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Accounting Forum

journal homepage: www.elsevier.com/locate/accfor

Accounting for decarbonisation and reducing capital at risk in the S&P500

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ARTICLE INFO

Keywords:

Climate change
Decarbonisation
Financial institutions
S&P500 carbon-financial risk

ABSTRACT

This article accounts for carbon emissions in the S&P 500 and explores the extent to which capital is at risk from decarbonising value chains. At a global level it is proving difficult to decouple carbon emissions from GDP growth. Top-down legal and regulatory arrangements envisaged by the Kyoto Protocol are practically redundant given inconsistent political commitment to mitigating global climate change and promoting sustainability. The United Nations Environment Programme (UNEP) and European Commission (EC) are promoting the role of financial markets and financial institutions as drivers of behavioural change mobilising capital allocations to decarbonise corporate activity.

1. Introduction

Since signing the Kyoto Protocol in 1997 international climate conferences such as Montreal 2005, Copenhagen 2009 and Paris 2015 national governments have moved towards setting long-term goals to control the increase in Greenhouse Gas Emissions (GHG) and their carbon equivalent to levels that are designed to arrest the increase in global average temperatures to levels that are below 2 °C above pre-industrial levels. At the Paris climate conference (COP21) in December 2015 Governments agreed:

a long-term goal of keeping the increase in global average temperature to well below 2 °C above pre-industrial levels; to aim to limit the increase to 1.5 °C, since this would significantly reduce risks and the impacts of climate change; on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries; to undertake rapid reductions thereafter in accordance with the best available science (European Commission, 2018a).

According to a carbon footprint briefing note issued by ShareAction and TruCost, ‘global emissions would have to fall by about 60% by 2050 to limit the increase in average temperature to less than 2 °C (3.6 °F) above pre-industrial levels. Over the last 40 years, CO₂ emissions have continually risen and only stalling following major economic crises.’ (ShareAction and Trucost, 2015).

Table 1 reveals that, although carbon emissions intensity has fallen from 0.48 tons of carbon per \$1000 of global GDP in 1990–0.32 tons in 2016, it is that case that GDP has grown at a faster rate thereby increasing overall global emissions from 22 billion to 36 billion tons of carbon equivalent emissions annually. The world’s major industrial and industrialising economies have not found a way of decoupling carbon emissions from economic growth and carbon emission concentrations in the atmosphere have increased

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Received 19 January 2018; Accepted 21 January 2018

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Table 1

Global carbon emissions in relation to GDP and atmospheric concentrations.

Sources: For carbon emissions parts per million in atmosphere as at Jan 1st of these years. (Tans, Keeling, & Dlugokencky, 2018). For data on total global carbon emissions in relation to GDP. (European Commission, 2017a).

	1990	2000	2010	2016
Tons of carbon/1000\$ of GDP	0.48	0.41	0.37	0.32
Total CO2 emissions bill tons	22.5	25.6	33.6	35.8
CO2 parts per mill in atmosphere	355.0	370.6	388.7	402.5

from 355 to over 400 parts per million.

Since the Kyoto Protocol was signed in 1997 the idea that a top down legalistic regulatory model would provide the authority to establish a unified global political commitment to reducing carbon emissions has been progressively undermined and global carbon emissions continued to increase. Rather than a top down legal and regulatory approach attention is now focusing on the contribution of financial markets and financial institutions. Specifically, how financial markets or governing financial institutions could be employed to modify corporate behaviour and decarbonise economic development. This approach is now being advocated by the United Nations Environment Programme (UNEP) and European Commission (EC). New financial markets such as carbon cap and trade have been tested out in Europe and to some extent in the US but with limited impact on carbon emissions. The broader alternative, and which is the focus of this paper, is the contribution of financial institutions (FIs) and how their power over capital allocations (debt and equity) could promote decarbonisation. FI's could progressively direct capital from more to less carbon intensive business models because there is a risk attached to investing in carbon intensive activities. Carbon intensive business activity could, for example, be subjected to adverse regulatory and technical changes that could lead to 'stranded assets' or a 'carbon bubble' that would put invested capital at risk.

Whilst there has been a steady increase in our understanding of climate change from a scientific-environmental risk perspective, for example, the increase in volatile climatic events (Sneed, 2017), the challenge has been to translate this understanding of risk into meaningful behavioural changes within corporations. Specifically this would involve companies that are carbon intensive moving on to a less carbon intensive trajectory so as to secure absolute reductions in global carbon emissions. Connecting the science of climate risk arising from carbon emissions to changes in corporate behaviour is, as we have noted, not an easy task but recent policies have centred on encouraging new financial markets to trade in carbon off-set credits and of encouraging financial institutions (FIs) to change their asset allocation behaviour away from more to less carbon intensive investment portfolios.

With regards to financial market interventions the European Union Emissions Trading System (EUETS), the world's largest carbon cap and trade system, was launched in 2005 and the UK Government believed that:

The EU Emissions Trading System (EU ETS), the world's largest cap and trade system, should remain the cornerstone of EU energy and climate change policy. The EU ETS demonstrates Europe's ambition to act as a global leader in the fight against climate change through the delivery of a functional and effective carbon market. The continued success of EU ETS is vital in helping the EU to meet its 2030 and 2050 targets at least cost, and in laying the foundations of a global carbon market (United Kingdom Government, 2014)

The EU ETS operates on the basis of what is termed a 'cap and trade' principle. Within the EU a target is set for the overall volume of greenhouse gases that can be emitted by energy power plants, industry and other sectors covered by a cap on carbon emissions set at EU level. Within this overall cap some companies may be under target and so obtain allowances which they can trade with other companies/sectors that are above their targets (European Commission, 2016)

Chart 1 reveals that the price of carbon traded is volatile and peaked at 30 Euro before falling into a range of 3–5 Euro. A fundamental problem is that this cap and trade trading system has failed to impose meaningful caps on the emissions of Europe's most carbon-intensive industries (Friends of the Earth Europe, 2010). In addition and according to a Sandbag report (2017):

The EU ETS has hit a new record of 3 billion tons of surplus EUAs (EU Allowances), including both volumes available to the market and those destined for the MSR (Market Stability Reserve). This record surplus and accompanying low carbon prices suggests that the EU ETS has failed as a policy (Sandbag, 2017).

A research report produced by the Grantham Institute for climate change is more positive but finds that it is difficult to separate out the impact of the ETS market for carbon and the recession in Europe which also contributed to reducing emissions (Muûls, Colmer, Martin, & Wagner, 2016). However, according to the European Commission climate action website the surplus of trading credits risks undermining the orderly functioning of the carbon market. In the longer term it could also affect the ability of the ETS to meet more demanding emission reduction targets cost-effectively (European Commission, 2018b).

The lack of support for the EU ETS is nicely summed up in a recent European Commission (2017b) report which observes that there is a considerable gap between the shadow price for carbon emissions employed by the European Investment bank (EIB) of €32/tCO₂ and so-called market price of less than €5 euro. This low 'price' for carbon emissions obscures the difference between assets that are carbon efficient and those which are not.

The absence of a financially material carbon price prevents investors from differentiating carbon-intensive assets from carbon-efficient assets in their economic reasoning. The EU emissions trading system (ETS) price of carbon for a DEC17 EUA is currently

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