Demographics, Structural Reform and the Growth Outlook for Europe

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Debt Crisis or Growth Crisis?

- Highly indebted countries have four ways to reduce their debt/GDP ratios
  - Austerity
  - Inflation
  - Real GDP growth
  - Default
- Political limits to reductions in debt via austerity and limited inflation for euro members.
- So for various parts of European public and private sectors, it's likely to be growth or default.
- Unfortunately, the outlook for real growth in the euro area is not good.

Roadmap

- We build on our 2008 paper, which while written before the crisis, flagged weak Total Factor Productivity (TFP) growth as a concern for the euro area.
- This paper looks at the following:
  - Growth accounting calculations.
  - Demographic and labour force trends.
  - A longer-term baseline projection.
  - Impact of structural reforms. Lots of discussion about these reforms in policy circles but what precisely are they and what can they do?
- Focus on euro area 12 countries, both aggregate and country-by-country.

Some Sobering Findings

- TFP growth in the euro area has almost ground to a halt: Averaged 0.2 percent per year over 2000-2013.
- Investment slump is having negative supply-side effects: Low capital stock growth subtracting about 0.6 percent per year from potential output growth.
- Work-age population of the euro area has been declining since 2010.
- We project real GDP growth of less than half of one percent over the next decade even if unemployment and investment return to their pre-crisis rates by 2020.

Simple Growth Accounting Framework

- Cobb-Douglas production function

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$$

- Implying growth accounting equation

$$\frac{\dot{Y}_t}{Y_t} = \frac{\dot{A}_t}{A_t} + \alpha \frac{\dot{K}_t}{K_t} + (1-\alpha)\frac{\dot{L}_t}{L_t}$$

- We set alpha equal to one-third and construct a capital stock with a depreciation rate of six percent.

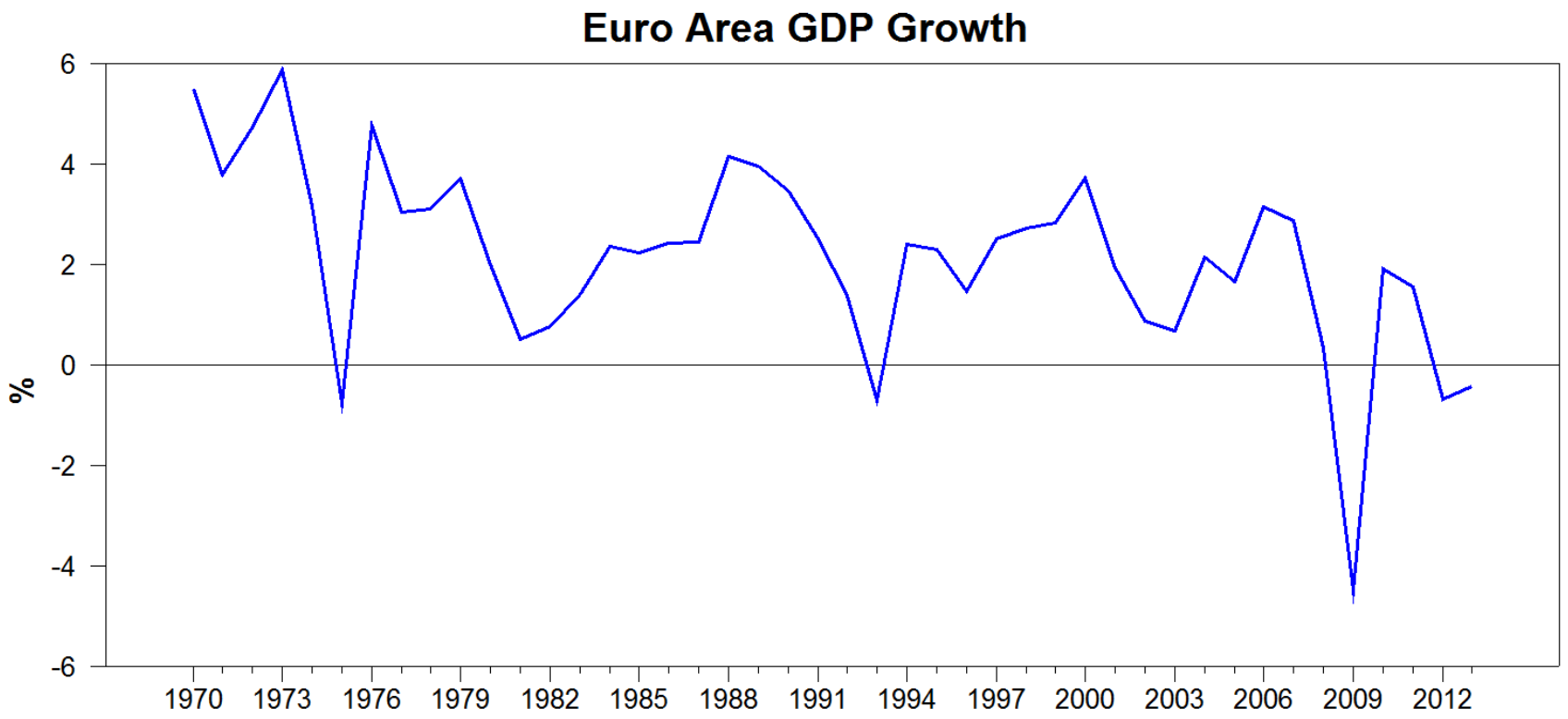
Growth Accounting Results

Period	Euro Area				United States			
	$\triangle y$	$\triangle a$	$\triangle k$	$\triangle l$	$\triangle y$	$\triangle a$	$\triangle k$	$\triangle l$
1970-1976	3.6	2.7	1.5	-0.5	3.1	0.9	1.2	1.0
1977-1986	2.1	1.6	0.8	-0.4	3.1	0.7	1.2	1.2
1987-1996	2.3	1.5	0.8	0.0	2.9	0.9	1.1	0.9
1997-2006	2.2	0.7	0.8	0.7	3.1	0.9	1.6	0.7
2007-2013	-0.3	-0.2	0.5	-0.6	1.0	0.5	0.7	-0.2
2000-2013	0.9	0.2	0.7	0.0	1.7	0.5	1.1	0.2
2010-2013	0.1	0.3	0.3	-0.5	2.1	0.7	0.5	0.9

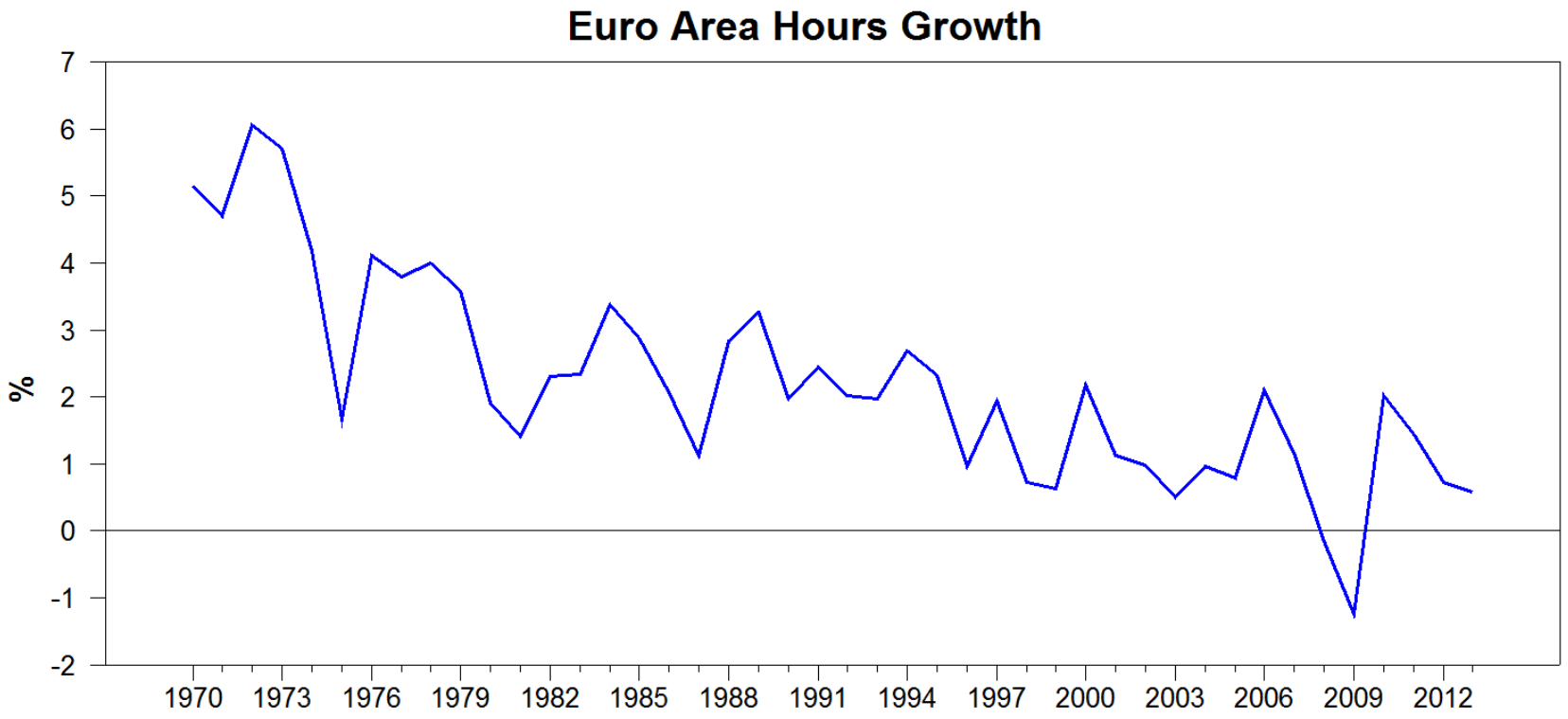
US TFP Growth Also Weakening

Period	Euro Area				United States			
	$\triangle y$	$\triangle a$	$\triangle k$	$\triangle l$	$\triangle y$	$\triangle a$	$\triangle k$	$\triangle l$
1970-1976	3.6	2.7	1.5	-0.5	3.1	0.9	1.2	1.0
1977-1986	2.1	1.6	0.8	-0.4	3.1	0.7	1.2	1.2
1987-1996	2.3	1.5	0.8	0.0	2.9	0.9	1.1	0.9
1997-2006	2.2	0.7	0.8	0.7	3.1	0.9	1.6	0.7
2007-2013	-0.3	-0.2	0.5	-0.6	1.0	0.5	0.7	-0.2
2000-2013	0.9	0.2	0.7	0.0	1.7	0.5	1.1	0.2
2010-2013	0.1	0.3	0.3	-0.5	2.1	0.7	0.5	0.9

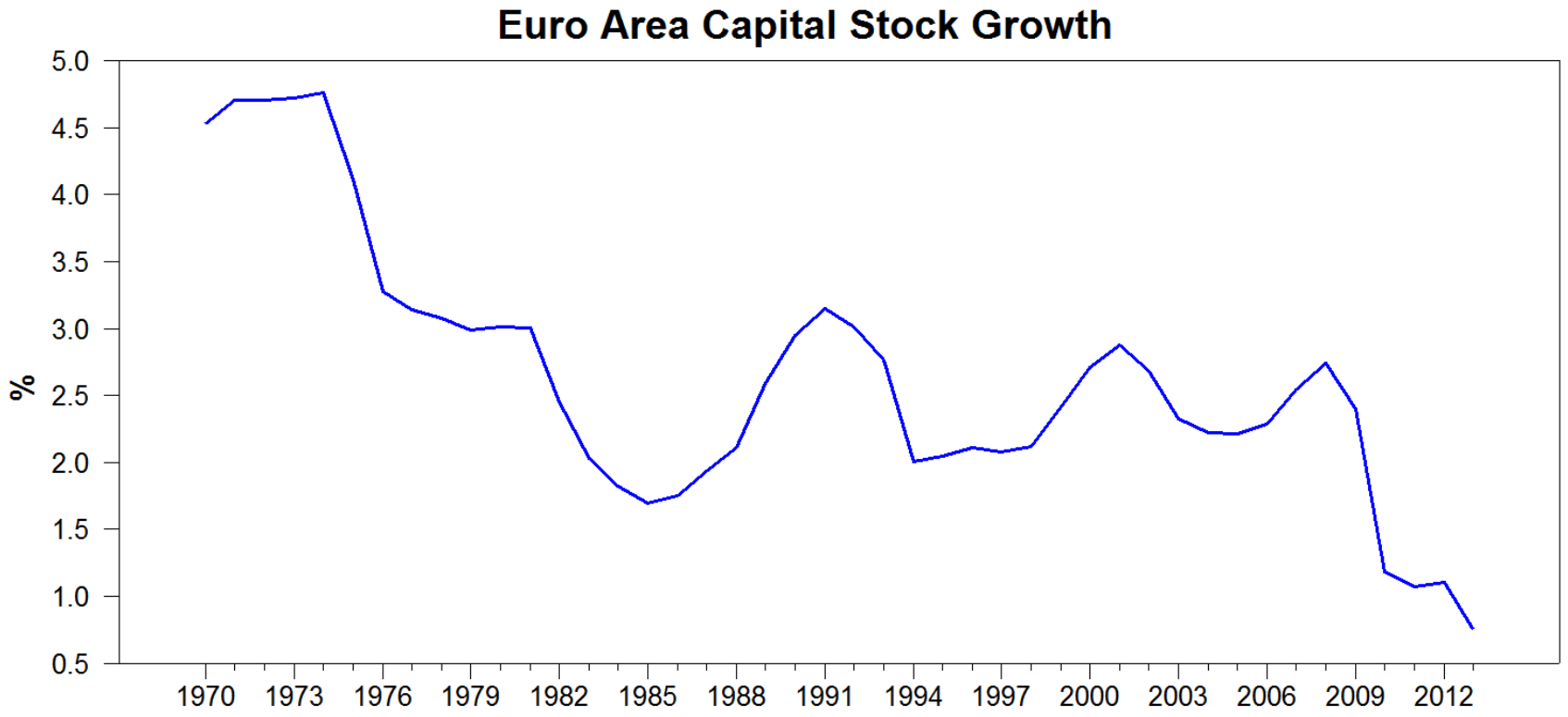
Euro Area GDP Growth



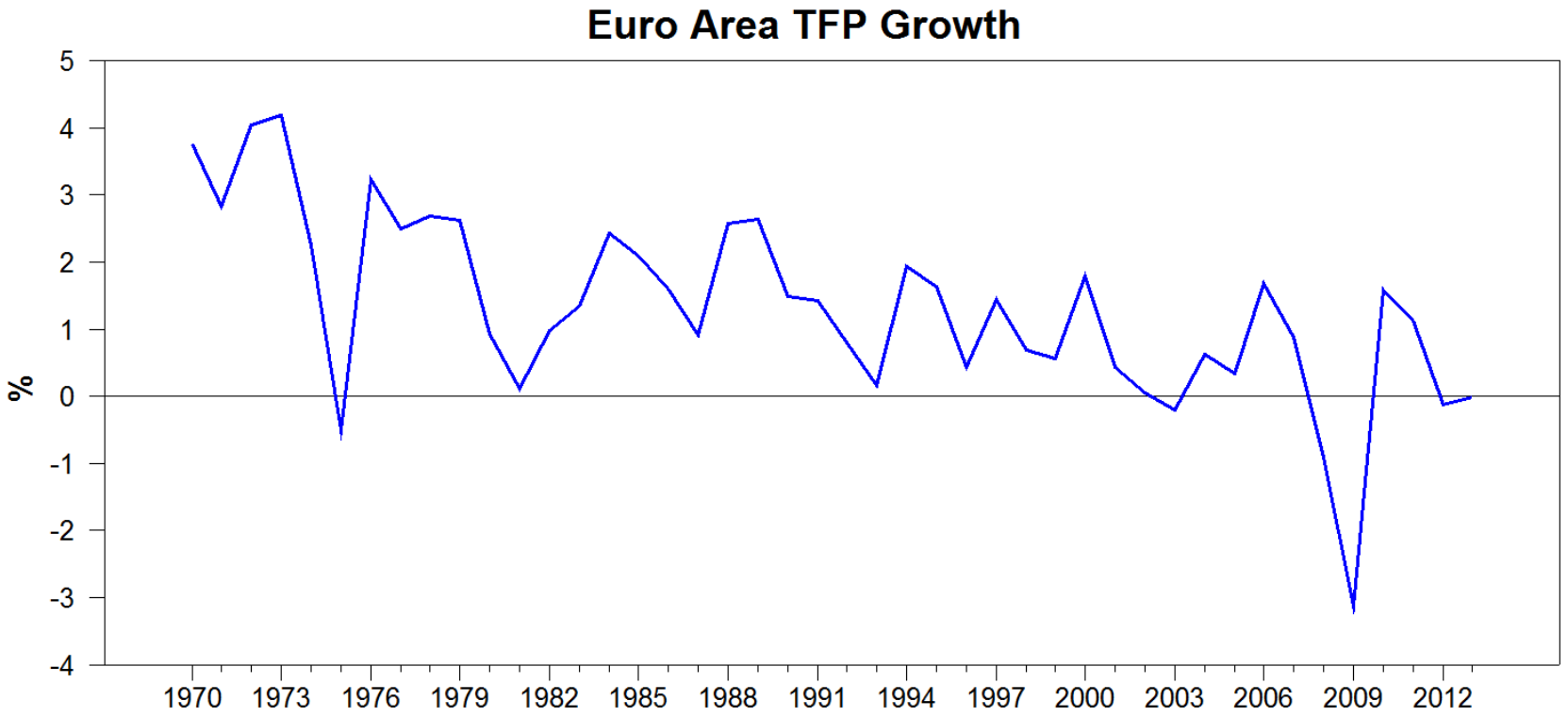
Components of Euro Area GDP Growth



Components of Euro Area GDP Growth



Components of Euro Area GDP Growth



TFP Versus Capital Deepening

Period	Euro Area			United States		
	$(\triangle y - \triangle l)$	$\triangle a$	$(\triangle k - \triangle l)$	$(\triangle y - \triangle l)$	$\triangle a$	$(\triangle k - \triangle l)$
1970-1976	4.4	2.7	1.7	1.5	0.9	0.6
1977-1986	2.7	1.6	1.0	1.3	0.7	0.6
1987-1996	2.3	1.5	0.8	1.6	0.9	0.7
1997-2006	1.1	0.7	0.4	2.1	1.0	1.1
2007-2013	0.6	-0.2	0.8	1.2	0.5	0.8
2000-2013	0.8	0.2	0.7	1.5	0.5	1.0
2010-2013	0.9	0.3	0.6	0.8	0.7	0.1

TFP Versus Capital Deepening: Some Analytics

- Consider a Solow growth model with

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$$

- Along a steady growth path with $\Delta \log A_t = g$ the steady-state growth rate of output per worker is $\frac{g}{1-\alpha}$ with g coming from TFP growth and the rest coming from capital deepening.
- With $\alpha = \frac{1}{3}$, TFP should account for two-thirds of productivity growth along a steady growth path.

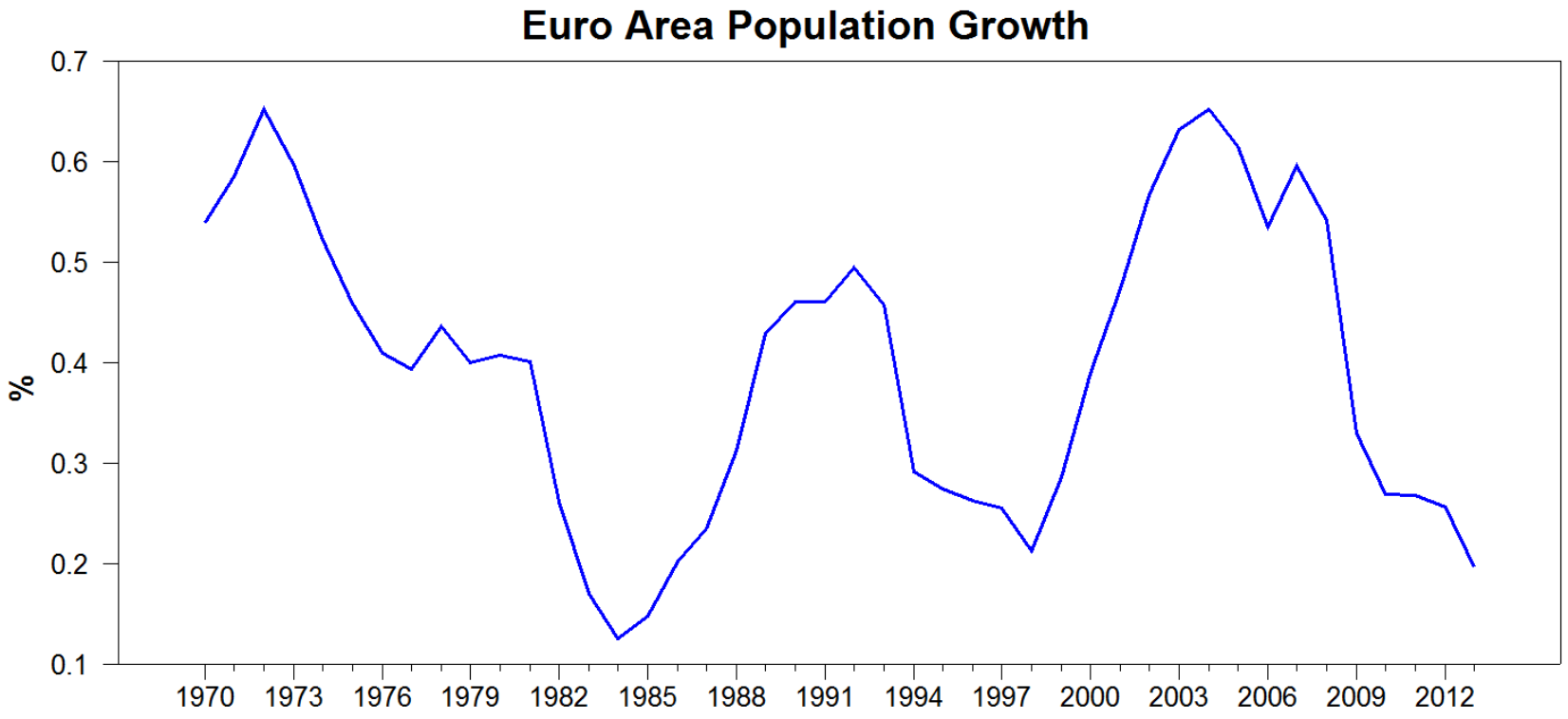
Low TFP Growth Signals Further Declines in Productivity Growth

Period	2007-2013			2000-2013		
	$(\triangle y - \triangle l)$	$\triangle a$	$(\triangle k - \triangle l)$	$(\triangle y - \triangle l)$	$\triangle a$	$(\triangle k - \triangle l)$
Belgium	0.1	-0.5	0.6	0.6	0.1	0.6
Germany	0.2	-0.1	0.3	1.0	0.6	0.4
France	0.3	-0.5	0.7	0.9	0.1	0.8
Greece	-0.9	-2.6	1.8	1.4	0.0	1.4
Ireland	1.4	-0.1	1.5	1.7	0.4	1.3
Italy	-0.3	-1.0	0.7	0.0	-0.6	0.6
Spain	2.1	0.3	1.8	1.0	-0.1	1.1
United Kingdom	-0.6	-1.1	0.6	0.9	0.2	0.8
Finland	-0.1	-1.0	0.9	1.4	0.6	0.7
Luxembourg	-1.6	-2.4	0.9	1.0	-0.2	1.1
Portugal	0.9	0.3	0.6	1.1	0.0	1.1
Austria	0.9	0.3	0.6	1.3	0.8	0.5
Netherlands	-0.1	-0.8	0.7	0.7	0.0	0.7

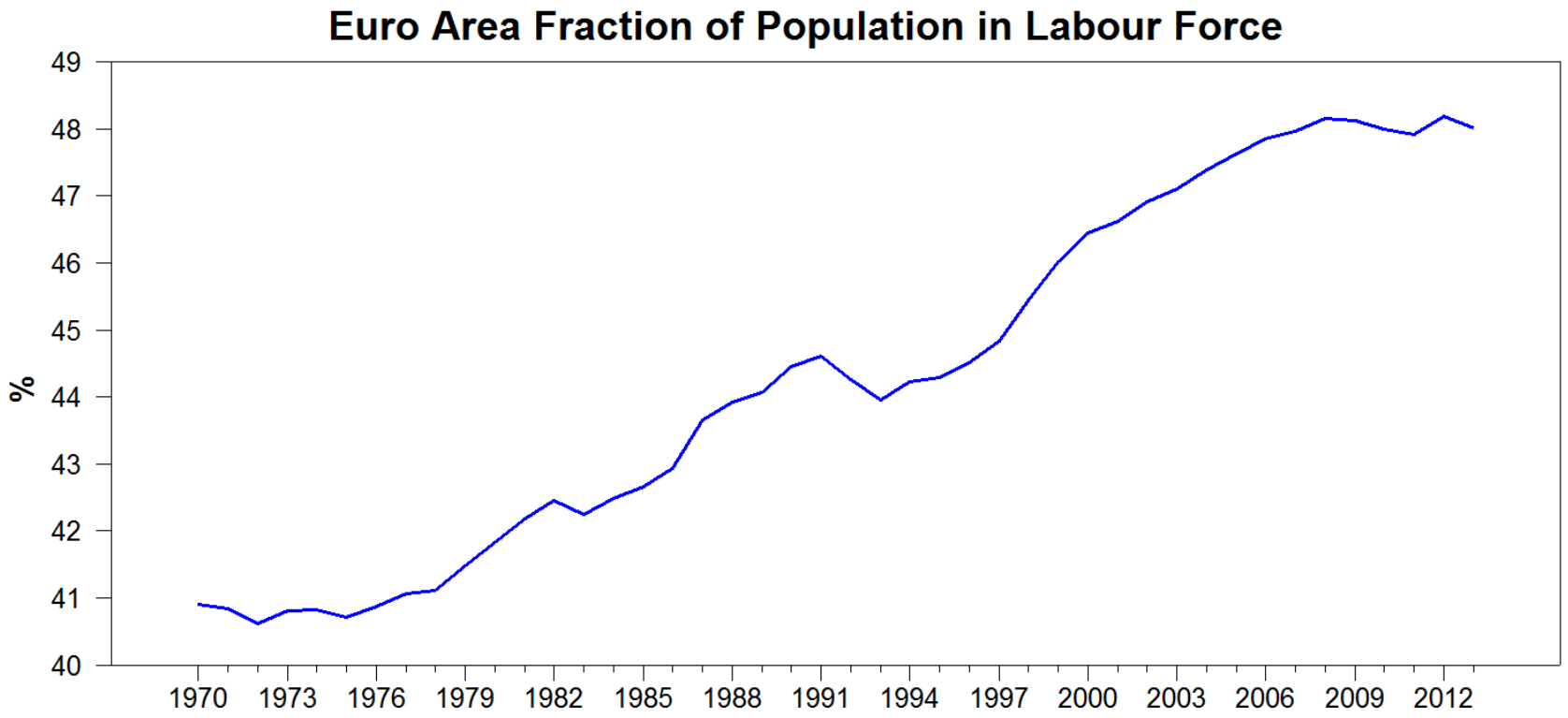
Determinants of Hours Worked: A Decomposition

- To think about future developments in labour input, the following decomposition is useful.
- Total hours worked equals
  - Population
  - Times fraction of population in the labour force
  - Times the employment rate
  - Times the average workweek of employees

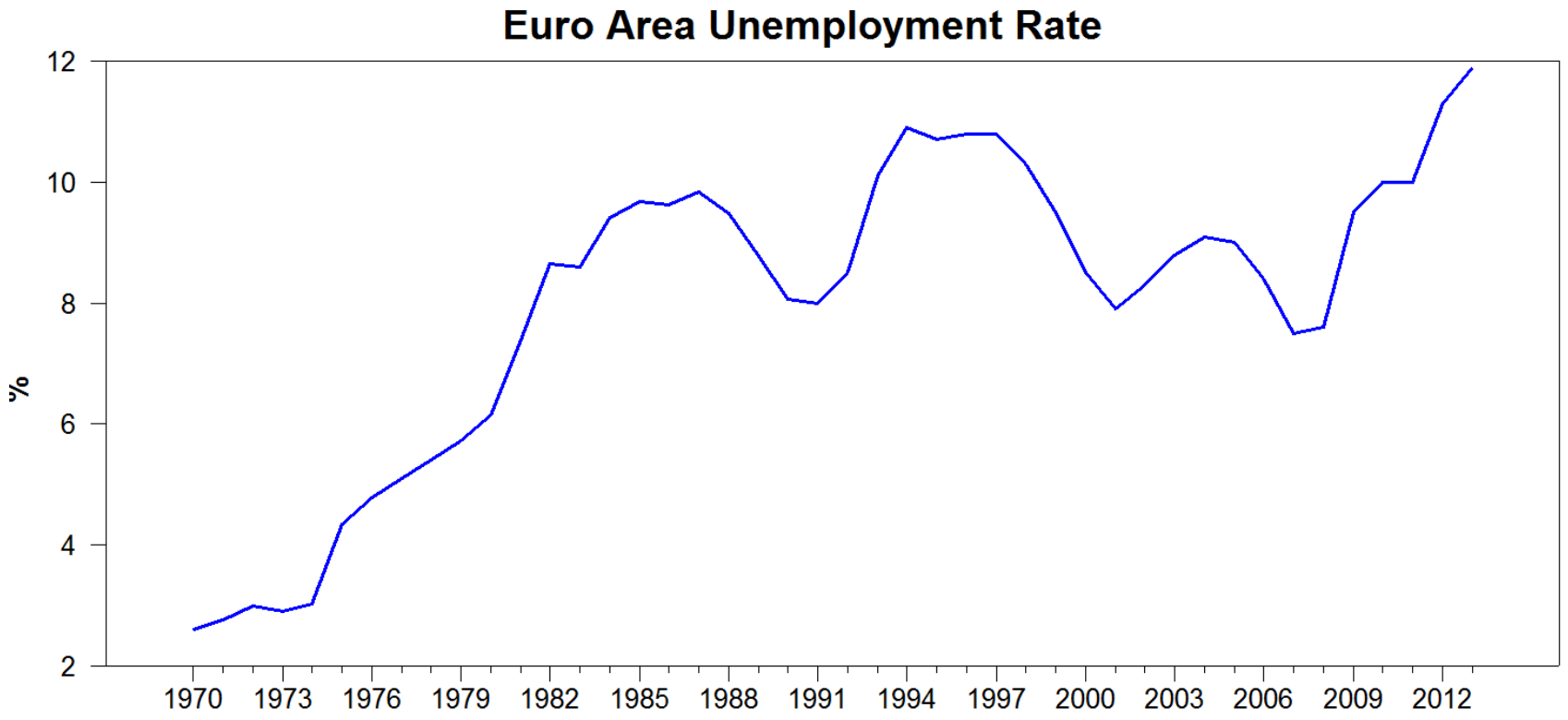
Determinants of Hours Worked



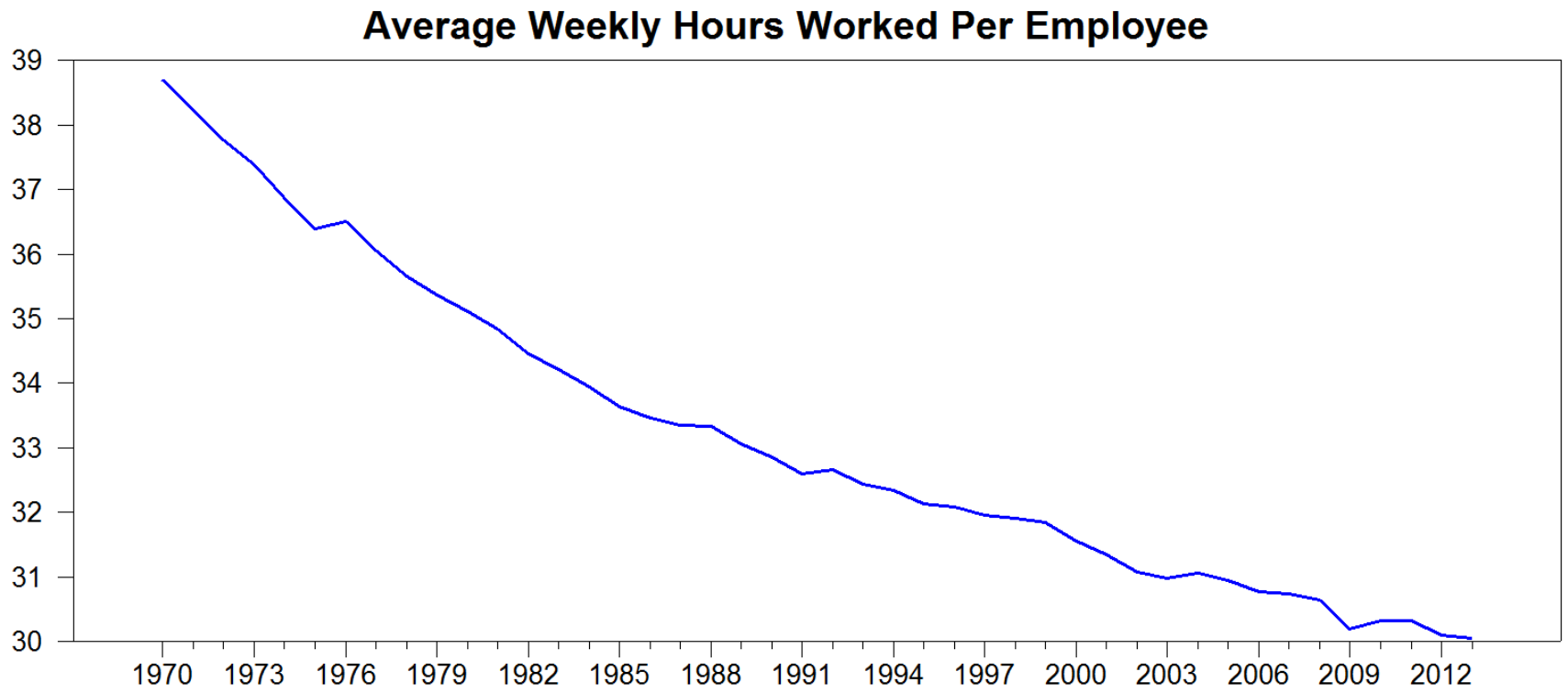
Determinants of Hours Worked



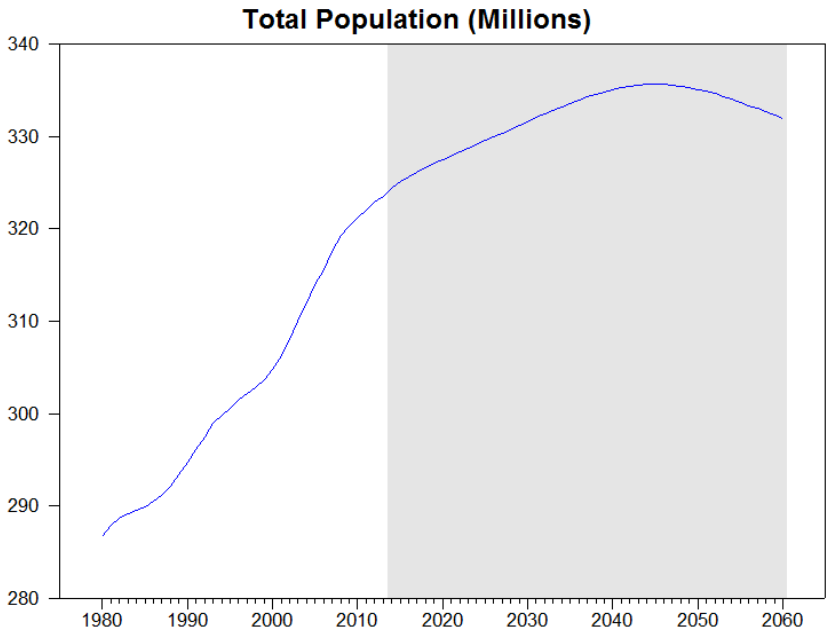
Determinants of Hours Worked

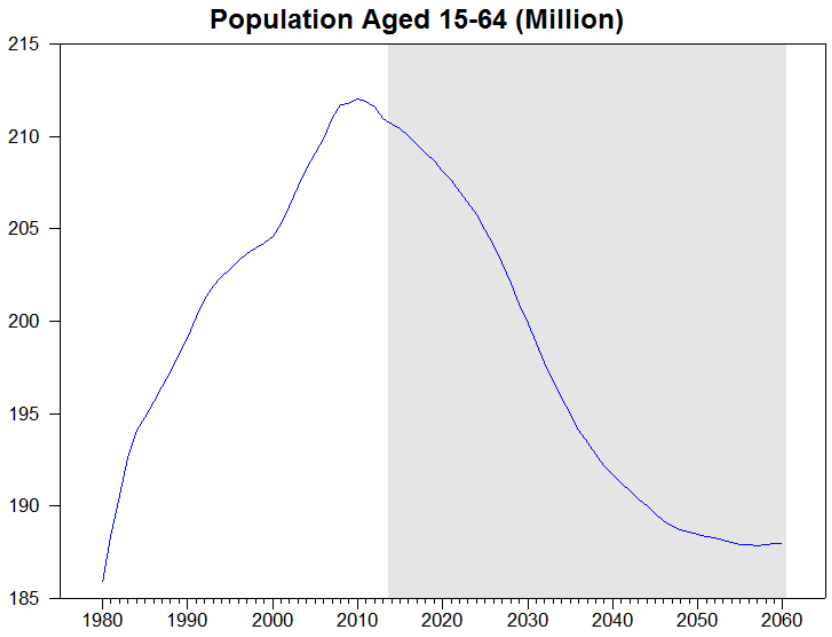


Determinants of Hours Worked

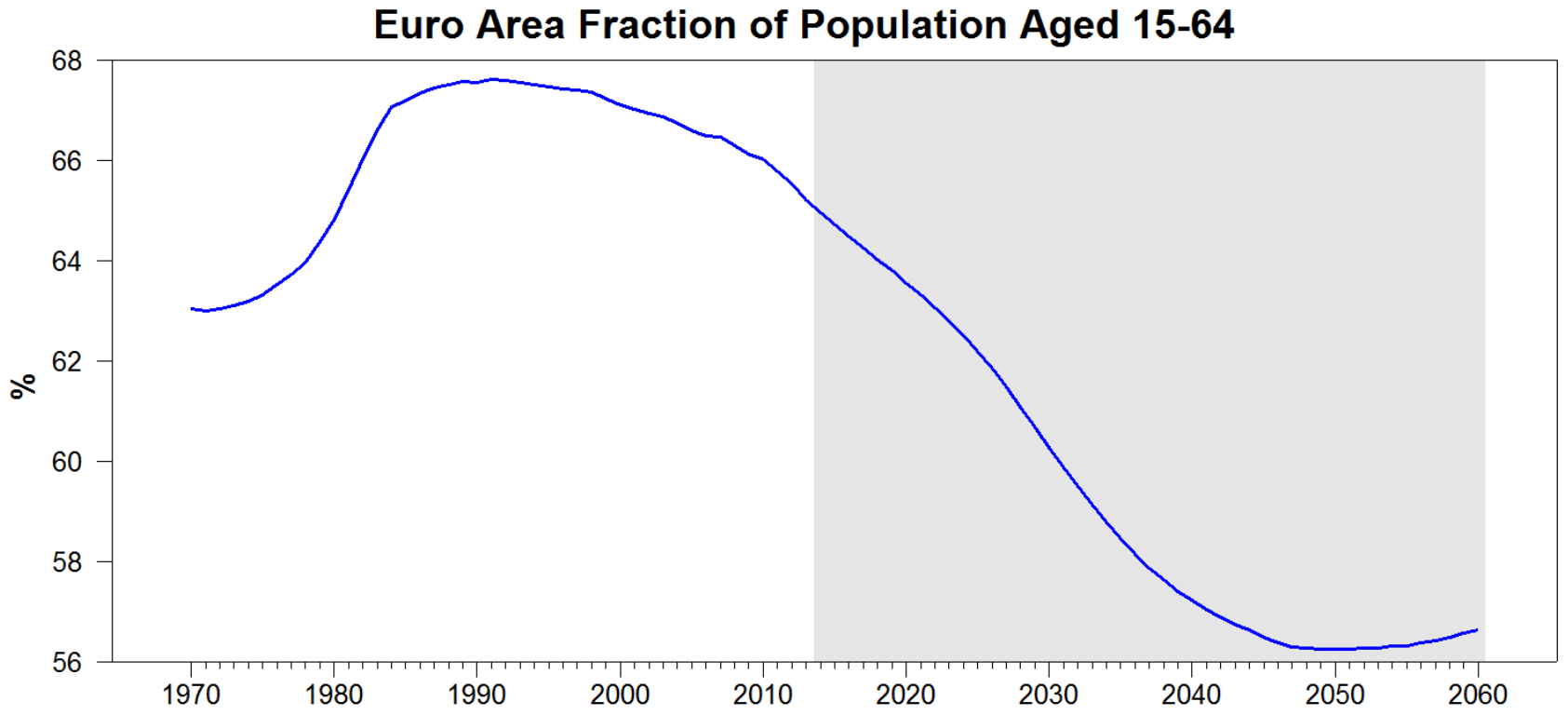


Big Demographic Changes On the Way: Eurostat Projections

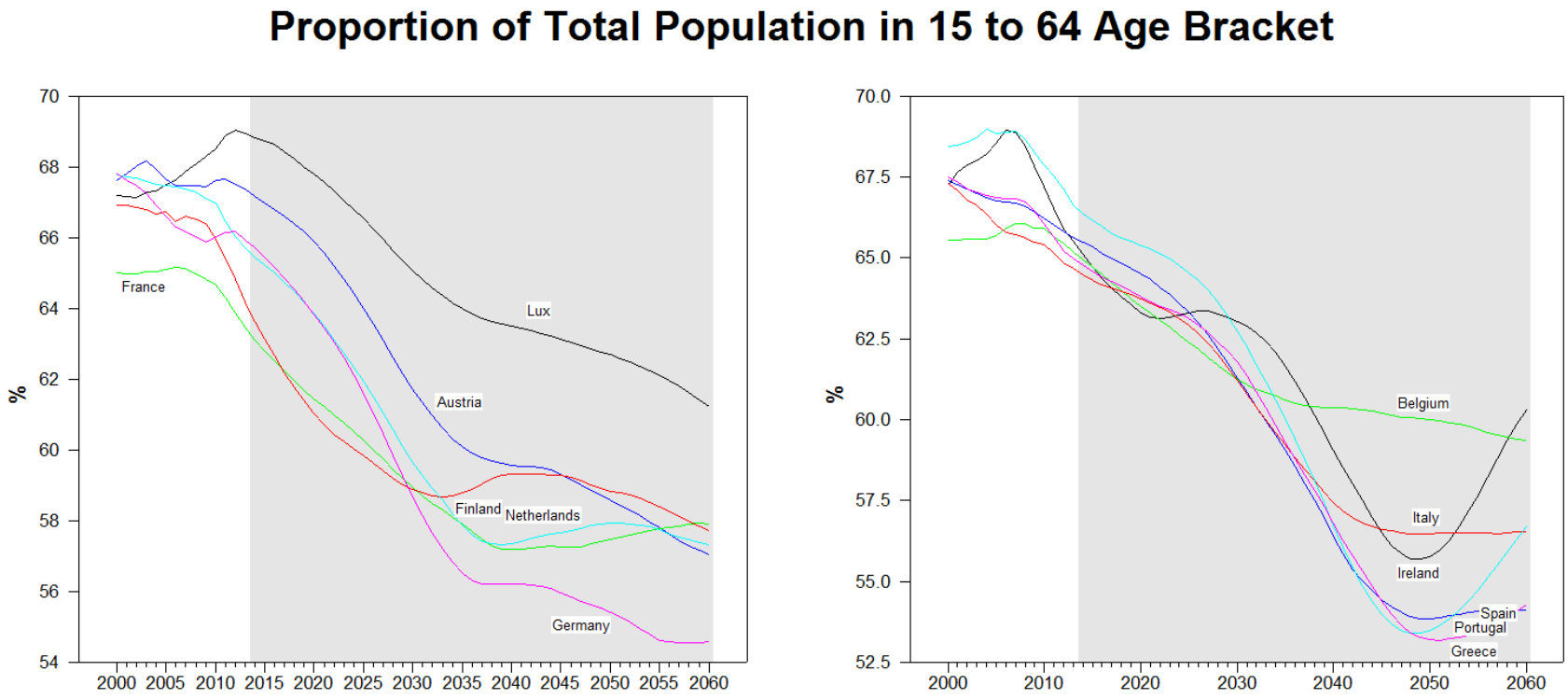




Large Fall in Work-age Fraction of Population



Ageing Now Important All Across Europe



A Long-Term Simulation

- We build a simple simulation model of the euro area economy, going from 2014 to 2060, using the Cobb-Douglas production function from the growth accounting framework.

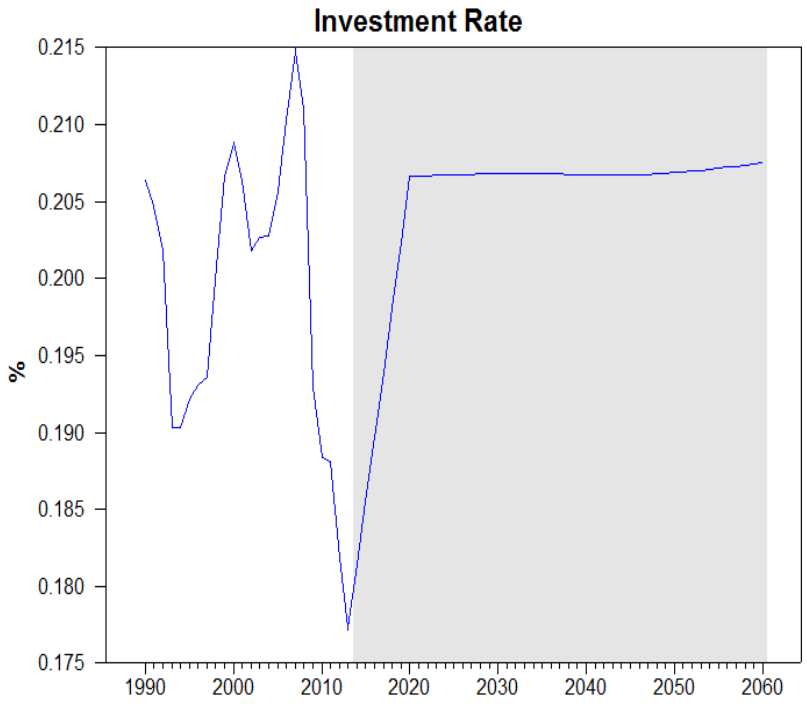
$$
\begin{aligned}
Y_t &= A_t K_t^{\alpha} L_t^{1-\alpha} \\
K_t &= (1-\delta) K_{t-1} + I_{t-1} \\
L_t &= (1-u_t)(p_t \times Pop_t) \times H_t \\
I_t &= s_t Y_t \\
\Delta \log A_t &= g
\end{aligned}
$$

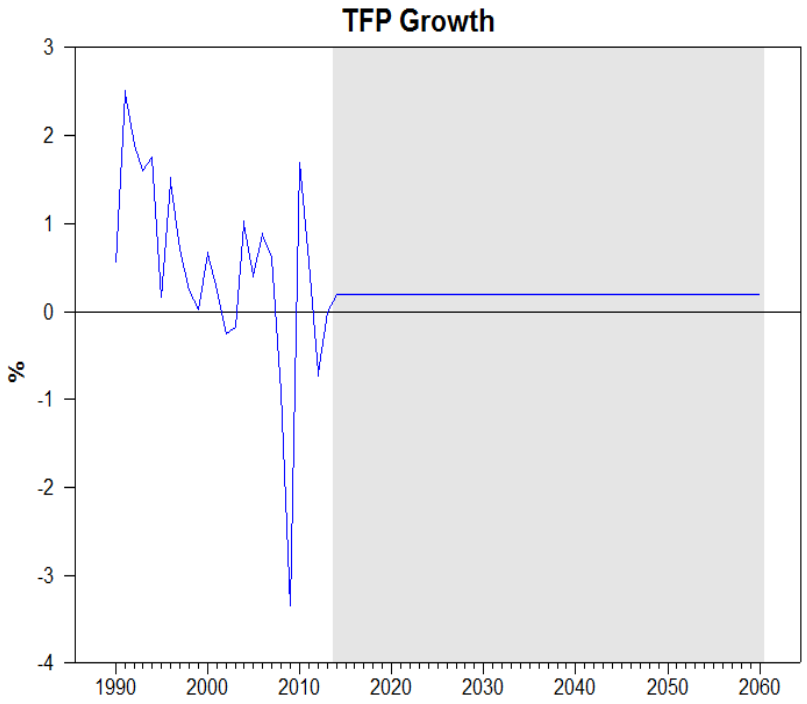
- It is a “bottom-up” simulation with specific assumptions for each country

Baseline Simulation Assumptions

- TFP grows at its 2000-2013 average of 0.2 percent.
- Ratios of investment to GDP are projected to recover by 2020 to their 1998-2007 averages and be constant thereafter.
- Unemployment rates fall to their 1998-2007 averages by 2020 and are constant thereafter. (Exceptions: Germany and Finland, where the rate stays constant from 2013.)
- Work-age populations follow the Eurostat projection.
- Participation rates of the work-age population flattens out at their current levels.
- Average workweeks continue to decline over the period 2012 to 2020 at the same rate as their 2000 to 2012 average and then stay flat.

Assumptions





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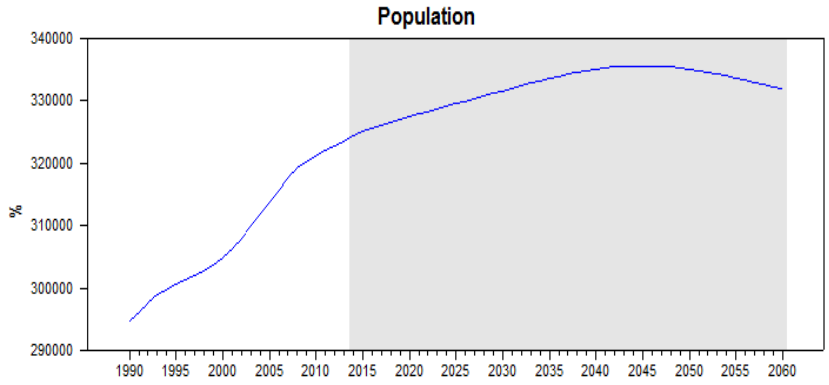
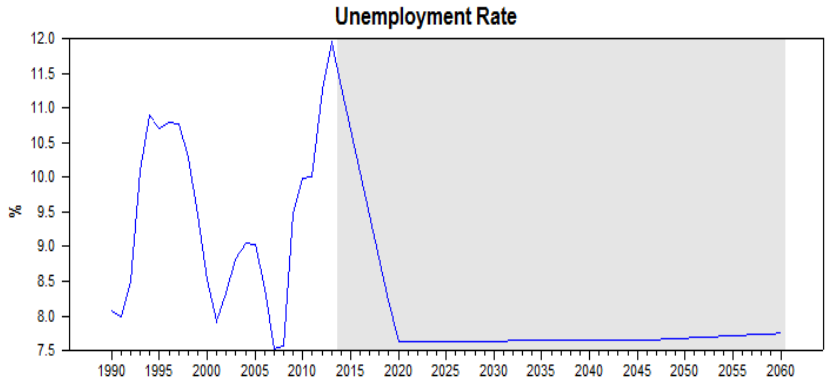
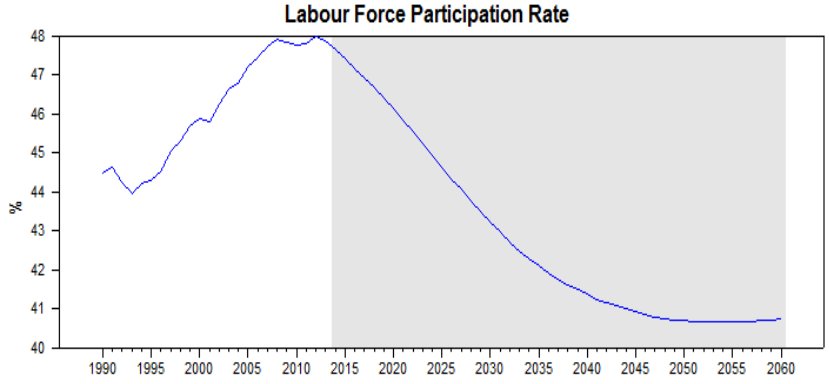
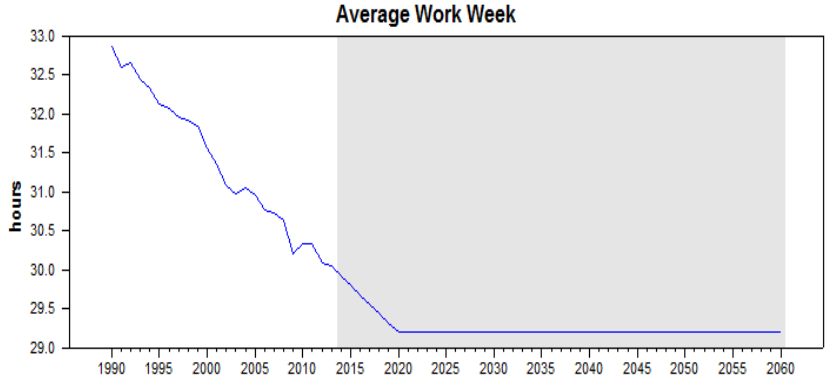
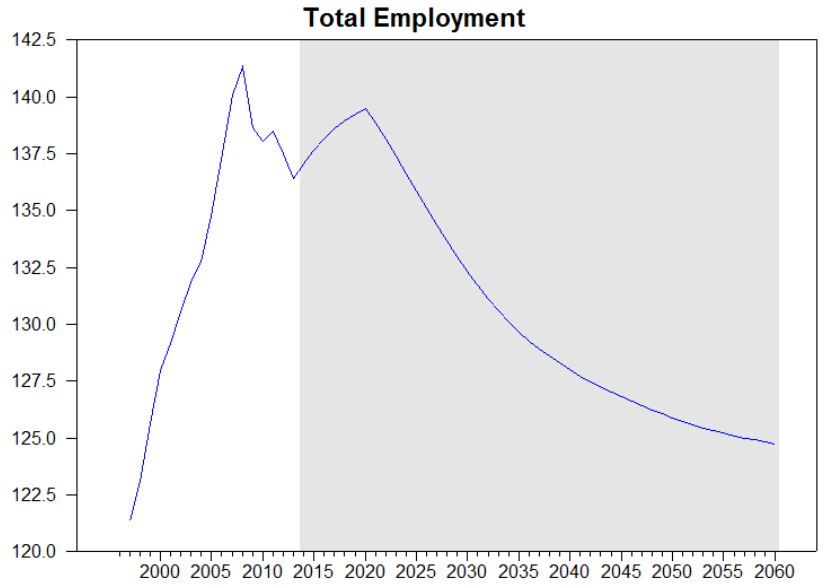


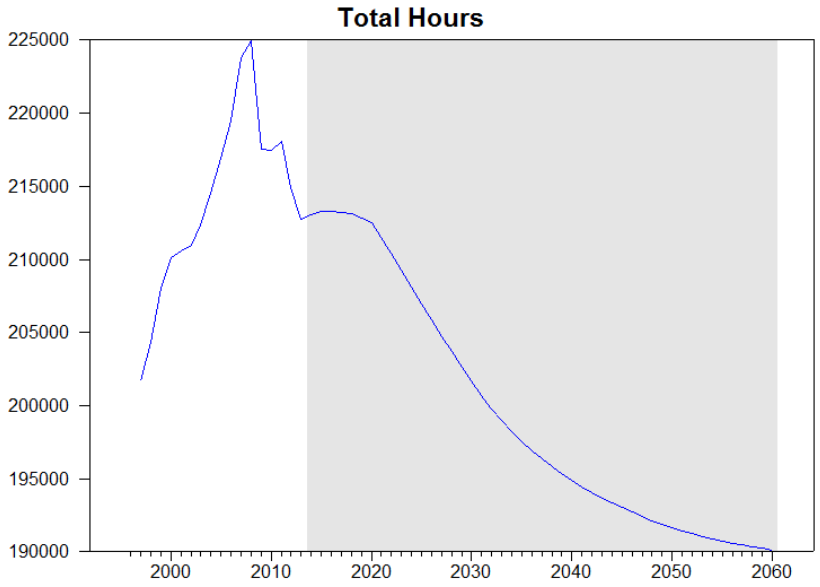




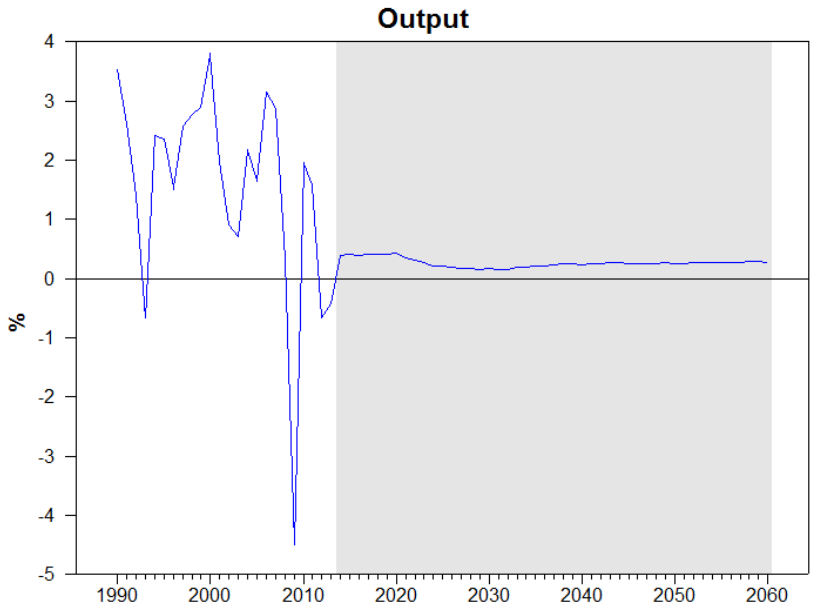


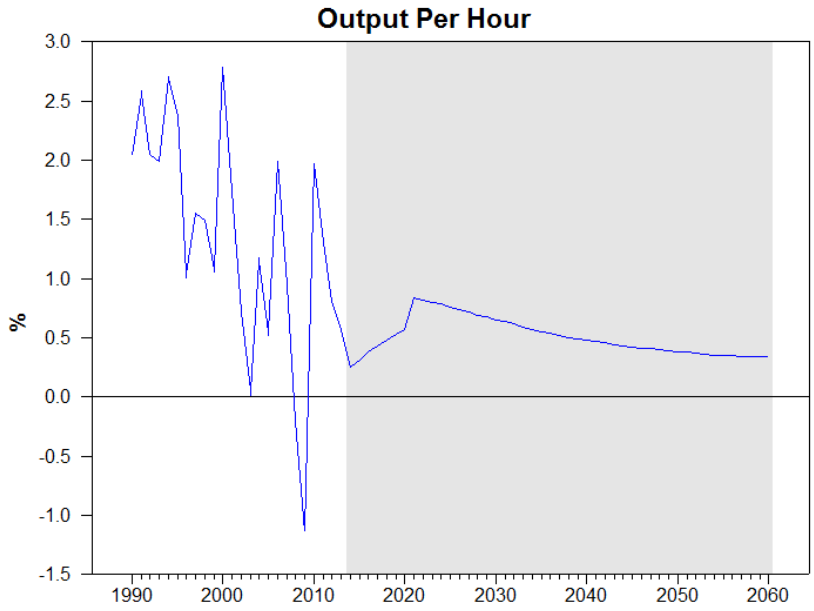
Employment and Hours



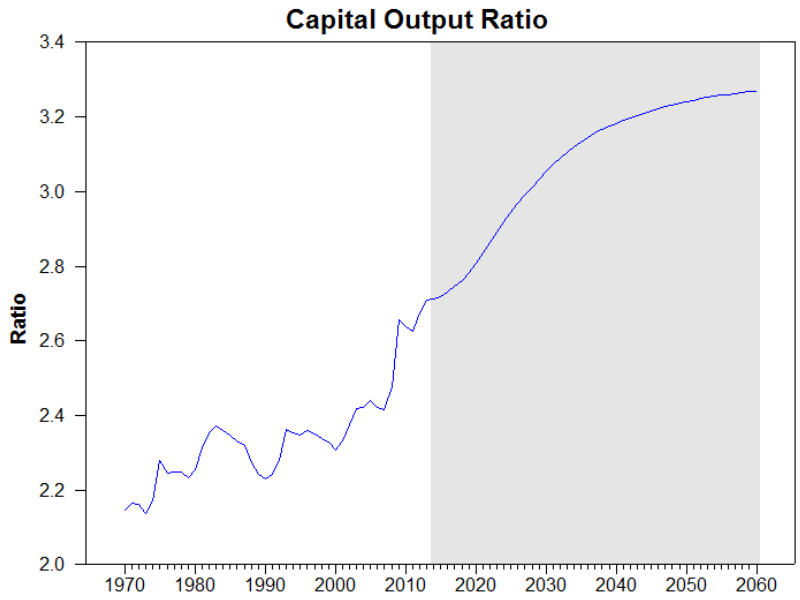


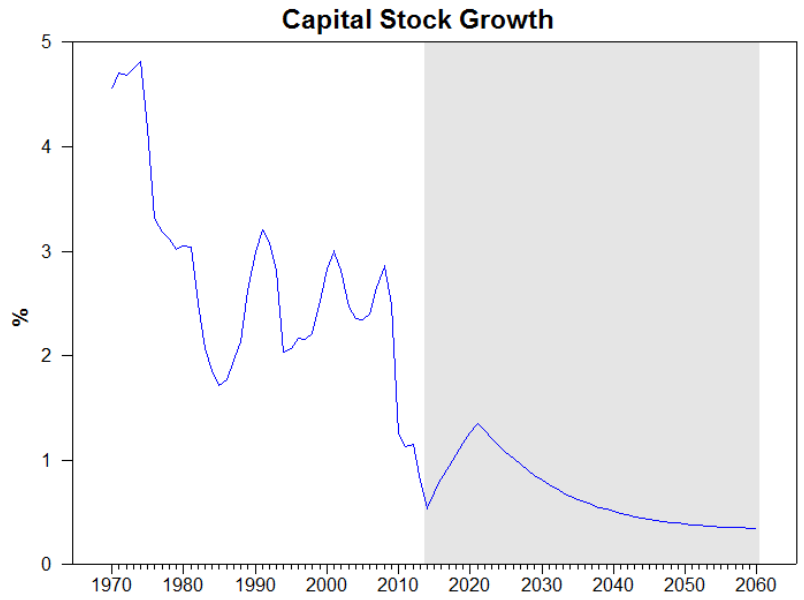
Growth in GDP and GDP Per Hour





Transition Dynamics for Capital





Baseline: Average Growth Rates

	GDP	GDP Per Hour	Hours
2014-2023	0.38	0.54	-0.16
2024-2033	0.18	0.68	-0.50
2034-2043	0.24	0.50	-0.26
2044-2053	0.26	0.40	-0.14
2054-2060	0.28	0.35	-0.07

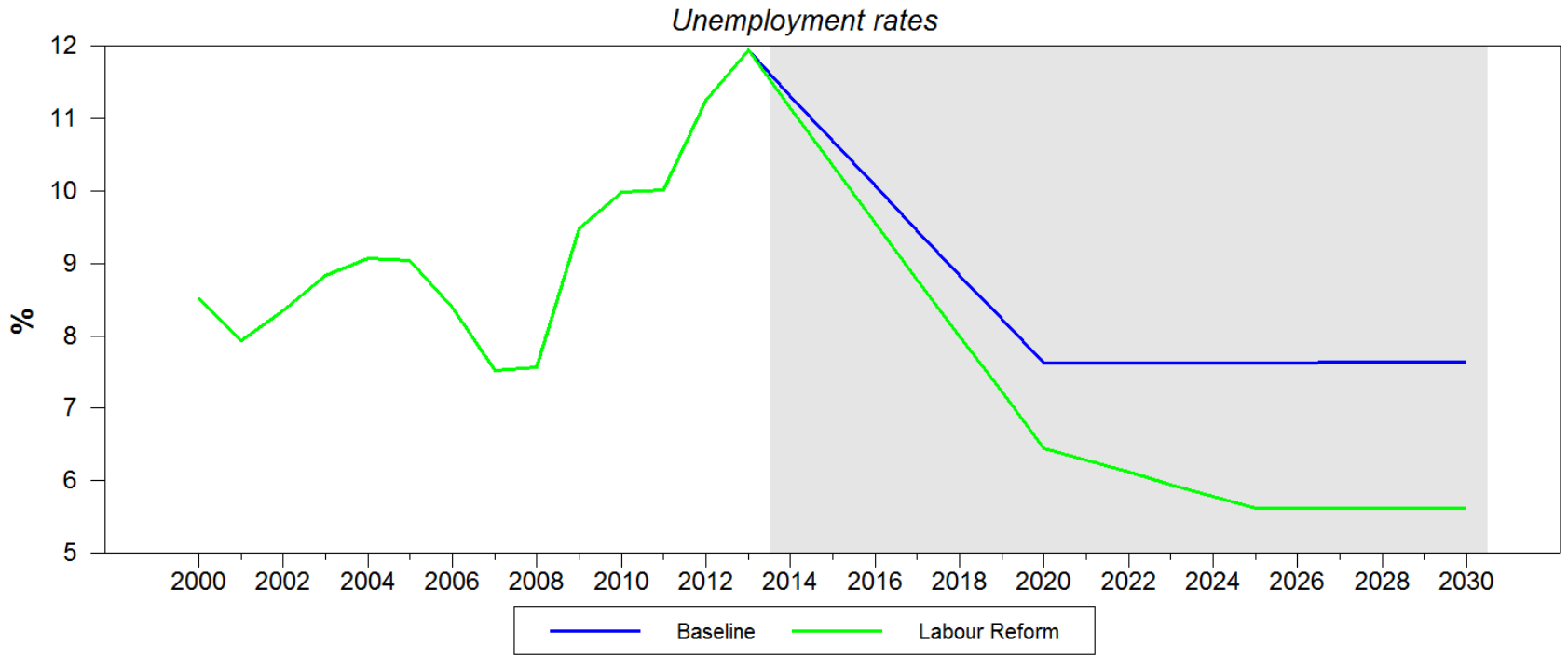
Structural Reform Scenarios

- Endless discussion in European political circles about the need for “structural reform”.
- But what exactly are structural reforms and what can they achieve.
- We consider three structural reform scenarios:
  - A labour market reform that reduces unemployment.
  - A pension system reform that increases labour force participation.
  - Product and labour market deregulation that boosts TFP.

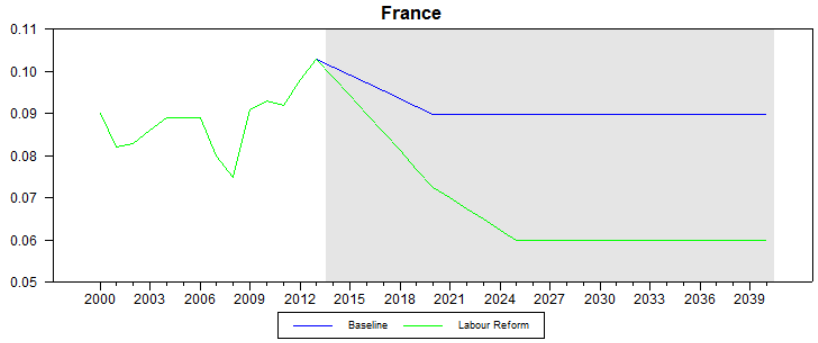
Labour Market Reform Scenario

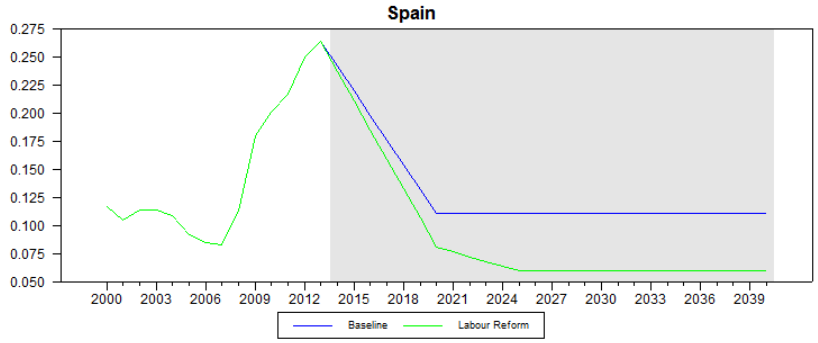
- 7 countries implement reforms that reduce their unemployment rate to 6% by 2025 i.e. the reforms take 12 years to have full impact.
- 5 countries who converge to unemployment rates below 6% in baseline do not reform (Germany, Austria, Netherlands, Luxembourg, Ireland).
- Total euro area unemployment rate settles at 5.6% instead of 7.7% in baseline.

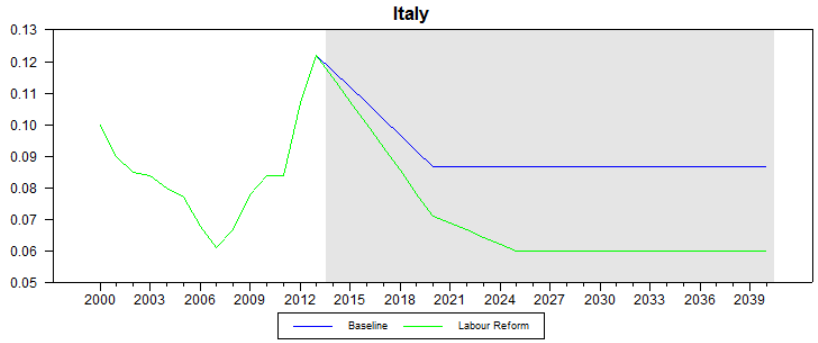
Labour Market Reform Scenario: Euro Area

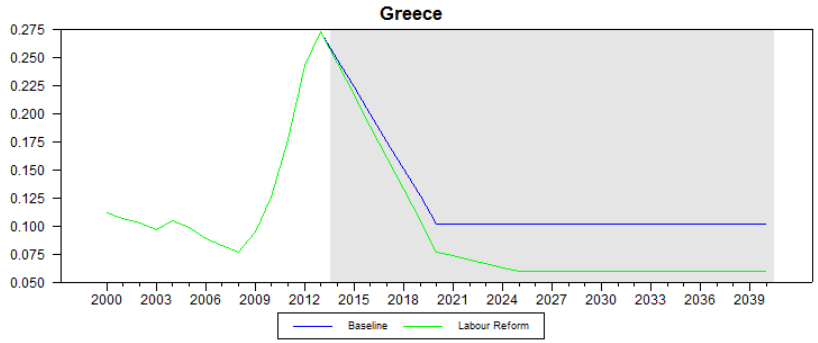


Labour Market Reform Scenario: Selected Countries

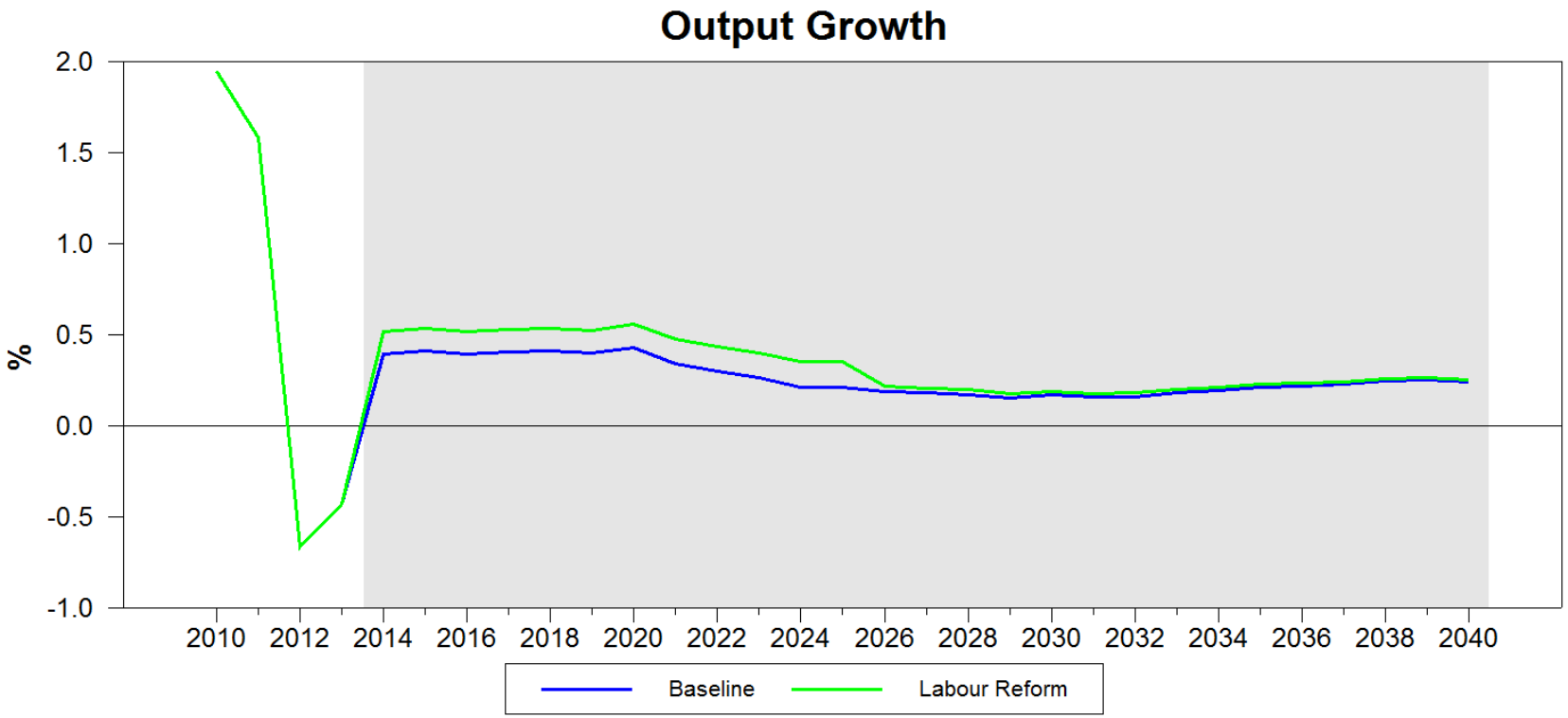




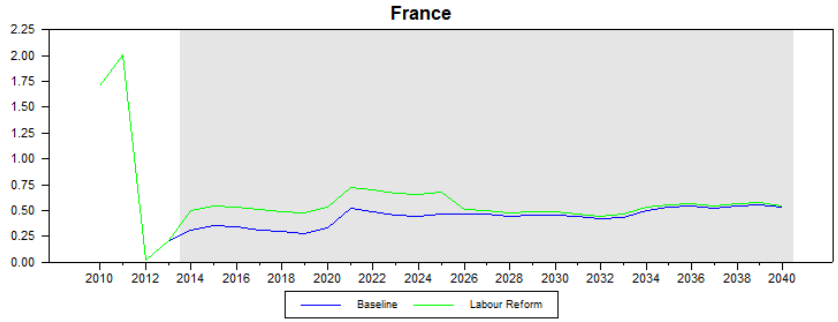


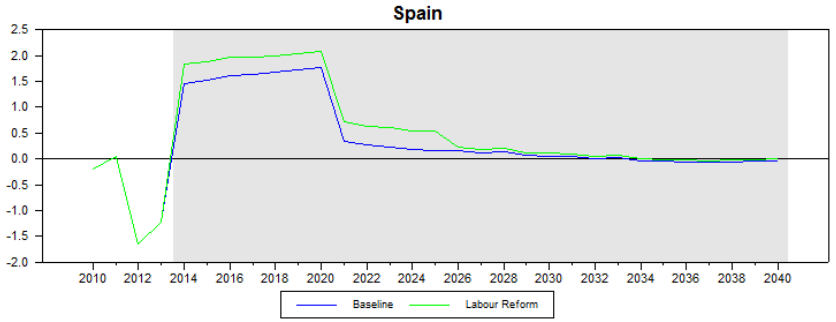


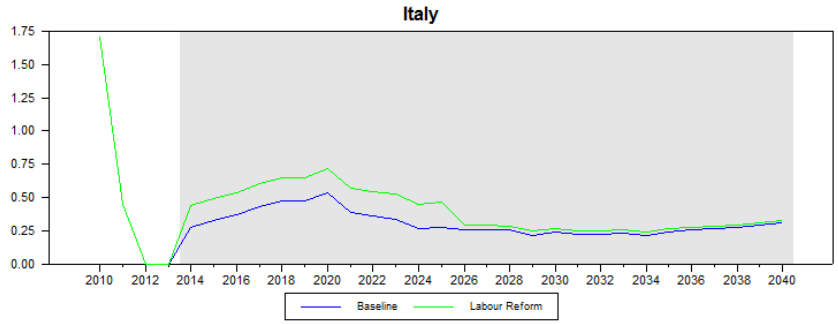
Labour Reform: Euro Area GDP Growth

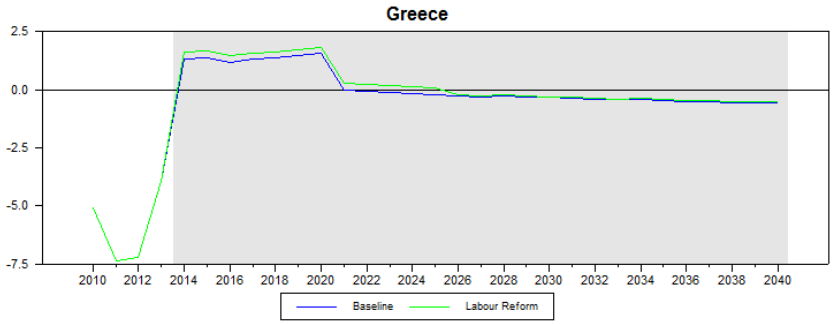


Labour Reform:
GDP Growth for Selected Countries









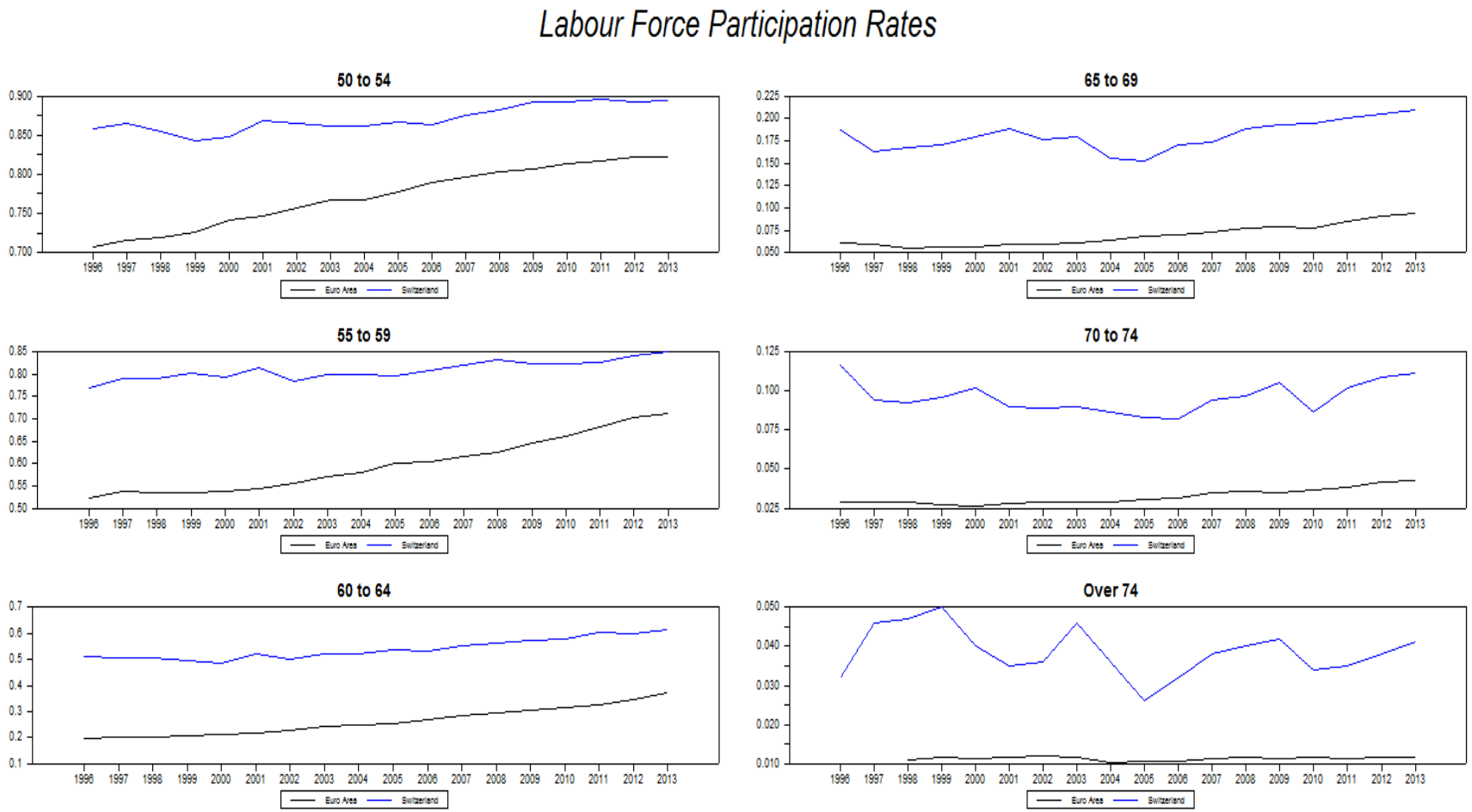
Impact of Labour Reform on GDP Growth Rates

	2014-2023	2024-2033
Euro Area		
Baseline	0.38	0.18
Labour Reform	0.50	0.23
France		
Baseline	0.37	0.45
Labour Reform	0.57	0.52
Italy		
Baseline	0.40	0.24
Labour Reform	0.58	0.30

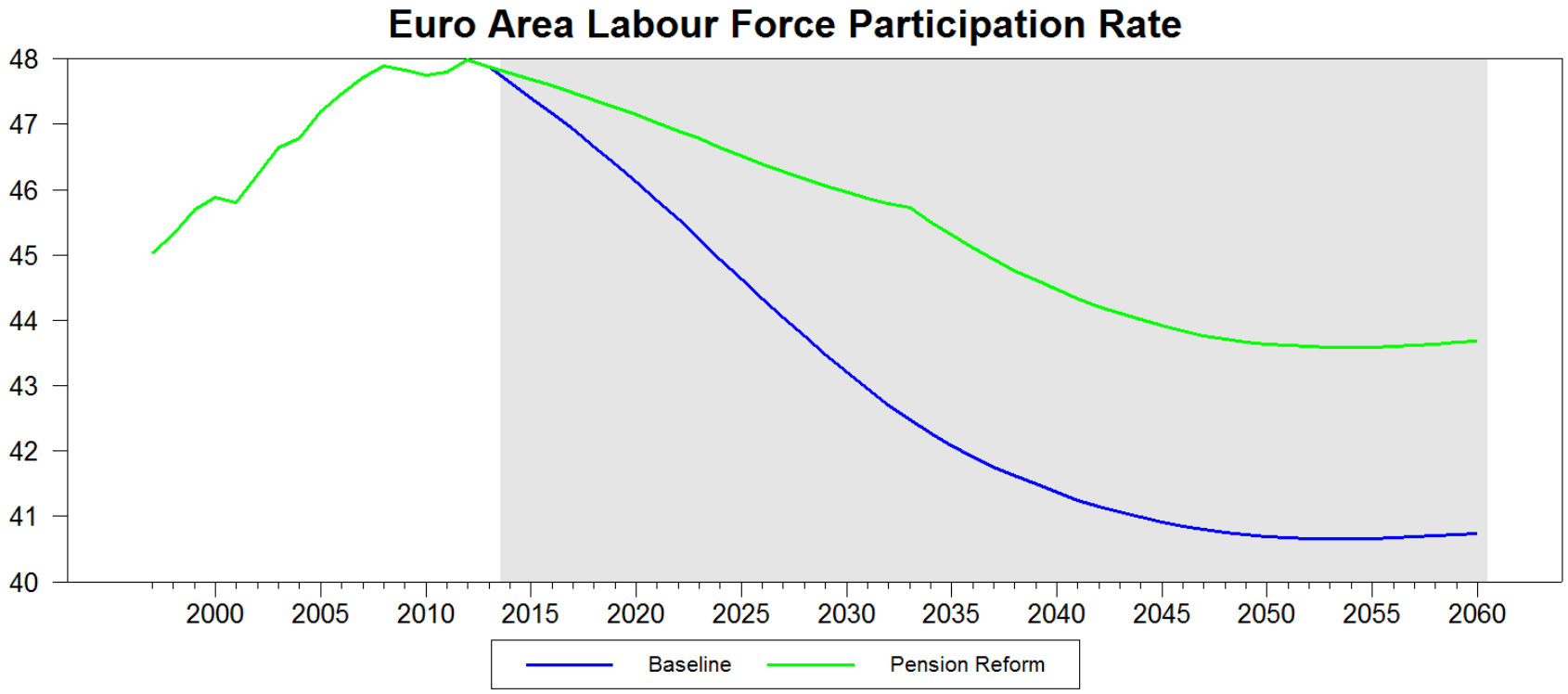
Pension System Reform Scenario

- Ability to retire early has a major impact on labour supply in Europe.
- OECD points to Switzerland as having particularly high activity rates among older workers.
- Our “pension reform” scenario sees a transition over 20 years such that a worker aged 50-54 has the same probability of working at 55-59, 60-64 etc. as Swiss workers.

Comparing Euro Area and Switzerland

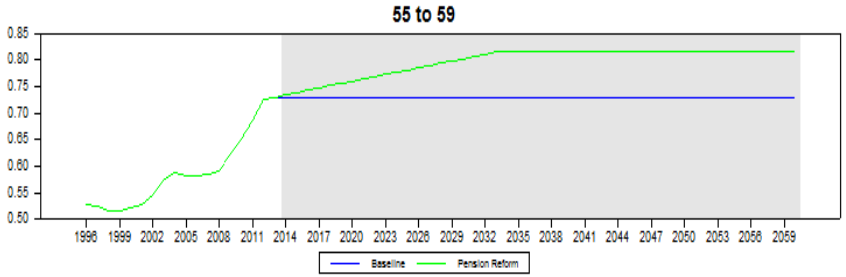


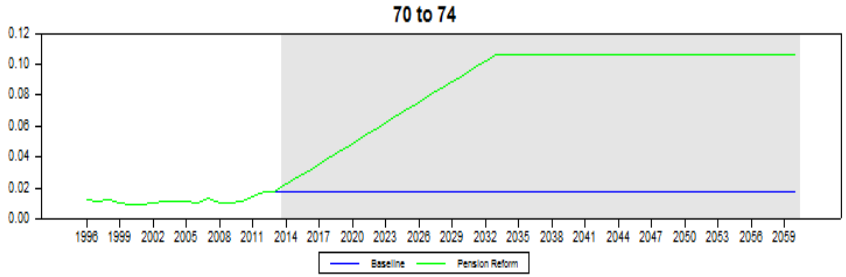
Impact of Pension Reform on Participation

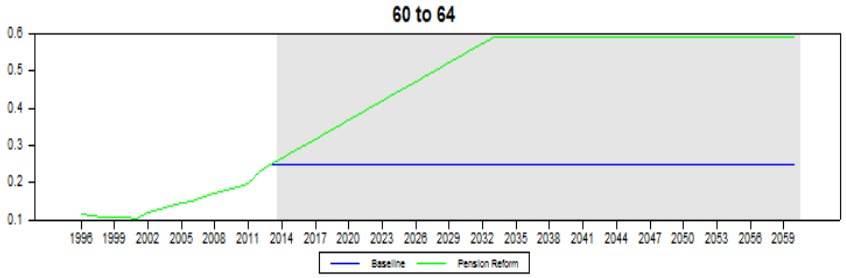


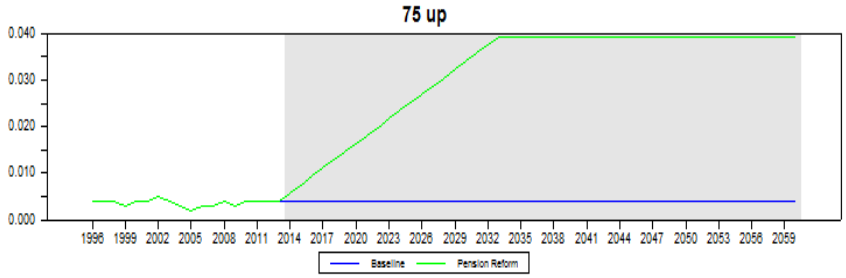
Pension Reform in France

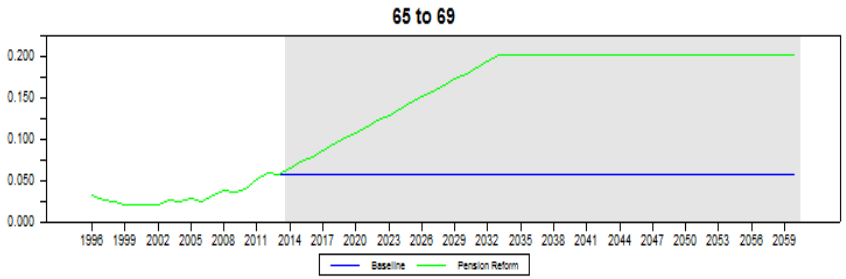
French Participation Rates





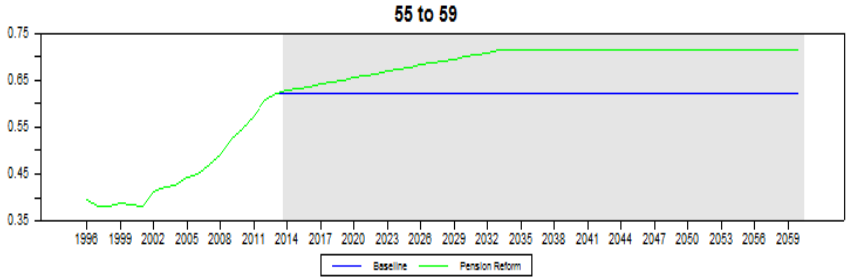


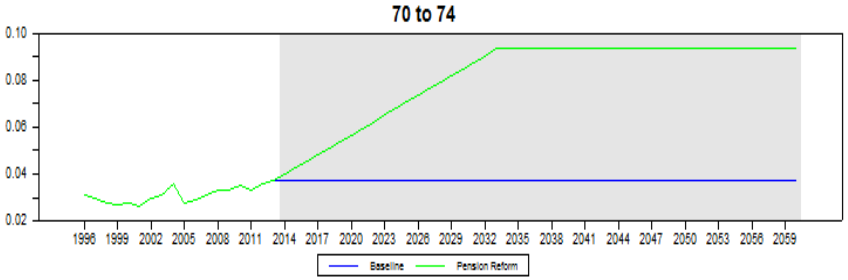


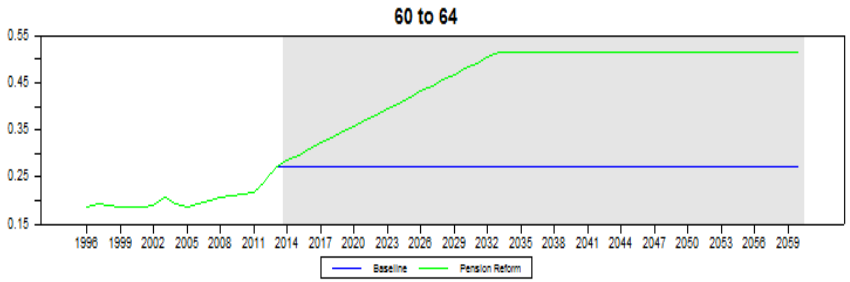


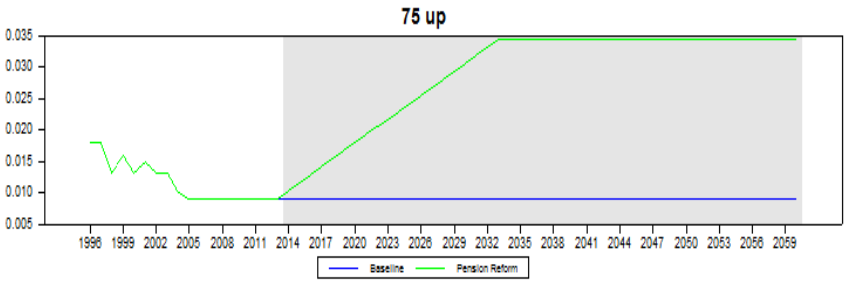
Pension Reform in Italy

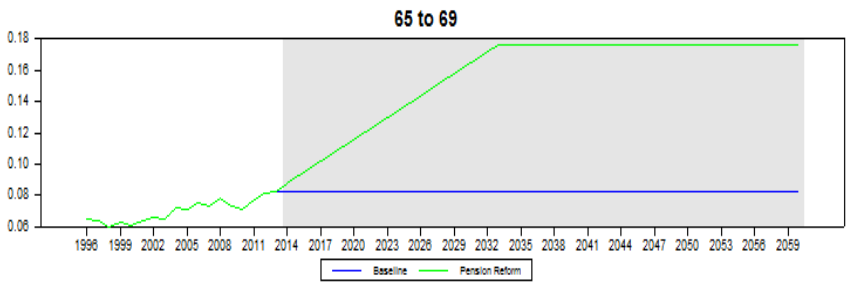
Italian Participation Rates





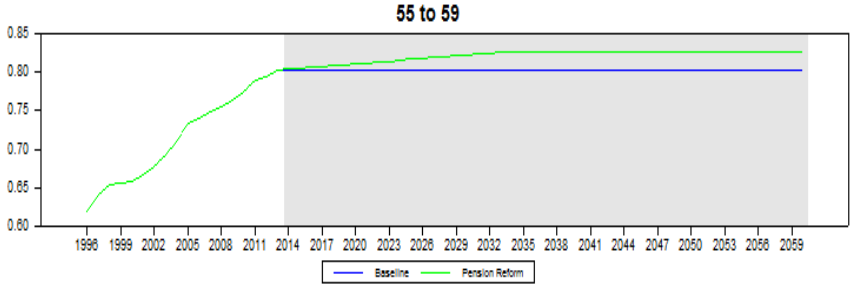


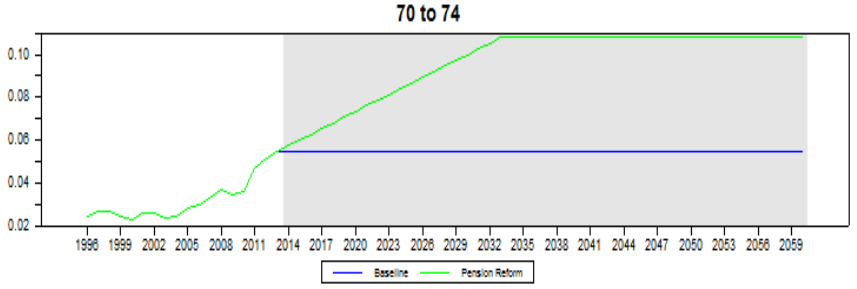


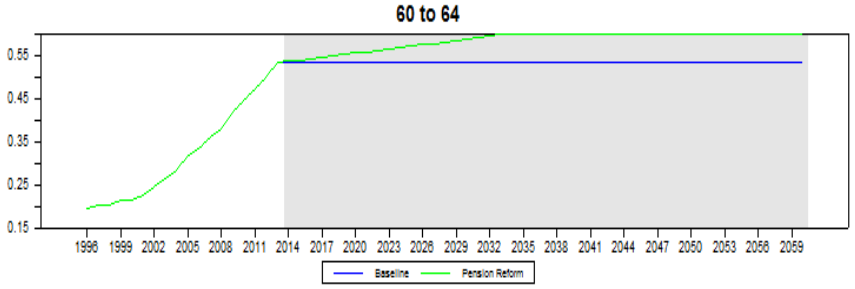


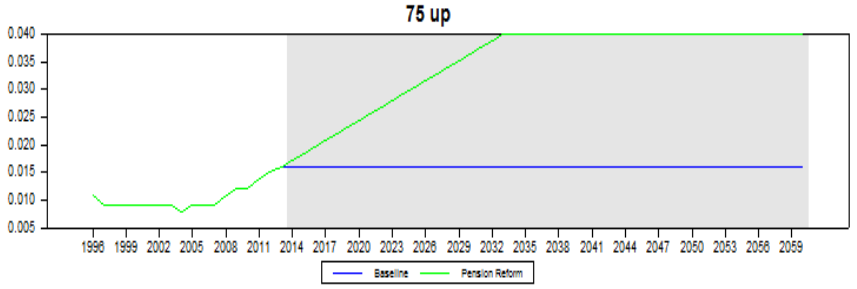
Pension Reform in Germany

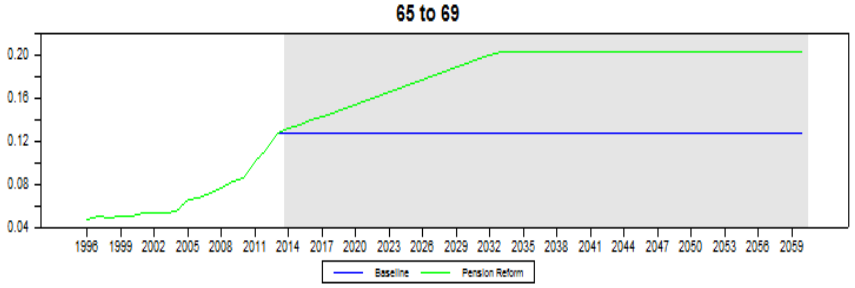
German Participation Rates











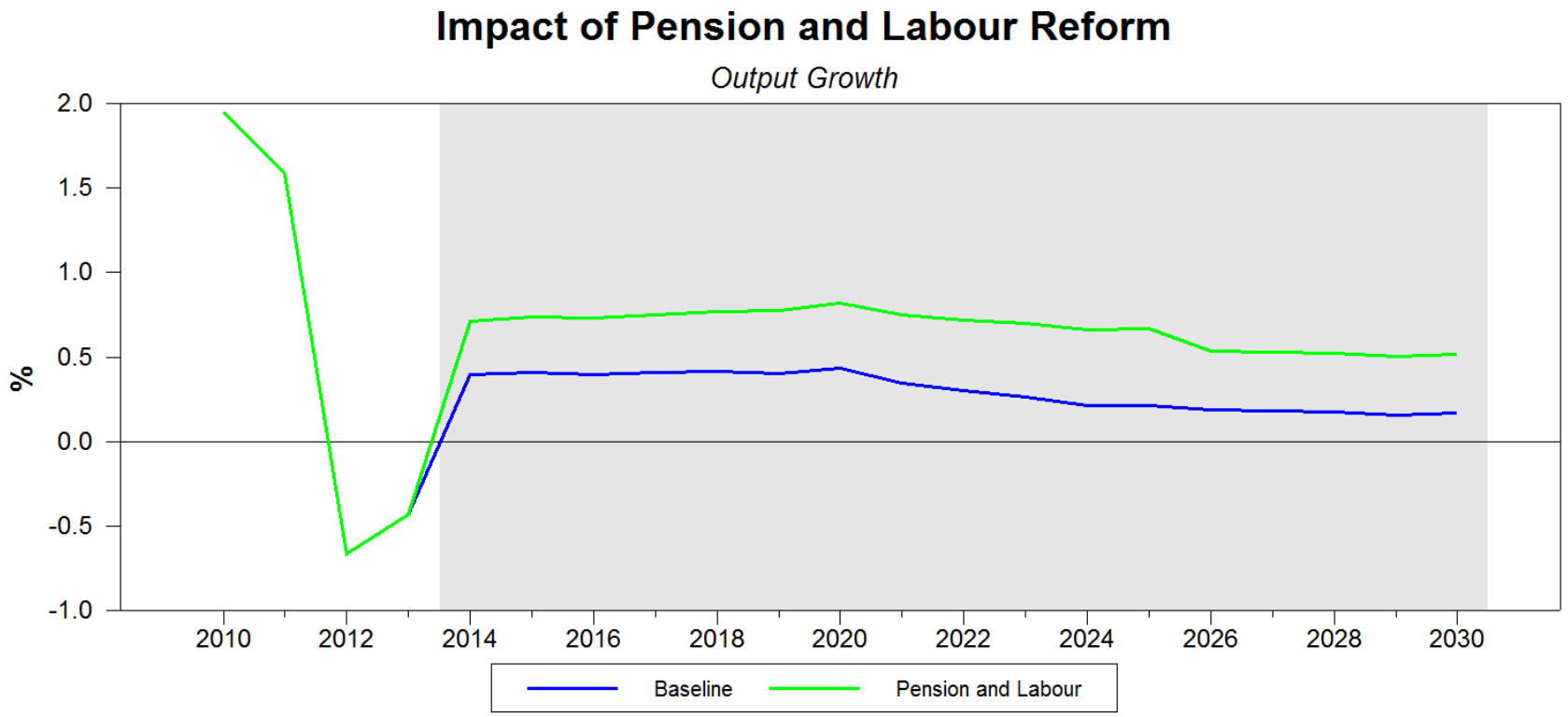
Impact of Pension Reform on GDP Growth Rates

	2014-2023	2024-2033
Euro Area		
Baseline	0.38	0.18
Pension Reform	0.62	0.50
France		
Baseline	0.37	0.45
Pension Reform	0.72	0.86
Italy		
Baseline	0.40	0.24
Pension Reform	0.71	0.67

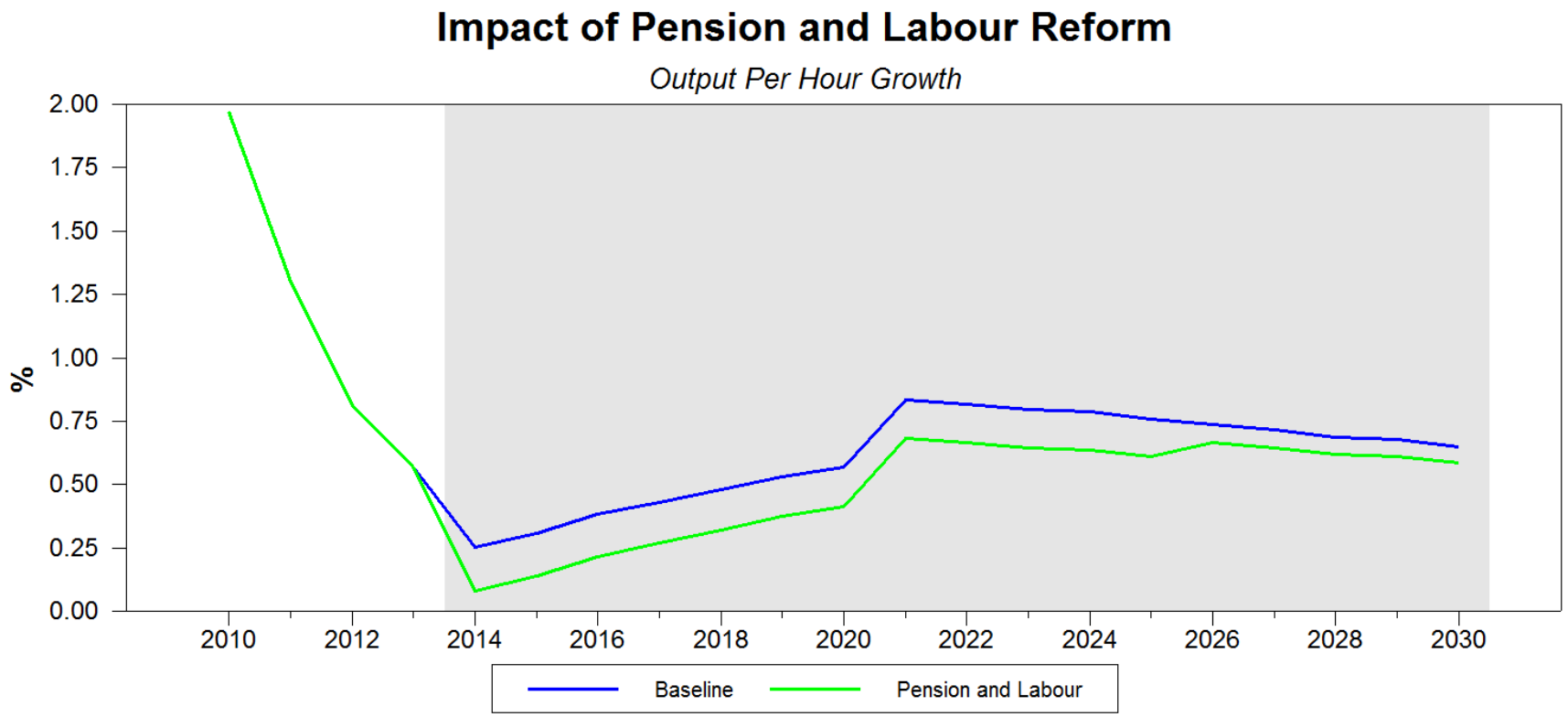
Impact of Pension Reform on GDP Growth Rates

	2014-2023	2024-2033
Germany		
Baseline	-0.16	-0.29
Pension Reform	-0.03	-0.11
Greece		
Baseline	0.93	-0.32
Pension Reform	1.24	0.13
Spain		
Baseline	1.23	0.09
Pension Reform	1.49	0.53

Impact on Euro Area GDP Growth



Impact on Euro Area Productivity Growth



Broader Regulatory Reform

- There are many restrictions on how various product and labour markets operate in euro area countries.
- Many sources for information on these restrictions
  - World Bank Doing Business indices.
  - OECD product regulation indices.
- Linking these with productivity is difficult but there is empirical evidence (e.g. Gillanders and Whelan, 2014).

Doing Business in Italy

ITALY		OECD high income		GNI per capita (US$)	34,400
Ease of doing business rank (1–189)	56	**Overall distance to frontier (DTF) score (0–100)**	68.48	**Population (m)**	59.8

✔ **Starting a business** (rank)	46	**Registering property** (rank)	41	**Trading across borders** (rank)	37
DTF score for starting a business (0–100)	91.22	DTF score for registering property (0–100)	79.44	DTF score for trading across borders (0–100)	83.44
Procedures (number)	5	Procedures (number)	4	Documents to export (number)	3
Time (days)	5	Time (days)	16	Time to export (days)	19
Cost (% of income per capita)	14.1	Cost (% of property value)	4.4	Cost to export (US$ per container)	1,195
Minimum capital (% of income per capita)	0.0			Documents to import (number)	3
		Getting credit (rank)	89	Time to import (days)	18
Dealing with construction permits (rank)	116	DTF score for getting credit (0–100)	45.00	Cost to import (US$ per container)	1,145
DTF score for dealing with construction permits (0–100)	67.35	Strength of legal rights index (0–12)	2		
Procedures (number)	10	Depth of credit information index (0–8)	7	**Enforcing contracts** (rank)	147
Time (days)	233	Credit bureau coverage (% of adults)	100.0	DTF score for enforcing contracts (0–100)	45.61
Cost (% of warehouse value)	3.7	Credit registry coverage (% of adults)	24.6	Procedures (number)	37
				Time (days)	1,185
Getting electricity (rank)	102	**Protecting minority investors** (rank)	21	Cost (% of claim)	23.1
DTF score for getting electricity (0–100)	72.65	DTF score for protecting minority investors (0–100)	66.67		
Procedures (number)	5	Extent of conflict of interest regulation index (0–10)	6.0	**Resolving insolvency** (rank)	29
Time (days)	124	Extent of shareholder governance index (0–10)	7.3	DTF score for resolving insolvency (0–100)	71.29
Cost (% of income per capita)	212.6	Strength of minority investor protection index (0–10)	6.7	Time (years)	1.8
				Cost (% of estate)	22
		Paying taxes (rank)	141	Recovery rate (cents on the dollar)	62.8
		DTF score for paying taxes (0–100)	62.13	Strength of insolvency framework index (0–16)	12
		Payments (number per year)	15		
		Time (hours per year)	269		
		Total tax rate (% of profit)	65.4		

Doing Business in France

FRANCE		OECD high income		GNI per capita (US$)	42,250
Ease of doing business rank (1–189)	31	Overall distance to frontier (DTF) score (0–100)	73.88	Population (m)	66.0

✔	**Starting a business** (rank)	28
	DTF score for starting a business (0–100)	93.00
	Procedures (number)	5
	Time (days)	4.5
	Cost (% of income per capita)	0.9
	Minimum capital (% of income per capita)	0.0
	Dealing with construction permits (rank)	86
	DTF score for dealing with construction permits (0–100)	73.14
	Procedures (number)	8
	Time (days)	183
	Cost (% of warehouse value)	4.7
	Getting electricity (rank)	60
	DTF score for getting electricity (0–100)	79.87
	Procedures (number)	5
	Time (days)	79
	Cost (% of income per capita)	42.9

Registering property (rank)	126
DTF score for registering property (0–100)	59.36
Procedures (number)	8
Time (days)	49
Cost (% of property value)	6.1
Getting credit (rank)	71
DTF score for getting credit (0–100)	50.00
Strength of legal rights index (0–12)	4
Depth of credit information index (0–8)	6
Credit bureau coverage (% of adults)	0.0
Credit registry coverage (% of adults)	44.5
Protecting minority investors (rank)	17
DTF score for protecting minority investors (0–100)	67.50
Extent of conflict of interest regulation index (0–10)	5.7
Extent of shareholder governance index (0–10)	7.8
Strength of minority investor protection index (0–10)	6.8
Paying taxes (rank)	95
DTF score for paying taxes (0–100)	72.12
Payments (number per year)	8
Time (hours per year)	137
Total tax rate (% of profit)	66.6

Trading across borders (rank)	10
DTF score for trading across borders (0–100)	90.18
Documents to export (number)	2
Time to export (days)	10
Cost to export (US$ per container)	1,335
Documents to import (number)	2
Time to import (days)	11
Cost to import (US$ per container)	1,445
Enforcing contracts (rank)	10
DTF score for enforcing contracts (0–100)	77.67
Procedures (number)	29
Time (days)	395
Cost (% of claim)	17.4
Resolving insolvency (rank)	22
DTF score for resolving insolvency (0–100)	75.94
Time (years)	1.9
Cost (% of estate)	9
Recovery rate (cents on the dollar)	77.2
Strength of insolvency framework index (0–16)	11

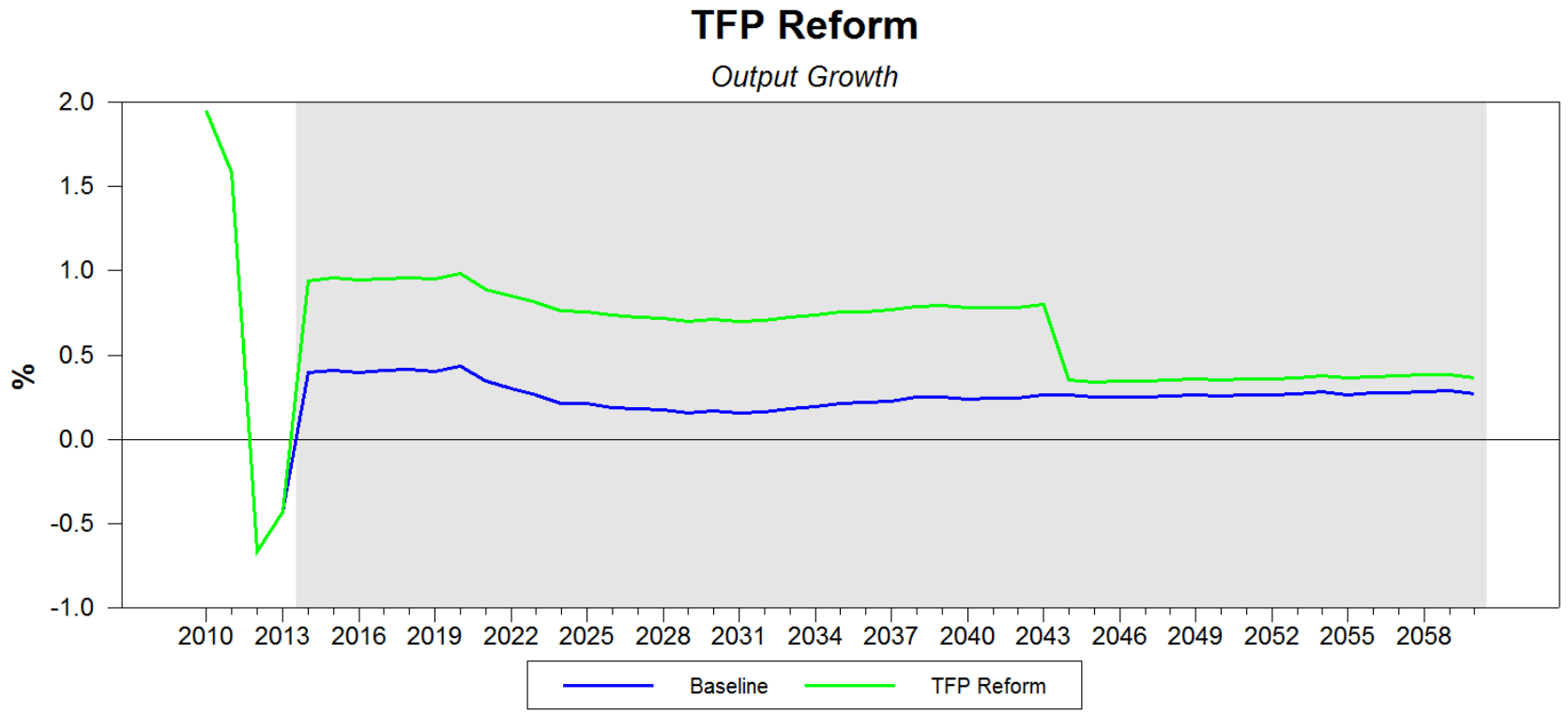
Doing Business in the UK

UNITED KINGDOM		OECD high income		GNI per capita (US$)	39,110
Ease of doing business rank (1–189)	**8**	**Overall distance to frontier (DTF) score (0–100)**	**80.96**	**Population (m)**	**64.1**
✔ **Starting a business** (rank)	45	**Registering property** (rank)	68	**Trading across borders** (rank)	15
DTF score for starting a business (0–100)	91.23	DTF score for registering property (0–100)	72.55	DTF score for trading across borders (0–100)	88.32
Procedures (number)	6	Procedures (number)	6	Documents to export (number)	4
Time (days)	6	Time (days)	21.5	Time to export (days)	8
Cost (% of income per capita)	0.3	Cost (% of property value)	4.6	Cost to export (US$ per container)	1,005
Minimum capital (% of income per capita)	0.0			Documents to import (number)	4
		Getting credit (rank)	17	Time to import (days)	6
Dealing with construction permits (rank)	17	DTF score for getting credit (0–100)	75.00	Cost to import (US$ per container)	1,050
DTF score for dealing with construction permits (0–100)	85.06	Strength of legal rights index (0–12)	7		
Procedures (number)	9	Depth of credit information index (0–8)	8	**Enforcing contracts** (rank)	36
Time (days)	105	Credit bureau coverage (% of adults)	100.0	DTF score for enforcing contracts (0–100)	68.08
Cost (% of warehouse value)	1.2	Credit registry coverage (% of adults)	0.0	Procedures (number)	29
				Time (days)	437
Getting electricity (rank)	70	**Protecting minority investors** (rank)	4	Cost (% of claim)	39.9
DTF score for getting electricity (0–100)	78.42	DTF score for protecting minority investors (0–100)	78.33		
Procedures (number)	4	Extent of conflict of interest regulation index (0–10)	8.3	**Resolving insolvency** (rank)	13
Time (days)	126	Extent of shareholder governance index (0–10)	7.3	DTF score for resolving insolvency (0–100)	82.04
Cost (% of income per capita)	90.1	Strength of minority investor protection index (0–10)	7.8	Time (years)	1.0
				Cost (% of estate)	6
		✔ **Paying taxes** (rank)	16	Recovery rate (cents on the dollar)	88.6
		DTF score for paying taxes (0–100)	90.52	Strength of insolvency framework index (0–16)	11
		Payments (number per year)	8		
		Time (hours per year)	110		
		Total tax rate (% of profit)	33.7		

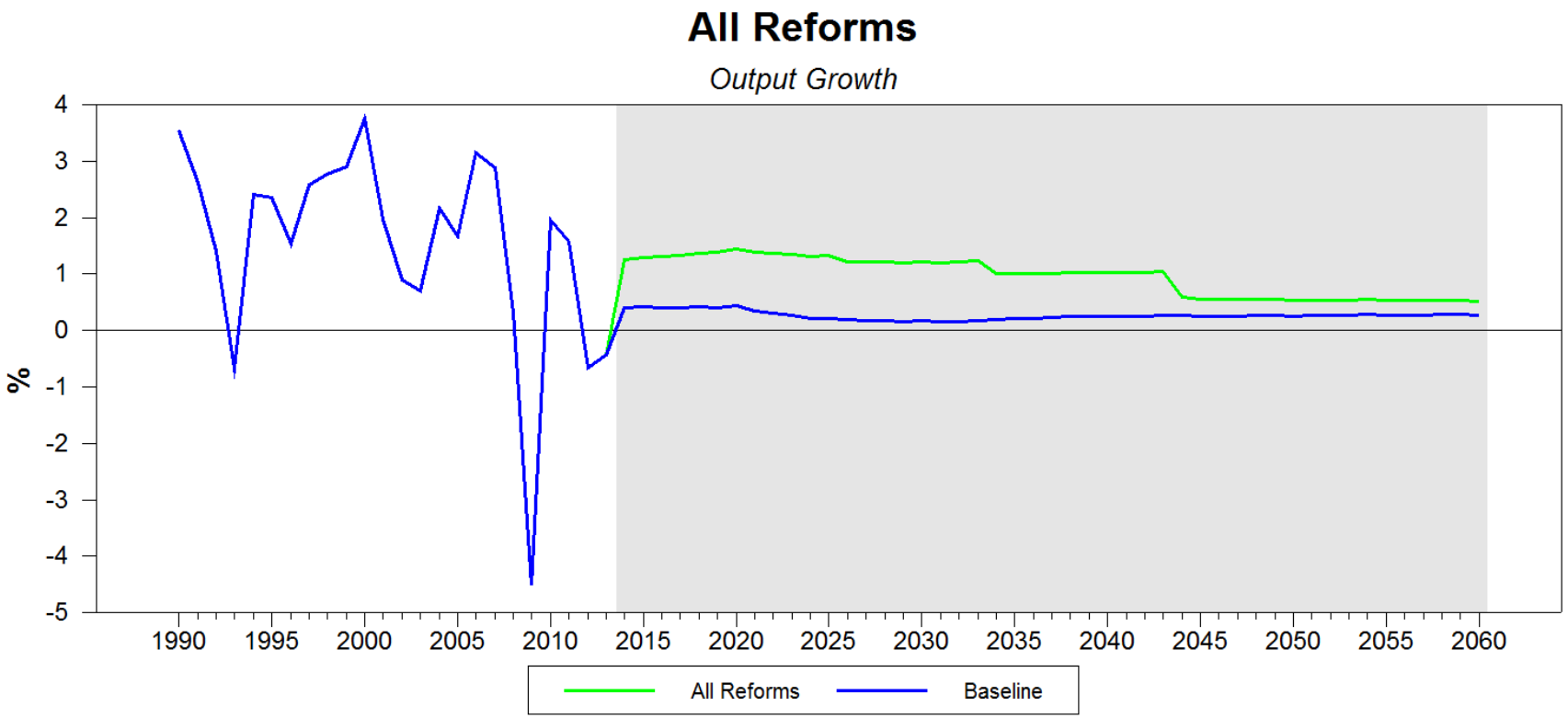
Broader Reform Scenario

- According to the Penn World Tables, the UK has higher TFP than all euro area states except Ireland and Luxembourg.
- We simulate a scenario where euro area states reform product markets so that TFP converges on UK levels in 2043.
- UK TFP growth has been poor over the past decade: We simulate this at 0.3 percent per year.

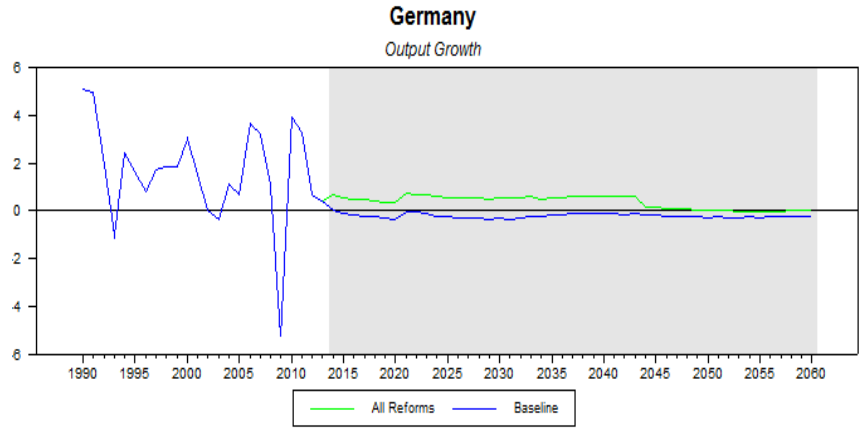
Impact of Broader Reform on Euro Area Growth

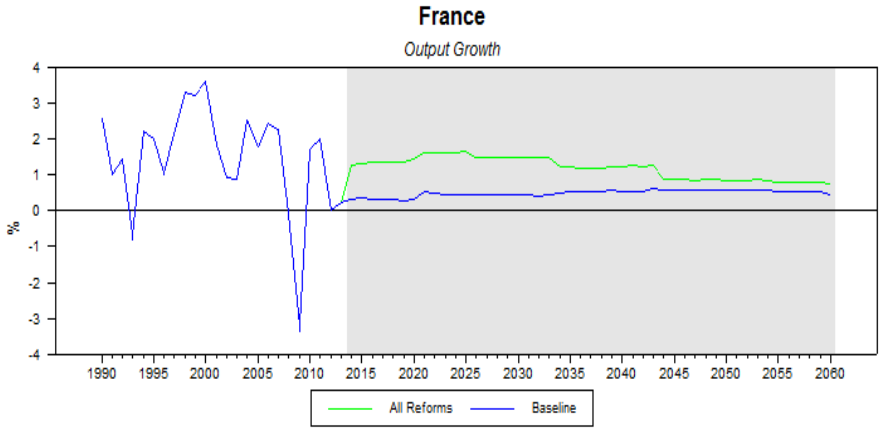


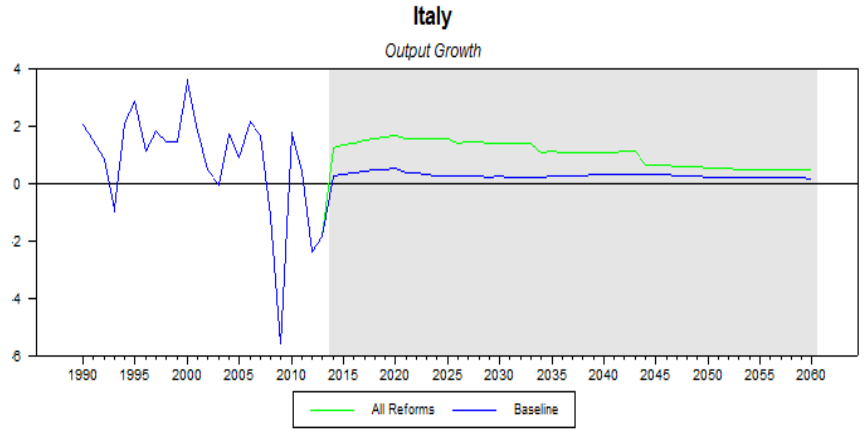
Impact of All Reforms on Euro Area Growth

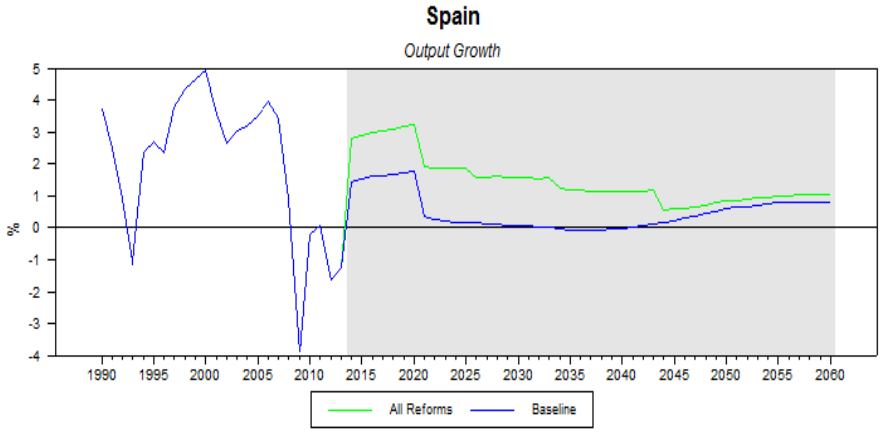


Impact of All Reforms on Selected Countries









Impact of All Reforms on Growth Over 2014-2043

	Labour and Pension	All Reforms
Euro Area	0.26	0.93
Austria	0.20	0.64
Belgium	0.32	0.94
Finland	0.19	0.87
France	0.36	0.93
Germany	0.11	0.75
Greece	0.43	1.67
Ireland	0.05	0.17
Italy	0.34	1.04
Luxembourg	0.25	0.41
Netherlands	0.07	0.52
Portugal	0.04	1.52
Spain	0.44	1.44

Lots of Caveats

Mainly towards arguing the true effects of reform programmes are probably smaller.

- Marginally attached workers induced by pension reform may work part-time, reducing workweek.
- Extra workers from labour and pension reforms may be less productive, so may reduce productivity by more than we calculate.
- Links between regulatory reform and TFP growth are not at all precise.
- Huge pressure from vested interests against reforms so their implementation is likely to be partial.

A Large Research Agenda

This research is ultimately speculative. A large research agenda is required to fill in the gaps.

- Which specific measures (tax wedges, minimum wages, employment protection, active labour market policies) reduce structural unemployment rates?
- Which elements of pension systems determine retirement decisions?
- Impact of pension reform on average workweeks.
- Effects of demographic composition on productivity.
- Impact on productivity of reduced unemployment rates.
- Relationships between product market reforms and productivity.
- Costs and benefits of other policies to raise participation.

Concluding Thoughts

- Product, pension and labour market reforms are beneficial but probably not a “silver bullet” to re-ignite fast growth.
- Unemployment at 11.5 percent implies a large shortfall relative to *current* supply potential.
- Large joint euro-area-funded capital investment programme would address large output gap and boost supply-side potential.
- Immigration on a much larger scale may be necessary to keep the euro area economy growing at a reasonable pace.