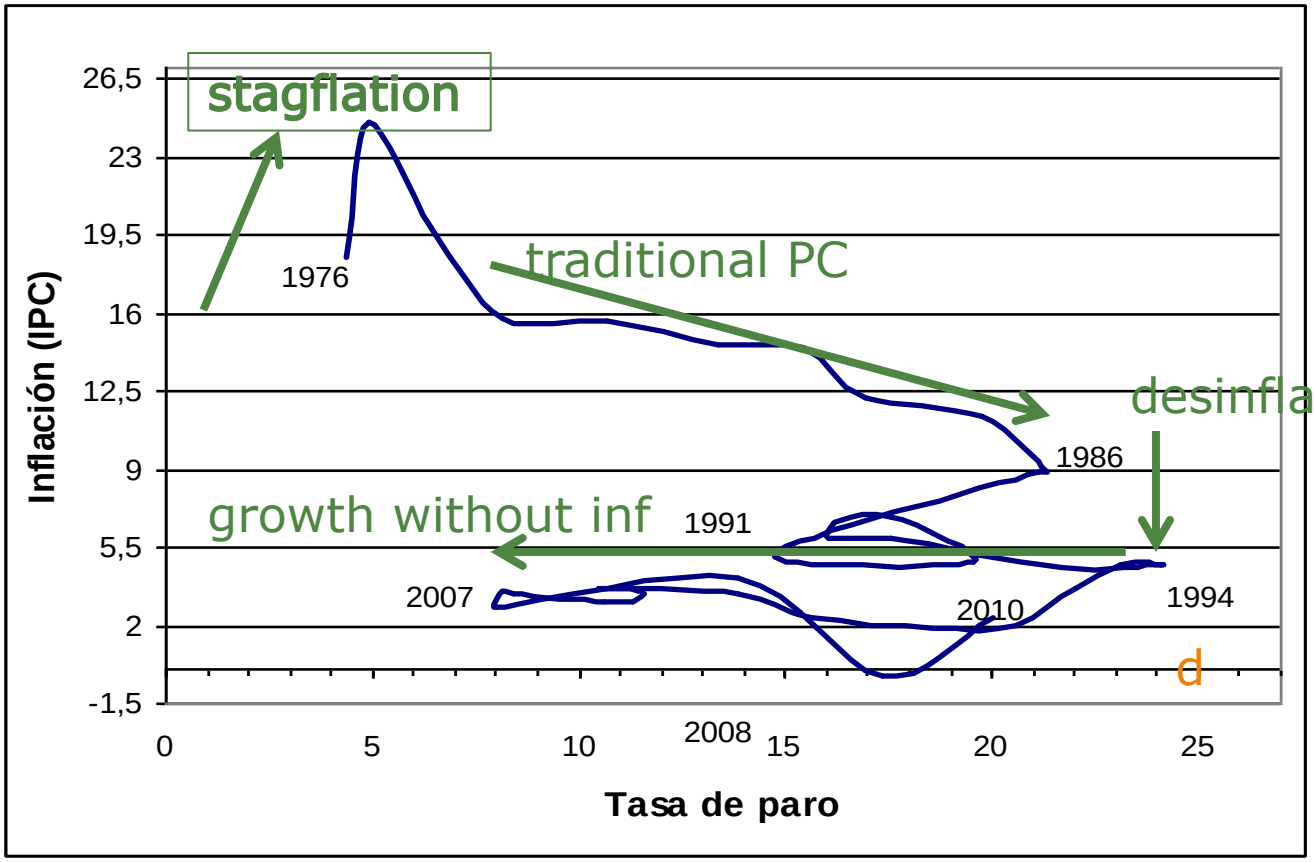
1. The issues at stake

- In 1973 and again in 1978-79 the price of oil increased fourfold. Result: stagflation (stagnation + inflation)
- In the five year boom previous to 2008 the price of oil increased by the same amount but inflation remained under control (2%)
- In the big recession after 2008, stagnation with constant prices (after a year of deflation
- How can we explain these contradictory developments of output and inflation? Are we free from stagflation?

Sources of data

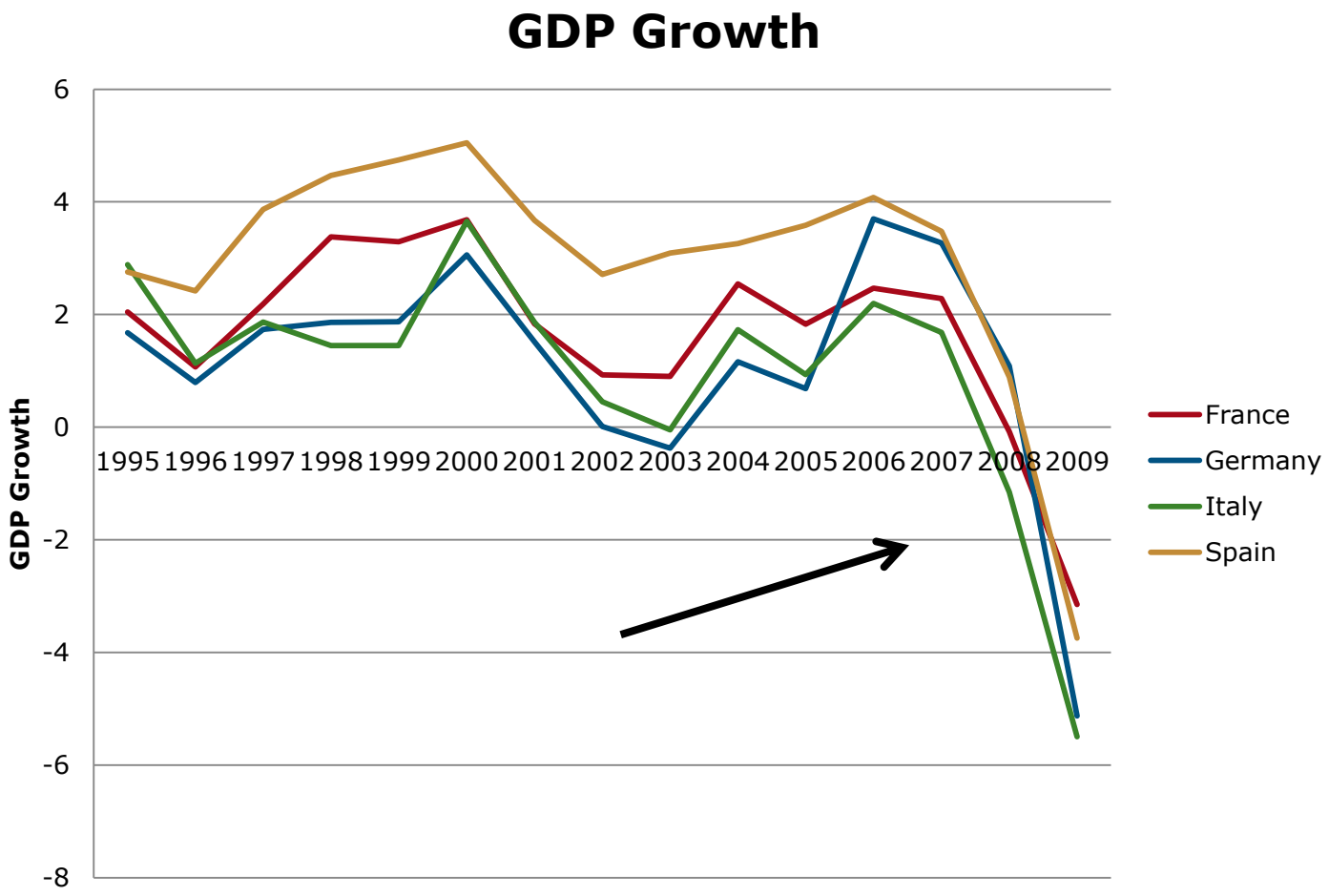
- Eurostat
- OECD
- World Bank
- WIOT (World Input-Output Data Base)
- Others (INE, BdE, The Economist…)

2. Empirical evidence

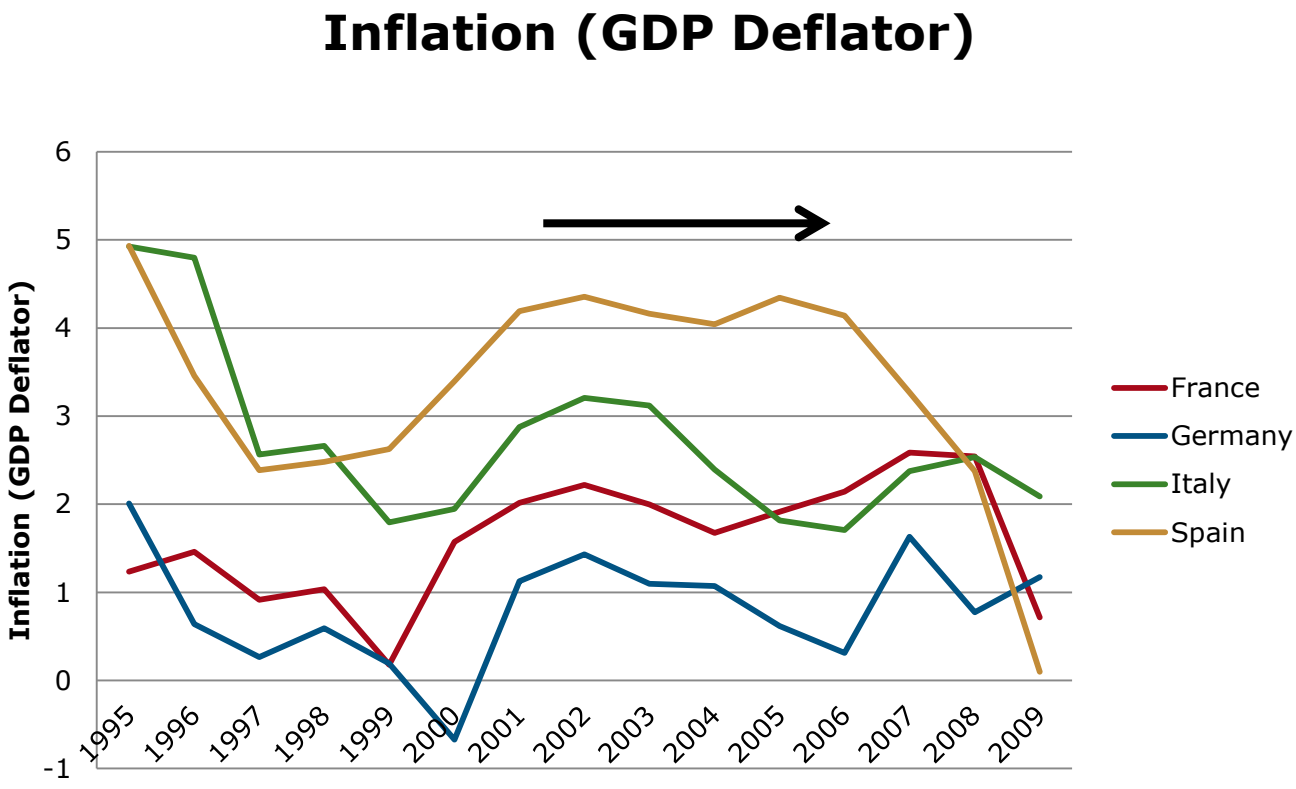


Phillips curve for the Spanish Economy (1976-2010)

Source INE

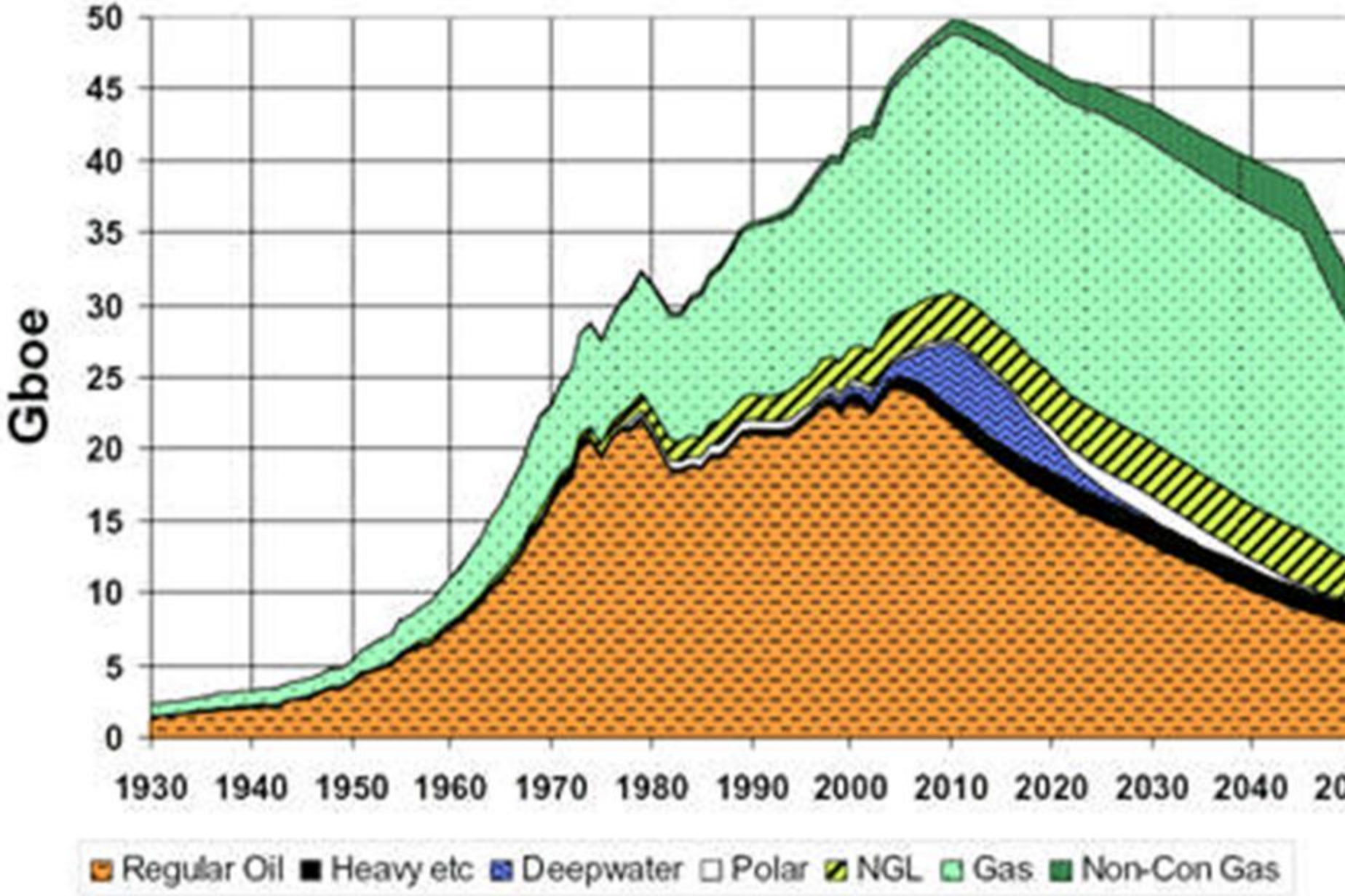


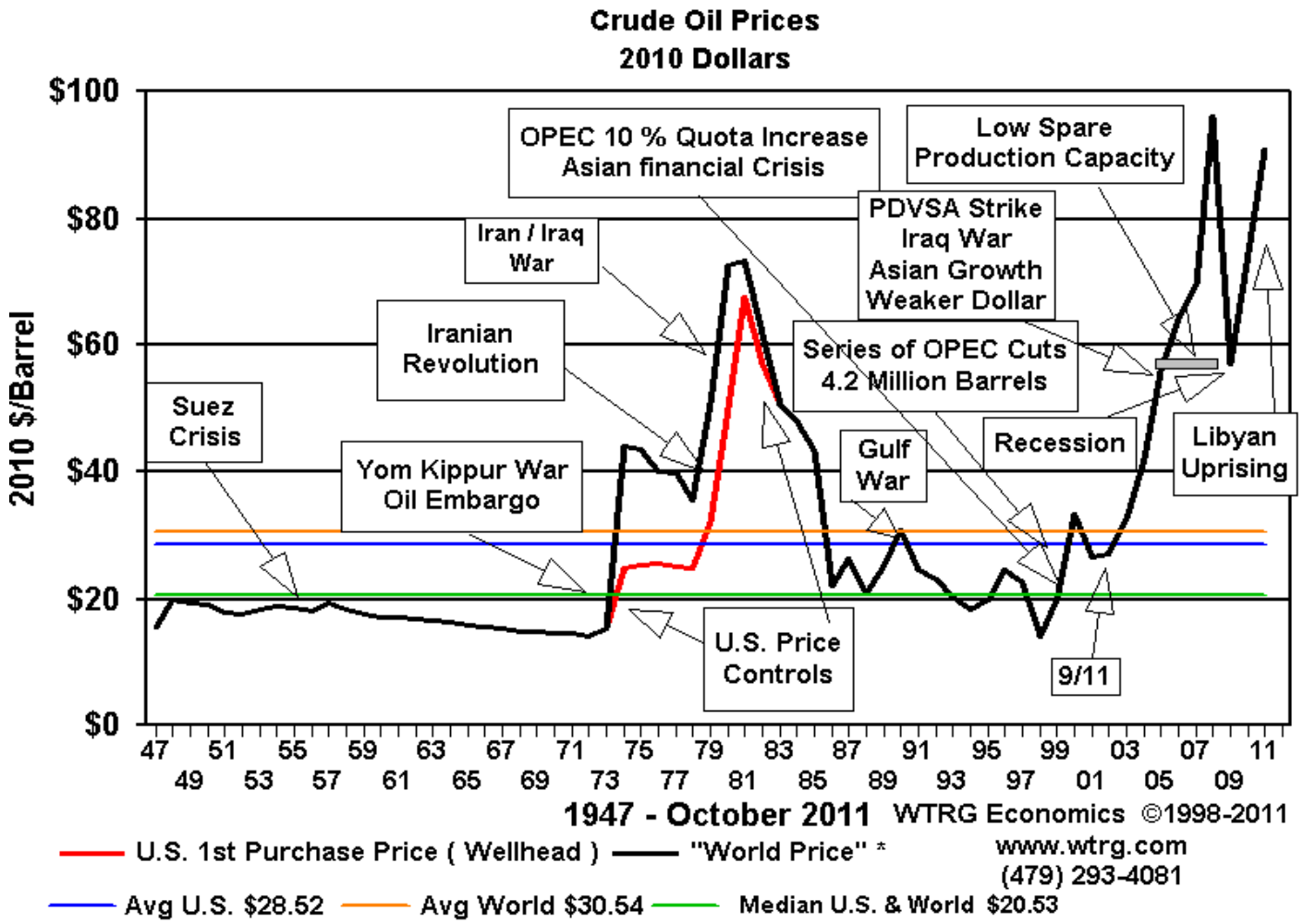
Source: World Bank



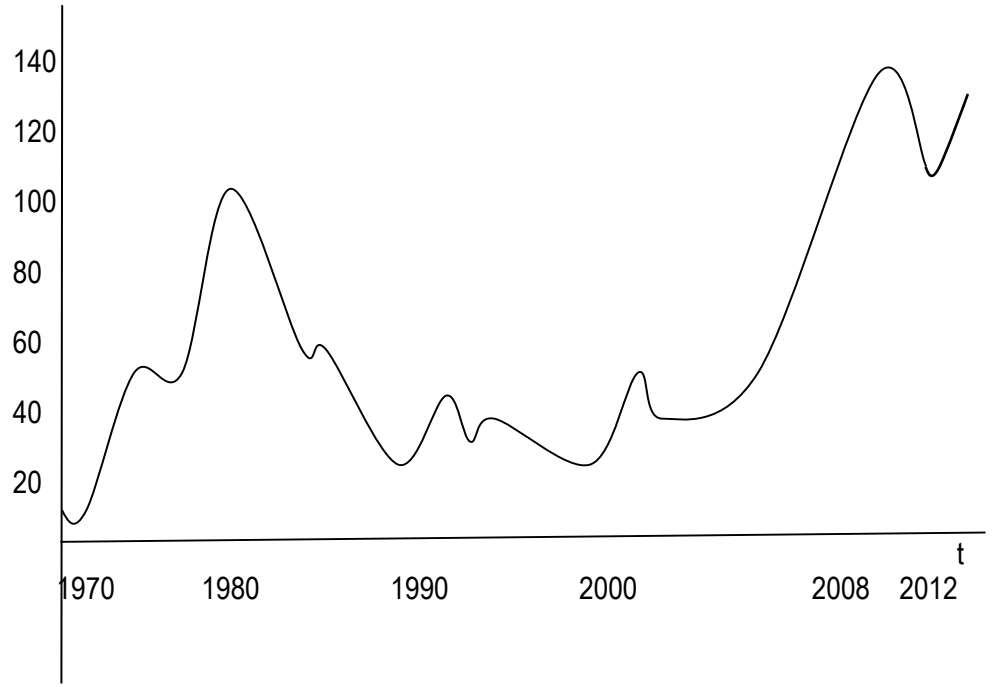
Source: World Bank

ASPO: OIL & GAS PRODUCTION PROFILES
2005 Base Case

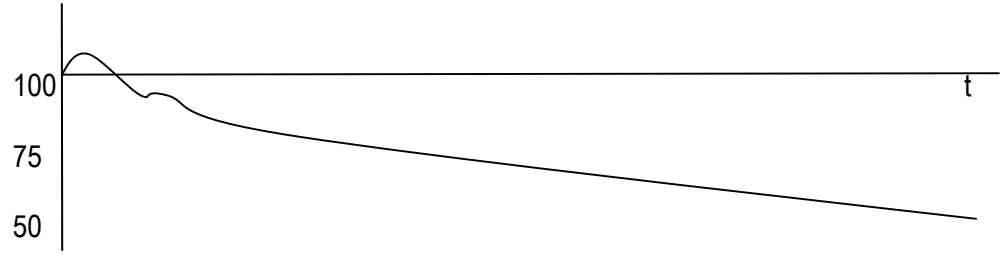



Crude Oil Prices
2010 Dollars
$100
$80
$60
$40
$20
$0
2010 $/Barrel
OPEC 10 % Quota Increase
Asian financial Crisis
Low Spare
Production Capacity
PDVSA Strike
Iraq War
Asian Growth
Weaker Dollar
Iran / Iraq
War
Iranian
Revolution
Series of OPEC Cuts
4.2 Million Barrels
Suez
Crisis
Yom Kippur War
Oil Embargo
Gulf
War
Recession
Libyan
Uprising
U.S. Price
Controls
9/11
47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07 09 11
1947 - October 2011
WTRG Economics ©1998-2011
www.wtrg.com
(479) 293-4081
U.S. 1st Purchase Price (Wellhead)
"World Price" *
Avg U.S. $28.52
Avg World $30.54
Median U.S. & World $20.53

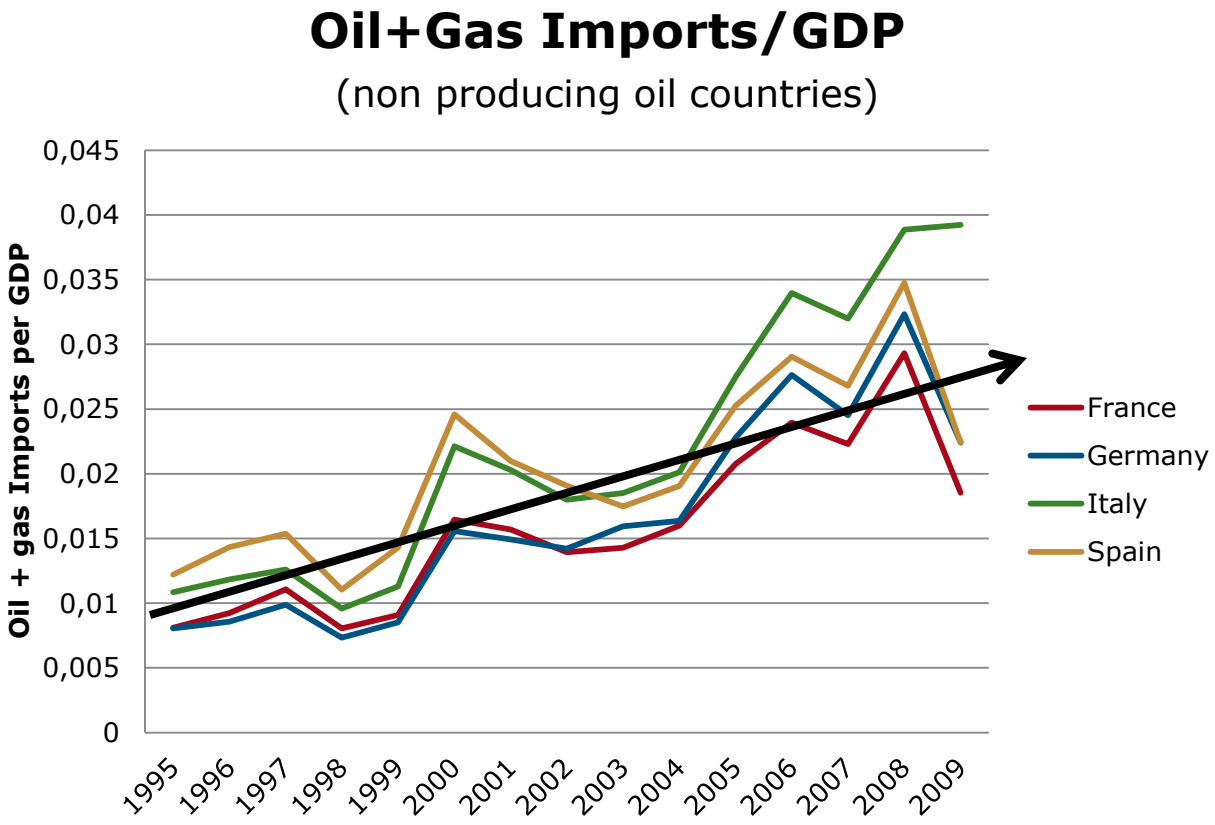
$ per barril crude oil (constant dollars, 2007)



Oil consumption per unit GDP
(67 countries, 1970 = 100)



The Economist


Oil+Gas Imports/GDP
(non producing oil countries)
Oil + gas Imports per GDP
0,045
0,04
0,035
0,03
0,025
0,02
0,015
0,01
0,005
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
France
Germany
Italy
Spain

Source: WIOD

Table 2.2.1: Energy intensity

	(kgoe/1 000 EUR)			Index (2000 = 100)		
	1999	2004	2009	1999	2004	2009
EU-27	193	184	165	103.0	98.3	88.2
Belgium	242	221	206	103.2	94.0	87.6
Bulgaria	1 378	1 105	843	103.4	82.9	63.2
Czech Republic	661	659	514	98.5	98.2	76.6
Denmark	121	112	107	106.3	98.5	93.6
Germany	171	166	151	102.6	99.7	90.4
Estonia	891	686	607	110.5	85.1	75.3
Ireland	144	118	109	106.1	87.0	80.8
Greece	204	187	168	99.6	91.5	81.9
Spain	197	198	168	100.0	100.6	85.5
France	184	179	164	102.8	100.3	91.9
Italy	150	150	140	101.8	101.4	94.9

Eurostat

- **Output**: principle of effective demand
  - $Y=\mu A$
  - $Y'=A'$

- **Prices-Inflation**: Cost-push inflation. Augmented Phillips curve
  - Wage share: **l·w** ($=1/\pi$) (globalization)
  - Oil share:φ·**Po** (Po($), ε=$/€)
  - Inflation expectations (Monetary Policy of CB)
  - Mark-up (globalization)

3. PostKeynesian model of analysis

- **Impact of ΔPo on prices**

  Δ oil share >ΔP

  Possible feedback (spiral?) P <> w) unless expectations of inflation are anchored

  ΔP > ∇X′ > ∇Y′

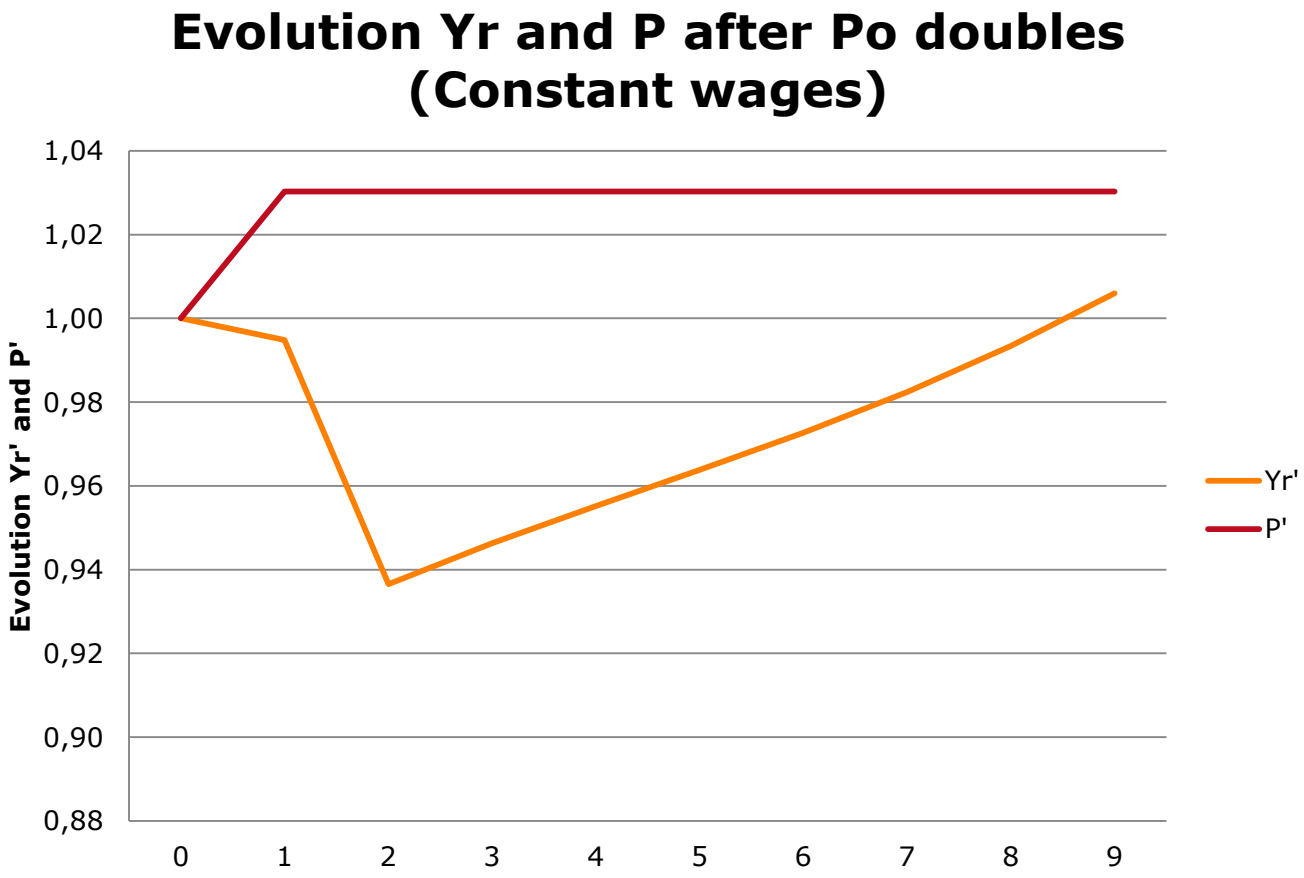
- **Impact of ΔPo on output**

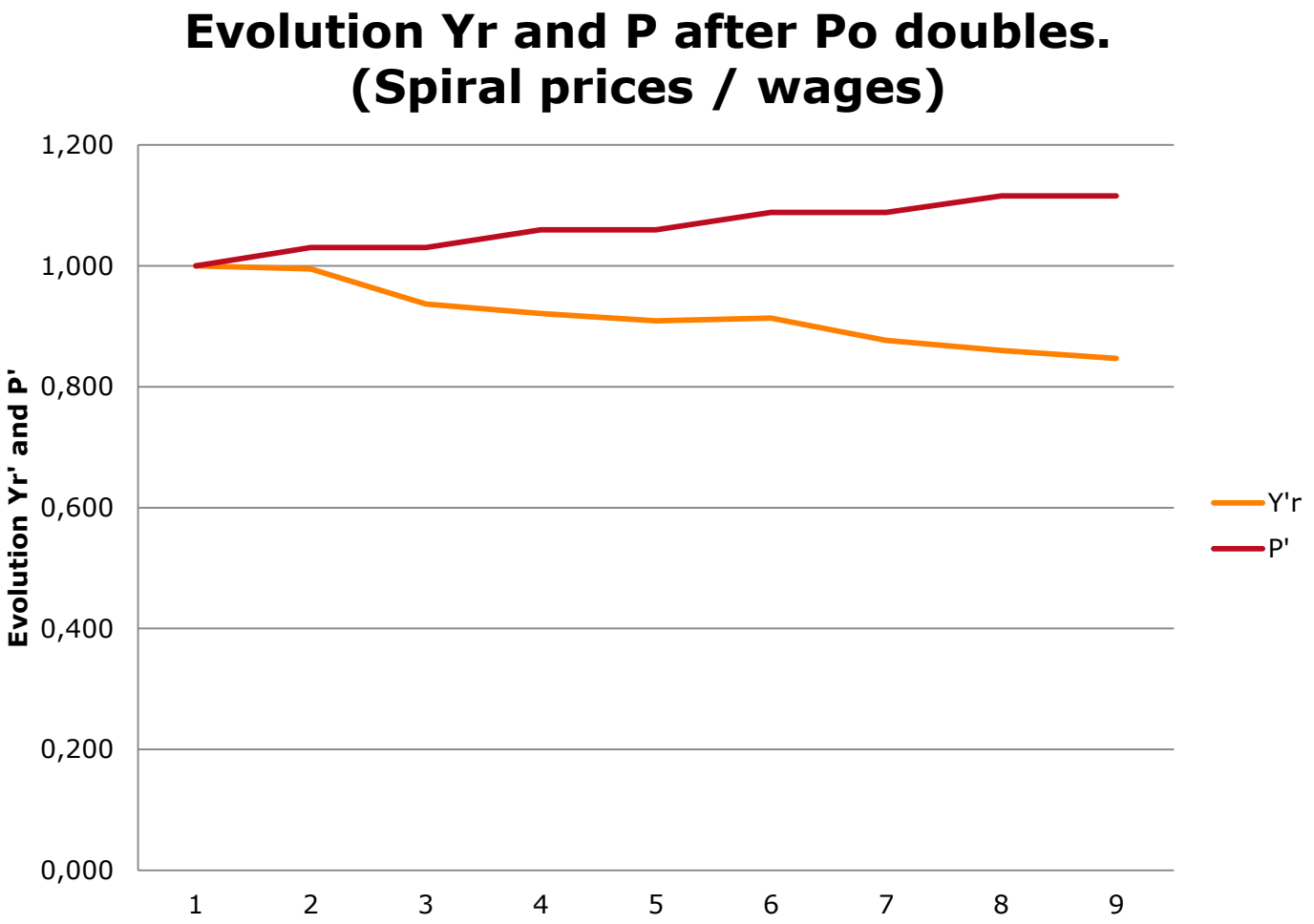
  >Δ oil share >ΔTransfers to RoW >

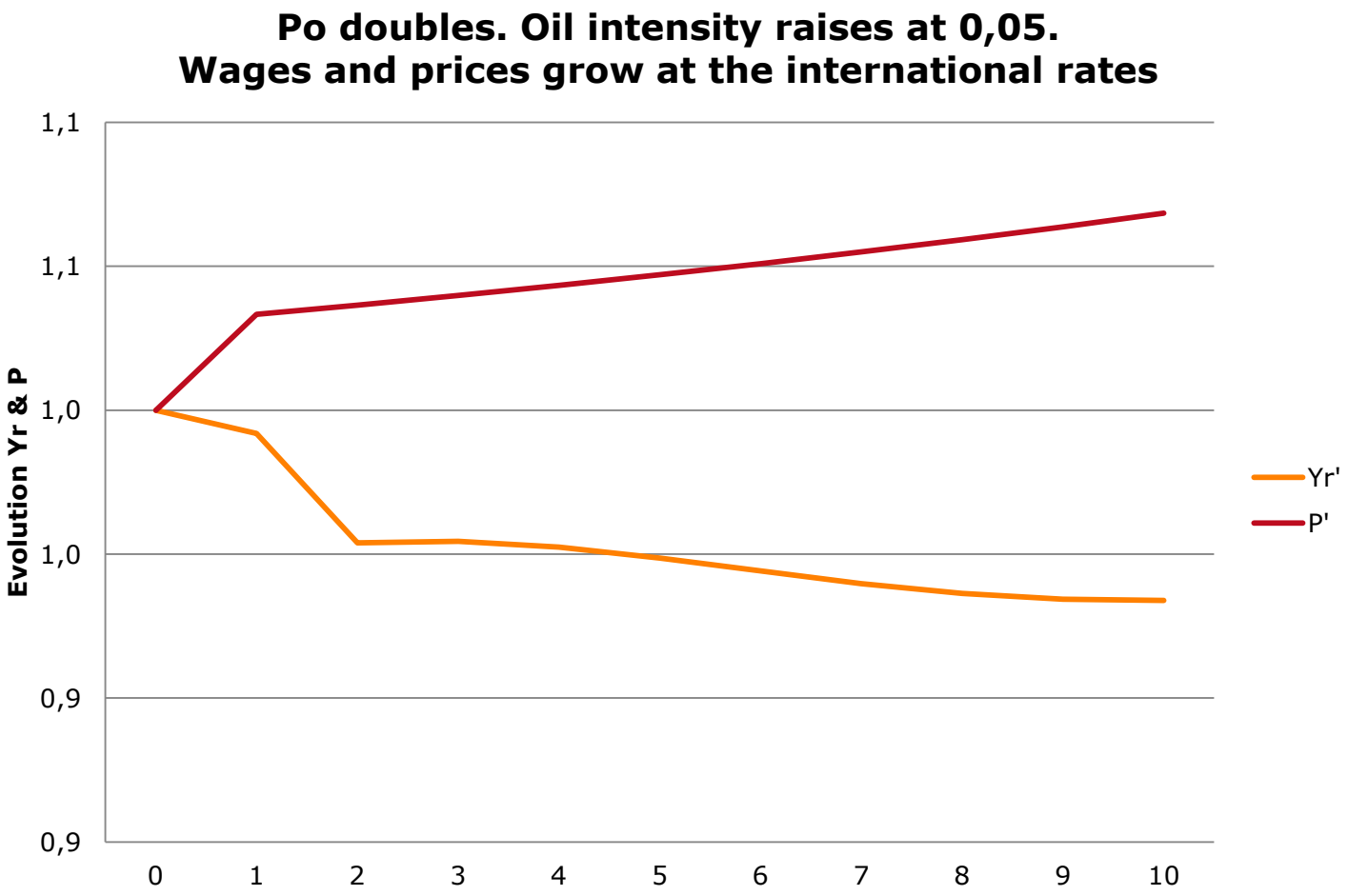
  >∇Yd >∇μ >∇C >Y′

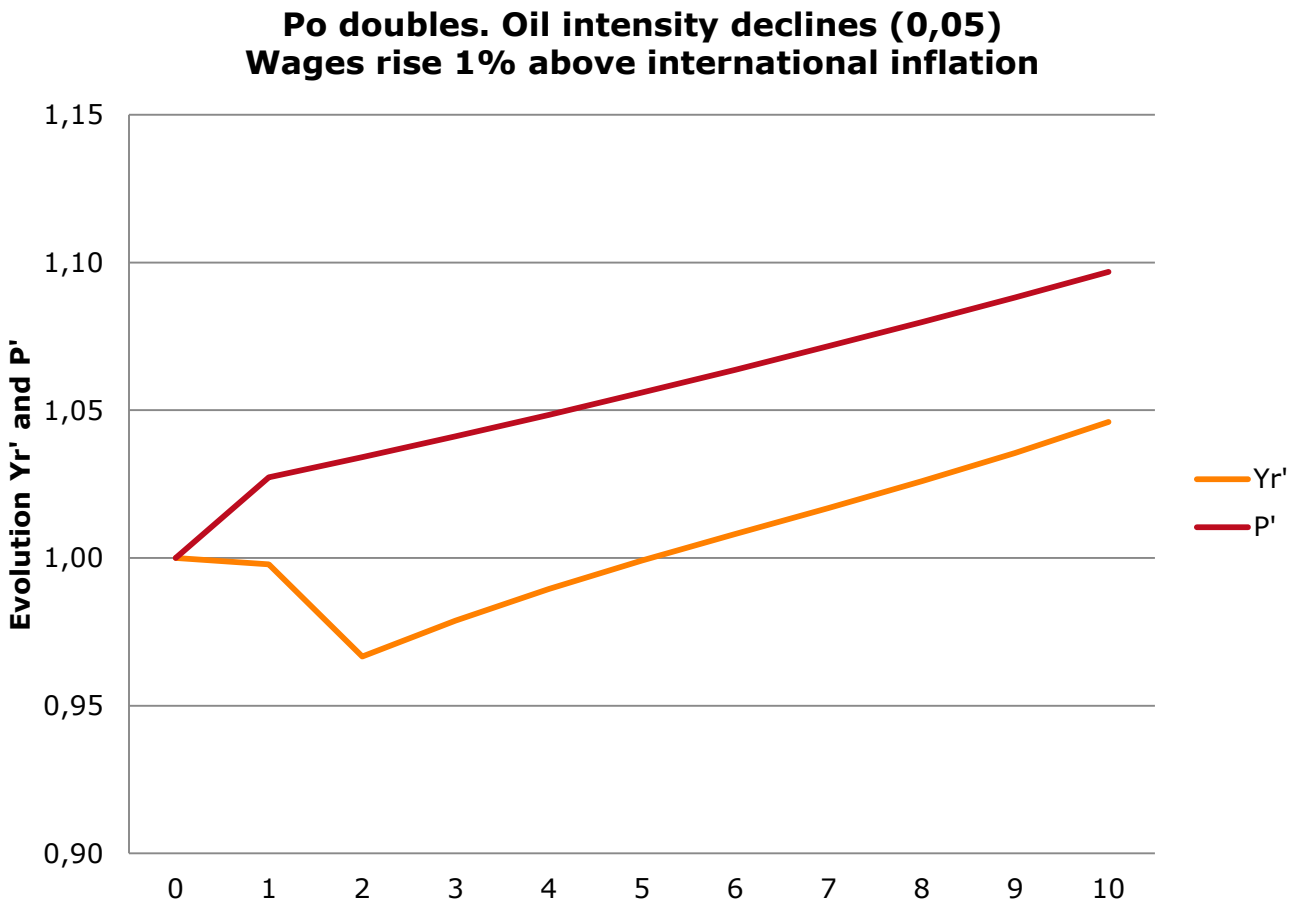
	Autonomous Demand, Aggretate D and output						Factors				Distribution and redistribution								Balance of Payments									Utilization rates of capacity and labour					Prices					
	('X(1+gx(1-a3-e")	('Z(1+gz)	('I(1+g)	1/(1-ao-c(1-t)+m)	(X+Z+I)m	Y/(1/P'ac)	Yr-k	KI+'Ip	'LF(1+g(LF)	Yr/p	w-L	W/Y	Yr-j	Yr-j-Po Mo=T	Mo/Y	Y-W-Tr1	i-BW	Y-Tro-Tr1	c-Y	k-g-Y+ao-u	j-Y	m-Y	Y-C-Io-Ip-Z-X+M1+M2)	Us if -	X-M0-M1-M2	BP1(1+i·BW)	BP/Y	BW	KR-KI	Y/Y*=KR/KI(u-'u)/'u	L-LF	L/LF	(`w+`j)*a	(P-'P)/'P	P'(1)+P'(2)...		
	X	Z	I	m	D=Y	Yr	KR	KI	L	LF	W	`w	joil	0	`Mo	R	T1	Yd	C	Io	Ip	M1	V	M2	BP1	BP2	BP/Y	BW	Uk	u	u"	L>LF	e	e"	wn	P	P'	P'ac	g	g(y)
0	225,0	45,0	50,0	3,125	1000	1000	2000	2000	20	20	800	0,8	25	25	0,025	175	0	975	780	100	50	200	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
1	230,6	46,1	51,3	3,125	1025	995	2050	2050	21	21	820	0,8	25	26	0,025	179	0	999	800	103	51	205	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,005
2	236,4	47,3	52,5	3,125	1051	1020	2101	2101	21	21	841	0,8	25	26	0,025	184	0	1024	819	105	53	210	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
3	242,3	48,5	53,8	3,125	1077	1045	2154	2154	22	22	862	0,8	26	27	0,025	188	0	1050	840	108	54	215	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
4	248,4	49,7	55,2	3,125	1104	1071	2208	2208	22	22	883	0,8	27	28	0,025	193	0	1076	861	110	55	221	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
5	254,6	50,9	56,6	3,125	1131	1098	2263	2263	23	23	905	0,8	27	28	0,025	198	0	1103	882	113	57	226	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
6	260,9	52,2	58,0	3,125	1160	1126	2319	2319	23	23	928	0,8	28	29	0,025	203	0	1131	905	116	58	232	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
7	267,5	53,5	59,4	3,125	1189	1154	2377	2377	24	24	951	0,8	29	30	0,025	208	0	1159	927	119	59	238	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
8	274,1	54,8	60,9	3,125	1218	1183	2437	2437	24	24	975	0,8	30	30	0,025	213	0	1188	950	122	61	244	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
9	281,0	56,2	62,4	3,125	1249	1212	2498	2498	25	25	999	0,8	30	31	0,025	219	0	1218	974	125	62	250	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025
10	288,0	57,6	64,0	3,125	1280	1242	2560	2560	26	26	1024	0,8	31	32	0,025	224	0	1248	998	128	64	256	0	0	0	0	0,000	0	0,000	1,000	0,000	0,000	1,000	0,000	40,000	1,000	0,000	0,000	0,025	0,025

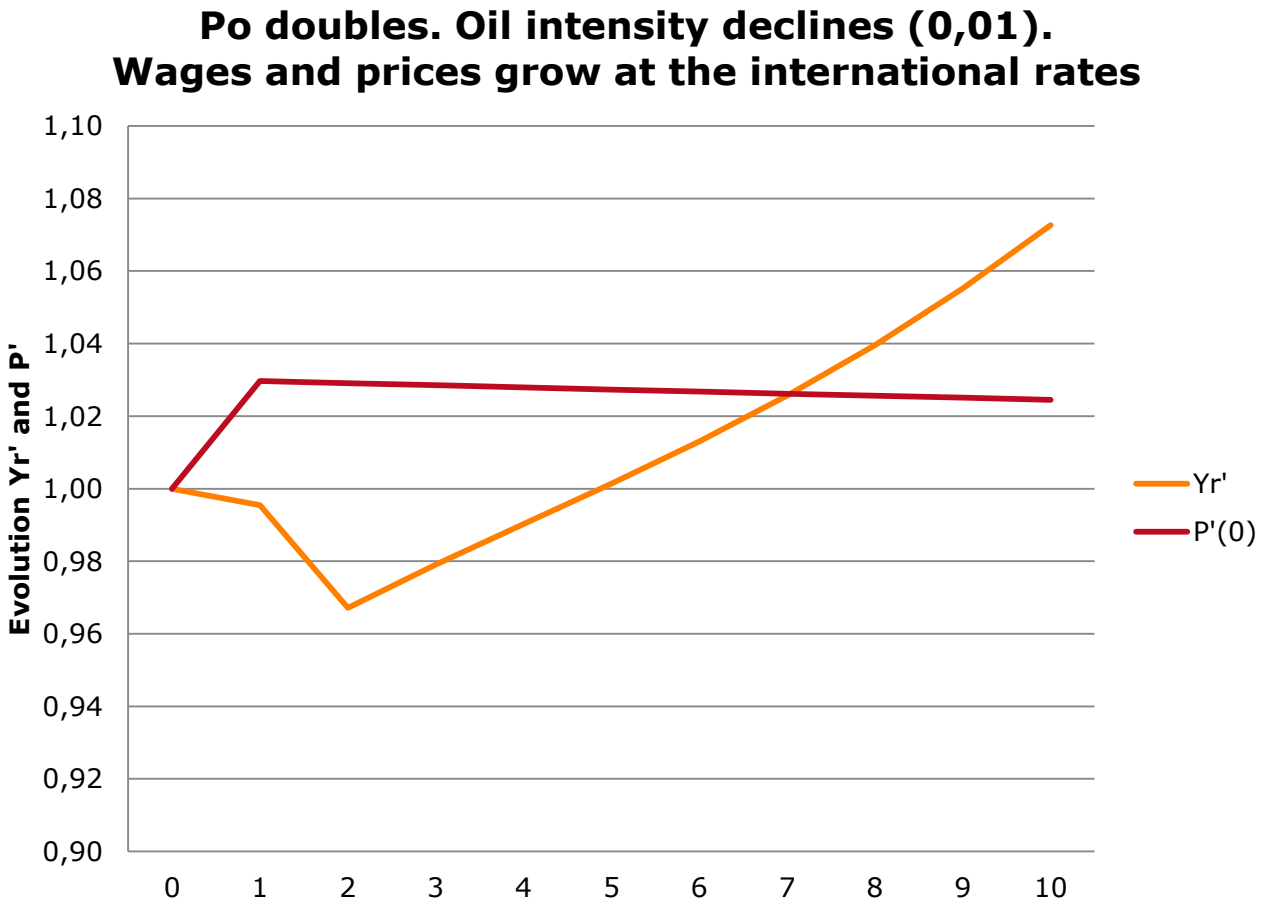
4. Simulations


Evolution Yr and P after Po doubles (Constant wages)
Evolution Yr' and P'
1,04
1,02
1,00
0,98
0,96
0,94
0,92
0,90
0,88
0
1
2
3
4
5
6
7
8
9
Yr'
P'


Evolution Yr and P after Po doubles.
(Spiral prices / wages)
Evolution Yr' and P'
1,200
1,000
0,800
0,600
0,400
0,200
0,000
1
2
3
4
5
6
7
8
9
Y'r
P'


Po doubles. Oil intensity raises at 0,05.
Wages and prices grow at the international rates
Evolution Yr & P
1,1
1,1
1,0
1,0
0,9
0,9
0
1
2
3
4
5
6
7
8
9
10
Yr'
P'


Po doubles. Oil intensity declines (0,05)
Wages rise 1% above international inflation
Evolution Yr' and P'
1,15
1,10
1,05
1,00
0,95
0,90
0
1
2
3
4
5
6
7
8
9
10
Yr'
P'


Po doubles. Oil intensity declines (0,01).
Wages and prices grow at the international rates
Evolution Yr' and P'
1,10
1,08
1,06
1,04
1,02
1,00
0,98
0,96
0,94
0,92
0,90
0
1
2
3
4
5
6
7
8
9
10
Yr'
P'(0)

- Why ∆Po (2003-2008) has not caused stagflation as in 1973-1980?
  - **Less oil intensity** (oil+gas ?)
  - **No wage/prices feed-back**. Key role of Central Banks anchoring expectations
  - **Globalization** (international competition of labour and capital)
- .Which countries are more vulnerable to stagflation?
  - High oil+gas intensity countries. → reduce fuel intensity and fuel dependency (diversification of energy mix, exchange rates stability)
  - Countries where wages are linked to past inflation. → Wages linked to inflation target

5. Conclusions

Thank you very much for your attention