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Can Electricity Market Liberalisation be Compatible with Policy Objectives such as Energy Security and GHG Emission Reductions?

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Introduction

The importance of this question has been underscored by recent advice from the Intergovernmental Panel on Climate Change on the implications of aiming for a goal of global warming no greater than 1.5 degrees Celsius, which is an aspiration in The Paris Agreement (TPA). To fulfil the goals of TPA, and in the light of the IPCC report, policies to decarbonise the power sector must accelerate. Both the immensity of the challenge, and experience to date with high levels of renewable power generation in some countries, raise important issues about the relationship between government policy and the market.

While it is a valid question whether liberalised electricity markets can deliver the required decarbonisation, without jeopardising energy security, the evidence to date suggests they can – under the right policies. While it is important to draw the right lessons from those countries with liberalised markets who are attempting to deliver ambitious decarbonisation goals, it is also important to avoid a binary, and hence oversimplified, view of the nature of liberalised markets vis-a-vis regulated ones. For there is no such thing as a wholly unregulated market. Electricity is too central to the wellbeing of society, and the functioning of the economy, for total liberalisation to be a realistic choice. Historically, regulation has been centred on economic regulation. That approach needs to evolve both to deliver new policy goals and to remain fit for purpose in different market circumstances. Electricity market liberalisation must therefore be recognised for what it is - not a single event but a continuing process, subject along the way to government interventions.

So the question comes down to this : ***what policy and regulatory approaches are required to enable liberalised markets to deliver GHG emission reductions most effectively while preserving energy security?***

European Energy and Climate Policy and the European Electricity Market

The EU is an interesting case study as an early adopter of ambitious commitments to decarbonisation and because, for the last decade or more, it has been driving towards a liberalised market in electricity.

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In 2008 the EU adopted its so called ‘20/20/20 package’ : 20% of energy demand to be sourced from renewables; a 20% improvement in energy efficiency; and a 20% reduction in CO_2 emissions – all to be attained by 2020, with contributions from individual Member States varying according to their particular circumstances. Crucially, this package required large increases in the proportion of variable renewable energy (VRE) on the grid.

This ‘20/20/20’ package was introduced against a backdrop of the EU taking steps to develop a single electricity market (and in parallel a single market for gas) in line with its signature policy of a single market economy across the European Union. This process continues.

According to the European Commission, (Footnote 1) delivery of the ‘20/20/20’ package is broadly on track, though some further policies and measures will be needed to attain all of the goals. As regards GHG emissions, the 20% goal has already been exceeded. By 2016 it was 22 % below the base year of 1990. Emitters covered by the EU Emissions Trading Scheme (ETS) contributed a 26% reduction, largely from savings in heat and electricity, including through a doubling in the share of renewable power generation.

Alongside the ETS as a market mechanism for pricing carbon, there are several other emission reduction policies, which vary considerably across individual Member States. The penetration of renewables has been driven largely by measures such as regulation and subsidies. Another intervention, by some Member States concerned about security of electricity supply, has been the use of ‘capacity mechanisms’, adopted for example in the United Kingdom and Spain. These issue tenders for standby generation. Although involving significant sums (nearly £4bn committed by February 2018 in the UK, for instance), they have mainly paid existing plant to remain available and do not appear to have driven investment in new plant as intended. The main exception is new diesel powered generation, hardly a poster child for decarbonisation. Countries offering such payments must seek permission from the EU to derogate from the rules prohibiting state subsidies. Such permissions have tended to be granted. On 15 November, however, the Court of Justice of the European Union annulled the permission which had been granted to the UK by the European Commission, albeit on purely procedural grounds; and remitted the case to be considered anew by the Commission. The UK Government does not believe this poses any threat to electricity supplies this winter, and will be seeking approval for a new auction for the next one.

Together with permitted subsidies to increase the deployment of renewables, measures to secure additional capacity have paradoxically contributed to the low running of modern, lower emitting, efficient gas plant as well as inhibiting investment in new low carbon baseload. A fuller treatment of these dysfunctional aspects of the EU market(s) can be found in a 2014 Synopia report. (Footnote 2).

Although the ETS has contributed to the considerable decarbonisation which has occurred, the impact of the ETS has been diluted by policy mistakes in other areas.(Footnote 3). The set up design was also undoubtedly flawed. It led to a surplus of emissions allowances through failing to allow for dramatic economic events, like the economic downturn fuelled by the global financial crisis; and, less forgivably, through initial overallocation of emissions allowances for political reasons. But overlapping policies have significantly exacerbated the situation. The large and continuing surplus of allowances has caused the carbon price to remain below the level needed to influence investment. So the European Commission progress report cited above expresses concern about whether more ambitious goals for emissions reductions can be fully delivered with existing policies and measures.

What needs to be done to fix the (at least partly) broken electricity market in Europe? What measures are relevant globally, beyond Europe?

Policies to Improve Market Functioning

A general rule is that policy interventions need to be targeted such that they do not undermine the effectiveness of market signals for producers/suppliers and consumers. They must give confidence to investors and innovators that policy will be stable enough to allow for an adequate return on investments.

Theory and practice tell us that decarbonisation will be delivered at a lower cost through carbon pricing. Prices need to be at a level sufficient to influence investment decisions. Some countries may choose to price through carbon taxes, but in Europe and in 45 jurisdictions globally emissions trading is favoured. Reforms to the EU ETS, notably the creation of a ‘Market Stability Reserve’ and a more ambitious tapering of the cap on total allowances, have addressed the allowance surplus and led to a tripling of the carbon price this year. Forecast prices are now thought to be enough to drive a switch from investment in thermal generation to low carbon sources. (Footnote 4). They have not, however, addressed all the issues arising from policy overlap.

As the IEA has pointed out (Footnote 5), additional policies to drive carbon emissions reductions can introduce uncertainty in the carbon price, rendering it more vulnerable to changes in economic conditions. The greater the role of such policies, the less effectively market based instruments such as carbon pricing can operate. This constitutes a risk to overall cost effectiveness which can be mitigated by adopting an holistic approach, looking at not only the policies themselves but their interaction and any side effects arising in practice. Furthermore, the detail of electricity market design in a world of increasing VRE must give appropriate value to system services such as diversity of sources and technologies (to improve security); flexibility; balancing; and availability. Ensuring security of supply in a well-functioning market need not necessarily entail capacity mechanisms; it can be enhanced by improvements such as better transmission infrastructure,

greater interconnection, and better forecasting of VRE. The EU for example has laid out plans and targets for increased interconnection; and some US markets, such as the PJM region, have successfully secured considerable flexibility through Demand Side Response auctions.

Conclusion

The annual assessment of the effectiveness of countries' energy policies (the World Energy Council Trilemma) ranks over 100 countries according to the sustainability (including emissions intensity), security, and equity (covering access to electricity and affordability) of their energy systems. This analysis, drawing on multiple data sets, has found no correlation between countries' performance and whether or not their markets are liberalised. What does matter is the quality of policy design and execution, including the predictability of regulation (with decisions inoculated from short term political considerations). This implies that decarbonisation can perfectly well be attained in liberalised electricity markets (as in Europe) or in heavily regulated ones. It may however be harder to mitigate the risk of political short termism in less market based systems. But equally there can be advantages from, for example, retail price regulation : the independent regulator model, focused on fostering competition as a route to economic efficiency, is not designed to ensure affordability for low income consumers.

But whatever one's position on this (far from binary) debate, we must acknowledge that in this era of decentralisation and digitalisation of energy, market circumstances are changing rapidly, particularly as regards the costs and performance (actual and potential) of technologies. Governments are not as good at responding to such changes as, generally speaking, are market participants, which poses a challenge for policymakers and regulators in liberalised markets but an even greater one for policy and operations in a government run system. Both the scale of investment, and the transformative innovation, required to decarbonise the electricity system mean that governments are more likely to succeed if they are able to harness market forces towards their goals. An appropriately regulated private sector will catch the wave of exciting new technological opportunities, but unhesitatingly ditch approaches or technologies which fail to deliver as promised. For their success (or survival) depends on doing so. Governments for their part must deliver an appropriate regulatory framework to foster private sector innovation while meeting policy goals.

In recent years both public and private sectors have come a long way in their thinking and actions to address the existential threat of climate change. The sobering assessment from the IPCC Report should cause them to redouble and accelerate their efforts, with decarbonisation of the electricity sector playing a prominent role.

Footnote 1: EU-2018_GHG trends and projections in Europe 2018 ‘Tracking progress towards European energy and climate targets’

Footnote 2: ‘A new European Energy Policy? Assessment and proposals’, Synopia, 2014

Footnote 3: ‘The EU ETS Phase IV reform: implications for system functioning and the carbon price signal’ oxford Institute for Energy Studies Insight, 2018

Footnote 4: ‘2018 State of the EU ETS Report’, ERCCST et al, 2018

Footnote 5: ‘Summing up the parts; Combining Policy Instruments for Least Cost Mitigation Strategies’, IEA 2011

Writer’s Profile

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She chairs The Climate Group and the International Advisory Board of the New Energy Coalition, and is a Non Executive Director of The James Hutton Institute, and the Energy Savings Trust. She sits or has sat on several other boards in the academic, public and corporate sectors, and the Advisory Boards of the Grantham Institute, the Joint Institute for Strategic Energy Analysis, and Engie UK plc. She is one time Vice Chair of the UN High Level Panel on the CDM, Chair of the Governing Board of the IEA, and a former Director General of Energy in the UK Government.