

## Energy Economics in the Second Half of the Age of Oil

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The prospective evolution of energy economics in the second half of the Age of Oil cannot be understood without some understanding of the first half of the Age of Oil, which began in the late 19<sup>th</sup> century and is going to end, more or less, now. The reasons for this are various, but fundamentally boil down to the complex interaction of technology, population growth, energy, finance, and economic activity. Technology in the form of improved medical care and public health had by the end of the 18<sup>th</sup> century considerably accelerated the pace of population growth in the newly industrialising world. For the provision of energy, which up to that time had been largely provided by muscle and wood, societies turned to coal, and by the late 19<sup>th</sup> century, were beginning to convert to petroleum.

Finance too began to change in a process that began with the Glorious Revolution in England, a hostile takeover, if you will, by military and commercial forces that had coalesced around William of Orange. This resulted very quickly in the “liberalisation” of British finance with the creation of the Bank of England. For the purposes of this discussion, this was important because it revolutionised the process of raising money by the state for war or other purposes by effectively swapping the credit rating of the sovereign for that of the Bank’s owners, and so set in motion the most efficient means of financing war hitherto known to man. From that point to the end of the 19<sup>th</sup> century at least, finance was still generally ruled by the notion that the monetary system had to be based on a unit of exchange with a commonly agreed value, either gold or silver or both. Credit growth was thus dependent on the supply of these metals that could be mined or stolen, as the history of early European exploration and conquest shows us. The holy grail of finance was then, as it still is

today, a means of liberating finance from this constraint while still keeping control of credit.

The invention of the internal combustion engine and the resulting leap in the demand for petroleum interacted with these developments in ways that are both obvious and subtle. Just as finance was first revolutionised by the creation of a more efficient means of financing war, long before citizens had almost universally traded ownership of house, car, and refrigerator for a leasing contract, petroleum did not really burst on the scene until the Royal Navy adopted it in place of coal. This ignited a world-wide arms race and inadvertently ceded to the hydrocarbon self-sufficient United States a critical strategic advantage. Britain with this fateful choice went from being self-sufficient in energy in the form of coal to being utterly dependent on the oil resources of the Middle East thousands of miles away and threatened by competitive interests in Germany and France which likewise needed it.

The foundations of contemporary emerging energy economics cannot be complete without a nod towards the development of the corporation, especially in the United States, and the revolutionary changes that this brought to the American society and political economy. In 1887 JP Morgan brought the eight men who controlled virtually all of America’s energy transportation and basic industrial processes into a room at his Fifth Avenue mansion in New York and hammered out a non-compete agreement that, by and large, defined the future path that the country would take. Only a few years later, the US had become an Asian colonial power, and within three decades had signed what amounted to a non-aggression pact with Britain, had established a central bank, completing de jure what had been de facto control of American finance, and emerged as the world’s most formidable

financial power. Much of this it owed to oil, being the world's biggest producer and exporter. This made the strategic problem of establishing hegemony one of denying free access to oil to those European and Asian powers that were, and are, net oil importers.

American victory in the Second World War completed this process, setting the stage for several decades of American dominance of the world scene with one notable exception, the USSR, which was also energy self-sufficient. The collapse of the USSR is usually attributed to factors such as its lack of free markets, the inability to match American military spending and so on, but almost certainly it also was due to the collapse of oil prices in the middle 80s which severely impacted its hard currency earnings and decimated state revenue while increasing the financial burden of supporting its Warsaw Pact allies.

These days it is fashionable again to worry about debt levels in the industrial world. For two decades or so this was not the case as the political marketplace was dominated by ideas of government budget discipline and disinflation as fiscal and financial priorities. These priorities were honoured more in the breach than in the observance, but they are relevant to our discussion of energy economics for the simple reason that it highlights the truth that it is not finance that makes economies "grow" but real factors such as population growth and energy availability. The attractiveness of hydrocarbons has always been predicated on their uniquely productive energy release characteristics, as well as the fact that their chemical makeup has rendered them useful to the production of fertilisers among other products. Mechanisation and chemical fertilisers have transformed the political economy of agriculture by stripping agriculture of workers, and thus neutering political movements as diverse as Ukrainian Kulaks and American populists and progressives.

Hydrocarbons are useful to the corporate state not just because of profit, which tends to be the

view of what remains of the modern left, but also because they have simultaneously liberated the state from concern about serious political opposition while simultaneously ratifying growing debt burdens. The mechanism for doing the latter has been predicated on cheap and abundant oil which has held the promise of high future output rates that could be relied on to service debt assumed in earlier years.

A world in which oil is priced for scarcity instead of the rhythms of cyclical supply and demand represents a very different world than the one which we live in today, in which oil and gas are priced as if they are infinitely renewable. We live in a world of temporal limits and limitless possibilities. The conflation of these two, well, limits, is a source of limitless confusion. The choice is not between a world with and a world without oil, but (among other choices) between a world organised around oil as the primary propellant for growth and military and political supremacy, and a world organised around people as the organic driver of growth. This point can be illustrated by the concept of "growth" itself, which we measure by an additive function called gross domestic product. Being additive, GDP tells us nothing about the quality or the nature of the actions of real people that added together are GDP. Investment in a factory is not the same as swapping fixed for floating debt, but add up enough of the latter and you can arrive at the same GDP figure. In the United States, where the financial sector's profits are half of those of the rest of the economy, this matters.

It is a fact that it is more productive to conserve oil than to consume it. Look out of the airplane the next time you travel to Los Angeles or Dallas, and you will see why the US political system refuses to conserve. Energy economics in the second half of the age of oil require a profound change in the way we and our corporate institutions imagine the world. Look at Iraq, and you can see what the response of our leadership is to this challenge.