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Green growth and net zero policy in the UK: some conceptual and measurement issues

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Climate change remains one of the biggest and most complicated issues facing the modern world. Reducing emissions greenhouse gases (GHG) requires a major policy response that alter energy mix (high- vs. low-emission sources) in order to mitigate the change in the global climate. Getting GHG emissions down to zero (net) by 2050 is the stated policy of the UK and the European Union and net zero targets have been announced by China (by 2060) and India (by 2070). There is a renewed attention on net-zero emissions energy systems to achieve deep decarbonization of the power sector as the sector will play a fundamental role in decarbonizing energy systems to lower emissions through large-scale clean energy investments. While the concept of green growth has been recognized by policymakers as sustainable growth that delivers win-win outcomes for society based on the assumption that it fosters environmental protection while at the same time speeds up (or does not reduce) the pace of economic growth, however, green growth has remained somewhat of an oxymoron, certainly in terms of conventional measurement.

We discuss some of the fundamental issues related to the future growth of productivity under net zero climate change policies. Specifically, we explain just how challenging it will be for an advanced economy with a net zero target to grow total factor productivity. Our discussion covers the concept of green growth, green industrial revolution, the circular economy which emphasises reduced material consumption and increased material recycling, GDP

measurement and how this relates to productivity growth under climate policies. We use a worked example of the projected growth under net zero of the electricity sector in Great Britain (using projections from NG ESO's Future Energy Scenarios) to show just how challenging raising even maintaining the level of TFP will be in that sector in the years out to 2050. Despite the popularity of green growth and a green industrial revolution concept, this paper shows that they are difficult to pin down theoretically and in terms of measurement. Advanced economies that minimise environmental impact will struggle to grow under conventional measures of GDP. Adjustments to GDP measurement might make a difference but it is difficult to imagine that that difference will be large.

In fact, our analysis shows that we are going to need more careful measurement of the quality of output and non-price factors, as we are implementing net zero policies because of them. Making sure that measured productivity accurately reflects progress towards net zero goals is going to be important given the potential for current measures of productivity to misrepresent the overall welfare impact of net zero policies. Pursuing and measuring the circular economy and the extent to which we are actually re-cycling material and reaching true environmental sustainability looks more necessary. Lower cost low carbon technologies will also be beneficial and can relatively reduce the inputs required across the economy to meet net zero, improving currently measured productivity.

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