Looking Beyond The Greek Crisis and Lessons for Europe

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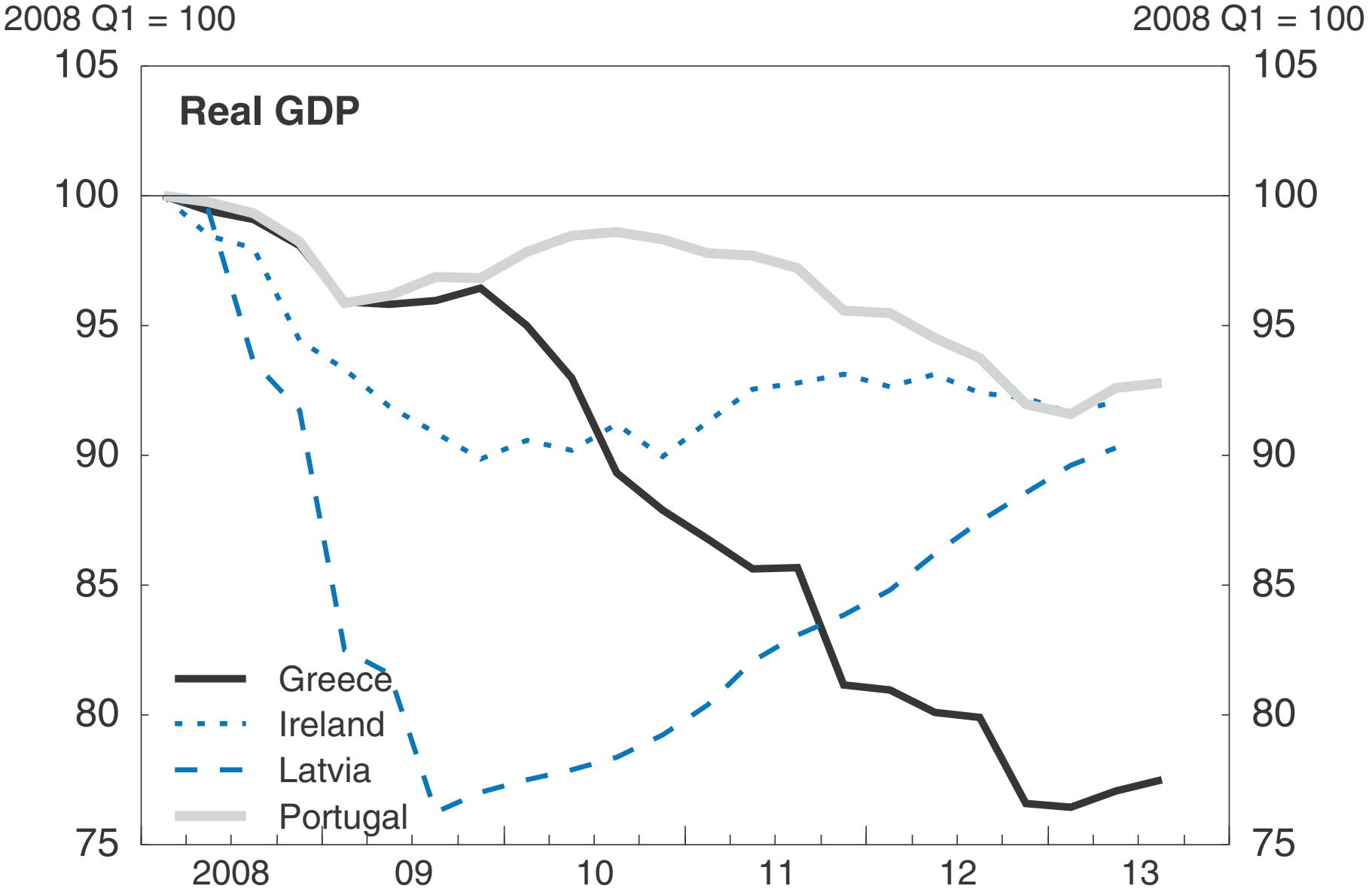
Outline

- Crises
  - Greek Great Recession, vs. Ireland, Portugal
  - US Great Depression (1929-1938): standard reference
  - Finnish Great Depression (1990-1997): Finland's most severe since 1929
  - Crises end, with restructuring
- Competitiveness
  - Structural reforms to unleash technological progress, competitiveness
  - Small improvements grow geometrically in the long run
  - Investments: human and physical capital, infrastructure
  - Quality of education, rule of law, and institutions
  - Aim at world markets, internal linkages will follow
- Reinventions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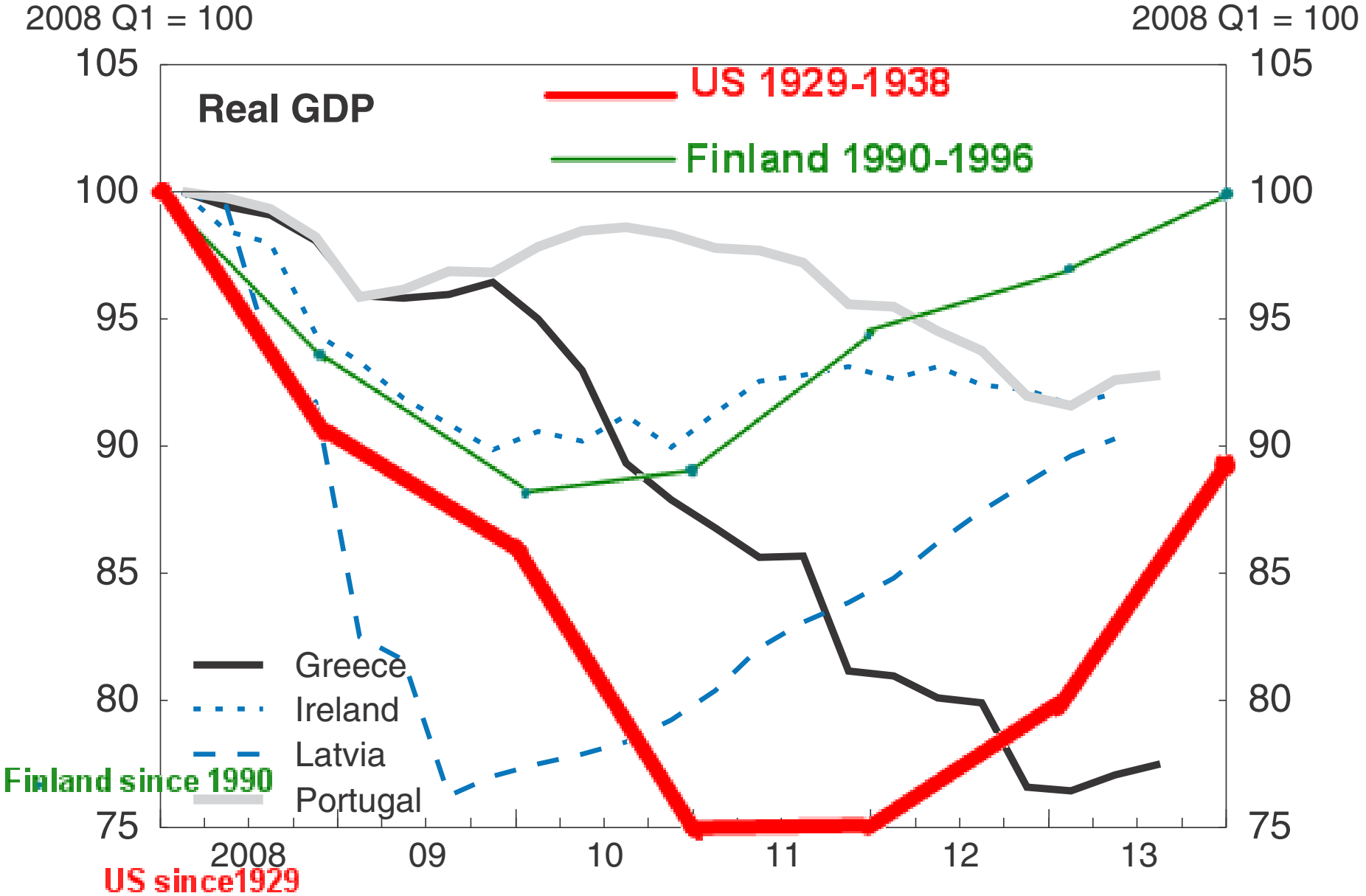
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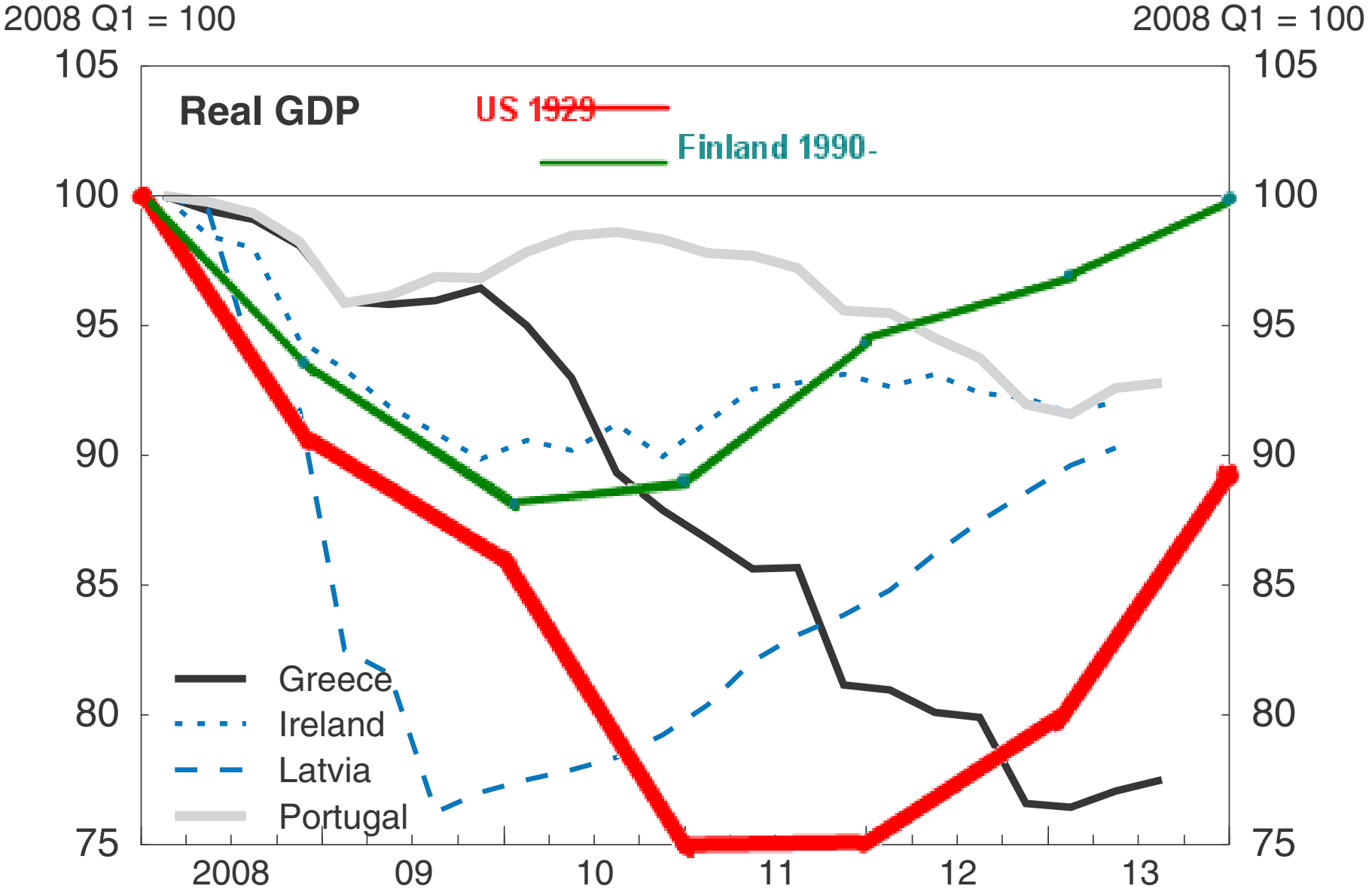
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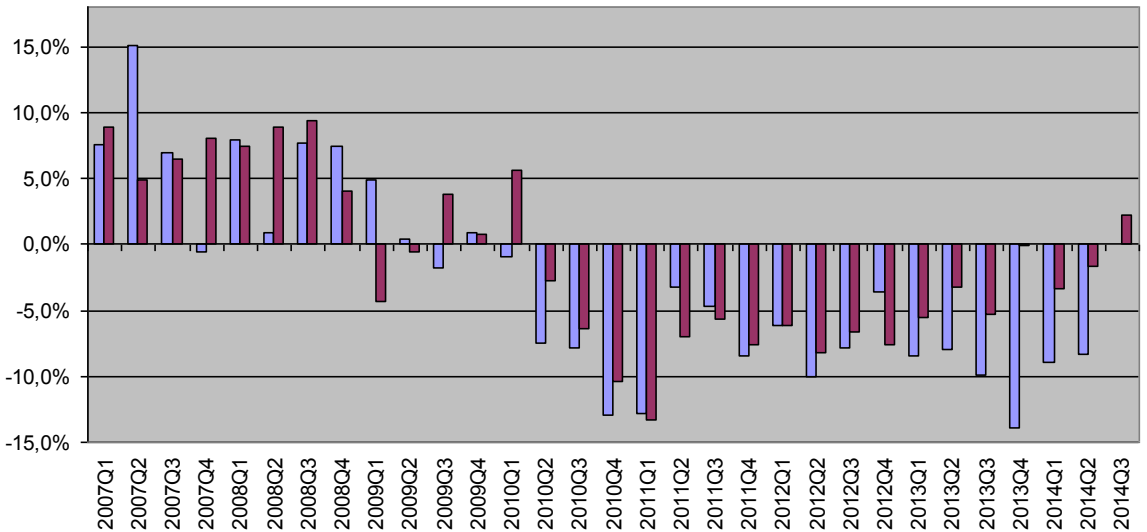
Understanding the Greek Crisis

- Fiscal contraction + cutoff of bank credit + persistent uncertainties related to public debt + one third fall of the real wage + pessimistic expectations + collapse of investment
  $\Rightarrow$ Contraction of aggregate demand
  $\Rightarrow$ huge rise in unemployment, accentuated by pervasive frictions
- Accomplished huge reduction in unit labor costs
- Product market rigidities prevented *huge* commensurate price reductions. KEPE 2015, 1.3.1, 1.3.2
- Huge reduction in living standards. ELSTAT Jan. 23, 2015
- Structural reforms to improve competitiveness, ease price adjustment, reallocate resources to most productive sectors and exports.
- Modernization of public services to raise trust, increase tax compliance, strengthen rule of law, encourage foreign investment.

Εξέλιξη του ακαθάριστου διαθέσιμου εισοδήματος και της καταναλωτικής δαπάνης των Νοικοκυριών και ΜΚΙΕΝ

ELSTAT Jan 23 2015

(μεταβολή σε σχέση με το αντίστοιχο τρίμηνο του προηγούμενου έτους)



Gross Disp. Income

Final consumption spending

Wage index, y-y, seas. adj

Wage index y-y, seas. unadj., hrs-adj.

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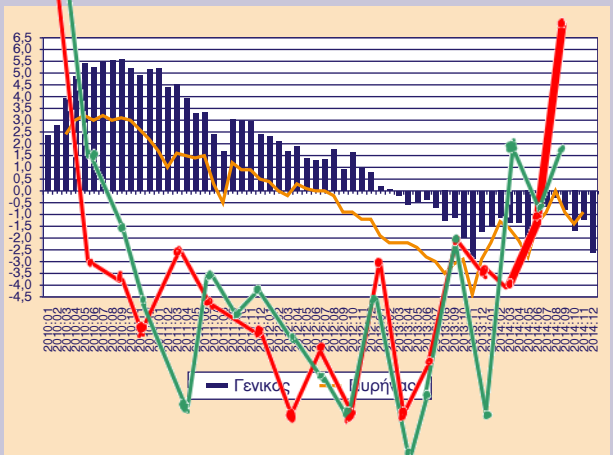

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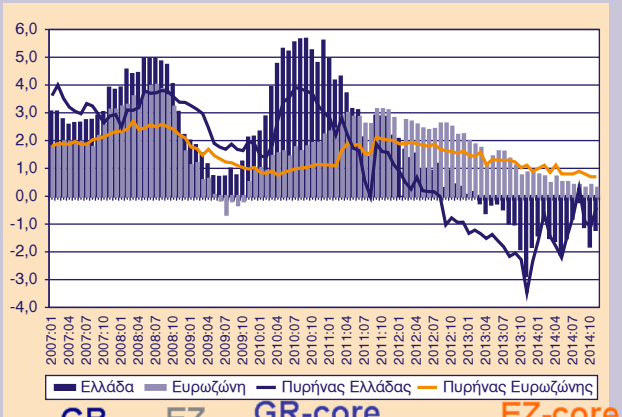
Εναρμονισμένος Δείκτης Τιμών Καταναλωτή σε Ελλάδα και ΟΝΕ, % μεταβολή (ως προς τον αντίστοιχο μήνα του προηγούμενου έτους)



GR EZ GR-core EZ-core

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Flashback: Income/person – Greece, Finland, Ireland

How did Ireland overtake Finland and Greece?

Country	EEC/EU	At entry	1995	2007
Ireland	1973	same as Greece	175% Greece	125% Finland
Greece	1981	88% Ireland	60% Ireland	47% Ireland
Finland	1995	same Ireland	175% Greece	80% Ireland

- Ireland: "problem economy" in the 1980s. Then massive foreign investment + massive investment in human capital.
- Finland: Poorer than Greece in 1865, still poorer in 1918 (independence from Russia), twice as rich as Russia in 1990.
  - Finland: Industrialized after World War II, using renewable natural resources plus massive investments in human capital and industry. And, educational system world-class model.
  - Finland's forests contribute 5% of GDP.
    Greece's seas (tourism) contribute 15.8% of GDP.

Lessons from Finland's Great Depression, 1990–1997

- Collapse of Soviet Union, 1990 (biggest trading partner) + a banking crisis $\Rightarrow$ Finnish Great Depression: 1990–1997
- Lessons from Finland's recovery: emerged restructured, a dynamic high-tech economy. Example: Nokia
  - old low-tech firm, grew enormously after crisis riding high-tech revolution to contribute 2.8% to GDP, 2% of government revenue, 1.6 percentage points to Finnish annual growth. Employs now 90,000 across 120 countries. Phone business now sold to Microsoft. Spawned industry of start-ups.
    Spends a lot on R&D domestically and internationally, close relationships with universities.
  - Information technology industries contributed 0.9% to Finland's output growth of 4.1% (1995–2004).
- Quality improvement of the Finnish labor force added 0.5 percentage points to average TFP growth.
- Lessons Finland, Ireland: Aim at world markets, small price reductions make huge differences; internal linkages follow.

Greece: Resources, Reforms, Ideas

- Income plus wealth shocks shrunk national savings: needed massive foreign investment.
  Foreign Direct Investment: down to 9.95% (GDP) 2012 (13.12%, 2009); Ireland, up 161.62% (111.64%,, 2009); Portugal, up 55.2% (49.01%). Investment, since 2010, down 58%.
- Mobilize entrepreneurial and artistic talent plus ICT capital.
  Examples: `Upstream`, `Corallia Clusters Initiative`.
- Large privatizations + massive public investments = *Big Push*. Held up!
- *"Stars"* (McKinsey study): 70,000 jobs, + 7 billion to GDP:
  1. Generic drugs. 2. Acquaculture. 3. Medical tourism, elderly care (big, with portable pensions in EU). 4. Regional cargo/logistics hubs. 5. Waste management. *More "stars"*: 6. "Classical" tourism, niche tourism. 7. Specialty foods. *Jronia k Jronia*,
- Caprichos griegos. Hortaleza 75, Madrid. `JroniakJronia.com`


jronia ķ jronia
caprichos griegos

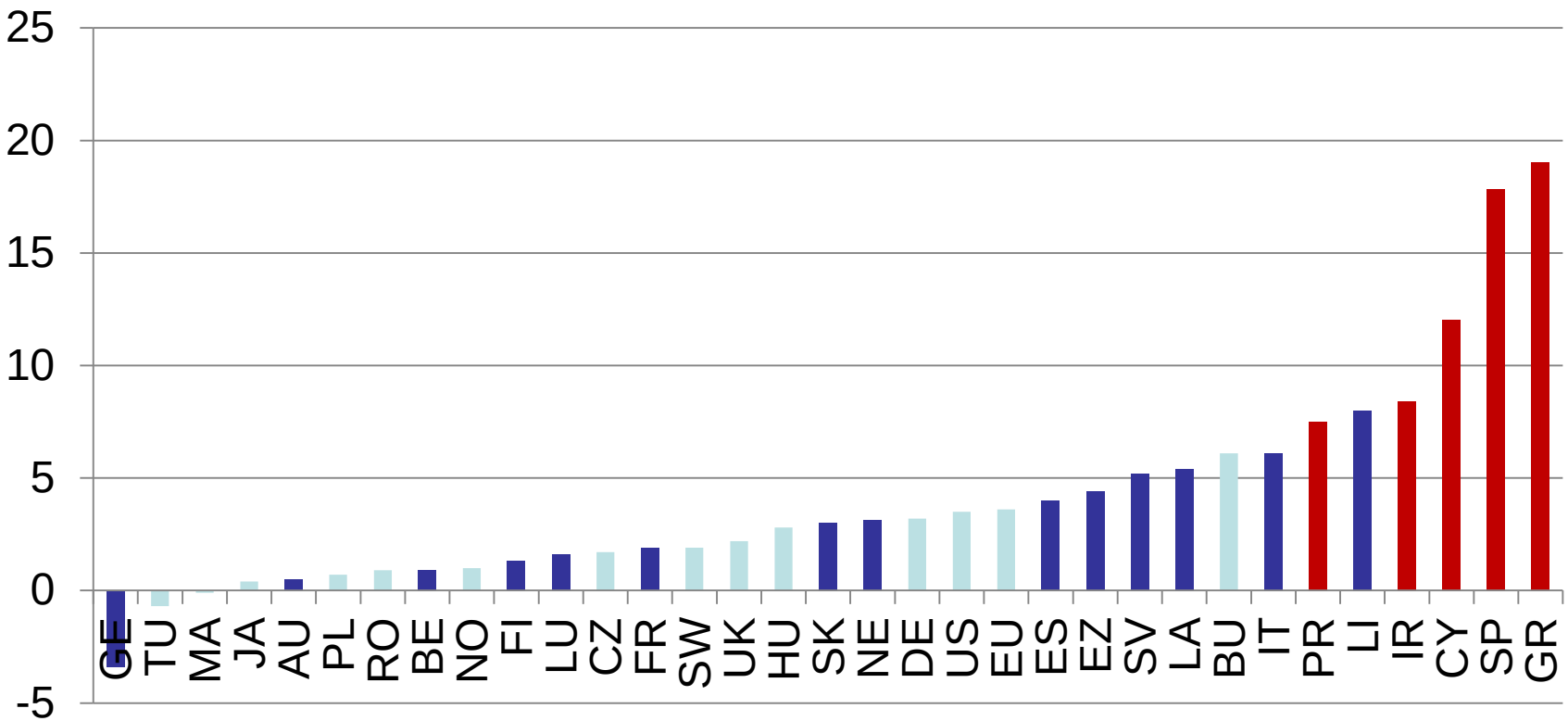
Productivity gains from deregulation and structural reforms

- Removal of restrictions in product and labor markets increase income by increasing economic activity (like economic integration): 5-15% GDP over 10 years for Greece.
- Contributes to growth in income per person, over and above increased capital per person, due T.F.P. Growth.
- Lowers entry barriers, allows larger firm sizes, eliminates monopolistic situations to allow catch up with best international practices:
- Promotes latest technology adoption
- Flexibility, most productive firms to attract greatest increase in sectoral employment: With Sweden and Finland the leaders in the EU, Greece does better than Poland only.
- Deregulation in product and labor markets work better when combined. Together with gap from best performers account for 60% of TFP Growth, OECD, 1983–2003

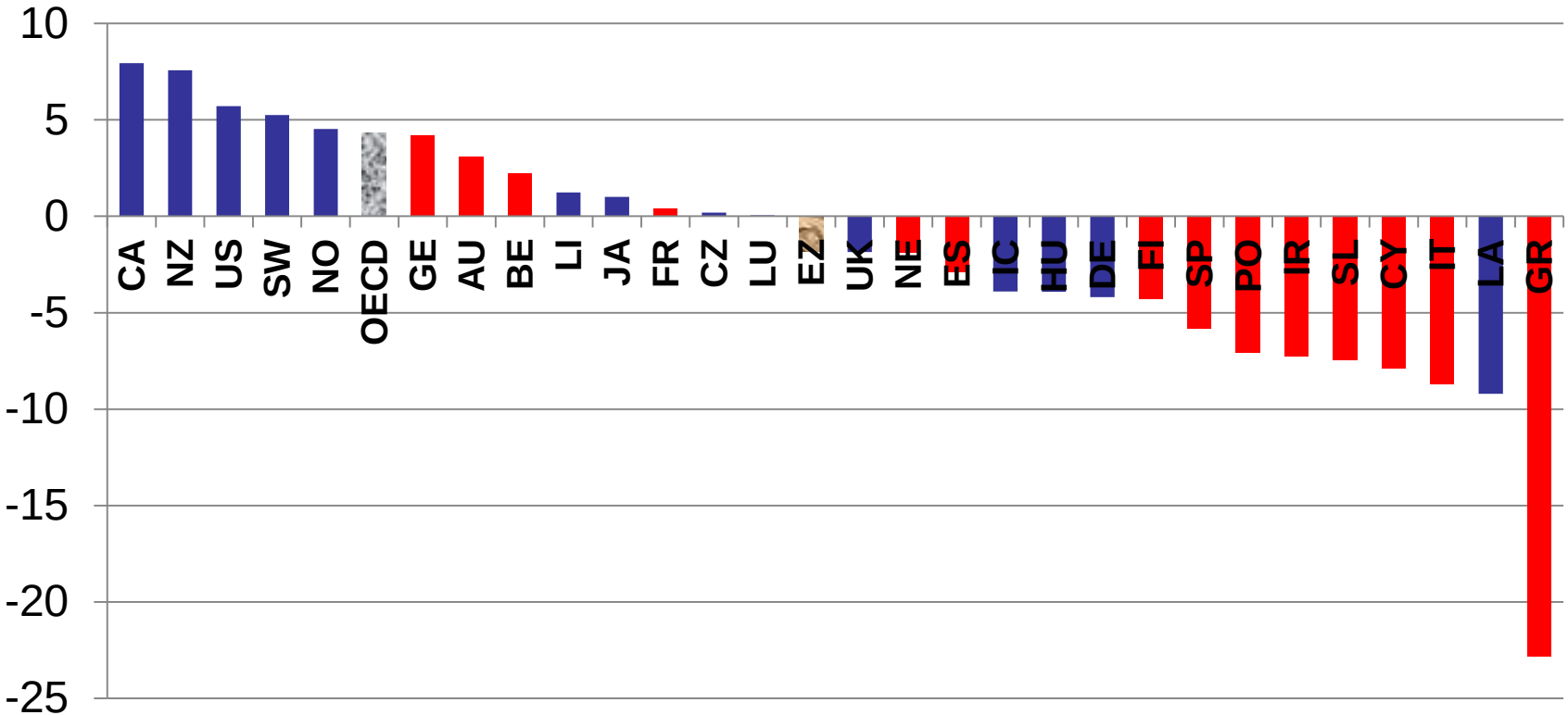
Productivity improvements and the future of the EMU

- Draghi (2014): "If some countries in monetary union perpetually adjust more slowly than others, they are likely to have consistently higher unemployment. And if they also have lower growth potential, then that unemployment is more likely to *become entrenched and structural.* In other words, lack of structural reforms raises the spectre of permanent economic divergence between members. And insofar as this threatens the essential cohesion of the Union, this has potentially damaging consequences for all EMU members ... Euro area countries cannot be agnostic about whether and how others address their reform challenges. Their own prosperity ultimately depends on each country putting itself in a position to thrive within the Union. And for this reason, there is a strong case for sovereignty over relevant economic policies to be exercised jointly. That means above all structural reforms."
- Eurozone does have a problem: compare with OECD

Unemployment change 2007-2012



Cumulative change in GDP 2007-13 (Eurozone in red)



Small differences grow geometrically in the long run

- Gains from deregulation depend on specific policies and quality of institutions.
- Gains look small; power of compound interest makes them huge over the long run.
  Growth rates, real income per person:
  - India 1884–2010: 6.1 times, 1.43% per year.
  - US 1865–2010: 12.9 times, 1.72% per year.
  - Greece 1864–2009: 12.3 times, 1.69% per year.
  - Greece 1950–2009: 6.97 times, 3.24% per year.
- Already progress in market reforms in Greece.
- Performance weak within EU.
- But World Bank 2014 Doing Business Report: Greece jumped from 147th to 36th in "ease of starting business".

Reforming the educational system

- Mathematics and science education crucial for growth: relative to mean OECD, higher mathematics and science scores (PISA) by 1/2 standard deviation add $= 0.93$ percentage points to growth rate GDP/person. Pearson–Economist rankings: aggregate cognitive skills scores (PISA, TIMSS and PIRLS for reading, mathematics and science) and educational attainment place Greece about a standard deviation below the mean of OECD countries.
- Total factor productivity is correlated with *trust.*
  - Germany's improved competitiveness mainly due to cooperative environment: trade unions, employer associations, works council, and firm-level bargaining.
  - Large gap between vertical and horizontal teaching (teacher lecturing versus students working in groups) correlated with low trust across the world.
  - Greek educational system: lowest in tolerance and respect, high in distrust. It must do better in producing trust.

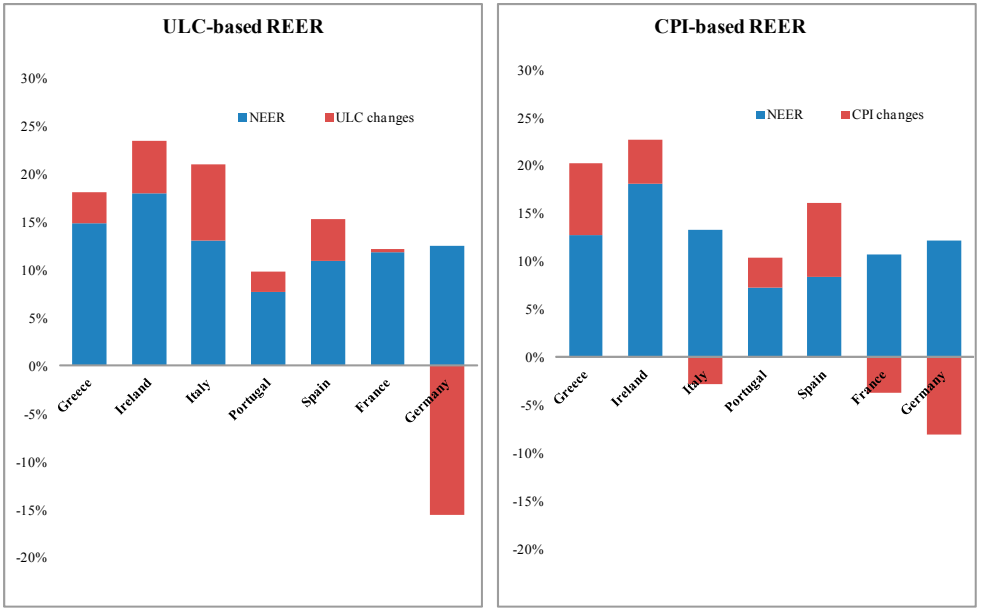
Medium Run Evolution of Employment and New Opportunities

- Finland's recovery slow, restructuring to favor services.
- Projections of slow recovery; unemployment to fall slowly.
- Lower and middle classes, especially youth, severely hit; must prevent loss of skills during unemployment.
- Vigorous safety net, special measures for households with no members employed.
- OECD countries with rich vocational education and training have better unemployment record, esp. for young. If without tertiary education, better employment prospects with vocational than academic upper secondary education.
- Assessment of computer skills: use of internet, computer skills, below EU average; Greek high skilled near EU average; firms report little difficulty in filling high-skilled jobs. Knowledge curiosity high, but need to retrain labor force for business services.
- Geopolitical changes, rapprochement with Israel (an ICT giant) bring to the fore, opportunities in energy networks and trade

Competitiveness of the European Periphery

- Chen et al. IMF study: Loss of competitiveness 2000–2010 of European periphery mostly due to euro nominal appreciation and to asymmetric trade interactions with Eastern Europe, China, oil exporters; less to cost increases.
- Two-prong approach:
  - Germany needs to boost domestic demand, investment, reducing pressure on euro (argued by Ollie Rehn, blog 2013).
  - Massive infrastructure and ICT investment in periphery to boost productivity; spillovers throughout EU (advocated by EU Agenda 2020).
    EU economy, a large economic entity: neither too closed not too open; spillovers of investment spending within.

Figure 3. Decomposition of Real Effective Exchange Rates, Percentage Change from 2000 to 2010.



Source: ULC-based REER is from Eurostat, 36 trading partners; CPI-based REER is from INS.

Chen et al. Econ. Policy 2013

Why are Greek exports more expensive?

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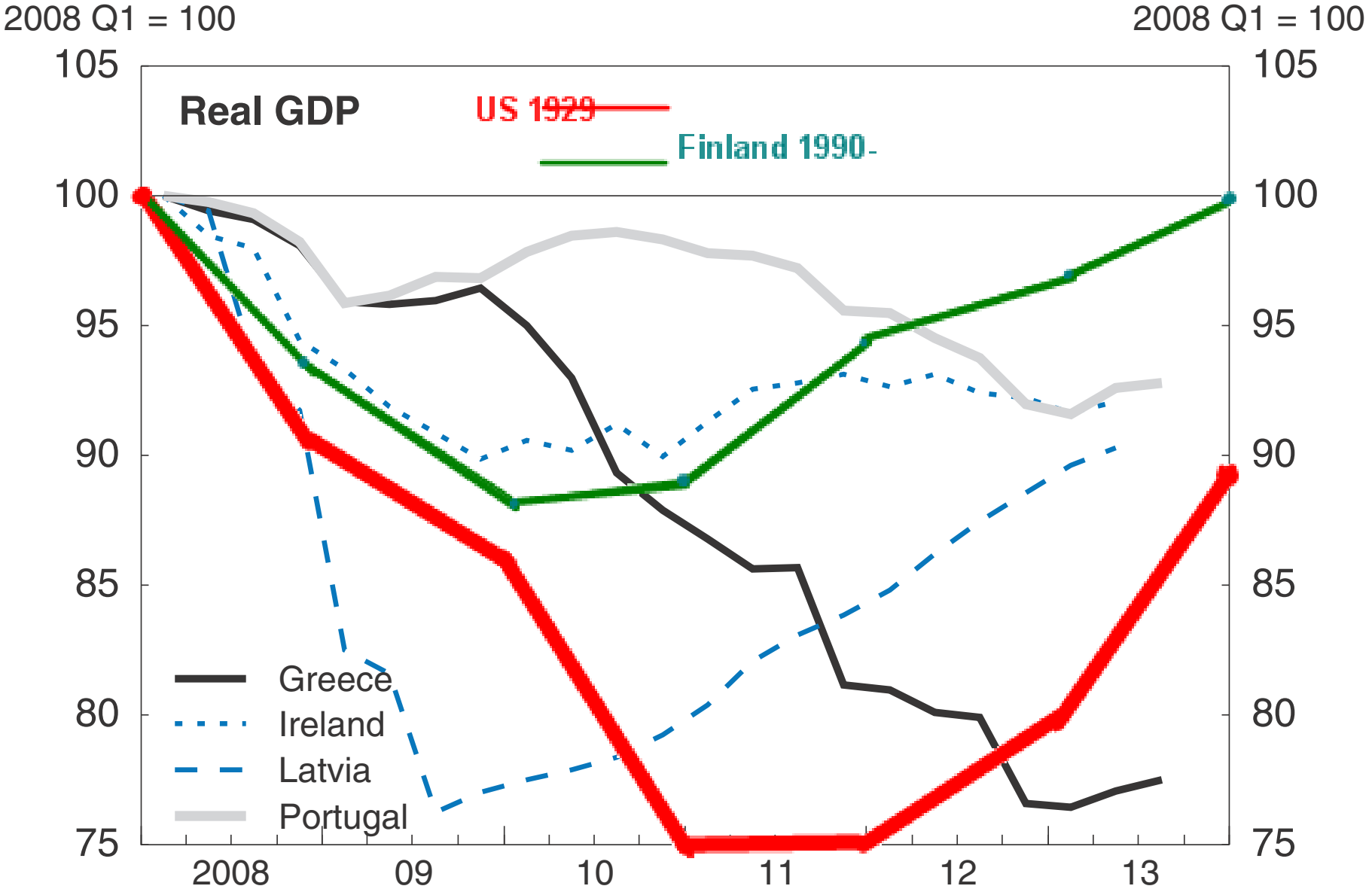
Demographics and Debts

- Demographics: more people, easier to pay off given debt.
- Greek population fell 1.3%, 2001–2011.
- Total fertility rates falling in European South.
- Out-migration selectively deprives country of skilled workers.
- Works slowly as an equilibrating device.

A Crucial Role for Expectations

- OECD (2013) finds little role for expectations; but takes very narrow view, ignores expectations of about new policies.
- Eggertsson (2008) study the end of US Great Depression: credits shift in expectations, Roosevelt credible when eliminated several policy dogmas, were responsible for 70–80% for the recovery, 1933 to 1937. Back to Figure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  Output would have been 30 percent lower in 1937 than in 1933, instead of increasing 39 percent in this period
- Critical for speedy recovery *credibility* and *confidence* that:
  - Greece must conduct business differently,
  - policies delivering,
  - political environment is conducive.
- Focus on EZ deflation:
  even more pressing for Greece to focus on structural reforms to maintain competitive advantage.
  Quantitative Easing (QE) by the ECB, plus historical low of

Some Greece-specific issues

- External non-competitiveness → current account deficits
- Greek exports grew 1999-2007, imports grew more. Decreased slightly 2008–2013. Graphs: *GR, IE, PT, ES, Core EZ*

  GR: Most adjustment from decreased imports; others more balanced.
- Future Gain in competitiveness easier: larger firms survived. Most contraction from smaller firms, 67% of job loss, 2009–13
- HICP started falling Sept. 2012.Graph *GR inflation*
  - Product market reforms overlooked. Regulation still big barrier
  - Credit for exporters, a greater barrier since 2010.
  - EZ core countries maintaining CA surpluses as peripheral deficits decreased
  - Greece eliminated twin deficits, enormous social cost, CA deficit "shaky"
  - Had Greece improved exports, huge impact in less contraction.

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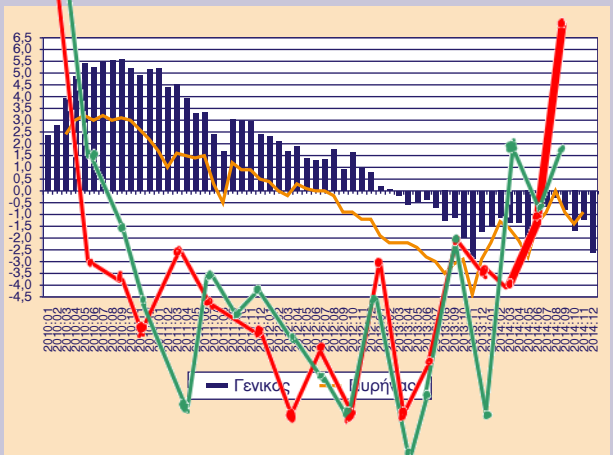

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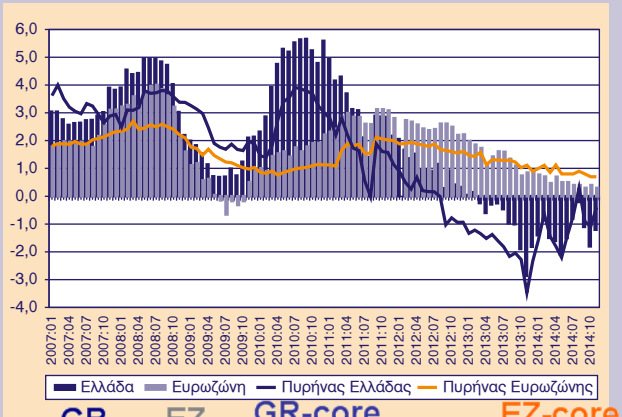

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Trade Adjustment between 2008 and 2013 (% of 2008 GDP)

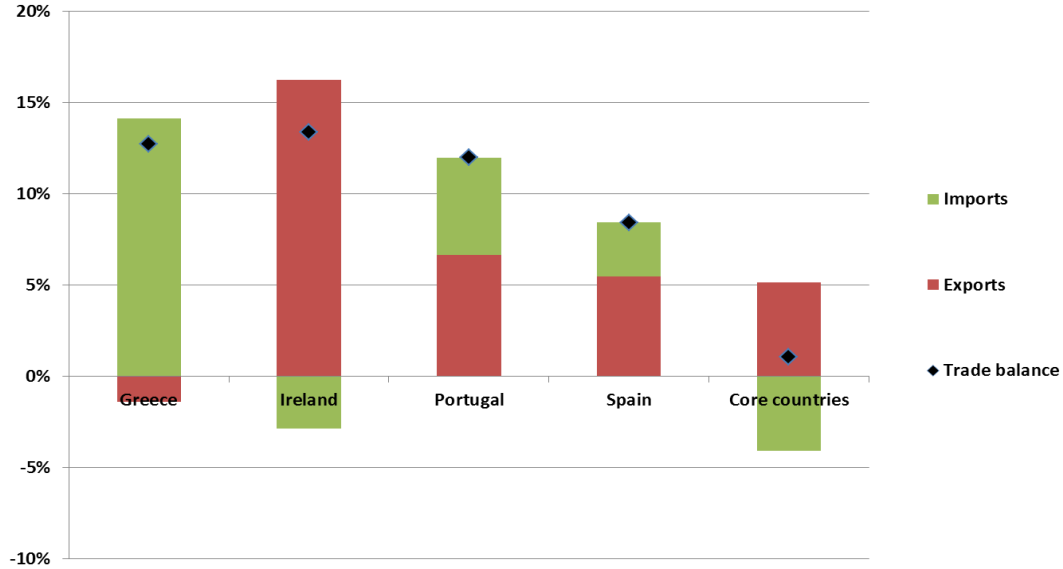

Figure 4.2

Source: Eurostat

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Reinventions

- Reinventing Boston: 1630–2003
- Boston reinvented itself three times:
  - Early 19th century: Seafaring human capital for far flung trading and fishing empire
  - Late 19th century: factory town with immigrant labor
  - Between 1920–1980: Boston lost 26% population.
  - Late 20th century: prosperity returned due to human capital via new industries, education, information technology, biomedical technology.
- Secret of success?

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Can Greece Reinvent itself?

- Greece in the Eurozone, as developed following the EZ debt crisis?
- Need to know a bit more about the EZ, EZ vs. the US

Towards a European Federation?

- Overview
- Macro policy tools in unions
- EU/EZ vs US at a glance
- Limits to monetary policy tools, fiscal union
- Model
- Lessons

Overview

- EU/EZ at a crossroads
- Recession ending in the majority of the EZ/EU

- Portugal, Ireland, and soon Cyprus, market access. GR?

- Is expansion in the "North" sufficient to pull the "South" along?

EZ–wide response: Discretionary national macro policy tools

- EZ–wide response: Discretionary macroeconomic stabilization policy tools?

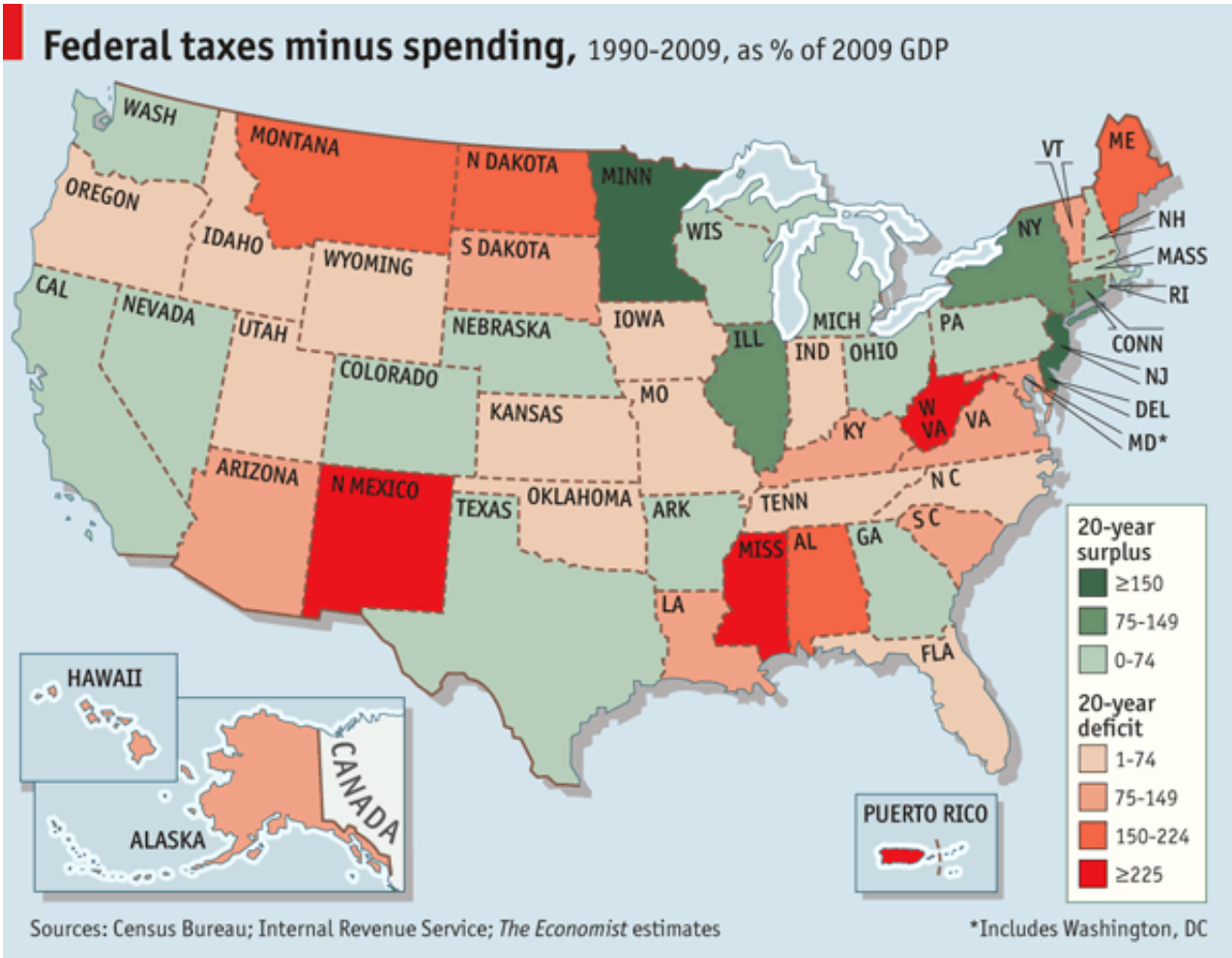
- EU fiscal tools
  - EU budget
  - Fiscal policy: national
  - Monetary policy: EZ-wide
  - Spillovers among EZ/EU/non EZ countries require macro policy coordination
  - Could interpret emergency response as discretionary macro policy
    (Recall US assistance to Detroit)

EU/EZ vs. US Union at a glance

	US	EU/EZ
Fiscal policy	Federal	National
Federal Budget	24%*GDP*	1%(*balanced*)
countercycl. transfers	e.g., unempl. insurance	??
as automatic stabilizers		??
State/local budgets	23%balanced	can borrow
State/local borrowing subsidized	yes	in crisis
State/local borrowing subsidized	lower interest	higher interest
Total public sector	41%	50%
Monetary policy	Federal	ECB/NCBs

- Transfers in US fiscal union: min: NJ 0.61$ per $ of US taxes. max: NM: 2.06$ per $ of US taxes.
- Transfers in US fiscal union: federal taxes - federal spending (1990–2009)/2009 state GDP. min: NM: −261%. max: DE: 206%.

  Reinhardt/Economist graph



See the full data below:

US fiscal transfers

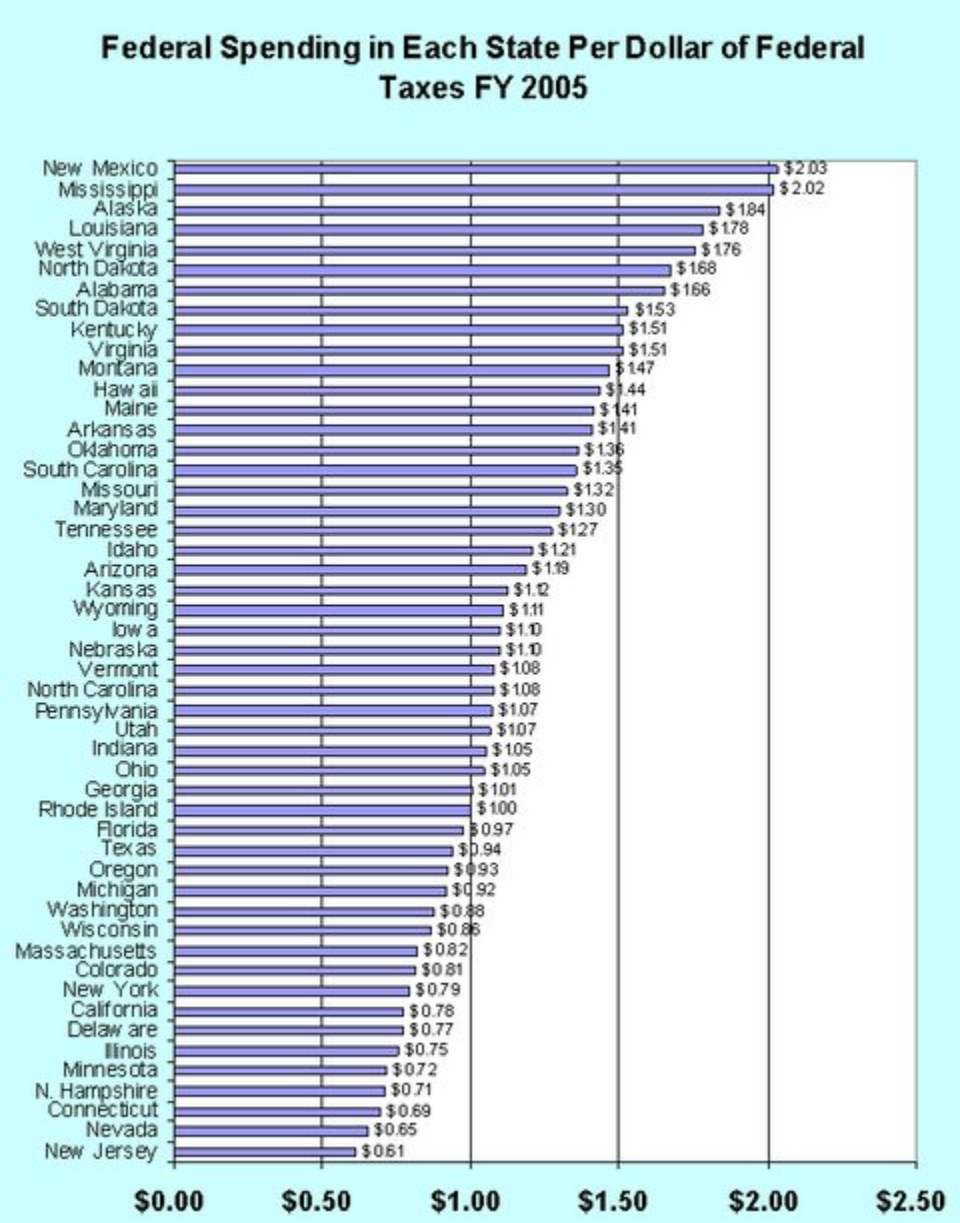
	Federal taxes, 1990-2009, $bn	Federal spending, 1990-2009, $bn	Taxes minus spending, $bn	GDP, 2009, $bn	Federal taxes minus spending, 1990-2009, as % of 2009 GDP
Delaware	211.1	86.4	124.8	60.7	206
Minnesota	1,016.9	503.8	513.2	258.5	199
New Jersey	1,656.2	950.5	705.7	471.9	150
Illinois	2,000.0	1,299.1	700.9	632.0	111
Connecticut	715.2	474.5	240.7	227.6	106
New York	3,320.8	2,364.6	956.2	1,094.1	87
Ohio	1,569.3	1,265.8	303.5	462.0	66
Michigan	1,228.0	1,031.2	196.8	369.7	53
Nebraska	246.5	202.2	44.2	86.4	51
Massachusetts	1,065.5	917.9	147.6	360.5	41
Colorado	606.9	506.2	100.7	250.7	40
Wisconsin	630.1	543.3	86.8	239.6	36
Texas	2,738.6	2,348.8	389.8	1,146.6	34
Georgia	1,018.3	918.8	99.5	394.1	25
Nevada	219.9	197.0	22.9	125.0	18
California	4,249.5	3,913.3	336.2	1,847.0	18

Arkansas	333.3	316.3	17.0	98.8	17
Washington	785.8	739.6	46.2	331.6	14
Rhode Island	145.6	139.7	6.0	47.5	13
New Hampshire	134.2	129.7	4.5	59.1	8
Pennsylvania	1,602.3	1,602.5	-0.3	546.5	0
Indiana	632.0	642.2	-10.2	259.9	-4
North Carolina	863.5	881.3	-17.8	407.0	-4
Oregon	350.0	361.8	-11.8	167.5	-7
Kansas	307.1	331.7	-24.6	122.5	-20
Missouri	723.5	794.3	-70.8	238.0	-30
Tennessee	649.9	731.2	-81.3	243.8	-33
Utah	187.6	225.3	-37.7	111.3	-34
Oklahoma	385.0	434.3	-49.3	142.4	-35
Florida	1,704.0	2,002.7	-298.7	732.8	-41
Idaho	124.3	148.4	-24.1	53.7	-45
Iowa	268.9	332.2	-63.3	136.1	-47
Wyoming	51.3	70.4	-19.1	36.8	-52
Vermont	54.7	73.9	-19.2	24.6	-78
Arizona	424.9	631.7	-206.8	249.7	-83
Louisiana	397.8	601.2	-203.5	205.1	-99
South Dakota	64.7	109.9	-45.3	38.3	-118
South Carolina	302.1	494.5	-192.4	158.8	-121
Kentucky	329.3	536.8	-207.5	155.8	-133
Hawaii	118.9	206.6	-87.7	65.4	-134
Virginia	848.1	1,441.0	-592.9	409.7	-145
Alaska	63.2	131.4	-68.2	45.9	-149
Maryland*	1,030.8	1,604.1	-573.3	384.0	-149
Maine	96.9	172.5	-75.6	50.0	-151
North Dakota	53.9	102.6	-48.7	31.6	-154
Alabama	340.1	630.8	-290.6	166.8	-174
Montana	60.8	125.2	-64.5	35.0	-184
West Virginia	98.6	247.6	-149.0	61.0	-244
Mississippi	164.7	404.6	-239.9	94.4	-254
New Mexico	115.7	316.6	-201.0	76.9	-261
Puerto Rico†	73.7	256.1	-182.4	62.8	-291

Sources: Census Bureau; Internal Revenue Service; *The Economist* estimates *Includes Washington, DC †US territory

Limits to monetary union tools

- Limits to monetary union tools?
- Banking union
- Fiscal Union
  - Overview of European Fiscal Compact
  - Interaction of Monetary and Fiscal Unions


Federal Spending in Each State Per Dollar of Federal Taxes FY 2005
New Mexico $2.03
Mississippi $2.02
Alaska $1.84
Louisiana $1.78
West Virginia $1.76
North Dakota $1.68
Alabama $1.66
South Dakota $1.53
Kentucky $1.51
Virginia $1.51
Montana $1.47
Hawaii $1.44
Maine $1.41
Arkansas $1.41
Oklahoma $1.36
South Carolina $1.35
Missouri $1.32
Maryland $1.30
Tennessee $1.27
Idaho $1.21
Arizona $1.19
Kansas $1.12
Wyoming $1.11
Iowa $1.10
Nebraska $1.10
Vermont $1.08
North Carolina $1.08
Pennsylvania $1.07
Utah $1.07
Indiana $1.05
Ohio $1.05
Georgia $1.01
Rhode Island $1.00
Florida $0.97
Texas $0.94
Oregon $0.93
Michigan $0.92
Washington $0.88
Wisconsin $0.86
Massachusetts $0.82
Colorado $0.81
New York $0.79
California $0.78
Delaware $0.77
Illinois $0.75
Minnesota $0.72
N. Hampshire $0.71
Connecticut $0.69
Nevada $0.65
New Jersey $0.61
$0.00
$0.50
$1.00
$1.50
$2.00
$2.50

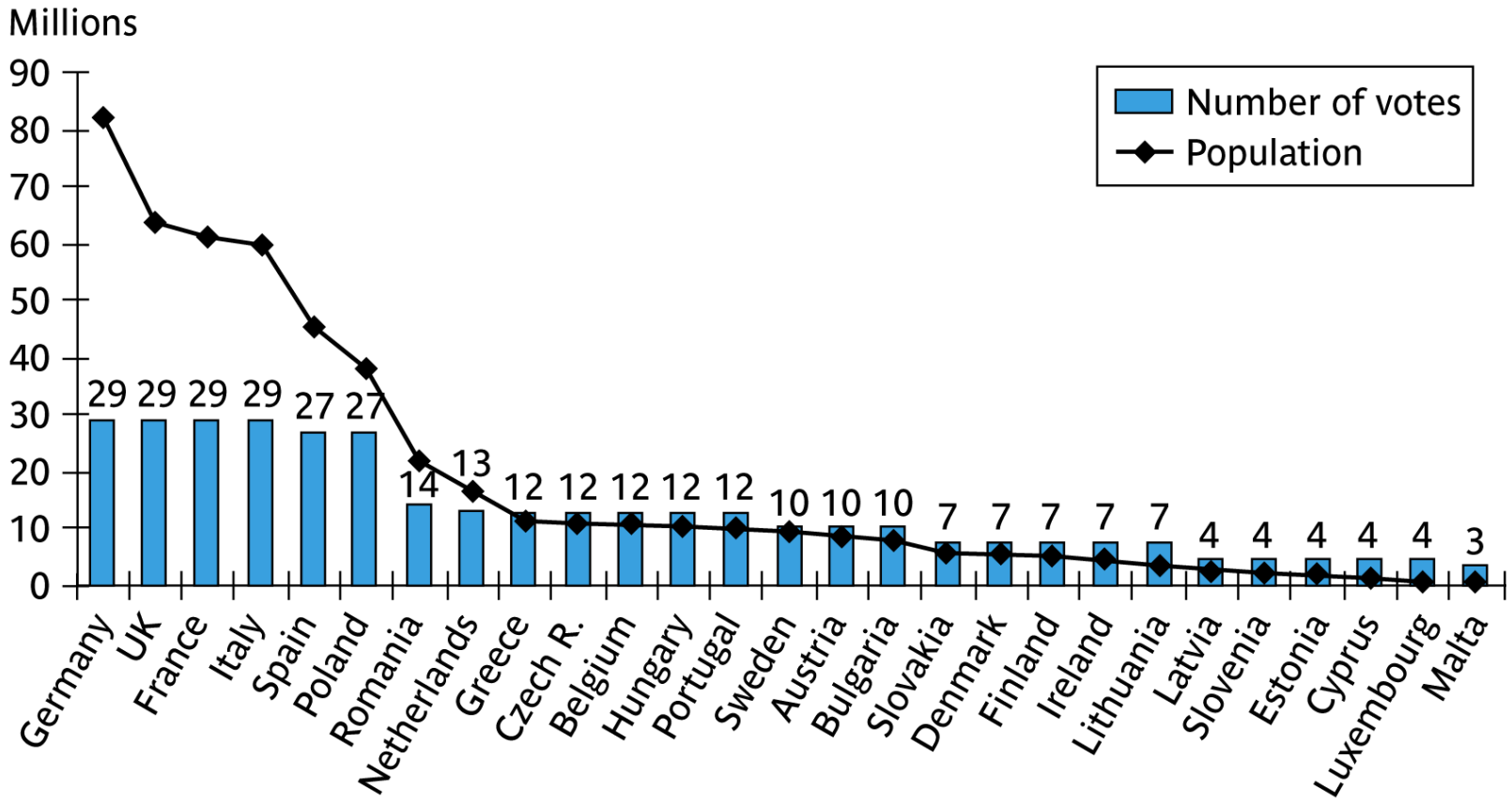
Monetary Union with Fiscal Union

- Interactions between monetary policy and national fiscal policies.
  Union-wide fiscal policy eliminates potentially inefficiency of game between sovereign governments [Guiso, Herrera, Morelli (2012)]
  Inefficiency depends on cultural differences; can express via coefficient of public good; culture conformity constraint on policy.
- Design common institutions — *fiscal union* — to mitigate clash.
- Functioning institutions may feed back to taste change?
- Decentralized country, plus subsidiarity, convergence of national fiscal systems to fiscal union?

Monetary Union with Fiscal Union

- National democratic accountability interacts with union-wide need *more than proportional* power to smaller states [Casella (1992)]
- Adjusted population weighting enshrined in voting procedures. *B&W Graph*.

Economical view of decision-making



Monetary Union with Fiscal Union

- National democratic accountability interacts with union-wide need more than proportional power to smaller states, $\gamma > \sigma$?
- Adjusted population weighting enshrined in voting procedures. *B&W Graph*.
  But reasons to worry. E.g. changes in 2014: Lisbon Treaty. 2014. Or 2017, at Poland's insistence, at the wish of a single member reverting to old Nice rules. Lisbon Treaty more power to smallest states and Germany; Spain, Poland and middle-sized states biggest losers.
- *Treaty on Stability, Coordination and Governance in the Economic and Monetary Union*, signed March 2, 2012 (all EZ, and all other EU, except UK, Czech Republic), took effect January 1, 2013.
- strengthens Stability and Growth Pact, rules for coordination and oversight over the national fiscal policies.

Monetary Union with Fiscal Union

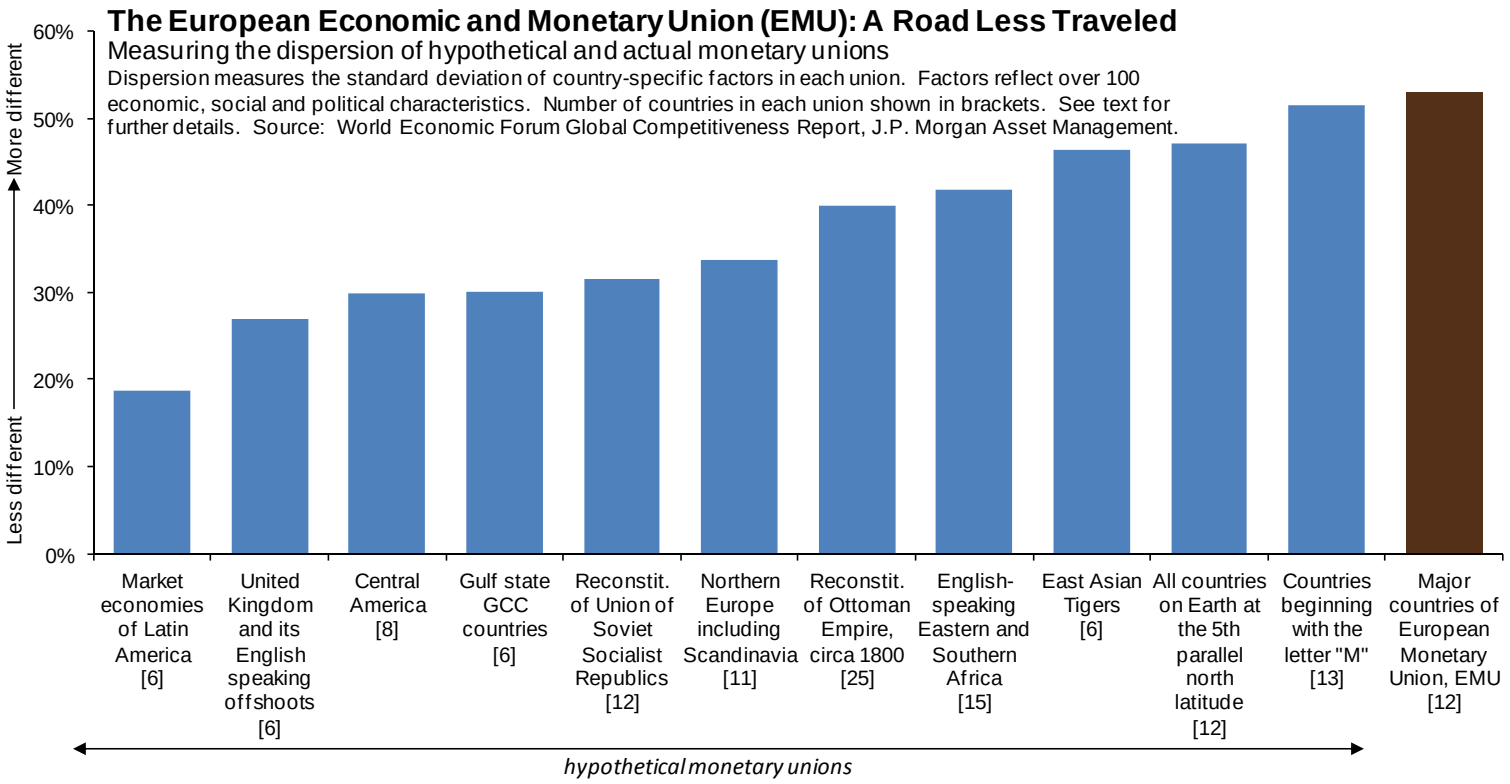
- *Balanced budget rule*: "annual structural deficit" $\leq$ 0.5% GDP (if debt as a share of GDP <60%, structural deficit at most 1%.
- *Debt brake rule*, if debt $>$ 60% GDP, reduce at an average annual rate of at least one twentieth (5%) of the exceeded percentage points.
- *Automatic correction mechanism*: If not compliant with balanced budget, or debt brake rules, automatic correction mechanism triggered, to be defined individually by each state, comply with EU directive, institute National Fiscal Advisory Council. National monitoring of observance.
- Debt issuance coordination, "better coordination and planning."
- Notify of policies for improving competitiveness, employment and financial stability.

Lessons

- Dysfunctions: taste heterogeneity vs. economies of scale
  Economies of scale in provision of common public goods high
  Europeans very *heterogeneous* culturally, linguistically, and economically
- Have European publics come closer together, or further apart, during crisis?
- Political contagion?
- "Stark" heterogeneity? See JP Morgan *Graph*.

Topics: how lonely a road is Europe traveling; Graham-Dodd and Shiller US equity valuation measures; casual reading

Europe and the road less traveled. As we wait for the next round of fiscal transfers from North to South, European Central Bank rescue operations, IMF firewall expansions, foreign capital flight, deferral of tighter bank capital standards, elections, Bundesbank resignations, protests, rising unemployment and generally miserable economic data in the European Periphery, it's worth remembering something broader about what Europe is up to. There is no small amount of economic hubris associated with the European monetary project, and the chart below shows why. Multinational monetary unions are rare (*see Appendix*). Some regions debate adopting them, like the Persian Gulf, but decide not to, preferring to retain independent monetary policy. Europe went ahead anyway, despite large differences between member countries. Just how different? **Countries in the European Monetary Union are more different than just about any other monetary union you could imagine:**



What does this chart show?

- The best way I know of to compare countries is via the World Economic Forum Global Competitiveness Report. This compilation rates 142 countries on over 100 factors related to labor and goods market efficiency; government institutions (property rights, corruption); macroeconomic soundness (debt, deficits); health and education; business sophistication (local supplier quality/quantity); and capacity for innovation (quality of scientific research institutions, R&D spend, patent grants).
- Using this raw data, I imagined what other monetary unions might exist, and how different their constituents would be. The chart shows the country dispersion for hypothetical unions comprised of the UK and its English-speaking offshoots (US, Can, Australia, Ire, NZ); and of countries in Central America, Latin America, the Gulf, Northern Europe, Africa and Southeast Asia (*see Appendix for details*). ***All* of these hypothetical monetary unions have lower country dispersion measures than the European Monetary Union. And yet, these regions have resisted the temptation to form one**.
- I even reconstituted the old Soviet Union by combining the Russian Federation with 11 former republics, and the Ottoman Empire, by combining 25 countries which now inhabit its 18th century borders. I also added a random monetary union comprised of the 12 countries on Earth located at the latitude of the 5th parallel (north), and another union comprised of the 13 countries on Earth whose names start with the letter "M". Even these groupings exhibited less dispersion than the EMU.

And still, Europe soldiers on, even as the rest of the world avoids monetary union in circumstances more favorable to it. **What remains are political questions regarding how much inflation and fiscal transfer Germany can sustain; if a true fiscal union can be created, seen by some as indispensable to the Euro's future (see Bordo 2011); and how much austerity countries like Spain can take**. As this is a road less traveled, it's hard to know how it will turn out. It's a tough road, and the chart helps explain why. Europe's problem is not just one of public sector deficit spending differences, but also of deeper, more fundamental differences across its various private sector economies. Whether it's equities, credit or real estate, EMU valuations need to be considerably more attractive than US counterparts to justify investment given the challenges of the European project.

Lessons

- Dysfunctions: taste heterogeneity vs. economies of scale
  Economies of scale in provision of common public goods high
  Europeans very *heterogeneous* culturally, linguistically, and economically
- Will European publics come closer together, or further apart, during crisis?
- Political contagion?
- "Stark" heterogeneity? See JP Morgan *Graph*.
  Size easier to account for, yet exaggerates heterogeneity.
  Large countries, not necessarily too heterogeneous. "Law of large numbers" re taste.

Lessons for the EU: Hamilton (1755 – 1804) and Future EU Architecture

- Alexander Hamilton: US assume states debt (revolutionary period), understood US tax revenue, for US to borrow.
- US states spent on canals and roads, defaulted in mid-1800s. Long-run consequences (England still trying to collect from Mississippi).

Lessons for the EU: Hamilton (1755 – 1804) and Future EU Architecture

- Alexander Hamilton: US assume states debt (revolutionary period), understood US tax revenue, for US to borrow.
- US states spent on canals and roads, defaulted in mid-1800s. Long-run consequences (England still trying to collect from Mississippi). See Graph. Wallis Table.
- US federated nation creation teaches us:
  - Need tax revenue to borrow. Eurobonds?
  - Federated states' default have long-lasting spillovers: spreads over Canadian provinces, 19th cent., but went back to markets.
- Has the crisis generated political solidarity and trust among EZ countries?
- What should we expect for Greece from ECB's policy QE initiative? Little unless Greece is more competitive.

THANK YOU!