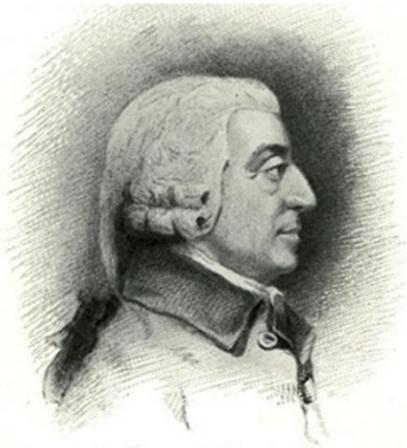
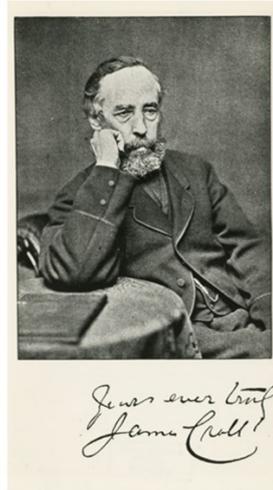


Win-Win-Win: the carbon feebate

A carbon feebate system could stem carbon emissions while improving the economy and securing a clean-energy future.



Adam Smith



Two pioneering, historic Scots have helped inform a possible economic solution to the very modern problem of how to prevent catastrophic climate change.

A study, published in *Anthropocene Review*, draws on the work of the Scottish scientist James Croll and philosopher and economist Adam Smith.

Croll, from Perthshire, was a product of the Highland Clearances. He was largely a self-educated man. After overcoming much adversity he became a janitor at Anderson College and Museum, Glasgow and eventually a Fellow of the Royal Society. Access to books allowed him to create a theory of climate change. This remarkable man, and revolutioniser of scientific thought, was the first person to identify positive feedbacks in the earth system – explaining how “*in regard to ... climate, cause and effect mutually react so as to strengthen each other*”.

Fifer, Adam Smith, became part of the brilliant intellectual circle of the Scottish Enlightenment. In his great 18th century work “*The Wealth of Nations*”, which still lies at the heart of economics, he famously developed his ideas on supply and demand and free trade. But Adam Smith was not a strict, doctrinaire advocate of laissez faire. He did not believe that laissez faire (or more precisely, in his words, ‘*to leave her alone*’) was always good, or always bad. Instead he recognised that self-interest and competition were sometimes treacherous to the public interest they were supposed to serve, and so he was prepared to allow governments to exercise some measure of control according to circumstance.

The new research – which incorporates Croll's feedbacks and Smith's economics – shows that without an emphatic change to current climate-economic policies

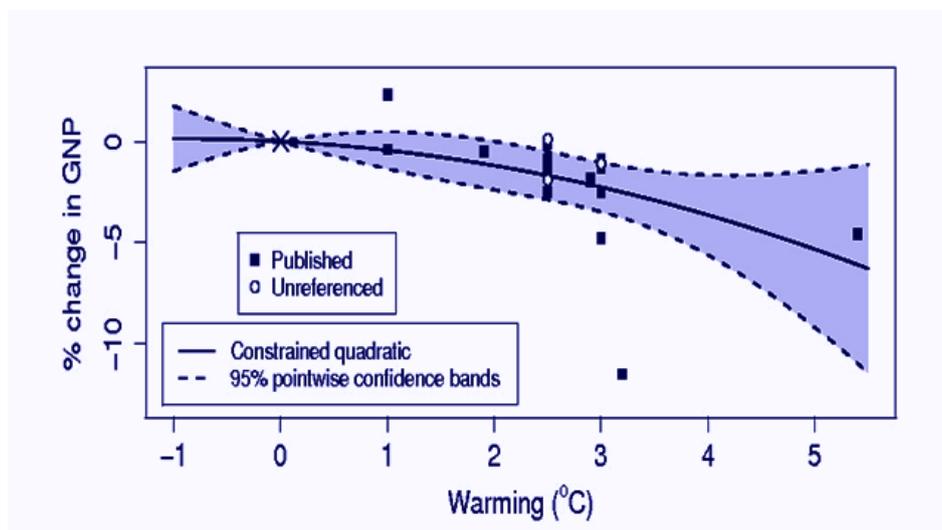
temperatures and sea-levels are likely to continue to rise strongly this century. It goes on to suggest that a decades-old tax system would permit a balance to be struck between the conflicting needs of limiting the impact of man-made greenhouse gas emissions and supporting the economy.

The idea re-emerges ahead of the forthcoming COP22 climate change talks (7-18 November, 2016) in Marrakech, Morocco, at which delegates will seek to enforce targets to limit global temperature rise to well below 2°C.

The study unites an energy-balance climate model and a cost-benefit economic analysis to reveal how an adjustment to the levy system, first devised by the English economist Arthur Pigou in the 1920s, offers a viable way forward. The key adjustment is for all revenues from a carbon tax to be recycled directly to households. Such a system – known as a feebate – has been successfully introduced in British Columbia, Canada.

Sellers respond to the Pigouvian system either by lowering their costs, or by striving to improve their production methods thereby creating novel, cleaner technologies. Buyers respond by reducing their carbon consumption. Householders create growth in nascent economic sectors when spending their new carbon allowance.

In short, the most attractive response to the climate-change problem is for society to take much firmer action. Stoutly adopting Pigouvian economics, especially by applying a carbon feebate, is the best way to encourage a change in behaviour of both peoples and companies, and so help foster Adam Smith’s vision “*of bringing to mankind maximum happiness and prosperity*”.



Damage (expressed as percentage of GNP). Constrained (no constant) quadratic fit to the 21 currently available data points, as garnered by Tol (2015).