

Financing Energy Infrastructure: An Analysis of Current Issues

John FitzGerald
28th October 2015
Engineers Ireland

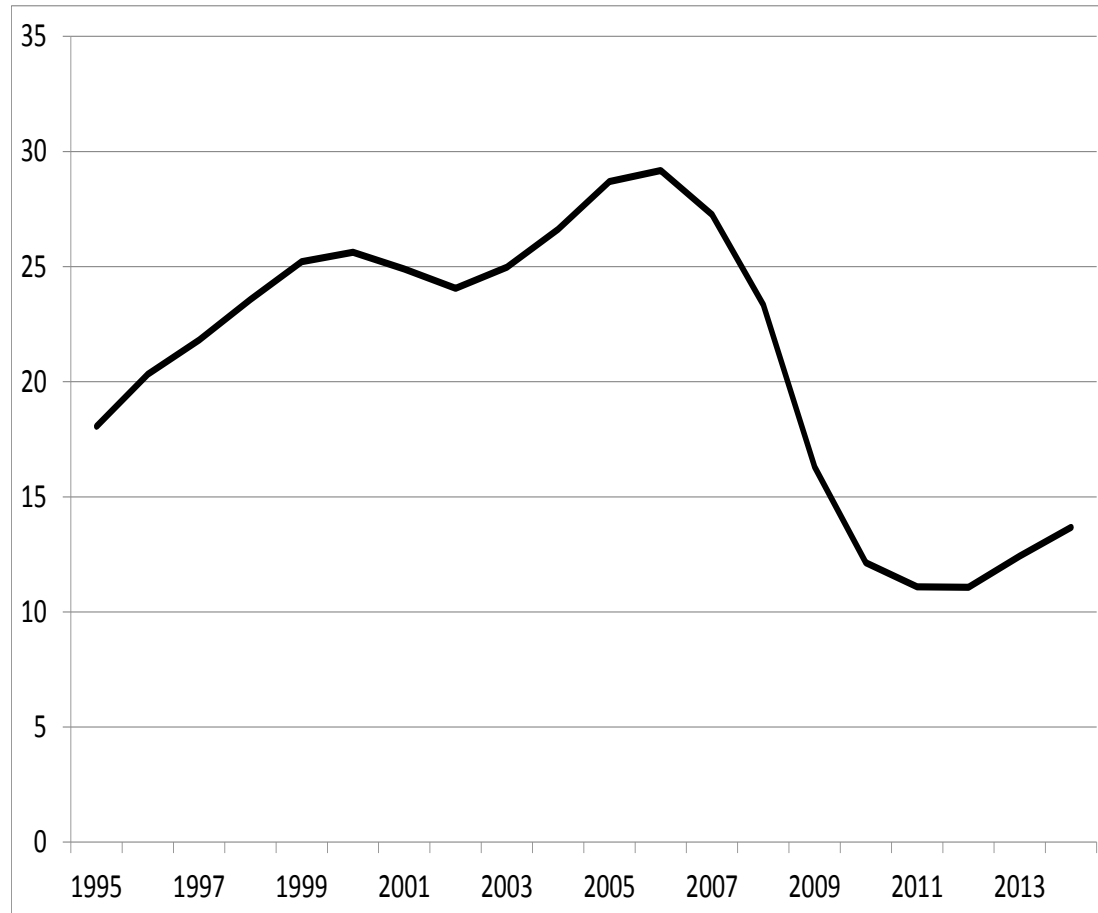
Outline

- Economic Background
- Policy Priorities
- Capital Needs
- Reducing Cost of Capital

Ireland in 2015 and 2016

- Strong growth
- Current account of the balance of payments
 - Not a constraint
- Employment and unemployment adjusting
- Public finances – eliminating borrowing
- Debt and debt burden falling
- Housing pressures
 - Need 25,000 dwellings a year to stand still
 - Building half that. Solution is to build more

Investment / GNP Ratio

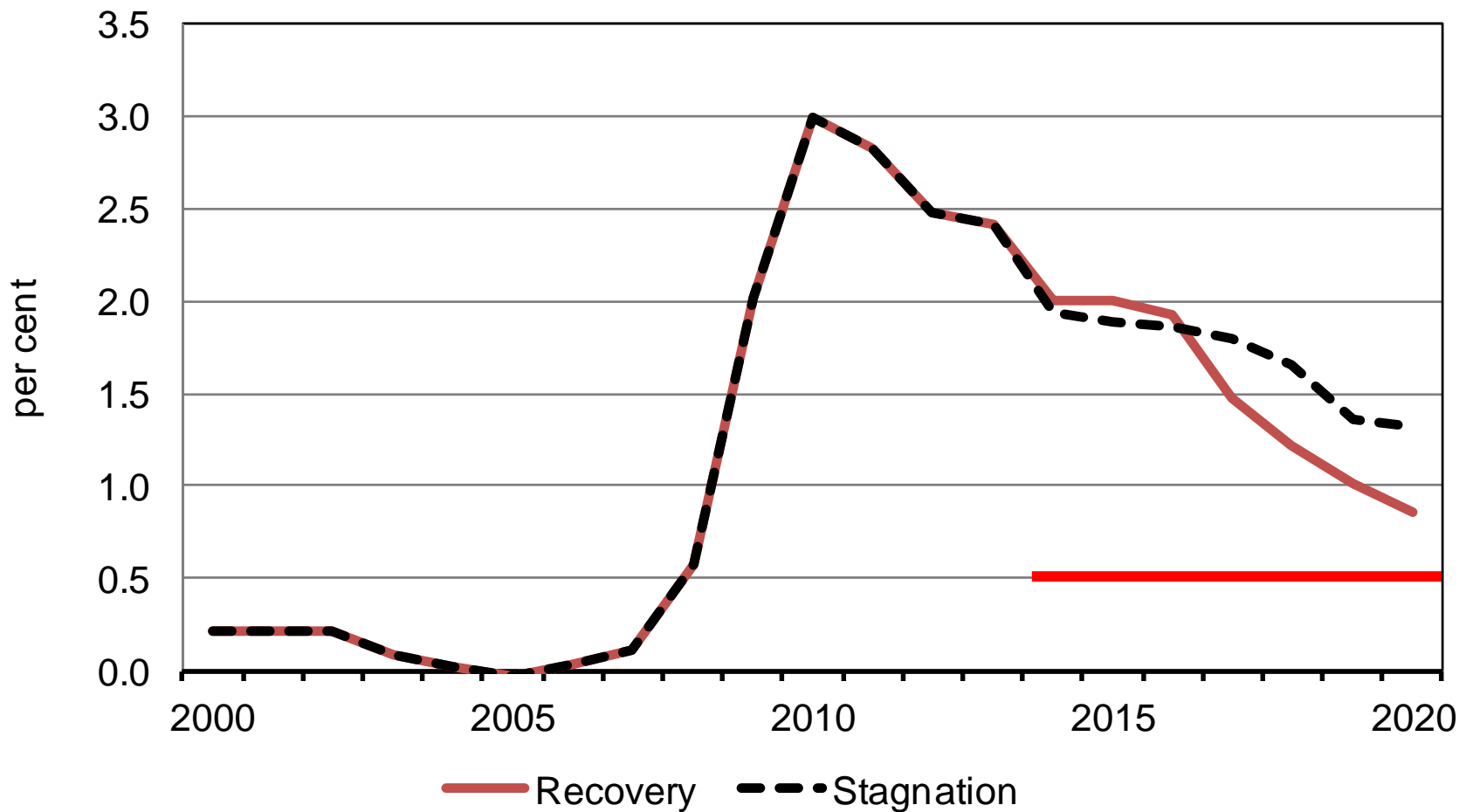


Excluding Aircraft and Investment in R&D

National Risk Premium

- Directly affected Government investment
 - Made most investment unprofitable
 - Dramatically altered in 2012/2013
- Indirect effects on national utilities
 - Treated as “national”
 - EDF v ESB
- Now a more normal market

Irish Risk Premium – Forecast in 2013



Policy Players

- EU policy
 - Uncertainty about post 2020: 2030 and 2050
 - Above all, uncertainty about carbon price
- UK Policy
 - Brexit?
 - UK policy on electricity market and climate change
- Domestic Policy
 - Electricity market
 - Renewables
 - Delivering necessary infrastructure

EU Climate Change Policy

- Price the best answer, ETS a second best
- With ETS it should:
 - Provide some certainty about price
 - Cover all emissions
 - Auction all permits
 - Don't transfer resources to companies from consumers
- Importance of research

EU Climate Change Policy

- Renewables Policy
 - Do we need one?
 - Are renewables beautiful?
 - Infant industry arguments
 - Technology neutrality
- Reliance on targets: Distributional Effects
 - Not transparent because of targets and the Emissions Trading System (ETS)
 - Using models to forecast outcomes 15+ years??
 - Nonetheless – substantial distributional effects

Brexit - Electricity Market

- Since 2007 we have a single all-Ireland electricity market that works well.
- It needs to change to eventually make us part of an EU electricity market.
- The GB market is dysfunctional and GB is poorly connected (electrically) to rest of the EU.
- If the UK remains in the EU as part of a developing EU market it could be good for us
- If the UK leaves we would need to consider expensive electricity interconnection to the EU

Brexit - Environmental Policy

- Currently, like the UK, we are part of the EU emissions trading scheme and share EU renewables obligations.
- If the UK pursued a different environmental policy outside the EU it could be very disruptive
- Because of all-island electricity market, UK environmental policy could have significant effects on Irish prices.
- If the UK abandoned EU policy on renewables: it could also have significant costs for Ireland

Brexit - Energy Security

- Currently all Irish gas comes through GB.
- Any prolonged interruption in gas could be catastrophic for Ireland (no electricity)
- Ireland's strategic oil reserves: some stored in GB
- In an emergency (e.g. WW II and Suez) UK pre-empted scarce energy resources
- Under EU law scarce gas (and oil) must be shared. EU exit would leave UK free of constraints
- How could we ensure energy (and economic) security if UK exits?

Domestic Policy

- Necessary infrastructure
 - Electricity, gas
 - Delivering it
- Support for renewables?
 - To date – not too expensive
 - Finding an efficient instrument – minimal cost
 - Technology neutral
 - Sunset clause
 - If does not work – risk of retrospective changes

Capital Requirements

- Major capital needs
 - Not just Ireland
- Electricity and gas infrastructure
 - Transmission – problem delivering it
- Electricity – generation
 - Renewables
- Future requirements
 - Electric vehicles?

Sources of Uncertainty

- Technological uncertainty
 - Difficult to insure against
 - Hedging risk
 - Sharing risk internationally
- Regulatory uncertainty
 - Consistent behaviour by government
- Market uncertainty
 - Normal risk – carried by players

Option Value of Waiting

- If uncertain of right course of action
 - Delay decision
- Examples:
 - Farmers and biomass (Behan et al., 2004)
 - Moneypoint replacement (Diffney et al, 2012)
 - Interconnection (Lynch, 2011)

Delivering Infrastructure

- Huge capital requirements
- Cost of Capital crucial
 - Uncertainty affects the cost of capital
- Macro-economic Context
 - Uncertain future growth
 - Uncertain future policy
 - Changing EU Context
 - Rogue elephant next door?

Cost of capital

- National risk premium
 - Is it relevant?
- Uncertainty inherent in project
- Uncertainty about market
- Uncertainty about technology

Delivering Infrastructure

- Needed for security, climate change and cost reduction
- North-South electricity
 - Needed for security and cost minimisation
- Corrib Gas
 - Vital for security
- Increased interconnection?
 - Needed for cost minimisation and climate change
- Problems with planning and delivery

Danger of Stranded Assets

- Answer: Recover capital quickly?
 - Raises short-run costs
 - Eventually may lead to windfall gains
- Regulatory uncertainty
 - Could strand assets
 - e.g. Germany
- Insurance against stranding?
 - Would it be credible?

Networks - electricity

- Capital Intensive Industry
 - Heavy financial burden
 - Don't over invest
 - Who pays? Closed market – consumers
 - Who pays? Exports - exporters
- Minimise risk for investors where possible
 - Regulatory risk?
 - Planning? Strategic infrastructure?
 - Capital structure – ownership
 - Networks – publicly owned
- Competition to supply services to network
 - Puts downward pressure on operating costs

Moving to a Fixed Cost Regime?

- Technological change could pose danger of stranding of assets:
 - Transmission and distribution?
 - Low marginal cost technologies: wind, solar nuclear
- Growing size of Public Service Obligation
 - Ireland
 - Germany
- Moving to fixed payment for network access?
- Distributional effects of fixed cost regimes?

Networks - Gas

- Networks

- Gas - security of supply paramount
- Physical security: need duplicate pipelines
- Transmission “owned” by consumers
- Security benefits all consumers – they should pay
- Charge SRMC for use of network
- Recoup long-run costs from all consumers
- Dangers of stranding?

Conclusions - 1

- Reduce unnecessary uncertainty
- Minimise cost of delivering essential infrastructure
- Networks publicly owned

- Risks
 - UK exit
 - Break up of the United Kingdom
- Climate change & environment
 - EU policy needs more coherence
 - EU policy needs to be cost effective
 - EU policy and non-ETS – Agriculture
 - EU policy on electricity market?
 - Mismatched national policies?

Conclusions - 2

- Competitiveness
 - Price transmission correctly
 - Price electricity at LRMC – others should do so too
 - Who will pay for distribution and transmission?
 - Get interconnection right – location, size & governance
 - Put pressure on operating costs
 - Getting R&D policy right