

**The London School of Economics and Political
Science**

*The Energy Statecraft of Brazil:
Promoting biofuels as an instrument of Brazilian
foreign policy, 2003-2010*

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Abstract

The 'conditionalist' approach to the economic statecraft literature in International Relations and Foreign Policy Analysis seeks to establish the conditions under which economic instruments of foreign policy are likely to be effective. This thesis applies these conditions to a specific set of economic instruments of foreign policy, namely energy resources, the use of which is here referred to as 'energy statecraft'. The conditions for successful implementation of energy resources as an instrument of foreign policy set forth in this study serve as a theoretical framework to test a specific case study of energy statecraft: Brazilian biofuels. The choice of Brazil as the only case study in this thesis is justified by its uniqueness in energy statecraft on two different levels: empirical and theoretical. Empirically, among the relatively few energy-exporting countries that use their energy resources as instruments of their foreign policy, Brazil is the only one that uses biofuels for that purpose, whereas other countries that implement energy statecraft mostly do so with petroleum and/or natural gas. Theoretically, Brazil's promotion of biofuels to third countries is also unique because it is pursued through soft power – attraction by encouraging emulation of its own successful experience with biofuels – rather than through hard power: bribes or coercion. The case study is also analysed in the context of a decade characterised by energy security concerns, including worries over increasingly scarce traditional energy resources, skyrocketing oil prices, unreliability of conventional energy supplies, and environmental threats. All of these factors have boosted the advancement of biofuels worldwide. Finally, the means through which Brazil pursues its goal of turning ethanol into a global commodity is tested against the conditional criteria set out in the theoretical framework. The thesis concludes that this particular foreign policy strategy has been fruitless, with little progress made towards achieving its goal of 'commoditizing' ethanol in the short term, though its long-term prospects seem promising. Theoretically, the strategy's ineffectiveness is attributed to the international context in which it took place, rather than any inherent characteristic of energy resources as an instrument of foreign policy.

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CHAPTER 1

Introduction

Fairly early in his seminal work on the subject of *Economic Statecraft*, David Baldwin cites Harold Lasswell: ‘*Concepts for the study of influence must be changed or invented when influence is sought by novel means or under changed conditions.*’¹ Baldwin’s study was an attempt to theorise, in a comprehensive manner, the increasing use of economic instruments of foreign policy, or what he calls ‘economic statecraft’, and the proliferation of academic studies on the subject in the late 1970s and early 1980s. The subject of economic instruments of foreign policy became popular not only because of the growing use of economic sanctions, especially when compared to the relatively diminishing use of force (among other reasons, due to its increasing costs) as an instrument of foreign policy, but also as a reaction to the employment of the so-called ‘oil weapon’ by the Arab members of the Organization of Petroleum Exporting Countries (OPEC) in protest to the Yom Kippur War in 1973, which was a favourite case study in the analysis of economic statecraft. The newfound power of the oil-exporting cartel thus became the subject of much interest among scholars, who at the time tended to analyse the ‘oil weapon’ as an economic foreign policy instrument in general, rather than seeing energy resources as unique and intrinsically different from most other economic goods. In 1986, the year after the publication of Baldwin’s book, however, the price of oil collapsed, and interest in the role of energy in International Relations faded quickly, although the theoretical lessons set forth in *Economic Statecraft*, along with Albert Hirschman’s *National Power and the Structure of Foreign Trade*, continue to make up the foundation of most subsequent studies on economic instruments of foreign policy. To quote Andreas Goldthau: ‘A decade-long period of oversupply on oil and gas markets and resulting low prices calmed public debate on these issues. It is only since the turn of the new millennium, when supply-demand balances both in global oil markets and in regional gas markets tightened again, that energy...has come to receive renewed attention.’²

¹ Lasswell, H., *Politics: Who Gets What, When, How*, pp. 7-8, cited in Baldwin, D.A., *Economic Statecraft*, (Princeton: Princeton University Press, 1985), p. 29.

² Goldthau, A., ‘Energy Diplomacy in Trade and Investment of Oil and Gas’, in Goldthau, A. & Witte, J.M. (eds.), *Global Energy Governance: The New Rules of the Game*, (Washington, D.C.: Brookings Institution Press, 2010), p. 27.

The early twenty-first century witnessed the rise of an international energy context plagued by oil prices rising steadily to historic heights, coupled with fears over the future availability of oil and increasing concerns over environmental degradation, much of it a result of humanity's wanton burning of fossil fuels. Under a tight international oil market, in which producers could not keep up with rising demand from emerging economies, a number of oil and gas exporting countries took advantage of importing countries' scramble for energy resources and used their energy exports politically to manipulate importing states. This sort of behaviour, which the present study terms 'energy statecraft' – be it in the form of the coercive stick, like Russia's natural gas 'pipeline wars' with Ukraine, or the bribing carrot, like Venezuela's subsidised oil sales to neighbouring countries during Hugo Chávez's regime – rekindled the energy debate in International Relations among scholars, the media and policy makers alike. Unlike the energy crises of the 1970s and early 1980s, however, the twenty-first century saw the appearance of renewable energy sources as viable alternatives to fossil fuels, also as forms of energy statecraft. While most attention has been given to 'traditional' energy resources such as oil and natural gas, few (if any) studies concerned themselves exclusively with energy statecraft using renewable energy. The problem with the relative scarcity of studies on renewable energy in International Relations is not limited to insufficient research on the matter, but also the fact that discussions of alternative energy resources have often been biased: 'their proponents tend to be over the top in their enthusiasm and their detractors tend to be exaggeratedly negative.'³ Indeed, Jürgen Maier states that there is 'probably no other energy issue currently being discussed with so much emotion and so little facts as bioenergy.'⁴ The present work seeks to remedy this oversight by assessing the use of biofuels as a form of energy statecraft.

The term *biofuels* refers to liquid transportation fuels produced from biological feedstocks like agricultural commodities or other organic materials.⁵ Among different kinds of biofuels, ethanol is by far the world's most widely used biofuel for transport,

³ Howell, D. & Nakhle, C., *Out of the Energy Labyrinth*, (London: I.B. Tauris, 2006), p. 112.

⁴ Maier, J., 'Bioenergy: Neither Golden Solution nor Prescription for Disaster', in Dodds, F., Higham, A. & Sherman, R. (eds), *Climate Change and Energy Insecurity: The Challenge for Peace, Security and Development*, (London: Earthscan Publications, 2009), p. 35.

⁵ Seelke, C.R. & Yacobucci, B.D., 'Ethanol and Other Biofuels: Potential for U.S.-Brazil Energy Cooperation', Congressional Research Service Report for Congress, 27 September 2007, p. 2. And Zarrilli, S., 'Development of the Emerging Biofuels Market', in Andreas Goldthau & Jan Martin Witte (eds.), *Global Energy Governance: The New Rules of the Game*, (Washington, D.C.: Brookings Institute Press, 2010), p.74.

accounting for 94 per cent global biofuel production. Ethanol fuel is an alcohol that is mostly produced through a process of fermentation and distillation of starch- or sugar-based crops like corn, beets or sugarcane, the latter of which is the most efficient feedstock and is used to produce roughly 60 per cent of the world's ethanol.⁶ Seelke and Yacobucci remind us that ethanol can also be produced from lignocellulose-based feedstocks, like switchgrass and wood chips, although the technology to generate lignocellulosic ethanol is in its embryonic stage and is still too expensive to produce on a commercial scale without subsidies. The remaining 6 per cent of biofuels include biodiesel made from vegetable oils, like palm oil and soybeans, or animal fats, as well as butanol made from various biological feedstocks.⁷ Since ethanol makes up the vast majority of biofuels produced globally, this study will focus predominantly on ethanol as an instrument of energy statecraft.

Among the world's ethanol producers, Brazil holds a leading position not only as one of the two main producers – along with the United States, which together are responsible for nearly 90 per cent of the world's ethanol made for fuel consumption – and as the most important exporter thereof, but unlike other countries Brazil also has almost forty years' experience producing ethanol for domestic consumption – a success story that Brazil can share with other countries. Coupled with immense discoveries of oil and natural gas in recent years, Brazil's well-established ethanol industry has positioned the country to be one of the twenty-first century's foremost global energy players.⁸ Larry Rother states that Brazil has 'the abundance of sources of energy, which seem, as the twenty-first century advances, more likely than ever to become one of the main determinants of a nation's power, influence, and prestige on the world stage. Perhaps that is why the government of Luiz Inácio Lula da Silva in 2009 adopted the slogan "Brazil, Fifth World Power," implying that Brazil's extraordinary energy foundation is capable of projecting the country into the same category as the United States, the European Union, China, and India.'⁹ According to one observer, 'Brazil really does have a concrete chance of participating in and even leading an important revolution in the world economy' by sharing its knowledge and experience with biofuels with other countries. Indeed, 'the world wants what Brazil

⁶ Maier, *Op cit.*, p. 38.

⁷ Seelke & Yacobucci, *Op cit.*, p. 2.

⁸ Roett, R., *The New Brazil*, (Washington, D.C.: Brookings Institution Press, 2010), p. 120.

⁹ Rother, L., *Brazil on the Rise: The Story of a Country Transformed*, (London: Palgrave Macmillan, 2010), p. 171.

has to offer' where biofuels are concerned: 'the country has technology that, if replicated in other countries, has the capacity to significantly reduce the emission of the greenhouse gases'¹⁰ (GHGs) as well as costly petroleum imports, while also creating jobs and promoting rural development. To that end, Brazil's National Development Bank (BNDES) published a comprehensive study advocating the benefits of sugarcane-based ethanol, to be distributed to countries interested in developing their own biofuel programmes (with implied Brazilian assistance):

Modern society is facing the worsening of environmental degradation while, at the same time, realizing that its reserves of natural resources, be they energy, water or metals are limited. In this context, energy plays a central role, compelling us to urgently rethink the foundations of an energy-supply model that is showing signs of depletion and seeks new resources which will allow continued socioeconomic development. ... Within this context, bioenergy has proven to be one of the best alternatives to capture and store solar energy, wherever idle land and favorable climate (sunlight, water and temperature) are matched by sufficient knowledge and an entrepreneurial spirit to apply it.¹¹

By showcasing its successful experience with ethanol, Brazil encourages third countries to adopt biofuel programmes by emulating its own experience. This 'soft power' strategy – getting others to want what you want through imitation, rather than getting others to do what you want through bribes or coercion¹² – has been employed by the Brazilian government in the pursuit of its goal to spread the production, use and international trade of biofuels, with the aim of creating a global market in which ethanol is freely traded as a commodity and Brazil has a natural competitive advantage. However, the world has yet to develop a formal commodity market for major biofuel transactions with globally-recognised prices, similar to the long-established international oil market. For this to happen, not only do more biofuels need to be produced (and, obviously, consumed), but a much larger number of countries need to grow their own biofuels, in order to avoid the reliance on few (potentially unreliable) suppliers that currently plagues the international oil market – a condition without which only a few countries are willing consume biofuels that are not indigenously grown. It is against this backdrop that the Brazilian government

¹⁰ Nucci, J.P., 'Fuel to Change the World', *PIB*, Year 1, Number 2, Dec 07/Jan 08, pp. 32-33.

¹¹ Banco Nacional de Desenvolvimento Econômico e Social & Centro de Gestão e Estudos Estratégicos (eds.), *Sugarcane-Based Ethanol: Energy for Sustainable Development*, (Rio de Janeiro: BNDES, 2008), p. 259.

¹² Nye, J.S., *Soft Power: The Means to Success in World Politics*, (New York: NY: Public Affairs, 2004).

formulated its foreign policy goal to ‘commoditise’ ethanol and increase its exports thereof – a goal that Brazil pursues through energy statecraft by promoting the use of biofuels to third countries as an instrument of its foreign policy.

The present study seeks to analyse and evaluate the relative efficacy and potential for success of using biofuels as an instrument of foreign policy – or, as this study terms it, ‘energy statecraft’ – with Brazil currently being the only major case study on the matter. To inform this analysis, this study draws on the economic statecraft literature to set up a theoretical framework in which to test its main hypothesis against the only case study available. Within the relatively limited literature on economic statecraft – for, as Baldwin draws attention to, the ‘two most salient characteristics of the literature on economic statecraft are scarcity and the nearly universal tendency to denigrate the utility of such tools of foreign policy’¹³ – positive economic statecraft (the proverbial ‘carrot’) is significantly under-researched compared to negative forms of economic statecraft (or ‘sticks’).¹⁴ ‘It is not that political scientists have said wrong things about the role of positive [economic] sanctions in power relations’, writes Baldwin; ‘it is just that they have said little.’¹⁵ The present study therefore seeks to make a contribution not only to the relatively scarce literature on positive economic statecraft, but also to the recently emerging literature on energy statecraft in general, as well as to the literature on energy statecraft using biofuels in particular – which was completely unheard of when the research for this study began.

Three main schools of thought were identified in the economic statecraft literature: realism, liberalism and the conditionalist approach, the last of which includes a domestic and an international subdivision within that approach. This study takes a conditionalist approach to economic and energy statecraft – focusing primarily on international conditions, while also acknowledging domestic ones – which strives not for definite answers to whether such instruments of foreign policy work or not, but asks under what conditions economic and energy statecraft work best. Four such conditional variables have been identified in the conditionalist literature on economic statecraft: 1) whether the instruments employed are commensurable with the

¹³ Baldwin, *Op cit.*, p. 51.

¹⁴ Mastanduno, M., ‘Economic Statecraft’, in Smith, S., Hadfield, A. & Dunne, T. (eds.), *Foreign Policy: Theories, Actors, Cases*, (Oxford: Oxford University Press, 2008), p. 182.

¹⁵ Baldwin, D.A., ‘The Power of Positive Sanctions’, *World Politics*, Vol. 24, No. 1 (October 1971), p. 19, cited in Mastanduno, M., ‘Economic Statecraft, Interdependence, and National Security’, *Security Studies*, Vol. 9, No. 1, 1999, p. 301.

objective(s) pursued; 2) the magnitude and dependence on an economic interaction; 3) the elasticity of demand for a good; and 4) the degree of government control over economic actors. While generally applicable to all forms of economic statecraft, these factors have been adjusted to fit the specificities of energy resources vis-à-vis most other economic goods, for the purposes of this study. In theory, if all of these four conditional variables are favourable, energy statecraft is more likely to work. This theoretical proposition forms the main hypothesis in this study, which seeks to answer the question of whether Brazil's energy statecraft using biofuels has been successful.

Chapter Summaries

In addition to this introduction and the conclusion, this thesis is divided into four main chapters. The next chapter provides the theoretical framework for the rest of this study. It begins by defining the term *statecraft*, which essentially refers to the foreign policy 'instruments used by policy makers in their attempts to exercise power, i.e., to get others to do what they would otherwise not do.'¹⁶ Next follows a discussion of Joseph Nye's concept of *soft power*, which, unlike 'traditional' accounts of power, such as the one defined in the term of *statecraft*, also considers the possibility that an actor can get others to want what the same things it wants, rather than coercing them to do what they would otherwise not do. This distinction is important because Brazil's entire energy statecraft strategy is based (and depends) on soft power. The remainder of Chapter 2 is dedicated to explaining *economic statecraft*. The section starts with a definition of the term – 'all of the economic means by which foreign policy actors might try to influence other international actors'¹⁷ – before reviewing the literature on economic statecraft, identifying the three schools of thought mentioned above: realism, liberalism and conditionalist approaches (international and domestic). What follows is a description of the different types of economic statecraft, both negative and positive, ranging from short- to long-term economic statecraft. Lastly, the chapter examines the four conditional variables identified in the literature, which determine whether economic statecraft is likely to be effective. First among these are the scope, domain and cost of economic statecraft; in other words, measuring economic foreign policy instruments in terms of the underlying strategic objectives they are meant to

¹⁶ Baldwin, *Economic Statecraft*, p. 9.

¹⁷ Hanson, P., *Western Economic Statecraft in East-West Relations: Embargoes, Sanctions, Linkage, Economic Warfare, and Detente*, (London: Routledge & Kegan Paul, 1988), p. 6.

achieve. Second is the magnitude of, and dependence on, the economic interaction in question. Third is the ‘strategic’ quality of a good, defined in terms of its price elasticity. And lastly, the degree to which a government has control over the economic actors that implement its economic statecraft in practice is analysed through the perspective of principal-agent theory. These four conditional factors are of crucial importance to this study, as they form the framework through which the main hypothesis is tested throughout the thesis.

Chapter 3 constitutes the core of this study, providing a thorough and comprehensive examination of the diverse roles played by energy resources in foreign policy and international relations, with a focus on energy statecraft. The chapter is divided into four sections, with the first clarifying and defining three different but interrelated energy concepts that often cause confusion in the emerging literature on the study of energy in International Relations: energy security, energy diplomacy and energy statecraft. In its most fundamental sense, energy *security* means having the ‘assurance of the ability to access the energy resources required for the continued development of national power’, sustained economic performance and growth.¹⁸ More specifically, energy security involves four basic elements, all of which need to be addressed to ensure the energy security of a state: the *availability* of energy goods and services; *reliability* in terms of being protected from interruption of energy supplies; the economic *affordability* of energy goods and services for consumers, safeguarded against price volatility; and the environmental *sustainability* of energy resources, given the world’s increasing concerns over GHG emissions from burning fossil fuels. The role of energy security in foreign policy is then divided into the two remaining concepts – energy diplomacy and energy statecraft – with the former representing energy as a goal and the latter denoting an instrument of foreign policy. Thus, energy *diplomacy* refers to the use of political instruments of a state’s foreign policy aiming to ensure that state’s energy security. Conversely, energy *statecraft* means the use of a state’s native energy resources as an instrument of its foreign policy to attain the political objectives of that state – or, more specifically, the manipulation of a target state’s energy security in order to get it to do what it would otherwise not do – which is the main subject of this study.

¹⁸ Kalicki, J.H. & Goldwyn, D.L., ‘Introduction: The Need to Integrate Energy and Foreign Policy’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press / Woodrow Wilson Center Press, 2005), p. 9.

The following section briefly repeats the different types of economic statecraft in general – namely, negative, positive, short- and long-term – and applies them to the specific case of energy resources, with examples for each. The section also examines how different kinds of energy resources (e.g., oil, natural gas, coal, nuclear and renewable energy) vary in their application as instruments of energy statecraft. The third and most important section in Chapter 3 lists the four conditional variables on which successful economic statecraft depends (analysed in Chapter 2) and adjusts them to the specific nature of energy resources, as opposed to most other economic goods. The first of these sub-sections repeats the proposition that a state's foreign policy goals must be commensurate with the energy instrument employed, illustrating it with the case of OPEC's use of the 'oil weapon' following the Yom Kippur War in 1973. Where energy resources are concerned, the magnitude of the economic interaction translates into the market power (including the control of energy transport routes) of the state employing energy statecraft and the degree to which target states are vulnerable to their dependence on energy imports from the former. Since energy resources are, by almost any definition, 'strategic goods', the third conditional variable focuses on how the low price elasticity for most energy resources are reflected in price volatility under tight international oil market conditions, which largely favours the energy statecraft of exporters. Interestingly, unlike most other economic goods, energy resources are particularly prone to government control under the auspices of national oil companies, given the tendency towards 'resource nationalism' in energy-rich states. This last conditional variable indicates that energy resources are, in theory, more effective instruments of economic statecraft than most other economic goods.

Finally, the last section in Chapter 3 avoids merely 'showcasing' the efficacy of energy statecraft by discussing the several limits and countermeasures to it. First among these are the so-called 'resource curse' and the export dependence often generated in energy-rich states, which can cripple all other sectors of the economy of an energy-exporting state, failing to translate their short-term wealth from energy sales into long-term economic growth and sustainable development due to poor governance and fiscal mismanagement. Though a potential source of control and increased effectiveness of energy statecraft, the same 'resource nationalism' mentioned in the fourth conditional factor for effective energy statecraft mentioned above can also be a limitation: while the nationalization of energy resources and the

removal of foreign or private energy companies may accrue more power and revenue to energy-rich states in the short term, the long-term ramifications tend to be detrimental. The same is true for the creation of energy cartels like OPEC, whose strength depends on internal cohesion, without which their energy statecraft loses its force. There are also limitations imposed by the demand-side, as energy importers can collectively use their monopsony power to form the equivalent of an ‘importer’s cartel’, like the International Energy Agency (IEA) linked to the Organization for Economic Cooperation and Development (OECD), which established that member states should create strategic petroleum reserves to be drawn upon in times of sustained shortfalls or interruptions in energy supply. Importing countries can also counteract exporters’ energy statecraft by reducing their dependence on imports from the latter through diversification and conservation of their energy use.

Chapter 4 explores the new international energy security context that has risen in the early twenty-first century. Since the utility of any given instrument of foreign policy is, according to Baldwin, ‘a function of the situation and not a quality intrinsic to the particular technique’,¹⁹ it is crucial to recognise the context in which energy statecraft takes place. The conditionalist approach adopted in this study also calls for an understanding of the international conditions that have allowed energy statecraft to thrive in the past decade. As explained in Chapter 3, energy security involves four basic elements: availability, reliability, affordability and sustainability. The risks that fossil fuels in general, and oil in particular, pose to all four of these elements have created a context in which traditional energy resources have gained value as an instrument of state power in international relations. On the other hand, because this situation has also allowed renewable energy to compete with fossil fuels in general – and biofuels to compete with petroleum in particular – the international energy security context has also paved the way for the possibility of using biofuels as a tool of energy statecraft – the subject of this study. Chapter 4 therefore assesses the concerns that oil raises to each of these elements – availability, reliability, affordability and sustainability – in the current international energy security context, with secondary consideration paid to other energy sources. The section on *availability* raises the issue of resource scarcity and the finite nature of fossil fuels, tackles the ‘Peak Oil’ debate, and concludes that while there is still much oil underground in

¹⁹ Baldwin, *Economic Statecraft*, p. 123.

physical terms, economic and geopolitical factors may prevent its exploration and production. The next section, on *reliability*, focuses on the fact that only a limited number of countries produce the whole world's oil supply, most of which are OPEC members with their own political interests, which are not necessarily convergent with those of importing states wishing for uninterrupted energy supplies that are both abundant and affordable. On the related subject of *affordability* of energy resources, the third section examines the diverse factors that led to steadily rising oil prices to a historic peak of \$147 per barrel in July 2008, such as the long-term imbalance between supply and demand for oil, and the negative impact that has had on investments in the oil sector. Lastly, the section on *sustainability* raises the relatively recent concern over the effect that human energy use is having on the environment, particularly in terms of climate change caused by GHG emissions, which gives an additional incentive for countries to shift their energy use away from dirty fossil fuels towards renewable sources. All of these factors put together, the chapter concludes, have created an international energy security context which, on the one hand, has allowed energy statecraft to flourish, while on the other hand also serves as an incentive to adopt more renewable energy resources like biofuels, thus increasing the likelihood that energy statecraft using biofuels may succeed.

Chapter 5 serves as a case study to test the four conditional variables elaborated in previous chapters. As mentioned above, Brazil is chosen as the only case study for the simple reason that it is the only country that has employed biofuels as an instrument of energy statecraft so far. The chapter begins with a historical overview of Brazil's National Alcohol Program (*ProAlcool*), a series of public policies aimed at reducing the country's dependence on costly oil imports as a response to the international oil price spikes of the 1970s. Though at first being strictly a domestic policy, Brazil's almost forty year-long success story with ethanol fuel gained a foreign policy component during the administration of President Luiz Inácio Lula da Silva. The rest of the chapter is dedicated to testing this study's main hypothesis with the four conditional variables that determine whether Brazil's energy statecraft through the use of biofuels has been successful, in order to answer this thesis' research question. The first of these sections describes the formulation of Brazil's twofold declaratory goal of creating an international market where ethanol is traded freely as a commodity by promoting the increased production and use of biofuels to as many countries as possible, and expanding Brazilian ethanol exports

within such a market, as well as illustrating the diverse strategies pursued by the Brazilian government to achieve those objectives. Next, the chapter compares Brazil's comfortable but fragile position as the world's leading exporter and second-largest producer of ethanol to other major biofuel producers like the US and the European Union, warning that Brazil will need to invest significantly in the expansion of its biofuel sector if it is to maintain this leading position. The third conditional variable is interesting in the sense that ethanol fuel has a very high price elasticity, which would indicate, in theory, that biofuels make a poor instrument of energy statecraft. While the demand is inelastic for compulsory biofuel blends into traditional fuels mandated by governments, however, the section clarifies that it is precisely ethanol's elasticity that makes it a strong candidate for energy statecraft, in the sense that it can complement or substitute gasoline, thereby increasing the latter's elasticity and diminishing countries' dependence on petroleum imports, thus partially counteracting the potential for energy statecraft using oil and enhancing the energy security of biofuel-consuming states. The last conditional variable indicates that, unlike its oil and gas sector, which is firmly within the government's control through Brazil's national oil company, Petrobras, the country's ethanol industry is entirely private. Nevertheless, the interests of the Brazilian government and the ethanol industry are convergent, which has led to good cooperation and coordination between the government and the private companies that implement Brazil's energy statecraft in practice. In sum, the four conditional variables tested in this case study are generally favourable, revealing that Brazil's energy statecraft through the promotion of biofuels abroad has the potential to be successful.

The conclusion starts with a brief summary of the research's findings, followed by suggested questions for further investigation. It then raises a rigorous critique of the strategies carried out under Brazil's energy statecraft. While the Brazilian government has invested substantial efforts in promoting the increased production of biofuels around the world – in order to commoditise ethanol, the main goal of Brazil's energy statecraft – the fact is that most of the increase in global biofuel production over the past decade has for the most part been driven domestically in producing states through their own national policies stimulating biofuel production. Moreover, the other major foreign policy goal pursued under Brazil's energy statecraft – to open markets for the country's ethanol exports – has not been achieved, as the world's main demand centres (the United States and Europe) still protect their

markets from Brazilian imports through tariff and non-tariff barriers. Brazil's soft power strategy of encouraging other countries to emulate its example is also questioned: the specific conditions that made Brazil's successful domestic experience with ethanol possible may not be easily replicated in other countries, suggesting that Brazil's case could be unique in the world and the lessons it has to teach are the exception rather than the rule. In particular, the tactic to transfer Brazilian technology to developing countries with ideal climactic conditions for biofuel cultivation – especially in Africa, which hosts an important share of the target states of Brazil's energy statecraft – faces the obstacle of inadequate human infrastructure and governance needed to absorb this technical knowhow. Additionally, Brazil's recent discovery of mammoth offshore oil and gas reserves has dampened the country's enthusiasm for biofuels, somewhat changing its energy policy priority towards being a major oil exporter rather than flaunting its international credentials as a 'green energy power' – a shift that has been more pronounced since Lula's successor, President Dilma Rousseff, took office in 2011. This thesis concludes that Brazil's energy statecraft was potentially effective only as long as the international context made it possible, citing David Baldwin in suggesting that the probability of success of an energy statecraft initiative – be it through the use of oil, natural gas or biofuels – is 'a function of the situation and not a quality intrinsic to the particular technique'²⁰ of foreign policy.

²⁰ Baldwin, *Op cit.*, p. 123.

CHAPTER 2

Economic Statecraft: A Theoretical Framework for Energy Statecraft

Statecraft

A term originating in northern Europe to describe the ‘science of government’,²¹ *statecraft* has come to mean the art of conducting state affairs, both domestic and international. Its use by scholars of domestic politics, however, has largely been relinquished, making it a term predominantly employed by International Relations academics. Its precise definition varies slightly according to the author, but for the purposes of this study David Baldwin’s definition is fitting:

Among students of foreign policy and international politics [statecraft] is sometimes used to encompass the whole foreign-policy-making process, but more often it refers to the selection of means for the pursuit of foreign policy goals. Thus, for Harold and Margaret Sprout “statecraft embraces all the activities by which statesmen strive to protect cherished values and to attain desired objectives vis-à-vis other nations and/or international organizations.” Similarly, K. J. Holsti defines “statecraft as the organized actions governments take to change the external environment in general or the policies and actions of other states in particular to achieve the objectives that have been set by policy makers.” Insofar as such definitions depict statecraft as governmental influence attempts directed at other actors in the international system, they correspond to the conception of statecraft employed here. ... To study statecraft...is to consider the instruments used by policy makers in their attempts to exercise power, i.e., to get others to do what they would otherwise not do.²²

In the literature on statecraft, foreign policy instruments are often interchangeably referred to as means, tools, techniques, levers, policy options and other synonyms.²³

Although never having written those exact words, the phrase Machiavelli is most famous for – ‘the end justifies the means’²⁴ – suggests that the choice of political goals precedes the choice of which instrument(s) best to pursue them with. As Brighi and Hill explain, a successful foreign policy implementation ‘depends...on the crucial relation between ends and means. No matter how powerful or big a state is, the pursuit of foreign policy aims is contingent on the ever-important choice of the

²¹ Ping, J.H., *Middle Power Statecraft: Indonesia, Malaysia and the Asia Pacific*, (Aldershot: Ashgate, 2005), p. 14.

²² Baldwin, D.A., *Economic Statecraft*, (Princeton, NJ: Princeton University Press, 1985), pp. 8-9.

²³ Ping, *Op cit.*, p. 18. See also Baldwin, *Op cit.*, p. 12.

²⁴ Variations on this phrase date back at least to Ancient Greece, such as Sophocles’ play *Electra* (c. 409 B.C.), which includes the line ‘The end excuses any evil’, a thought later represented in the Roman poet Ovid’s *Heroides* ii. 85 (c. 10 B.C.) as ‘*exitus acta probat*’ or ‘The result justifies the deed’.

appropriate means.’²⁵ The relationship between ends and means in foreign policy, however, is not simple. The choice of the former need not necessarily precede the choice of the latter; in fact, it is often the available means that determine what ends are possible to pursue, not to mention that an action can be seen either as means or an end depending on the situation. As Baldwin makes clear, the fact that few goals are final, but intermediate or even instrumental towards further goals, complicates any means-ends analysis: ‘Noting this difficulty, inherent in all means-ends analysis, scholars sometimes describe the distinction between instruments and objectives as “no more than a convenient analytical device.” For those interested in the effectiveness, efficiency, utility, or rationality of a given policy or technique of statecraft, however, the distinction is more than a “convenient analytical device”; it is a necessity.’²⁶

A further problem in analysing ends and means, alluded to above, is similar to the ancient ‘chicken and egg’ conundrum: which comes first, the goal or the instrument? Assertions such as ‘means determine the ends far more often than ends determine means’²⁷ are symptomatic of what has been called the ‘law of the instrument’ in social science, a concept which Charles Hermann has applied to foreign policy behaviour:

Kaplan has suggested the “law of the instrument” which is well remembered as a result of his characterization of the law through an analogy: “Give a small boy a hammer, and he will find that everything he encounters needs pounding”. Does a similar phenomenon exist in the conduct of foreign policy? Governments that invest heavily in the development and maintenance of a certain set of skills and resources will tend to apply them widely—perhaps excessively. Wilkinson seems to suggest exactly such an effect with respect to the instruments of foreign policy. He observes that states “whose military means are notably better than their non-military capabilities are subject to a strong pressure to militarize their foreign policies”.²⁸

Therefore, in order to understand foreign policy behaviour, careful attention must be paid to the instruments available to policy-makers, while acknowledging that these means are likely to affect the nature of policy and its goals. As Brighi and Hill remind us, ‘[a]ny understanding of how states approach the problem of deciding on the best

²⁵ Brighi, E. & Hill, C., ‘Implementation and behaviour’, in Smith, S., A. Hadfield & T. Dunne (eds.), *Foreign Policy: Theories, Actors, Cases*, (Oxford: Oxford University Press, 2008), p. 128.

²⁶ Baldwin, *Op cit.*, p. 16.

²⁷ From the Summer 2004 final examination for the ‘IR 300 – Foreign Policy Analysis’ course at the London School of Economics and Political Science.

²⁸ Hermann, C.F., ‘Instruments of Foreign Policy’, in Callahan, P., L.P. Brady & M.G Hermann (eds.), *Describing Foreign Policy Behavior*, (Beverly Hills, CA: Sage, 1982), p. 156.

means of implementing their foreign policy must remember two dicta: firstly, instruments are themselves dependent on underlying capabilities, which are in turn a function of the resources at the disposal of the society in question; secondly, decision makers do not choose instruments as the surgeon selects the scalpel—rather, the nature of the available instruments tends to shape their policy choices in the first place.²⁹

Resources are what Pierre Renouvin and Jean-Baptiste Duroselle of the French school of IR called the ‘basic forces’ of foreign policy: the building blocks derived from a country’s geography and history that determine a state’s foreign policy choices. These include a country’s geographical position, natural resources, climate, population and level of development. Assuming the expansion or loss of territory is discounted, these elements take generations to change significantly and are thus inherited by governments. Though resources are enormously important, there is no automatic correlation between their possession and the ability to exert influence, as they are not operational levers of foreign policy by themselves. In order to pursue an effective foreign policy, resources need to be operationalised into capabilities before they can be translated into a variety of specific instruments at the disposal of policy-makers to be applied in practical politics.

Capabilities are ‘the recognizable elements of a modern government’s responsibilities for which separate departments might exist and where decisions may hope to have an effect, at least in the medium term.’³⁰ These include the armed forces, the quality of the civil service, industrial and technological capacity, levels of education, agricultural productivity, reputation and prestige, patterns of trade and diplomatic representation, GDP and the general strength of a country’s economy, etc. *Instruments* of foreign policy, in turn, are the forms of pressure and influence available to decision makers that amount to what Don Puchala called ‘externally projectable power’.³¹ They comprise ‘the inventory of means or capabilities used by a government or other foreign policy actor in the formation and implementation of its foreign policies.’³²

²⁹ Brighi & Hill, *Op cit.*, p. 130.

³⁰ Hill, C., *The Changing Politics of Foreign Policy*, (Basingstoke: Palgrave Macmillan, 2002), p. 136.

³¹ *Ibid.*, p. 138. For a pyramidal model illustrating the interrelationships between the resources, capabilities and instruments of foreign policy, see *Figure 6.2* on p. 137 of Christopher Hill’s *The Changing Politics of Foreign Policy*.

³² Hermann, *Op cit.*, p. 154.

From an analytic point of view, according to Hermann, ‘instruments offer a way of classifying various foreign policy activities according to the devices and procedures employed in the pursuit of some substantive issue or problem.’³³ Whereas Hermann goes as far as offering an eightfold categorisation of foreign policy instruments – diplomacy, domestic politics, military, intelligence, economics, science/technology, promotion, and natural resources³⁴ – while acknowledging the possibility of significant overlap between some of these, most scholars place the main instruments of foreign policy into four broad categories that represent ‘an ascending scale of seriousness in terms of commitment of resources, the impact on third parties, and the according degree of risk in use... akin to the spectrum of soft to hard power’ discussed below:³⁵ cultural/ideological or information/propaganda (words/ideas); political/diplomacy (deals/negotiation); economic (money/goods); and military force (weapons/violence). While coercive strategies (hard power) draw on policy options from the last three categories, persuasive strategies (soft power) can use all four.

Hard and Soft Power

According to Christopher Hill, there are three different dimensions of power: power as an end; power as a means; and power as a context.³⁶ ‘Power *as an end in itself* represents a popular view of politicians and their motives. Actors are seen as out to maximize their own personal power, for the psychological satisfaction involved in controlling others, and for the glory, money and opportunities that come with it. When acting on behalf of states they blur, in this view, the distinction between their own aggrandizement and that of the state and come to identify the fate of the latter with themselves.’ Power *as a means* ‘explicitly deals with the question of power as the means to further ends derived from other values.’ Power *as a context* suggests that ‘foreign policy actors operate in an environment where they cannot sensibly *disregard* power.... Practitioners quite commonly, and disastrously, overlook the external “realities”, by which is meant simply those factors outside the control of the actors in question.’ The context of power is a complex subject in its own right, and will therefore be covered separately in Chapter 4. For now, however, ‘while individual cases of power-worship can erupt unpredictably, for most of the time states are in the

³³ *Ibid.*

³⁴ *Ibid.*, p. 156.

³⁵ Brighi & Hill, *Op cit.*, p. 131.

³⁶ Hill, *Op cit.*, pp. 129-134.

hands of those who, however ruthless, are essentially concerned with power for what it can do to bring them closer to objectives with a much wider reach.³⁷ Therefore the present chapter will focus on *power as a means*.

At the most basic level, *power* means the ability to achieve one's purposes or goals; in other words, to get the outcomes one wants.³⁸ Robert Dahl has defined power as the ability to get others to do what they otherwise would not do. But as Joseph Nye points out, 'when we measure our power in terms of the changed behaviour of others, we have to know their preferences. Otherwise, we may be mistaken about our power. ... Knowing in advance how other people or nations would behave in the absence of our efforts is often difficult.'³⁹ Baldwin also raises this issue, but takes it one step further by advocating the use of counterfactual analysis in assessing the utility of different instruments of foreign policy:

*Power analysis always requires consideration of counterfactual conditions. If power relations involve some people getting other people to do something they would not otherwise do, the question of what would otherwise have been done cannot be ignored. ... Nothing very significant can be said about the utility of...techniques of statecraft without addressing the question of what would have happened if they had not been used or if some other technique had been used. Such discussions may amount to little more than "educated guesses," but this is preferable to ignoring the problem.*⁴⁰

Because the ability to control others is often related to the possession of certain resources, a second definition of power is commonly used, which 'simply define[s] it as the possession of capabilities or resources that can influence outcomes. Consequently...a country [is considered] powerful if it has a relatively large population and territory, extensive natural resources, economic strength, military force, and social stability. The virtue of this second definition is that it makes power appear more concrete, measurable, and predictable. But this definition also has problems. When people define power as synonymous with the resources that produce it, they sometimes encounter the paradox that those best endowed with power do not always get the outcomes they want.'⁴¹

³⁷ *Ibid.*, p. 130.

³⁸ Nye, J.S.: *Bound to Lead: The Changing Nature of American Power*, (Basic Books, 1991), pp. 25-26; *Soft Power: The Means to Success in World Politics*, (New York: NY: Public Affairs, 2004), pp. 1-2; *The Powers to Lead: Soft, Hard and Smart*, (Oxford University Press, 2008), p. 27.

³⁹ Nye, *Bound to Lead*, p. 26.

⁴⁰ Baldwin, *Op cit.*, p. 22. Original emphasis.

⁴¹ Nye, *Soft Power*, p. 3. See also *Bound to Lead*, p. 26, and *The Powers to Lead*, p. 28.

Power conversion, writes Nye, ‘is a basic problem that arises when we think of power in terms of resources. Some countries are better than others at converting their resources into effective influence.... Power conversion is the capacity to convert potential power, as measured by resources, to realized power, as measured by the behavior of others. Thus, one has to know about a country’s skill at power conversion as well as its possession of power resources to predict outcomes correctly.’⁴² For Nye, skillful leadership and well-designed strategies are necessary to transform resources into influence, or realised power in terms of attaining desired outcomes.⁴³ Ned Lebow concurs that power is difficult to operationalise, citing Hans Morgenthau’s recognition of this, in contrast to mainstream realists and liberals:

Morgenthau, to his credit, recognizes that there is no absolute measure of state power because it is always relative and situation-specific. He acknowledges that the strategies and tactics that leaders used to transform the potential attributes of power into influence are just as important as the attributes themselves.

The fundamental problem – most pronounced in Waltz, but evident in other realists and many liberals as well – is the tendency to equate material capabilities with power, and power with influence. ... [M]aterial capabilities are only one component of power, and that power is only one basis of influence. ... This is an anomaly for most realist and liberal understandings of power, but not for a theory...that disaggregates influence from power...⁴⁴

Therefore, as Nye clarifies, ‘proof of power lies not in resources but in the changed behavior of nations.’⁴⁵

There are, of course, several different ways of affecting the behaviour of others. For Nye, these fall under three broad techniques: coercion through threats (‘sticks’); inducement through payment (‘carrots’); and attraction through cooptation. The first two are ways to change what other states do, which might be called the commanding method of exercising power. The latter works indirectly by getting others to *want* what you want, and might be called the cooptive method of exercising power, which contrasts with active command power that makes others *do* what you want. In Nye’s terminology, the resources associated with latter ‘can be thought of as *soft* power, in contrast to the *hard* command power associated with tangible resources

⁴² Nye, *Bound to Lead*, p. 27.

⁴³ Nye, *Soft Power*, p. 3.

⁴⁴ Lebow, R.N., *A Cultural Theory of International Relations*, (Cambridge: Cambridge University Press, 2008), p. 557.

⁴⁵ Nye, *Bound to Lead*, pp. 174-175.

like military and economic strength.⁴⁶ Thus, command and cooptive power refer to power as an abstract concept in the form of a continuum from the former at one end to the latter at the other, whereas hard and soft power generally represent the types of resources and capabilities associated with command and cooptive power, but more specifically denote the manner in which instruments are implemented.

Hard and soft power are related because they are both aspects of the ability to achieve one's purpose by affecting the behavior of others. The distinction between them is one of degree, both in the nature of the behavior and in the tangibility of the resources. Command power—the ability to change what others do—can rest on coercion or inducement. Co-optive power—the ability to shape what others want—can rest on the attractiveness of one's culture and values or the ability to manipulate the agenda of political choices in a manner that makes others fail to express some preferences because they seem to be too unrealistic. The types of behavior between command and co-option range along a spectrum from coercion to economic inducement to agenda setting to pure attraction. Soft-power resources tend to be associated with the co-optive end of the spectrum, whereas hard-power resources are usually associated with command behavior. But the relationship is imperfect. For example, sometimes countries may be attracted to others with command power by myths of invincibility, and command power may sometimes be used to establish institutions that later become regarded as legitimate. A strong economy not only provides resources for sanctions and payments, but can also be a source of attractiveness. On the whole, however, the general association between the types of behavior and certain resources is strong enough to allow us to employ the useful shorthand reference to hard- and soft-power resources.⁴⁷

<i>Table 1: Hard/Soft Power</i> ⁴⁸	Hard		Soft	
Spectrum of Behaviors	coercion	inducement	agenda setting	attraction
	Command ← —*————*————		————*————	*————→ Co-opt
Most Likely Resources	force sanctions	payments bribes	institutions	values culture policies

It goes without saying that coercion is a form of hard power; indeed, the very term, *hard* power, seems to suggest it. But why should inducements fall under that side of the power continuum? As Richard Sennett explains, ‘the act of giving needn’t in itself carry the positive charge of a cooperative act. Giving to others can be a way of manipulating them,’ which falls under the category of largesse: ‘The two sides of largesse embody two extremes in the act which is at the heart of any welfare system:

⁴⁶ *Ibid.*, pp. 31-32. Emphases added.

⁴⁷ Nye, *Soft Power*, pp. 7-8. See also Nye: *Bound to Lead*, Chapter 1 endnote 11, p. 267; *The Powers to Lead*, pp. 30 & 39.

⁴⁸ Nye, *Soft Power*, p. 8.

making a gift. At the one extreme is a gift freely given, at the other is a manipulative gift. The first embodies that aspect of character focused on the sheer fact that others lack something, that they are in need; the other act of giving uses it only as a means to gain power over them'.⁴⁹ Similarly, Baldwin cites Klaus Knorr in stating that 'there is a "clear difference in principle" between compliance that is "bought" and that which is "freely given." This distinction leads him to describe "aid given for some advantage to be received by the donor" as a "pseudogift".' Thus, for Baldwin, 'aid that is completely unilateral cannot be an instrument of statecraft at all, since the statecraft perspective implies that aid is a means to an end.'⁵⁰ However, Baldwin resorts to social exchange theory to explain how even a gift that is allegedly freely given is not without conditions:

In common parlance, gifts are freely given with no expectation of anything in return. It is considered bad taste to insist on a quid pro quo for what is supposed to be a gift. ... Common parlance is quite misleading with respect to gifts since social deception is deeply embedded in the social process of giving and receiving gifts. Marcel Mauss identifies a set of social phenomena "which are in theory voluntary, disinterested and spontaneous; but are in fact obligatory and interested." ... Thus, while people *pretend* not to expect a quid pro quo in return for a gift, they actually do expect gifts to be reciprocated and are likely to inflict social disapprobation on those who fail to reciprocate. Gift giving generates an obligation to reciprocate regardless of whether any specific quid pro quo is agreed upon at the time the gift is given. Indeed, the giver is likely to—nay, is expected to—deny, explicitly or implicitly, that any quid pro quo is expected. This, however, is a social lie and is tacitly understood to be such by both giver and receiver.⁵¹

Moreover, as Nye states, even though the economic part of hard power resting on inducements may not seem coercive, threats and inducements are closely related because coercion is a matter of degree: 'Inducements, rewards, and bonuses are more pleasant to receive than threats, but the hint of their removal can constitute an effective threat. ... Some inducements (and the threat of their removal) may be more enabling and others more coercive' in the eyes of those who receive them.⁵²

Soft power, on the other hand, should not be discounted as 'just a question of image, public relations, and ephemeral popularity. ... [I]t is a form of power—a

⁴⁹ Sennett, R., *Respect: The Formation of Character in a World of Inequality*, (London: Allen Lane, 2003), pp. 136-138.

⁵⁰ Knorr, K., *The Power of Nations: The Political Economy of International Relations*, (New York, NY: Basic Books, 1975), pp. 172-175. Cited in Baldwin, *Op cit.*, pp. 292-293.

⁵¹ *Ibid.*, pp. 293-294. Original emphasis.

⁵² Nye, *The Powers to Lead*, pp. 39, 141-142.

means of obtaining desired outcomes.⁵³ Soft power is ‘the ability to get what you want through attraction rather than coercion or payments. ... A country may obtain the outcomes it wants in world politics because other countries—admiring its values, *emulating its example*, aspiring to its level of prosperity and openness—want to follow it. In this sense, it is also important to set the agenda and attract others in world politics, and not only to force them to change by threatening military force or economic sanctions. ... Soft power rests on the ability to shape the preferences of others.’⁵⁴ As Nye clarifies, however, the ability to shape preferences should not be confused with influence:

Soft power is not merely the same as influence, though it is one source of influence. After all, influence can also rest on the hard power of threats or payments. Nor is soft power just persuasion or the ability to move people by argument, though that is an important part of it. It is also the ability to entice and attract. Attraction often leads to acquiescence. In behavioral terms, soft power is attractive power. In terms of resources, soft power resources are the assets—tangible and intangible—that produce such attractions.⁵⁵

Soft power uses different resources to bring about cooperation or acquiescence from other actors than does hard power, which rests on coercion and payments. These resources are generally ‘slower, more diffuse and more cumbersome to wield than hard-power resources’ and ‘often work indirectly by shaping the environment for policy, and sometimes take years to produce the desired outcomes.’⁵⁶ Hill goes further in stating that while hard power tends to focus on the target itself, soft power primarily seeks to change the target’s environment, but argues that the use of such ‘slow-acting, opinion-shaping instruments can still be a form of coercion, albeit barely understood by the target.’⁵⁷ Nye counters this by arguing that while soft power may indeed feel threatening and manipulative, ‘it still leaves open a wider range of choices in the target’s response. Soft power instruments are not all equal in this regard. They differ in the degree of rational appeal and respect for followers’ autonomy.’⁵⁸

⁵³ Nye, *Soft Power*, p. 129.

⁵⁴ *Ibid.*, pp. x, 5. Emphasis added.

⁵⁵ Nye, *The Powers to Lead*, p. 31. See also *Soft Power*, p. 7.

⁵⁶ Nye, *Soft Power*, pp. 99-100.

⁵⁷ Hill, *Op cit.*, p. 135.

⁵⁸ Nye, *The Powers to Lead*, p. 142.

For Nye, a country's soft power derives mainly from three sources: its culture, its values and its foreign policy.⁵⁹ The first two are clearly outside a government's control, but the last one is by definition a government's responsibility. This work will therefore focus on the latter source of soft power – indeed, in Nye's words, a government's 'foreign policies strongly affect soft power', which in turn 'can attract or repel others by the influence of their example.'⁶⁰ Foreign policies that are perceived to have moral authority and are legitimate in terms of the shared values they represent, along with 'the justness and duty of contributing to the achievement of those values', will produce 'an intangible attraction that persuades [others] to go along with [one's] purposes without any explicit threat or exchange taking place.'⁶¹ Soft power therefore depends on how these objectives are framed: 'Policies based on broadly inclusive and far-sighted definitions of the national interest are easier to make attractive to others than policies that take a narrow and myopic perspective.'⁶² This is a point Lebow concurs with, adding that such policies are also likely to cost less:

It is easier to elicit support for policies that reflect shared norms because it is possible to persuade other actors that they are in the common interest. Policies contrary to accepted values and practices must rely on coercion or bribes, or a combination of the two, and are correspondingly more costly in resources. Cooperation [achieved] on this basis lasts only so long as the dominant state retains the power to punish and reward.⁶³

When a country can entice others to want what it wants, on the other hand, it does not need to spend as much on sticks and carrots to change their behaviour towards its own preferences. 'Seduction is always more effective than coercion,'⁶⁴ according to Nye. He warns, however, that whether 'attraction in turn produces desired policy outcomes has to be judged in particular cases. Attraction does not always determine others' preferences, but this gap between power measured as resources and power judged as the outcomes of behavior is not unique to soft power. It occurs with all forms of power.'⁶⁵

⁵⁹ Nye, *Soft Power*, pp. x, 6, 11, 14.

⁶⁰ *Ibid.*, pp. 13-14.

⁶¹ *Ibid.*, pp. 6-7.

⁶² *Ibid.*, p. 61.

⁶³ Lebow, *Op cit.*, p. 495.

⁶⁴ Nye, *Soft Power*, p. x.

⁶⁵ *Ibid.*, p. 6.

Economic Statecraft

In *War and Change in World Politics*, Robert Gilpin predicts a long-term trend in international relations towards the increased relevance of economics as a result of ‘the expansion of a highly interdependent world market economy’ and argues that this has ‘enhanced the role of economic power as an instrument of statecraft.’⁶⁶ This assertion inevitably calls attention to the need for further academic work on economic instruments of foreign policy. In its simplest form, economic statecraft is to study economics as an instrument of politics.⁶⁷

Baldwin defines economic statecraft as “all of the economic means by which foreign policy actors might try to influence other international actors”. To influence someone, he points out, is to induce someone to do something that they would not otherwise have done. Like most other forms of influence, economic statecraft will take effect by affecting attitudes, expectations or beliefs. It is of necessity a means of sending messages. It may impose or threaten to impose costs on the target nation, and such costs may be an important part of the message; but it may transmit a message effectively without necessarily imposing a cost.⁶⁸

Although economic policy instruments may be used to pursue economic ends, Baldwin illustrates that their use is not confined to such aims through an analogy with Carl von Clausewitz’s famous dictum that war is a continuation of policy by other means: ‘Clausewitz argues that what is peculiar about war “is simply the peculiar nature of its means.” Likewise, the distinguishing characteristic of economic statecraft lies not in its goals but rather in the peculiar nature of its means.’⁶⁹ Thus, more specifically, economic statecraft signifies an international actor’s use of *economic* instruments and relationships (or means) in the pursuit of *political* goals (ends) in foreign policy.⁷⁰

Economic statecraft is analytically distinct from other similarly-named concepts – such as foreign economic policy, international economic policy, economic diplomacy, economic leverage, economic sanctions, economic warfare or economic coercion – in that these ‘are usually defined in terms of actual or intended effects of a

⁶⁶ Gilpin, R., *War and Change in World Politics*, (Cambridge: Cambridge University Press, 1981), pp. 68-69, 218. Cited in Baldwin, *Op cit.*, p. 68.

⁶⁷ Baldwin, *Op cit.*, p. 3.

⁶⁸ Hanson, P., *Western Economic Statecraft in East-West Relations: Embargoes, Sanctions, Linkage, Economic Warfare, and Detente*, (London: Routledge & Kegan Paul, 1988), pp. 6-7.

⁶⁹ Baldwin, *Op cit.*, p. 65.

⁷⁰ Mastanduno, M., ‘Economic Statecraft’, in Smith, S., Hadfield, A. & Dunne, T. (eds.), *Foreign Policy: Theories, Actors, Cases*, (Oxford: Oxford University Press, 2008), p. 172.

policy or in terms of the process by which the policy was made.’⁷¹ As Hill notes, economic statecraft ‘refers to the extent to which an actor can pursue its goals through the use of economic instruments, even when the content of the goal is not centrally economic. It is not about foreign economic policy [and other concepts named above] in the service of economic goals, important as that is.’⁷² In comparison with some of the available alternative definitions above, Baldwin summarises several advantages to the concept of economic statecraft:

- “Economic statecraft” emphasizes means rather than ends. This usage is probably closer to ordinary language than definitions in terms of ends. ...
- “Economic statecraft” does not restrict the range of goals that may be sought by economic means. It makes it conceptually possible to describe the empirically undeniable fact that policy makers sometimes use economic means to pursue a wide variety of noneconomic ends. ...
- Unlike most alternative concepts, the definition of “economic statecraft” includes a definition of “economic” [i.e. “resources which have a reasonable semblance of a market price in terms of money”⁷³]. It thus provides criteria for distinguishing economic techniques of statecraft from noneconomic techniques.⁷⁴

However, as Philip Hanson critiques, an underlying problem remains with this approach: ‘The economic costs of sanctions, embargoes and economic warfare are measurable (however imperfect) for both sender and target nations, but the political costs and benefits are not. Net economic costs and net political benefits for the nation imposing the sanctions cannot be weighed against one another.’⁷⁵ The economic-political cost-benefit analysis of economic statecraft notwithstanding, Baldwin’s concept remains appropriate for the purposes of this study. ‘Given the starting point of linkage between politics and economics, between foreign policy and the pursuit of wealth,’ writes Hill, to study economic statecraft ‘means analysing the extent to which economic instruments are indeed at the disposal of the state’:⁷⁶ whether they are used positively as carrots, involving the use of economic relationships as incentives or rewards; negatively as sticks, involving the threat or use of sanctions or other forms of economic coercion or punishment;⁷⁷ or even as a form of soft power.

⁷¹ Baldwin, *Op cit.*, p. 33.

⁷² Hill, *Op cit.*, p. 148.

⁷³ Baldwin, *Op cit.*, pp. 13-14.

⁷⁴ *Ibid.*, pp. 39-40.

⁷⁵ Hanson, *Op cit.*, p. 18.

⁷⁶ Hill, *Op cit.*, p. 148.

⁷⁷ Mastanduno, *Op cit.*, p. 172.

The Literature

Much like the wider discipline of International Relations itself, the study of economic sanctions (more specifically, negative sanctions or economic coercion) began with optimism following the First World War, with high expectations that sanctions could deter future wars. However, the failure of sanctions to restrain military aggression and to achieve other important goals – most prominently such ‘classic cases’ as League of Nations sanctions against Italy, US sanctions against Cuba, UN sanctions against Rhodesia, NATO sanctions against the Communist bloc and Arab sanctions against Israel – led to a generalised scepticism concerning their use among post-Second World War IR scholars. Indeed, the overall impression derived from the literature, writes Baldwin, ‘is that economic statecraft is so obviously useless as to raise questions about the good judgment of any policy maker who gives serious consideration to such techniques’ of statecraft.⁷⁸ The publication of Baldwin’s *Economic Statecraft* in 1985, however, marks a turning point in the literature on economic means of interstate influence, and has ‘profoundly influenced how the current generation of scholars approaches the study of economic statecraft and sanctions.’⁷⁹

Baldwin reconceptualized the scholarly literature and argued that the use of economic sanctions—more generally economic statecraft—typically involved multiple objectives and targets, and that the assessment of success or failure could only be made convincingly by comparing the costs and benefits of economic statecraft to that of other forms of statecraft. Baldwin did not claim that economic sanctions were likely to succeed. His conceptual framework and reconsideration of classic cases, however, did suggest that the economic instrument was considerably more useful than scholars generally acknowledged.⁸⁰

For instance, as Michael Mastanduno states, ‘even if sanctions do not solve major foreign policy problems, a variety of economic instruments...may still be useful to governments in signalling intentions, complementing diplomacy, building a political consensus, or even paving the way for the use of military force.’⁸¹ Thus, Hanson considers Baldwin’s view of economic sanctions as being primarily a form of

⁷⁸ Baldwin, *Op cit.*, p. 115.

⁷⁹ Mastanduno, M., ‘Economic Statecraft, Interdependence, and National Security: Agendas for Research’, *Security Studies*, Vol. 9, No. 1, 1999, p. 291.

⁸⁰ *Ibid.*, p. 290.

⁸¹ Mastanduno, ‘Economic Statecraft’ (2008), p. 172.

signalling: ‘An effective signal can change the expectations of decision-makers in the target nation about the sender’s response to the original action that triggered the sanction. If it does so, this signalling may be more important on the whole than the costs directly imposed by the sanctions.’⁸²

Baldwin critiqued the bulk of existing literature for the short-sighted assumption that no political end can possibly be achieved unless the economic means is effective: ‘Some writers...argue that economic techniques of statecraft can succeed *only* through economic effects on the target. [Donald] Losman, for example,...views infliction of economic damage on the target country as a necessary but not sufficient condition for political success.’ Baldwin counters this argument by reminding us that economic sanctions ‘may have diplomatic, psychological, political, military, or other effects when their economic effect is nil. Ignoring this fact severely impairs one’s ability to evaluate the costs and effectiveness of economic sanctions as instruments of foreign policy.’ Indeed, he concludes ‘it seems unwise to rule out in advance the possibility that economic techniques may succeed because of their connection with noneconomic causal conditions.’⁸³ However, the drawback in Baldwin’s methodology, in Hanson’s words, is that ‘his multiple and unqualified success criteria make it hard ever to conclude that an economic sanctions episode is a clear failure. Perhaps that is as it should be in the unclear world of international relations.’⁸⁴

These shortcomings notwithstanding, Baldwin notes that the ‘two most salient characteristics of the literature on economic statecraft are scarcity’ – whose neglect he attributes partly to a tendency to focus on policy-making processes in detriment to policy techniques and outputs – ‘and the nearly universal tendency to denigrate the utility of such tools of foreign policy.’⁸⁵ Despite these limitations, Jean-Marc Blanchard and Norrin Ripsman have listed three broad schools of thought in the economic statecraft literature: realism, economic liberalism and conditionalist approaches.

Realist stances on economic statecraft are straightforward and largely responsible for the popular view that economic instruments are not useful tools of statecraft. For realists, political and strategic goals always take precedence over

⁸² Hanson, *Op cit.*, p. 18.

⁸³ Losman, D., *International Economic Sanctions: The Cases of Cuba, Israel, and Rhodesia* (Albuquerque, NM: University of New Mexico Press, 1979). Cited in Baldwin, *Op cit.*, pp. 63-64.

⁸⁴ Hanson, *Op cit.*, p. 14.

⁸⁵ Baldwin, *Op cit.*, pp. 51-52.

economic ones, so states are unlikely to relinquish important political goals because of economic considerations, leading to the conclusion that economic instruments almost never succeed in achieving foreign policy goals. Thus, according to realists, ‘economic statecraft—premised as it is on the exchange of political concessions for economic gains or the avoidance of economic losses—should usually fail, unless economic pressures are consonant with political ones or the sender’s political demands are inconsequential.’⁸⁶

Economic liberalism, on the other hand, draws almost opposite conclusions on economic statecraft than does realism, but has an equally straightforward logic. ‘Economic liberals expect policy success to correlate directly with the magnitude of economic incentives or punishments offered. ... By focusing on the magnitude of economic signals, liberals implicitly acknowledge that compliance with economic statecraft is not automatic, but is the product of a calculation of the costs and benefits of compliance versus the costs and benefits of defiance.’⁸⁷ However, since economic statecraft, as defined above, entails the use of economic means for the purposes of achieving political goals, concentrating exclusively on the economic effects of statecraft may not tell us much about their efficacy in reaching political objectives. Being an inherently political act due to the nature of its ends, the economic effect of statecraft by itself, even if extreme, is ‘unlikely to result in changes in behavior if the right political conditions are not present. ... Since economic sanctions are designed to influence target governments in large part by generating domestic political opposition to the proscribed policy, their political costs are more significant than their economic bite.’⁸⁸ As Robin Renwick puts it, ‘the idea of an automatic correlation between economic deprivation and the loss of the political will to resist it is, to say the least, questionable.’⁸⁹ The same is true of economic incentives.

As Blanchard and Ripsman note, however, much of the literature on economic statecraft ‘consists of a rather sterile debate about *whether* economic sanctions or incentives can achieve important foreign-policy objectives, with less attention to the more policy-relevant issue of *when* and *under what conditions* economic statecraft

⁸⁶ Blanchard, J.M. & Ripsman, N., ‘A Political Theory of Economic Statecraft’, *Foreign Policy Analysis*, Vol. 4, 2008, p. 374.

⁸⁷ *Ibid.*, pp. 373-374.

⁸⁸ Blanchard, J.M. & Ripsman, N., ‘Asking the Right Question: *When* Do Economic Sanctions Work Best?’, *Security Studies*, Vol. 9, No. 1, 1999, pp. 220-223.

⁸⁹ Cited in Blanchard & Ripsman, ‘Asking the Right Question’, p. 220.

can achieve these goals.’⁹⁰ Since economic statecraft succeeds more frequently than the realist perspective predicts, but fails more often than economic liberalism suggests, they conclude not only that these two schools of thought are ‘unsatisfying theoretically and unable to explain important, high profile cases’, but also that a conditional model of economic statecraft is needed to understand when such instruments of statecraft are likely to be effective. Indeed, for Blanchard and Ripsman, ‘conditionalist approaches represent a significant step forward for the study of economic statecraft by identifying the importance of intervening factors that influence how states view economic signals.’⁹¹

Conditionalist approaches stress that ‘the economic costs and benefits associated with economic statecraft are only likely to have an important impact on decision making under certain political conditions.’⁹² Within this broad school, scholars tend to focus on the international environment as a conditioning factor for economic statecraft, while a smaller number of studies concentrate on domestic conditions in the target state.

International conditionalists argue that the economic considerations brought on by economic statecraft are weighed against geopolitical interests like power, prestige and sovereignty, and list international political conditions necessary for effective economic statecraft such as ‘the sender and target states’ relative military power, the strength of international regimes, the sender’s strategic relationship with the target, and the international threat situation’,⁹³ to mention but a few. The international environment is complex in its own right and can include a myriad of conditions modifying the probabilities of success of economic statecraft depending on the context in which it takes place, and therefore warrants its own chapter in the present study (Chapter 4).

Meanwhile, domestic conditionalists focus on the internal circumstances in the target states as the key variable in an influence attempt through economic statecraft. As Mastanduno points out, ‘the study of economic statecraft *must* proceed not only with an appreciation of the domestic level of analysis but with a sophisticated understanding of it. Economic sanctions involve the exploitation of power asymmetries, but the effectiveness of sanctions, that is whether those asymmetries can

⁹⁰ Blanchard & Ripsman, ‘A Political Theory of Economic Statecraft’, p. 371. Original emphasis.

⁹¹ *Ibid.*, p. 376.

⁹² *Ibid.*, p. 375.

⁹³ *Ibid.*, pp. 375-376.

be exploited, depends vitally on how their effects are transmitted domestically. This is true of both positive and negative sanctions, although the mechanics of transmission are somewhat different.⁹⁴ Therefore, domestic conditionalists ‘view the success or failure of economic statecraft as a function of the extent to which economic pressure might harm vital domestic constituencies or to which economic inducements might enrich key powerbrokers.’⁹⁵ Most such studies tend to concentrate on the target state’s regime type, with their most common contention being that negative sanctions are less effective against authoritarian regimes while being more effective against democracies, whereas economic inducements are more likely to work best on authoritarian states. But in doing so, these studies neglect the complexity of any given target state’s internal political setting.

However, more recent domestic conditionalist studies, such as Blanchard and Ripsman’s, stress that focusing only on target states’ regime type is insufficient, since ‘similar regimes can vary along critical dimensions, including autonomy of the state from society and the policy instruments at its disposal.’ Instead, they separate domestic interest groups from the government, and propose a more detailed and sophisticated domestic condition in the form of a target state’s ability to buffer its government against disaffected groups – or what they call ‘stateness,’ which comprises three factors: ‘(1) *autonomy*, or a state’s ability to take decisions in the face of domestic political opposition; (2) *capacity*, or the state’s capability either to compensate or coerce those who stand to lose from defying the sender; and (3) *legitimacy*, or the ability of the state to rally disaffected domestic groups.’ They conclude that ‘when economic statecraft co-opts domestic interest groups, high stateness will interfere with an economic statecraft attempt by allowing leaders to ignore pressures to comply. Conversely, when economic statecraft resonates with the target government, rather than domestic interest groups, stateness can actually foster compliance by allowing the leadership to overcome domestic resistance to compliance.’⁹⁶ But even such ardent advocates of domestic conditions admit that in order to explain completely the dynamics of economic statecraft, ‘we must not only consider the internal dynamics of the target state, but also international political

⁹⁴ Mastanduno, ‘Economic Statecraft, Interdependence, and National Security’ (1999), p. 315. Original emphasis.

⁹⁵ Blanchard & Ripsman, ‘A Political Theory of Economic Statecraft’, p. 376.

⁹⁶ *Ibid.*, pp. 377, 372.

variables that can alter the political costs facing the regime.⁹⁷ In other words, even though conditionalist approaches to economic statecraft are preferable to, if not more accurate than, realist and liberal perspectives, both domestic as well as international conditions should be taken into account when analysing a state's attempt at economic statecraft on another.

In addition to being divided among different schools of thought, the economic statecraft literature is also separated by the types of techniques used by governments in their attempts to influence other states – mainly between negative and positive sanctions, the proverbial ‘sticks and carrots’, respectively. No matter what conclusions were reached – i.e. whether or not sanctions ‘work’, or under what conditions they might – up to the end of the Cold War, the literature focused almost exclusively on negative economic statecraft, or economic coercion. Indeed, as Mastanduno draws attention to, ‘[p]olitical scientists have traditionally devoted relatively little attention to positive economic statecraft. ... Economic sticks have commanded more attention than economic carrots.’⁹⁸ As Baldwin has suggested, perhaps this is because ‘researchers typically have tended to overestimate threats (negative sanctions) relative to promises (positive sanctions) in the study of international politics.’⁹⁹ Insofar as these studies compare negative sanctions to other alternative forms of statecraft, they tend to focus on economic versus military coercion,¹⁰⁰ rather than comparing negative and positive forms of economic statecraft. However, Mastanduno points out that ‘the more carefully we examine the historical record, the more cases—successes and failures—we are likely to find’, both of negative sanctions and of positive sanctions, which ‘political scientists have only begun to investigate.’¹⁰¹

Baldwin made an observation in 1971 regarding research on positive economic statecraft that remained accurate for the next two decades: ‘It is not that political scientists have said wrong things about the role of positive sanctions in power relations; it is just that they have said little.’¹⁰² However, the end of the Cold War, and the shift in focus away from primary (security) to secondary (economic) and

⁹⁷ *Ibid.*, p. 393.

⁹⁸ Mastanduno, ‘Economic Statecraft’ (2008), p. 182.

⁹⁹ Cited in Mastanduno, ‘Economic Statecraft, Interdependence, and National Security’ (1999), p. 305.

¹⁰⁰ *Ibid.*, p. 310.

¹⁰¹ *Ibid.*, pp. 305, 304.

¹⁰² Baldwin, D.A., ‘The Power of Positive Sanctions’, *World Politics*, Vol. 24, No. 1 (October 1971), p. 19, cited in Mastanduno, ‘Economic Statecraft, Interdependence, and National Security’ (1999), p. 301.

tertiary (human rights, environment, etc.) agenda topics in IR scholarship, led to a rediscovery of positive economic statecraft:

The end of the Cold War has brought a changed global situation and a revival of scholarly interest in positive economic statecraft. The major powers of the world are now economically interdependent, as they were during the late nineteenth century. An understanding of great power politics once again requires an understanding of economic relationships and of the links between economics and foreign policy. ... As economic relations take centre stage in foreign policy, the traditional lines between high politics and low politics become blurred. It is not surprising that scholars have begun to rediscover the agenda of positive economic statecraft. ... Since the end of the Cold War, economic engagement has proved to be a key foreign policy strategy in relations both among major powers and between stronger and weaker states.¹⁰³

The new research focusing on economic incentives that has emerged in the post-Cold War era, however, has been inclined to flaunt the successes of positive sanctions in carefully selected case studies, to some extent as a response to the predominance of the negative sanctions in the literature up to that point.¹⁰⁴ But as Mastanduno makes clear, ‘the positive use of economic incentives has considerable promise as an instrument of statecraft, and deserves more systematic attention from students of the subject.’¹⁰⁵

In terms of which schools of thought tend to write about positive economic statecraft, many are liberals. For instance, Randall Newnham argues that if an economic incentive is strong enough, it can be more effective in changing a target state’s behaviour than negative sanctions.¹⁰⁶ Meanwhile, there are few, if any, realists writing about economic incentives, which Blanchard and Ripsman attribute to a self-selection process: ‘The few authors who write about incentives implicitly begin with the assumption that they can be of significance. However, [Blanchard and Ripsman] interpret the dearth of attention paid to economic incentives as evidence of the widespread realist attitude that economic gains are unlikely to move states to alter their policies.’¹⁰⁷

¹⁰³ Mastanduno, ‘Economic Statecraft’ (2008), p. 183.

¹⁰⁴ Mastanduno, ‘Economic Statecraft, Interdependence, and National Security’ (1999), p. 310.

¹⁰⁵ Mastanduno, ‘Economic Statecraft’ (2008), p. 185.

¹⁰⁶ Newnham, R., *Deutsche Mark Diplomacy: Positive Economic Sanctions in German-Russian Relations*, (University Park, PA: Pennsylvania State University Press, 2002), cited in Blanchard & Ripsman, ‘A Political Theory of Economic Statecraft’, p. 374.

¹⁰⁷ Blanchard & Ripsman, ‘A Political Theory of Economic Statecraft’, p. 375.

According to Blanchard and Ripsman, the economic statecraft literature suffers from a crucial weakness: namely that it treats negative and positive sanctions as analytically distinct from one another, ‘despite Baldwin’s observation that various forms of economic statecraft follow a similar logic and Hirschman’s assertion that economic incentives influence states because of the possibility they create for future economic sanctions’.¹⁰⁸ Yet the connection between negative and positive sanctions is ‘relatively unexplored territory’ in International Relations. ‘Now that positive measures have been rediscovered,’ writes Mastanduno, the next step will be to study their effectiveness more systematically, both on their own, and in relation to the more familiar forms of economic sanctions.’¹⁰⁹

Basic Types of Economic Statecraft: Negative, Positive, and Short- versus Long-Term
When policy makers talk about ‘economic sanctions’, more often than not they are referring to negative sanctions – in other words, the sticks (rather than carrots) of economic statecraft – which include the boycott of imports, embargoes on exports, restrictions on private business and travel, and the imposition of price rises through punitive duties.¹¹⁰ Moreover, as Hill reminds us, ‘[i]t is important to distinguish between sanctions as an instrument of collective security, used by the League of Nations and the United Nations (where they have almost always proved a failure) and sanctions as an instrument of foreign policy, where they have been a qualified success in a number of cases despite the smaller number of enforcing states.’¹¹¹ The present study concerns itself exclusively with the latter. Nevertheless, it is also necessary to discuss the source of power behind the use of negative sanctions, rather than merely listing different instruments in which they might be manifested.

In a pioneering work on economic instruments of foreign policy, *National Power and the Structure of Foreign Trade* (1945), Albert Hirschman states that ‘the power to interrupt commercial or financial relations with any country, considered as an attribute of national sovereignty, is the root cause of the influence or power position which a country acquires in other countries’.¹¹²

¹⁰⁸ *Ibid.*, p. 371.

¹⁰⁹ Mastanduno, ‘Economic Statecraft’ (2008), p. 184.

¹¹⁰ Hill, *Op cit.*, p. 149.

¹¹¹ *Ibid.*, endnote 52 to Chapter 6, pp. 336-337.

¹¹² Hirschman, A.O., *National Power and the Structure of Foreign Trade*, (Berkeley, CA: University of California Press, 1945 [1980]), p. 16.

He calls the “two main effects” of foreign trade on “the power position of a country” the “supply effect” and the “influence effect”. “The first effect is certain to be positive: By providing a more plentiful supply of goods or by replacing goods wanted less by goods wanted more (from the power standpoint), foreign trade enhances the potential military force of a country”. Hirschman, however, regards the implications of the supply effect as “obvious” and hardly in need of “further elaboration”; therefore, he devotes the bulk of his attention to the more theoretically interesting and less well understood influence effect. Whereas the first effect derives from the would-be power wielder’s “gain from trade,” the second effect derives from the ability to deprive one’s trading partners of *their* gains from trade by exercising the right of every sovereign state to interrupt its own export and import trade. Hirschman views the influence effect as more important than the supply effect and asserts “that economic pressure upon a country consists mainly of the threat of severance and ultimately of actual interruption of external economic relations with that country.”¹¹³

In Hirschman’s own words, “[t]he stoppage of this trade obliges the other countries to find alternative markets and sources of supply and, should this prove impossible, it forces upon them economic adjustments and lasting impoverishment. True, the stoppage of trade will also do harm to the economy of the country taking the initiative in bringing about the stoppage, but this is not unlike the harm an aggressive country can do to itself in making war on another. A country trying to make the most out of its strategic position with respect to its own trade will try precisely to create conditions which will make the interruption of trade of much graver concern to its trading partners than to itself.”¹¹⁴ Abdelal and Kirshner recall how Hirschman demonstrates that asymmetric economic relations between states afford more power to the larger state involved in the relationship: ‘If large country A trades with small country B, commerce between them might account for only two or three percent of country A’s exports and imports, but might well represent over half of country B’s. Such a relationship gives the larger country coercive power over the smaller, because an interruption of the relationship would cause much greater distress in B than in A. Threats of interruptions, then, both explicit and implicit, give A power.’¹¹⁵ In other words, the power accrued by country A over country B is a form of hard power, and the threat of, if not an actual, trade interruption lies at the extreme end of the hard-soft

¹¹³ Baldwin, *Economic Statecraft*, pp. 210-211. Original emphasis.

¹¹⁴ Hirschman, *Op cit.*, pp. 15-16.

¹¹⁵ Abdelal, R. & Kirshner, J., ‘Strategy, Economic Relations, and the Definition of National Interests’, *Security Studies*, Vol. 9, No. 1, (Autumn 1999), p. 120.

power scale as an act of (economic) coercion, usually implemented as sanctions, as illustrated in Table 1 above.

The conception of power in Hirschman's book is cast primarily in terms of negative sanctions, but it is important to recall that economic statecraft can also be positive – used as a carrot, rather than a stick. Although Baldwin claims that 'Hirschman neither considers nor allows for the possibility that country A may want to enhance the supply effect in country B as a direct means of influence',¹¹⁶ a closer inspection of Hirschman's book reveals that he does, in fact, briefly consider this possibility: 'country A, seeking to increase its influence in country B, might have an interest in altering the terms of trade in B's favor. Here, then, it would seem, we have an ideal instance of the opposition between a policy trying to maximize national income and a policy setting out to maximize national power.'¹¹⁷ As Abdelal and Kirshner summarise, Hirschman illustrates how influence can be exercised indirectly by engaging in trade with another country, even without the threat of severing economic relations, although Hirschman dedicates much less attention to this dynamic than he does to his more fully and systematically developed argument on economic coercion:

Simply put, *National Power [and the Structure of Foreign Trade]* shows that the pattern of international economic relations affects domestic politics, which in turn shapes national interests. This is always true but is most vivid in asymmetric relations, where the effects are typically large, visible, and almost wholly found within the smaller economy. Consider, for example, a free trade agreement between a large and a small state. The likely result is a change in the smaller state's perception of its own interest: it will converge toward that of the larger. Why? Because the simple act of participation in the arrangement strengthens those who benefit from it relative to those who do not (by definition). This strength should translate into political power. Further, because firms and sectors engage in patterns of activity based on economic incentives, and since this constellation of incentives will be transformed by the trade agreement, the subsequent reshuffling of behavior will lead to new interests and the formation of political coalitions to advance those interests. Most importantly, decisions based on these new incentives give firms a stake in their country's continued participation [in the trade agreement], and they will direct their political energies to that end. In Hirschman's words, "...these regions or industries will exert a powerful influence in favor of a 'friendly' attitude toward the state to the imports of which they owe their interests." Finally, the central

¹¹⁶ Baldwin, *Economic Statecraft*, p. 213.

¹¹⁷ Hirschman, *Op cit.*, p. 20.

government can find its own interests reshaped, above and beyond that which results from domestic political pressures.¹¹⁸

Abdelal and Kirshner rightly find it important to distinguish between two different components, or sources, of Hirschman's influence effects: 'Hirschman considers "influence effects" to include both power that accrues to one state from asymmetric costs of exit *and* changes in domestic politics that result from international economic relations. [Abdelal and Kirshner] call the former "coercion" and the latter "influence." In other words, coercion refers to changes in policy, influence refers to changes in definition of interest.'¹¹⁹ This distinction is important because it relates to Nye's hard and soft power dichotomy explained above, as Abdelal and Kirshner also acknowledge, while advocating the superior effectiveness of the latter: 'Hirschmanesque effects are more profoundly felt with regard to influence than coercion. ... [C]hanges in international political behavior do not occur because of pressure, but because new incentives alter perceptions of interest. This is akin to what Joseph S. Nye has called "soft power." Rather than forcing others to do what you want them to do, soft power, or influence, is about "getting others to want what you want."¹²⁰ Thus, Hirschman's influence effects have the potential to be manifested as both hard and soft power, depending on how they are employed, either as trade severance or altered interest perception.

Meanwhile, Mastanduno focuses more on the deliberate use of positive sanctions than on influence as a nuanced side effect of trade. He defines positive economic statecraft as 'the provision or promise of economic benefits to induce changes in the behaviour of a target state.'¹²¹ Furthermore, he argues that positive economic statecraft can bring about the same results as the use of their negative counterparts: 'Just as trade denial can be used to change behaviour, weaken capabilities, or induce regime change, so trade promotion—the promise or actuality of expanded trade—can be a means to influence a government's domestic or foreign policies or to strengthen its capabilities. Governments can promise to increase aid,

¹¹⁸ Abdelal & Kirshner, *Op cit.*, pp. 120-121.

¹¹⁹ *Ibid.*, footnote 5, p. 120. Original emphasis.

¹²⁰ *Ibid.*, p. 121.

¹²¹ Mastanduno, 'Economic Statecraft' (2008), p. 182; and Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 303.

encourage foreign investment, or support a country's currency in exchange for desirable changes in that country's behaviour.'¹²²

Mastanduno then goes on to argue that there are several reasons why positive economic statecraft might be more effective in achieving foreign policy goals than their negative counterparts, which bear repeating here:

Threats tend to inspire resistance and resentment in the target government; a typical response to the promise of rewards is hope and expectation. Negative sanctions often produce the 'rally around the flag' effect. Positive sanctions do not, and have the potential to undermine the target government by creating transnational coalitions between groups in the sanctioning and target countries at the societal [and business] level. Positive sanctions have a tendency to encourage the target government to cooperate with the sanctioning government on other issues; negative sanctions create a general reluctance to cooperate. With negative sanctions, multilateral cooperation is a necessity and there are strong incentives for third parties to break the embargo in order to gain above-normal profits. Positive sanctions do not require multilateral support, and alternative economic partners typically cannot gain by undercutting the sanctions. Business interests in the sanctioning state tend to mobilize against negative sanctions. But they are likely to support positive ones that coincide with their natural interest in expanding economic integration.¹²³

Based on such advantages, Abdelal and Kirshner conclude that nations are loath to engage in economic coercion because doing so forgoes the possibility of exercising positive sanctions, which they consider more valuable.¹²⁴

However, there are also reasons to be sceptical of the overall utility of positive economic statecraft. Making a habit of handing out carrots to induce good foreign policy behaviour in a target state, as Mastanduno suggests, may well 'subject the sanctioning state to potential blackmail, since the state that hands out bribes in one context is likely to be pressured to do the same in others.'¹²⁵ The sanctioning state thus becomes a victim to perpetual demands for payments in exchange for the target state's sustained good behaviour. Mastanduno relates this to the subsequent problem pertaining to 'the political repercussions of "trading with an enemy"'. Even if positive economic measures stand a relative chance of success, governments might be reluctant to reward a government that they otherwise find to be politically or morally

¹²² Mastanduno, 'Economic Statecraft' (2008), p. 175.

¹²³ *Ibid.*, pp. 183-184. See also Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 309.

¹²⁴ Abdelal & Kirshner, *Op cit.*, p. 122.

¹²⁵ Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 309.

repugnant.¹²⁶ Moreover, insofar as economic statecraft is employed to make an immediate or short-term change in another state's behaviour, policy makers tend to resort more often to negative sanctions than to positive ones, which Daniel Drezner attributes to the former's cost effectiveness relative to the latter.¹²⁷ It might be argued that the cost borne by the sanctioning state through economic coercion, though potentially high in the short term, is likely to be lower than the long-term costs of positive sanctions, especially if the target state involves the sanctioning state in recurring blackmail for further bribes. This argument is in line with Hirschman's dictum, cited above, that the cost of coercion to the sanctioning state 'is not unlike the harm an aggressive country can do to itself in making war on another'; whereas positive sanctions can be compared to appeasement, which will not necessarily change the behaviour of the target state. However, as Mastanduno reminds us, negative and positive forms of economic statecraft need not be mutually exclusive: 'Positive and negative measures can be used as complementary instruments of statecraft. Positive economic sanctions can set up the threat or use of negative ones by developing the economic dependence of the target on the sanctioning country. Similarly, negative sanctions can structure opportunities for the use of positive measures. Once negative sanctions have been in place, lifting them is a change from the status quo for which sanctioning states can derive some concession in return.'¹²⁸

This, in turn, leads to the important issue of the short- versus long-term effectiveness of economic statecraft. There seems to be a general consensus that economic statecraft is more, if not only, efficacious in the long run: 'From whichever viewpoint economic instruments [of foreign policy] are viewed there can be little doubt that they are slow-moving in their impact,' writes Hill.¹²⁹ Even so, Mastanduno distinguishes between two types of positive sanctions, the first of which is short-term and whose logic might also be applied to negative sanctions. 'The first [type] involves the promise of a well-specified economic concession in an effort to alter specific foreign or domestic policies of the target government', he writes, calling 'this version tactical linkage; others refer to "carrots," or "specific positive linkage." ... Specific sanctions operate at a more immediate level: The sanctioning state calculates that the

¹²⁶ Mastanduno, 'Economic Statecraft' (2008), p. 184.

¹²⁷ Drezner, D.W., 'The Trouble With Carrots: Transaction Costs, Conflict Expectations, and Economic Inducements', *Security Studies*, Vol. 9, No. 1, (Autumn 1999), pp. 188-218.

¹²⁸ Mastanduno, 'Economic Statecraft' (2008), p. 184.

¹²⁹ Hill, *Op cit.*, p. 149.

provision of a particular type of economic reward will be sufficient to convince policymakers in the target state to reconsider their existing foreign or domestic policies.¹³⁰ The same might be said of punitive economic measures when enforcing negative sanctions in (often vain) hopes of short-term success in economic statecraft.

The other type of positive sanctions Mastanduno discusses is informed by a different logic, in line with Hirschman's argument that the influence effect alters the interests of the target state, but which bears repeating. This second version, which Mastanduno terms 'structural linkage and which others refer to as "general positive linkage" or "long-term engagement", involves an effort to use a steady stream of economic benefits to reconfigure the balance of political interests within a target country. Structural linkage tends to be unconditional; the benefits are not turned on and off according to changes in target behaviour. The sanctioning state expects instead that sustained economic engagement will eventually produce a political transformation and desirable changes in target behaviour.'¹³¹ Hill states that it is in the long run that the use of economic statecraft has the most profound impact,¹³² but in order to be effective, Mastanduno reminds us, 'economic engagement requires a patient, sustained commitment on the part of the sanctioning state.'¹³³ Though the slow but long-term effects of economic statecraft have often been criticised in the literature, particularly by realists, Baldwin counters that 'this is not necessarily the "inherent weakness" it is often made out to be. Quicker is not always better.'¹³⁴ The altered interests of countries resulting from economic engagement is not without drawbacks, however, as the vested interests of the sanctioning state are also changed in favour of maintaining these economic relations: 'The deepening of interdependence has the potential to tie the hands of sanctioning state policy officials, should they decide in the future that they need to abandon engagement and adopt a more confrontational foreign policy strategy.'¹³⁵

Lastly, as a rebuttal to those who denigrate the utility and effectiveness even of long-term economic statecraft, Baldwin stresses that '[t]he effects of economic

¹³⁰ Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), pp. 303, 306; and Mastanduno, 'Economic Statecraft' (2008), p. 182.

¹³¹ Mastanduno, 'Economic Statecraft' (2008), p. 182; and Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), pp. 303-304.

¹³² Hill, *Op cit.*, p. 151.

¹³³ Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 308.

¹³⁴ Baldwin, *Economic Statecraft*, p. 111.

¹³⁵ Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 309.

statecraft are rarely sudden or dramatic but rather tend to be slow, circuitous, and unexciting. “Economic variables,” as Gilpin observes, “tend to be accretive. Although sudden and dramatic economic changes can and do take place, in general the influence of economic changes tends to be cumulative, building up over decades or even centuries.” This low profile makes it easy to overlook the effects of economic statecraft.¹³⁶ He recalls that ‘one of the most important foreign policy goals for most countries is how to get other countries to contribute to the enhancement of their economic welfare’, and concludes:

No other technique of statecraft even begins to approach international trade for effectiveness in promoting this important foreign policy goal. International economic exchange is one of the most spectacularly successful examples of international influence in history; yet it is rarely so described. Why? Because routine, mundane, day-to-day economic exchange is often *defined* as either not involving power or as not being “real” foreign policy. Such conceptions of power or foreign policy have important effects on conclusions about the efficacy of economic techniques of statecraft. ... It is easy to overestimate the importance of the spectacular, the unusual, the dramatic, the extraordinary while underestimating the cumulative impact of everyday things that we take for granted. The “low politics” of economic exchange may not be very noticeable on any given day; but over the long haul, it is one of the most important influence mechanisms in the world.¹³⁷

Causal Factors That Determine Effective Economic Statecraft

Fairly early in his seminal work on the subject, *Economic Statecraft*, Baldwin advocates that what is clearly needed in this sub-field of International Relations and Foreign Policy Analysis is ‘a conception of the instruments of policy that is independent of the causal conditions that determine success.... The instruments of policy, or techniques of statecraft, should thus be treated as properties of a single state and should be discussed without implying anything whatsoever about the probable effectiveness of an influence attempt employing a particular instrument.’¹³⁸ Instead, he dedicates the bulk of his work to redefine, in the broadest terms, what ‘successful economic statecraft’ means. His statement was in large part a reaction to what he saw as a disproportionate focus on prescriptive approaches to the subject, rather than a systematic and more descriptive theory of economic statecraft, prior to the publication of his book. Though this is a valid point, given the scarcity of theoretical work on the

¹³⁶ Baldwin, *Economic Statecraft*, p. 134.

¹³⁷ *Ibid.*, pp. 115-116, 118.

¹³⁸ *Ibid.*, p. 24.

matter at that time, Lebow reminds us of perhaps an even more significant observation, made by Morgenthau, that ‘the role of international relations theory should never be limited to describing reality; it must educate actors about the necessity and feasibility of improving it.’¹³⁹ More specifically, with regards to economic statecraft, William Norris agrees that ‘understanding exactly how states employ economics in practice to achieve their grand strategic objectives constitutes an important contribution to policy makers’ understanding of how states behave in the international system.’¹⁴⁰ In that spirit, and since numerous authors have discussed the determining factors behind the effective use of economic instruments of statecraft, this sub-section will explore some of the main, and most addressed, criteria for successful economic statecraft.

Before analysing each of these factors individually, a crucial interpolation must first be made. Mastanduno states that economic statecraft is ‘part of the wider array of foreign policy instruments that states have at their disposal; more often than not, economic measures are used in conjunction with diplomatic and military ones as part of any government’s overall approach to addressing foreign policy problems and opportunities.’¹⁴¹ It is therefore a widespread and popular (if not completely accurate) view in International Relations that ‘[e]conomic sanctions are more effective when used in conjunction other techniques of statecraft.’ However, Baldwin quotes Harold Lasswell and Abraham Kaplan’s *Power and Society* in stating that the previous proposition is generally applicable to all forms of power:

The forms of power are interdependent: a certain amount of several forms of power is a necessary condition for a great amount of any form. ... Each form of power always involves a number of others, to degrees and in ways which must be separately determined, in principle, in each case. ... In short, none of the forms of power can stand alone: each requires, for its acquisition as well as maintenance, the simultaneous exercise of other forms of power as well.¹⁴²

Which is why, as recognised by Hirschman, any examination of economic statecraft in general, and of the separate causal factors that determine its success in particular,

¹³⁹ Lebow, R.N., ‘Culture and International Relations: The Culture of International Relations’, *Millennium*, Vol. 38, No. 1, p. 4.

¹⁴⁰ Norris, W., ‘Economic Statecraft: The Use of Commercial Actors in Grand Strategy’, *Paper presented at the annual meeting of the International Studies Association: ‘Theory vs. Policy? Connecting Scholars and Practitioners’*, New Orleans Hilton Riverside Hotel, The Loews New Orleans Hotel, New Orleans, LA, 17 February 2010. Cited with the author’s permission.

¹⁴¹ Mastanduno, ‘Economic Statecraft’ (2008), p. 172.

¹⁴² Lasswell, H.D. & Kaplan, A., *Power and Society: A Framework for Political Inquiry*, (London: Routledge and Keegan Paul, 1952), pp. 92-94. Cited in Baldwin, *Economic Statecraft*, pp. 143-144.

must presuppose all other things being equal: ‘In order to analyze the way in which foreign trade contributes to a certain distribution of power among the various nations, it must be isolated temporarily from the other determinants; for the purpose of this inquiry these other determinants may be impounded in a vast *ceteris paribus* upon which, for the sake of rendering our analysis more realistic, we shall have to draw from time to time.’¹⁴³

In a recent paper,¹⁴⁴ Norris argues there are four principal factors that determine the success of economic instruments of foreign policy, the first three of which are drawn from previous works on economic statecraft, while he further develops the fourth, which ‘has received comparatively little attention.’ These are: first, the relative importance of the issue at stake, which includes the scope and scale of the objective(s) to which economic statecraft is directed, along with the costs incurred (economic and political) for both sanctioning and target states; second, the relative magnitude of, or overall dependence on, the economic interaction; third, the price elasticity of certain goods in the economic interaction, or how ‘strategic’ these goods are; (it should be noted that the second and third factors are somewhat related, in that they both amount to a form of dependence: on aggregate trade and on a specific good or commodity, respectively); and, fourth, the degree to which the state is able to control and implement that economic interaction, or the extent to which commercial actors are agents of the government.

1. Scope, domain and cost of economic statecraft

The first, and perhaps most important, determining factor behind an effective attempt at economic statecraft is reflected in Baldwin’s warning that ‘it may...be inappropriate to judge economic instruments without reference to underlying strategic purposes.’¹⁴⁵ Indeed, economic sanctions have different purposes, from changing the domestic or international behaviour of a state, to affecting a target state’s economic or military capabilities, and even to undermine the very existence of a government, by attempting to bring about regime change.¹⁴⁶ Thus, for Norris, the primary determinant of effective economic statecraft is the relationship between the ends sought and the means used to achieve those objectives:

¹⁴³ Hirschman, *Op cit.*, p. 13.

¹⁴⁴ Norris, *Op cit.*

¹⁴⁵ Baldwin, *Economic Statecraft*, p. 114.

¹⁴⁶ Mastanduno, ‘Economic Statecraft’ (2008), p. 175.

The first factor that determines the likelihood of success is the purpose that economic statecraft is designed to achieve and how that end matches with the target state's own objectives. As has been noted in the sanctions literature, success of economic statecraft often depends on the relative importance of the jeopardized economic interaction *vis a vis* the contentious issue area. The ends sought cannot be out of proportion with the economic means available to realize those ends. ... *Ceteris paribus*, economic statecraft that has a more modest objective targeting a less recalcitrant state will meet with success more readily than economic statecraft with a grandiose goal targeting a state whose domestic political climate is not conducive to the sought objective. ... In other words, for economic statecraft to be successful, the ends must be commensurate with the means. To the extent that the objective sought is out of proportion to the economic tools available, economic statecraft is unlikely to succeed.¹⁴⁷

However, Baldwin clarifies that it is useful to distinguish between the targets (or what he calls 'domain') and the objectives (what he calls the 'scope') of an influence attempt in foreign policy:

The distinction refers to who is to be influenced (the target) and in what ways (the scope). Targets and objectives vary in number, specificity, and importance. In any given influence attempt, states may—and usually do—pursue more than one goal with respect to more than one target. ... Not all goals or targets are equally important, but none is intrinsically unimportant. Thus, it may be useful to sort out the primary, secondary, and perhaps even tertiary goals and targets of a given influence attempt; but it is a mistake to assume that the content of such categories never varies. ... Recognition that a given influence attempt may involve multiple goals and targets of varying generality and significance is an important first step for assessing the utility of various techniques of statecraft, especially economic ones.¹⁴⁸

Mastanduno, in turn, corroborates this point by stating that 'Baldwin's argument on the need to recognize that multiple objectives are at play in any sanctions attempt is compelling. The identification of sender objectives is obviously crucial to any assessment of the utility of economic sanctions in any particular case.'¹⁴⁹

A further dimension of this causal factor is cost. The costs involved in an economic influence attempt, for both sanctioning and target state, are a key determinant in whether or not economic statecraft is likely to succeed. From the sender country's standpoint, Baldwin notes, costs do not only have negative connotations, since 'incurring costs adds to the credibility of mere words. Costs are widely regarded as a standard indicator of the intensity of one's resolve. In statecraft,

¹⁴⁷ Norris, *Op cit*.

¹⁴⁸ Baldwin, *Economic Statecraft*, pp. 16-18.

¹⁴⁹ Mastanduno, 'Economic Statecraft, Interdependence, and National Security' (1999), p. 292.

observes [Thomas] Schelling, “words are cheap, not inherently credible when they emanate from an adversary. ... Actions also prove something; significant actions incur some cost or risk and [thus] carry some evidence of their credibility.”¹⁵⁰ Thus, in Hanson’s recount of Baldwin’s argument, “[t]he message conveyed to the target nation is more imposing if it is sent at some evident cost to the sender. Cost is a disadvantage in itself, but it is also a sign of seriousness, and that may heighten the impact of the message.”¹⁵¹

Baldwin then goes on to argue that even if strict compliance to a sanctioning country’s demands is not observed, some degree of success still takes place:

[T]o the extent that economic sanctions increase a target country’s costs of noncompliance, power is being exerted *even though no change occurs in the policies of the target country*. ... Thus, a typical conclusion is that sanctions succeeded in increasing the costs of intransigence to the target but failed to produce a political effect. From the standpoint of conventional power analysis, however, *increased costs are political effects*. Not all influence is manifest in terms of changes in policy; changes in the costs of noncompliance also constitute influence. The tendency to overlook this point contributes to underestimating the effectiveness of economic statecraft.

This problem may also be viewed in terms of the target country’s costs of compliance. The higher the costs of compliance, the more difficult the undertaking, and the higher the costs of noncompliance will have to be if the costs of compliance are to be offset by the influence attempt.¹⁵²

Blanchard and Ripsman acknowledge this last point and further elaborate it by analysing target states’ incentives to resist or yield to economic statecraft based on costs to the target nation. Unlike Baldwin, their focus is not on the economic costs of compliance, but the political costs, ‘which are more important for target state calculations.’¹⁵³ It should be noted, however, that despite concentrating on economic costs, Baldwin does acknowledge other forms of costs involved in economic statecraft:

The tools of economic statecraft involve things measurable in terms of money, but that does not mean that the costs of using such techniques are measurable solely in economic terms. The costs of using economic statecraft, like the costs of any other kind of influence attempt, may be political, military, or psychological as well as economic. To pretend that the costs or benefits of

¹⁵⁰ Baldwin, *Economic Statecraft*, p. 107.

¹⁵¹ Hanson, *Op cit.*, pp. 12-13.

¹⁵² Baldwin, *Economic Statecraft*, pp. 132-133. Original emphasis.

¹⁵³ Blanchard & Ripsman, ‘Asking the Right Question’, p. 224.

influence attempts can be calculated with great precision by even the most rational of decision makers would be false and misleading.¹⁵⁴

Because previous (mostly liberal) scholars have not been successful in their attempts to correlate the effectiveness of economic statecraft with the economic costs the sender state is able to impose on the target country – thus neglecting ‘the essentially political nature of the policy changes that sanctions seek to achieve’ – Blanchard and Ripsman’s argument is that ‘the efficacy of economic sanctions should depend not on the economic pain they promise, but on the corresponding political costs that the target state faces if it refuses to comply with the sender’s wishes as well as the political costs it will incur if it accedes to the sanctioning state’s demands.’¹⁵⁵ The political costs of compliance to economic statecraft are, in turn, affected by a variety of international and domestic conditions, some of which will be explored more specifically in Chapter 4.

Thus, the variation in targets, objectives and the costs for both sender and target states should be taken into consideration before evaluating the effectiveness of an influence attempt through economic statecraft, including whether or not such an attempt has been successful, as Baldwin concludes:

Power varies not only in degree but on several dimensions, including scope, domain, and cost. Thus, a simple dichotomy of “success/failure” obscures not only variations in degree but also the various dimensions for measuring success. Establishing the intended scope and domain of an influence attempt is a basic first step in assessing effectiveness. ... To view the use of economic statecraft strictly in terms of securing compliance with explicit and publicly stated demands is to load the dice in favor of failure. Third parties, secondary goals, implicit and unstated goals are all likely to be significant components of such undertakings.¹⁵⁶

2. Magnitude of, and dependence on, the economic interaction

The second determining factor for effective economic statecraft that Norris lists is the relative magnitude of the economic interaction – in other words, the relative importance of trade to one country vis-à-vis the other and the extent to which a target state is dependent on the economic relations it maintains with the sender or sanctioning state. Hirschman explains that

¹⁵⁴ *Ibid.*, p. 128.

¹⁵⁵ Blanchard & Ripsman, ‘Asking the Right Question’, p. 224.

¹⁵⁶ Baldwin, *Economic Statecraft*, pp. 131-132.

the difficulty of substituting country A as a market or supply source for country B may be said to depend not only on the absolute amount of A's trade with B, but also on the importance of this trade relatively to B's total trade. ... The greater the percentage of exports and imports involved in a dominant market, the more difficult it will be to provide substitute markets and sources of supply. ... If a nation with an absolute volume of trade imports from or exports to, a small trading nation, the trade they conduct together will inevitably result in a much higher percentage for the small than for the large trading nation.¹⁵⁷

As Norris exemplifies, 'a country whose trade comprises 80% of its GDP will be much more sensitive to disruptions of that trade than one for whom trade plays only a minor role in its overall economy. The relative magnitude of the economic interaction ought to be fairly large for economic statecraft to be effective.'¹⁵⁸

This kind of exploitable trade dependence for the purposes of extracting benefits for political goals is analogous to Hirschman's influence effect:

What [Hirschman has] called the influence effect of foreign trade derives from the fact that the trade conducted between country A, on the one hand, and countries B, C, D, etc., on the other, is worth *something* to B, C, D, etc., and that they would therefore consent to grant A certain advantages—military, political, economic—in order to retain the possibility of trading with A. If A wants to increase its hold on B, C, D, etc., it must create a situation in which these countries would do *anything* in order to retain their foreign trade with A. Such a situation arises when it is extremely difficult and onerous for these countries:

- 1) to dispense entirely with the trade they conduct with A, or
- 2) to replace A as a market and a source of supply with other countries.

The principles of a power policy relying on the influence effect of foreign trade are in their essence extremely simple: *They are all designed to bring about this "ideal" situation.* ... The difficulty for country B, C, D, etc., of dispensing with the trade conducted with A seems to depend on three main factors:

- 1) The total net gain to B, C, D, etc., of their trade with A;
- 2) The length and the painfulness of the adjustment process which A may impose upon B, C, D, etc., by interrupting trade;
- 3) The strength of the vested interests which A has created by its trade within the economies of B, C, D, etc.¹⁵⁹

¹⁵⁷ Hirschman, *Op cit.*, p. 30.

¹⁵⁸ Norris, *Op cit.*

¹⁵⁹ Hirschman, *Op cit.*, pp. 17-18. Original emphasis. It is important to remember a crucial distinction raised by Abdelal and Kirshner, between Hirschman's influence effect and dependency theory: 'Fostering dependence, as used by Hirschman..., is undertaken by states using economic means to advance political goals. This is distinct, and in essence the converse of "dependency," in which large states use their political power to enforce economic extraction. From the dependency perspective, then, power is a means to achieve an economic end. In Hirschman's story of dependence, wealth is used to advance a political goal.' Abdelal & Kirshner, *Op cit.*, p. 122.

Thus Hirschman concludes that ‘the influence which one country exercises upon another through foreign trade is...likely to be larger the greater the immediate loss which it can inflict by stoppage of trade.’¹⁶⁰ In other words, the more a target state benefits from trade with a sender state, the more dependent it is on that trade and the more vulnerable it is to interruption, thereby increasing the potential for effective (negative) economic statecraft. This is precisely the contention George Shambaugh makes, who also concurs that ‘the higher the level of dependence, the more likely it is that economic sanctions will work.’¹⁶¹

Baldwin takes this argument one step further by demonstrating that a similar logic of dependence is also at work in positive forms of economic statecraft, such as giving foreign aid to target or recipient states:

Dependency on aid, like dependency on trade, stems from the opportunity costs of forgoing the relationship. Thus, the larger the gains from aid, the larger the costs of forgoing aid, and the greater the dependency on aid. The most asymmetrical case of aid dependency would be one in which one party...values the relationship very highly...and the other party...places little or no value on the relationship. Such a situation maximizes the potential influence of the indifferent party with respect to the dependent party. Since the former can make costless and credible threats to end the relationship.¹⁶²

For these reasons, the relative magnitude of an economic interaction between two countries, reflected in the level of economic dependence of a target state on a sender state, is a crucial factor in determining the effectiveness of economic statecraft, be it negative or positive.

3. ‘Strategic’ goods and their price elasticity

The third factor that determines the effectiveness of economic statecraft is the extent to which a good involved in the economic interaction is ‘strategic’. Before delving into what is meant by a ‘strategic good’ for the purposes of this study, however, it is necessary first to point out what the concept usually refers to and why that narrow use of the concept is inappropriate. According to Baldwin, the basic intuitive notion behind the ‘strategic goods’ concept is that some goods ‘*have more strategic value*

¹⁶⁰ Hirschman, *Op cit.*, p. 27.

¹⁶¹ Shambaugh, G., *States, Firms, and Power: Successful Sanctions in United States Foreign Policy*, (Albany, NY: SUNY Press, 1999), p. 583. Cited in Blanchard & Ripsman, ‘A Political Theory of Economic Statecraft’, p. 373.

¹⁶² Baldwin, *Economic Statecraft*, p. 306.

than others. That is, for any *given* strategy, some things have more utility than others'.¹⁶³ The traditional view that some goods are inherently more strategic than others – what Baldwin calls the 'strategic goods fallacy' – derives from the premise that 'some goods are only strategic if they can be used for war, or converted for war, or processed into war-type goods.' But as Schelling clarifies, this assumption 'ignores the fact that a nation's resources can be used to produce alternative goods.'¹⁶⁴

Instead, Baldwin suggests that the 'strategic' value of a good is not inherent, but context-specific:

*The "strategic" quality of a good is a function of the situation; it is not intrinsic to the good itself. Thus, the question of how strategic an item is cannot be determined by examining the item itself; nor can it be determined by analyzing all the possible uses to which the item may be put. What is highly "strategic" with respect to one target country may not be very "strategic" at all with respect to another. ... From the standpoint of international trade a "strategic" item is anything that is needed to pursue a given strategy and that is relatively inefficient to produce at home.*¹⁶⁵

As Hanson notes, this is a common theme throughout the works of a number of key authors on the subject: 'Schelling, Baldwin and [Peter] Wiles all consider that in particular circumstances, and when particular time-horizons are being considered, it can make sense to treat some goods as "strategic". For Baldwin, however, these are not items identified by their being usable directly for military purposes. He suggests that the term is best reserved for *items for which the target nation has a low price-elasticity of demand and little scope for replacement with substitutes*.'¹⁶⁶

Hirschman also hints at demand inelasticity as a source of power between nations. A country ('A') that wants to gain power or influence over other nations through economic statecraft, he explains, 'has to seek trading partners with an "urgent" demand for its export goods...which have no possibilities of themselves producing the commodities country A exports.'¹⁶⁷ This in turn leads to another form of dependence of the target state on the exporting country ('A') – but on a single, 'strategic' good produced by the sender state, rather than on the aggregate amount of trade conducted between the two nations – which will persist unless the target country

¹⁶³ *Ibid.*, pp. 214-215. Original emphasis.

¹⁶⁴ Schelling, T., *International Economics*, (Boston, MA: Allyn and Bacon, Inc., 1958), p. 500.

¹⁶⁵ Baldwin, *Economic Statecraft*, p. 215. Original emphasis.

¹⁶⁶ Hanson, *Op cit.*, p. 9. Emphasis added.

¹⁶⁷ Hirschman, *Op cit.*, p. 24

manages to diversify its consumption of the strategic good in question – (a topic which will be explored more specifically and in depth in the next chapter). Hirschman then goes on to prescribe a more concrete way to maintain such a power position over other countries: ‘A more specific policy by which a country could try to prevent its trading partners from diverting their trade to other countries would consist in the creation of monopolistic or monopsonistic conditions with regard to certain products.’¹⁶⁸

Based on the arguments exposed above – and other, similar ones in the literature – Norris lists the price elasticity of ‘strategic’ goods as one of the four key determinants for the successful use of economic statecraft, and even illustrates it with an example that is directly relevant to this study, which will be elaborated further in the following chapter in this study:

The third factor is the elasticity of demand (or, in some cases, supply) for the economic interaction. For economic statecraft to be effective, the nature of the economic interaction ought to be fairly inelastic. For example, a country whose domestic energy grid is based on light, sweet crude oil is not easily able to substitute alternative goods in place of this type of crude oil. Since energy also provides such a fundamental input for the rest of the economy, this country’s demand for light sweet crude would be said to be fairly inelastic. Thus, we can hypothesize that economic statecraft based on large, inelastic economic interaction has a greater likelihood of success, *ceteris paribus*.¹⁶⁹

4. Principal-agent theory and government control of economic actors

As Hill notes, ‘[m]ost economic statecraft is a question of making some use of what is happening anyway, through trade, investment or development aid.’¹⁷⁰ However, Norris points out that even though ‘states have some discretion over the elasticity and relative magnitude of their various types of economic interactions, for the most part these conditions are driven by relatively exogenous, long-run economic dynamics...rather than deliberate state action *per se*.’ Although the three aforementioned factors – cost and scope of objectives, relative magnitude and dependence, and price elasticity of strategic goods – are ‘important for determining the ultimate effectiveness of economic statecraft,’ writes Norris, ‘the degree to which a government is able to control or direct the behavior of its commercial actors is the

¹⁶⁸ *Ibid.*, p. 31.

¹⁶⁹ Norris, *Op cit.*

¹⁷⁰ Hill, *Op cit.*, p. 148.

critical element that has not been as well developed in the existing work on economic statecraft.’ This is conceptually significant because ‘the study of economic power, like most works in [I]nternational [R]elations, has focused on states as the unit of analysis. This analytical perspective risks overlooking the importance of commercial actors and the role that commercial actors play in attempts to realize strategic national objectives using economic means.’ Norris therefore devotes the bulk of his paper to answer the question of how states manipulate their commercial actors to behave in ways that support their political goals: ‘Despite the centrality of economic actors in explaining international economic power, these actors have not been adequately incorporated into a general theory of economic statecraft. As a result, we have little sense of the micro-foundations of economic statecraft as practiced in [the] grand strategy’ of a state’s foreign policy.¹⁷¹

The main problem in conceptualising a government’s control of its foreign economic relations to serve its political objectives, as Hill reminds us, is that ‘international economic activity derives for the most part from the private sector, while foreign policy is largely the business of states. There is therefore an uneasy public-private relationship at the heart of economic statecraft.’¹⁷² Hirschman downplays this predicament by arguing that ‘it is not essential that the state should exercise positive action, i.e., organize and direct trade centrally’ for a state to derive power from its international economic relations; ‘the negative right of veto on trade with which *every* sovereign state is invested is quite sufficient.’¹⁷³ While his contention may have made more sense at the time of his writing in the early 1940s, today it is too simple a dismissal, particularly in an age of globalisation and economic interdependence. In the current international system, writes Hill, ‘where capital moves far more freely and trade liberalization has become entrenched, it is far more difficult for governments either to act unilaterally on major aspects of political economy or to disrupt the normal workings of the market for anything less than a national emergency.’¹⁷⁴ However, Norris maintains that ‘even in a modern, liberal economic system in which states themselves are not directly responsible for conducting the majority of economic interaction, states can create incentives for commercial actors to behave in ways that...are conducive to a state’s strategic interests.’ In fact, it is

¹⁷¹ Norris, *Op cit.*

¹⁷² Hill, *Op cit.*, pp. 148-149.

¹⁷³ Hirschman, *Op cit.*, pp. 16-17. Original emphasis.

¹⁷⁴ Hill, *Op cit.*, p. 149.

precisely this sort of state manipulation of economic interaction that Norris defines as economic statecraft,¹⁷⁵ which is in line with Baldwin's definition of statecraft, which is not necessarily practised only by governments, but also by other (non-state) actors. This then leads to the final causal factor for effective economic statecraft, according to Norris:

The fourth factor determining the likelihood of success [in economic statecraft] is the state's ability to control or direct its economic interaction. The degree to which a state is able to direct its economic interaction is largely a function of its domestic economic system—in particular, the nature of its business-government relations. ... The nature of these relations often determines the degree to which the state has control over the specific conduct of its economic interaction with other states. *Ceteris paribus*, states with a greater degree of control over their domestic economy will be better suited to direct their economic interaction and thus more likely to realize success in their attempts to engage in economic statecraft.¹⁷⁶

It is important to remember, though, as Hill recalls, that 'despite the ambiguities of the public-private relationship from the point of view of the [sanctioning] actor, from that of the recipient the distinction may seem trivial and the reality that of external pressure, even neo-colonialism.'¹⁷⁷

On the other hand, Hill also raises the issue that while the long-run use of economic power by states 'has proved over the past fifty years to be the most effective way of pursuing foreign policy goals – so long as you are rich, powerful and capitalist' – it is nevertheless much 'more complex to operate in an era of laissez-faire than one of autarky'.¹⁷⁸ This in turn leads to a fundamental contradiction, identified by Norris, concerning the government-business relations of a state and its foreign policy ramifications:

A basic paradox confronts states seeking to exercise economic power. To be effective at directing its economic power, a state needs to be able to direct its economic activities. However, as demonstrated by states with centrally directed economies, the more a government, rather than markets, is in charge of directing a state's economic behavior, the less efficient the state's economic productivity tends to be.¹⁷⁹ Over time, this lower economic productivity limits the size of a

¹⁷⁵ Norris, *Op cit.*

¹⁷⁶ *Ibid.*

¹⁷⁷ Hill, *Op cit.*, p. 149.

¹⁷⁸ *Ibid.*, pp. 151, 149.

¹⁷⁹ While Norris realises 'that the paradox presented here assumes some liberal economic tenets (i.e. that directed economic growth is not as efficient as market-oriented economic activity)', he assumes 'that directed economic growth is not as efficient as market-oriented economic activity over the long

nation's economy. The smaller or less powerful a state's economy is, the less intrinsic weight the state has to throw around... ['Of course, if the economy provides a unique, critical good (e.g. something with highly inelastic demand), the state can also derive considerable influence from the inelasticity (rather than the magnitude) dimension of its international economic relations.']¹⁸⁰ So although a state needs to be able to direct its economic might for economic statecraft to be effective, too much state direction tends to lead to inefficiency and a less robust economy overtime. Likewise an economy in which the state is relegated to a very small role may grow to exceptional proportions, but the state will find it difficult to meaningfully direct this latent economic power in any concerted way. This is the essence of the paradox inherent in the exercise of national economic power.¹⁸¹

Governments then resolve this paradox by making a fundamental choice with regards to the economic system, and resulting government-business relations, of their states, depending on the extent to which they wish to interfere in (if not control) their economy. It is therefore not surprising, for Mastanduno, that 'powerful states—those with strong economies and many economic instruments at their disposal—are more likely than weaker states to initiate economic statecraft as a key foreign policy measure.'¹⁸²

From a theoretical perspective, this choice is reflected in a diversity of possible mechanisms of interaction between principals and their agents, postulated in the 'principal-agent problem' (or 'agency dilemma'), which provides an appropriate conceptual framework for analysing states' implementation of economic statecraft through commercial actors. To recapitulate, Norris' summary of the principal-agent relationship is instructive:

At the heart of principal-agent theory lies a very simple concept: principals have one set of goals and objectives but they must rely on agents to act on their behalf to realize them. The wrinkle lies in that agents often have a different set of goals and objectives derived from the incentives that they face as autonomous actors. So the challenge becomes one of aligning the agents' incentives such that they will act in a manner that furthers the principal's goals. This is the principal-agent...problem in brief.

run and [focuses] on developing the implications of this in terms of the paradox. That said, the underperformance of centrally-planned economies is well documented. Economic inefficiencies stem not only from the challenge of the complexity involved, but also from the long-term implications of inefficient capital allocation. ... Although intensive, government planned and directed economic growth is possible (and may even be sustained for some period of time), it does not seem to be the best path for economic dominance, or long term sustainability.' Norris, *Op cit.*, footnote 33.

¹⁸⁰ Norris, *Op cit.*, footnote 34

¹⁸¹ Norris, *Op cit.*

¹⁸² Mastanduno, 'Economic Statecraft' (2008), p.172.

The dynamics present in the principal-agent relationship mirror those present in the relationship between the state and commercial actors when the state exercises economic statecraft. The state (acting as the principal) desires to achieve some strategic national objective through the use of economics. However, in many economies, the practice of economic interaction is actually conducted by commercial actors. As such, if the state seeks to manipulate [its] economic interaction [with another country,] and this economic interaction is being conducted on a day-to-day basis by commercial actors, the state must face up to the challenges of working through a proxy—namely, the commercial actors. Thus, the dynamics highlighted by principal-agent theory provide a useful guide for framing the issues that arise when states must work with commercial actors.¹⁸³

Consequently, states that do not have full control over their economic actors must be able to surmount the principal-agent problem involved in their government-business relations, in order for their economic statecraft to be successful.

In conclusion, all four determining factors proposed by Norris are required for an effective implementation of economic statecraft to take place:

If a state can overcome the principal-agent challenges, and the other three...variables (Relative Magnitude, Elasticity and Commensurate Purpose) are present, then we are likely to see states being able to realize their strategic goals through the use of economics. In this manner, overcoming the principal-agent challenges are a necessary but not sufficient requirement for economic statecraft. Without state manipulation of commercial actors, economic statecraft does not exist. At the same time, although state manipulation of commercial actors is an important factor for the success of economic statecraft, on its own it is not sufficient for effectiveness—state manipulation also relies on favorable values across the other three...variables for effective economic statecraft to occur.¹⁸⁴

However, it is important to bear in mind, as Hill reminds us, that ‘sanctions are not precise tools whose impact can be predicted with confidence. Rather, they can usually be parried, if the target is prepared (as they usually are, given the threat to their reputation for sovereign independence) to pay the inevitable price for defying states on whom they are dependent, and at times the whole international community.’ This is why a further factor is crucial in analysing whether any economic statecraft attempt can be successful: the context in which it takes place – a topic which will be explored at length in Chapter 4.

¹⁸³ Norris, *Op cit.*

¹⁸⁴ *Ibid.*

CHAPTER 3

Energy Statecraft: Energy Resources as Foreign Policy Instruments

For more than a century, write Carlos Pascual and Evie Zambetakis, ‘energy, politics and power have been clearly intertwined as a force in international security.’¹⁸⁵ Despite the centrality of energy to a state’s national security and the role of energy in international relations, Brenda Shaffer reminds us that ‘professional journals in international relations and political science have paid scant attention to publishing research on the topic.’ During periods of tight energy market conditions, however, ‘there has generally been an increase in scholarly publications dealing with energy. For instance, following the 1973-74 oil crisis, a number of publications in major political science and international relations outlets appeared that dealt with energy.’¹⁸⁶ This is also true of the more recent five-year steady rise in oil prices since 2003 – which culminated in the summer of 2008 with a historical record price of \$147.27 a barrel – during which time renewed academic attention was paid to the role of energy in international relations.

Energy as an instrument of foreign policy is a more specific form of economic statecraft, for energy resources are economic resources, after all. As such, they have essentially similar conceptual characteristics. They are also alike academically in the sense that what relatively little research has been done on energy in International Relations and Foreign Policy Analysis, like the literature on economic statecraft up to David Baldwin’s seminal work by the same title in 1985, ‘tends to be narrowly focused and topical rather than general and theoretical.’¹⁸⁷ Thus, given the relative lack of theoretical research on energy statecraft so far, the current chapter will use the theoretical framework of economic statecraft delineated in the previous chapter as a conceptual model for the present study, while also building on some of the more recent works on energy in International Relations.

This chapter follows a similar structure to the previous one – although more narrowly focused on energy, rather than economic, statecraft – while exploring the

¹⁸⁵ Pascual, C. & Zambetakis, E., ‘The Geopolitics of Energy’, in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), p. 31.

¹⁸⁶ Shaffer, B., *Energy Politics*, (Philadelphia, PA: University of Pennsylvania Press, 2009), p. 18.

¹⁸⁷ Baldwin, D.A., *Economic Statecraft*, (Princeton, NJ: Princeton University Press, 1985), pp. 53-54.

characteristics that are specific to energy resources in contrast to most other economic instruments of foreign policy. It begins with a conceptual discrimination between three distinct but interrelated terms that are often applied interchangeably to energy in International Relations – security, diplomacy and statecraft – in order to clarify a certain level of theoretical confusion in the literature. Next is a brief discussion of the different types of energy statecraft, which is not just limited to the same typology as economic statecraft – namely negative, positive, short and long term – but also explores how the various types of primary energy sources can (or cannot) be implemented as instruments of statecraft. Then, following the same model used in the previous chapter, the four causal factors that determine the effective use of economic techniques of statecraft – ends-means commensurability, market power and dependence, price elasticity, and government control of economic agents – will be applied specifically to energy statecraft. Lastly, in order to avoid merely ‘showcasing’ the efficacy of energy statecraft, this chapter lists a series of inherent and potential obstacles and limits to the use of energy resources as instruments of foreign policy.

Security, Diplomacy & Statecraft: 3 Different but Interrelated Energy Concepts

‘Even though David Baldwin’s work has been of seminal importance for the academic recognition of economic statecraft as an indispensable “portfolio” of policy means in the service of a nation’s strategic goals,’ Theodore Tsakiris calls attention to the fact that nowhere does Baldwin make a specific reference to energy-related concepts¹⁸⁸ – such as security, diplomacy or statecraft – despite energy resources permeating every ‘aspect of social life in terms of the production and consumption of wealth that is measurable in terms of money’, as Baldwin defines.¹⁸⁹ However, energy resources are distinct from all other goods and commodities that can be utilised for economic statecraft. In fact, Baldwin’s disdain for the idea of ‘strategic goods’ notwithstanding – namely that ‘for any *given* strategy, some things have more utility than others’¹⁹⁰ – energy resources are probably among the few (if not the only) goods that qualify as being strategic for *any given* strategy. Energy resources also fit Baldwin’s more restrictive use of the term, seen from most energy-importers’ position, in that they are ‘items for which the target nation has a low price-elasticity of demand and little scope

¹⁸⁸ Tsakiris, T., ‘Energy Security Policy as Economic Statecraft: A Concise Historical Overview of the Last 100 Years’, *Agora Without Frontiers*, Vol. 9, No. 4, 2004, p. 308.

¹⁸⁹ Baldwin, *Op cit.*, p. 65. Also cited in Tsakiris, *Op cit.*, p. 308.

¹⁹⁰ *Ibid.*, p. 215. Original emphasis.

for replacement with substitutes.’¹⁹¹ Yet energy resources are not only strategic to importers, but are strategically vital commodities for all civilized countries.

Having access to energy supplies is crucial for the survival of a state both in security and in economic terms, and has been ‘fundamental to any position of power in the world’ since the Industrial Revolution, according to the first US Secretary of Energy, James Schlesinger,¹⁹² whose Department was created in 1977 as a response to the extended energy crisis of the 1970s and the ensuing ‘need for unified energy organization and planning’ in the US government.¹⁹³ Like many others, Michael Klare asks why energy has come to play such a pivotal role in world affairs, and gives a thorough answer on its importance to the power of states:

To begin with, its continued availability—in great profusion—has never been as critical to the healthy operation of the global economy. Energy is required to keep the factories humming, power the cities and suburbs that house the world’s rising population, and produce the crops that feed the planet. Most important, petroleum products are utterly essential to sustain the international sinews of globalization—the planes, trains, trucks, and ships that carry goods and people from one region of the planet to another. ... Without...additional energy, the world economy will fall into recession or depression, the globalization project will fail, and the planet could descend into chaos.

But the wheels of industry are not the only ones to slow down without an abundant supply of energy; military forces are equally dependent on a copious infusion of critical fuels. For major powers like United States that rely on airpower and mechanized ground forces to prevail in conflict, the need for petroleum products multiplies with each new advance in weapons technology.¹⁹⁴

The ubiquitous need for energy in almost every possible way of modern, civilized life inevitably makes energy inseparable from politics in all countries and often also with each other, as Shaffer notes: ‘Energy trends and international politics are innately interconnected and energy security is an integral part of the foreign and national security policy of states.’¹⁹⁵ Because energy is so intertwined with everything else, it generates interdisciplinary debates, often brandishing different terms interchangeably to mean the same thing or employing the same expression with different meanings. Thus, before delving into the subject of energy as an instrument

¹⁹¹ Hanson, P., *Western Economic Statecraft in East-West Relations: Embargoes, Sanctions, Linkage, Economic Warfare, and Detente*, (London: Routledge & Kegan Paul, 1988), p. 9.

¹⁹² Schlesinger, J., ‘Foreword’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. xiii.

¹⁹³ U.S. Department of Energy, ‘Origins & Evolution of the Department of Energy’, <<http://www.energy.gov/about/origins.htm>>, accessed 19 May 2011.

¹⁹⁴ Klare, M.T., *Rising Powers, Shrinking Planet*, (Oxford: Oneworld Publications, 2008), p. 11.

¹⁹⁵ Shaffer, *Op cit.*, p. 91.

of foreign policy, a distinction must first be made between three different energy-related concepts – energy security, energy diplomacy and energy statecraft – whose definitions are sometimes confused or overlapping in the literature, and how they relate to each other.

Energy Security

Given the basic need for energy to fuel all aspects of a state's economic activity, *energy security*, in its most fundamental sense, means having the 'assurance of the ability to access the energy resources required for the continued development of national power',¹⁹⁶ sustained economic performance and growth. In the simplest, unpoliticised, economic terms, it is defined as 'reliable supply at affordable prices in the case of consuming nations and as reliable demand at sustainable prices in the case of producing nations.'¹⁹⁷ More specifically, the concept comprises a different number of elements, depending on the author, that constitute an overall definition of the term energy security. Among many similar classifications – most of which consist of *reliability* and *affordability* of energy supplies, but increasingly also *environmental sustainability* – Jonathan Elkind provides one of the most comprehensive definitions of the term, involving four basic elements, including one that is often taken for granted and only mentioned implicitly, namely *availability*:

Availability

First and foremost, energy security stems from the availability of energy goods and services—consumers' ability to secure the energy that they need. Availability requires the existence of commercial energy markets in which buyers and sellers trade energy goods and services, markets that take shape only when parties agree on terms that accommodate the commercial, economic, political strategic, and other interests of buyers, sellers, and shippers. Mutuality of interest among the players in the value chain is therefore a prerequisite for energy security. ...

Reliability

Reliability involves the extent to which energy services are protected from interruption. Energy is an essential building block of economic activity; it enables daily life. Interruptions jeopardize the ability to run factories, illuminate

¹⁹⁶ Kalicki, J.H. & Goldwyn, D.L., 'Introduction: The Need to Integrate Energy and Foreign Policy', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press / Woodrow Wilson Center Press, 2005), p. 9.

¹⁹⁷ Goldthau, A., 'Energy Diplomacy in Trade and Investment of Oil and Gas', in Goldthau, A. & Witte, J.M. (eds.), *Global Energy Governance: The New Rules of the Game*, (Washington, D.C.: Brookings Institution Press, 2010), footnote 2, p. 26.

hospitals, and heat homes continuously. In certain cases, therefore, energy reliability can be a matter of life and limb. ...

Affordability

Energy that is not affordable in absolute terms is energy that cannot be used... However, the affordability element of energy security is not just a question of whether energy prices are low or high relative to disposable income. The *volatility* of prices is even more central. Price shocks often cause serious humanitarian or economic hardship, even political instability, as energy consumers struggle to cope with unexpected financial burdens. Prices reflect market circumstances and signal market expectations, which in turn influence consumer choices and investment decisions, whether in favor of consumption or conservation. However, even in wealthy countries, when prices deviate seriously from established expectations, consumers find it hard to make rapid changes in their energy consumption.

Sustainability

In the past, definitions of energy security typically did not include environmental considerations. However, a contemporary approach to energy security must place emphasis on environmental sustainability, for several reasons:

—*Energy infrastructure typically is long-lived.* Decisions made today will have long-term implications for how energy is produced, converted, stored, and used. ...

—*Promoting energy security without including sustainability will promote use of technologies and practices that will exacerbate climate change.* ...

—*Climate change clearly will affect energy systems profoundly.* For example, rising sea levels will require redesign and re-construction of the transportation infrastructure that serves energy systems—from oil terminals to shoreline rail and road systems.¹⁹⁸

Even so, despite the fact that all elements are essential to ensure the overall energy security of a state, countries tend to prioritise some elements of energy security over others – with the exception of *availability*, whose necessity is self-explanatory – as Shaffer exemplifies: ‘the United States gives deference to reliability of supplies. The EU and its component states tend to place priority on affordability and friendliness to the environment, taking bigger risks with supply reliability. China emphasizes reliability of supply more than affordability or friendliness to the environment.’¹⁹⁹ These elements have also been emphasised differently though time, not just space, with *reliability* being the main concern in the 1920s, for instance, while *affordability* became a crucial concern during the oil crises of the 1970s, and *sustainability*

¹⁹⁸ Elkind, J., ‘Energy Security: Call for a Broader Agenda’, in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), pp. 121-129. Original emphasis.

¹⁹⁹ Shaffer, *Op cit.*, p. 93.

appeared as an issue from the 1980s onwards, as the environmental movement gained momentum.

Access to energy resources is so critical to a state that Henry Kissinger remarked in 1982, only a couple of years after the second oil price spike of the 1970s, that ‘aside from military defense, there is no project of more central importance to national security and indeed independence as a sovereign nation than energy security’²⁰⁰ – a proposition many agree with. However, the underlying problem with this prioritisation is that military forces *also* depend on energy to fuel the diverse modes of transportation required to mobilise them, not to mention the production of their weapons and transports. Thus, in that sense, one could argue that energy security trumps military defence in national security priority, since the latter cannot function fully without ensuring the former.

‘Notwithstanding obvious market concerns,’ with such high importance attached to it, Adam Stulberg argues, it follows that ‘energy security is fundamentally “politicized,” as states allow foreign ambitions to alter their behavior in energy markets; employ political instruments to advance their position in energy markets; and exploit this standing to influence the strategic behavior of target states.’²⁰¹ What is interesting about Stulberg’s statement is that it implicitly takes account of all three energy-related concepts, without distinguishing them as separate: energy *security* as being politicised; energy *diplomacy* in the use of political instruments to acquire energy resources; and energy *statecraft* in using energy as a tool to change the behaviour of other states, respectively. This, in turn, raises the analytical need to differentiate between these concepts, which relates back to the ends-means analysis problem described at the beginning of the previous chapter. States’ need for energy security gives rise both to energy diplomacy for energy importers in search of the former (or producers in search of markets), and to energy statecraft for energy exporters that exploit importers’ energy dependence that ensures their energy security. Whereas energy *diplomacy* is a political instrument used to achieve a strictly energy-related goal (namely, energy security), energy *statecraft* makes use of energy resources as an instrument – by manipulating another actor’s need for energy security

²⁰⁰ Kissinger, H., ‘Foreword’, in Ebinger, C.K. (ed.), *The Critical Link: Energy and National Security in the 1980s*, (Cambridge: Ballinger, 1982), cited in Stulberg, A.N., *Well-Oiled Diplomacy: Strategic Manipulation and Russia’s Energy Statecraft in Eurasia*, (Albany, NY: State University of New York Press, 2007), p. 3.

²⁰¹ *Ibid.*

with one's own energy resources – to advance political aims that are not necessarily energy related. In simpler terms, energy diplomacy uses political means for energy ends, while energy statecraft uses energy means for political ends.

Energy Diplomacy

Sascha Müller-Kraenner describes 'the political discipline aimed at making states more "energy secure" as energy foreign policy.'²⁰² However, foreign policy includes both goals and instruments, and the previous definition portrays energy security as the objective of 'energy foreign policy'. Insofar as energy security has a different meaning for consumers and producers, in their search for supplies and markets, respectively, Müller-Kraenner's definition denotes increased energy exchange between importers and exporters as an end in itself – in other words, energy *diplomacy* – rather than the manipulation of this exchange for other political goals, which is better termed *energy statecraft*, in order to be distinguished from the former term. Taking this distinction into account, one of the most complete definitions of *energy diplomacy* – that does not implicitly reference or encompass elements of statecraft – is provided by Andreas Goldthau:

The term commonly connotes the way countries give their energy companies a competitive edge in bidding for resources by using the state's power: consumer countries strengthen their supply situation by diplomatically flanking energy contracts, whereas producer countries use diplomacy to enhance access to markets or reserves.

... Despite a myriad of contributions linking the term to the nexus of energy, foreign policy, and supply security, there is no consensus on what exactly the term *energy diplomacy* means. ... As a general pattern, the term is used mostly in the geopolitics-informed debate on access to resources and points to a strategic and instrumental use of foreign policy to secure a country's energy supplies. ...

While a generally accepted definition of energy diplomacy does not exist, it would seem appropriate to define the term as *the use of foreign policy to secure access to energy supplies abroad and to promote (mostly bilateral, that is, government to government) cooperation in the energy sector*. This definition suggests that the primary units of analysis are states or state actors; that the primary driver behind the conclusion of oil and gas deals is not necessarily maximizing business opportunities but national security goals; and that the underlying cost-benefit calculations do not follow an economic logic but rather a political one.²⁰³

²⁰² Müller-Kraenner, S., *Energy Security: Re-Measuring the World*, (London: Earthscan, 2007), p. 19.

²⁰³ Goldthau, *Op cit.*, pp. 25-28. Emphasis added.

The above description, as much recent academic literature and media coverage have revealed, is illustrative of the behaviour of some of the rising powers of the past decade, China in particular. Such states ‘have backstopped the activities of their state companies, donated or sold arms to producers at reduced prices, and offered construction projects as side payments for access to resources’, writes Edward Morse.²⁰⁴ Despite the latest hype in public discourse about energy security in general and energy diplomacy in particular, Goldthau explains that the phenomenon of energy diplomacy is nothing new:

Oil and gas have always been politically charged commodities and, hence, have been subject to significant government intervention. ... Yet the current trend toward energy diplomacy coincides with the general perception that global energy politics has become a zero-sum game, in which one country’s energy security is another’s lack thereof. Energy diplomacy has thus emerged as a powerful concept in public discourse. ... A decade-long period of oversupply on oil and gas and resulting low prices calmed public debate on these issues. It is only since the turn of the new millennium, when supply-demand balances both in global oil markets and in regional gas markets tightened again, that energy diplomacy has come to receive renewed attention.²⁰⁵

In spite of this renewed academic attention to the general subject of energy politics, what little literature there is on energy security is mostly focused on energy diplomacy, while comparatively little has been written on the concept of energy statecraft, which is the subject of this study and to which we now turn.

Energy Statecraft

‘Energy is both a factor that influences a state’s foreign policy outcomes and a potential tool of foreign policy’ writes Shaffer. ‘During periods of tight international energy market conditions, energy tends to become a more prominent factor and tool in states’ foreign policies and a higher priority on their policy agenda. At these times, energy needs affect the foreign policies of importers as well as exporters.’²⁰⁶ Energy statecraft as an instrument of foreign policy – in contrast to energy diplomacy, which is used by net energy importers to reach the objective of securing their energy needs – is reserved for energy-exporting countries for a very simple reason, as Christopher Hill elucidates: ‘When it comes to choosing the instruments with which to act, the

²⁰⁴ Morse, E.L., ‘Low and Behold: Making the Most of Cheap Oil’, *Foreign Affairs*, Vol. 88, No. 5, September/October 2009, p. 48.

²⁰⁵ Goldthau, *Op cit.*, pp. 25-27.

²⁰⁶ Shaffer, *Op cit.*, p. 28.

differences between states do come into play. The wide variation in state capacities is a key determinant of what can even be attempted in the outside world.²⁰⁷ Consequently, only states that possess sufficient reserves of energy resources to be net exporters thereof, *ipso facto*, can make use of energy statecraft as one of their foreign policy instruments. In the simplest terms, therefore, *energy statecraft means the use of a sender state's domestic energy resources as a means to get one or more other international actors to do what they would otherwise not do, in order to achieve the political goals of the sender state's foreign policy*. This is achieved by manipulating or exploiting another actor's fundamental need for energy security, without which energy statecraft is likely to be ineffective, if not an outright exercise in futility.

While some scholars treat energy statecraft as a subset of economic statecraft, others view it as its own category of foreign policy instruments. As mentioned in the previous chapter's first section, Charles Hermann's broader typology of foreign policy instruments includes eight, rather than the usual four categories (cultural, diplomatic, economic and military), in which energy statecraft falls into the category of *natural resources*, as opposed to being a specific type of economic statecraft:

Natural resources instruments involve the potential or actual use of natural resources, or knowledge thereof, in the conduct of foreign policy activities. Skills and resources used in the development and protection of natural resources as well as their cultivation or extraction are included. No assumption is made concerning the level of expertise involved in these activities (for example, primitive farming could be included). Resources include not only the natural products (for example, fossil fuels, food, ores, timber, water) but also equipment necessary for their development and use. A potential overlap exists between this category of instruments and those classified as scientific/technological.²⁰⁸ There is an important distinction, however. The natural resources category makes no

²⁰⁷ Hill, C., *The Changing Politics of Foreign Policy*, (Basingstoke: Palgrave Macmillan, 2002), p. 130.

²⁰⁸ 'Scientific/technological instruments share a common foundation in that body of knowledge produced by the generally accepted methods of science. Scientific skills and resources involve activities pertaining to the basic corpus of theory, empirical results, and the procedures for their continuous investigation and extension. Technological skills and resources concern the application of the existing body of scientific knowledge for practical problem solving rather than for the extension of fundamental knowledge. Individuals trained in the physical, biological, and certain behavioral sciences are part of the cadre of professionals with scientific and technological skills as well as those trained in such applied areas as medicine and engineering. The resources of scientific/technological instruments are widespread in industrialized societies and range from the vast array of scientific apparatus to the seemingly innumerable products of technology. Among the applications of scientific/technological instrumentalities in foreign affairs are such familiar undertakings as the establishment and maintenance of international satellite communications, explorations of the oceans for resource extraction, educational exchange programs, population projects, agricultural and other technical assistance programs, and more exotic enterprises such as joint ventures in space.' Hermann, C.F., 'Instruments of Foreign Policy', in Callahan, P., Brady, L.P. & Hermann, M.G. (eds.), *Describing Foreign Policy Behavior*, (Beverly Hills, CA: Sage, 1982), pp. 160-161.

necessary presumption of the application of the methods of science. In some parts of the world enormous technological investments have been made to capture and use natural resources, but in other areas the use of natural resources has not necessarily involved modern technology. ... The government of a developing country may engage in considerable foreign policy activity using a recognized natural resource as an instrument even before it has the capability to employ that resource...²⁰⁹

However, there are also good reasons to view energy statecraft as part of a wider array of economic instruments of foreign policy, given their similarity in the sense that they both use resources that can be measured in terms of money, as Stulberg explains:

Typically, the practice of statecraft involves the use of diverse policy instruments. Economic statecraft, for example, relies primarily on applying resources that have discernable market prices. The most widely analyzed forms are sanctions and inducements that entail the actual or threatened withdrawal/extension of economic resources to prompt policy change. Similarly, energy statecraft involves increasing or decreasing access to a resource, as well as to related property rights, pipelines, investment capital, prices and tariffs that are extended to deter, contain, or coerce a target. These tools of statecraft contrast with the value of military and diplomatic techniques that are generally stipulated in terms of violence, symbols, or negotiation.²¹⁰

The key difference, and main reason why energy statecraft is treated as its own category of statecraft in this study, is that the resources used in energy statecraft are ‘strategic goods’ vital to any functioning economy and whose price elasticity is low and is not easily substitutable, unlike most other resources employed in economic statecraft more generally.

‘Energy supplies are frequently viewed by suppliers, consumers, and transit states as a potential tool to promote foreign policy and security goals’, notes Shaffer, and recently ‘there has been considerable commentary warning about the danger of the “oil weapon” and the “gas weapon.” For example, U.S. senator Richard Lugar (R-Ind.), a leading U.S. lawmaker on foreign policy issues, has stated that “the use of energy as an overt weapon is not a theoretical threat of the future; it is happening now.”’²¹¹ When exporters such as Russia, Venezuela and Iran overtly use energy exports as a tool to promote their foreign policy goals, Shaffer writes, ‘Europe and the United States regularly decry the use of energy as a “weapon” rather than accept it as

²⁰⁹ *Ibid.*, p. 161.

²¹⁰ Stulberg, *Op cit.*, p. 17.

²¹¹ Shaffer, *Op cit.*, p. 29.

a standard and legitimate tool of foreign policy.’ She further argues that ‘for energy exporters and important energy-transit states, energy supply is as much a part of the policy arsenal as other economic tools, military power, and diplomatic tactics. States are no more likely to refrain from using energy to promote their policy goals than to ignore economic or military means of doing so.’²¹²

Such commentaries coincide with the increasing use of the ‘energy weapon’ at the onset of the twenty-first century, when runaway demand for energy resources outstripped supply and oil and other energy prices rose to unprecedented levels, leading to academic speculation that the world has entered a new era for energy security – a topic which will be explored in depth in the next chapter. As a consequence, Klare reasons, ‘the problem of “energy security”—as it is widely termed—has climbed toward the top rung of the international ladder of unease and concern. Not surprisingly, this has fundamentally changed the perception of what constitutes “power” and “influence” in a dramatically altered international system, forcing policymakers to view the global power equation in entirely new ways.’²¹³ To cite Senator Lugar again, in this allegedly new energy era, power in the international system shifts to countries with energy reserves.²¹⁴ Klare goes even further, arguing that

military superiority does not constitute the decisive, or even necessarily the leading, determinant of global paramountcy in this troubled new era. Other factors have come to rival military power in importance, and one—energy—has acquired unexpectedly vast significance.

In this new, challenging political landscape, the possession of potent military arsenals can be upstaged by the ownership of mammoth reserves of oil, natural gas, and other sources of primary energy. Hence, Russia, which escaped the Cold War era in a shattered, demoralized condition, has reemerged as a major actor in the international arena by virtue of its colossal energy resources. For all its military might, the United States has, in contrast, sometimes found itself reduced to cajoling its foreign oil suppliers...to increase their petroleum output in order to slow the upward spiral in energy prices. The “sole superpower” has, in short, found itself scrambling...to somehow come to terms with what U.S. Senator Richard G. Lugar (R-Ind.) has termed “petro-superpowers”—nations that wield disproportionate power in the international system by virtue of their superior energy reserves. ...

When military power was the principal determinant of a nation’s global ranking, nuclear-armed behemoths like the United States and the Soviet Union

²¹² *Ibid.*, p. 1.

²¹³ Klare, *Op cit.*, p. 14.

²¹⁴ Lugar, R., ‘In oil’s new era, power shifts to countries with reserves’, *Wall Street Journal*, 14 June 2006, Opinion Page.

occupied the top stratum and were able to influence the behavior of lower-ranked powers. Admittedly, military prowess still conveys an advantage in today's world, but it increasingly finds itself overshadowed by the clout of energy abundance. Saudi Arabia, for example, with a negligible military, commands substantial leverage in world affairs due to its possession of the world's largest known petroleum reserves. Even countries with smaller oil inheritances, such as Azerbaijan, Kazakhstan, Angola, and Sudan, are coming to enjoy influence disproportionate to their size and condition. The governing elites of these energy-surplus states have been able to exploit their privileged status to wring concessions of various sorts from their principal customers—whether in the form of political support at international institutions like the U.N. Security Council, the transfer of arms and military assistance, or even a disinclination by their clients to probe conspicuous human rights abuses.²¹⁵

However, like energy diplomacy, energy statecraft is nothing new. The most blatant and infamous use of energy statecraft, in the form of the 'oil weapon', was employed by the Arab members of the Organization of Petroleum Exporting Countries (OPEC) on 16 October 1973, ten days after the Yom Kippur War erupted between Israel and an Egyptian-Syrian alliance. These countries unilaterally announced a 70 per cent increase in the price of oil, and on the next day announced production cuts of 5 per cent and an additional 5 per cent for every following month until Israel withdrew from the territories it had occupied since 1967, in addition to a full oil embargo on the countries that had supported Israel during the war, causing severe economic damage to energy-importing countries around the globe. The ensuing recession – by then the worst since the Great Depression – led many member states of the Organization for Economic Cooperation and Development (OECD) to change their stance on the Israeli conflict and take heed to the plight of the Palestinian people, two of the goals behind OPEC's use of the 'oil weapon' (though the main goal of Israeli withdrawal from territories occupied since 1967 was not achieved).

Nevertheless, the 1973 embargo and the resulting oil price spike 'led to the emergence of new power centers in international affairs. Oil-exporting countries, either individually or through OPEC, began to play a more prominent role in [international] politics.' In Daoudi and Dajani's view, 'one cannot but observe the impressive economic and political impact of the oil weapon, which led Professor Harmut Brosche to describe it as "one of the most successful weapons introduced into world politics during the last years."²¹⁶ The unexpected effectiveness of the oil

²¹⁵ Klare, *Op cit.*, pp. 9-10, 16.

²¹⁶ Daoudi, M.S. & Dajani, M.S., *Economic Diplomacy and World Politics*, (London: Westview Press, 1985), pp. 157, 160.

weapon against rich, industrialised countries has led Tsakiris to characterise energy statecraft as ‘asymmetric since the aforementioned consequences of the 1973 embargo occurred despite the fact that OPEC’s Arab producers had only a fraction of the combined political, economic and military power of the OECD states.’²¹⁷ Ian Smart further illustrates how, despite this power asymmetry, the embargo’s target states did not counterattack:

It is a fact that a small number of countries whose military strength, separately or together, is relatively trivial were able to impose a politically motivated embargo on nations much stronger militarily without even having to consider seriously the possibility of a military reaction. The Western countries, against which Arab economic strength was primarily turned, did not seek to transform their own superior military strength into countervailing power.²¹⁸

This reinforces the point made by Senator Lugar and Klare, among others, that energy statecraft is on par with military power as an effective foreign policy instrument in terms of changing the behaviour of other states by getting them to do what they would otherwise not do.

Different Types of Energy Statecraft

In theory, the most basic types of energy statecraft follow essentially the same logic as economic statecraft: they can be negative or positive, as well as short term or long term. The most important caveat is the indispensable nature of energy resources to the economy of any state, which should hypothetically make the use of energy statecraft more effective than most other economic instruments that can be employed in foreign policy. In practice, however, the diverse forms of energy statecraft are much more differentiated by the specific kinds of primary energy resources used, than by the way in which they are implemented (i.e. coercively, cooperatively, in the short or long term).

Negative energy statecraft is used as a disincentive or coercively in order ‘to dictate/influence the political/security or economic behavior of a state or corporate actor in the international arena.’ It can be implemented as embargos, sanctions, licensing denials, production quota manipulation to reduce price elasticity, exclusion from tenders, among many other ways. Apart from the ‘celebrated’ cases of oil

²¹⁷ Tsakiris, *Op cit.*, p. 321.

²¹⁸ Smart, I. ‘Uniqueness and Generality’, *Daedalus*, Vol. 104, No. 4, Fall 1975, p. 278. Cited in Daoudi & Dajani, *Op cit.*, p. 168.

embargos such as the one in 1973, negative energy statecraft ‘usually takes the form of oil and natural gas sanctions directed to impede domestic energy companies from developing the resources of a geopolitical competitor or adversary (actual or prospective), since such a development would enhance its military and diplomatic clout. ... Sanctions can also take the form of secondary sanctions targeting the technological equipment (pipeline tubes, compressors, turbines, refinery equipment) necessary for the construction of energy infrastructure.’²¹⁹

Perhaps the most obvious current example of a country’s use of negative energy statecraft is Russia, whose ‘officials have made no secret of their use of energy for political purposes.’ In 2005, ‘Kremlin spokesman Dmitry Peskov commented on the abrupt energy price hikes that Russia was demanding of its neighbors, linking energy issues to Russia’s broader foreign policy objectives. If a neighbor wished to join NATO, it would be viewed as disloyal, and “if you are not loyal then you [make the jump to higher energy prices] immediately,” he said.’²²⁰ Over the following two winters, in 2006 and 2007, ‘a string of crises between Russia and the bordering former Soviet republics resulted in temporary energy cuts to those now independent states. Georgia and Ukraine claimed that Moscow tried to punish them for their Western orientations and color revolutions that had removed regimes that were accommodating to Russia’s demands, and to use the gas weapon to destabilize their regimes.’²²¹ Indeed, as Müller-Kraenner reminds us, ‘Russia has hardly any neighbour that is not threatened with energy deprivation as a weapon in the event of any political insubordination.’²²²

Positive energy statecraft is used cooperatively and ‘has primarily taken the form of oil and natural gas subsidies that are used as an incentive for the harmonisation of foreign policy goals between the sender and the targeted state.’ But it can also be implemented as preferential access to energy resource developments contracts, technological cooperation in order to increase energy efficiency or decrease energy intensity, state-sponsored investment guarantees, granting most favoured nation status, or simply using energy rents to give overseas development aid, among other ways.²²³ For example, when Saudi Arabia demonstrates willingness to assist

²¹⁹ Tsakiris, *Op cit.*, pp. 326-328.

²²⁰ Elkind, *Op cit.*, p. 137.

²²¹ Shaffer, *Op cit.*, p. 42.

²²² Müller-Kraenner, *Op cit.*, p. 54.

²²³ Tsakiris, *Op cit.*, p. 326.

China in upgrading its refining capacity to use more Saudi crude oil²²⁴ or Hugo Chávez sells heavily subsidised Venezuelan petroleum to several Latin American and Caribbean countries, they are not doing so out of generosity; they are pursuing their long-term national interest by creating dependence for *their* oil in these countries, in case their main markets – the United States and other OECD countries – one day decide to import less or none of their petroleum, if not demanding an outright political *quid pro quo* for their assistance. It should be noted that, unlike the ‘celebrated’ cases of oil embargos and Russia’s more recent overt uses of the ‘gas weapon’, positive energy statecraft has received much less attention academically than its negative counterpart, and therefore warrants more research into the subject.

As to whether energy statecraft is implemented over the short or long term, its negative manifestation tends to be short term, or tactical: its use or threat thereof is linked to a specific change in target state behaviour, such as Western support for Israel during the Yom Kippur War that led to the 1973 oil embargo by OPEC’s Arab producers, or the Russian examples cited above. The long-term use of negative energy statecraft is ultimately counterproductive in foreign policy, as energy-rich states engaged in it would eventually lose money by not earning rents from their energy exports, which is often their governments’ main source of revenue.

Positive energy statecraft, on the other hand, can be either short term or long term, following the same logic as positive economic statecraft: tactical linkage (‘carrots’) seeking a short-term *quid pro quo*, or structural linkage (‘long-term engagement’) which strategically ‘involves an effort to use a steady stream of economic benefits [or, in this case, energy resources] to reconfigure the balance of political interests within a target country. Structural linkage tends to be unconditional; the benefits are not turned on and off according to changes in target behaviour. The sanctioning state expects instead that sustained economic [or energy] engagement will eventually produce a political transformation and desirable changes in target behaviour.’²²⁵ Again, as with academic research dedicated to negative compared to positive energy statecraft, short-term tactical linkage in energy statecraft has commanded much more scholarly attention than strategic long-term engagement.

²²⁴ Jaffe, A.M., ‘Geopolitics of Energy’, in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol.4, (San Diego, CA: Elsevier, 2004), p. 848.

²²⁵ Mastanduno, M., ‘Economic Statecraft, Interdependence, and National Security: Agendas for Research’, *Security Studies*, Vol. 9, No. 1, 1999, pp. 303-304; and Mastanduno, M., ‘Economic Statecraft’, in Smith, S., Hadfield, A. & Dunne, T. (eds.), *Foreign Policy: Theories, Actors, Cases*, (Oxford: Oxford University Press, 2008), p. 182.

As mentioned above, in spite of these variations in implementation, the different types of energy statecraft are more distinguished by the specific kind of energy resource employed. There are numerous forms of what are called primary energy sources – ‘energy [resources] found in nature that has not been subjected to any conversion or transformation process’²²⁶ – but only a few of them are, or even can be, used as instruments of foreign policy. The main defining attribute of whether a primary energy source is exploitable as a technique of statecraft is its share of the world’s total primary energy supply (TPES). In that respect, hydrocarbons (or fossil fuels) have by far the leading potential to be implemented as instruments of energy statecraft, due to their overwhelming share of TPES: a total of 81.2 per cent in 2008, according to the International Energy Agency, of which 33.1 per cent is petroleum, 27 per cent is coal and 21.1 per cent is natural gas.²²⁷ Because of the long lead-times in energy projects, writes Christoph Rühl, ‘one can make reasonable estimates ten, or even 20, years ahead. By all accounts, the foreseeable future in energy markets will remain dominated by fossil fuels.’²²⁸ According to the US Department of Energy, for example, ‘these [fossil] fuels will still be satisfying an estimated 87 percent of global energy needs in 2030...[and] petroleum, which, for the last half century, has been—and remains—the world’s most important source of energy...is expected to remain number one in 2030.’²²⁹

Shaffer reminds us that the predominance of petroleum among primary energy sources stems from its multiple, if not ubiquitous, uses:

Oil is a popular energy source because it can be easily and cheaply transported and because it has flexible applications, including a range of uses: to generate electricity, provide heat and transportation, and fuel industry. Other fossil fuels can substitute for most of these functions. However, current modes of transportation were developed based on the availability of copious and mostly inexpensive quantities of oil during the twentieth century. ... In the transportation sector, there are no good substitutes for oil, unless radical changes are made in the way people transport themselves and goods.²³⁰

²²⁶ Wikipedia, ‘Primary Energy’, <http://en.wikipedia.org/wiki/Primary_energy>, accessed 6 May 2011.

²²⁷ International Energy Agency, ‘Share of total primary energy supply in 2008’, <http://www.iea.org/stats/pdf_graphs/29TPESPI.pdf>, accessed 6 May 2011.

²²⁸ Rühl, C., ‘Global Energy After the Crisis’, *Foreign Affairs*, Vol. 89, No. 2, March/April 2010, p. 74.

²²⁹ Klare, *Op cit.*, pp. 13-14.

²³⁰ Shaffer, *Op cit.*, pp. 11-12.

Thus, the widespread use of petroleum, as well as the ever-increasing demand for it globally, makes oil a suitable resource for energy statecraft. This is particularly the case considering most of petroleum reserves and production is concentrated in relatively few countries, some of which have formed the OPEC cartel, which was the first to make use of negative energy statecraft overtly during the 1973 oil embargo.

Meanwhile, ‘Moscow’s recent rhetoric seems to suggest that natural gas is also regarded as a potential tool in fostering foreign policy objectives.’²³¹ This is in large part due to its rapidly increasing use – particularly in Europe, which imports a considerable amount of natural gas from Russia – but also because of its predominant mode of transportation through pipelines, which in principle fosters dependence on suppliers, leaving consumers vulnerable to energy statecraft. The wider share of TPES natural gas occupies in the future, the more it will have the potential to be the main primary energy source used for energy statecraft, which seems likely given its projected growth in consumption:

Natural gas is the world’s fastest growing primary energy source. Global consumption is anticipated to double by 2030. Natural gas will soon overtake coal as the second most important energy source, and among the Organization for Economic Cooperation and Development (OECD) countries it has already supplanted it. If current trends continue, natural gas consumption will overtake that of oil within a couple of decades and become the leading global energy source. Natural gas is especially attractive because it releases significantly lower emissions that cause air pollution and lead to climate change.²³²

In addition to the overall share of how much energy is consumed worldwide, another factor that determines what kinds of energy resources can be used in statecraft is its relative scarcity or abundance. In that sense, some fossil fuels are more implementable as instruments of statecraft than others. While coal comprises over a quarter of TPES and is the predominant source of the world’s electricity production, its ease of transportation, ‘relatively low cost, especially in electricity production, and the extensive reserves of exporters...make it low risk in terms of security of supply’, and is therefore unsuitable for energy statecraft given the relative lack of international competition over its access. Moreover, the fact that coal is highly polluting – indeed, it is ‘the major source of climate-altering greenhouse gases’ – makes its continued widespread use unattractive unless ‘significant research and investment efforts are

²³¹ Goldthau, *Op cit.*, p. 31.

²³² Shaffer, *Op cit.*, p. 13

[made] in carbon dioxide capture and sequestration’,²³³ thus potentially decreasing its relative demand in the long term due to environmental concerns.

The remaining primary energy sources – nuclear power and several forms of renewable energy – together comprise such a relatively marginal share of TPES that their use as instruments of energy statecraft currently lacks potential. Where nuclear energy is concerned, it is limited not only by its high cost, but also by the fact that it is only used to generate electricity and therefore has restricted reach in terms of transportation and export to potential target states of energy statecraft. Moreover, as Tsakiris rightly recalls, ‘it would be academically inept to analyze nuclear power without dedicating [part of the] analysis to its potentially devastating military uses. Such an analysis, though interesting, would fall outside the framework of economic statecraft’. As for renewable energy resources, most of them are limited by their focus on ‘electricity generation,...their limited impact on the overall economic sphere...[and] oil’s domination of the transportation and petrochemical sectors of the economy’.²³⁴

Though fossil fuels will continue to dominate energy consumption – and therefore also energy statecraft – Klare reminds us that the current drive to combat climate change by reducing greenhouse-gas emissions has at least the potential to increase the share and significance of renewables for energy security:

Scientists are avidly seeking ways to develop a new spectrum of fuels to replace those now at risk of depletion while releasing far fewer or zero climate-altering “greenhouse gases” into the atmosphere. But no major energy-consuming nation has yet devoted sufficient resources to this problem to ensure that these alternatives will be available on a large enough scale to replace existing energy sources in the foreseeable future.²³⁵

However, should certain forms of renewable energy resources – for instance, biofuels – extend their reach beyond electricity generation, particularly to the transportation sector, and increase their share of TPES to a significant amount, they could potentially be used as an instrument of energy statecraft. To date, very little academic research has explored this potential, which merits further scholarly attention.

²³³ *Ibid.*, pp. 13-14.

²³⁴ Tsakiris, *Op cit.*, footnote 5, p. 309.

²³⁵ Klare, *Op cit.*, p. 13.

Causal Factors That Determine Effective Energy Statecraft

Tsakiris postulates that ‘energy...statecraft has always been a powerful foreign policy-making instrument, which has been proven to be – under specific conditions – much more effective than the use of force or threat of the use of force in enticing or coercing a state to “do something he would not otherwise do”.’²³⁶ But in order to be effective, energy statecraft (like economic statecraft in general) first needs to meet certain conditions. The list of criteria for successful energy statecraft varies from one author to another.

Stulberg, for instance, focuses on just two factors, namely market power and regulatory authority: ‘the more market and regulatory power a state enjoys in a particular energy sector, the more successful it should be at securing strategic concessions from a target. Possessing both elements, an initiator can structure the framing effects and guide a target’s risk-taking propensity toward compliance.’²³⁷

Meanwhile, Tsakiris enumerates four other criteria, whose ‘control’ thereof define what he calls ‘energy power’: exploitable reserves, net export capacity, transportation routes and pricing mechanisms (price elasticity), whilst also specifying that the energy resources employed must necessarily be hydrocarbons (oil and natural gas).²³⁸

The causal factors listed by both authors, though not necessarily overlapping, are all valid, but incomplete. Tsakiris’ first three criteria fall largely under Stulberg’s first factor, market power over a specific energy sector, though in different forms (as will be explained below). On the other hand, the remaining criterion in each author’s list – regulatory power and price elasticity, respectively – is not considered by the other, leaving a gap in their coverage of the subject.

Therefore, the present study favours translating William Norris’ four factors for successful economic statecraft,²³⁹ delineated in the previous chapter, since the causal factors that determine effective energy statecraft broadly match those for economic statecraft, but with certain unique characteristics that are specific to energy resources in contrast to most other economic instruments. Moreover, these four

²³⁶ Tsakiris, *Op cit.*, p. 309.

²³⁷ Stulberg, *Op cit.*, p. 53.

²³⁸ Tsakiris, *Op cit.*, p. 308.

²³⁹ Norris, W., ‘Economic Statecraft: The Use of Commercial Actors in Grand Strategy’, *Paper presented at the annual meeting of the International Studies Association: ‘Theory vs. Policy? Connecting Scholars and Practitioners’*, New Orleans Hilton Riverside Hotel, The Loews New Orleans Hotel, New Orleans, LA, 17 February 2010.

factors not only encompass all criteria listed by Stulberg and Tsakiris – exploitable reserves, net export capacity and transportation routes in the form of market power; price elasticity; and governmental authority over the energy sector – but also include a fourth, often overlooked, factor that is inherent to all forms of statecraft: namely the commensurability between the means used for the ends sought, to which we now turn.

1. Goal-instrument commensurability

The first factor is by now obvious, but nevertheless bears repeating, for the sake of the argument: the effectiveness of ‘a state’s international influence turns on the leadership’s capacity to balance the ends and means of statecraft.’²⁴⁰ In other words, the foreign policy goals sought must be commensurate with the energy instrument employed.

For example, after the so-called ‘oil weapon’ was first used successfully in 1973, evaluation of its effectiveness has been mixed depending on which perspective is taken with regards to the scope of the objectives. On the one hand, when seen in light of the (somewhat ambitious) primary goals sought by the Arab member states of OPEC – namely to compel Israel to retreat back to its 1967 borders and fully to restore Palestinian rights – the oil weapon is often dismissed as having been ineffective. On the other hand, as Baldwin advocates, secondary and tertiary goals should not be ignored when determining the ‘success’ of an economic technique of statecraft, and in that respect the Arab oil weapon of 1973 was to some extent effective in that it called international attention to the plight of the Palestinian people and even led some (mostly European) countries to change or adapt their policies towards the Israeli-Palestinian conflict.

Baldwin’s conceptual separation of the domain (or targets) from the scope (objective) of an influence attempt is also instructive when evaluating the relative success of the oil weapon in 1973. While the oil weapon was more effective against Western European states in the OECD and Japan, in terms of their changed policies towards the Middle East, it was less effective against a much stronger country like the United States, let alone against Israel, for which the stakes in the conflict were obviously considerably higher and had much more to lose by yielding to the Arab states’ demands.

²⁴⁰ Stulberg, *Op cit.*, p. 43.

With regards to the United States, the use of the oil weapon by the Arab members of OPEC was relatively successful in bringing their grievances to the top of the US foreign policy agenda and even encouraged the US ‘to play a more conciliatory role in arranging the settlement of the Arab-Israeli dispute in the aftermath of the Yom Kippur War’, though ultimately it ‘did not change the basic policy of the United States in the Middle East.’²⁴¹

Meanwhile, with regards to the effectiveness of the oil weapon against Israel, Daoudi and Dajani remind us that the Arab states’ two primary objectives mentioned above ‘were the ultimate political goals of the Arab *military* initiative of 6 October 1973. The oil weapon was unsheathed to *complement* the Arab war effort, *not to replace* it’, which is why ‘one needs to be aware that there is inevitable overlapping among the political, economic, and military dimensions’ of an influence attempt when considering the impact and achievements of the oil weapon alone.²⁴² Thus, as Stulberg concludes, ‘all else being equal, energy statecraft will be more successful when a central executive can affect the domain and value that a target assigns to an exchange of the strategic good [i.e., energy resources], and can ensure that domestic agents will pursue complementary policies.’²⁴³

The remaining causal factors that determine effective economic statecraft deserve further detailed analysis when applied to energy resources because of the specific ways in which these factors operate in the energy sector compared to other goods and services that can be employed in economic statecraft more widely. To recapitulate, these are: the magnitude of the economic interaction and target states’ dependence on it, translated into a sender state’s market power and target state’s vulnerability in the energy sector; the price elasticity or ‘strategicness’ of a good, which is normally low and high, respectively, for most energy resources, and which translates into volatility during tight markets; and, finally, the extent to which a state has control over an economic resource, which is usually higher in the energy sector compared to other sectors of the economy in most countries, particularly in those that are energy-rich.

²⁴¹ Nye, J.S., *The Future of Power*, (New York: PublicAffairs, 2011), p. 67.

²⁴² Daoudi & Dajani, *Op cit.*, pp. 149-150. Emphasis added.

²⁴³ Stulberg, *Op cit.*, p. 45.

2. *Market power, dependence and vulnerability*

The first determinant of whether a state can effectively implement energy statecraft is its market power in a given energy sector. This is not as obvious as might seem at first, for in this case market power does not only mean the possession of great energy reserves or being a large producer thereof. The United States and China, for instance, are both great petroleum producers, but they are also even greater oil consumers, meaning they consume most of their domestic production and must also import additional petroleum, making both countries net oil importers. Thus, in the energy sector in general and for energy statecraft in particular, market power refers to export capacity, rather than merely production capacity and reserves.

But given certain distinguishing characteristics between the international oil and natural gas markets – the two most commonly used energy resources in statecraft – market power also involves control of export and transport routes. Despite a certain arbitrariness concerning the specific percentages involved, Stulberg's definition of market power is appropriate for taking both export market share and transportation routes into account:

Market power is measured in terms of both aggregate percentages of supply and competitive advantages at delivering energy to international markets. A state is traditionally considered to wield significant influence over markets if it controls nearly half the supply of the good. In the case of strategic goods, such as energy, however, the relevant percentages are typically much lower. This is because energy is essential to all aspects of a state's military, industrial, and consumer sectors, and that even marginal fluctuations in supply have potentially severe implications for the breadth of a target's national activities. Moreover, market power in the energy sector is not determined solely by raw supply, as states must be able to deliver energy to foreign markets. ... Accordingly, [Stulberg] regard[s] an initiator as wielding significant market power in the oil and gas sector if it controls roughly 30 percent of supply and export to foreign markets, as well as possesses competitive advantages at reliably delivering low-cost energy via shorter-distance and wider-diameter pipelines than available through other routes.²⁴⁴

This then begs the question of whether each of these two elements of market power has higher significance in one energy sector than in another. Though the relationship is imperfect, a high percentage of aggregate supply bears more significance in the international oil market, whereas control of transport routes plays a

²⁴⁴ *Ibid.*, p. 56.

stronger role in (mostly regional) natural gas markets. This, in turn, means that energy statecraft works differently depending on the energy resource employed.

The principal distinction stems from the fact that petroleum is a global, fungible commodity, ‘traded primarily on international markets with little connection between the supplier and the consumer,...which allow[s] states to import from a variety of sources and quickly find new sources of supply on the open global market’.²⁴⁵ As such, having control of transport routes for oil, specifically, has little if any impact on a state’s ability to use petroleum as a form of energy statecraft, since a potential target state would be able to find alternative supplies on the open market, provided a higher price is paid. In that sense, it is mostly poor countries that are vulnerable to energy statecraft in the form of the oil weapon, as Klare points out, since wealthy countries ‘will be able to buy their way out of scarcity, though no doubt damaging their economies in the process; poorer countries, lacking such advantages, will suffer egregiously.’²⁴⁶ Therefore, market power in terms of share of aggregate supply is a more important element for energy statecraft using petroleum than control of transport routes.

But given oil’s fungibility as a traded commodity, and the relative ease of consumers to diversify their sources of supply, in order for states to muster sufficient market power in the petroleum sector to employ that resource in their energy statecraft, they have had to resort to cartel formation. In increasing their collective market power by pooling their resources, the oil weapon is made ‘most effective when it is collectively rather than unilaterally deployed,’ which is why ‘cohesion and cooperation among the various oil-producing nations is essential’²⁴⁷ for energy statecraft to be effective with petroleum.

Although OPEC formed as a cartel in 1960, it was not until 1973 that its member states successfully managed to exploit their collective market power as a cartel, despite previously having tried to impose oil embargoes on consumer countries during the Middle East wars of 1956 and 1967. These two attempts at energy statecraft were unsuccessful, according to Nye, ‘because the United States was producing enough oil to supply Europe when it was cut off by the Arab countries. Once American production peaked in 1971 and the United States began to import oil,

²⁴⁵ Shaffer, *Op cit.*, pp. 36-37.

²⁴⁶ Klare, *Op cit.*, p. 16.

²⁴⁷ Daoudi & Dajani, *Op cit.*, p. 173.

the power to balance the oil market switched to such countries as Saudi Arabia and Iran. The United States was no longer the supplier of last resort that could make up for any missing oil',²⁴⁸ thus transferring the bulk of market power in the petroleum sector to OPEC. On 16 October 1973, ten days after the Yom Kippur War erupted, OPEC members from the Persian Gulf unilaterally announced a 70 per cent increase in the price of oil, and on the next day announced production cuts of 5 per cent and an additional 5 per cent for every following month until Israel withdrew from the territories it had occupied since 1967, in addition to a full oil embargo on the countries that had supported Israel during the war. This represented the first time that OPEC countries collectively used oil as a weapon to achieve political goals, which, in Henry Kissinger's words, 'altered irrevocably the world as it had grown up in the postwar period.'²⁴⁹

Now controlling approximately 70 per cent of the world's known oil reserves and circa 40 per cent of its production, OPEC derives its strength as a petroleum cartel from its ability to export most of its production, whereas most non-OPEC producers consume most of their oil, having to import the remainder of their domestic demand for oil,²⁵⁰ thus giving OPEC leverage over the countries that depend on its exports. Such a dependence on oil by importing countries is defined by Greene and Tishchishyna as the result of an uncompetitive global oil market dominated by OPEC and high levels of energy imports that are vital to these countries' economies.²⁵¹ Indeed, the more energy-consuming countries import, the more they become dependent on producing countries, which in turn gives the latter the ability to use their energy resources against the former, thus creating a higher degree of vulnerability in energy-importing countries. OPEC countries are keenly aware of this, and underlying their ideology is 'the view that the future is theirs and worth waiting for...bank[ing] their future on a combination of growth in oil demand and a presumed "natural" limit to the growth of non-OPEC production.'²⁵²

²⁴⁸ Nye, *Op cit.*, p. 65.

²⁴⁹ Yergin, D., *The Prize: The Epic Quest for Oil, Money, and Power*, (New York, NY: Simon & Schuster, 1991), p. 588.

²⁵⁰ Maugeri, L., *The Age of Oil: The Mythology, History, and Future of the World's Most Controversial Resource*, (Westport, CT: Praeger, 2006), p. 229.

²⁵¹ Kohl, W.L., 'National Security and Energy', in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol.4, (San Diego, CA: Elsevier, 2004), p. 199.

²⁵² Morse, E.L. & Jaffe, A.M., 'OPEC in Confrontation with Globalization', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 78.

In its power projection, OPEC uses two interrelated instruments: spare production capacity and its role as ‘swing producer’, both of which are uniquely strongest in Saudi Arabia’s case. Spare capacity – the capacity to produce additional oil above normal output levels that can be put into production quickly, or leave production idle depending on market conditions²⁵³ – serves as a supply-side ‘security margin’ in the international energy market that can buffer against supply shocks by producing additional oil to replace the oil missing from the market due to disruptions.²⁵⁴

However, maintaining spare capacity is expensive: it costs billions to develop excess capacity to allow prompt, additional oil production in case of emergencies; and, being unable to sell it due to generally inexistent demand for the superfluous oil, there is no return on the investment made in spare capacity. Economically speaking, the opposite is preferable: ‘The decision to minimize excess production capacity represents optimal economic behavior for any producer of any good. As Western economic textbooks teach, it is simply absurd to spend money to create something that will not be sold, and will probably induce a general fall of price of that very product.’²⁵⁵ Following this economic rationale, all non-OPEC producing countries sell all the oil they produce internally or for export; private international oil companies do the same, in order to maximise their shareholder value.²⁵⁶ ‘The problem with this approach’, writes Leonardo Maugeri, ‘is that it takes a long time to put onstream new production when it becomes necessary, so that inevitably a razor-thin spare capacity generally turns into higher prices, and make any sudden supply disruption or consumption peak a lethal blow.’²⁵⁷

As a result, virtually all of the world’s spare production capacity rests in OPEC countries, with Saudi Arabia alone responsible for nearly 80 per cent thereof, allowing them to manipulate the short-term price of oil according to their spare capacity level. Also being responsible for one-tenth of the world’s oil supply, Saudi

²⁵³ Kenderdine, M.A. & Moniz, E.J., ‘Technology Development and Energy Security’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 430. Yergin, D., ‘Energy Security and Markets’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 55.

²⁵⁴ Yergin, D., ‘Ensuring Energy Security’, *Foreign Affairs*, Vol. 85, No. 2, March/April 2006, p. 75.

²⁵⁵ Maugeri, *Op cit.*, p. 227.

²⁵⁶ Goldwyn, D.L & Billig, M., ‘Building Strategic Reserves’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 515.

²⁵⁷ Maugeri, *Op cit.*, p.228.

Arabia therefore holds a unique position in the global oil market, as its prime ‘swing producer’, by being ‘the only oil producer in the world that can singlehandedly replace, within a short period of time, the total loss of exports for any other oil producer in the globe’.²⁵⁸ It is that role which gives OPEC and Saudi Arabia in particular their international clout and geopolitical influence, lowering production to raise prices, or increasing production to accommodate the interests of importing nations, normally in return for other economic or political compensations – a role Saudi Arabia does not want to relinquish. Therefore, it should be recognized that ‘Saudi Arabia uses its spare capacity not as a favour to the West but as an instrument designed to enhance its power and influence in the world.’²⁵⁹

Meanwhile, market power in terms of control of energy transport routes is much more relevant to the use of natural gas as an instrument of foreign policy. This is essentially because natural gas, due to its gaseous form, is not as easily or inexpensively transported as petroleum under current technology, and relies either on pipelines or liquefied natural gas (LNG) terminals, both of which demand high investments in infrastructure. The result of this, particularly where pipelines are concerned, is that direct, long-term linkages are created between energy suppliers and consumers. These commercial relations are further solidified not only due to the physical infrastructural ties between supplier and consumer states, but also because of the high costs involved – both for pipelines and for LNG terminals – which lead to long-term contracts between the states involved.

According to Shaffer,²⁶⁰ these direct and fixed long-term linkages foster much more dependence and vulnerability between natural gas suppliers and consumers than in the oil market, which in turn lead to more opportunities for political manipulation through energy statecraft. Unlike petroleum, where a disruption in supply from one source can be compensated for by buying from another source (albeit normally at a higher price), the fixed nature of gas supply through pipelines means that most natural gas importers have little flexibility or alternatives when faced with a disruption in supply. Which is why ‘states rarely have options of diversifying their natural gas supplies or creating multiple parallel supply mechanisms to enhance their energy security. ... Because of the lack of commercial or government interest, states rarely

²⁵⁸ Jaffe, *Op cit.*, p. 846.

²⁵⁹ Morse & Jaffe, *Op. cit.*, p. 87.

²⁶⁰ Shaffer, *Op cit.*, pp. 4, 10, 13, 28.

have multiple gas supply infrastructures. ... In theory, all natural gas importers that lack extensive alternative import capability, such as extensive LNG import capacity, are potentially at risk for supply disruptions and accordingly dependent on their suppliers, rendering them vulnerable to the dictates of the supplier state.²⁶¹

A further factor that has repercussions for energy statecraft, which may arise specifically for energy resources transported through pipelines – be it oil or natural gas, though not LNG – is transit through third countries between supplier and consumer states. ‘With the increasing internationalization of the oil and gas trade, rising consumption of natural gas, and initiation of the export of oil and gas from landlocked states,’ Shaffer explains, ‘energy transit states are emerging regionally and in the international system. Their role affects their strategic value and position. ... The main potential value of achieving a role as a major energy transit state is geopolitical, since transit is not especially lucrative financially for the transit states.’²⁶²

What is interesting with regards to market power in the form of control of energy transport routes (i.e. pipelines) as an enabling factor for effective energy statecraft is the fact that it is a tool mostly employed by transit countries, rather than by producing states let alone consumers. This is due to the interdependence established between suppliers and end-users connected by pipelines, as they both lose from disruptions in energy supply: consumers do not get access to energy resources vital to the healthy functioning of their economies and producers lose revenue from lost markets, while transit states have comparatively little to lose by disrupting the energy supply going through their countries. ‘This has been seen in Ukraine and Belarus,’ writes Shaffer, ‘which have at times inhibited the flow of Russian oil and gas to markets in Western Europe in an attempt to attain political and economic goals. ... While energy suppliers and consumers are cautious in their denial of supplies or markets, transit states are more likely to be tempted to use their role to elicit economic, security, and other gains. As a result, supply arrangements that have transit states in between supplier and the consumer are less stable than direct ones.’²⁶³

Of course, it is not just transit states that can use transnational pipeline transit as a tool in their energy statecraft; producing states can also use transit to their advantage in their own use of energy statecraft. Again, Shaffer illustrates that

²⁶¹ *Ibid.*, pp.37-39.

²⁶² *Ibid.*, p. 64.

²⁶³ *Ibid.*, pp. 4-5, 40.

‘exporting states, while not enjoying their vulnerability to supply disruptions, recognize that transit can be an important carrot in their relations with transit states. In the 1990s, Moscow used the transit carrot effectively with neighboring Baltic states, even playing them against each other to offer Moscow better conditions to retain its transport facilities in their respective states. Once Russia stops using transit routes through these states, it will also lose a tool for influence in them.’²⁶⁴

Ultimately, market power in the energy sector – be it a high share of aggregate supply or though control of transport routes – is a determining factor behind effective energy statecraft because it translates into target-state dependence on the energy resources in question, which is exacerbated by a lack of alternative sources of supply. This, in turn, makes target states vulnerable to political influence and manipulation by sender (or transit) states that employ energy statecraft against them. It follows logically, writes Stulberg, that ‘the capacity to manipulate a target’s domain rests on the *net vulnerability* of that target’²⁶⁵ – a term he further defines:

In the energy sector, vulnerability can be measured in terms of market power. Market power is a function of the percentages of global imports/exports accounted for by a state’s consumption/supply of a specific resource. The greater the percentage, the greater the concentration of exchange, the lower the probability that alternate trade partners will be available, the higher the costs of adjustment, and the greater the capacity of a state to orchestrate the framing effects for foreign targets in that sector. Conversely, the weaker the market power, the lower the concentration of exchange, the more likely opportunities exist to diversify relations, the lower the costs of changing the terms of an existing relationship, and the more difficult it will be for a state to manipulate a target’s decision choices. All things being equal, the lower the opportunity costs of compliance for other states, the more likely a state will be able to exploit strategic energy advantages to shape a target’s reference point, decision domain, and risk-taking propensity.²⁶⁶

Thus, if an energy-producing and -exporting state enjoys high market power – either in terms of share of aggregate supply and/or by controlling pipelines – it has a better chance of engaging in effective energy statecraft towards energy-consuming states.

This formula is made even more powerful for the state initiating energy statecraft if it has several potential consumer states competing for its energy resources. Shaffer illustrates this point by quoting the managers of Russia’s state-controlled natural gas company, Gazprom, who demonstrated a propensity for

²⁶⁴ *Ibid.*, p. 41.

²⁶⁵ Stulberg, *Op cit.*, p. 46. Emphasis added.

²⁶⁶ *Ibid.*, p. 48.

political blackmail in response to European energy security concerns regarding Russia's reliability as a natural gas supplier: 'We want European countries to understand that we have other alternatives in terms of gas sales. We have a fast growing Chinese market, and a market for liquefied natural gas in the U.S. If the European Union wants our gas it has to consider our interests as well.'²⁶⁷ This is a typical stance adopted by energy-exporting countries during tight market conditions, when demand for energy outstrips supply, and which brings us to the next determining factor for effective energy statecraft.

3. *Price elasticity and volatility under tight market conditions*

As is the case with economic statecraft in general, price elasticity is somewhat related to the previous determining factor in that they both amount to a form of dependence: on a specific good or commodity and on aggregate trade, respectively. Yet, when viewing this distinction in terms of a single kind of commodity (in this case, energy resources), the discrepancy becomes even more subtle. Dependence on energy refers to a situation in which a country imports much of its energy needs from a single or few, undiversified sources; whereas elasticity refers to the fact that not only are energy resources (in general) a prerequisite for a modern, functioning economy, but also that some of these resources are not easily substitutable with other energy resources in certain sectors of the economy.

Ultimately, the elasticity of an energy resource depends on its end-use. For instance, electricity can be generated by a wide variety of energy resources – coal, petroleum, natural gas, nuclear power, hydropower, solar power and other renewables, etc. – and a shortfall in the supply of one of these resources could *theoretically* be compensated with another, provided the appropriate infrastructure is in place. Of course, lack of infrastructural fungibility among different kinds of energy resources would lower their price elasticity. Meanwhile, some energy resources are much less elastic due to an economic sector's complete dependence on that specific kind of energy source, such as the 'limited elasticity of oil demand in the short run, a result of the transportation sector's high level of reliance on gasoline and other petroleum-based motor fuels.'²⁶⁸

²⁶⁷ Cited in Shaffer, *Op cit.*, p. 46.

²⁶⁸ Pascual & Zambetakis, *Op cit.*, p. 15.

Inelasticity of demand (and supply) for an energy resource is, therefore, an important factor in determining effective energy statecraft. Where petroleum is concerned, OPEC has mostly been successful at using its market power to keep the price of oil well above production costs (which in the Persian Gulf has generally been less than \$2 per barrel or \$4 when exploration and development costs are included) since the 1970s. In this regard, OPEC's success has derived from the relative inelasticity of demand and, to a lesser extent, supply of oil, meaning they do not respond quickly to changes in the price of oil, on the demand side, because consumers take a long time to adapt and change their habits and lifestyles to reflect new, high market prices for oil and limited readily available alternatives, particularly in the transportation sector;²⁶⁹ and, on the supply side, because it takes several years to develop new production capacity to meet faster-rising demand.

But there are also seasonal factors affecting not just oil's, but other energy resources' elasticity. 'An oil embargo imposed at the beginning of winter [in the northern hemisphere], when there is a high, inelastic demand on oil for heating,' Daoudi and Dajani remind us, 'is more effective than an embargo imposed in early summer, when an elastic demand on oil for traveling represents a large share of the market'²⁷⁰ – which can also be applied, albeit for different reasons, to other energy resources, such as increased gas demand during winter for heating or hydropower supply varying seasonally according to precipitation levels, for example.

Nevertheless, the relative price elasticity of energy resources becomes a much stronger factor in influencing the potential success of energy statecraft during times of tight energy markets, when demand outstrips supply. In such scenarios, energy markets become much more volatile and vulnerable even to minor disruptions in supply, for whatever reason: 'International economic and political developments can exacerbate the effects of inelastic supply and demand on global energy markets, causing massive price fluctuations even when the underlying nature of the market remains unchanged. Under such volatile conditions, political power has accrued in the hands of energy exporters,' write Pascual and Zambetakis.²⁷¹

Morse calls attention to the fact that 'when prices are low, resource-rich countries are at least as dependent on energy markets as their markets are on them.

²⁶⁹ Kohl, *Op cit.*, pp. 197-198.

²⁷⁰ Daoudi & Dajani, *Op cit.*, p. 174.

²⁷¹ Pascual & Zambetakis, *Op cit.*, p. 11.

This means that they cannot simply take advantage of their customers or make gains at their expense. Rather, sellers and buyers must think in terms of relative gains and losses: they might both gain or both lose, but one will gain or lose more than the other. In tight markets, however, some producers nakedly resort to using energy as a tool of leverage.²⁷² This is in large part because tight markets translate into higher energy prices, which in turn increase the revenue of energy-exporting states, giving them not only more economic resources in terms of money, but also affords them more leverage against energy-importers who are competing for scarce energy resources. This can then become a vicious cycle in which producers are emboldened to take measures to tighten energy markets further – e.g., through production cuts – in an attempt to increase the power and international influence derived from their energy resources. ‘During periods of high oil and gas prices and thus windfall profits,’ Shaffer reminds us, ‘energy exporters often conduct a more assertive foreign policy, increasing their regional and at times international involvement. Indeed, their energy and political interests can overlap, with oil exporters initiating crises that lead to further oil price hikes.’²⁷³

The increased effectiveness of energy statecraft under tight market conditions was first realised by OPEC after first successfully employing the oil weapon in 1973. As mentioned above, OPEC’s previous oil embargo attempts had failed because the market had been oversupplied and the United States retained a significant spare production capacity. In 1973, however, the market was already tight, and under such conditions, ‘removal or threat of removal of even a small amount of oil can significantly affect world prices.’²⁷⁴ Even though the actual amount of oil removed from the market (7.5 per cent)²⁷⁵ was not as staggering as OPEC had threatened, ‘the insecurity and uncertainty created by the war and the embargo declaration triggered a 400 percent increase in world oil prices in a short period. These tight market conditions allowed OPEC’s declarations further to boost already rising oil prices.

In periods when oil production significantly outstretches demand, these political declarations and developments have less impact on oil prices.²⁷⁶ The lesson that ‘the

²⁷² Morse, *Op cit.*, p. 47.

²⁷³ Shaffer, *Op cit.*, p. 32.

²⁷⁴ *Ibid.*, p. 35.

²⁷⁵ *The Economist*, ‘The 2011 oil shock’, 5 March 2011, p. 13.

²⁷⁶ Shaffer, *Op cit.*, p. 7.

oil weapon is most effective if it is accompanied by production cuts²⁷⁷ would not be forgotten by OPEC, which since then also increased its overall effectiveness as a cartel by limiting its members' production through quotas, in order to maintain a certain tightness in the international oil market, as Nye explains:

Cartels generally have a problem because there is a tendency to cheat on production quotas when markets are soft and the price drops. ... OPEC was unable to enforce price discipline from the year it was founded, 1960, until the early 1970s. But after oil supplies tightened, OPEC's role in coordinating the bargaining power of the producers increased.

The Middle East war of 1973 gave OPEC a boost, a signal that now it could use its power. The Arab countries cut off access to oil during the 1973 war for political reasons, but that created a situation in which OPEC could become effective.²⁷⁸

The situation referred to above is, of course, a tight international oil market – kept that way through limited petroleum production quotas agreed amongst OPEC, when its member states' interest are unified or when global demand for oil outstrips even OPEC's capacity to supply the market fully. Most of the 1970s through the early 1980s saw a tight oil market provoked by OPEC production cuts (both deliberate as well as by supply disruption due to the Iranian Revolution), whereas the first decade of the twenty-first century saw the latter case of a tight market built up by runaway demand for oil in rapidly-emerging countries.

Regardless of differing reasons behind the tight market of the 1970s and the most recent one, the result has been the same for the relative power of energy-exporters in the international system: 'rising demand for oil and gas imports and limited capacity to expand short-term supply drove up prices, supplier wealth, and producer leverage, allowing producers such as Russia, Venezuela and Iran to punch above their weight in regional and international politics.'²⁷⁹ As Nye complements, oil-sale windfalls gave oil-exporting countries 'extra cash [that] provided money for payments and aid to advance their foreign policy objectives.'²⁸⁰

Yet the reverse is also true: countries that need to rely on exorbitant energy-export revenues to support assertive foreign policies, as well as to fund domestic stability and social programmes, lose much of their power and international leverage

²⁷⁷ Daoudi & Dajani, *Op cit.*, p. 174.

²⁷⁸ Nye, *Op cit.*, p. 66.

²⁷⁹ Pascual & Zambetakis, *Op cit.*, p. 10.

²⁸⁰ Nye, *Op cit.*, p. 76.

when energy markets are not tight and prices are low. Russia, for instance, is a prominent recent example of this trend, as Morse illustrates:

In Russia, revenues from taxes on energy sales, domestic or foreign, are critical to the legitimacy of the state and to its hopes of pursuing assertive policies abroad. Especially during the years of Vladimir Putin's presidency, when oil prices rose steadily, the former superpower grew critically dependent on its oil and gas sales as a form of influence. Russia has built its foreign policy on controlling the resources of former Soviet states and their access to pipelines that would connect them to third-party markets around the Mediterranean, in northern Europe, and in East Asia. But having pegged its hopes—and its budget—on oil priced at \$140 a barrel, Moscow has found its plans challenged when oil is \$90 and almost impossible to meet when it is \$40. ... And yet the Russian government has been slow to recognize that the effectiveness of its energy weapon has declined.²⁸¹

Being emboldened to pursue more assertive foreign policies by using energy resources as a tool of leverage, however, is not the only practice that becomes prevalent among large energy exporters during periods of tight markets and high energy prices. Higher revenue from energy sales often prove too tempting for most governments of energy-exporting states to stand by idly while private companies reap the profits themselves. This brings us to the next factor that determines effective energy statecraft: namely, the trend among energy-rich countries, during extended periods of high energy prices, towards resource nationalism, or what Morse describes as 'the tendency of producing countries to concentrate control over their resources in the hands of state-run entities, that has characterized energy politics for most of the last decade.'²⁸²

4. *Resource nationalism and government control of National Oil Companies*

'Are instruments that are more directly and uniquely susceptible to government control in a given society more frequently used?' asks Hermann. 'This question suggests the possibility that ease of access rather than appropriateness for a given problem may influence the use of certain skills and resources.'²⁸³ Hermann's answer might seem obvious in the sense that the possession of, or ease of access to, energy resources allows the states that have them to use them as instruments of their domestic and foreign policies, whereas those that do not possess them, *ipso facto*, cannot.

²⁸¹ Morse, *Op cit.*, p. 49.

²⁸² *Ibid.*, p. 37.

²⁸³ Hermann, *Op cit.*, p. 158.

However, it does not fully answer his own question in terms of *why* certain instruments are particularly susceptible to government control, compared to other resources at the disposal of a state.

One such instrument is energy. In paraphrasing the French Prime Minister during the last year of the First World War, Georges Clemenceau, who famously said that ‘war is too important a matter to be left to the military’, former US Representative Lee Hamilton has written that ‘energy is too important to be left just to the engineers and geologists.’²⁸⁴ As mentioned above, because energy security is so ubiquitously important to every aspect of a functioning modern society and economy, energy as an instrument of state policy becomes highly susceptible to politicisation.

This is also true in the international arena, where some states are unable to ensure their own energy security by themselves and therefore need to procure their energy needs from other states that have them in surplus through energy diplomacy. For that reason, it is important to bear in mind that it is precisely the politicised nature of energy resources in general, and of the fundamental need for energy security of a state in particular, that attributes any power and leverage to the use of energy statecraft by one state on another. Which is why an energy-exporting state’s ability effectively to pursue energy statecraft hinges on its capacity to cater not only to its own energy security, but also (and particularly) to that of other states, especially those that the sender state wishes to influence. The way in which a state chooses to pursue the goal of energy security – for itself and/or for others – goes a long way to explain the manner in which it engages in energy diplomacy and statecraft, as well as how effective it is in those endeavours. Thus, energy statecraft, defined as the manipulation of another state’s energy security for one’s own political purposes, inevitably becomes politicised as well, given energy-importing states’ inelastic need for these resources to ensure their energy security.

Energy security is a ‘public good’, and is therefore also a government responsibility²⁸⁵ – regardless of whether a country has nationalised or private energy companies and other energy-provision mechanisms – because ‘as long as there are

²⁸⁴ Hamilton, L.H., ‘Foreword’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. xxii.

²⁸⁵ Kenderdine & Moniz, *Op cit.*, p. 453.

externalities, market forces alone cannot achieve...energy security'.²⁸⁶ Out of the four elements of energy security, only *availability* and *affordability* are provided by the free market (although geology also plays a role in the former, while the volatility component of affordability can be politically induced), while the other two – *reliability* and *sustainability* – are not, as Shaffer explains: 'Environmental friendliness [*sustainability*] and security of supply [*reliability*] are not provided by the market. This means that the state will need to stay involved in crafting energy security policies. The market does not create the diverse sources, infrastructures, or storage policies that can enhance security of supply. The market does not know how to fashion wider political relations in a way to foil [the] use of the energy weapon. In addition, the market can lead to decisions to promote short-term personal interests and not the long-term energy security of the state.'²⁸⁷

Therefore, regardless of whether a country is a net importer or exporter of energy, the fundamental need for such resources to ensure the proper functioning of any state makes energy a particularly politicised economic resource, usually with a high level of government involvement in the sector, which Klare terms 'resource nationalism':

One way to describe the growing role of senior government officials in national energy policy is to brandish the term "resource nationalism," which might be defined as *the management of energy flows in accordance to vital state interests*. Some analysts have tended to apply this term solely to nations with an abundance of energy that have maximized state control over domestic oil and gas deposits and sought to leverage this latent power into a source of political advantage. But there is no conceptual reason to limit the term's use that way; it also applies to efforts by leaders of the deficit states to protect their national interests in a world of intense competition over the available pool of supply. ... However one applies "resource nationalism," one thing is clear: The state, itself, is acquiring greater authority over national energy sectors—as the owner of key assets and/or as a key actor in the procurement, transportation, and disposition of energy flows.²⁸⁸

Again, because the need for energy security is so prevalent in modern societies, resource nationalism manifests itself both in the search for energy resources by energy-deficit states through energy diplomacy and in the increased control of

²⁸⁶ Martin, W.F. & Harrje, E.M., 'The International Energy Agency', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 112.

²⁸⁷ Shaffer, *Op cit.*, p. 3.

²⁸⁸ Klare, *Op cit.*, p. 23. Emphasis added.

domestic energy resources by energy-surplus states for political use through energy statecraft.

Resource nationalism first emerged in Latin America during the first oil concessions in the early twentieth century and gained momentum after the Second World War, culminating with the ‘overturn of OPEC’ in the 1970s. As an ideology, it extends the traditional nationalist principle of territorial sovereignty to its subsoil, thus claiming the state’s ownership and administration of all the natural resources it contains. It also envisions the creation or strengthening of national companies while either restricting access to, or increasing the state’s share of rents from, international companies operating in the country.²⁸⁹ The right to nationalise natural resources is recognized by the United Nations:

In order to safeguard its resources, each state is entitled to exercise effective control over them and their exploitation with means suitable to its own situation, including the right to nationalize or transfer ownership of such resources to its nationals, this right being an expression of the full permanent sovereignty of the state. No state may be subjected to economic, political, or any type of coercion to prevent the free full exercise of this inalienable right.²⁹⁰

However, resource nationalism is not a constant factor in international relations, and it usually emerges when conditions are favourable – i.e. higher prices and/or demand for a natural resource during a tight market – while it wanes when conditions are inauspicious.

Even though petroleum is traded today as a fungible commodity and a global market for LNG is currently in its fledgling stages, Tsakiris contends that the oil and gas industries have ‘not followed the typical model of economic liberalisation’ of other commodities.²⁹¹ Through much of the Cold War (particularly during its first two to three decades), Klare argues, ‘the United States and other Western powers largely relied on market forces and the international oil companies rather than state-directed efforts and outright military intervention, to ensure adequate supplies of energy. Freeing these companies to establish worldwide operations in the pursuit of corporate profit, so the argument went, was the best way to ensure the maximum production of

²⁸⁹ Rodríguez-Padilla, V., ‘Nationalism and Oil’, in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol. 4, (San Diego, CA: Elsevier, 2004), p. 181.

²⁹⁰ ‘Declaration and Action Program for the Establishment of a New International Economic Order’ by the United Nations General Assembly, 1974. Cited in Rodríguez-Padilla, *Op cit.*, p. 185.

²⁹¹ Tsakiris, *Op cit.*, p. 324.

energy and avoid crippling inefficiencies.’²⁹² However, with the ‘overturn of OPEC’ in the 1970s, when almost every major oil-producing country had nationalised their petroleum industries, the nature of the international oil market changed dramatically, paving the way for the increased use of energy statecraft.

The oil embargo imposed by Arab members of OPEC on Western countries in 1973 gave OPEC countries greater control over their domestic energy resources, boosted their economic and even political power and international influence, advanced their autonomy to pursue their own oil-production policies and demonstrated OPEC’s (and that of its Arab members in particular) ability to act as a unified body in international relations. Accordingly, the majority of worldwide oil production shifted from private, multinational ownership to national government control, leading to ‘the curtailment of the traditional domination of the oil trade by the integrated international oil companies known as the “seven sisters” by the new power of the oil-exporting countries who now controlled both the volume of production and the price of crude oil.’ Since then, ‘[n]ew nationalistic governments with radically different economic and political approaches from their predecessors have emerged in a number of the oil-exporting countries. Their say in their national oil industries has increased tremendously, and their share in the profits has been greatly enlarged. Furthermore, they have been more inclined to give higher priority to politics than to economics. Some have exhibited an increased tendency to put their natural resources to political use.’²⁹³

This is true not only of OPEC member states, but also of non-OPEC oil and gas exporters, among which perhaps the most prominent example is currently Russia’s Gazprom, where the state ‘owns 50 percent plus one share of the company, and almost all of the company’s top executives are devout Kremlin loyalists. The current Russian President Dmitri Medvedev was Gazprom’s Chairman. He replaced Putin, who became Prime Minister, replacing Victor Zubkov who became Gazprom’s Chairman.’²⁹⁴ As a result, given the deep involvement of top politicians in the Russian

²⁹² Klare, *Op cit.*, p. 22.

²⁹³ Daoudi & Dajani, *Op cit.*, pp. 158, 171.

²⁹⁴ Glover, P.C. & Economides, M.J., *Energy and Climate Wars: How Naive Politicians, Green Ideologues, and Media Elites Are Undermining the Truth About Energy and Climate*, (New York: Continuum Books, 2010), pp. 170-171.

hydrocarbon sector, Gazprom ‘has come to be portrayed as the Kremlin’s foreign policy arm.’²⁹⁵

Among other reasons, due to the highly politicised nature of energy resources and their use in domestic and foreign policy, today by far the largest part of the oil and gas industry is state-controlled through governments’ majority share, if not outright monopolistically state-owned. While private international oil companies (IOCs) have full access to merely 15 per cent of oil reserves worldwide, national oil companies (NOCs) are currently responsible for at least 55 per cent of petroleum production and control 85 per cent of the world’s proven conventional oil reserves²⁹⁶ – ‘an enormous source of latent power for the states that control them. And because they operate in the countries with the most promising untapped energy fields, they are bound to retain their dominant position for years to come.’²⁹⁷

Following Klare’s logic that it is not just energy-rich countries that engage in resource nationalism, government leaders in energy-importing states are getting progressively more involved in the acquisition of foreign energy reserves to ensure their countries’ energy security through energy diplomacy, ‘[I]acking confidence in the capacity of private firms to overcome many [of the] challenges’ posed by increasingly politicised and state-controlled energy resources.²⁹⁸

Similarly, energy-exporting states’ ability to ensure energy security – for themselves and especially for other states – is a crucial determinant of how effectively they will be able to engage in energy statecraft, since the latter is the manipulation of another state’s energy security for the sender state’s own political purposes, thus increasing the incentive for government control of its energy resources, as Stulberg explains:

A manipulator [i.e., national government]...must ensure that domestic actors with direct responsibility for controlling energy resources and extraterritorial activities line up behind its statecraft. This requires that a national leadership possesses discrete regulatory authority to mobilize national resources so that domestic energy firms pursue policies that align the substantive appeal of

²⁹⁵ Goldthau, *Op cit.*, p. 32.

²⁹⁶ 2010 figures. NOCs control 85% of the world’s proven oil reserves, only 1% of world reserves have equity access to IOCs while 37% have limited equity access and 47% of world reserves are held by NOCs with no equity access to IOCs. Energy Information Administration, ‘Who are the major players supplying the world’s oil market?’, 15 March 2012.

<http://tonto.eia.doe.gov/energy_in_brief/world_oil_market.cfm>, accessed 27 March 2012.

²⁹⁷ Klare, *Op cit.*, p. 17.

²⁹⁸ *Ibid.*, p. 22.

compliance with a target's risk-taking propensity. This does not necessitate the political capacity to impose or enforce compliance at home, as much as the authority to shape the commercial and political incentives for domestic agents and firms in ways that make upholding national interests more rewarding.²⁹⁹

But energy monopolies are not a prerequisite to ensure the energy security of a state, nor, by consequence, to be able to pursue energy diplomacy or statecraft. What matters is how much influence a country's government has over energy companies to implement its energy security strategy in tandem with them, be they nationalised or private. Because 'formal authority to oversee the formulation and implementation of foreign policy is hierarchical', writes Stulberg, 'foreign policy decisions are the product of interaction between principals—central executives empowered to devise and oversee policy—and agents—administrative actors tasked with carrying them out. To influence the behavior of another state, a central executive must convince foreign targets to sacrifice preferred policies or to take a risk on compliance, as well as secure the dutiful implementation of statecraft by functionaries and interest groups at home.' Therefore, in order to engage in energy statecraft, 'statesmen must be able to devise a strategy and secure the cooperation of domestic actors (both government and private) that possess the critical expertise and control over respective policy resources.'³⁰⁰

This resonates with the principal-agent dilemma explained in the previous chapter, which also suggests that national monopolies are often less efficient than their private, international counterparts. With a few notable exceptions – such as Saudi Aramco, Norway's Statoil, Brazil's Petrobras and Malaysia's Petronas – precisely because nationalist or protectionist sentiments tend to limit the access of foreign investment in a country's energy sector, national companies seldom have the same technical expertise, organisational skills and capital as IOCs, giving the latter a better record at developing energy-production capacity, and with it energy security, than the former. As Shaffer explains,

Resource nationalism policies usually make little economic sense, since they tend to harm production and export capabilities and thus ultimately state revenues. Substituting state oil companies for foreign and private partners often means less efficient operation and more limited access to advanced exploration and production technologies. These policies also hurt the climate for future foreign and private investment in the states. As stated by William Ramsay,

²⁹⁹ Stulberg, *Op cit.*, p. 7.

³⁰⁰ *Ibid.*, p. 43.

deputy director of the International Energy Agency, “The rise of nationalism is a concern for future (oil and gas) production.”³⁰¹

Therefore, the need for more capital and better technical knowhow often drives producing countries to invite IOCs to participate in their energy sectors by promising them equity stakes in their operations. Since the mid-1970s, according to Adam Sieminski, ‘there have been very few examples of national oil companies making significant net increases in production capacity without some form of direct participation by the IOCs.’³⁰² Moreover, IOCs are much better at managing their revenues over the long term than NOCs because they set aside parts of their profits during booms in order to avoid deficits during business troughs.

Meanwhile, governments with energy monopolies habitually take away from their NOC’s profits to spend on national development programmes and/or more assertive foreign policies, thus creating budgetary constraints that limit these companies’ ability to reinvest in future production capacity and energy security: ‘In contrast to private firms, largely motivated by the lure of profits and a desire to increase shareholder value, the NOCs are often driven by what the Congressional Research Service terms “governmentally mandated objectives.” ... But for many of the countries involved, the national oil companies are also being wielded by their governments as a tool of foreign policy. “It is no surprise,” the James A. Baker III Institute of Rice University in Texas, U.S., reported, “that NOCs, with their vast access to the world’s resources, are becoming important players in global power politics.”’³⁰³

In principle, because NOCs act in accordance with their government’s national interests, while IOCs follow their shareholders’ interests, energy security can sometimes better be served by NOCs than by IOCs, which ‘cannot be expected automatically to consider the energy security concerns of client nations as they are driven mainly by commercial pressures.’³⁰⁴ This, in turn, compromises the ability of states relying on private energy companies not only to pursue their energy security,

³⁰¹ Shaffer, *Op cit.*, p. 31.

³⁰² Sieminski, A.E., ‘World Energy Futures’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 37.

³⁰³ Klare, *Op cit.*, pp. 18-19.

³⁰⁴ Jaffe, A.M., Hayes, M.H. & Victor, D.G., ‘Conclusions’, in Victor, D.G., Jaffe, A.M., & Hayes, M.H. (eds.), *Natural Gas and Geopolitics: From 1970 to 2040*, (Cambridge: Cambridge University Press), p. 477.

but also to convert that ability into effective energy diplomacy and statecraft. Conversely, NOCs with a strong international projection, whose chairmen are typically also their country's energy minister, are increasingly able to outbid IOCs for new oil concessions abroad by providing the host country's government with additional political incentives that may well be more attractive than the (usually purely economic) offers made by IOCs.³⁰⁵

However, as Goldthau calls attention to, a quick assessment of the motivations behind China's energy diplomacy and Russia's energy statecraft challenges the assumption that the primary driver is energy security or national security. Rather, he argues, 'both strategic government goals and corporate business interests—which may often coincide but not necessarily be identical—are reflected in energy diplomacy [and statecraft]. As the cases of China and Russia reveal, the driving force of (energy-related) foreign policy is not necessarily only the Kremlin or the Chinese presidency but may be also the headquarters of Gazprom or PetroChina.'³⁰⁶

In that respect, the principal-agent dynamic can work both ways: the government using energy companies as agents to carry out their political strategy, and energy companies using the governments where they are based as instruments to achieve their (usually profit-driven) goals. But, in any case, in order for more effective energy statecraft (or diplomacy) to take place, a solid principal-agent relationship should be in place between national governments and their energy companies, national or otherwise.

Limits to Energy Statecraft

In order to avoid one of the criticisms that Michael Mastanduno has directed at the new literature on positive economic statecraft – namely that it 'has tended to focus research on "showcasing" the effectiveness of economic inducements in carefully selected case studies'³⁰⁷ – it is important to list and assess the limits and potential hindrances to the successful implementation of energy statecraft, be it negative or positive. As Daoudi and Dajani remind us, 'in their efforts to use oil leverage most

³⁰⁵ Howell, D. & Nakhle, C., *Out of the Energy Labyrinth*, (London: I.B. Tauris, 2006), p. 22.

³⁰⁶ Goldthau, *Op cit.*, pp. 33-34.

³⁰⁷ Mastanduno (1999), *Op cit.*, p. 310.

effectively, the oil producers need to consider the counterleverage options open to the target nations.³⁰⁸

With regards to negative energy statecraft, Shaffer has noted that ‘oil supply embargos by producers have been an infrequently used and very ineffectual tool’ of foreign policy, while reminding us that it is more often the oil- and gas-producing countries that are the targets of consuming countries’ sanctions, given the large investment necessary to develop their hydrocarbon industry.³⁰⁹ It is, after all, ‘in the national interests of major oil consumers who may eventually find themselves the targets of the oil weapon to guard themselves against such a possibility by seeking to minimize conflict with the producers and having multiple policy options available should those conflicts fail to be resolved. ... [Therefore, p]otential target nations need to adopt energy policies that will make them less vulnerable to drastic supply restrictions.’³¹⁰

For Pascual and Zambetakis, the short-term options are limited for consumer states and those ‘who see the wider risks of vesting so much political power in energy-rich states’ (particularly during tight market conditions), since energy production is managed by producer states.³¹¹ However, there are several inherent limits to energy statecraft as well as a number of long-term options available to energy-importing states against exporters’ energy statecraft, and many such energy security countermeasures have been put in place. These include the resource curse and export dependence; resource nationalism; OPEC’s lack of cohesion as a cartel; the International Energy Agency and strategic petroleum reserves; and diversification and conservation of energy resources.

The resource curse and export dependence

Though being richly endowed with energy and other natural resources can be a boon and a source of power for some countries, it can have the opposite effect if their resources and revenues are not well managed. This is the so-called ‘resource curse’: countries that are dependent on revenues from the sales of their hydrocarbons or other natural resources often fail to translate their short-term wealth into long-term economic growth and sustainable development due to poor governance and fiscal

³⁰⁸ Daoudi & Dajani, *Op cit.*, p. 174.

³⁰⁹ Shaffer, *Op cit.*, p. 36.

³¹⁰ Daoudi & Dajani, *Op cit.*, pp. 176-177.

³¹¹ Pascual & Zambetakis, *Op cit.*, p. 23.

mismanagement.³¹² And the resource curse is not just limited to countries lacking good governance; it can also happen in advanced, industrialised countries like The Netherlands, which has given its name to a particular form of economic malaise caused by its first discovery of natural gas in the North Sea in the 1960s – ‘Dutch disease’:

The affliction hits when a country becomes a significant producer and exporter of natural resources. Rising resource exports push up the value of the country’s currency, which makes its other exports, such as manufactured and agricultural goods, less competitive abroad. Export figures for those products then decline, depriving the country of the benefits of dynamic manufacturing and agricultural bases and leaving it dependent on its resource sector and so at the mercy of often volatile international markets.³¹³

But the resource curse goes well beyond ‘Dutch disease’, especially where less developed countries with poor governance are concerned. High energy prices and their resulting windfalls in the coffers of less developed energy-producing and exporting countries can lead to other economic problems, excessive and wasteful government spending, corruption and internal conflict. The ‘easy money’ resulting from high energy prices reduces incentives to invest in future production capacity, meaning that energy-producing countries could derive less revenues over a twenty-year period than if prices had been low.³¹⁴ Paul Collier’s research has shown that countries benefitting from an oil boom grow on average 7 per cent during the first five years but shrink an average of 17 per cent over the following ten years.³¹⁵ This means that energy producers are ultimately much more dependent on their exports than consumers are on energy imports, which can be illustrated by comparing the United States and Saudi Arabia, the world’s biggest oil importer and exporter, respectively:

From the exporters’ point of view, “energy security,” or perhaps, to be more precise, “demand security,” is at least as important, perhaps more so, than for the importers. Energy represents about 15 percent of the U.S. total import bill and 2 percent of GDP but 90 percent of Saudi exports and 45 percent of GDP. The Saudis need the United States more than the United States needs them. *In extremis*, the United States can turn to coal and nuclear power; Saudi Arabia has neither of these nor any other realistic way of earning a living. If the United

³¹² Jaffe, Hayes & Victor, *Op cit.*, p. 480.

³¹³ Ross, M.L., ‘Blood Barrels’, *Foreign Affairs*, Vol. 87, No. 3, May/June 2008, p.3

³¹⁴ Burrows, M. & Treverton, G.F., ‘A Strategic View of Energy Futures’, *Survival*, Vol. 49, No. 3, September 2007, pp. 83-84.

³¹⁵ Cited by Javier Solana, ‘Towards an EU External Energy Policy’, keynote speech delivered at the EU Energy Conference in Brussels, 20 November 2006.

States manages to cut oil demand by just a few percent, it might not import any Saudi oil. During the period of the oil crises, say from 1973 to 1980, real U.S. GDP per head rose by 9 percent. The production cutbacks and low prices that followed led to real Saudi per capita GDP falling by 42 percent, taking them from parity with Switzerland to lying just ahead of Mexico.³¹⁶

Thus, during low-price scenarios, the export dependence created by the resource curse severely hampers the ability of producing countries to engage in energy statecraft, since their revenues depend on these exports, like ‘Russia’s now-critical need for revenue from natural gas exports [that] limits the credibility of its threats to deny supplies to buyers.’³¹⁷

And, as is often the case under high prices, importing countries become more efficient in their oil use through conservation and look to other sources of energy to substitute for expensive oil, thus curbing future demand for exporting countries’ oil even under low price scenarios.

Despite the sustained tight oil market conditions in the early twenty-first century, the major industrial states are less vulnerable to the price surges and spikes caused by threat of supply disruptions than they were in the 1970s. Today the United States and Europe use half the amount of oil per dollar of GDP produced that they did in the 1970s. ... Moreover, the major oil exporters are much less prepared to sustain extended export disruptions than in the past, with their economies increasingly dependent on oil revenues. Those oil exporters with large populations supported by the oil revenues, such as Iran and Venezuela, are particularly dependent on continuing high exports.³¹⁸

Instead of making wise investments, such governments often lack fiscal discipline and spend their windfalls on projects that they cannot afford when prices are low, which given the nature of the business cycle, inevitably happens after booms. In that sense, in Yahia Said’s words, the oil curse ‘is similar to financial crises where problems are created on the up-side even if they are only manifested when the bubble bursts. Thus the mismanagement of the oil windfalls from the 1970s boom contributed to the debt crisis in the 1980s. Having squandered the windfalls from the 1970s boom many resource rich countries experienced economic, social and political upheavals in the 1990s which did not spare even the wealthiest ones.’³¹⁹

³¹⁶ Mills, R.M., *The Myth of the Oil Crisis: Overcoming the Challenges of Depletion, Geopolitics, and Global Warming*, (Westport, CT: Praeger, 2008), p. 201.

³¹⁷ Morse, *Op cit.*, p. 49.

³¹⁸ Shaffer, *Op cit.*, p. 35.

³¹⁹ Said, Y., ‘Energy’, *LSE Magazine*, Vol. 19, No. 2, Winter 2007, p. 8.

Even worse than their economic side-effects are the political repercussions of oil windfalls. Sudden and huge amounts of revenue not only tend to increase corruption at the expense of democracy and good governance, often solidifying dictatorships, but they also tend to delay badly needed reforms, instead spending the windfalls on payoffs and patronage in order for the regime to stay in power while silencing their opponents. This, in turn, is likely to increase economic disparities inside the country, which often lead to internal conflicts and civil wars – the so-called ‘Arab spring’ of 2011 in Libya and other Middle Eastern and North African countries is a case in point. Indeed, Collier also argues that resource-rich countries are nine times more likely than ‘resource-poor’ countries to experience violent internal conflicts.³²⁰ Thus, higher revenues from energy windfalls tend to create increased dependence on export rents in energy-producing countries.

Resource nationalism

Resource nationalism, though a potential source of control and increased effectiveness of energy statecraft, can also be a limitation. When oil prices are high over extended periods of time, writes Shaffer, ‘states often become emboldened and reduce or remove the participation of foreign or private companies in energy exploration, production, or export. They adopt a policy of resource nationalism, and take advantage of their newly acquired power under tight oil markets to attempt to revise agreements with foreign energy companies, nationalize energy industries, and advance state ownership of energy resources.’³²¹ While such actions may accrue more power and revenue to energy-rich states in the short term, the long-term ramifications tend to be detrimental, as explained above. Robert Mills clarifies that ‘recurrent attempts by petro-states to found their economies primarily on oil and gas will lead...to stagnation. The temporary feeling of power given their leaders by their possession of a scarce resource will turn out to be illusory; it will cause them to dally in making fundamental reforms and thus, ironically, make them weaker than their rivals, not stronger.’³²²

This can be illustrated by the fall in OPEC’s market share of oil production relative to non-OPEC producers over the years: from 53 per cent at the time of the

³²⁰ Cited by Javier Solana, *Op cit.*

³²¹ Shaffer, *Op cit.*, p. 31.

³²² Mills, *Op cit.*, p. 3.

1973 boycott to around 35 per cent today,³²³ which, according to Mills, is ‘too low for a really effective cartel, even if all its members were perfectly aligned, and OPEC is not itself homogeneous.’ Moreover, with so many more producers and exporters in the international oil market, the fungible nature of oil ‘make[s] it impossible to enforce a selective boycott or preferential supply’,³²⁴ since a buyer can always procure oil elsewhere (though probably for a higher price) in case of a supply disruption. This is also true of most commodities, and was realised at least as far back as the publication of Albert Hirschman’s *National Power and the Structure of International Trade* (1945): ‘A country menaced with an interruption of trade with a given country has the alternative of diverting its trade to a third country; by so doing it evades more or less completely the damaging consequences of the stoppage of its trade with one particular country. The stoppage or the threat of it would thus lose all its force.’³²⁵

In addition to competition from non-OPEC producers, there are several factors that limit OPEC’s ability to manage the world’s oil supply and price as a cartel, as the former Deputy Secretary General of OPEC, Fadhil al-Chalabi, enumerates.³²⁶ One of OPEC’s key limitations is its short-termism both politically and economically. The intense politicisation of OPEC became apparent once it took over the pricing of oil, which its members immediately turned into a political weapon to gain ‘short-term benefits with little regard for the long-term consequences of their decisions.’ OPEC’s short-termism has also been reflected economically due to its members’ almost total dependence on oil revenues – over 90 per cent of their total exports – for their national budgets, making their decisions based on the immediate financial requirements of their treasuries rather than long-term economic rationale. Indeed, as Chalabi himself puts it, ‘OPEC’s decision-making process had little to do with sound economics.’ The politicisation of oil by OPEC has led, time and again, to disruptions in supply and wide price fluctuations caused above all by political events than by market forces: ‘World oil markets can be seen as simply reacting to interruption of supplies caused by political events.’ This is in stark contrast to how the IOCs managed the market before OPEC took over its control. The former ‘controlled the

³²³ Shaffer, *Op cit.*, p. 35.

³²⁴ Mills, *Op cit.*, pp. 193, 200.

³²⁵ Hirschman, A.O., *National Power and the Structure of Foreign Trade*, (Berkeley, CA: University of California Press, 1945 [1980]), p. 29.

³²⁶ Chalabi, F.J., ‘History of OPEC’, in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol.4, (San Diego, CA: Elsevier, 2004), pp. 760-762.

upstream in response to downstream requirements, all of which were controlled by the major oil companies in a way as to create a stable market by avoiding a shortage or surplus of crude oil. In OPEC's case, decisions on crude oil production are not organically related to downstream requirements. OPEC production is based simply on the difference between world demand and the production from outside the organization, without any knowledge of the downstream exigencies of consumer countries', thus inevitably leading to worldwide price volatility and less control over markets, limiting OPEC's ability effectively to pursue energy statecraft.

As natural gas augments its share of overall energy demand, securing gas supplies will increasingly be considered as part of gas-importing countries' national interests. This raises fears that a few countries could dominate international gas markets, particularly LNG trade, and form a natural gas cartel emulating OPEC, an idea that has existed almost as long as OPEC but has only recently started to come to fruition. In May 2001, the Gas Exporting Countries Forum (GECF) held its inaugural meeting in Tehran, seeking to increase the coordination of gas production among its members.³²⁷ Since then, GECF has tried without success to influence Europe's natural gas market: 'GECF helped to catalyse the formation of a working group headed by Russia and Algeria who sought to resist EU attempts to outlaw destination clauses that prevent contracted gas buyers from reselling to third parties. (The option to resell gas is a pivotal mechanism for market arbitrage and efficiency, as it helps to prevent the segregation of markets that allows gas sellers to exert monopoly power.)'³²⁸

Despite its creation, there are several factors keeping GECF or other future gas cartels from being able to act collectively with the same relative success as OPEC. First and foremost, because of its insubstantial characteristic in its natural state, gas is mostly transported through fixed pipelines that require long-term contracts and good relations between gas-producing and -consuming countries, which have resulted in regional markets rather than a fungible, global market like oil. However, while the rising global trade in liquefied natural gas could facilitate gas cartel formation, not only is this market still being developed but LNG also competes with pipeline gas. Unlike oil, natural gas reserves are currently much more widely distributed in the world – 'largely as a result of natural gas not having been a priority for

³²⁷ Algeria, Brunei, Egypt, Indonesia, Iran, Libya, Malaysia, Nigeria, Oman, Qatar Russia, Trinidad & Tobago, the United Arab Emirates and Venezuela, and Norway as an observer rather than a member.

³²⁸ Jaffe, Hayes & Victor, *Op cit.*, pp. 477-478.

development'.³²⁹ Owing to the large and growing number of natural gas suppliers, GECF or other attempts at gas cartelisation are faced with too many potential members and too many diverging interests among them to act effectively with unity of purpose, not to mention fierce competition from those countries that do not join the cartel as well as competition from other energy sources, as Mills points out: 'Gas, primarily used for power, is much more easily substitutable than oil, having strong competitors in nuclear, coal, and renewables and being available as LNG from a wide and growing variety of suppliers.'³³⁰ Moreover, the natural gas industry, particularly LNG, is extremely capital-intensive to develop, but is much cheaper to operate once production has started, putting a 'premium on full operation once the equipment is in service'³³¹ rather than limiting production to achieve political ends. Lastly, with the exception of Russia, which is both the largest reserve holder and biggest exporter of natural gas, there is much less of a correlation between gas reserves and export market share than there is with oil – e.g. Canada is the world's second-largest gas exporter despite only having the nineteenth-largest reserves, whereas Iran holds the world's second-largest reserves and is not a significant gas exporter and is not even among the world's top twenty gas exporters³³² – meaning it is critical for gas exporters to maintain good relations with their costumers in order to attract further investments for this highly capital-intensive industry and to protect their revenues, market share and reputation as reliable suppliers.³³³ Thus, for Amy Jaffe, Mark Hayes and David Victor, 'the countries most likely to become [natural gas] exporters are those that are able to combine prodigious gas resources with a business environment that favors private investment; those same conditions would impede the successful implementation of an effective cartel', making the latter 'still a theoretical prospect rather than a real present danger.'³³⁴

³²⁹ Juckett, D.A. & Foss, M.M., 'Can a "Global" Natural Gas Market Be Achieved?', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 538.

³³⁰ Mills, *Op cit.*, p. 195.

³³¹ Jaffe, Hayes & Victor, *Op cit.*, p. 478.

³³² Jaffe, A.M. & Soligo, R., 'Market structure in the new gas economy: is cartelization possible?', in Victor, D.G., Jaffe, A.M. & Hayes, M.M. (eds), *Natural Gas and Geopolitics: From 1970 to 2040*, (Cambridge: Cambridge University Press, 2006), pp. 442-443.

³³³ Yergin, 'Energy Security and Markets', *Op cit.*, pp. 59-60

³³⁴ Jaffe, Hayes & Victor, *Op cit.*, p. 478.

OPEC's lack of cohesion as a cartel

OPEC's drawbacks in effectively controlling the global oil market are not limited to its collective actions, but they also include internal power struggles. OPEC members often fail to abide by their official production quotas, especially when oil prices are high – their degree of compliance tends to be greater when prices are low. This form of 'cheating' is a result of the heterogeneous nature of OPEC's membership, which sparks a conflict of interest between its larger and smaller members: 'those with low oil reserves always seek higher prices so as to maximize their oil revenues by increasing the per barrel income; also, because their production capacity is so limited, they do not even care about the market share or the long-term effects of high prices on demand and supply. Conversely, member countries with large reserves (e.g., Saudi Arabia) in principle have regard for their market share to maximize income from their larger volume and, thus, higher market share. OPEC has in the past tried to formulate a long-term strategy but has never succeeded due to these conflicts of interest within the organization.'³³⁵ There are two main examples of how diverging interests among OPEC members have backfired, both of which resulted in an oil price collapse, in 1986 and in 1998.

The Iranian Revolution of 1979, followed by the outbreak of the Iran-Iraq War in 1980, caused severe supply disruptions which more than tripled the price of oil to over \$40 a barrel, which in turn 'encouraged fuel switching, the development of more efficient technologies, and a strong increase in non-OPEC oil production, which, along with decreasing demand due to recession, reduced OPEC's market share from more than 30 million barrels/day (mbd) in the 1970s to as low as 16 mbd by the mid-1980s'³³⁶ – or, in percentage terms, OPEC's market share fell from 53 per cent during the mid-1970s to around 30 per cent in 1985.³³⁷ This drastic loss of market share was a direct result of Saudi Arabia playing the role of swing producer by cutting its production – from 10 mbd in 1981 to 3.5 mbd in 1985 – in a vain attempt to keep prices high as increasing amounts of non-OPEC oil flooded the market, while other OPEC members took advantage of the situation by cheating on their quotas.³³⁸ Both concerned about the ongoing loss of its market share and in an attempt to discipline

³³⁵ Chalabi, *Op cit.*, p. 762.

³³⁶ Energy Information Administration, *Annual Energy Review 1997*, DOE/EIA- 0384(97). (Washington, DC, July 1998), Table 11.4. Available at: <
<http://www.eia.doe.gov/emeu/25opec/sld003.htm>>, accessed 17 May 2011.

³³⁷ Chalabi, *Op cit.*, p. 759.

³³⁸ Gause, F.G., 'Saudi Arabia Over a Barrel', *Foreign Affairs*, Vol. 79, No. 3, May/June 2000, p. 87.

overproducers, Saudi Arabia not only increased its output almost overnight from 2.3 mbd to over 6 mbd, but it also sold its oil at a discount known as ‘netback pricing’ to guarantee a considerably larger market share for itself.³³⁹ Saudi production rose quickly during the first half of 1986, making prices tumble to less than \$8 per barrel that summer, showing that ‘opening up the spigots to discipline others could backfire.’³⁴⁰

During the mid-1990s, OPEC was characterised by overproduction and disunity among its members to the point of Venezuela questioning the cartel’s viability. In 1991, Venezuela’s state-owned company, PDVSA, completely ignored its OPEC quota and embarked on an ambitious campaign to increase its production from 2.8 mbd to 7 mbd by 2006, by reopening its nationalised petroleum sector to foreign investment and participation, in order to overtake Saudi Arabia as the top oil supplier to the United States, a position it reached in January 1997. Faced with the potential loss of its most important export market, this provided Saudi Arabia with a strong disincentive to cut its own production for the sake of defending the price of oil. Instead, Saudi Arabia once again decided to wage a price war by opening its taps, surpassing its 1996 OPEC quota of 8 mbd by 500,000 barrels a day for all of 1997, to punish Venezuela for challenging its share of the vital US market.

However, this infighting happened against a backdrop of aggressively increasing Iraqi exports under the auspices of the UN Oil for Food programme, the unexpected Asian financial crisis of 1997, which led to a drastic fall in Asian demand for oil – a drop in 1.9 per cent, in contrast to a 4.5 per cent rise in Asian demand the previous year – and two consecutive warm winters that stagnated OECD countries’ winter demand for oil. The combination of OPEC overproduction and worldwide demand slump resulted in yet another price collapse, from \$27 a barrel in 1997 to as low as \$8 the following year.³⁴¹

This event was a stunting reminder of the special glue that binds OPEC countries together—fear that the Saudis will use their own oil weapon for punitive purposes and for discipline within the producer group. In game-theoretic terms, OPEC politics involves a dominant producer—Saudi Arabia—and the peripheral countries—the other OPEC members. The dominant producer’s motive is to assure itself the maximum autonomy while preventing the others from “free riding” on its efforts to manage the market. It does so by

³³⁹ Morse & Jaffe, *Op cit.*, p. 77.

³⁴⁰ Gause, *Op cit.*, p. 88.

³⁴¹ Morse & Jaffe, *Op cit.*, pp. 72, 75-76; and Jaffe, *Op cit.*, pp. 849-851.

maintaining its “deterrent,” consisting of its shut-in production capacity, which it can use to feed the market and to discipline other producers. The peripheral countries, conversely, try to work together to prevent the dominant producer from acting on its own to produce flat out but rather offer cooperation as a means to ensure a floor under prices.³⁴²

As is often the case with countries dependent on oil export revenues, the price collapse of 1998 bankrupted Venezuela’s treasury, giving rise to popular discontent, which paved the way for regime change through the election of a radical, leftwing leader in the form of Hugo Chávez in December that year, who soon cancelled PDVSA’s expansion plans, heralding a major shift not only in his country’s oil policy but also within OPEC itself. That is why, in Morse and Jaffe’s view, ‘[t]here is no doubt that without the Saudi weapon, OPEC cooperation would be far shorter-lived than it has been. Other members are mindful of the damage Saudi Arabia can inflict over the short run with increased production.’³⁴³

The International Energy Agency and strategic petroleum reserves

With virtually all the world’s spare production capacity resting in the Middle East at the time of the 1973 Arab oil embargo, there was no mechanism in place for OECD countries to protect themselves from the economic fallout of such a major disruption. The oil price spike of 1973 thus revealed the full extent to which oil-import-dependent countries in the OECD were to supply shocks. In response to these events, US Secretary of State Henry Kissinger summoned the leaders of OECD countries to meet in Washington in February 1974 to establish a framework for international energy cooperation. Underlying the reason for the meeting was a recognition that ‘consuming countries have a clear interest in undertaking policies that will undermine OPEC’s short- and long-term ability to act as a cartel to inflate oil prices’ and that ‘[p]olicies undertaken in conjunction with other consuming nations are likely to be more effective than policies undertaken individually by increasing the strength of the monopsony wedge’ – i.e. collective buying power of major oil consumers³⁴⁴ – in other words, the reverse of monopoly power. After almost a year of intense negotiations, the International Energy Agency (IEA) was created on 15 November 1974, through a decision of the Council of the OECD – to which the new organisation is formally

³⁴² *Ibid.*, pp. 76-77.

³⁴³ *Ibid.*, p. 77.

³⁴⁴ Jaffe, *Op cit.*, p. 855; and Morse & Jaffe, *Op cit.*, pp. 66-67.

linked and headquartered in Paris – to serve as the collective mechanism through which its oil-consuming members would coordinate their actions in response to future energy crises, cooperate to prevent scrambles for oil supplies and deter oil-producing countries from using oil as a political weapon to influence the foreign policies of its members.³⁴⁵ In the words of a former US representative to the IEA, Edward Morse, the founding member states sought to ‘blunt the use of the oil weapon’, which the Agency does through its two major functions: ‘sharing oil among member states in the case of short-term supply disruptions, and long-term plans to reduce dependence on OPEC.’³⁴⁶

The IEA’s members currently agree on the following as their core objectives: maintaining and improving systems for coping with oil supply disruptions; promoting rational energy policies in a global context through cooperative relations with nonmember countries, industry, and international organizations; operating a permanent information system on the international oil market; improving the world’s energy supply and demand structure by developing alternative energy sources and increasing the efficiency of energy use; and assisting in integration of environmental and energy policies.³⁴⁷

The centrepiece of the IEA mechanism during its formative years was an emergency oil-sharing system through which its member states would share their supplies in case of another embargo or other serious supply disruptions affecting one or more of its members. This system would be triggered in the event of either a 7-11 per cent or a 12 per cent or greater shortfall in daily oil supply in one or more of IEA member states, with two different responses depending on the case: for a 7 to 11 per cent shortfall, demand restraint and conservation measures would be adopted by members, while only a 12 per cent or higher shortfall would require the actual sharing of IEA members’ oil supplies.³⁴⁸

However, the second oil price shock provoked by the Iranian Revolution in 1979 demonstrated that the oil-sharing plan was inadequate to cope with the new crisis. The shortfall in supply caused by the decrease of 4.5 mbd of Iranian production, although serious, did not reach the IEA’s minimum, but staggering, trigger of 7 per cent. The resulting action by OECD countries was in complete opposition to the IEA’s *raison d’être*, provoking a panicky scramble for supplies, oil

³⁴⁵ Yergin, ‘Ensuring Energy Security’, *Op cit.*, p. 75.

³⁴⁶ Cited in Shaffer, *Op cit.*, p. 95.

³⁴⁷ Martin & Harje, *Op cit.*, p. 108. See also Kohl, *Op cit.*, p. 200.

³⁴⁸ Kohl, *Op cit.*, pp. 199-200.

stock building and hoarding, putting additional upward pressure on prices and worsening the crisis.

The Iranian Revolution taught the IEA a valuable lesson, however: the importance of oil stocks and member state coordination in the event of a disruption.³⁴⁹ The United States Congress had already enacted legislation in 1975 authorising the construction of a Strategic Petroleum Reserve (SPR) that would allow the US government to purchase and store huge amounts of petroleum to be released according to need. After the Iran-Iraq War erupted in September 1980, the IEA decided to shift its emergency coordination system away from oil-sharing and demand restraint towards a more flexible and rapid response mechanism of releasing oil stocks to the market similar to the American SPR, a policy that became formalised in the IEA in 1985, requiring its 26 members to hold the equivalent of at least 90 days of oil imports in emergency stocks, and endures to this date:

There was a fundamental understanding in 1985 that oil stocks could buy time for diplomacy. They had become an essential tool of foreign policy, and there was an understanding that the tool must be implemented internationally in a coordinated manner. Recognizing this, the United States endorsed the development of a more formal system of stock usage and the need for the United States and its allies to expand their strategic oil stockpiles. As a result, the IEA undertook a major effort to formalize coordinated stock policy and urge all member countries to build stocks.³⁵⁰

Thus, when faced with energy statecraft in the form of a supply disruption, oil-consuming countries are faced with three choices: suffer high prices, try to convince countries with sufficient spare capacity to increase production, or draw down strategic oil stocks.³⁵¹ Strategic reserves represent the *demand-side* of the international energy market's 'security margin', absorbing supply shocks by releasing stored oil to replace the amount missing from the market without having to rely on spare capacity from the *supply-side*.

The development of strategic reserves sufficient to cover [ninety] days of imports by all IEA members (and more recent accumulation by China) provides a valuable buffer in the case of an interruption or embargo. The actual period of cover would be longer because not all exports worldwide would be cut off simultaneously; at most, one or two countries might be implicated (as with Iraq and Kuwait in 1990-1991). This gives consumers "staying power," ensuring that

³⁴⁹ Martin & Harrje, *Op cit.*, p. 101.

³⁵⁰ *Ibid.*, p. 104.

³⁵¹ Goldwyn & Billig, *Op cit.*, p. 517.

a boycott by a major exporter would have to be sustained for a long period, causing them severe economic hardship.³⁵²

As the former executive director of the IEA, Claude Mandil, has noted, ‘strategic stocks are a very important tool of deterrence for OECD countries’³⁵³ against politically motivated embargoes and OPEC’s monopolistic control of the market, ensuring price stability through intermittent checks on high oil prices, thus increasing the international influence of countries that have such stocks.³⁵⁴ Moreover, the threat to draw down strategic stocks can also encourage OPEC countries to increase production from their spare capacity – as was the case shortly before the Gulf War in 1991, when the Bush administration in conjunction with the IEA expressed their willingness to do so, leading Saudi Arabia to increase production – since such an action would deflate prices and revenue from oil exports, if not lead to an outright price collapse if the drawdown is sufficiently large. Thus, ‘in theory, [strategic] oil reserves are an important tool of both economic and foreign policy.’³⁵⁵

Diversification and conservation of energy resources

The IEA’s limited success as an international organization with formal mechanisms to counter OPEC’s monopoly power notwithstanding, there is one strategy Western, oil-importing countries have adopted, which, more than any other, has potentially worked to cripple OPEC’s long-term hold over the oil market, and, if used again, could repeat its feats of the 1970s and 80s: diversification. The principle of diversification is almost as old as the international politics of oil, and, like its ultimate goal today, was born out of fears of the Middle East and its unreliability as a secure source of oil supplies. In 1913, when Great Britain and Imperial Germany found themselves in the midst of an arms race for naval superiority preceding the First World War, Winston Churchill, then the First Lord of the Admiralty, made the landmark decision to substitute coal for petroleum as the main energy source to fuel the Royal Navy’s ships. Not only would this change make the ships faster and more manoeuvrable, but they would also require fewer men in the engine rooms, shovelling coal into the ships’ furnaces, allowing them to be on the deck, fighting. But this shift represented at the

³⁵² Mills, *Op cit.*, pp. 197-198.

³⁵³ Martin & Harrje, *Op cit.*, p. 107.

³⁵⁴ Goldwyn & Billig, *Op cit.*, pp. 516, 526-527.

³⁵⁵ Victor, D.G. & Eskeris-Winkler, S., ‘In the Tank’, *Foreign Affairs*, Vol. 87, No. 4, July/August 2008, p. 71.

same time a geopolitical and strategic gamble in the sense that the Royal Navy would no longer rely on abundant and safely available Welsh coal, instead having to rely on insecure oil supplies from Persia, thus turning Britain's energy security into a foreign policy matter. 'In addressing the risks associated with this historic move,' Daniel Yergin recounts, 'Churchill declared, "Safety and certainty in oil lie in variety and variety alone."' With that, he was articulating the fundamental principle of energy security: diversification of supply.³⁵⁶

Almost a century later, experience has shown that diversification remains the 'overarching principle' of energy security.³⁵⁷ 'Multiplying one's supply sources', writes Yergin, 'reduces the impact of a disruption in supply from one source by providing alternatives, serving the interests of both consumers and producers, for whom stable markets are a prime concern.'³⁵⁸ Norris notes that, in theoretical terms of economic statecraft, this means that 'over the long term, states may seek to limit their exposure to economic statecraft by consciously seeking to alter their elasticity exposure or relative magnitude exposure (e.g. changing a state's economic dependence on oil,...diversifying trade partners or sources of investment etc.)'.³⁵⁹ But the principle of diversification has evolved to take on a wider meaning, not just of varied sources of petroleum, but, more crucially, also of different kinds of energy sources, old and new – thus remaining 'the essential starting point for any thinking of energy security'.³⁶⁰ Indeed, the ability of IEA members and other energy-importing countries to exercise their monopsony power against OPEC and other unreliable suppliers 'depends in large part on the availability of alternative energy supplies'.³⁶¹

The purpose of diversification is to reduce dependence on a few, unreliable and/or unstable suppliers of a single energy source. Therefore, the outbreak of the Iranian Revolution in 1979 and the ensuing war between that country and Iraq – both of which caused the price of oil to skyrocket to significantly higher levels than they had been throughout the decade following the 1973 price spike – had unintended negative consequences for OPEC countries, which at first were satisfied with their

³⁵⁶ Yergin, 'Energy Security and Markets', *Op cit.*, p. 52.

³⁵⁷ Yergin, D., 'What does "energy security" really mean?', *The Wall Street Journal*, 11 July 2006, Opinion Page.

³⁵⁸ Yergin, 'Ensuring Energy Security', *Op cit.*, p. 75.

³⁵⁹ Norris, *Op cit.*

³⁶⁰ Yergin, 'What does "energy security" really mean?', *Op cit.*

³⁶¹ Hayes, M.H. & Victor, D.G., 'Politics, Markets and the Shift to Natural Gas', in Victor, D.G., Jaffe, A.M., & Hayes, M.H. (eds.), *Natural Gas and Geopolitics: From 1970 to 2040*, (Cambridge: Cambridge University Press, 2006), p. 339.

monumental increase in oil rents. The exorbitant price of oil during the first half of the 1980s not only gave incentive for a strong increase in non-OPEC oil exploration and production, but also for fuel switching to alternative energy sources as well as the development of more fuel-efficient technologies and energy conservation – all of which halved OPEC’s market share and made importing countries more energy-secure and less dependent on the former during the latter half of the 1980s, and could have the power to do so again.³⁶²

High oil prices after 1979 provided a twofold incentive for non-OPEC producers. First, high prices offered such a wide profit margin for oil producers and investors that hitherto high-cost oil-rich regions not only became economically viable to explore but also very lucrative for continued reinvestment in and of themselves. Second, the higher return on dividends from oil sales encouraged investment in scientific research and development of new and more cost-effective technologies to improve the efficiency of upstream oil operations – exploration, development and production of new oil fields – thus reducing the costs of producing oil in these otherwise high-cost areas while making them more profitable and attractive for reinvestment. One such example was oil production in the North Sea, which leaped from 2 million barrels a day (mbd) in 1975 to 3.5 mbd a decade later. And since ‘OPEC adhered to the system of fixed price and swing production, any additional oil coming from outside OPEC would first capture its share in the market before buyers resorted to OPEC oil. Also, the greater the supplies of non-OPEC oil, the less OPEC oil that was on the market to meet world demand.’³⁶³

The same strategy of oil diversification could be pursued today, like in the early 1980s, using the returns from high oil prices to invest in research and development of heavy and/or unconventional oils, which ‘have the potential to alter the geopolitics of oil without necessarily reducing oil consumption.’ Venezuela’s ultra-heavy oil and Canada’s tar sands (bitumen) together make up c. 600 billion barrels, or almost half of the world’s unconventional oils, which are about the same as the world’s conventional oil reserves of 1.1 trillion barrels. But producing, transporting and refining these unconventional oils on a massive scale requires more widespread investment in and use of ‘technologies to reduce viscosity, additives to enable transport, and the removal of significant contaminants in the refining process’,

³⁶² Kohl, *Op cit.*, pp. 195, 199. See also Daoudi & Dajani, *Op cit.*, p. 158.

³⁶³ Chalabi, *Op cit.*, pp. 762, 759-760.

all of which are lacking in major oil-importing regions, such as North America. Investment in these areas could repeat their success of the early 1980s in countering OPEC's geopolitical influence while ensuring the energy security and national interests of energy-importing states.³⁶⁴ As Kenderdine and Moniz remind us, '[e]ach of these options is expensive and the strategic objective—diminishing OPEC's market power—would be enhanced if technology investments were made in conjunction with policies to increase global strategic oil reserves and heavy oil refining capacity.'³⁶⁵

But as the North Sea and other non-OPEC oil and gas fields mature, hence slowing down their production, the need to find more fields outside OPEC's reach becomes paramount, considering the goal of decreasing OPEC's monopoly power. However, there is another, and even more effective, form of diversification that can permanently slash at least part of OPEC's market share: oil substitution for different kinds of energy sources. One fundamental consequence of OPEC's price spikes for the industrial economies of the West was that they sparked a long-term process of gradually shifting the bulk of their energy use away from petroleum towards alternative energy sources, from 45 per cent of the world's total energy mix in 1973 to around 35 per cent today, a figure that is projected potentially to decline, especially if the relative share of natural gas increases.³⁶⁶ This scenario could still repeat itself today, as Mills explains:

Even if conventional non-OPEC oil goes into decline, oil prices in the level of recent years (\$80-120) are not sustainable in the long term, because they create strong incentives to the development of new frontiers and unconventional production, and efficiency and alternative energy sources. This premature shift to unconventional fuels and alternatives would levy a heavy investment burden and be economically inefficient on a worldwide scale, but eventually the oil exporters would suffer more than the importers, as happened after the past two oil crises. OPEC nations are also well aware that they would ultimately pay the price for a global recession, reducing demand for their main export. This spectre increasingly confronted OPEC during 2008 as the consequences of the credit crisis unfolded.³⁶⁷

Past examples from the first oil crisis include the French policy to build thirteen 1,000-Megawatt nuclear power stations between 1973 and 1975 under

³⁶⁴ Kenderdine & Moniz, *Op cit.*, p. 433.

³⁶⁵ *Ibid.*, p. 434.

³⁶⁶ Shaffer, *Op cit.*, p. 35.

³⁶⁷ Mills, *Op cit.*, p. 194.

presidents Pompidou and Giscard D'Estaing,³⁶⁸ and Brazil's 1975 policy to manufacture car engines that run on ethanol rather than gasoline; but the leading case of diversification in the 1970s was the shift to natural gas, instead of oil, for electric power generation in the US, Japan and several European countries. These countries sought to replace the unexpectedly expensive and unreliable oil supplies with natural gas in order to reduce their dependence on oil imports. But natural gas was also more attractive than other fossil fuels, like oil and coal, because of its lower emissions of carbon dioxide and other pollutants. These qualities stimulated both a policy and industry shift towards natural-gas-fired electric power generation in industrialised countries, with developing countries soon following suit: 'Environmental preferences for natural gas were augmented by relatively cheap supplies from the mid-1980s through the 1990s, improvements in natural gas turbine technologies, and much cheaper construction and maintenance costs for natural-gas-fired power plants.'³⁶⁹ However, the shift to natural gas motivated mainly by energy security, but also by environmental concerns, brought two main challenges:

First, importing governments needed to ensure that they did not replace oil with another insecure and volatile import. Second, a shift to gas would require building infrastructures (pipelines and LNG systems) that were even more costly than their oil equivalents. A long time horizon would be needed to justify these investments. The response to these two challenges was found in long-term contracts. For governments, these contracts promised to assure energy security; for investors in gas projects, such contracts created a context in which capital could be risked when returns were distant.³⁷⁰

Today, such challenges are somewhat overshadowed by the relative urgency of mitigating climate change, making the shift from fossil fuels (oil and coal in particular) to alternative energy a social and political imperative, rather than merely relying on economic incentives. 'Climate change creates added incentives to move away from oil, just as clean gas displaced somewhat cheaper but dirty coal,' writes Mills, 'and therefore oil will increasingly need an additional competitive edge. Given the enormous sums of money pouring into the alternative energy complex so far this

³⁶⁸ *The Epic of Black Gold. Episode 3: Oil as a Weapon*, a documentary produced by Yves Billion (2005), 25:06–26:21.

³⁶⁹ Juckett & Foss, *Op cit.*, p. 536.

³⁷⁰ Hayes & Victor, *Op cit.*, pp. 330-331.

millennium, \$100 billion in renewables alone in 2006, oil exporters are playing a very dangerous game by resisting signals to increase output.³⁷¹

But the problem back then is the same as it is today, with natural gas as well as other, newer forms of alternative energy: namely whether resource development and infrastructure for delivery can keep up with the rising demand for these energy resources.³⁷² The current need to develop a new generation of nuclear power, ‘clean coal’ technologies, biofuels and other renewables, as well as hydrogen fuel cells in the longer term, will inevitably face infrastructural and investment challenges, but they are likely to overcome them because of their increased competitiveness with oil as a result of the latter’s astronomic price rise in the last few years and the technological development of the former fuels. As Chalabi argues, ‘technology favors these shifts because it reduces the costs of otherwise expensive alternatives.’³⁷³ Indeed, as Jaffe points out, amidst current anxiety over terrorist threats in the Middle East and elsewhere, which can cause severe oil supply disruptions, the drive for alternatives is even stronger:

In the post-September 11 climate, consumer governments are increasingly discussing enhancing development of backstop technologies or promoting alternative energy sources that can serve to reduce the need for fossil fuel. In this practice, backstop technologies create an incentive for oil producers to avoid oil price shocks and supply disruptions for fear that the new technologies would be released and used, permanently eliminating sales markets. Alternative energy supplies provide ready substitutes if an increase in the price of oil is too extreme, and they can shield the economy from the negative impact from disruption of any one fuel source.³⁷⁴

No matter what energy security benefits might ensue from diversifying the sources of a country’s oil supplies or its overall energy matrix, perhaps the most advantageous form of diversification is not the substitution of oil for other energy resources, but for nothing at all. Enhanced energy efficiency in the use of energy generally, and its conservation in particular, is a paramount source of energy security. As Yergin postulates, ‘[c]onservation—energy efficiency—should be thought of as an energy source, and one with very large potential.’³⁷⁵ That being the case, energy conservation should also be considered as form of diversification. A third unintended

³⁷¹ Mills, *Op cit.*, p. 194.

³⁷² Juckett & Foss, *Op cit.*, p. 536.

³⁷³ Chalabi, *Op cit.*, p.762.

³⁷⁴ Jaffe, *Op cit.*, p. 856.

³⁷⁵ Yergin, ‘Energy Security and Markets’, *Op cit.*, p. 54.

consequence of OPEC's 1973 price spike – the other two being diversification towards non-OPEC oil and the gradual shift to natural gas and other alternative energy sources – was its incentive for greater efficiency in fuel use and its conservation in the West, which were often adopted as national policies, especially in Western Europe. Various measures were taken by these countries' governments to diminish oil consumption, ranging from laws reducing the speed limit for automobiles, to public awareness campaigns, to fiscal policies. In France, for example, television ads encouraged motorists to drive in high gears (4th or 5th) to increase mileage, and housewives were told to do their laundry only if their washing machines were fully loaded with clothes.³⁷⁶ With petroleum products extremely expensive for end-users, oil consumption growth, which had been a staggering 8 per cent a year in Western Europe from the 1960s up to 1973, turned negative thereafter, falling from 15.2 mbd in 1973 to 13.5 mbd in 1975, levelling at circa 14 mbd from 1975 onwards.³⁷⁷

With a lead time, the price shock heralded a process of structural change in the world oil industry. Significantly, the emerging energy-saving campaigns led to diminishing oil consumption while achieving the same level of economic growth. Prior to the price shock, an increase in gross domestic product (GDP) had entailed an equal increase in oil consumption, but after the shock, the relationship between economic growth and oil consumption changed. A process of gradual “decoupling” of oil consumption from economic growth would not be attenuated later with the advent of even higher oil prices; that is, less consumption per unit of GDP became a permanent feature.³⁷⁸

This sort of ‘decoupling’ also took place in the United States, where the impact of energy conservation in the economy has been vast over the past 30 years: between 1975 and 2005, US GDP grew by 150 per cent, compared to a mere 25 per cent increase in energy consumption,³⁷⁹ while producing \$1,000 of US GDP required 1.8 barrels of oil in 1980 compared to only one-third of that in 2004.³⁸⁰ Yergin explains this phenomenon by citing the former Chairman of the US Federal Reserve, Alan Greenspan, who attributes much of this ‘decoupling’ to fundamental changes in the American economy: ‘many of the gains in energy efficiency have come because the

³⁷⁶ Billon, Y. (producer) *The Epic of Black Gold. Episode 3: Oil as a Weapon* (2005 documentary), 18:13–19:28.

³⁷⁷ Chalabi, *Op cit.*, p. 758.

³⁷⁸ *Ibid.*

³⁷⁹ Yergin, ‘Ensuring Energy Security’, *Op cit.*, p. 81.

³⁸⁰ Maugeri, *Op cit.*, p. 187.

U.S. economy is “lighter”...than it was three decades ago—that is, GDP today is composed of less manufacturing and more services (especially information technology) than could have been imagined in the 1970s. But the basic point remains: conservation has worked.³⁸¹

Given that most countries’ oil dependence is predominant in the transportation sector, it is particularly important to apply energy conservation to automobiles. After the 1970s’ oil shocks, this was recognised in the United States and especially in Western Europe and Japan – namely that oil dependence can be reduced by improving vehicle fuel efficiency.³⁸² Although overall fuel efficiency in the US declined during the low oil price scenario of the 1990s, with the rise in sport-utility vehicle (SUV) sales, the lesson stuck in Western Europe and Japan, where automobiles are significantly more efficient than in the US. Despite their success with fuel efficiency since the 1970s and 1980s, the return of exorbitant oil prices today indicates that the reduction of oil dependence in the transport sector requires more than just improved efficiency of automotive engines that run on petroleum derivatives. As Wilfred Kohl points out,

[t]he best long-term strategy to reduce the costs and risks of oil dependence lies in research and development of affordable alternatives to petroleum, especially in the transportation sector, in which there is a need for new technologies and fuels. ... Such a development could have a major impact on reducing future world oil demand, although the transition to a new transportation technology will take a considerable amount of time.³⁸³

Though such developments offer great promise for the future, these technologies will take time to have a real impact on the reduction of oil dependence. Yergin explains that the relatively slow capital turnover, especially in terms of exchanging current inefficient cars for newer and more efficient and/or environmentally friendly ones, will make ‘these new-technology paths to higher fleet-average fuel efficiency take time to reach their full potential.’³⁸⁴ Nevertheless, as Mills points out, the most worrying prospect for oil exporters is ‘if there is a

³⁸¹ Yergin, ‘Ensuring Energy Security’, *Op cit.*, p. 81.

³⁸² Kenderdine & Moniz, *Op cit.*, p. 434.

³⁸³ Kohl, *Op cit.*, pp. 202-203.

³⁸⁴ Yergin, ‘Energy Security and Markets’, *Op cit.*, p. 55.

breakthrough such as highly competitive hybrid or electric cars, [or] algal biofuels,' in which case 'OPEC might condemn itself to early extinction.'³⁸⁵

Overall, the demand-side instrument against OPEC's influence which has had the strongest impact – more so than strategic oil stocks – has proved to be consumer taxes on energy to reduce demand for oil. The price volatility brought on by market deregulation can also be alleviated by imposing hefty taxes on energy use in importing countries, which can serve as a buffer against wide price variations. According to Jaffe, not only do such taxes discourage wasteful use of energy, but they also collect rents that would otherwise go to oil-exporting countries, thus compelling OPEC to accept lower oil prices: 'When OPEC's monopoly power strengthens due to short-term market tightening, the incentive to exploit that power is tempered by the fact that increases in monopoly rents will not accrue entirely to producers but rather must be shared with consuming countries that have high energy taxes.'³⁸⁶

This has sparked scathing anti-tax rhetoric by OPEC directed at OECD governments that accumulate higher oil rents than OPEC by imposing high energy taxes, which is reminiscent of OPEC's early 1970s rhetoric against IOCs for depriving them of a 'fair share' of rents accumulated from the sales of their own natural resources. 'The leaders of OPEC countries cannot be seen as delivering benefits to Western consumers at the expense of their own citizens', writes Jaffe, since 'such perceptions would leave regimes more vulnerable to public attack and to the efforts of opposition groups.'³⁸⁷ Indeed, the lower oil prices resulting from importing countries' oil and other energy diversification, as well as energy taxes and conservation, were perceived by OPEC countries as far more damaging to them, whose oil revenues make up the bulk of their national budgets, than the previously high prices had been for OECD countries, whose oil import costs are a much smaller fraction of their aggregate trade. In other words, OPEC perceives low oil prices as a subsidy for growth in importing countries at expense of their own growth, which is mainly stimulated by high oil prices.³⁸⁸

Diversification is not only an important protection from the rent-seeking behaviour of energy-exporting countries, but also against that of importing countries that use their collective monopsony power. While diversity of *supply* is stressed *ad*

³⁸⁵ Mills, *Op cit.*, p. 194.

³⁸⁶ Jaffe, *Op cit.*, p. 854.

³⁸⁷ Morse & Jaffe, *Op cit.*, p. 74; and Jaffe, *Op cit.*, p. 851.

³⁸⁸ *Ibid.*, pp. 70-71.

infinitum as the principal source of energy security, diversification of *demand* is not often emphasised, even though it is a crucial mechanism for ensuring the energy security of countries dependent on energy rents to survive: the guarantee that it can export its energy resources to other countries in case one or more of its usual customers decide, for whatever reason, to cease importing their energy. In the 1980s, for instance, Saudi Arabia learned bitterly that if oil prices are too high, importing countries will switch to alternative sources of energy, which, as OPEC's largest oil producer with reserves that will last over a century at current production rates, is clearly against its long-term interests.³⁸⁹

But the fundamental way for oil-exporting countries to ensure their overall economic security, rather than merely their energy security, is not through diversification of different sources of demand for their oil, but by diversifying their economies as a whole, so as not to rely solely or mostly on oil rents for their national budgets – a strategy that unfortunately is rarely, if ever, taken into consideration. As Daoudi and Dajani have advised, ‘oil producers should assign priority to developing their industry and diversifying their economies. Meeting domestic economic and social demands is essential for diffusing counterleverages. ... The oil producers should make serious attempts to decrease imports and weaken trade linkages, particularly with consumer nations that might become embargo targets. In this respect, diversification of import sources is essential.’³⁹⁰ Therefore, diversification is not only an economic end for a country, be it a net importer or exporter of energy, but also a strategic means.

Concluding Remarks

The countermeasures against energy statecraft notwithstanding, the ‘energy weapon’ – be it in the form of oil, natural gas, or other energy resources – still has the potential to be effective if applied properly within an auspicious context, given the ubiquitous need for energy resources for a modern society to function. In the case of petroleum, on which there is a near-universal dependence for the transportation sector, this is particularly true, as Daoudi and Dajani point out below, but it could equally apply to any other energy resource on which a given target country excessively depends on. And, as such, ‘[j]ust as oil power should not be overestimated, it should not be

³⁸⁹ Gause, *Op cit.*, pp. 86-87.

³⁹⁰ Daoudi & Dajani, *Op cit.*, pp. 171-173.

underestimated. Even in times of oil oversupply, the Western nations' economies remain heavily dependent on oil as their primary source of energy, and because other sources are failing to compete successfully with oil in terms of safety, practicality, and low cost, the use of oil as a political weapon still poses a serious threat to the consumer nations.³⁹¹

³⁹¹ *Ibid.*, p. 5.

CHAPTER 4

The International Energy Security Context

Energy statecraft – the use of energy resources as an instrument of a state’s foreign policy – is a source of state power in that it has the potential to influence the behaviour of other actors, or getting them to do what they would otherwise not do. Being a subset of economic statecraft, energy statecraft might be conflated into some of the debates and criticisms traditionally directed at the former, such as whether ‘the use of economic instruments of statecraft [is] a sign of weak and pusillanimous statesmanship or an indication of firm commitment’. But no general rule can answer this question, says David Baldwin, ‘since the situational context is likely to be crucial in determining the symbolic importance of any given instance.’ Indeed, for Baldwin, the utility of any given instrument of foreign policy is ‘a function of the situation and not a quality intrinsic to the particular technique.’³⁹² This is a proposition many agree with, such as Hans Morgenthau, whom Ned Lebow alludes to when affirming that ‘power is not so readily transformed into influence because it is heavily context-dependent’,³⁹³ and Christopher Hill, who states that ‘both the power to act and the ability to exert power over another require an understanding of the nature of the wider context in which action has to take place.’³⁹⁴

This makes it essential to understand the context in which energy statecraft takes place in order properly to assess its utility as an instrument of foreign policy. Moreover, the power of any given foreign policy instrument may also change over time, according to Hill: ‘A currency only has value if it is recognized by others, and power thus always has a relational element.’³⁹⁵ Applied specifically to energy resources as a source of state power, Jonathan Elkind reminds us that

attention to energy security typically reaches fever pitch when global energy prices spike or international conflict threaten to disrupt energy trade. ... The attention paid to the issue by the public and policymakers alike wanes as soon as prices subside naturally, which they generally tend to do in a sector that is

³⁹² Baldwin, D.A., *Economic Statecraft*, (Princeton, NJ: Princeton University Press, 1985), pp. 104, 123.

³⁹³ Cited in Lebow, R.N. *A Cultural Theory of International Relations*, (Cambridge: Cambridge University Press, 2008), p. 551.

³⁹⁴ Hill, C., *The Changing Politics of Foreign Policy*, (Basingstoke: Palgrave Macmillan, 2002), pp. 134.

³⁹⁵ *Ibid.*, p. 132.

predisposed to long, recurring business cycles. The lower prices lull the country into a false sense of security even as the energy intensity of its economy remains substantially undiminished. In a few years, the cycle repeats.³⁹⁶

Since energy statecraft is herein defined as the manipulation of another state's energy security for one's own political purposes, this chapter will examine the international energy security context that has fostered an increasing use of energy statecraft by energy-rich states during the long oil price spike of the past decade.

This context, which Dieter Helm calls 'a new energy paradigm,'³⁹⁷ has been characterised not only by high prices for oil and other energy resources, but also by a myriad of other threats, 'ranging from rapidly growing competitors for traditional hydrocarbon resources, to terrorists whose willingness to wreak human suffering and economic chaos is beyond debate, to environmental impacts that threaten the global climate system.'³⁹⁸ Especially with regards to the latter, the growing acceptance of climate change as a threat not just to energy security but to the world in general has 'helped turn energy use policy into a major foreign policy and even national security issue.'³⁹⁹

All of these defining features of the international energy security context have helped promote a drive towards the production and consumption of alternative energy resources. Energy security concerns surrounding petroleum have been central to this drive, although problems raised by other fossil fuels like natural gas and coal have also contributed towards a partial shift towards alternative energy. However, since this thesis specifically concerns itself with the use of biofuels as an instrument of foreign policy, this chapter will focus on the threats posed by oil to energy security because it is the main energy source that biofuels compete with. While natural gas, for instance, is a cleaner fossil fuel with the potential to substitute 'dirtier' energy resources in a multitude of sectors – such as electricity generation, heating and a variety of industrial and agricultural purposes – it is rarely used as a source of energy for transportation.⁴⁰⁰ Petroleum, on the other hand, is used for everything, as Leonardo Maugeri reminds us: 'from transportation to heating, to electricity

³⁹⁶ Elkind, J., 'Energy Security: Call for a Broader Agenda', in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), p. 120.

³⁹⁷ Cited in Giddens, A., *The Politics of Climate Change*, (Cambridge, UK: Polity Press: 2009), p. 44.

³⁹⁸ Elkind, *Op cit.*, p. 121.

³⁹⁹ Shaffer, B., *Energy Politics*, (Philadelphia, PA: University of Pennsylvania Press, 2009), p. 2.

⁴⁰⁰ Klare, M.T., *Rising Powers, Shrinking Planet*, (Oxford: Oneworld Publications, 2008), pp. 43-44

generation, and to plastics and synthetics.’ But the transportation sector is ‘the only area where [oil] is truly irreplaceable.’ Interestingly, it is precisely by complementing (though not replacing) petroleum in the transportation sector that biofuels have made their foremost contribution to energy security – in addition to being increasingly able to substitute oil-derived products in all other fields as technology advances, including electricity and plastics. Nevertheless, Maugeri insists that ‘petroleum will continue to be central to any energy scenario. Furthermore, its cycles will influence the fate of all other sources of energy. Therefore, we cannot ignore oil while thinking about a new energy paradigm.’⁴⁰¹ Hence the focus on the energy security risks of petroleum at the expense of lengthy analysis of other energy resources.

As explained in the preceding chapter, energy security involves four basic elements: availability, reliability, affordability and sustainability. The risks that fossil fuels in general, and oil in particular, pose to all four of these elements have created a context in which traditional energy resources have gained value as an instrument of state power in international relations. On the other hand, because this situation has also allowed renewable energy to compete with fossil fuels in general – and biofuels to compete with petroleum in particular – the international energy security context has also paved the way for the possibility of using biofuels as a tool of energy statecraft – the subject of this thesis. The present chapter will therefore assess the concerns that oil raises to each of these elements – availability, reliability, affordability and sustainability, respectively – in the current international energy security context, with secondary consideration paid to other energy sources.

Availability

Given the finite nature of petroleum and other non-renewable energy resources, there has for a long time been a popular belief that the world is running out of oil. However, such warnings and predictions of global peak production, or ‘Peak Oil’ – when half the world’s petroleum has been depleted – are almost as old as the oil industry itself. For example: in 1885 the US Geological Survey (USGS) expected there was ‘little or no chance of [finding] oil in California’, which is now responsible for over one-tenth of oil production in the United States; in 1914 the US Bureau of Mines estimated

⁴⁰¹ Maugeri, L., *Beyond the Age of Oil: The Myths, Realities, and Future of Fossil Fuels and Their Alternatives*. Translated from the Italian by Jonathan T. Hine Jr. (Santa Barbara, CA: Praeger, 2010), pp. 3-4.

there were only ten years left of national oil supply, only to be proven wrong with an enormous oil glut in 1930 after the stock-market crash of 1929; this fear was also prevalent during World War II, a crucial reason behind Japan's and Hitler's invasions of the southeast Pacific and the Soviet Union, respectively, but gave way to overproduction after the war until the end of the 1960s; and, most notoriously, the two oil price shocks of the 1970s also resurrected these fears, until the price of oil collapsed in 1986. In 1972, for instance, the Club of Rome think tank published a controversial report entitled *Limits to Growth*, admonishing that only 550 billion barrels of oil were left on earth, which would run out by 1990. But the 1986 oil price collapse took much credibility out of this neo-Malthusian view, especially considering that the world had consumed 600 billion barrels of oil between the publication of *Limits to Growth* and its doomsday year of 1990 and still had almost twice that recoverable amount left,⁴⁰² while world oil production has increased by 60 per cent since the 1970s.⁴⁰³ It is easy enough to conclude, writes Michael Klare, that 'the "peak oil" theorists are but so many boys once again crying wolf—that the current upsurge of concern over energy scarcity is destined to prove a passing phenomenon, either because colossal new reservoirs will be discovered or alternative fuel sources will come on line.'⁴⁰⁴

Peak oil theorists build on the assumptions of the model first proposed by Marion King Hubbert in 1956, which accurately predicted the date for the peak of oil production in the United States sometime between 1965 and 1970 depending on worst- or best-case scenarios,⁴⁰⁵ which eventually happened in 1970. Hubbert and his followers have since then applied his model to the rest of the world in order to try to predict global peak oil production. Peak Oil theorists therefore assume that the entire world's subsoil has been exhaustively explored and therefore its geology is well known, as is the case in the United States, meaning that undiscovered oil deposits are unlikely still to exist – in other words, almost all of the world's oil has already been found and it is being depleted faster than it can be replaced by modest new discoveries – a questionable idea, given the erratic distribution of oilfields in the

⁴⁰² Jaffe, A.M. & Manning, R.A., 'The Shocks of a World of Cheap Oil', *Foreign Affairs*, Vol. 79, No. 1, January/February 2000, pp. 17-18.

⁴⁰³ Yergin, D., 'Ensuring Energy Security', *Foreign Affairs*, Vol. 85, No. 2, March/April 2006, p. 74.

⁴⁰⁴ Klare, *Op cit.*, p. 33.

⁴⁰⁵ Hubbert, M.K., 'Nuclear Energy and the Fossil Fuels', Paper presented before the Spring Meeting of the Southern District Division of Production, American Petroleum Institute, San Antonio, Texas, 7-9 March 1956, pp.22-24.

world and continuing discoveries of new ones, some of them gargantuan, such as recent the discoveries made during the past decade in Kazakhstan and Brazil.

However, when it comes to hydrocarbons, the rest of the world has not been explored for those natural resources to anywhere near the same extent as they have in the US. As Maugeri reminds us, the US is ‘by far the oldest and most intensively known, explored, and aggressively exploited area in the world. The knowledge of its subsurface outpaces that of any other region of the world except Western Europe by a factor of 100.’ Hydrocarbons can be found in sedimentary basins, 30 per cent of which have yet to be explored worldwide.⁴⁰⁶ But the most important example of under-exploration, ironically, is the Middle East, despite its long and notorious history with oil: between 1980 and 2006, around 70 per cent of hydrocarbons exploration has taken place in the US and Canada, which together hold close to 3 per cent of the world’s proven reserves, in contrast to Persian Gulf countries, which hold over 65 per cent of the world’s proven reserves, but together have barely been responsible for 1 per cent of exploration worldwide.⁴⁰⁷ Furthermore, Maugeri points out that almost one million wells have been drilled in Texas compared to 2,300 in Iraq, while there are currently over 560,000 active wells in the US compared to around 1,500 in Saudi Arabia.

But as oil prices started climbing relentlessly after 2002 – pressured by skyrocketing global demand that not even the members of the Organization of Petroleum Exporting Countries (OPEC) were able to meet, eventually reaching its highest level ever on 11 July 2008 at \$147.27 a barrel – the peak oil theory has regained popularity and doomsday predictions have become more widely publicised in the media. In addition to the unprecedented heights of consumption and demand for oil and other energy resources, Klare lists a faster-than-expected decline in output from existing oilfields, fewer discoveries of new fields and the running out of ‘cheap oil’ as factors behind the return to thinking on peak oil.⁴⁰⁸ According to Klare,

nonrenewable fossil fuels—oil, coal, and natural gas—are still projected to jointly satisfy a whopping 87 percent of world energy requirements, about the same proportion as today. But because worldwide energy demand in 2030 will be so much greater, the supply of all three will have to be correspondingly

⁴⁰⁶ Maugeri, L., *The Age of Oil: The Mythology, History, and Future of the World’s Most Controversial Resource*, (Westport, CT: Praeger, 2006), p. 204.

⁴⁰⁷ Maugeri, *Beyond the Age of Oil*, p. 7.

⁴⁰⁸ Klare, *Op cit.*, p. 37.

larger to retain this combined share: Oil production will have to rise by an estimated 42 percent, natural gas by 65 percent, and coal by 74 percent. And this is where the problem lies: In the view of many energy analysts, increases of this magnitude are almost inconceivable in a world where a peak in oil and gas production may be in the cards, possibly followed by a contraction in the overall global supply; even coal, the most abundant of the three, may not satisfy future expectations.⁴⁰⁹

A problem that compounds the fast rise in global demand for energy resources – and, indeed, is a symptom of peak oil – is the prospect of accelerating rates of decline in production in older oilfields. This matters greatly, writes Klare, because ‘every lost barrel from an existing reservoir must be replaced by an added barrel from some new deposit just to stabilize world production at existing levels; if the net rate of decline exceeds the rate of increase in newer fields, there can be no hope of meeting higher levels of demand.’⁴¹⁰ But even if global demand for oil remains static until 2030, the International Energy Agency (IEA) estimates that the equivalent of four times the current capacity of Saudi Arabia’s oil production will need to be brought on line only to compensate for the rate of decline in production in existing oilfields.⁴¹¹ Thus, in order to avoid a peak, followed by gradual decline, in oil production, the newer fields now coming on line, as well as those yet to be discovered, must be ‘ample enough to both supplant those now being exhausted *and* provide the added oil needed to satisfy rising international demand. But that is not happening’, according to Klare.⁴¹²

The relatively disappointing record of new oil discoveries since the 1980s supports this proposition: whereas the petroleum reserves discovered between 1960 and 1989 were over twice the amount produced during that period, new discoveries between 1990 and 2006 amounted to half of the cumulative oil production over the same time. If no sufficiently large new discoveries are made, the IEA’s chief economist, Fatih Birol, believes that ‘the output of conventional oil will peak in 2020 if oil demand grows on a business-as-usual basis.’ The IEA’s *World Energy Outlook* released in November 2009 states that *conventional* oil production ‘is projected to reach a plateau sometime before’ 2030, although that does not include hard-to-extract and unconventional forms of petroleum like Canada’s tar sands. Meanwhile, optimists

⁴⁰⁹ *Ibid.*, p. 34.

⁴¹⁰ *Ibid.*, p. 37

⁴¹¹ Birol, F., ‘The Coming Supply Crunch’, *Foreign Policy*, September/October 2009, p. 105.

⁴¹² Klare, *Op cit.*, p. 38. Original emphasis.

such as those at Cambridge Energy Research Associates (CERA) believe that advances in technology incited by high oil prices ‘will allow demand to be met for at least a couple of decades. After that, CERA reckons, “supply may well struggle to meet demand, but an undulating plateau rather than a dramatic peak will likely unfold”.’⁴¹³ Thus, insofar as ‘peak oil’ refers to ‘the traditional sort [of petroleum] that comes cheaply out of holes in the ground, [it] probably will arrive soon. There is oil aplenty of other sorts (tar sands, liquefied coal and so on), so the stuff is unlikely to run out for a long time yet. But it will get more expensive to produce, putting a floor on the price that is way above today’s.’⁴¹⁴

The IEA anticipates that such unconventional forms of petroleum will make up for its projected decline in future production of conventional, ‘easy’ oil, since increasingly high oil prices will make them economically viable.⁴¹⁵ Therefore, argues Maugeri, ‘the availability of oil will not be a problem if advanced technologies for exploration and production are applied on a vast scale to old and new areas of the planet. Critics may argue that while there may actually be plenty of oil left underground, the “easy” and cheap oil is gone forever. This view is partially true, but it is also true that today’s difficult oil will become tomorrow’s easy oil, thanks to the economies of applying currently expensive technologies on a large scale.’⁴¹⁶

According to ‘the most credible studies’, the world’s ultimately recoverable reserves are estimated at over 2.6 trillion barrels of *conventional* oil, including those yet to be discovered, of which 1.2 trillion are currently ‘proven’ while the remaining 1.4 trillion are ‘recoverable’ but may soon be classified as proven reserves when technology and prices allow. Today’s proven reserves are ‘enough to satisfy current consumption needs for thirty-nine years’ (as of 2010), although including ‘recoverable reserves extends the limit to eighty-six years. The figures on recoverable reserves exclude crude oil that costs more than \$18 per barrel to extract’ writes Maugeri, which ‘dramatically underestimates the real total.’⁴¹⁷ This brings us to the concept of ‘recoverability’: ‘proven’ reserves are those that can be extracted profitably with currently available technology, and are but a fraction of the total oil in place in any given oilfield; that fraction is the recovery rate, or recoverability.

⁴¹³ *The Economist*, ‘2020 vision’, 12 December 2009, p. 81.

⁴¹⁴ *The Economist*, ‘The power and the glory’, A special report on the future of energy, 21 June 2008, p. 4.

⁴¹⁵ *The Economist*, ‘2020 vision’, p. 81.

⁴¹⁶ Maugeri, *Beyond the Age of Oil*, p. 9.

⁴¹⁷ *Ibid.*, p. 6.

This has several implications.⁴¹⁸ First, in percentage terms, the difference between the recovery rate and 100 is the percentage of the original amount of oil in place still in the ground after a field has been exhausted under current price and technological conditions, which today is an average of 65 per cent worldwide, meaning that almost two-thirds of all the oil found to date is still beneath the ground. Second, technological improvements and higher prices can, and often will, increase the recoverability of a field, because ‘[t]echnical evolution also makes recoverable what was not recoverable before, which increases the reserves without the discovery of new deposits.’⁴¹⁹ Third, even fields that have been ‘exhausted’ in the past can start producing again under improved technological and price conditions. In other words, proven reserves figures can be revised upwards even without new discoveries. A notable example that illustrates this is the Kern River oilfield, discovered in 1899 in California:

Initially, it was thought that only 10 percent of its heavy, viscous crude oil could be recovered. In 1942, after a cumulative production of 254 million barrels of oil, it was estimated that the field still contained 54 million barrels of recoverable petroleum. As Morris Adelman pointed out in 1995, “In the next forty-four years, it produced not 54 million barrels but 736 million barrels and it had another 970 million barrels remaining in 1986.” Yet even data reported by Adelman were underestimated. In November 2007, Chevron announced that cumulative production had reached 2 billion barrels. The Kern River is still producing more than 80,000 barrels per day, and in 2009, the state of California estimated its remaining reserves to be about 627 million barrels. The explanation of this apparent miracle is the injection of steam into the subsoil, a technology that Chevron began using in the early 1960s.⁴²⁰

Moreover, while the world’s average recovery rate is 35, it is considerably higher in countries that allow free access to private oil companies, which normally hold the most advanced technologies – such as the US, Canada and the North Sea area – where recoverability surpasses 50 per cent, whereas many of the world’s most oil-rich countries – like Russia and most Arab states – have recovery rates lower than 25 per cent.⁴²¹ Given current production levels, writes Maugeri, ‘an increase of a single percentage point in the [average worldwide] recoverability factor can result in additional reserves of between 25 and 55 billion barrels, equivalent to one or two

⁴¹⁸ Howell, D. & Nakhle, C., *Out of the Energy Labyrinth*, (London: I.B. Tauris, 2006), p. 81. See Also Maugeri, *The Age of Oil*, p. 209, and *Beyond the Age of Oil*, p. 7.

⁴¹⁹ Maugeri, *Beyond the Age of Oil*, p. xxxi.

⁴²⁰ *Ibid.*, p. 8.

⁴²¹ *Ibid.*

years of global consumption.’⁴²² And better technology also tends to cut production costs, making it possible to produce oil from fields that in the past were considered too expensive to develop at all.

All these factors are particularly pertinent when it comes to *unconventional* oils, which are specifically excluded from proven and sometimes even from recoverable reserves. Precisely because they are heavy and highly viscous, requiring a mixture of light oil, water and/or detergent to make them flow smoothly through pipelines, they have traditionally been considered too expensive to produce in general and too costly to refine in particular due to their high concentration of sulphur and other pollutants, and were therefore not worth considering as part of official reserve figures. But with light crude prices above \$50 per barrel, unconventional oils become competitive and attract investment.⁴²³

This is especially significant because their quantities are truly massive: the USGS estimates unconventional oils – like the bitumen-like ultra-heavy oil in Venezuela’s Orinoco belt, Canada’s tar sands, the Rocky Mountains’ shale oil, and others – to amount to 8 trillion barrels, 1.3 trillion of which are considered to be recoverable with current technologies. These quantities indicate an important fact, says Maugeri: ‘Worldwide petroleum resources are enormous, and proven reserves are only a small fraction of the overall total.’⁴²⁴ The problem, however, is not geological (how many resources are under the ground); it is whether technological, economic and political conditions will allow the development of these resources – a problem well illustrated in Venezuela:

Venezuela’s Orinoco tar sands are estimated to be the largest deposits of their kind in the world, potentially rivaling conventional world oil reserves. Their strategic importance for global energy is enhanced by improvements in extraction technology and by potential future recovery rates with the turn to unconventional oil. When oil prices recover from the financial downturn, of the unconventional sources for oil—including Canadian tar sands—the Orinoco tar sands are the most economical. A poor investment climate combined with aggressive political rhetoric, unsound economic policy, and the current

⁴²² Maugeri, *The Age of Oil*, p. 216.

⁴²³ Howell & Nakhle, *Op cit.*, pp. 114-116. Jaffe & Manning, *Op cit.*, p. 17. Maugeri, *The Age of Oil*, p. 214.

⁴²⁴ Maugeri, *Beyond the Age of Oil*, p. 7.

economic crisis poses a risk for development of these reserves, which could enhance global oil supply.⁴²⁵

However, most of the new discoveries being made are almost invariably of this ‘tough oil’ variety, according to Klare, which poses problems of their own:

When a major resource is first exploited for human use, developers naturally go after the easy-to-excavate deposits: those that lie close to the surface, are concentrated in large and rich deposits, are located close at hand, or are found in welcoming countries. ... Typically, most of these “easy” deposits are exhausted by the time a resource approaches its peak moment, as now appears to be the case for [*conventional*] oil... This means we are largely left with “tough oil”: deposits buried deep underground or far offshore, scattered in small, hard-to-reach pockets that often contain significant impurities, or located in unfriendly, corrupt countries or hazardous locations. Even if the resources exist, investors may be disinclined to risk the vast sums that will be needed to develop these unappetizing deposits, or extraction and transportation difficulties of all kinds will cut into future supplies.⁴²⁶

Indeed, Klare states that this is possibly the most formidable impediment to increased oil output in the future: ‘the reluctance of major investors to risk their capital in the development of “tough oil” reserves in remote, hazardous, and unfriendly environments.’⁴²⁷

And herein lies a further problem. The consensus in the oil industry on what is needed to avoid a peak oil scenario is ‘lavish investment in the development of new fields and in exploration. Yet the reverse is happening. The oil industry is cutting its spending, bringing fewer new fields into production and exploring less.’⁴²⁸ Even though there is physically enough oil under the ground to satisfy growing consumption and demand, Birol explains that the global financial crisis of 2008-onwards has diminished the incentive to make the investments required to bring these resources into production: ‘A lack of investment where it is needed, particularly in the short to medium term, has become a key risk to supply. ... There is a danger that investment in the coming months and years will be reduced too much, pushing up decline rates and leading to a shortage of capacity when the economy begins to

⁴²⁵ Pascual, C. & Zambetakis, E., ‘The Geopolitics of Energy’, in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), pp. 18-19.

⁴²⁶ Klare, *Op cit.*, pp. 34-35. Emphasis added

⁴²⁷ *Ibid.*, p. 39.

⁴²⁸ *The Economist*, ‘Bust and boom’, 23 May 2009, p. 70.

recover.⁴²⁹ Meanwhile, the ‘above ground’ problems that led to the 2008 oil price spike, such as rising costs and limited access to exploration, have not gone away with the financial crisis. Jeff Currie of Goldman Sachs, an investment bank, argues that these problems ‘will continue to limit the growth of the world’s oil supply. He points out that even when prices were high, these constraints limited the volume of new projects approved by oil firms. Falling investment will simply compound the shortfall. So when demand begins to revive, a sharp rise in prices is inevitable. ... The speed with which it arrives will depend on the strength of the global recovery.’⁴³⁰

Reliability

If oil and other energy prices have been higher than ever during this century’s first decade, it is in part because supply has been too unreliable, as well as insufficient, to meet demand, thus sending prices on an upward spiral. Several supply-side factors, ranging from economic to political ones, have converged to beget unreliable and inadequate oil supplies, most of them springing from one common view of the oil market preceding the ‘demand shock’ of the 2000s: no one foresaw the demand boom. The 1997 Asian financial crisis provoked a severe drop in oil demand, which, combined with subsequent OPEC overproduction, led to an oil price collapse in 1998. Very few expected Asian economies and their demand for oil to rebound from that crisis as fast as they did. In fact, as late as 2000, a common view was that the danger to the oil market in the first decade of the new millennium was not scarcity but an oil glut: ‘contrary to much received wisdom, the energy problem looming in the early 21st century is neither skyrocketing prices nor shortages that herald the beginning of the end of oil age. Instead, the danger is precisely the opposite; long-term trends point to a prolonged oil surplus and low oil prices over the next two decades.’⁴³¹ With such mainstream forecasts, the vast majority of oil producers – both inside and outside of OPEC – had made long-term preparations for the opposite reality of what emerged in the years following. Thus Maugeri points out that the ‘high cost that the world paid for oil until 2008 was the consequence of low prices, which for almost twenty years

⁴²⁹ Birol, *Op cit.*, p. 105.

⁴³⁰ *The Economist*, ‘Bust and boom’, p. 71.

⁴³¹ Jaffe & Manning, *Op cit.*, pp. 16-17.

had discouraged the exploration and development of new deposits in the richest areas of crude oil on the planet.⁴³²

OPEC countries, which are collectively responsible for almost two-fifths of the world's oil production and four-fifths of its proved reserves, were unable to meet the world's aggregate demand during the past decade's commodities boom not because they lack oil, but because they have been running behind on investment for new production for several years. The lesson that history has taught them is that having excess production capacity almost inevitably leads to oil price collapses with subsequent gluts. Having followed this logic since the 1986 price collapse, OPEC countries have 'aimed at mere reserve replacement, limiting exploration and the development of new oilfields. Moreover, U.S. economic sanctions against oil countries such as Iran, Iraq, and Libya during the 1980s and 1990s further frustrated their ability to adequately replace their production capacity, or to increase it.'⁴³³ Even with record revenues following the demand boom starting in 2003, most OPEC countries have not increased their investments in their energy sectors significantly and have continued to keep low commercial inventories.⁴³⁴

Politically, the financial crisis that ensued in OPEC countries after the 1998 oil price collapse has led to a rapprochement inside the organisation with a new, more unified dynamic. Moreover, a recent 'rise in democratization, freedom of the press and political debate, and a growing tide of anti-Americanism are bringing a greater concern for popular opinion inside OPEC countries,' which in some cases has led to the election of radical leaders like Mahmoud Ahmadinejad in Iran and 'is restricting the options of regional leaders to accommodate Western interests',⁴³⁵ while the 1998 price collapse itself was a crucial factor behind the election of Hugo Chávez in Venezuela. Coinciding changes at the highest levels of government in other OPEC members, such as Kuwait and an 'increasingly hawkish' Saudi Arabia, have 'given OPEC the solidarity needed to turn idle rhetoric into political action' and 'moved the agenda of the organization away from the moderate policies of the 1990s toward a more radical, confrontational developing-world approach that favors revenues over

⁴³² Maugeri, *Beyond the Age of Oil*, p. 11.

⁴³³ Maugeri, *The Age of Oil*, pp. 188-189.

⁴³⁴ Kalicki, J.H. & Goldwyn, D.L., 'Introduction: The Need to Integrate Energy and Foreign Policy', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press / Woodrow Wilson Center Press, 2005), pp. 2-3.

⁴³⁵ Jaffe, A.M., 'Geopolitics of Energy', in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol.4, (San Diego, CA: Elsevier, 2004), p. 851.

other issues, including market share.⁴³⁶ Indeed, OPEC's new interest is to maximise Western, particularly US, dependence on its oil⁴³⁷ – a premise Crown Prince (now King) Abdullah of Saudi Arabia has been increasingly willing to test even before 11 September 2001. As Edward Morse and Amy Jaffe point out: 'Critical to the newer OPEC consensus is the view that OPEC is in a position to stand up to the West and that it should feel justified in doing so, because the West stood by and did nothing to help ease the debilitating suffering and destabilizing consequences of the 1998 price collapse.'⁴³⁸

The resulting economic stagnation in OPEC happened against a backdrop of growing populations in those countries, which put pressure on government revenues not only to assure their macroeconomic stability but also to increase spending on social programmes to appease their embittered and increasingly poor populations, making higher oil prices a budgetary necessity for OPEC countries. 'Owing to increased government spending and domestic consumption, as well as inflation and the erosion of the dollar,' writes Sheila McNulty, 'the threshold oil price has risen for every Opec member with the exception of Qatar since 2000.' While no OPEC country can currently afford the price of the barrel to drop below \$50, their required minimum price varies according to the member state, with Venezuela being the most dependent on high and rising prices, needing the barrel to cost at least \$94 in 2008 and \$97 in 2009.⁴³⁹ As a result, the more radical members of OPEC – Algeria, Iran and Venezuela – consistently argue against boosting OPEC production as a whole, and often push for production cuts to raise the price even further, a position that can be considered 'more aggressive than defensive.'⁴⁴⁰ This is also the case even during booming times, when 'the rise in oil demand strengthens oil producers, which reap massive profits by intentionally underinvesting in oil-production capacity. ... As oil producing countries amass substantial financial reserves, they tend to allocate investment and expenditure disproportionately less to oil-production capacity and more toward areas that benefit the ruling elites.'⁴⁴¹

⁴³⁶ Morse, E.L. & Jaffe, A.M., 'OPEC in Confrontation with Globalization', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), pp. 75, 73.

⁴³⁷ Kalicki & Goldwyn, *Op cit.*, p. 4.

⁴³⁸ Morse & Jaffe, *Op cit.*, p. 73.

⁴³⁹ McNulty, S., 'Domestic needs drive Opec price', *Financial Times*, 10 March 2008, p. 10.

⁴⁴⁰ Morse & Jaffe, *Op cit.*, p. 73.

⁴⁴¹ El-Gamal, M.A. & Jaffe, A.M., 'Subpriming the Pump', *Foreign Policy*, September/October 2009, p. 100.

With Saudi Arabia being one of the few members worried about their long-term interest of preventing a fall in aggregate demand because of what eventually came to be a high-oil-price-induced global recession, and the only one with sufficient spare capacity to lower prices through an increase in production, OPEC summits in 2007 and 2008 usually ended in deadlock and their oil production remained unchanged until the financial crisis despite prices mushrooming beyond the landmark figure of \$100 after January 2008. But even if out-of-control prices have recently raised concerns in Saudi Arabia, the Kingdom is partly to blame for the price run-up. As the organisation's swing producer, Saudi Arabia has been the driving force behind successive OPEC reductions in oil output since 1999 in response to the 1998 price collapse, with the Kingdom solely responsible for over one million barrels a day (mbd) in production cuts in 1999 alone.⁴⁴²

More recently, during the past decade's price hike – with oil prices hovering above \$60 per barrel after March 2006, but eventually starting to retreat from \$80 (the record price by then) in the fall of that year – Saudi Arabia began to decrease its production steadily from 9.56 mbd in March 2006 to 8.53 mbd in April 2007, in order to stop the decline in prices. This led to 'six consecutive quarters of inventory reduction and a 2007 drop in global inventories of about 930,000' barrels a day.⁴⁴³ As a result, the price of crude oil tripled between January 2007 and July 2008, from \$50 to \$147 a barrel. Naturally, following this exorbitant price rally, OPEC members (mostly Saudi Arabia) increased production. However, given the significant time lag to bring oil production on line, demand tumbled under pressure from record prices and the financial crisis that hit simultaneously, leading to new production cuts by OPEC, in order to maintain a suitably high oil price for its members' needs:

Just as the increased production found its way to inventories, in the summer of 2008, the global credit crisis broke. Global oil demand, especially in the United States and other OECD countries, fell off a cliff. Caught between rising production and falling consumption, prices fell from \$147 per barrel in the summer to \$34 by late December.

OPEC reacted swiftly. Racing to catch up with falling demand, it announced production cuts totaling 4.2 million barrels a day. Although implementation was solid, it lagged behind events and could not prevent prices from temporarily taking a nosedive. It took until the first quarter of 2009 for OPEC's cuts to match the decline in demand. Still, from OPEC's point of view, its supply

⁴⁴² Gause, F.G., 'Saudi Arabia Over a Barrel', *Foreign Affairs*, Vol. 79, No. 3, May/June 2000, p. 80.

⁴⁴³ Hoyos, C. & England, A., 'Riyadh set to test its power to move the market', *Financial Times*, 17 June 2008, p. 8.

management was a success. Oil prices stabilized soon after the Christmas holidays of 2008, on the expectation that the cartel members would follow cartel discipline, and then started to rise...⁴⁴⁴

As *The Economist* pointed out after oil prices picked up again, ‘most oil-rich states, naturally enough, are happy to see the price rise. Many have become used to bumper revenues in recent years and have struggled to balance their budgets since the price slumped’ in 2008.⁴⁴⁵

During the price rally in 2008, King Abdullah of Saudi Arabia said: ‘I keep no secret from you that when there were some new finds, I told them: “No, leave it in the ground, with grace from God. Our children need it.”’⁴⁴⁶ That statement reflects a lesson learned from the 1986 oil glut and price collapse, and reinforced after their repetition in 1998, which has led OPEC countries to minimise their spare production capacity in order to avoid similar crises in the future. From 1986 onwards, ‘the de facto guiding principle of several OPEC countries was to exploit only those fields that were already in production and to develop no new fields beyond those necessary to maintain steady production levels.’⁴⁴⁷ OPEC’s lack of investment in developing new oil production and infrastructure over the last two decades – instead spending their revenues on social programmes for their growing populations – has gradually eroded the organisation’s ability to cushion the oil market from sudden disruptions in supply through excess production capacity, thus making it ‘much easier for cartel members to agree to restrain output’ than to decide to increase it.⁴⁴⁸

The resulting drastic reduction in spare production capacity exacerbated an already tight global oil market under pressure from growing demand: ‘The tightness in supplies exposed the complacency or, rather, the failure of Saudi Arabia and other producers to adequately invest in exploration and the production of crude. ... The disappearance of spare Saudi production capacity was the most critical element in driving up prices from 2003 to 2008’, according to Edward Morse.⁴⁴⁹ Christoph Rühl provides a helpful explanation for why spare capacity is such an important factor influencing the price of oil:

⁴⁴⁴ Rühl, C., ‘Global Energy After the Crisis’, *Foreign Affairs*, Vol. 89, No. 2, March/April 2010, p. 67.

⁴⁴⁵ *The Economist*, ‘Bust and boom’, p. 70.

⁴⁴⁶ Hoyos & England, *Op cit.*, p. 8.

⁴⁴⁷ Maugeri, L., ‘Two Cheers for Expensive Oil’, *Foreign Affairs*, Vol. 85, No. 2, March/April 2006, p. 151.

⁴⁴⁸ Jaffe, *Op cit.*, p. 851.

⁴⁴⁹ Morse, E.L., ‘Low and Behold: Making the Most of Cheap Oil’, *Foreign Affairs*, Vol. 88, No. 5, September/October 2009, pp. 38, 40.

Like any complex system, the global oil market needs a degree of redundancy to operate smoothly. In the short term, inventories can provide this safety cushion; in the longer term, it is provided by spare production capacity. Following strong demand growth in 2003 and 2004, spare capacity in the global oil market was hovering around record lows, at little more than two percent of global production (that is, less than two million barrels per day, almost all of it in Saudi Arabia). In other words, even after the OPEC cuts of 2006 and 2007, the global oil market was running at above 97 percent of capacity—an exceptionally high rate and one much too high to guarantee any meaningful stability in prices.

When set against the backdrop of high global economic growth, this fundamental market tightness meant that as soon as the production cuts had translated into tighter inventories, prices accelerated their journey upward.⁴⁵⁰

This formula is not new to the oil market and it has always been the case that low spare capacity drives up prices and makes them volatile. Thus, as Maugeri writes, ‘minimal spare capacity made the price of oil dangerously vulnerable to almost any event: regional conflicts, hurricanes, pseudoscientific theories about the end of oil, market rumors, or financial speculation.’⁴⁵¹

With spare production capacity at its lowest level since 1973 – a low point of little over a million barrels a day in 2008, compared to around 3 mbd throughout the 1990s and a peak of 12 mbd in 1985⁴⁵² – the global oil market was more vulnerable than ever to any disruption in supply during the past decade’s supply crunch. In David Howell’s words: ‘The big spare tap that used to be so easy to turn on to raise production significantly at short notice is shut off, or if it is turned on only a trickle comes out. Any further surge in oil demand, or any sudden cut in supplies anywhere in the world in the present supply system, is immediately reflected in a shortage warning and a price blip as traders mark up their stocks.’⁴⁵³ According to Henry Groppe,⁴⁵⁴ a Texas-based oil and gas consultant, every 100,000 barrels per day of production that is added or subtracted from the market represents a \$1 decrease or increase in the price of oil, respectively. During the past decade several disruptions in oil supply worldwide – whose production difficultly recover to their full pre-disruption levels – have contributed to the steady oil price rise over the same period. In Saudi Arabia’s Prince Turki al-Faisal’s words, ‘the sad fact is that four oil-

⁴⁵⁰ Rühl, *Op cit.*, p. 67.

⁴⁵¹ Maugeri, *Beyond the Age of Oil*, p. 14.

⁴⁵² Butler, N., ‘The falling oil price is a lull in the storm’, *Financial Times*, 20 August 2008. Maugeri, *The Age of Oil*, p. 227.

⁴⁵³ Howell & Nakhle, *Op cit.*, p. 144.

⁴⁵⁴ Interviewed in London, 6 February 2007.

producing countries failed to live up to production expectations. In 1998, Iran, Iraq, Nigeria, and Venezuela were producing 12.7 million barrels per day. Everyone...expected them to be producing 18.4 million barrels per day in 2008. Instead, due to civil strife, failed investments, or in the case of Iraq, a U.S. invasion, they were producing only 10.2 million barrels per day.⁴⁵⁵

The first and most important disruption, which launched the steep upward shift in prices, was a December 2002 strike by the employees of Venezuela's national oil company, Petróleos de Venezuela S.A. (PDVSA), in a failed attempt to depose President Hugo Chávez in response to his drive to consolidate his control over his country's political system, PDVSA and its oil revenues.⁴⁵⁶ The strike completely shut down Venezuela's production of almost 3 mbd, which accounted for more than 4 per cent of the world's production at the time.⁴⁵⁷ The loss of Venezuelan oil from the market was greater than the cessation of Iraqi production during the 2003 Iraq war that started a couple of months after the end of the PDVSA strike, whose output has never fully recovered and has since been producing around 500,000 barrels a day less than its pre-strike level.⁴⁵⁸ The US-led invasion of Iraq in 2003, for its part, not only led to a shutdown of production during the war, but during its aftermath looting and sabotage impeded the country's oil sector from recovering to its pre-war 2 mbd export levels, with the country exporting merely 500,000 barrels a day by the end of 2003.⁴⁵⁹ Similarly, acts of sabotage made on Nigerian oil infrastructure by militants of the Movement for the Emancipation of the Niger Delta (MEND) were responsible for disrupting a further million barrels a day in 2003,⁴⁶⁰ and their periodic attacks have continued to this day. And supply disruptions need not be man-made, as evidenced by Hurricanes Katrina and Rita, which raged through the Gulf of Mexico in late August 2005, destroying numerous offshore oil platforms and refineries on the Louisiana coast, causing a disruption which sent the region's fuel prices to their highest ever.

⁴⁵⁵ Al-Faisal, T., 'Don't be Crude', *Foreign Policy*, September/October 2009, p. 103.

⁴⁵⁶ Yergin, *Op cit.*, p. 73.

⁴⁵⁷ Kuenzler, L.T., 'Latin America', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), pp. 383-384.

⁴⁵⁸ Yergin, *Op cit.*, p. 73.

⁴⁵⁹ Jaffe, *Op cit.*, p. 852.

⁴⁶⁰ Goldwyn, D.L & Billig, M., 'Building Strategic Reserves', in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 515.

But perhaps the most definitive new feature of supply disruptions this decade has been the emergence of Islamic terrorism as a threat to energy security following the attacks of 11 September 2001. Indeed, the renewed focus on energy security in International Relations is driven in large part by the threat of terrorism. In contrast to the period following the 1970s price spikes, when energy security concerns focused mainly on ‘the reliability of the flow of oil...and the response to and management of any disruptions’, energy security in the twenty-first century has widened its focus to include ‘the entire infrastructure of energy supply that supports...the global economy—offshore platforms and pipelines and tankers as well as refineries, storage, generating facilities, transmission lines, and distribution systems. This vast network was not designed with terrorism in mind. But its operations now have to be managed with that continuing danger in view’.⁴⁶¹

Al Qaeda has repeatedly menaced to launch terrorist attacks against energy infrastructure, or what Osama bin Laden called the ‘hinges’ of the world economy.⁴⁶² Bin Laden himself had also specifically urged Muslims to stop the flow of oil to the West by sabotaging Saudi Arabian oilfields and infrastructure.⁴⁶³ Terrorists almost succeeded in doing so on 24 February 2006, when they targeted the world’s largest refinery in Abqaiq, where nearly two-thirds of Saudi oil production is processed before export.⁴⁶⁴ Such threats have highlighted Saudi Arabia’s importance to the oil market, given that around 80 per cent of the world’s spare capacity⁴⁶⁵ and well over 10 per cent of production rests in that country, ‘in turn creating unique political pressures and augmenting a so-called terror premium onto world oil prices due to worries about the Kingdom’s internal stability.’⁴⁶⁶

Since the Second Gulf Crisis in 2003, Maugeri assesses that “‘black gold” prices incorporated a fear factor difficult to quantify. Saudi oil minister Ali Naimi estimated it at 10-15 dollars per barrel in November 2004, when oil prices were

⁴⁶¹ Yergin, D., ‘Energy Security and Markets’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), pp. 60, 52.

⁴⁶² Yergin, D., ‘Ensuring Energy Security’, p. 70.

⁴⁶³ Maugeri, *The Age of Oil*, p. 185.

⁴⁶⁴ ArabNews.com, ‘Attack on Abqaiq Oil Facility Foiled’, 25 February 2006.

⁴⁶⁵ Kenderdine, M.A. & Moniz, E.J., ‘Technology Development and Energy Security’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 430.

⁴⁶⁶ Morse & Jaffe, *Op cit.*, p. 81.

around 45 dollars per barrel.⁴⁶⁷ And given that bin Laden's aforementioned appeal for Muslims to sabotage Saudi infrastructure was posted on the internet in December 2004,⁴⁶⁸ the 'terror premium' on oil the price may well have exceeded \$25 per barrel since then.⁴⁶⁹ Moreover, since Islamic terrorism is most active in the oil-rich Middle East, operating in those countries has become more dangerous and thus more expensive, propping up oil prices even further. As Howell and Nakhle explain, '[d]anger spells risk and risk has to be paid for when investors put up their money. More capital up front, more spending on security, higher wages to persuade staff to work in personal danger – it all adds up to a bigger spend to get a barrel of oil out of the ground and moved to market, wherever the location. All this implies that oil prices could stay high at least for the next few years – probably for the next decade.'⁴⁷⁰

As mentioned above, however, the 2008 financial crisis led to a fall in demand which made oil prices plummet, followed by three separate rounds of production cuts by OPEC since September of that year. These production cuts have effectively brought OPEC members' spare capacity back to as much as 6 million barrels a day,⁴⁷¹ the highest it has been since the 1980s, most of it in Saudi Arabia. According to Morse, the re-emergence of Saudi Arabia's spare production capacity should be 'the most critical element' to maintain lower oil prices through the end of 2012 – 'or more, if global demand fails to rebound enough' – which the Kingdom is likely to use in order to 'keep prices moderate in order to spur global economic growth, maintain long-term demand for oil, and deter investments in alternative sources of energy.'⁴⁷² On the other hand, the global financial crisis hit the richer, more developed countries of the West significantly harder than some of the emerging markets that have been the main drivers of oil demand growth in the past decade, such as China. The return of emerging market growth after the crisis could well translate into rising oil demand again. As the McKinsey Global Institute admonished in 2009,

If oil demand grows as quickly as expected when the world economy recovers, OPEC's spare capacity could be gone within five years. And since the world relies increasingly on unconventional sources of oil (think tar sands), it will take time and money to bring more supplies online. Until then, the world will be left

⁴⁶⁷ Maugeri, *The Age of Oil*, p. 194.

⁴⁶⁸ *Ibid.*, p. 185.

⁴⁶⁹ Interview with Henry Groppe, London, 6 February 2007.

⁴⁷⁰ Howell & Nakhle, *Op cit.*, p. 144.

⁴⁷¹ *The Economist*, 'Bust and boom', p. 69.

⁴⁷² Morse, *Op cit.*, p. 40.

only with demand-side measures—such as boosting energy efficiency and cutting back on use—to control prices.⁴⁷³

This ultimately raises the question of whether petroleum will be a reliable energy resource in the future, and whether OPEC and other major oil-producing countries can be reliable suppliers – a concern that is encouraging switching to alternative fuels such as ethanol.

Affordability

The fundamental difference between the oil price spikes of the 1970s and the most recent one during the past decade is that, unlike the former, which were immediate and deliberately politically motivated, the 2003-2008 price spike was slow in coming and predominantly driven by demand. In *The Economist's* words: 'If the Arab oil-weapon felt like a hammer-blow, this time stagnant oil output and growing emerging-market demand have squeezed the oil market like a vice.'⁴⁷⁴ Throughout this past decade there has been an unexpected explosion in demand coming, for the most part, from emerging economies in Asia and elsewhere, which have not been outweighed by slower consumption in the West.⁴⁷⁵ Almost 85 per cent of the world's demand growth for crude oil between 2000 and 2007 – a rise in 9.4 million barrels a day – was in emerging markets in Asia (especially China and India), the Middle East and Latin America.⁴⁷⁶

The specific impact of Asia, particularly China, began to be felt from 2003 onwards, when global oil consumption growth led by China doubled compared to average annual rates during the 1990s, creating a 'demand shock'⁴⁷⁷ rather than a supply shock typical of the past. Global oil consumption grew by 1.8 mbd in 2003 and 3 mbd in 2004, compared to 600,000 to 700,000 barrels a day during the preceding years in the decade. China alone was responsible for almost a third of the 2004 global demand growth, with its own demand leaping by 17 per cent that year, an increase of over 900,000 barrels a day, thereby becoming the world's second-largest oil consumer after the United States. Bearing in mind that China still consumes only 2 barrels of oil

⁴⁷³ The McKinsey Global Institute, 'How High Will It Go?', *Foreign Policy*, September/October 2009, p. 96.

⁴⁷⁴ *The Economist*, 'Recoil', 31 May 2008, p. 15.

⁴⁷⁵ Webb, S., 'Oil consumers and producers to meet', *International Herald Tribune*, 21-22 June 2008, p. 17.

⁴⁷⁶ Yergin, 'It's still the one', *Foreign Policy*, September/October 2009, p. 92.

⁴⁷⁷ Yergin, 'Ensuring Energy Security', p. 72.

a year *per capita*, compared to 13 in Western Europe and 26 in the US, China's drive towards becoming a developed country indicates that its demand for energy is likely to continue to increase inexorably until it has overcome the most energy-intensive phase of its development, giving credence to Napoleon Bonaparte's prophetic words two centuries ago: 'Let China sleep, for when she awakes she will shake the world.'⁴⁷⁸

Even though record oil prices have reduced demand in the developed world, in emerging countries it is still rising. In the United States – 'where low tax rates on fuel, consumer disregard for efficiency, and demographic growth have increased oil consumption' and 'more than half of the 17 million cars sold...each year between 2000 and 2004 were gas-guzzling sport-utility vehicles',⁴⁷⁹ representing an important portion of this decade's increase in demand for oil and its price – demand has fallen under pressure from exorbitant prices, but consumption in developing countries has not dropped to the same extent. This is because fuel prices in emerging markets representing half of the world's population⁴⁸⁰ – especially in Asia, Latin America and the Middle East – are shielded by heavy subsidies and other kinds of market regulations by their governments. These subsidies, in turn, continue to boost demand distortedly since roughly a quarter of the world's petrol is sold below the real market price, keeping oil prices at artificially high levels. This is particularly the case in Middle Eastern countries, which, according to Michael Levi, 'will gobble up nearly 50 percent more oil than India in 2030, despite being home to just a fifth as many people. The reason? Massive oil subsidies that put China and India to shame. ... That probably means less oil left for the rest of the world—and higher prices to boot.'⁴⁸¹ In theory, *The Economist* points out, 'rising crude-oil prices should reduce global demand. But if domestic prices are capped, then emerging economies will continue to guzzle oil, pushing world prices still higher.'⁴⁸² But even more importantly, in terms of how this continues to affect the price of oil, Carola Hoyos calls attention to the fact that 'the countries that subsidise their fuel account for [more than] 100 per cent of current demand growth, because demand in developed regions such as the US, Europe

⁴⁷⁸ Maugeri, *The Age of Oil*, pp. 193-194.

⁴⁷⁹ *Ibid.*, pp. 159-160.

⁴⁸⁰ *The Economist*, 'Recoil', p. 15.

⁴⁸¹ Levi, M.A., 'Gas Guzzlers', *Foreign Policy*, September/October 2009, p. 103.

⁴⁸² *The Economist*, 'Crude measures', 31 May 2008, p. 91.

and Japan is either flat or contracting, as drivers have been feeling the full effect of higher, unsubsidised fuel costs.⁴⁸³

Being unprepared for such an unexpected rise in demand from emerging markets, the oil industry's risk-aversion in its investments since the 1990s has also contributed to higher prices in the past decade. The oil industry faced low prices and sluggish growth in consumption throughout the 1990s, thus assuming that the industry had fully matured, and therefore did not embark on new investments in exploration because they would not be profitable under such conditions.⁴⁸⁴ As stated in *The Economist*, 'ExxonMobil [the world's largest oil company] claims that it still assesses the profitability of potential investments using the same assumptions about the long-term oil price as it did at the beginning of the [last] decade, for fear that prices might tumble again.'⁴⁸⁵ This is also true more generally for the industry as a whole, as explained by Howell and Nakhle:

Years of weak oil prices may have been a joy for the consumer and for the oil-drinking advanced world. But the inevitable price paid on the supply side has been weak investment in the entire supply chain, from exploration and development through to production and refinery processing, and through to every kind of equipment supply in the chain in between. These were years in which no one wanted to spend too much on new rigs, new platforms, new drilling equipment or new tankers.⁴⁸⁶

The international oil companies' (IOCs) financial prudence by not launching high-capital investment ventures in new exploration has therefore 'partially eroded their capacity to replace reserves—i.e., to find new oil to replace their daily production.'⁴⁸⁷

The last two decades of underinvestment have also inhibited the updating of refining capacity to match the changing quantities of different kinds of oil being produced. As Maugeri puts it, 'Refining has been the weakest link in the petroleum production chain for the last 20 years.'⁴⁸⁸ Before the two oil crises in the 1970s, petroleum consumption was expected to grow at 5 per cent a year at least until the end of the century, incentivising investments not only in exploration and production of crude oil but also in refining capacity and infrastructure. But the crises of 1973 and

⁴⁸³ Hoyos, C., 'China fuel price rise is no quick fix', *Financial Times*, 20 June 2008, p. 3.

⁴⁸⁴ Maugeri, 'Two Cheers for Expensive Oil', pp. 150-151. Burrows, M. & Treverton, G.F., 'A Strategic View of Energy Futures', *Survival*, Vol. 49, No. 3, September 2007, p. 80.

⁴⁸⁵ *The Economist*, 'Double, double, oil and trouble', 31 May 2008, p. 90.

⁴⁸⁶ Howell & Nakhle, *Op cit.*, pp. 26-27.

⁴⁸⁷ Maugeri, *The Age of Oil*, p. 192.

⁴⁸⁸ Maugeri, 'Two Cheers for Expensive Oil', p. 155.

1979 disrupted the flow of enormous amounts of oil while refining capacity grew significantly. Demand for oil rose by less than 2 per cent a year from 1980 to 2000, a period characterised by excess refining capacity and no investments made in new refining infrastructure – e.g. no refineries have been built in the US since 1976 – or updating current refining capacity to refine heavier oils than the light variety predominant in the 1970s.⁴⁸⁹ Today, the ‘world can be swimming in oil,’ says Maugeri, ‘but the refineries may not be able to find the type of crude oil that they need.’⁴⁹⁰ While lighter crudes generate more petrol and diesel, heavier crudes produce more fuel oil for heating. In mid-2008, *The Economist* wrote that ‘diesel is in short supply and there is a glut of fuel oil. That makes processing heavy oil unprofitable for some refineries, since the gains from diesel are outweighed by losses on fuel oil. As refineries turn instead to lighter grades, it pushes their prices yet higher.’⁴⁹¹ Skyrocketing demand for crude oil after 2000 has therefore put additional pressure on light oil prices, since there is limited refining capacity for heavier oils, for which there is lower demand and are thus cheaper than light oils. Meanwhile, fears that oil prices would drop again have also been a deterrent to investments in more efficient and advanced refining technologies, putting further pressure on prices due to the relative lack of alternatives to light oil.

But as record oil prices kept getting higher and showed no signs of abating, it became clear to oil companies that new exploration and production was not only profitable but necessary to meet spiralling demand, encouraging a rush to invest in new capacity. Ironically, this has increased exploration, production and development costs by 110 per cent, according to Cambridge Energy Research Associates,⁴⁹² putting a higher price floor on the cost of the marginal barrel. This is because the oil platforms, ‘engineers, survey ships and seismic rigs that oil firms need to find and produce new deposits are expensive right now. The costs of finding oil have, temporarily, doubled precisely because everybody wants to give them work.’⁴⁹³ All of these increased development costs, in turn, are reflected in higher oil prices.

Moreover, the unexplored reserves that can be accessed by IOCs, despite their generally superior technological and managerial expertise, tend to have higher

⁴⁸⁹ Howell & Nakhle, *Op cit.*, pp. 26-27.

⁴⁹⁰ Maugeri, *Beyond the Age of Oil*, p. 21.

⁴⁹¹ *The Economist*, ‘Double, double, oil and trouble’, p.90.

⁴⁹² *Ibid.*

⁴⁹³ *The Economist*, ‘Recoil’, p. 15.

development costs than the ones under national oil company (NOC) control. When oil prices are low, it is usually the case that ‘oil-rich countries welcome the low-cost, high-tech and well-capitalised oil firms’,⁴⁹⁴ while high-price scenarios incite resource nationalism and politicisation, often leading to the expulsion of IOCs from such countries. The recent price spike is no exception, a period during which oil-producing countries’ government intake (i.e., taxes and royalties) has escalated, raising the overall cost of delivering oil to the market,⁴⁹⁵ with Venezuela and Russia as prominent examples of countries where the state has politicised hydrocarbon resources by taking over their control. ‘The danger from both an economic and energy security standpoint’, warn Jan Kalicki and David Goldwyn, ‘is that state control will have an adverse impact on investment and production, with collateral damage to both economic growth and global energy supplies—a danger reflected in oil price jumps in response to strikes against *Petróleos de Venezuela*’.⁴⁹⁶ Although global oil reserves are vast, IOCs have access to a very small portion thereof, since the vast majority is under NOC control, including the fields that are cheapest and easiest to develop. The plain truth, says Maugeri, is that ‘from the 1980s...the world’s private oil companies...controlled no more than 8 percent of the world’s oil reserves. At the same time, any new frontier of petroleum exploration and development [will be] technically and environmentally challenging, and above all costly’,⁴⁹⁷ such as the ultra-deep waters in the Arctic Ocean, the Gulf of Mexico and off the coast of Brazil, where new operations ‘will be more expensive than \$75 per barrel. Revitalizing production in the older and bigger petroleum basins of the world will cost more, too.’ Profitable production of such reserves may require high long-term prices due to their more prolonged and more expensive development, which is why Maugeri reckons ‘easy and *cheap* oil seems bound to disappear.’⁴⁹⁸

But considering the limited amount of petroleum supplies given runaway demand, inevitably leading to higher prices, standard economic theory has it that demand should fall when oil prices become too high. For years, consumption and

⁴⁹⁴ *Ibid.*

⁴⁹⁵ Maugeri, *Beyond the Age of Oil*, p. 25.

⁴⁹⁶ Kalicki, J.H & Goldwyn, D.L., ‘Conclusion: Energy, Security, and Foreign Policy’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 573.

⁴⁹⁷ Maugeri, *The Age of Oil*, p. 193. It should be noted that in this book, Maugeri uses 2005 figures. More recent figures (2010) are used elsewhere in this study: see p. 96, especially footnote 296 on that page.

⁴⁹⁸ Maugeri, *Beyond the Age of Oil*, p. 25. Emphasis added.

demand for oil was widely believed to be inelastic and uninfluenced by price rises, ‘a result of the transportation sector’s high level of reliance on gasoline and other petroleum-based motor fuels.’⁴⁹⁹ But as the drive for energy efficiency and conservation, along with the investment spree in diversification towards alternative energy sources, of the 1980s following the 1970s price spikes have proven, oil consumption does, in fact, respond to higher prices, meaning that demand for oil is inelastic only in the short term. As Maugeri points out, ‘price always affects demand, even if the connection takes time to manifest itself, as consumers try to maintain the lifestyle they are used to for as long as possible. Consumer inertia makes it difficult to establish quick and direct correlations between the demand for oil, the price of oil, and economic or demographic growth but these links do exist.’⁵⁰⁰ In that sense, the sustained rise in oil prices of the past decade was a key contributing factor to the recession that ensued after the 2008 financial crisis, which led global demand for oil to tumble and, with it, the price of the barrel. The record price of \$147 in July 2008 collapsed by almost 80 per cent by the end of the year due to decreased demand inflicted by the recession – the first time global oil consumption had fallen since 1993.⁵⁰¹

This sharp fall in prices has halted the investment rush that resulted from the preceding boom, making energy suppliers worldwide question whether future demand will be certain and high enough to justify the substantial investments necessary to develop new production capacity – a worry that is particularly pronounced since increasingly accepted environmental concerns are casting doubt on the future of fossil fuels.⁵⁰² For example, close to \$90 billion worth of new projects have been deferred in Canada’s tar sands alone.⁵⁰³

Falling prices have begun to curtail long-run investment in exploration and production (E&P) as more expensive projects are put on hold; that, in turn, will feed back into the long-run outlook. E&P planned under high oil prices to bring online more oil and gas to alleviate the tight supply market will not have taken place on the size and scale needed. While some international oil companies claim that they will stick to their investment plans, OPEC indicates that about

⁴⁹⁹ Pascual & Zambetakis, *Op cit.*, p. 15.

⁵⁰⁰ Maugeri, ‘Two Cheers for Expensive Oil’, p. 158.

⁵⁰¹ Rühl, *Op cit.*, p. 66.

⁵⁰² Victor, D.G. & Yueh, L., ‘The New Energy Order: Managing Insecurities in the Twenty-first Century’, *Foreign Affairs*, Vol. 89, No. 1, January/February 2010, pp. 68-69.

⁵⁰³ *The Economist*, ‘Vapour trails’, 3 July 2010, p. 66.

thirty-five new projects could be on hold, cutting by about half the increases projected in global production capacity expected by 2014.⁵⁰⁴

The irony is that, by diminishing investments into new production capacity to meet demand growth after the world economy recovers from recession, these long-term structural factors are likely to lead to an eventual reversal to higher oil prices. As the business cycle turns, El-Gamal and Jaffe explain, ‘the euphoria begins to wane. ... Then, reduced liquidity and credit prevent oil exporters from investing sufficiently in productive capacity during the recession, and our story eventually repeats, each time more dramatically than before.’⁵⁰⁵

Indeed, oil prices have made a remarkable recovery since their trough of \$34 per barrel in December 2008, reaching levels consistently over \$70 during the second half of 2009. With global demand for oil showing signs of recovery by the end of 2009, prices once again surpassed the \$100 mark in 2010, reaching close to \$120 a barrel upon civil war breaking out in Libya in February 2011, before stabilising again below \$100 per barrel after Saudi Arabia used its spare capacity to make up for its fellow OPEC-member’s supply disruption. All of this points to the fact that all the factors are in place for a likely new oil price spike similar to the previous one, subject to how soon the world economy really recovers from recession.⁵⁰⁶

As soon as the world economy starts growing again, the theory runs, demand for oil will once again outstrip the industry’s ability to supply it. The seemingly ample cushion of inventories and spare capacity will quickly be exhausted, sending prices soaring. In other words, the global recession has only interrupted the “supercycle” of which many analysts used to speak, during which the normal boom-and-bust cycle of oil and other commodities would give way to a protracted period of high prices, as ever-growing demand from emerging markets swallowed everything the extractive industries could produce. “The commodity supercycle is not over, just resting...”⁵⁰⁷

With a likely return to exorbitant oil prices, based on the long-term structural factors mentioned above putting the future affordability of petroleum in question, the drive towards alternative energy sources becomes increasingly imperative, particularly for those that can substitute the transportation sector’s inelastic dependence on oil, such as ethanol and other biofuels.

⁵⁰⁴ Pascual & Zambetakis, *Op cit.*, pp. 16-17.

⁵⁰⁵ El-Gamal & Jaffe, *Op cit.*, p. 100.

⁵⁰⁶ The McKinsey Global Institute, *Op cit.*, p. 96.

⁵⁰⁷ *The Economist*, ‘Bust and boom’, p. 70.

Sustainability

As humanity enters the twenty-first century, a new era of energy security is emerging, where the need to curb fossil fuel consumption is paramount. What characterises this new energy era, above all, is the environmental threat posed by these polluting energy sources, manifested in the form of global warming and climate change. According to some, climate change is ‘arguably the greatest challenge facing the human race.’⁵⁰⁸ Whether or not such statements are scientifically unequivocal is immaterial; what matters is that it is by now increasingly accepted as such, not only by the scientific community – where a steadily growing consensus on the matter has emerged over the past twenty years, while climate-change sceptics now find themselves in a minority⁵⁰⁹ – but also by politicians and decision makers worldwide, who ‘are now well aware of the hazards posed by climate change and the need to respond to them.’⁵¹⁰

The UN Intergovernmental Panel on Climate Change (IPCC) states that the rise in our planet’s average temperature is caused by increases in greenhouse gas (GHG) concentrations in the atmosphere – instigated mostly by the burning of fossil fuels since the Industrial Revolution – and asserts with ‘*very high confidence* [emphasis in original] that the global averaged net effect of human activities since 1750 has been one of warming.’⁵¹¹ The precise implications of climate change are moot and still the subject of ongoing research, but ‘there is a consensus that greenhouse-gas-induced climate change will entail not only higher average and extreme temperatures but also an increasing disruption of weather patterns, increases in both floods and droughts, rising sea level, and more, with adverse effects on agriculture, forestry, fisheries, patterns of disease, the livability of cities in summer, and many other aspects of human well-being.’⁵¹² This, in turn, aggravates energy security by creating a vicious cycle in which the violent weather conditions brought on by climate change, ‘generating out-of-season typhoons and exceptionally powerful hurricanes, such as Katrina and Rita, in the oil-producing Gulf of Mexico, are helping

⁵⁰⁸ Pascual, C. & Elkind, J., ‘Introduction’, in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), p. 5.

⁵⁰⁹ Elkind, *Op cit.*, p. 121. Giddens, *Op cit.*, p. 22.

⁵¹⁰ Giddens, *Op cit.*, p. 4.

⁵¹¹ Cited in Bordoff, J., Deshpande, M. & Noel, P., ‘Understanding the Interaction between Energy Security and Climate Change Policy’, in Pascual, C. & Elkind, J. (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), p. 211.

⁵¹² Holdren, J.P., ‘Commentary on Part IV’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 558.

to intensify the short-term [energy security] crisis by tipping platforms over and rupturing pipelines.⁵¹³ Climate change is therefore referred to as a ‘threat multiplier’: ‘a destructive force that will exacerbate existing social, environmental, economic, and humanitarian stresses. ... Such impacts may spark conflict in weak states, lead to the displacement of millions of people, create environmental refugees, and intensify competition over increasingly scarce resources.’⁵¹⁴

Unlike most environmental problems, climate change is a long-term global challenge with profound implications for energy security; it is primarily a problem caused by human use of energy resources, and it ‘has a greater impact on the environment than any other human activity.’ According to Kevin Baumert, around 75 per cent of all GHG emissions derive from energy use, with fossil fuel combustion constituting the largest part at 70 per cent of all emissions. Almost two-thirds of fossil fuel emissions come from electricity and heat generation (42 per cent) and transportation (23 per cent), while most of the remainder is emitted by industries and residences (20 and 9 per cent, respectively).⁵¹⁵ Because of the causal link between fossil fuel use and global warming, it is impossible to mitigate climate change without transforming the way energy is produced and consumed worldwide. Therefore, responding to climate change, writes Anthony Giddens, ‘has to be closely integrated with questions of energy security.’⁵¹⁶

But how does the world at once meet both the challenge of climate change and the challenge of economic growth by ensuring energy security, asks Daniel Yergin. The answer, for him, lies in ‘an emphasis on technology to a degree never before seen.’⁵¹⁷ The technological developments required to meet these challenges are multiple, and should be focused not only on developing renewable energy resources, but also in making better use of existing ones, as well as investing in home-grown energy in order to avoid dependence on volatile and often uncertain energy imports. Investing vast amounts into developing these varied technologies, particularly in renewable energies, is essential to counter climate change, but as Giddens recalls, ‘those resources won’t develop in some sort of automatic way, nor will they be

⁵¹³ Howell & Nakhle, *Op cit.*, p. 35.

⁵¹⁴ Pascual & Elkind, *Op cit.*, p. 5.

⁵¹⁵ Baumert, K.A., ‘The Challenge of Climate Protection: Balancing Energy and Environment’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), pp. 485-487.

⁵¹⁶ Giddens, *Op cit.*, p. 10.

⁵¹⁷ Yergin, ‘It’s still the one’, p. 94.

stimulated by the operation of market forces alone. The state has to subsidize them, in order for them to be competitive against fossil fuels and to protect investment in the face of fluctuations to which the prices of oil and natural gas are subject.⁵¹⁸ Otherwise, these investments need to be buttressed by a prolonged period of steep market prices for fossil fuels, in order to succeed without government subsidies.⁵¹⁹ In that sense, the exorbitant rise in oil prices of the past decade was in part a blessing for the cause of climate change because it encouraged a reduction in oil consumption and spurred investments into renewable energies and other technologies that make better or more efficient use of existing resources.

But even though such technological advances will in the future allow the refining and use of heavy and unconventional oils, these forms of petroleum are less attractive environmentally because they are much more polluting and emit more GHGs than lighter oils. Meanwhile, switching from conventional combustion engines to hybrid battery-powered vehicles offers little relief to the environment, 'since the electricity for those is commonly produced by burning fossil fuels at another location. Although local air quality is improved, total carbon dioxide emissions are not curtailed; they are merely exported.'⁵²⁰ Moreover, the different kinds of alternative, cleaner energy sources are not without their limitations. Nuclear energy, with which several countries have extensive experience, is attractive both for energy security and environmental reasons: it does not require vast quantities of uranium (compared to the volumes of oil, natural gas and other fuels to generate the same amount of energy) and its GHG emissions are minimal. But to play this role successfully, as Amy Jaffe reminds us, 'nuclear power will have to overcome serious economic and political challenges, including concerns over nuclear waste, safety, and non-proliferation.'⁵²¹ And even 'non-threatening' renewable energy sources – such as biofuels, geothermal, wind and solar power – face the financial and logistic obstacle of high fuel-switching costs given their still limited market penetration.

All of these examples point to an underlying incongruity between the goals of ensuring energy security on the one hand, and mitigating climate change on the other:

⁵¹⁸ Giddens, *Op cit.*, p. 8.

⁵¹⁹ Nivola, P.S with Carter, E.E.R., 'Making Sense of "Energy Independence"', in Pascual & Elkind (eds.), *Energy Security: Economics, Politics, Strategies, and Implications*, (Washington, D.C.: Brookings Institution Press, 2010), p. 114.

⁵²⁰ Lugar, R. & Woolsey, R.J., 'The New Petroleum', *Foreign Affairs*, Vol. 78, No. 1, January/February 1999, p. 94.

⁵²¹ Jaffe, *Op cit.*, p. 845.

‘Because climate change and energy security concern different fuels to different degrees, efforts to make progress on one may come at the expense of the other.’⁵²²

The most affordable and widely available energy resources tend to be more polluting, while those that are least offensive to the environment tend to be more expensive. In Maugeri’s words:

*The uncomfortable truth that we must all accept is that cheap energy is not good for the health of our planet, and it is not compatible with the fight against climate change. People’s quest for cheap energy has made fossil fuels the over-dominant actors of the contemporary world, it has made energy efficiency a subject of minor relevance, and it has depressed investment in new technologies to develop affordable primary sources of energy other than fossil fuels.*⁵²³

The high cost of ensuring both energy and environmental security simultaneously suggests that these two goals are mutually exclusive in the short term, with energy security apparently ranking higher as a short-term priority. ‘Too much focus on policies intended to make energy cheaper’, write David Pilling and Chris Giles for *The Financial Times*, ‘threatens to conflict with efforts to reduce consumption and greenhouse gas emissions.’⁵²⁴ The problem is not that energy and environmental security are mutually exclusive overall, but that achieving each goal individually is, in and of itself, very expensive, and even more so if both are to be achieved simultaneously. ‘Establishing a more reliable and secure energy supply system and reducing carbon emissions lie in part on the same road, which is a happy coincidence,’ according to Howell and Nakhle. ‘But long before we get any results from cutting carbon emissions the world will probably be shaken by problems of security and supply disruption that could blow the highest hopes off course.’⁵²⁵ Thus, in the long-term, the way to rectify both problems is essentially the same: namely through energy conservation and diversification to more environmentally friendly energy sources.

However, both of these problems – energy security and climate change – are exacerbated by ongoing increases in energy demand of dramatic proportions, which could lead to equivalent increases in greenhouse gas emissions, making possible solutions to these problems particularly elusive. While most of the GHGs that are

⁵²² Bordoff, Deshpande & Noel, *Op cit.*, p. 222.

⁵²³ Maugeri, *Beyond the Age of Oil*, p. xxix. Original emphasis.

⁵²⁴ Pilling, D. & Giles, C., ‘G8 sees more squalls on horizon’, *Financial Times*, 12 June 2008, p. 3.

⁵²⁵ Howell & Kakhle, *Op cit.*, p. 36.

currently contributing to global warming have been created by the energy needs of industrial countries over the past couple of centuries, it is now the rapidly growing developing countries' steep rise in fossil fuel consumption that is the main contributor to GHG emissions. To illustrate this, Rühl calls attention to the fact that 'the entire *net* increase in global oil consumption since 1999 has come from outside the OECD countries', leading to a noticeable acceleration in GHG emissions 'after the turn of the century, driven by growing demand in the developing world.'⁵²⁶ Because of their rapid and highly energy-intensive growth over the past decade, developing countries 'already account for just over half of total carbon emissions... The lifetime emissions from these countries' planned power stations would match the world's entire industrial pollution since 1850.'⁵²⁷ A further aggravating concern is that despite technological improvements to engine efficiency and environmental friendliness, 'vehicle miles traveled continually increases as more cars are purchased,'⁵²⁸ a problem that is becoming particularly acute as automobile sales grow in developing countries, which are nowhere near as 'motorised' as Western countries. As stated in *The Economist*:

The number of cars in the rich world will grow only slowly in the years ahead, but car ownership elsewhere is about to go into overdrive. Over the next 40 years the global fleet of passenger cars is expected to quadruple to nearly 3 billion. China, which will soon overtake America as the world's biggest car market, could have as many cars on its roads in 2050 as are on the planet today; India's fleet may have multiplied 50-fold. Forecasts of this kind led Carlos Ghosn, boss of the Renault-Nissan alliance, to declare [in March 2008] that if the industry did not get on with producing cars with very low or zero emissions, the world would "explode".

Cars already contribute around 10% of the man-made greenhouse gases that are responsible for climate change.⁵²⁹

If these trends continue – with 'developing countries responsible for almost all growth in energy demand, whose energy consumption is expected to exceed that of the industrial world in about two decades and to climb even more rapidly thereafter'⁵³⁰ – developing countries' GHG emissions will soon dwarf those of developed countries.

⁵²⁶ Rühl, *Op cit.*, p. 65. Emphasis added.

⁵²⁷ *The Economist*, 'A bad climate for development', 19 September 2009, p. 76.

⁵²⁸ Kohl, W.L, 'National Security and Energy', in Cleveland, C.J. (ed.), *Encyclopedia of Energy*, Vol.4, (San Diego, CA: Elsevier, 2004), p. 201.

⁵²⁹ *The Economist*, 'Charge!', 5 September 2009, p. 16.

⁵³⁰ Kenderdine & Moniz, *Op cit.*, p. 443.

As the worldwide debate on climate change unfolds, a political cleavage is being created between rich and developing countries: ‘The currently wealthy want measures that will put [GHG emission] limits on everyone, at least eventually, while the rapidly developing argue that they should not be penalised for coming late to the party. They should be allowed a phase of energy-intensive growth like the one the rich countries went through.’⁵³¹ To deny developing countries the right to grow economically, and thereby also increase their GHG emissions significantly, their argument goes, is to resign them to eternal poverty. For without energy, writes Maugeri, ‘there is no economic development and no freedom from poverty. This need for energy tends to put environmental and climate concerns on the back burner. For the vast majority of [poor or developing] countries, access to low-cost energy will remain a top priority.’⁵³² Though it seems fair that developing countries should not be denied a chance to catch up with rich ones, the problem with this approach is that these countries normally seek ‘the easiest and most direct way to obtain the necessary energy resources for development,’⁵³³ which is found in the increased use of fossil fuels. As Paul Roberts puts it,

In today’s economy, clean, sustainable energy is a luxury reserved for the richest nations. In countries staggering under high population growth, the drive for energy security rarely means “leapfrogging” to a sophisticated, clean technology. Instead, these nations tend to take the easiest, fastest, and cheapest path possible – which usually means technologies that are obsolete, low-quality, and highly polluting.⁵³⁴

As the prices of oil and natural gas increase, poorer consumers desperately turn to the worst possible way to solve their energy security in environmental terms, namely coal, which is the most carbon-intensive fossil fuel and makes up over a quarter of the world’s energy matrix,⁵³⁵ thus putting energy security considerations above environmental concerns for many states, including even some countries in Europe

⁵³¹ Burrows & Treverton, *Op cit.*, p. 85.

⁵³² Maugeri, *Beyond the Age of Oil*, pp. xxiv-xxv.

⁵³³ Leal, J. & Samaniego, J., ‘Environmental Issues in Latin America and the Caribbean’, in Weintraub, S. (ed.), *Energy Cooperation and Confrontation in the Western Hemisphere*, (Washington, D.C.: Center for Strategic and International Studies, 2007), p. 436.

⁵³⁴ Roberts, P., *The End of Oil: The decline of the petroleum economy and the rise of a new energy order*, (London: Bloomsbury Publishing, 2004), p. 246.

⁵³⁵ Kenderdine & Moniz, *Op cit.*, p. 447.

where utilities calculate that burning coal is cheaper than burning cleaner natural gas.⁵³⁶

Coal reserves worldwide are much more abundant and more widely dispersed than other fossil fuels and their production costs are also much lower. ‘Faced with the insecure nature of imported oil supply and potentially rising prices,’ writes Amy Jaffe, ‘even countries seeking environmental improvement may find themselves unable to move away from heavy reliance on coal in power and industrial sectors.’⁵³⁷ In order not to aggravate the environmental threat brought on by the expanding use of coal, new technologies for carbon dioxide capture and sequestration are necessary. Unlike other technological advances in energy use, which are motivated mostly by energy security and financial concerns, carbon sequestration ‘is motivated uniquely by global climate change concerns, because it is always less expensive to vent carbon dioxide directly to the atmosphere.’⁵³⁸ Nevertheless, if strong GHG-emission reduction policies are implemented worldwide, coal consumption is more likely to fall than other energy sources not only because coal is the most polluting, and therefore more expensively charged under potential carbon taxes or cap-and-trade systems, but also because ‘there are more low-cost alternatives to coal used in the electricity sector than there are to oil used in the transportation and manufacturing sectors.’⁵³⁹

Meanwhile, in the highest GHG-emitting sector – power generation for heat and electricity – the fuel that offers the best alternative to carbon-intensive energy sources like oil and coal, is actually another fossil fuel, natural gas, since it produces more energy per unit burned while emitting far fewer GHGs than either of the former.⁵⁴⁰

Because of its relative abundance, versatility, and environmental benefits compared with other fossil fuels, natural gas is widely viewed as *the* “bridge fuel” to the next energy future (whatever that may be). Whether the global demand for natural gas will grow during the next two decades and whether natural gas will graduate to the full status of a global energy source like oil will hinge on how these four challenges—supply development, frameworks for

⁵³⁶ Bordoff, Deshpande & Noel, *Op cit.*, p. 222.

⁵³⁷ Jaffe, *Op cit.*, p. 844.

⁵³⁸ Kenderdine & Moniz, *Op cit.*, p. 444.

⁵³⁹ Bordoff, Deshpande & Noel, *Op cit.*, p. 221.

⁵⁴⁰ Kenderdine & Moniz, *Op cit.*, p. 444.

delivery and use, the expansion of international trade through LNG or other options, and balancing supply availability and use—are met.⁵⁴¹

But in order for natural gas to have a significant positive impact on the environment, its use must become much more widespread, which in turn requires an ‘aggressive program to develop stranded and unconventional gas reserves’⁵⁴² in order to create a global market for it, as currently exists for oil – a proposition which also holds true for ethanol and other biofuels. Moreover, if coal use is substituted by natural gas worldwide, GHG emissions would be cut by approximately 50 per cent,⁵⁴³ which, as promising as it sounds, may not turn into reality given the vastly cheaper cost of coal compared to natural gas. But even if natural gas is plentiful and cheap enough to replace carbon-rich coal, asserts *The Economist*, ‘it will also be in a position to replace carbon-free nuclear and renewables, and in doing so more carbon dioxide will be emitted than would otherwise be the case.’ In that sense, prioritising natural gas over other energy sources would be a ‘mixed blessing’ for climate change mitigation, since ‘the overall increase in energy use and the reduced use of nuclear and renewables in a gas-happy world would almost perfectly balance out the gains made by burning gas instead of coal’, according to a hypothetical scenario projected by International Energy Agency for the year 2035.⁵⁴⁴

As for the second-highest GHG-contributing sector, transportation, a partial shift to ethanol fuel made from biomass ‘stands out as an excellent way to introduce an environmentally friendly energy technology’. A fundamental advantage of ethanol is that it is not mutually exclusive with current and more advanced, forthcoming engine technologies, like cars powered by petroleum-derived fuels, hybrid engines or fuel cells, respectively. Moreover, the environmental advantages of its *consumption* – as opposed to its *production* – might be even greater than its practicality. There is a virtual consensus among scientists, write Richard Lugar and James Woolsey, that ‘when considered as part of a complete cycle of growth, fermentation, and combustion, the use of cellulosic ethanol as fuel, once optimized, will contribute essentially no net carbon dioxide to the atmosphere.’⁵⁴⁵ However, in terms of ethanol

⁵⁴¹ Juckett, D.A. & Foss, M.M., ‘Can a “Global” Natural Gas Market Be Achieved?’, in Kalicki, J.H. & Goldwyn, D.L. (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, (Baltimore, MD: Johns Hopkins University Press, 2005), p. 536.

⁵⁴² Kenderdine & Moniz, *Op cit.*, p. 444.

⁵⁴³ Baumert, *Op cit.*, p. 489.

⁵⁴⁴ *The Economist*, ‘Cleaner, not cooler’, 6 August 2011, p. 12.

⁵⁴⁵ Lugar & Woolsey, *Op cit.*, pp. 99, 94.

production, as environmentalists often point out, the cultivation of *some* (but not all) biofuel-yielding crops can lead to rainforest destruction in developing countries, exacerbating environmental problems, and displacement of other food crops in developed countries, raising food prices. As the former UK Secretary of State for Energy, David Howell, questions: ‘If that is the price of independence from fossil fuels, is it worth it?’⁵⁴⁶

Although the drive for energy diversification towards conservation and ‘greener’ alternative fuels to diminish dependence on fossil fuels is worthy for reasons of energy security, it is a *necessity* for environmental reasons, in order to mitigate climate change. But even if this drive offers much future potential and gives reason for optimism, the shift to alternative energy sources faces major obstacles. Normally such obstacles include high technical costs, creating new infrastructure for distributing alternative energies, long lead-times for new investments and entrenched interests in power generation, transportation, industry and agriculture sectors – all of which put renewable energies at a crucial disadvantage against fossil fuels, due to the latter’s dominance in most markets, existing knowhow and infrastructure for fossil fuels and the perceived high costs of adjusting to new, low-carbon policy frameworks.⁵⁴⁷ For these reasons, the exorbitant oil-price scenario of the past decade was in fact a blessing for investment in alternative energies – because it is inconceivable for most consumers to shift to renewable energies merely out of environmental concerns, unless there is also a strong financial incentive to do so.

However, the collapse of global oil prices induced by the 2008 financial crisis has held back an otherwise necessary investment drive towards a ‘greener’ future, as has often been the case in the past: ‘History has shown that low prices for petroleum or excessive uncertainty about future price movements are the worst enemies of research and development into alternative energy sources.’⁵⁴⁸ If fossil fuels remain too cheap for renewables to compete with them, Maugeri suggests that we can expect ‘a continued drop in investment in new forms of energy. ... As a case in point, the greatest wave of investment in renewable sources took place during the oil shocks of

⁵⁴⁶ Howell & Nakhle, *Op cit.*, p. 120.

⁵⁴⁷ Jaffe, *Op cit.*, p. 844. Baumert, *Op cit.*, p. 489.

⁵⁴⁸ Maugeri, *Beyond the Age of Oil*, p. 31.

the 1970s. However, when prices dropped, spending on alternatives to oil, gas, and coal evaporated.⁵⁴⁹

There is, conversely, a fundamental and crucial difference between the 1986 price collapse following the two oil crises of the 1970s and the most recent one after the 2008 financial crisis. Unlike in the 1970s and 80s, the concern about the environmental impact of energy use and its overwhelming contribution to climate change caused by GHG emissions has come into the political limelight. It is now almost ubiquitously recognised as ‘a challenge of the highest order’, requiring technological, institutional and behavioural change.⁵⁵⁰ According to Edward Morse, the opportunities presented by relatively lower oil prices after the 2008 financial crisis should not, therefore, ‘detract from the important goals of reducing global greenhouse emissions...and building a new generation of energy-efficient nonhydrocarbon fuel sources.’⁵⁵¹ Indeed, it could well be, as Maugeri believes, that the ‘environmental conscience now shown by many governments could help sustain interest and investment in alternative energy when fossil fuels are cheap.’⁵⁵² We can consequently expect to see a surge of technological innovation in renewable energy resources in the future in order simultaneously to tackle energy security and climate change, Giddens affirms: ‘Without such innovation, it is impossible to see how we can break our dependency upon oil, gas and coal, the major sources of environmental pollution. A turn to renewable sources of energy is *essential*, and it has to be on a very large scale.’⁵⁵³

⁵⁴⁹ *Ibid.*, p. xxv.

⁵⁵⁰ Baumert, *Op cit.*, p. 489.

⁵⁵¹ Morse, *Op cit.*, p. 52.

⁵⁵² Maugeri, *Beyond the Age of Oil*, p. xxv.

⁵⁵³ Giddens, *Op cit.*, p. 11. Emphasis added.

Concluding Remarks

The assessment of energy statecraft as an effective instrument of foreign policy cannot be made without a proper understanding of the context in which it takes place. Being defined as the manipulation of another state's *energy security* for one's own political purposes, energy statecraft is useful only under an auspicious international context for that end. Such a situation exists if one or more of the four elements of energy security – namely, availability, reliability, affordability and sustainability – raise cause for concern. The 'new energy paradigm' that has emerged since the turn of the new millennium – simultaneously characterised by worries over the future adequacy of global oil reserves and other finite energy resources; the questionable ability and willingness of energy producers to supply them in a reliable fashion; skyrocketing demand for energy sources across the board by rapidly growing developing countries, coupled with extremely volatile oil prices that jeopardises investments in new supply capacity, both of which aggravate the affordability of hydrocarbons; and the threat posed by climate change caused by burning fossil fuels – has raised the value of energy resources as an instrument of state power to those that possess them, and thus influence over those that are in want of them. But this so-called new energy paradigm has also created a context in which the drive towards switching to use of alternative energy has blossomed as a necessary response to the aforementioned threats to energy security.

The last time such a massive switch to renewable energy sources was widely discussed was after the Arab oil crisis of 1973. As *The Economist* points out:

Then, too, a spike in the price of oil coincided with a fear that natural limits to supply were close. ... Of course, there was no geological shortage of oil, just a politically manipulated one. Nor is there a geological shortage this time round. But that does not matter, for there are two differences between then and now. The first is that the price rise is driven by demand. More energy is needed all round. That gives alternatives a real opening. The second is that 35 years have winnowed the technological wheat from the chaff.⁵⁵⁴

As mentioned above, one particular energy resource that stands out as 'an excellent way to introduce an environmentally friendly energy technology' is ethanol and other biofuels, especially considering their applicability in transportation, the only sector where alternatives have not been able to replace petroleum. Given the need to curb

⁵⁵⁴ *The Economist*, 'The future of energy', 21 June 2008, p. 16

GHG emissions from burning fossil fuels and the huge projected rise in car ownership in the developing world, combined with the concern that future oil supplies may not be able to meet such a steep surge in demand, biofuels seem like an increasingly attractive alternative and renewable energy source.

With such an appeal, in view of the international energy security context described above, biofuels have the potential to join the ranks of the few energy resources that can be used as an instrument of foreign policy. There are but a few major producers of biofuels in the world, but only one country currently employs biofuels in its energy statecraft, namely Brazil. The subsequent chapter will therefore evaluate the effectiveness of Brazil's energy statecraft focused on biofuels.

CHAPTER 5

The Energy Statecraft of Brazil

Energy statecraft has been an established instrument of foreign policy among energy-rich countries at least since the first international oil crisis of 1973, but its employment has thus far been restricted to petroleum and natural gas, more often than not in a negative way by restricting or disrupting target states' access to these energy resources. What is new in this century, however, is the use of biofuels as an instrument of energy statecraft. So far, only Brazil presents a case study of a country using biofuels as an instrument to achieve its foreign policy goals. This chapter seeks to assess the efficacy of using biofuels as a form of energy statecraft by testing the conditional variables identified in the economic statecraft literature, which have been examined in previous chapters.

The chapter begins with a historical outline of Brazil's National Alcohol Programme – a series of public policies implemented by the Brazilian military regime in response to the oil crises of the 1970s – through its various phases, from a strictly domestic energy security policy to its launch as a foreign policy initiative during the administration of President Luiz Inácio Lula da Silva (2003-2010). The four conditional variables identified in the literature that, in theory, determine the potential for success of energy statecraft are then assessed individually against the foreign policy strategy employed by the Brazilian government during the Lula administration. The first of these variables analyses whether the instrument employed by the state – in this case, the promotion of biofuel use to third countries – is commensurable with the foreign policy goals that it seeks to achieve. In Brazil's case, energy statecraft is carried out with the aim of attaining two main objectives: first, is the so-called commoditization of ethanol, that is the creation of an international market where ethanol is traded freely without barriers; second, is the increase in Brazilian ethanol exports within this market. In order to create this market, however, more countries need to produce ethanol or other biofuels, since Brazil is unable to supply global demand for biofuels while potential importers are unwilling to substitute their dependence on unreliable petroleum supply for dependence on a single (or few) suppliers of biofuels. Thus, the main strategy pursued by Brazil to accomplish its goal of commoditising ethanol is to encourage and assist other countries to use and

produce their own biofuels by promoting its use to third countries and transferring the technology to do so.

The second conditional variable is the market share of a given product, in this case biofuels. Here Brazil holds a relatively comfortable position as the world's second-largest producer of ethanol and its main exporter. But as other countries, particularly the United States and the European Union, spend exorbitant amounts of money into developing their own biofuel programmes, Brazil risks falling behind the race for prominence in the still fledgling international biofuels market. Unlike the US and the EU, however, Brazil has much land available in which further to expand its biofuel production. In order to maintain its leading position in the international biofuels market, Brazil therefore needs to invest significantly in expanding its production capacity – both to meet rising internal demand, as well as to supply growing global demand for biofuels.

The elasticity of demand for a given good is the third conditional variable: in order for a resource to be used effectively as a form of energy statecraft, it should have a low degree of elasticity. This is where biofuels differ most significantly from other, more traditional resources used in energy statecraft, such as oil and natural gas: demand for biofuels is extremely elastic. Thus, while this makes biofuels a poor instrument of energy statecraft in principle, it is their capacity to complement, if not substitute, traditional fossil-based fuels that give strength to energy statecraft using biofuels. To be sure, the inelastic demand for biofuels generated through the increasing number of countries enforcing compulsory biofuel blend mandates in gasoline adds to the potential for successful energy statecraft through biofuels. However, the ultimate strength of biofuels as a form of energy statecraft lies in its competition with petroleum and the increased elasticity of the latter as a result of introducing the former – a competition which only matures after introducing flexible-fuel ('flex-fuel') technology in the transportation sector, the sector which is most dependent on inelastic demand for oil.

Fourth and last among the conditional variables tested is the degree of control a government has over the private commercial actors that carry out the specific measures of a country's energy statecraft. National oil companies are usually the avenue through which most energy-rich states pursue their energy statecraft. In Brazil, however, unlike the oil and gas sectors which are more firmly under government control through the national energy company, Petrobras, the country's biofuel

industry is entirely private. This means that a large degree of cooperation between the government and the private biofuel industry is required in order to implement an energy statecraft strategy employing biofuels. As such, the fact that the objectives of the Brazilian government and its biofuel industry are largely the same – namely to create an international market for ethanol, in which Brazil plans to be a major exporter thereof – is a favourable condition when testing this variable. Moreover, the Brazilian government's recent decision to intervene in the country's biofuel sector – by classifying ethanol as a strategic fuel rather than as an agricultural product, and regulating it under the auspices of the National Petroleum Agency, using the same market rules for oil and gasoline – is also a favourable factor in terms of improving the prospects of significantly increasing ethanol exports abroad.

The chapter then concludes by discussing a common theme that runs through each of these conditional variables: the fact that the international market for biofuels is still in its fledgling stage. In principle, the lack of such a market should hinder the use of biofuels as a form of energy statecraft. However, as debated throughout these sections, energy statecraft using biofuels does not operate in a manner similar to energy statecraft using oil or gas. The very fact that there is no full-fledged international biofuel market indicates that energy statecraft using biofuels cannot be employed in a negative manner, only positive – through carrots rather than sticks. However, countries that adopt biofuels as part of their national energy mixes enhance their own energy security by doing so. Since energy statecraft is herein defined as the manipulation of another country's energy security to attain one's own political goals, biofuels can still be used as a form of energy statecraft by enhancing the energy security of target states.

Brazil's National Alcohol Programme (*ProÁlcool*)

Often being touted as the most successful producer of biofuels in the world, Brazil has a long history of biofuel production, particularly with ethanol made from sugarcane. Though sugarcane is one of the country's oldest crops, exporting sugar since 1532, it was not until the 1920s that the crop was grown to produce biofuels. Starting with a 1931 government mandate to blend a modest 5 per cent of ethanol to all gasoline imports, national consumption slowly grew to 7 per cent in 1937 and 9.4 per cent at the outbreak of the Second World War. During the war, however, the government's mandatory blend of ethanol to gasoline reached as high as 50 per cent in 1943, due to

the threat posed by German submarine attacks to the supply of oil. But cheap and plentiful oil after the war led only to periodic mandates for ethanol blends in gasoline until the first global oil crisis of 1973.⁵⁵⁵

The gasoline shortages provoked by OPEC's 1973 oil embargo led policymakers in Brazil and elsewhere to realise the danger to energy security caused by dependence on a few unreliable suppliers of petroleum and their ability to raise oil prices dramatically. This situation alarmed the government of General Ernesto Geisel, which anticipated that such a crisis could happen again in the future, and therefore set out to implement a series of policies drastically to reduce Brazil's dependence on foreign energy sources. At the time of the embargo, Brazil imported 80 per cent of its oil needs, representing roughly half of its total import bill, meaning that the subsequent increase in petroleum prices placed a substantial burden on the country's balance of payments.⁵⁵⁶ In reaction the Brazilian government launched the National Alcohol Programme (*ProÁlcool*) in 1975, which coincided not only with a sharp rise in global oil prices but also with a fall in world sugar prices, thus providing a new market for an otherwise struggling domestic sugarcane industry,⁵⁵⁷ while at the same time taking advantage of Brazil's vast tracts of fallow land and its long history of growing sugarcane. In terms of ensuring the country's energy security, the *ProÁlcool* programme was driven mainly by concerns over the affordability of oil as well as the reliability of its delivery, whilst also considering the lack of availability of known domestic petroleum reserves versus the vast availability of land to grow sugarcane in Brazil. Another goal of the Brazilian government in implementing *ProÁlcool* was to help lessen the economic disparity between the more developed south and the underdeveloped northeast regions by stimulating the latter's agricultural industry. Even though it is well known today that ethanol made from sugarcane has a positive

⁵⁵⁵ Wikipedia.com, 'History of Ethanol Fuel in Brazil', available at

<http://en.wikipedia.org/wiki/History_of_ethanol_fuel_in_Brazil>, accessed 28 June 2012.

⁵⁵⁶ Smith, J., *Biofuels and the Globalization of Risk: The biggest change in North-South relationships since colonialism?*, (London: Zed Books, 2010), p. 22.

⁵⁵⁷ Spencer, N., *Energy and Climate Change in Brazil*, Energy Action Group Working Paper (Washington, D.C.: Americas Society/Council of the Americas, November 2009), p. 6. See also: International Atomic Energy Agency, *Brazil: A country profile on sustainable energy development*, (Vienna: IAEA, 2006), p. 184.

impact on the GHG emissions, environmental sustainability was not one of the original driving forces behind *ProÁlcool*'s creation.⁵⁵⁸

Since its relatively modest beginning in 1975 (compared to its scale and reach today), Brazil's National Alcohol Programme evolved through the following decades in four distinct phases, according to the first head of the recently-created Department of Energy at the Brazilian Foreign Ministry, Ambassador Antônio José Ferreira Simões.⁵⁵⁹ The first phase, from 1975 to 1979, saw the Brazilian government implementing the multi-pronged *ProÁlcool* programme by taking measures to stimulate both the supply and demand for ethanol fuel, initially as an additive to be blended with gasoline. At the outset of the programme, when the production costs of ethanol were still relatively high, *ProÁlcool* was heavily dependent on government incentives. The government required a mandatory blend of ethanol in gasoline, fluctuating between 10 per cent (E-10) and 22 per cent (E-22) until the end of the decade, thereby guaranteeing the purchase of set amounts of ethanol fuel by Petrobras, the state oil company, at a guaranteed fixed price considered adequate to generate a reasonable profit to producers.⁵⁶⁰

The second phase of *ProÁlcool* was a reaction to the second oil price spike in the 1970s, sparked by the Iranian Revolution of 1979, when global petroleum prices quadrupled. Lasting until 1989, this phase is considered the heyday of Brazil's National Alcohol Programme, characterised by a series of new policies and government incentives to expand the use of ethanol.⁵⁶¹ On the supply side, in addition to giving tax rebates on ethanol production, the government offered preferential low-interest loans and credit guarantees for the construction of new ethanol distilleries. More important, however, was the government's decision to allow the sale of pure ethanol (E-100) in petrol stations, rather than merely blend it with gasoline, thus ordering Petrobras to create a distribution infrastructure by installing E-100 pumps in

⁵⁵⁸ Cortez, L. & Leal, M.R. with Sinkala, T., 'Why Biofuels are Important', in Rosillo-Calle, F. & Johnson, F.X. (eds.), *Food versus Fuel: An Informed Introduction to Biofuels*, (London: Zed Books, 2010), p. 59.

⁵⁵⁹ Simões, A.J.F., 'Petróleo, Gás Natural e Biocombustíveis: Desafio estratégico no mundo e no Brasil', paper presented at I Conferência Nacional de Política Externa e Política Internacional: O Brasil no mundo que vem aí, Rio de Janeiro, 6-7 July 2006.

⁵⁶⁰ International Atomic Energy Agency, *Op cit.*, pp. 184-185. Spencer, *Op cit.*, pp. 6-7. Roett, R., *The New Brazil*, (Washington, D.C.: Brookings Institution Press, 2010), p. 120. Seelke, C.R. & Yacobucci, B.D., 'Ethanol and Other Biofuels: Potential for U.S.-Brazil Energy Cooperation', Congressional Research Service Report for Congress, 27 September 2007, pp. 8-9.

⁵⁶¹ Simões, *Op cit.*

most of the country's petrol stations.⁵⁶² On the demand side, the government generously fixed the price of neat ethanol at the pump at 59 per cent of gasoline, largely subsidised by substantial taxes on gasoline, thereby guaranteeing competitive prices for consumers. These measures solved the 'chicken-and-egg' concern raised by the big automobile manufacturers operating in Brazil, who were reluctant to produce vehicles with engines that ran only on E-100 until they could be certain of a guaranteed demand for these new cars, as well as by the sugarcane producers, who worried about not being able to sell all the additional ethanol the government was incentivising them to produce.⁵⁶³ Thus the government signed an agreement with automobile manufacturers requiring them to build pure ethanol-run cars on a large scale. Consumer demand for these vehicles was further stimulated by sales tax incentives throughout the 1980s, peaking at roughly 90 per cent of all cars sold annually in Brazil in 1986.⁵⁶⁴

Although *ProAlcool* was very successful in its first and halfway through its second phase – during which time ethanol production skyrocketed in Brazil, quadrupling during the programme's second phase – a series of concomitant exogenous factors led its discredit. The Latin American debt crisis of 1982 had already severely restricted the Brazilian government ability to continue subsidising its National Alcohol Programme, when the oil price collapse of 1986 made ethanol uncompetitive with gasoline, even with subsidies, thus forcing the government to phase out its financial support for ethanol, although the minimum blend to gasoline was kept. To make matters worse, when global sugar prices rose sharply at the end of 1988, Brazilian sugarcane growers shifted their crops to sugar production for export, provoking a severe ethanol shortage in the second quarter of 1989. As a result, ethanol-run car drivers were left stranded, which seriously undermined consumer confidence in the availability and reliability of ethanol fuel, and sales of E-100 fuelled cars rapidly declined afterwards. *ProAlcool* was further discredited when the

⁵⁶² Bundy, D., *The Global Dynamics of Biofuels: Potential supply and demand for ethanol and biodiesel in the coming decade*, Brazil Institute Special Report, April 2007, Issue No. 3, Woodrow Wilson International Center for Scholars, p. 5. Almeida, A.O., 'Exports, Energy, Food: The Multiple Functions of Brazilian Agriculture', Paper prepared for presentation at the 2009 LASA Congress, Rio de Janeiro.

⁵⁶³ Rother, L., *Brazil on the Rise: The Story of a Country Transformed*, (London: Palgrave Macmillan, 2010), p. 184.

⁵⁶⁴ Seelke & Yacobucci, *Op cit.*, p. 8. Smith, *Op cit.*, p. 22. International Energy Agency, Office of Global Energy Dialogue, 'The Energy Situation in Brazil: An overview', paper prepared for the Standing Group on the Global Energy Dialogue, in June 2006, p. 11

Brazilian government had to authorise ethanol imports, turning Brazil from the world's largest producer of ethanol to its largest importer.⁵⁶⁵ Larry Rother reminds us that ethanol was questioned as a fuel in Brazil for purely economic, rather than technical, reasons: 'It continued to be an efficient fuel source, but if reliable supply could not be guaranteed, consumers preferred to protect themselves by returning to gasoline, supplies of which were never interrupted' – a situation that persisted throughout the 1990s. 'Even after sugar prices returned to their historically low levels, motorists were wary of being tricked again, and the sales of ethanol-fueled cars continued to lag.'⁵⁶⁶

During *ProÁlcool's* third phase, throughout the 1990s, the Brazilian government focused its efforts on reducing runaway inflation and cutting its expenditures, thus characterising this phase by deregulation in the country's fuel sector and phasing out of all ethanol-related subsidies, leaving all decisions concerning the ethanol sector in the hands of private industry. While the ethanol blend in gasoline was maintained – and indeed made mandatory by law in 1993 (varying between 20 and 25 per cent), thus creating a smaller but permanent market for ethanol – E-100 sales at the pump dropped significantly throughout the decade, putting an end to imports from 1996 onwards. The same decline occurred in the sales of pure ethanol-fuelled vehicles, which were discontinued after 1998 when its sales amounted to less than one per cent of total annual auto sales in Brazil. This put pressure on the sugarcane industry to lower production costs, increase efficiency and improve management practices. By the late-1990s, when the price of ethanol was fully liberalised, the retail price dropped, making it competitive with gasoline again. Renewed interest in E-100 as a fuel by both consumers and car manufacturers then led to an increase in demand and supply for ethanol in Brazil.⁵⁶⁷

The fourth and current phase of *ProÁlcool*, from 2000 onwards, has seen the revitalisation of ethanol fuel in Brazil and elsewhere. Daniel Yergin lists three factors that 'brought "alcohol" back in Brazil': the steadily rising price of oil of the 2000s; the accumulated thirty-year experience in research and development of ethanol fuel and learning curve which led to dramatically reduced production costs; and, most

⁵⁶⁵ Spencer, *Op cit.*, pp. 6-7. IEA, *Op cit.*, p. 11. International Atomic Energy Agency, *Op cit.*, p. 185. Bundy, *Op cit.*, p. 5.

⁵⁶⁶ Rother, *Op cit.*, pp. 184-185.

⁵⁶⁷ International Atomic Energy Agency, *Op cit.*, p. 185. Simões, *Op cit.* IEA, *Op cit.*, p. 11. Cortez & Leal with Sinkala, *Op cit.*, pp. 72-73.

importantly, Volkswagen's introduction of flexible-fuel technology ('flex-fuel') in automobiles in 2003, which are given tax breaks in Brazil. Flex-fuel vehicles (FFVs) work with any combination of ethanol and gasoline, including 100 per cent of either, due to electronic sensors that automatically detect whether the fuel in the tank is gasoline, ethanol or a mixture of both, and then properly adjust the engine combustion parameters accordingly, giving the driver the choice of the cheapest fuel available at the pump. 'This was the impressive breakthrough that would put confidence back into the minds of motorists', he writes.⁵⁶⁸ Flex-fuel cars protect consumers both from sharp increases in the price of gasoline provoked by high international oil prices and potential shortages in ethanol supply. As a result, FFVs have become immensely popular in Brazil, and all automobile manufacturers in the country followed Volkswagen's suit in producing them: by 2006, 75 per cent of cars sold in Brazil had flex-fuel engines, and today virtually all of the cars sold annually in Brazil (over 3 million) are equipped with this technology. Consequently, domestic demand for ethanol rose dramatically during this phase, eventually surpassing gasoline.⁵⁶⁹ Today, the Brazilian ethanol sector is driven predominantly by market forces, including demand from abroad, rather than by government incentives. The sugarcane industry has made significant investments in technological improvements to increase production, and now produces ethanol efficiently and at competitive prices.⁵⁷⁰

Despite its ups and downs along the years, the Brazilian National Alcohol Programme has developed into a definite success story overall, catching the attention of other countries, particularly in the past decade, when concerns over energy security have been paramount. In this context, the Brazilian government has identified an opportunity to promote the use of ethanol abroad based on its own positive experience with it. Though the first attempts to promote Brazilian biofuels abroad were undertaken by the state government of São Paulo under governor Mário Covas in 1988 and 1989 in places like Sweden, Canada and Iowa in the United States, in order to make up for the gradual loss of domestic demand for the fuel at the time,⁵⁷¹ it was not until the Luiz Inácio Lula da Silva administration, from 2003 to 2010, that promoting biofuels in third countries became a part of the federal government's

⁵⁶⁸ Yergin, D., *The Quest: Energy, Security and the Remaking of the Modern World*, (London: Allen Lane, 2011), p. 653. See also Bundy, *Op cit.*, pp. 5-6.

⁵⁶⁹ Rother, *Op cit.*, p. 185.

⁵⁷⁰ Simões, *Op cit.*

⁵⁷¹ Brazilian Congressman Antônio Carlos Mendes Thame, interviewed in Brasília, Brazil, 22 June 2011.

foreign policy. Indeed, ‘Lula is the “father of ethanol”, in terms of promoting the image of ethanol and incentivising its use abroad’, according to a representative of Brazil’s Sugarcane Industry Association (UNICA).⁵⁷² The following sections will describe this particular foreign policy strategy and analyse it in terms of the criteria for effective energy statecraft discussed in previous chapters, testing the hypothesis that if each of these conditional factors is favourable, energy statecraft should be more likely to be successful in its implementation.

1. Goal Formulation

Effective energy statecraft – herein defined as the manipulation of the energy security of one or more target states by a sender state to advance the political goals of the sender state – depends, according to the theoretical framework used in previous chapters, on the fulfilment of four conditional criteria: 1) the formulation of foreign policy goals being commensurable with the instruments used in their pursuit; 2) the sender state should have a high market share in the commercialisation of the energy resource in question; 3) low elasticity of demand for the energy resource in question on the part of the target states; and 4) a high level of government control over the commercial actor(s) that sell the energy resource in question. However, what is unique and completely novel in the study of biofuels as an instrument of energy statecraft, as opposed to existing forms of energy statecraft (oil and natural gas), is that there is not yet an international market for it. Thus, theoretically speaking, one cannot pursue negative energy statecraft using biofuels for the very simple reason that there is not a market for it in most countries, whereby a sender state can implement negative biofuel energy statecraft by denying a target state that energy resource, since there are no sender states dependent on biofuels in the same way they are dependent on oil and gas. Since biofuels cannot be used as a negative form of energy statecraft, it can only be employed in a positive manner, through incentives and carrots: by positively manipulating the energy security of a country by enhancing their energy security with biofuels – i.e. ‘exporting energy security’ by exporting biofuels. Therefore, the ability to use bioenergy as a form of energy statecraft depends on the creation of an international market for it – in other words to transform ethanol and

⁵⁷² Interview with UNICA representative, São Paulo, Brazil, 14 June 2011. My translation.

other biofuels into a globally traded commodity – whereby producing states can manipulate the energy security of consumer states, positively or negatively.

As mentioned above, the promotion of biofuel use abroad, particularly of ethanol, has been undertaken by Brazilian sub-state actors since the late 1980s. From the Lula da Silva administration (2003-2010) onwards, however, promoting the use of biofuels to third countries has become an instrument of the Brazilian government's foreign policy. According to President Lula, the idea to promote increased biofuel consumption not only domestically but also abroad, was inspired by his first Minister of Agriculture, Roberto Rodrigues, who in 2003 walked into Lula's office saying, 'Mr President, the country has an extraordinary opportunity' to spread the use of biofuels, and 'you could go down in history as the "biofuel president"'.⁵⁷³ The 'opportunity' for Brazil and Lula, in this case, was an international energy context plagued by steadily rising oil prices in the face of growing populations in developing countries, concerns over the future availability of fossil fuels and their effect on the environment, as well as the reliability of having a large portion of the world's energy needs provided by a limited number of countries. In other words, the world was faced once again, like in the 1970s, with threats to energy security – threats which Brazil overcame with its National Alcohol Programme, and whose experience could benefit other countries faced with similar energy security challenges today. It is within this context that Brazil's foreign policy strategy to disseminate the production and consumption of biofuels is situated, according to Lula's Foreign Minister, Celso Amorim: 'President Lula has determined biofuels as one of the priorities of his administration. He has committed himself personally to defend the economic, environmental and social benefits of these energy resources.'⁵⁷⁴ Since then, there has hardly been a presidential trip abroad or visit by a foreign dignitary to Brazil in which Lula had not mentioned Brazil's successful experience with ethanol production, if not staunchly advocated its use, often admitting to being 'in love with biodiesel'.⁵⁷⁵ 'I have been, as everyone

⁵⁷³ Lula da Silva, L.I., Speech given at the 2nd Top Ethanol Award Ceremony, Sao Paulo, Brazil, 6 June 2011. Available at: < <http://www.youtube.com/watch?v=L23Y2-GSyF4&feature=autoplay&list=PLBB2BCE9E5EB2637D&playnext=2> >, accessed 28 June 2012.

⁵⁷⁴ Amorim, C., 'Prefácio', in Ministério das Relações Exteriores, *Biocombustíveis no Brasil: Realidades e Perspectivas*, (Brasília: Ministério das Relações Exteriores, 2007), p. 6.

⁵⁷⁵ Lula da Silva, L.I., 'Palavras introdutórias do Presidente da República, Luiz Inácio Lula da Silva, por ocasião de entrevista coletiva ao final da Reunião de Cúpula África-América do Sul, Abuja, Nigéria, 30 de novembro de 2006', in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2006*, (Brasília: FUNAG, 2007), p. 187. My translation.

knows – almost in an obsessive manner – an advocate of renewable sources of fuel.⁵⁷⁶

The speeches delivered by President Lula from 2004 onwards in his trips abroad, as well as at home, may have varied in the attention given to biofuels, depending on the occasion, but the basic message remained the same. Lula repeatedly recalled the need to tackle the energy security challenge the world faces, listing the advantages of adopting biofuels in his speeches, such as those summarised in an article he published in the *Miami Herald*:

- First, these products constitute renewable energy alternatives, which allow us to diversify the world's energy supply while lessening the undesirable dependency on a limited number of sources and suppliers.

- Second, these products protect the environment, both by emitting fewer of the gases responsible for the greenhouse effect and by using agricultural wastes and depleted lands.

- Third, these biomass products are development tools with a strong positive impact on society. Given the abundance and variety of their feedstocks and the versatility of the technology employed, these products facilitate job creation on small and family farms, as well as in related industries. Moreover, they generate export revenue for countries that in many cases depend on a single export commodity and which now lack energy resources.

Using the full potential of biofuels, however, depends on creating new models of energy cooperation. We need to join efforts to create and disseminate these technologies and open up world markets for new fuels. ...

Given that each country can produce and consume different kinds of biofuels, it's no longer a question of dividing up the world between producers and importers nor of creating new dependency relationships. Our aim is to maximize the advantages that these new sources of energy can produce, in terms of agricultural diversification, job creation and environmental conservation.⁵⁷⁷

Spreading this message wherever Lula went in the world, and to all those who visited him in Brazil, followed by other instruments and subsequent strategies, has been the core of what some have called Brazil's 'biofuels diplomacy'⁵⁷⁸ or 'ethanol diplomacy' – which the present work defines as 'energy statecraft' or, in this case,

⁵⁷⁶ Lula da Silva, L.I., 'Declaração à imprensa do Presidente da República, Luiz Inácio Lula da Silva, após visita à Transpetro com o Presidente dos Estados Unidos, George W. Bush, 9 de março de 2007', in Ministério das Relações Exteriores, *Resenha de Política Externa: 1º Semestre de 2007*, (Brasília: FUNAG, 2007), p. 80. My translation.

⁵⁷⁷ Lula da Silva, L.I., 'Summit offers chance to gain consensus', *Miami Herald*, 16 July 2006. Also in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2006*, (Brasília: FUNAG, 2007), p. 402.

⁵⁷⁸ Seelke & Yacobucci, *Op cit.*, p. 21.

biofuels/ethanol statecraft – and was, ‘without doubt, one of the hallmarks of [Lula’s] administration’, according to Ambassador Simões.⁵⁷⁹

Brazil has many overlapping objectives in its energy statecraft – including creating new export markets for Brazilian biofuel-related products, enhancing energy security in terms of reducing dependence on expensive imported oil, limiting greenhouse gas emissions, improving the environment by substituting lead additives in gasoline, creating jobs in rural communities and developing poorer countries – but the overarching declaratory goal is to transform ethanol into a globally traded commodity.⁵⁸⁰ Thus, the aspirations of Brazil’s energy statecraft are twofold: ‘to increase demand for Brazilian biofuels around the world, and to help guarantee reliability of supply in the global marketplace, enhancing private-sector development. For instance, if a drought resulted in lower production levels in Brazil, other countries such as South Africa and India could still supply the market, and vice versa.’⁵⁸¹ Despite being the world’s most efficient ethanol producer and having the most potential for its expansion, it is not in Brazil’s interest to be the world’s only biofuels exporter. As a former director of UNICA, Eduardo Carvalho, explains, Brazil is ‘not interested in becoming the Saudi Arabia of ethanol... It’s not our strategy because it doesn’t produce results. As a large producer and user, I need to have other big buyers and sellers in the international market if ethanol is to become a global commodity, which is our real goal.’⁵⁸²

In order for biofuels to be traded as commodities in a global market, a number of conditions – or complementary goals – must also be met. First and foremost is the need to promote both the production and the consumption of ethanol fuel in third countries. There are currently a limited number of producers, and even fewer exporters, of ethanol, while overall demand for it is low in the world. Nicole Spencer expects that more countries will adopt biofuels in their national energy mix once they have access to a larger biofuel market globally, which will likely increase and become more competitive as more countries produce biofuels.⁵⁸³ But more importantly, the

⁵⁷⁹ Simões, A.J.F., ‘Biocombustíveis: A Experiência Brasileira e o Desafio da Consolidação do Mercado Internacional’, in Ministério das Relações Exteriores, *Biocombustíveis no Brasil: Realidades e Perspectivas*, (Brasília: Ministério das Relações Exteriores, 2007), p. 11. My translation.

⁵⁸⁰ Amorim, C., Speech delivered at *Seminário do TCU Sobre Política do Comércio Exterior Brasileiro*, in Brasília, Brazil, 28 August 2007.

⁵⁸¹ Worldwatch Institute, *Biofuels for Transport: Global Potential and Implications for Energy and Agriculture*, (London: Earthscan Publications, 2007), p. 285.

⁵⁸² Cited in Rother, *Op cit.*, p. 188.

⁵⁸³ Spencer, *Op cit.*, p. 16.

need to commoditise ethanol by spreading its use and production to third countries is inherently linked to the energy security component of biofuel use. One of the main advantages of biofuels is how they reduce dependence on oil imports from a few unreliable producers, and energy consumers and importing countries are not interested in substituting one energy dependence for another, which is why it is crucial to have as many biofuel suppliers as possible in the world. Potential ethanol-importing countries are wary of using a product from a single supplier, in case there is a bad harvest or other disruption in supply from Brazil. Therefore, expanding production to other countries is paramount to the strategy of turning ethanol into a commodity because the more countries that produce biofuels, the more importing countries' energy security is enhanced by consuming them.⁵⁸⁴ As Lula's Foreign Minister, Celso Amorim, has clarified, 'when we are talking about ethanol, we are not thinking about an "ethanol OPEC", we want the opposite, seeking something that involves other countries in a solidary manner. We will win and others will win too.'⁵⁸⁵

Second, common technical standards for ethanol and other biofuels must be adopted internationally. Similar to the need to increase the number of ethanol producers, adopting universal standards for biofuels would ensure that a disruption of supply from one country would be met by another supplier using the same or similar technical standards, ensuring similar end-products. Third, biofuels need to be traded in relevant commodity exchanges, creating a futures market for them and the option of long-term contracts, much like the current international petroleum market.⁵⁸⁶ Finally, in order for a global biofuels market to function smoothly and without distortions, all barriers to its trade, including tariffs and subsidies, must be removed.

There are many motivations behind these goals, some idealistic and others more narrowly self-interested. An obvious interest behind Brazil's objective to create an international market for biofuels is economic. By creating a world market for ethanol and other biofuels, it follows that more export opportunities arise for Brazilian biofuel producers, with benefits to Brazil's trade balance. But equally important is the potential for export of Brazilian energy production technologies along the entire sugarcane-ethanol industry, including flex-fuel vehicles. Many of the countries that

⁵⁸⁴ Corrêa do Lago, A., 'Entrevista com André Corrêa do Lago', in Tribunal de Contas da União, *A Nova Matriz Energética Brasileira*, (Brasília: TCU, 2008), p. 71.

⁵⁸⁵ Amorim, C., Lecture delivered at the University of Brasília, Brasília, Brazil, 24 April 2007. My Translation.

⁵⁸⁶ Simões, A.J.F., 'Biocombustíveis: A Experiência Brasileira e o Desafio da Consolidação do Mercado Internacional', p. 31.

have the appropriate climactic conditions to grow biofuels lack the technical expertise to make them, so every biofuel cooperation agreement that Brazil signs with such countries is integrated with the promotion of technologies along the entire ethanol production chain, providing opportunities for Brazilian companies in many sectors to benefit.⁵⁸⁷ In this regard, write Freemantle and Stevens, ‘it is in the interest of Brazil’s large state-owned and private sugarcane growers and biofuels machinery manufacturers to see ethanol develop as a global commodity’, and foreign policy is merely serving Brazilian economic interests in the pursuit of this objective by providing its companies with ‘a formidable competitive advantage in expanding their global reach and establishing market participants on both the demand and supply sides’ in growing markets with large agricultural potential and technological deficit.⁵⁸⁸ Another, less obvious, interest behind Brazil’s ‘teach a man to fish’ strategy of investment and technology transfer in biofuels to developing countries is political. Lavishing such investments and technical assistance on these countries helps Brazil compete with India and China for soft power influence among developing countries and alleviates whatever mistrust they may have over Brazil’s dominant role in world trade. It also promotes the country’s international image as a relatively moderate and apolitical energy supplier, while garnering support for Brazil’s ‘lonely quest for a permanent seat on the UN Security Council. Since rising powers like Brazil will one day run the world, argues Samuel Pinheiro Guimarães Neto, the [former] foreign ministry’s secretary-general, they can save trouble later by reducing poverty in developing countries now.’⁵⁸⁹

But there are also more long-term and idealistic motivations behind the goal of commoditising ethanol. According to Brazil’s current Foreign Minister, Antonio de Aguiar Patriota, Brazil wants to project internationally an agenda of peace and development. From a more idealistic perspective, Brazil is motivated by the idea that it has something to contribute to a peaceful and developed world. In that light, the Brazilian government sees agriculture as an instrument of peace, as are sustainable and economic development, since social tensions can arise in places without energy

⁵⁸⁷ Interview with UNICA representative, São Paulo, Brazil, 14 June 2011.

⁵⁸⁸ Freemantle, S. & Stevens, J., ‘Brazil weds itself to Africa’s latent agricultural potential’, Standard Bank Group Economics, BRIC and Africa, 1 February 2010, p. 5, available at: <<http://www.biofuelsdigest.com/bdigest/2011/07/21/biofuels-mandates-around-the-world/>>, accessed 28 June 2012.

⁵⁸⁹ *The Economist*, ‘Speak softly and carry a blank cheque’, 17 July 2010, p. 52. See also, Beattie, A., ‘Ethanol puts power in Brazil’s tank’, *Financial Times*, 16 May 2006.

and food security. Accordingly, Brazil's international projection, particularly its promotion of biofuels abroad, is not directed at any specific objective, but towards the idea of creating an international order where there is more room for sustainable development and poverty reduction.⁵⁹⁰ President Lula himself had also endorsed this view when stating that 'Brazil is actively preparing itself for a new development paradigm that will meet the environmental and social challenges of the coming decades. Ethanol and biodiesel are the key components of our approach, and we are determined to "plant the oil of the future".'⁵⁹¹ In poor countries, he writes, 'production of ethanol and biodiesel can have an extremely positive impact. It assists in dealing with the energy deficit, influencing internal consumption and exports. It can also generate a vast number of jobs, redistributing the population more harmoniously between urban and rural areas.'⁵⁹²

The Brazilian government employs different strategies to pursue its goal of commoditising ethanol, depending on the target state in question, mainly whether the target states are potentially great consumers and/or producers of biofuels, since both demand for and the supply of biofuels need to be increased to become a commodity. Part of the strategy behind commoditizing ethanol is to increase and diversify the consumer base for the product, particularly for Brazil's own exports. The United States is currently Brazil's largest single export market for ethanol, making Brazil highly dependent on the ups and downs of the American market. In order to diversify its own ethanol exports, as well as to bolster the fuel's commoditization, Brazil has identified the Europe and Asia as potential key demand centres, in addition to the US,⁵⁹³ given these regions' high energy consumption. However, many of these countries, particularly the US and EU countries, have highly protected agricultural markets with barriers to biofuel imports from Brazil and elsewhere. Thus, in terms of encouraging potential large ethanol demand centres to increase their biofuel consumption, one of the Brazilian government's strategies has been to put pressure on

⁵⁹⁰ Interview with Brazil's Minister of External Relations, Antônio de Aguiar Patriota, Brasília, Brazil, 22 June 2011.

⁵⁹¹ Lula da Silva, L.I., "Join Brazil in planting oil – Only radical solutions will overcome the energy and environmental crises while promoting equality", *The Guardian*, 7 March 2006. Also available in Ministério das Relações Exteriores, *Resenha de Política Externa: 1º Semestre de 2006*, (Brasília: FUNAG, 2006), pp. 444-445.

⁵⁹² Lula da Silva, L.I., 'Fuel for Thought', *The Wall Street Journal*, 14 July 2006. Also available in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2006*, (Brasília: FUNAG, 2007), p. 101.

⁵⁹³ Spencer, *Op cit.*, p. 10.

these countries to reduce, if not eliminate, their trade barriers to ethanol imports. Another tactic employed is to encourage the introduction of compulsory ethanol blend mandates into gasoline in these countries, where there are few or none, although both the US and the EU have already set very ambitious targets.

While Brazilian talks with potential large biofuel demand centres, especially the US and the EU, have been limited in their success in terms of opening markets, their importance has been much more pronounced in cooperation agreements to disseminate the use of biofuels to third countries. The most significant of such agreements is the Memorandum of Understanding Between the United States and Brazil to Advance Cooperation on Biofuels, signed in São Paulo on 9 March 2007. According to President Lula, the idea behind the agreement originated over lunch with President George W. Bush, during the latter's visit to Brasília in 2005, where Lula ('obsessed with biofuels') told Bush about Brazil's success story with ethanol so eagerly that Bush 'almost couldn't have lunch because [Lula] wouldn't stop talking about biofuel.'⁵⁹⁴ The Memorandum of Understanding (MOU) between the two countries is based on three pillars: bilateral, third countries and global. On the bilateral front, the two countries agreed to share technologies and cooperate in the research and development of the next generation of biofuels, such as those made from lingo-cellulosic material. Second, Brazil and the US have agreed to spread the benefits of biofuels to third countries by conducting feasibility studies and providing technical assistance aimed at stimulating private sector investment in domestic biofuel production for local consumption in these countries. Initially, this pillar of the MOU targeted the Dominican Republic, El Salvador, Haiti and Saint Kitts and Nevis, but was later expanded to include Guatemala, Guinea-Bissau, Honduras, Jamaica and Senegal. Globally, the two countries have been working multilaterally to establish common standards and codification for biofuels in order to advance commoditization. Involved in these efforts are the Brazilian National Institute for Metrology, Normalization and Industrial Quality (INMETRO) and the US National Institute of Norms and Technology (NIST), as well as the International Biofuels Forum (IBF), whose members include the EU, China, India and South Africa, in addition to Brazil

⁵⁹⁴ Cited in Yergin, *Op cit.*, p. 651. See also Lula da Silva, L.I., 'Declaração à imprensa do Presidente da República, Luiz Inácio Lula da Silva, após visita à Transpetro com o Presidente dos Estados Unidos, George W. Bush, 9 de março de 2007', in Ministério das Relações Exteriores, *Resenha de Política Externa: 1º Semestre de 2007*, (Brasília: FUNAG, 2007), p. 79.

and the US.⁵⁹⁵ In addition to accelerating the process of biofuel commoditisation, the MOU brings political benefits to both countries: ‘For the United States, biofuels serve as a bridge to a closer relationship with Brazil, a leader in Latin America and a growing world power. Likewise, collaborating with the United States and other countries on biofuels shines a spotlight on Brazil’s achievements in this area and further enhances its profile as an international leader.’⁵⁹⁶ Concurrently, the MOU also helps improve the US’s image in Latin America while countering the influence of Venezuela’s petroleum-based version of energy statecraft. Indeed, “‘Ethanol diplomacy’” appears to be helping Brazil reassert regional leadership relative to oil-rich Venezuela under Hugo Chávez.’⁵⁹⁷

Brazil has also signed similar ‘triangular cooperation’ agreements on biofuels with the European Union, although the target states of EU-Brazil agreements are all in Africa, rather than predominantly in Central America and the Caribbean, as is the case with the MOU with the US. But even though Brazil’s agreements with the US and the EU, as well as Brazil’s exclusively bilateral agreements on biofuel cooperation (mostly with South American countries), differ on their target states, these countries nevertheless share some basic similarities, which make them ideal countries for biofuel production. President Lula explained in several speeches that Brazilian ethanol is competitive because Brazil has the right technology, fertile soils, abundant sunshine and water available for the best ethanol-yielding crop: sugarcane. But he stresses that these conditions are not exclusive to Brazil, and similar climactic conditions are found in large parts of other tropical and subtropical countries in Africa, Latin America and the Caribbean, as well as parts of Asia, where enough land is available to expand biofuel production, especially in those countries that already cultivate sugarcane. With energy cooperation agreements and technology transfer, based on over thirty years’ experience in Brazil, Lula believed that Brazil can incite a ‘green revolution’ in developing countries with the right combination of available land and appropriate climactic conditions, generating jobs, wealth and

⁵⁹⁵ Launched on 2 March 2007, the International Biofuels Forum is an informal and temporary forum that gathers biofuel producing and consuming countries with the goal of establishing norms and technical standards that will facilitate the international commercialisation of biofuels and their trade in futures markets. On 31 December 2007, the Forum announced the publication of a *White Paper on Internationally Compatible Biofuels Standards*, which compared the specifications on biofuels standards currently in place around the world. Feres, P.F.D., *Os Biocombustíveis na matriz energética alemã: possibilidade de cooperação com o Brasil*, (Brasília: FUNAG, 2010), p. 58.

⁵⁹⁶ Spencer, *Op cit.*, p. 10.

⁵⁹⁷ Seelke & Yacobucci, *Op cit.*, p. 1.

development.⁵⁹⁸ ‘The good thing is that a poor country can reduce what it pays for imported oil and earn money exporting this,’ explains Ambassador Simões. ‘That way they will have more money to invest in social programs, and the production of energy will be democratized in the world, with a hundred countries producing energy instead of just fifteen or twenty.’⁵⁹⁹

According to the Food and Agriculture Organization, roughly one tenth of the world’s 200 million hectares of land that is both available and suitable for sugarcane cultivation is currently being used, not counting forests and protected areas, spanning more than one hundred countries.⁶⁰⁰ Among such target states, the Brazilian government’s effort to spread the production of biofuels has paid particular attention to Africa. The reasons behind Brazil’s focus on African countries are not restricted to the fact that the continent has, after Brazil itself, the largest area of available land for potential expansion of biofuel production, nor that African savannahs are geographically very similar to the Brazilian *Cerrado*, where sugarcane is highly productive. During the Lula administration, the Brazilian government acted in Africa with a modern-day sense of *mission civilisatrice*, in which helping Africa to fulfil its entire potential for development is officially a part of Brazil’s foreign policy,⁶⁰¹ as part of its wider ‘South-South diplomacy’. A junior Brazilian Foreign Ministry official⁶⁰² has explained that the Brazilian government is convinced that it is contributing to the development of African states by sharing its experience with biofuels. Brazil’s experience demonstrates that biofuel programmes are an important instrument of sustainable development, if implemented in a responsible manner, in five different ways. First, by incorporating new agricultural technologies, the entire agricultural sector’s productivity is increased, including food production. Second, native biofuel industries reduce dependence on imported petroleum for net oil-

⁵⁹⁸ Lula da Silva, L.I., ‘Discurso na Reunião de Alto Nível da FAO sobre Segurança Alimentar, Mudanças Climáticas e Bioenergia’, Roma, Itália, 3 de junho de 2008, in Ministério das Relações Exteriores, *Discursos Selecionados do Presidente Luiz Inácio Lula da Silva*, (Brasília: FUNAG, 2008), p. 77. See also Coutinho, L., Melo, L. et al, ‘Preface’, in Banco Nacional de Desenvolvimento Econômico e Social & Centro de Gestão e Estudos Estratégicos (eds.), *Sugarcane-Based Ethanol: Energy for Sustainable Development*, (Rio de Janeiro: BNDES, 2008), pp. 17-19

⁵⁹⁹ Cited in Rother, *Op cit.*, p. 188.

⁶⁰⁰ UNICA, *Brazilian Sugarcane Ethanol: Get the facts right and kill the myths*, November 2009, available at <http://www.unica.com.br/downloads/folhet_MITHYS&FACTS.pdf>, accessed 28 June 2012.

⁶⁰¹ Lula da Silva, L.I., ‘Discurso do Presidente da República, Luiz Inácio Lula da Silva, durante almoço oferecido pelo Presidente do Quênia, Mwai Kibaki - Nairóbi, Quênia, 06/07/2010’, in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2010*, (Brasília: FUNAG, 2011), p. 104.

⁶⁰² Interviewed in Brasília, Brazil, 6 February 2012.

importing countries, while increasing the amount available for export in oil-producing nations. Third, biofuel programmes have an important industrial side, unlike most traditional agricultural products, which attracts and stimulates investment in industry. Fourth, biofuels diversify not only sources of liquid fuels for transport but also sources of electricity, since biofuels can co-generate electricity during their production cycle when using advanced technologies. And, fifth, biofuels can generate significant export revenues for countries that have a small domestic consumer market and/or that can produce biofuels beyond their internal needs. In sum, Brazil's assistance in generating deeper socioeconomic stability in Africa by actively positioning itself to be the main partner in several African countries' pursuit of energy and food security 'fits Brazil's desire to see, and actively participate in, the ongoing shift in the global economy towards the developing markets of the South.'⁶⁰³

In order to propagate biofuel production in Africa and other developing countries, the Brazilian government has employed a series of tactics. First and foremost has been the use of presidential diplomacy. President Lula was a 'marketing man',⁶⁰⁴ who travelled the world preaching the virtues of biofuels wherever he went and inviting other world leaders, such as President George W. Bush, to come see the success of Brazilian ethanol for themselves. The fact that roughly two-thirds of Brazilian biofuel cooperation agreements made by 2008 were signed abroad⁶⁰⁵ confirms the importance of Lula's foreign visits to this strategy. However, from 2006 onwards Brazil's strategy to spread biofuel production abroad became more unified. Foreign Minister Patriota recalls that 'during inter-ministerial meetings – involving the President's Chief of Staff, the Ministries of Energy and Agriculture, among others – what bewildered [the Foreign Ministry] at the time was that many ministries [involved in matters pertaining to biofuels] were in contact with their counterparts in other countries, without having a unified vision behind [these contacts].'⁶⁰⁶ This led to the creation of the Energy Department within Brazil's Ministry of Foreign Relations in April 2006, whose role is systematically to coordinate the multiple fronts on which

⁶⁰³ Freemantle & Stevens, *Op cit.*, p. 1.

⁶⁰⁴ Interview with Paulo César Lima, Legislative Consultant on Energy Matters to the Brazilian Chamber of Deputies, Brasília, Brazil, 2 June 2011. My translation.

⁶⁰⁵ Paiva, I. 'Acordos de Cooperação Internacional como Estratégia da Política Externa Brasileira para a Promoção do Mercado de Biocombustível Nacional', Paper presented at IV Seminário de Ciência Política da UFPE, Recife, November 2008.

⁶⁰⁶ Interview with Brazil's Minister of External Relations, Antônio de Aguiar Patriota, Brasília, Brazil, 22 June 2011. My translation.

the Brazilian government and private sector engage with the outside world in matters related to biofuels.⁶⁰⁷ Since then, Brazil's promotion of biofuels to third countries has followed a largely uniform model of knowledge and technology transfer through exchanging visits by officials and technicians.

Delegations from countries interested in starting up their own biofuels programme are invited to come to Brazil and attend seminars at the Foreign Ministry in Brasília, where they learn about the Brazilian ethanol programme, the different phases of biofuel production, including distribution and the manufacture of flex-fuel vehicles, as well as the socioeconomic impact of ethanol production, its role in the mitigation of greenhouse gas emissions and the current state of biofuels research. Foreign delegations are also invited to go to Rio de Janeiro and/or São Paulo to visit Petrobras, regulatory agencies such as the National Petroleum Agency, the National Development Bank (BNDES), INMETRO, as well as sugar mills, ethanol plants and the automobile industry.⁶⁰⁸ Equally, Brazil sometimes sends its own officials and specialists abroad to conduct seminars and courses on the aspects of biofuels listed above.

Once a target state decides to adopt a biofuel programme of its own – be it through a bilateral or trilateral agreement (with the US or EU) – a standard three-phase model is followed.⁶⁰⁹ During the first phase, Brazil sends a team of researchers from the Getúlio Vargas Foundation, an academic institution, to conduct feasibility studies (using the same methodology in all target states) analysing the country's potential to develop a biofuels in a sustainable fashion. These feasibility studies make comprehensive analyses of the social, economic and environmental aspects related to the sustainable production and use of biofuels and bioelectricity, taking into account local stakeholders' views and assessing the potential to meet domestic and foreign demand in order to determine the most appropriate sites, technologies and feedstocks for the implementation of bioenergy projects.⁶¹⁰ The feasibility study's final report is then presented to local authorities, identifying sustainable bioenergy projects with

⁶⁰⁷ Sequeira, C.D., 'Energia ganha status diplomático', *Correio Braziliense*, 25 June 2006, p. 19.

⁶⁰⁸ Ministério das Relações Exteriores: *Resenha de Política Externa: 2º Semestre de 2005*, (Brasília: FUNAG, 2006), p. 289; and *Resenha de Política Externa: 1º Semestre de 2006*, (Brasília: FUNAG, 2006), p. 255.

⁶⁰⁹ Interview with senior Brazilian Foreign Ministry Official, Brasília, Brazil, 3 June 2011.

⁶¹⁰ Brazil-EU-Mozambique Joint Declaration on the Partnership for the Sustainable Development of Bioenergy, signed at Brasília, 14 July 2010, available at: <<http://www.itamaraty.gov.br/sala-de-imprensa/notas-a-imprensa/declaracao-conjunta-brasil-uniao-europeia-mocambique-relativa-a-parceria-para-o-desenvolvimento-sustentavel-de-bioenergia>>, accessed 28 June 2012.

high potential for implementation. The second phase consists of the host government selecting or prioritising one or more among the potential projects presented by the feasibility study, and finding investors, funding from governmental sources and/or potential partners to participate in those bioenergy projects.⁶¹¹ Brazilian companies and the BNDES are involved in funding some of these projects, whose third phase is their actual implementation, often through joint ventures with Brazilian firms.⁶¹²

As a sign of the priority given to African countries in Brazil's quest to disseminate biofuel production worldwide, in 2007 the Brazilian Agricultural Research Corporation (Embrapa), linked to the Ministry of Agriculture, opened an African branch office in Accra, Ghana. When visiting Accra in April 2008, President Lula referred to Embrapa's African branch as 'the cornerstone of a new Brazilian foreign policy strategy, and the spearhead of [Brazil's] commitment to extend to developing countries, particularly African, the benefits that Embrapa has and continues to bring to Brazil'⁶¹³ in areas of tropical agriculture, including food and bioenergy production. During its first year, Embrapa's office in Accra sent representatives to seventeen African countries while providing long-distance assistance to thirteen others. Thus Embrapa's office in Ghana serves as bridge of technology transfer and cooperation between Brazilian and African institutions, and is an integral part of the Brazilian government's policy of deepening ties with African countries.

2. Market Share

According to theory, economic statecraft is more effective when a sender state has a large market share for a given good or product. This is particularly true when employing negative economic statecraft, where a sender state with a large market share of a good can disrupt the flow of its trade to target states in order to achieve the former's political goals. Insofar as energy statecraft is concerned specifically, rather than general economic statecraft, Adam Stulberg considers a sender state to wield significant market power in the energy sector if it controls roughly 30 per cent of

⁶¹¹ Interview with junior Brazilian Foreign Ministry official, Brasília, Brazil, 6 February 2012.

⁶¹² Interview with senior Brazilian Foreign Ministry official, Brasília, Brazil, 3 June 2011.

⁶¹³ Lula da Silva, L.I., 'Discurso do Presidente da República, Luiz Inácio Lula da Silva, durante cerimônia de descerramento de placa alusiva à visita às instalações do escritório regional da Embrapa na África. Acra, Gana, 20/04/2008', in Ministério das Relações Exteriores, *Resenha de Política Externa: 1º Semestre de 2008*, (Brasília: FUNAG, 2008), p. 87. My translation.

supply and exports to foreign markets.⁶¹⁴ However, the international market for biofuels – including ethanol and biodiesel – is a relatively recent phenomenon and so far remains small and volatile, with only about 10 per cent of the world’s ethanol production traded internationally, and even less for biodiesel, most of it being exported from Brazil to the United States and the European Union,⁶¹⁵ since most biofuel production worldwide is made primarily for domestic consumption.⁶¹⁶ Given the current small size of its international market, biofuels make for a poor instrument of foreign policy, which is why building such a market is of paramount importance if it is ever to be fully employed as a tool of energy statecraft. But as more countries implement policies that mandate the use of biofuel blends into gasoline and diesel, the international trade in biofuels in general and ethanol in particular is steadily growing.

Global ethanol production has more than doubled in the period between 2000 and 2005, and its annual production has grown on average by 12.2 per cent between 2000 and 2007, from 17.25 billion to over 46 billion litres of ethanol produced per year, with the US responsible for 43 per cent of that growth, followed by Brazil with 32 per cent and the EU with 15 per cent. Brazil was the world’s leading producer of ethanol up to 2005, before being overtaken by the US in 2006. With the collective European Union ranking a distant but significant third place in ethanol production – followed by China, Canada, Thailand, Colombia, India and Australia – Brazil and the US dominate the world’s ethanol production, together making up around 70 per cent of the ethanol production for all uses and nearly 90 per cent of ethanol fuel.⁶¹⁷ However, since the vast majority of US ethanol production is consumed domestically, Brazil is the world’s leading exporter of ethanol by an extremely wide margin,

⁶¹⁴ Stulberg, A.N., *Well-Oiled Diplomacy: Strategic Manipulation and Russia’s Energy Statecraft in Eurasia*, (Albany, NY: State University of New York Press, 2007), p. 56.

⁶¹⁵ Zarrilli, S., ‘Development of the Emerging Biofuels Market’, in Andreas Goldthau & Jan Martin Witte (eds.), *Global Energy Governance: The New Rules of the Game*, (Washington, D.C.: Brookings Institute Press, 2010), p. 77. See also: Johnson, F.X. & Virgin, I., ‘Future Trends in Biomass Resources for Food and Fuel’, in Rosillo-Calle, F. & Johnson, F.X. (eds.), *Food versus Fuel: An Informed Introduction to Biofuels*, (London: Zed Books, 2010), p. 186; and Carvalhal, C.M., *Ethanol and the Latin American Great Game*, Cambridge Energy Research Associates Decision Brief, April 2007, p. 2.

⁶¹⁶ Sullivan, M.P., C.R. Seelke & R.G. Rush, ‘Latin America: Energy Supply, Political Developments and U.S. Policy Approaches’, in Joanna E. Carlson (ed.), *Latin America: Energy and Politics*, (New York: Nova Science Publishers, 2010), p. 6.

⁶¹⁷ Ravindranath, N.H., Manuvie, R. & Lakshmi, C.S., ‘Biofuels and Climate Change’, in Rosillo-Calle, F. & Johnson, F.X. (eds.), *Food versus Fuel: An Informed Introduction to Biofuels*, (London: Zed Books, 2010), p. 142. Zarrilli, *Op cit.*, p. 76. Roett, *Op cit.*, p. 120. Spencer, *Op cit.*, p. 8. Freemantle & Stevens, *Op cit.*, p. 4.

consistently responsible for more than half of global ethanol exports to 63 different countries.⁶¹⁸

Brazilian ethanol exports have grown relatively steadily since the start of the current century, and sugarcane producers as well as the government want this upward trend to continue. Petrobras estimates that world demand for biofuels in 2012 is around 5-6 per cent of all liquid fuels for transportation,⁶¹⁹ but Brazil alone could potentially produce enough ethanol to substitute 10 per cent of world gasoline consumption by cultivating an additional 25 million hectares of sugarcane, mainly from low-productivity, degraded and pasture lands.⁶²⁰ However, Brazil needs substantial investments in order to expand both its production and export of ethanol significantly. Around 2006 and 2007, the Brazilian government and sugarcane industry had ambitious expansion plans for the production of ethanol, particularly exports. In September 2006, Silas Rondeau, Brazil's Minister of Mines and Energy at the time, announced that the country expected to double its annual exports of ethanol to 4 billion litres by 2010.⁶²¹ Half a year later, Luis Carlos Guedes Pinto, then the Agriculture Minister, said in an interview with Bloomberg that Brazil planned to double its ethanol production to roughly 34 billion litres while tripling its exports to around 10 billion litres by 2014, requiring US\$13.4 billion in new investments to achieve that target.⁶²² Meanwhile, the construction of 77 new ethanol plants were being planned up to 2012, while some of the 335 existing plants at the time were scheduled for upgrades or expansions.⁶²³ With such expectations of growth in the Brazilian ethanol sector, Petrobras announced its plan to build 1150km-long ethanol

⁶¹⁸ UNICA, 'Ethanol Exports – By Country', available at: <<http://english.unica.com.br/dadosCotacao/estatistica/>>, accessed 28 June 2012.

⁶¹⁹ Senado Federal, Subcomissão dos Biocombustíveis, 'Perspectivas de mercado e as projeções e cenários futuros para o setor de biocombustíveis', *Relatório Anual – 2007*, (Brasília: Senado Federal, Secretaria de Editoração e Publicações, 2007), p. 20.

⁶²⁰ Johnson, F.X. & Rosillo-Calle, F., 'Food versus Fuel: Concluding Remarks', in Rosillo-Calle, F. & Johnson, F.X. (eds.), *Food versus Fuel: An Informed Introduction to Biofuels*, (London: Zed Books, 2010), p. 197.

⁶²¹ STRATFOR, 'Brazil: Plan To Double Ethanol Exports', 12 September 2006, available at <http://www.stratfor.com/brazil_plan_double_ethanol_exports>, accessed 19 October 2011.

⁶²² STRATFOR, 'Brazil: Ethanol Production Increase', 14 March 2007, available at <http://www.stratfor.com/brazil_ethanol_production_increase>, accessed 19 October 2011. See also Roett, *Op cit.*, p. 120.

⁶²³ Bundy, *Op cit.*, p. 6. See also Senado Federal, Subcomissão dos Biocombustíveis, 'Produção e exportação de álcool e biocombustíveis', *Relatório Anual – 2007*, (Brasília: Senado Federal, Secretaria de Editoração e Publicações, 2007), p. 15.

pipeline from Brazil's sugarcane producing regions to export terminals on the coast, with the capacity to increase ethanol exports significantly.⁶²⁴

Despite the Brazilian government's rhetoric about vast ethanol production and export growth, the fact is that Brazilian ethanol exports stagnated in 2007, growing only 3 per cent from 2006. Though ethanol exports made an impressive 45 per cent leap in 2008 to 5.1 billion litres,⁶²⁵ the global financial crisis led to a cutback in production expansion plans while domestic demand kept rising, thus lowering expectations for future ethanol exports to increasingly modest levels. In September 2008, the Energy Research Company (EPE), a research institution linked to the Brazilian Ministry of Mines and Energy, lowered the Ministry's 2006 projection by half to 4.1 billion litres of ethanol exports in 2010, estimating that Brazil will only surpass the original 2006 projection of 8 billion litres in 2017, taking into account the priority given to domestic demand over export markets:

In order to meet Brazilian ethanol consumption, EPE estimates that it will be necessary to build 246 new mills by 2017, adding an average of around 4.5 billion liters to the market a year. This amount of projects represents a boost of 60% over the 400 ethanol mills in operation registered by the Agriculture, Livestock and Supply Ministry (Mapa) in 2008. This prospect, however, is affected by the lack of credit in the market as a result of the economic slump in the US which has driven many projects around the world to a halt. ... According to trade experts, the companies will be put on hold in 2009 and this should delay the forecasts for production expansion by at least five years.⁶²⁶

But even with lowered expectations, Brazilian ethanol exports in 2009 fell below their 2006 level and dropped even further to around 1.9 billion litres in the following two years.⁶²⁷ Making matters worse was a period of low ethanol inventories during the 'inter-harvest' period – between late November 2010 and early April 2011 – as a result of poor management and planning, which not only crippled Brazil's market share of global ethanol exports, but also forced Brazil to import ethanol from the United States for a brief period during the first semester of 2011, generating price

⁶²⁴ Ferolla, S.X., 'Biocombustíveis – a saga de muitos pioneiros, in Hage, J.A. (ed.), *A Energia, a Política Internacional e o Brasil: Conflitos e Propostas no Século XXI*, (Curitiba: Instituto Memória, 2008), p. 332.

⁶²⁵ Ministério da Agricultura, Pecuária e Abastecimento, Departamento de Cana-de-Açúcar e Agroenergia, 'Exportações Brasileiras de Etanol', available at <www.agricultura.gov.br/desenvolvimento-sustentavel/agroenergia/estatistica>, accessed 28 June 2012.

⁶²⁶ *Análise Energia* (Anuário 2009), 'Ethanol After the Euphoria', December 2008, pp. 229-230.

⁶²⁷ Ministério da Agricultura, Pecuária e Abastecimento, Departamento de Cana-de-Açúcar e Agroenergia, *Op cit.*

hikes and pessimistic views about the future of ethanol.⁶²⁸ So even if there were an open international market for ethanol unhindered by trade barriers, Brazil would not have produced enough ethanol for significant exports in 2011, a situation which could persist up to 2015, according to two experts.⁶²⁹

Meanwhile, US ethanol production has soared beyond domestic demand to exportable quantities. It was reported on 11 May 2011 that, in addition to meeting internal demand, the US exported 760 million litres of ethanol during the first quarter of 2011 alone, roughly the same figure as its total ethanol exports in 2010 and almost double its 2009 exports. According to the Renewable Fuel Association's vice president of research and analysis, Geoff Cooper, '[a]rtificially constrained markets in the US and fears of instability in the policies that impact domestic ethanol production and use are forcing ethanol producers to seek other markets...until we eliminate artificial barriers to greater ethanol use domestically, export markets present real demand opportunities that our industry will continue to explore.'⁶³⁰ However, the US consumer market, the largest in the world, is likely to become a net importer when it exhausts its domestic capacity to produce ethanol made from corn, possibly around 2015. 'The great breakthrough [for Brazil] will come in 2015,' says Plínio Nastari, a Brazilian agribusiness consultant, 'when the United States could become ethanol purchasers.'⁶³¹ Thus, its recent slump in ethanol exports notwithstanding, the long-term perspectives for Brazil's market share of the emerging international ethanol market are 'excellent,'⁶³² with optimistic projections by Ernst & Young, an accounting firm, that Brazilian exports could reach 17.4 billion litres in 2030,⁶³³ provided the necessary investments are made in the sector.

Where biodiesel – as opposed to ethanol – is concerned, there is still very little being traded internationally. 'Because of restrictive specifications and national

⁶²⁸ UNICA, 'Pursuing Growth', *Ethanol Summit 2011 – Official Magazine*, (São Paulo: UNICA, 2011), p. 30.

⁶²⁹ Rodrigo Dolabella, Legislative Consultant on Agriculture Matters to the Brazilian Chamber of Deputies, and Paulo César Lima, Legislative Consultant on Energy Matters to the Brazilian Chamber of Deputies, interviewed in Brasília, Brazil, 2 June 2011.

⁶³⁰ Cited in *Biofuels International*, 'US ethanol exports reach all-time high', Issue 4, Vol. 5, May 2011, p. 5.

⁶³¹ Cited in Nucci, J.P., 'Fuel to Change the World', *PIB*, Year 1, Number 2, Dec 07/Jan 08, p. 33.

⁶³² Jardim, A., 'Etanol: O Desafio de Marcar Gols com a Globalização', Pronunciamento no plenário da Câmara dos Deputados, 26 de junho de 2007, in Jardim, A., *O Desafio Energético do Brasil: Planejar, Executar e Assegurar o nosso Crescimento*, (Brasília: Câmara dos Deputados, Centro de Documentação e Informação, Coordenação de Publicações, 2007), p. 60.

⁶³³ Ernst & Young Terco, *Sustainable Brazil: Energy market challenges*, Communication and Brand Management Department of Ernst & Young Terco Brazil, 2011, p. 22.

policies for biofuels around the world,’ write Kaltner et al, ‘the market for biodiesel exports remains rather dispersed, varied and impaired by various trade barriers.’⁶³⁴ Within the embryonic biodiesel market, the European Union is the undisputed leader, collectively responsible for 56 per cent of the world’s production in 2009 (10 billion litres produced in the EU, out of 17.9 billion litres worldwide, with Germany alone responsible for 28 per cent of the EU’s total production, while the US produced 1.9 billion litres and Brazil is estimated to have produced 1.6 billion litres in 2009).⁶³⁵ Though this is still a modest amount – especially when compared to global consumption of so-called ‘middle distillates’ (which include jet and heating kerosene, as well as conventional diesel oil) of 1.75 trillion litres in 2009⁶³⁶ – Zarrilli reminds us that ‘the development of the [biodiesel] industry in several regions and ambitious government targets in several countries are expected to lead to more international [biodiesel] trade in the future.... Moreover, the need for a number of non-self-sufficient countries to meet biofuels utilization mandates will also likely contribute to the expansion of international trade’, with annual global production of biodiesel potentially reaching 44 billion litres by 2018.⁶³⁷ Given the limited available land to expand biofuel production significantly in Europe, however, ‘Brazil faces an unprecedented opportunity to build market share on the European continent’,⁶³⁸ and is expected to surpass both US and EU biodiesel production by 2015.⁶³⁹

In sum, Brazil clearly has the potential to be among the world leaders of biofuels – both ethanol and biodiesel – in terms of market share. This is especially true for biofuel exports, or what is traded internationally between countries, as opposed to aggregate worldwide biofuel production, most of which is grown for domestic use. Theory suggests that a significant market share of biofuel exports – above 30 per cent according to Stulberg – will better enable Brazil’s energy statecraft to be effective. Achieving and maintaining such a leading global position in that

⁶³⁴ Kaltner, F.J., Azevedo, G.F.P., Campos, I.A. & Mundim, A.O.F., ‘Biofuels for Transportation in Brazil’, in Worldwatch Institute, *Biofuels for Transport: Global Potential and Implications for Energy and Agriculture*, (London: Earthscan Publications, 2007), p. 342.

⁶³⁵ US Department of Energy, ‘Fact #662: February 14, 2011 – World Biodiesel Production’, available at: < http://www1.eere.energy.gov/vehiclesandfuels/facts/2011_fotw662.html >, accessed 28 June 2012; European Biodiesel Board, ‘2009 Production By Country’, available at: < http://www.ebb-eu.org/prev_stats_production.php >, accessed 28 June 2012; Brazil’s Ministry of Agriculture, Livestock and Food Supply, *AgriEnergy Statistical Yearbook 2009*, (Brasília: MAPA/ACS, 2009), p. 123.

⁶³⁶ *BP Statistical Review of World Energy June 2011*, p. 13.

⁶³⁷ Zarrilli, *Op cit.*, pp. 77-78.

⁶³⁸ Kaltner et al, *Op cit.*, p. 342.

⁶³⁹ Zarrilli, *Op cit.*, p. 77.

market, however, will require significant and sustained investments in the expansion of Brazil's biofuel production capacity.

3. Elasticity of Demand

Theory dictates that economic – or more specifically in this case, energy – statecraft is more likely to succeed if it is implemented with a good that has low elasticity of demand. This is, in principle, true both in negative and positive statecraft: a target state is more likely to acquiesce to demands made in the face of threats to cut off supply of an inelastic good, as well as to bribes made with such a good. What is interesting about employing biofuels in energy statecraft, on the other hand, is that they are extremely elastic in their demand, so far. Petroleum is not, however, and the crucial advantage of biofuels in this respect is not their own elasticity, but their capacity to substitute – or at the very least complement – oil use, thereby diminishing the inelasticity of oil demand, and therefore increasing its force as a tool of energy statecraft. Hence, biofuels serve as an instrument of energy statecraft by manipulating the energy security of a target state in terms of enhancing that state's energy security through the diversification of energy sources as an alternative to petroleum-derived fuels.

While there are many alternatives to petroleum in every sector except transportation – such as electricity generation, heating and manufacturing – approximately 95 per cent of the world's transport fuels are derived from crude oil,⁶⁴⁰ indicating highly inelastic demand for petroleum in the transportation sector. The only renewable energy source that can replace oil directly in the transportation sector in a sufficiently large scale are biofuels.⁶⁴¹ But in order to substitute gasoline for biofuels, a fundamental 'chicken and egg' problem must first be overcome: 'Consumers are afraid to buy cars that use a new fuel that may be difficult to find. Service station owners are not interested in investing in a parallel fuel distribution system since the number of potential users is usually very small.'⁶⁴² This dilemma was experienced in

⁶⁴⁰ Klare, M.T., *Rising Powers, Shrinking Planet*, (Oxford: Oneworld Publications, 2008), p. 36. Zarrilli, *Op cit.*, p. 75.

⁶⁴¹ Maugeri, L., *Beyond the Age of Oil: The Myths, Realities, and Future of Fossil Fuels and Their Alternatives*, (London: Praeger, 2010), p. 126. See also Hunt, S.C. & Flavin, C., 'Preface', in Worldwatch Institute, *Biofuels for Transport: Global Potential and Implications for Energy and Agriculture*, (London: Earthscan, 2007), p. xvii.

⁶⁴² Moreira, J.R., 'Bioenergy and Agriculture: Promises and Challenges – Brazil's Experience with Bioenergy', *2020 Vision for Food, Agriculture, and the Environment*, Focus 14, Brief 8 of 12, December 2006, International Food Policy Research Institute, p. 1.

Brazil in the late 1980s and most of the 1990s, when ethanol supply could not meet demand and pure ethanol-driven car sales plummeted from more than 90 per cent in 1989 to less than 1 per cent in 1996. This is a challenge faced by all countries considering a shift away from oil use, particularly in the transport sector. For, as Richard Lugar and James Woolsey remind us, '[t]he massive infrastructure developed to support gasoline-powered cars is particularly resistant to modifications. It precludes rapid change to alternative transportation systems.'⁶⁴³

Contrary to other potential alternatives to petroleum, however, biofuels have the advantage of being easily integrated within the vast distribution and storage infrastructure already in place for oil-derived fuels,⁶⁴⁴ including automotive engines, where concentrations of up to 10 per cent ethanol or 20 per cent biodiesel in gasoline and diesel motors, respectively, are imperceptible and do not require engine modifications.⁶⁴⁵ As the International Energy Agency has observed, biofuels 'have the potential to leapfrog traditional barriers to entry because they are liquid fuels largely compatible with current vehicles and blendable with current fuels. In fact, low-percentage ethanol blends, such as E10 (10% ethanol by volume), are already dispensed in many service stations worldwide, with almost no incompatibility with materials and equipment. Thus, biofuels could be used in today's vehicles to reduce global petroleum consumption by 10% or more.'⁶⁴⁶ Brazil's case clearly illustrates the possibility of reducing dependence on oil for transport: during the first thirty years of *ProÁlcool*, over one billion barrels of oil equivalent were saved by partially substituting gasoline with ethanol.⁶⁴⁷

According to Antônio Carlos Mendes Thame, a Brazilian Congressman representing the sugarcane-growing region of São Paulo state, there are two basic ways to establish a biofuel market, both of which were initially implemented as part of the *ProÁlcool* programme: incentives and mandates. Incentives aim to manipulate the economic rewards of producing a certain good – including fiscal incentives, subsidies and higher taxation of competing goods – but are ultimately voluntary; no

⁶⁴³ Lugar, R. & Woolsey, R.J., 'The New Petroleum', *Foreign Affairs*, Vol. 78, No. 1, January/February 1999, pp. 89-90.

⁶⁴⁴ Hunt & Flavin, *Op cit.*, p. xvii. Zarrilli, *Op cit.*, p. 75.

⁶⁴⁵ Banco Nacional de Desenvolvimento Econômico e Social & Centro de Gestão e Estudos Estratégicos, *Op cit.*, p. 260.

⁶⁴⁶ International Energy Agency, *Biofuels for Transport: An International Perspective*, (Paris: International Energy Agency, April 2004), p. 20.

⁶⁴⁷ Simões, A.J.F., 'Petróleo, Gás Natural e Biocombustíveis: Desafio estratégico no mundo e no Brasil'.

one is forced to produce the goods in question. Mandates, on the other hand, are compulsory; if a predetermined amount of a good is not produced, the producer is fined. Though both measures were implemented at the outset of *ProÁlcool*, incentives were completely gone after thirteen years, but the compulsory mandate to blend up to 25 per cent ethanol into gasoline has remained. Mendes Thame therefore attributes the establishment of a permanent and competitive ethanol market in Brazil, free of subsidies and other incentives, to these mandates.⁶⁴⁸ The same is true for the creation of biofuel programmes in other countries, where the implementation of compulsory biofuel blend mandates automatically generate a market for biofuels, writes Zarrilli: ‘The mandatory use of certain amounts or percentages of biofuels in transportation fuels not only creates a market of a certain size but also ensures stability and predictability for new investments. It also helps ensure the growth of the biofuels sector, sets demand ahead of supply, and induces investments to close the gap.’⁶⁴⁹ Thus, in realising the potential advantages of biofuels – be they economic, environmental, social or even political – several countries are seeking to develop significant domestic markets for biofuels through blending mandates, effectively guaranteeing a considerable amount of future demand.⁶⁵⁰ According to one analyst, the world witnessed a proliferation of biofuel production targets around 2006, and at least 64 countries had adopted national biofuel mandates or targets by 2007.⁶⁵¹

The bulk of biofuel mandates comes from the European Union, where the goals of reducing greenhouse gas emissions and dependence on imported petroleum have led to the Biofuel Directive (2003/30/EC), mandating that all transport fuels should include a minimum biofuel blend of 2 per cent by the end of 2005 and 5.75 per cent by the end of 2010 in all 27 EU member states.⁶⁵² The 5.75 per cent blend mandate alone represents an impressive demand of 14 billion litres of biofuels a year.⁶⁵³ But in 2009 the EU went even further, repealing the previous directive with a

⁶⁴⁸ Interviewed in Brasília, Brazil, 22 June 2011. See also Mendes Thame, A.C., ‘Posfácio: O papel dos biocombustíveis’, in Maffei Neto, J., *A História do Carro Flex no Brasil*, (Embu, SP: IQUAL Editora, 2009), p. 124.

⁶⁴⁹ Zarrilli, *Op cit.*, p. 79.

⁶⁵⁰ Worldwatch Institute, *Op cit.*, p. 118.

⁶⁵¹ Smith, *Op cit.*, p. 66.

⁶⁵² Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport, available at: <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0030:EN:HTML>>, accessed 28 June 2012.

⁶⁵³ International Atomic Energy Agency, *Brazil: A country profile on sustainable energy development*, (Vienna: International Atomic Energy Agency, 2006), p. 187.

new Renewable Energy Directive (2009/28/EC), mandating that 20 per cent of all energy consumed in the EU should derive from renewable sources, including a minimum of 10 per cent of transportation fuels,⁶⁵⁴ targets which are well beyond the European agricultural sector's capacity.⁶⁵⁵ In addition to the EU, the most important countries whose blend mandates will drive global demand for biofuels are the United States, China with 10 per cent by 2020, Brazil, which has a varying blend mandate between 18 and 25 per cent for ethanol in gasoline and 5 per cent biodiesel in regular diesel oil, and India, which mandates a 20 per cent ethanol blend by 2017.⁶⁵⁶

In the United States, the first major boost in domestic ethanol production came with the Energy Policy Act of 2005, which not only bans the use of methyl tertiary-butyl ether (MTBE), thus forcing ethanol's major competitor as an additive to gasoline off the market, but also mandates a Renewable Fuel Standard (RFS) of 7.5 billion gallons (29 billion litres) of ethanol to be blended in gasoline by 2012.⁶⁵⁷ Six billion gallons (22.7 billion litres) of ethanol are required each year merely to replace MTBE as an additive to gasoline, which is being phased out because of its polluting effects on ground water.⁶⁵⁸ However, the US government set much more ambitious targets two years later in the Energy Independence and Security Act of 2007, which raised the RFS to 9 billion gallons (34 billion litres) in 2008 (up from 4.7 billion gallons, or 17.8 billion litres, in 2007), with a phased increase to 36 billion gallons (136 billion litres) of ethanol blended into gasoline by 2022, of which 21 billion gallons (79.5 billion litres) must be 'advanced biofuels' derived from feedstocks other than corn starch, such as sugar or cellulose.⁶⁵⁹ According to Daniel Yergin, the 2022 target is equivalent to around 20 per cent of all motor fuel in the United States, or the

⁶⁵⁴ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, available at: <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>>, accessed 28 June 2012.

⁶⁵⁵ Zarrilli, *Op cit.*, p. 87.

⁶⁵⁶ *Biofuels Digest*, 'Biofuels Mandates Around the World', 21 July 2011. Available at: <<http://www.biofuelsdigest.com/bdigest/2011/07/21/biofuels-mandates-around-the-world/>>, accessed 28 June 2012.

⁶⁵⁷ Energy Policy Act of 2005, available at: <<http://www.gpo.gov/fdsys/pkg/PLAW-109publ58/pdf/PLAW-109publ58.pdf>>, accessed 28 June 2012.

⁶⁵⁸ Runge, C.F. & Senauer, B., 'How Biofuels Could Starve the Poor', *Foreign Affairs*, May/June 2007, Vol. 86, No. 3, p. 44.

⁶⁵⁹ Energy Independence and Security Act of 2007, available at: <<http://www.gpo.gov/fdsys/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf>>, accessed 28 June 2012.

annual oil production of Venezuela or Nigeria.⁶⁶⁰ The difficulty with this target is that the US Environmental Protection Agency (EPA) only allows blends of up to 10 per cent ethanol, because more might corrode the internal surface of engines' fuel rails. But as the American ethanol industry is nearing the 'blend wall', when its production meets the demand for the maximum 10 per cent ethanol blend in gasoline, thus generating surplus for export, the industry is lobbying the EPA to raise the cap to 15 per cent, even though only 3 per cent of American automobiles are designed to run on fuels containing more than 10 per cent of ethanol.⁶⁶¹ The most obvious way to remedy this situation, according to a study by the Worldwatch Institute, is to introduce flex-fuel vehicles to the market on a large scale:

Ethanol use can increase to 10 per cent of non-diesel fuel, possibly more, with minimal changes to current car fleet or infrastructure; biodiesel blends can be higher. To go beyond this, however, governments need to address the 'chicken or the egg' dilemma: vehicles are needed that can run on high blends of biofuels; but consumers will not buy them without a distribution system that ensures access to these fuels. Such a distribution system is not likely to develop without the vehicles to demand/use it. This dilemma can be resolved with technologies such as flexible-fuel vehicles (FFVs).⁶⁶²

Therefore, in order for the US to consume the 36 billion gallons of ethanol mandated by the Energy Independence and Security Act, 'massive investment in flex fuel technologies and infrastructure to increase the capability of cars to run on higher ethanol percentages and expand the supplemental distribution of ethanol' are necessary⁶⁶³ – a proposition that holds true for all countries with ambitious biofuel mandates.

The technology known as 'flex-fuel' (flexible fuel) arose from research developed in the US, Europe and Japan during the end of the 1980s, in search of a solution to the problems generated by the uncertainty of international oil prices, whose volatility and periodic spikes are economically detrimental to all oil-importing nations.⁶⁶⁴ Its introduction in the Brazilian automotive market in 2003 was a promising development in the country's ethanol market, which had been debilitated by the gradual phase-out of pure ethanol-run cars. Engines powered only by ethanol

⁶⁶⁰ Yergin, *Op cit.*, pp. 644-645.

⁶⁶¹ Maugeri, *Op cit.*, p. 127. And *The Economist*, 'The age of ethanol', 3 July 2010, p. 47.

⁶⁶² Worldwatch Institute, *Op cit.*, p. 318.

⁶⁶³ Bundy, *Op cit.*, p. 3.

⁶⁶⁴ Maffei Neto, J., *A História do Carro Flex no Brasil*, (Embu, SP: IQUAL Editora, 2009), p. 24.

depended on the permanent availability of ethanol at the pump and at prices competitive with gasoline, which, given the fluctuations in the prices of oil and sugar, could not be guaranteed. By introducing FFVs, the choice of fuel was transferred from the automobile industry to the consumer, thus revolutionising fuel use in Brazil by ‘democratising’ the choice of fuel in favour of the consumer, forever ‘banishing the ghost of ethanol scarcity’ and potentially even gasoline shortages, should they happen.⁶⁶⁵

Advocates of flex-fuel technology list several advantages of its adoption. They argue that for consumers, the security of fuel supply engendered by the possibility of fuel choice at the pump is highly attractive, despite Brazil already having a wide ethanol distribution infrastructure in place. It is also attractive for ethanol producers, who are afforded greater flexibility in determining whether their sugarcane crops are turned into ethanol fuel or refined sugar, depending on harvest yields and international sugar prices. Car manufacturers also benefit, saving money by not having to build duplicate models running on either gasoline or pure ethanol.⁶⁶⁶ Beyond Brazil, where biofuel markets are not as well-established, they argue that introducing FFVs, in addition to mandatory blends, will stimulate the expansion of ethanol production while bridging the gap between today’s biofuels grown from agricultural feedstocks to the advanced biofuels of the future, such as cellulosic (or ‘second-generation’) ethanol.⁶⁶⁷ Moreover, FFVs allow countries that adopt them to use whatever fuel is available domestically, be it gasoline or ethanol, until a national biofuel market is properly consolidated.⁶⁶⁸

Early surveys conducted with new FFV owners indicate that their choice of fuel at the pump is defined primarily by the relative price of the fuel, although some consumers deliberately choose ethanol over gasoline due to environmental concerns.⁶⁶⁹ The liberty of fuel choice notwithstanding, flex-fuel engines seem to offer no disadvantage in performance vis-à-vis regular ones:

The surveys carried out with Brazilian owners of flex fuel vehicles show that they are satisfied with the performance, power and automatic regulation of

⁶⁶⁵ Meirelles, J.C.S., ‘Posfácio: Carro Flex: vitória do consumidor’, in Maffeis Neto, J., *A História do Carro Flex no Brasil*, (Embu, SP: IQUAL Editora, 2009), pp. 137-138. My translation.

⁶⁶⁶ Szwarc, A., ‘Posfácio: A opção pelo Flex Fuel’, in Maffeis Neto, J., *A História do Carro Flex no Brasil*, (Embu, SP: IQUAL Editora, 2009), p. 140.

⁶⁶⁷ *The Economist*, ‘The age of ethanol’, 3 July 2010, p. 47.

⁶⁶⁸ Maffeis Neto, *Op cit.*, pp. 110-111.

⁶⁶⁹ *Ibid.*, p. 21.

engines. Most of them have stated that “in the beginning, many different mixtures of alcohol and gasoline are tested, however, it makes almost no difference for the power of the engine, which is easily adapted to the fuel used. Therefore, the best alternative is the chance to fill the tank with the cheapest fuel per kilometre driven.” All of the users interviewed stated that they would buy a flex fuel vehicle again.⁶⁷⁰

And since no other alternative energy technology is available on a viably large commercial scale in the automotive industry – such as hydrogen fuel cells or electric cars that perform as well as those with combustion engines – it is safe to assume that FFVs are the most practical option to reduce oil dependence in the transportation sector in the short- to medium-term.⁶⁷¹

To quote Daniel Yergin, ‘[t]o say that flex-fuel vehicles “caught on” [in Brazil] would be an understatement.’ In 2003, when they were first launched, only 40,000 FFVs were sold in Brazil,⁶⁷² comprising merely 4 per cent of new car sales that year. In 2004, this share skyrocketed to 22 per cent, 50 per cent in 2005, 78 per cent in 2006, over 2 million new FFVs sold in 2007 representing 86 per cent of all new car sales, 87 per cent in 2008 with over 2.3 million units sold,⁶⁷³ 94 per cent by August 2009 and a total of more than ten million FFVs on the road by March 2010⁶⁷⁴ (roughly one third of the entire national car fleet), while the Brazilian Sugarcane Industry Association estimates that FFVs will make up as much as 50 per cent of Brazil’s automotive vehicle fleet in 2012 and 65 per cent by 2015.⁶⁷⁵ ‘The rate at which this technology has been adopted is remarkable,’ said Barry Eagle, president of Ford do Brasil in 2006, ‘the fastest I have ever seen in the motor sector, faster even than the airbag, automatic transmission, or electric windows’.⁶⁷⁶ In the words of another observer, ‘no one, not even the most ardent advocates of ethanol and biofuel-run engines, would have dared imagine that flex-fuel vehicles would, over a very short period of less than five years, mean the end of the era of cars fuelled only by

⁶⁷⁰ Szwarc, A., ‘New technologies ensure the demand for hydrated alcohol in Brazil’, in Mendes Thame, A.C. (ed.), *The History of the Alcohol Car*, (Embu, SP: IQUAL Editora, 2003), p. 117.

⁶⁷¹ Schneider, J., ‘Posfácio: O Sucesso dos Veículos Flex’, in Maffei Neto, J., *A História do Carro Flex no Brasil*, (Embu, SP: IQUAL Editora, 2009), p. 133. See also Cortez & Leal, with Sinkala, *Op cit.*, p. 70.

⁶⁷² Yergin, *Op cit.*, p. 653.

⁶⁷³ Maffei Neto, *Op cit.*, p. 21.

⁶⁷⁴ Bodman, S.W. & Wolfensohn, J.D. (Chairs); Sweig, J.E. (Project Director), *Global Brazil and U.S.-Brazil Relations*, Independent Task Force Report No. 66, (New York: Council on Foreign Relations, 2011), Endnote 23, p. 83.

⁶⁷⁵ UNICA, ‘Light vehicle sales’, available at <<http://english.unica.com.br/dadosCotacao/estatistica/>>, accessed 28 June 2012.

⁶⁷⁶ Cited in Rother, *Op cit.*, p. 185.

gasoline [in Brazil].⁶⁷⁷ Yet the rest of the world still has a long way to go in terms of adopting flex-fuel technology in automobile manufacture. In June 2009, there were over 16.4 million FFVs in circulation worldwide: 8 million in the US, 7.5 million in Brazil, 600 thousand in Canada, 300 thousand in Sweden and a few thousand spread over other countries like France, the United Kingdom, Germany and Thailand.⁶⁷⁸

The fact that Brazil is at the vanguard of flex-fuel technology represents, in principle, an additional motivation behind the country's goal of commoditising ethanol, in hopes of gaining new export markets for FFVs. Indeed, the increasing use of biofuels in other countries provides an opportunity for Brazilian automobile manufacturers to expand their FFV production beyond domestic demand. However, Brazilian FFV exports have been limited due to a lack of ethanol fuel and distribution infrastructure in potential export markets. In an attempt to remedy this situation, in 2008 the Federation of Industries of the State of São Paulo (FIESP) joined up with the Brazilian Automotive Industry Association (ANFAVEA) and Brazil's Sugarcane Industry Association (UNICA) in a campaign to promote FFV exports, even to countries where they would only run on gasoline for lack of a local ethanol market. This partnership's goal, writes Maffeis Neto, was to popularise FFVs with the view that 'demand always precedes supply' – in other words, the existence of an FFV fleet could subsequently lead to ethanol production, or at least to ethanol imports when oil prices rise excessively. However, even though Brazil's Foreign Ministry set up its own Energy Department, provisions to incentivise FFV sales are not included in trade agreements for the adoption of compensation mechanisms in automotive trade with other countries – an oversight that FIESP considers a 'failure,'⁶⁷⁹ since increased FFV and ethanol use abroad would not only further stimulate demand for Brazilian ethanol, which the country has the long-term capacity to meet, but would also go a long way towards commoditising ethanol globally.

Nevertheless, the commoditisation of ethanol depends less on the adoption of FFVs than on the implementation of biofuel blend mandates worldwide. While flex-fuel technology increases the elasticity of demand for both ethanol and oil, compulsory blend mandates make the demand for ethanol decidedly inelastic by generating a fixed and mandatory demand for it. Given the considerably limited

⁶⁷⁷ Maffeis Neto, *Op cit.*, p. 20. My translation.

⁶⁷⁸ Szwarc, *Op cit.*, p. 140.

⁶⁷⁹ Maffeis Neto, *Op cit.*, pp. 29-30.

market share of ethanol compared to petroleum, however, biofuels are extremely unlikely ever fully to substitute oil and the relatively inelastic demand for it. But ethanol and other biofuels can, in fact, become a permanent complement to the energy supply in the transportation sector by substituting harmful additives to gasoline such as MTBE. Once ethanol becomes an established additive to gasoline through compulsory blend mandates in most countries, it will effectively turn into a global commodity⁶⁸⁰ with entrenched (and less elastic) demand for it. But ultimately, biofuels' advantage as an instrument of energy statecraft lies not in their potential inelasticity of demand – even if only as an additive to gasoline – but in its capacity to diminish the inelasticity of oil.

4. Government Control of Commercial Actors and Public-Private Partnerships

As mentioned in previous chapters, William Norris puts forward the notion that economic statecraft is unlikely to be very effective unless the sender state's government has a large degree of control or influence over the specific private commercial actors that actually implement the measures stipulated by the economic statecraft of that sender state. This is particularly the case with energy statecraft, where most states able to pursue it as part of their foreign policies tend to have national energy companies firmly in the government's control, such as Russia's Gazprom or the national oil companies of most OPEC member states. However, while Brazil does have a national energy giant in Petrobras, its biofuels sector is entirely private, and therefore requires a significant level of public-private cooperation effectively to implement energy statecraft using ethanol and other biofuels. Since the success of biofuels as an instrument of energy statecraft hinges on the creation of an international biofuels market – unlike 'traditional' energy statecraft, where there are established markets and consumer dependence on oil and gas – the private commercial actors that carry out the technology transfer that helps build such a market become of paramount importance to Brazil's energy statecraft strategy of promoting biofuels abroad.

According to an extensive study on biofuels by the Worldwatch Institute, bilateral and multilateral governmental agreements play a crucial role in the promotion of biofuels through technology transfer. Notwithstanding governments'

⁶⁸⁰ Interview with Brazilian Congressman Antônio Carlos Mendes Thame, Brasília, Brazil, 22 June 2011.

vital role in this transfer, the study states that in practice the actual flow of biofuel technology is executed by the private sector:⁶⁸¹

The process of transferring biofuel technology and expertise can be understood as a process of managing technological change. It involves the flows of knowledge, experience and equipment among different stakeholders, including governments, private-sector entities, financial institutions, non-governmental organizations (NGOs), research and educational institutions and labour unions. It encompasses technological cooperation and the diffusion of technologies both within countries, as well as between them. And it involves the process of learning to understand, utilize and replicate existing biofuel technologies – including the capacity to select and adapt them for local conditions and even to sell them back to the original source as improved technologies. ...

Technology flows are also influenced by government policies and by financial aid and development programmes. The rate of such flows is affected by the motivations of the relevant stakeholders and by the barriers that impede them – both of which are influenced by government policies, including environmental and climate change policies.

Most technology flows occur in, or are driven by, the private sector (between commercial parties), although they can also involve the government or community.⁶⁸²

Mendes Thame reminds us that the fact that the Brazilian government detains the technology for agricultural production of biofuels while Embrapa holds the scientific knowledge behind it, could theoretically allow free technology transfer to other countries. However, the industrial sector, which actually operates the production of biofuels once the technology and knowledge are in place, does not belong to the government; it belongs to private enterprise,⁶⁸³ which encompasses the actors that carry out the government's energy statecraft in practice. In line with this reality, the aforementioned Worldwatch Institute study then goes on to suggest that one way that 'Brazil (and other biofuel leaders) can stimulate biofuel technology transfer abroad is through bilateral technological cooperation, supported by government diplomacy and implemented by the private sector.'⁶⁸⁴ This formula of public-private partnership is at the heart of Brazil's energy statecraft, as vouched for by Lula's Foreign Minister, Celso Amorim, who states that the Brazilian government's initiatives to promote ethanol and biodiesel in third countries are aided by the dynamism and

⁶⁸¹ Worldwatch Institute, *Op cit.*, pp. 267-268.

⁶⁸² *Ibid.*, pp. 264-264.

⁶⁸³ Interview with Brazilian Congressman Antônio Carlos Mendes Thame, Brasília, Brazil, 22 June 2011.

⁶⁸⁴ Worldwatch Institute, *Op cit.*, p. 275.

competitiveness of Brazilian entrepreneurs.⁶⁸⁵ Indeed, it will not be possible to maintain Brazil's international leadership in biofuels unless the interests of the Brazilian state are aligned with those of its private agribusiness sector, according to Arnaldo Jardim, a Brazilian Congressman.⁶⁸⁶

In a sector as complex as biofuels – which overlaps the energy, agricultural and industrial sectors, as well as advanced technologies and scientific research and development – it is no surprise that several different commercial actors are involved in the Brazilian government's promotion of biofuels to third countries, including several ministries (e.g., Foreign, Energy, Agriculture, Trade) as well as NGOs and the private sector. According to a senior Brazilian Foreign Ministry official, the two actors that have had the greatest responsibility and influence in the government's overall strategy of ethanol dissemination across the world are the Foreign Ministry and UNICA, the Sugarcane Industry Association. UNICA, which represents the interests of the major sugarcane producers in Brazil, mostly in the state of São Paulo, has offices in Washington, D.C. and Brussels, where, along with Brazil's Embassies there, it is very active in lobbying the US Congress and the European Commission, respectively, to drop import tariffs on ethanol and any other form of protectionism that serves as an impediment for the creation of an international market for ethanol.⁶⁸⁷ UNICA's representation in Brussels is particularly focused on issues surrounding the environmental sustainability of ethanol production, such as participating in roundtables and debates on certification and standardisation of ethanol fuel as a product, which will be a significant step towards its commercialisation.⁶⁸⁸ Both of these activities are in line with the Brazilian government's goals and strategies pursued in the international promotion of biofuels, as President Lula has advised in a speech: 'we will have to arrive [in other countries] speaking a single discourse on ethanol; there is not a discourse by UNICA and one by another group, there is not a discourse by the Government and one by UNICA. We will have to arrive there speaking a single language, a single discourse'⁶⁸⁹ – implying the need for Brazilian

⁶⁸⁵ Amorim, 'Prefácio', *Op cit.*, p. 6.

⁶⁸⁶ Jardim, *Op cit.*, p. 58.

⁶⁸⁷ Interview with senior Brazilian Foreign Ministry official, Brasília, Brazil, 3 June 2011.

⁶⁸⁸ Interview with UNICA representative, São Paulo, Brazil, 14 June 2011.

⁶⁸⁹ Lula da Silva, L.I., 'Discurso do Presidente da República, Luiz Inácio Lula da Silva, por ocasião da cerimônia em comemoração ao quinto aniversário do jornal "Valor Econômico", em São Paulo, no dia 2 de maio de 2005', in Ministério das Relações Exteriores: *Resenha de Política Externa: 1º Semestre de 2005*, (Brasília: FUNAG, 2005), p. 137.

non-governmental commercial actors, such as UNICA, to align their public views on biofuels with the government's, if Brazil's energy statecraft is to be effective. Taking this into consideration, it is advantageous for Brazil's energy statecraft that UNICA shares the government's principal goal in that endeavour:

One of the main objectives of UNICA is promoting Brazilian ethanol abroad. To this end, UNICA formed a partnership with APEX-Brasil, the Brazilian trade and investment promotion agency [in December 2007]. The project started in January of 2008 and targets the markets of North America, Europe and the South and East of Asia.

UNICA formed a partnership with APEX-Brasil to establish ethanol as a global energy commodity. The agreement contemplates shared funding of around R\$16.45 million through the end of 2009 [revised to a total of R\$18.75 million by the end of that period⁶⁹⁰] to promote Brazilian ethanol as a clean and renewable fuel around the world.

Among the activities foreseen under this agreement are improving the ethanol supply structure, commercial intelligence studies and projects to promote ethanol in high-impact events like fairs and seminars, and work to enhance the image of ethanol via a public relations effort aimed at key opinion makers around the world.

In addition to having direct benefits for UNICA members and other areas of the sugar-energy sector, this project will benefit the sugarcane ethanol supply chain, which includes biotechnology research for new strains of sugarcane, suppliers of inputs and equipment, rural producers, trading companies, logistical structure and service providers.⁶⁹¹

The UNICA partnership with APEX-Brasil has been fundamentally important for Brazil's inclusion in international biofuel debates, and was renewed in 2010 to continue the activities listed above to promote the adoption of biofuels worldwide and increased exports of Brazilian ethanol,⁶⁹² aiming to stimulate the demand side of ethanol's commoditisation.

In addition, Brazilian government agencies are also involved in incentivising the supply side of ethanol commoditisation through public-private partnerships. The Brazilian strategy to spread the production of biofuels has given particular attention to the African continent, where this endeavour has been spearheaded by Embrapa, the government-linked Brazilian Agricultural Research Corporation, which opened a representative office in Accra, Ghana, inaugurated by President Lula himself during an official visit in April 2008: 'In Africa, Embrapa focuses on technology transfer, knowledge diffusion, agricultural and socio-economic development, environmental

⁶⁹⁰ See UNICA, *Sustainability Report 2010*, (São Paulo: Grafilar, 2011), p. 95.

⁶⁹¹ UNICA, *Sustainability Report 2008*, (São Paulo: Editora Gráficos Burti, 2009), p. 62.

⁶⁹² UNICA, *Sustainability Report 2010*, p. 96.

sustainability and food, fibre and energy security. ... The office in Ghana coordinates the agencies' efforts on the continent, as well as acting as an agent in facilitating linkages between financial organisations and Brazilian companies and African governments and continuing to accelerate the shift towards biofuels across the continent.⁶⁹³ As a result, several Brazilian companies are getting financial support and other incentives from Brazilian government agencies taking part in promoting bilateral and multilateral biofuel cooperation, in order to sell and transfer biofuel technologies abroad.⁶⁹⁴ The synergy between Brazilian government agencies, such as BNDES and Agência Brasileira de Cooperação (ABC, Brazil's equivalent of USAID in America), and the country's private sector in promoting the development of biofuel technology transfer in Africa has been notable.⁶⁹⁵

The commercial actor over which the Brazilian government holds most control, however, is the national oil and gas company, Petrobras, which also plays an important role in the government's energy statecraft. Sérgio Gabrielli, the former CEO of Petrobras during most of the Lula administration, has written that in view of the prospects of global growth in the biofuel sector, Petrobras seeks to become not only an oil and gas company, but an energy company more broadly, by taking on a strategic role in developing the necessary infrastructure and logistics for increased ethanol exports. Improving the transport infrastructure to deliver ethanol from producers to the market is a fundamental step to help create an international ethanol market with a large share of Brazilian exports. To that end, Petrobras has formed partnerships with private companies to build an ethanol pipeline linking Brazil's ethanol producing regions to export terminals on the coast, with a projected annual capacity of 8 billion litres. Gabrielli makes clear, however, that Petrobras does not intend to participate in ethanol production for domestic consumption, but invests in export capacity in order to contribute to increase the Brazilian private sector's capacity to supply future ethanol demand from around the world, by investing in infrastructure while at the same time increasing the national energy company's participation in ethanol exports.⁶⁹⁶ A study by the International Atomic Energy Agency views this strategy as necessary to achieve Brazil's goal of expanding its

⁶⁹³ Freemantle & Stevens, *Op cit.*, pp. 5-6.

⁶⁹⁴ Worldwatch Institute, *Op cit.*, p. 269.

⁶⁹⁵ Bodman, Wolfensohn & Sweig, *Op cit.*, pp. 60-61.

⁶⁹⁶ Gabrielli de Azevedo, J.S., 'A Petrobras e o mercado internacional de etanol', *Revista Opiniões*, Abr-Jun 2007, available at: <<http://www.revistaopinioes.com.br/aa/materia.php?id=143>>, accessed 28 June 2012.

market share of ethanol exports worldwide, but also ultimately dependent on the private actors in the Brazilian sugarcane sector increasing production:

The application of this export oriented strategy would necessitate expanding ethanol production capacity in Brazil.... However, this strategy can only be implemented if...additional ethanol supply is reliable and long term contracts are negotiated. Given that sugar cane yields, and hence ethanol production, vary from year to year, an ethanol storage system would be needed in conjunction with ethanol exportation under long term contracts. This is the reason why some specialists argue that Petrobras should participate in this programme, both through its fuel storage system and through its fuel trade divisions. For instance, Petrobras oil pipelines already transport ethanol from the major areas of sugar cane production (São Paulo State) to possible locations of ethanol shipping (Rio de Janeiro and Santos harbours), and Petrobras exports petroleum or petrol products to several markets, including Africa, Southeast Asia and the United States of America.⁶⁹⁷

In an effort to solidify this strategy, the Brazilian government, aware that the country's biofuel sector lacked regulation, decided through a presidential decree by Lula's successor, Dilma Rousseff, to consider ethanol a strategic fuel rather than an agricultural product. With this new measure, ethanol is now being regulated by the National Petroleum Agency (Agência Nacional do Petróleo, or ANP, the government's regulator of the fuel market). 'But the government didn't adopt this measure thinking of our international projection,' says a senior Brazilian Foreign Ministry official, 'but because of our internal needs. But the measure does have an influence in our actions abroad'.⁶⁹⁸ This new measure will regulate the entire productive chain of ethanol and other biofuels and will frame the biofuel industry within the same legal regime defined by Brazil's Constitution for the oil industry. The National Petroleum Agency is now responsible for the regulation of ethanol production, creating stocks and inventories, distribution, as well as determining the amounts reserved for exports or imports. According to one source, this governmental intervention into the private sector has a clear political objective: to favour Petrobras' plan to become an important global player in the fledgling international ethanol market.⁶⁹⁹ It is interesting to observe that the reach and limits of the government's actions in the expansion of the Brazilian ethanol sector are still being defined in practice. Roberto Rodrigues, the former Minister of Agriculture during part of the

⁶⁹⁷ International Atomic Energy Agency, *Op cit.*, p. 187.

⁶⁹⁸ Interview with senior Brazilian Foreign Ministry official, Brasília, Brazil, 3 June 2011.

⁶⁹⁹ Casado, J., 'A mão pesada do Estado chega ao setor de álcool', *O Globo*, 26 August 2007, p. 39.

Lula administration, advocates greater government intervention and even the creation of a National Energy Secretariat, with the goal of attributing strategic treatment to the sector, which it lacks today, in his opinion. Without such strategic coordination for the sector – which, according to Rodrigues, only the government can offer – it will be impossible to turn ethanol into an international commodity. Perhaps the recent creation of a specific biofuel company, led by Petrobras, could be a response to this sort of preoccupation. It is noteworthy that without an articulated governance structure, Brazil's strategic objectives for its biofuel sector will find themselves under threat, according to one observer.⁷⁰⁰

Concluding Remarks

The hypothesis raised by this study states that if the four variables identified in the conceptual literature, listed above, are favourable, energy statecraft should be more likely to succeed. First, the formulation of Brazil's foreign policy goals in its implementation of energy statecraft using biofuels has focused on two key objectives: the creation of an international market for biofuels where ethanol is freely traded as a commodity, and the significant increase of Brazilian ethanol exports therein. While ambitious, this first objective – namely the commoditization of ethanol and possibly other biofuels as well – is attainable in the longer term, but is ultimately dependent on actions taken by several other actors. This is why the Brazilian initiative during the Lula administration to encourage and assist other countries to produce their own biofuels – both for their own domestic consumption as well as for export – is such an important aspect of the overall strategy pursued to achieve the goals pursued in Brazil's energy statecraft. The second objective in Brazil's formulation of its foreign policy goals sought through energy statecraft is directly linked to the second conditional variable identified in the literature, namely increasing Brazil's market share of global biofuel production, particularly where exports are concerned. In this respect, Brazil started from a comfortable position of being the world's top ethanol producer, but was quickly overtaken by US production. In what relatively little ethanol is traded internationally, however, Brazil does hold a comfortable leading position. But as global demand for ethanol and other biofuels keeps growing, Brazil will need to invest heavily in expanding its biofuel production capacity – not only to

⁷⁰⁰ Abramovay, R., 'Eficiência e contestação socioambiental no caminho do etanol brasileiro', *Política Externa*, Vol. 17, No. 2, Sept/Oct/Nov 2008, p. 28.

supply its growing domestic demand, but also to produce increasing amounts for export – if it is to maintain its position as the world’s foremost exporter of ethanol fuel.

Third, theory suggests that in order to be an effective instrument of energy statecraft, the energy resource employed should have low elasticity of demand. Biofuels, however, are extremely elastic and countries that use them are not dependent on its imports, especially when compared to petroleum use worldwide, which is particularly inelastic in the transportation sector. The elasticity of demand for biofuels nevertheless decreases as more countries implement policies that mandate a compulsory blend of biofuels as an additive to traditional fossil fuels, thus increasing their efficacy as an instrument of energy statecraft. Interestingly, though, it is precisely the inelasticity of biofuels and their capacity to complement fossil fuels as additives, thereby reducing import dependence on the latter, which makes biofuels an attractive alternative fuel. Moreover, the introduction of flex-fuel technology in the automobile industry addresses the elasticity problem raised by petroleum-based gasoline use by allowing consumers freely to choose their fuel at the pump, rather than being restricted to a single fuel source for their cars. This increases the elasticity of ethanol, too, but in doing so counteracts the inelasticity of oil dependence. In that sense, the efficacy of biofuels as an instrument of energy statecraft lies more in its ability to enhance a target state’s energy security vis-à-vis petroleum imports in the form of positive statecraft, rather than as a potential punitive measure exploiting a target state’s import dependence on an inelastic good, as would be the case in negative statecraft.

Lastly, Norris suggests that in addition to the three conditional variables delineated above, effective economic statecraft depends also on degree of control or influence the sender state has over the private commercial actors that actually implement the political measures dictated by the state when formulating its energy statecraft. In that regard, while the Brazilian state does control its national oil company, Petrobras, it is largely the country’s private sector that is responsible for the production and commercialisation of biofuels. Carrying out the Brazilian government’s energy statecraft strategy of commoditizing ethanol and increasing Brazil’s market share of ethanol exports worldwide therefore requires a large degree of cooperation between the government and private companies, as well as establishing lasting public-private partnerships. In Brazil’s case, the interests of private ethanol

producers have been convergent with the government's, while both have often acted in partnership in promoting increased biofuel use abroad. The Brazilian government's recent intervention in the country's biofuel sector, reclassifying ethanol as a strategic energy source rather than as an agricultural product (as it used to be classified) and regulating it with the National Petroleum Agency under the same rules for fossil fuels, has also been instrumental to the objective of increasing Brazil's ethanol exports abroad.

However, a major common theme that runs through these four variables – on which, in theory, effective energy statecraft is conditioned – is the still embryonic existence of an international market for biofuels, and the goal to create one. Without a fully developed and established global biofuel market, energy statecraft using biofuels cannot be employed in a similar manner to more 'traditional' energy statecraft utilizing oil and natural gas – either as a stick (negative) or a carrot (positive). Instead, the instrumentality of biofuels as a form of energy statecraft lies not on its inelasticity and market share dependence, but precisely in its ability to decrease the energy security threats posed by the dependence on other, more traditional energy sources. As such, energy statecraft using biofuels still manipulates the energy security of another state to achieve the sender state's political goals – in accordance with the definition of 'energy statecraft' used herein – but in a more positive manner, enhancing the target state's energy security, rather than increasing its reliance on energy import dependence. Thus, the goal of creating a global market where ethanol and other biofuels are traded as commodities is a significant step towards enhancing the energy security of many countries, which is a crucial objective of Brazil's energy statecraft through the use of biofuels.

CHAPTER 6

Conclusion

The present study began by acknowledging the relative scarcity of scholarly research on economic instruments of foreign policy (i.e., ‘economic statecraft’) in general and on positive economic statecraft in particular, and has sought to make a contribution to the literature on these general subjects. More specifically, this study focused its research on a particular subset of economic statecraft, namely energy statecraft – in other words the use of energy resources as a particular and unique type of economic foreign policy instrument – the academic scrutiny of which is fairly new to International Relations and Foreign Policy Analysis. What comparatively little has been published so far on energy statecraft, like economic statecraft, has tended to focus on the negative uses thereof, in detriment of studies on positive energy statecraft. Moreover, these studies have almost exclusively examined petroleum and natural gas as instruments of foreign policy. Conversely, scholarly inquiry on the use of biofuels as instruments of a state’s energy statecraft were completely unheard of at the time the research for this thesis began. Thus, the goal of this study has been to examine the use of biofuels as an instrument of a state’s foreign policy.

To inform this analysis, this study reviewed the literature on economic statecraft and adopted a ‘conditionalist’ approach to it. This school of thought stipulates that the right question to ask is not *if* economic statecraft works, but *when* and *under what conditions* it is likely to be effective. Within the conditionalist literature on economic statecraft, four conditional variables that determine the efficacy of economic statecraft were identified: 1) the commensurability between the means and ends sought in foreign policy; 2) the magnitude of an economic interaction; 3) the price elasticity of an economic good; and 4) the degree of control a government has over the commercial actors that carry out its economic statecraft in practice. These four conditional variables were adapted to the particular characteristics of energy resources – i.e., the specific economic goods used in energy statecraft – in order to form a theoretical framework in which to test this study’s main hypothesis: namely, if all four conditional variables are favourable, energy statecraft is more likely to be successful. Moreover, a further subcategory of the conditionalist economic statecraft literature – the international conditionalist (as opposed to

domestic conditionalist) approach – finds that the international context in which economic statecraft takes place also plays a role in determining its efficacy. A chapter on the international energy security context of the past decade was therefore included to explain how opportunities have surfaced in recent times for energy statecraft in general and energy statecraft using biofuels in particular. Since the focus of this study was on biofuels, rather than other energy resources (like oil and gas), only one case study was available, in terms of a country using its native biofuels as an instrument of its foreign policy: Brazil. Thus, this study made use of the Brazilian case to test its hypothesis, which sought to answer the question of whether Brazil’s energy statecraft using biofuels has been successful.

Adopting biofuels as part of a country’s energy mix brings several benefits in terms of the four elements of energy security listed in Chapter 3: availability, reliability, affordability and sustainability. Biofuels have the potential not only to substitute, or at least complement, increasingly unavailable petroleum, but there is significant land available around the world on which to grow more crops for biofuel production. They also enhance the energy security of countries that consume them by decreasing dependence on costly (if not unaffordable) oil imports from few, unreliable suppliers. Lastly, biofuels help reduce greenhouse gas emissions, which is needed to mitigate the harmful effects of climate change. However, these benefits will only reach their full potential if a well-structured international market for biofuels is created, writes Antônio Simões, a Brazilian Ambassador. In order to develop such a market, it is necessary to increase the number of biofuel-producing countries, establish common standards and norms for biofuels, expand the consumption of biofuels to as many countries as possible, and trade biofuels through mercantile exchanges and futures markets – all of which comprise the Brazilian government’s goal of turning ethanol (the world’s most widely used biofuel) into a commodity.⁷⁰¹ To that end, the Brazilian government has developed several strategies in the pursuit of its goals, which have been evaluated in this thesis’ case-study chapter. As indicated in that chapter, global biofuel production, particularly of ethanol, has indeed skyrocketed over the past decade, suggesting, in principle, that the strategies pursued under Brazil’s energy statecraft have been successful.

⁷⁰¹ Simões, A.J.F., ‘Biocombustíveis: A Experiência Brasileira e o Desafio da Consolidação do Mercado Internacional’, in Ministério das Relações Exteriores, *Biocombustíveis no Brasil: Realidades e Perspectivas*, (Brasília: Ministério das Relações Exteriores, 2007), p. 23.

The empirical work conducted for this study raises an important question for further research: namely, whether the increasing use of biofuels (both in terms of production and consumption) worldwide is the result of Brazil's energy statecraft, or whether it has been mostly driven by domestic initiatives like compulsory biofuel blend mandates. In other words, is it the international energy security context, rather than Brazilian pressure and influence, that is driving the commoditization of ethanol and other biofuels? Ultimately, this question can only be answered empirically, by comparing the international agreements on biofuel production and technology transfer *et cetera* signed by Brazil and its target states with data on biofuel production in these countries after these agreements have been signed. And even then, it is difficult to determine whether increased biofuel production (if any) in these countries has been directly a result of Brazilian influence or whether recent initiatives to adopt biofuel programmes in several countries have been domestically driven by the pressures of the international energy security context. In other words, did Brazil's energy statecraft really manage to get other countries to do what they would otherwise not have done? This is, of course, an empirical problem shared by all academic studies on foreign policy initiatives relying on soft power, in which a country gets others to want what it wants – as opposed to bribing or coercing them to do so (hard power) – so that target states do what the sender state wants through their own initiative. These questions and empirical problems need to be addressed in future studies, the groundwork for which the present thesis has attempted to provide.

In the meantime, the international energy security context remains, by itself, an important driver of ethanol's commoditization, a process which Brazil's former President Lula believes is 'irreversible.'⁷⁰² The Brazilian Congressman Antônio Carlos de Mendes Thame⁷⁰³ lists six positive externalities of biofuel production that address some of the threats posed to energy security by the current international context. The first is a macroeconomic externality: every barrel of ethanol produced is one less barrel of oil that is imported, or an additional barrel that can be profitably exported (depending on whether a country is a net oil importer or exporter). The second externality affects public health by permanently eliminating any toxic additive to gasoline, such as MTBE and ETBE, while also allowing the substitution of diesel

⁷⁰² Lula da Silva, L.I., "Café com o Presidente" – Programa com o Presidente da República, Luiz Inácio Lula da Silva, em 12 de março de 2007', in Ministério das Relações Exteriores, *Resenha de Política Externa: 1º Semestre de 2007*, (Brasília: FUNAG, 2007), p. 565.

⁷⁰³ Interviewed in Brasília, Brazil, 22 June 2011.

fuel use in buses and trucks, which is highly polluting and damaging to public health, particularly in metropolitan areas. The third and fourth externalities are environmental: biofuels emit less carbon dioxide and also further enhance the availability aspect of energy security through the cogeneration of clean energy by turning biofuel feedstock residues into electricity or even more biofuels (breaking down plants' lignocellulose, in addition to their starch). The fifth externality is geopolitical in that it enhances the reliability aspect of energy security by diminishing dependence on oil imports from politically unstable Middle Eastern countries. The last externality is job creation in Brazil and all other countries that produce biofuels. Given the current global energy security context, these externalities serve as strong incentives to spread and increase the production of biofuels worldwide.

Among the many advantages to energy security brought on by biofuels, one of the most publicised is the diversification they bring to liquid fuel supply. It has been widely debated whether the goal of liquid fuel diversification is best achieved by incentivising biofuel production for export in tropical countries whose climactic conditions are most suited for their cultivation, thus replicating the centralised market control that oil companies display in the international petroleum market, or by producing biofuels domestically exclusively to meet local demand.⁷⁰⁴ So far, biofuel production worldwide has been spurred predominantly by domestic policies that support indigenous biofuels at the expense of imports from countries better suited for biofuel production, only opening their markets to imports when demand outruns local supply. Such domestically-oriented policies, however, severely limit the expansion of a truly global market for biofuels, delaying the Brazilian government's goal of commoditising ethanol by years, if not decades.⁷⁰⁵ This situation is exacerbated by the fact that the world's most important demand centres, the United States and the European Union, protect their markets with tariff and non-tariff barriers:

Seeing its ethanol exports blocked by the United States and Europe, Brazil is learning that energy security and climate change were only a part of the reason countries looked to biofuels. Certainly, these arguments were important, but biofuel mandates would not have happened if not for the power of agriculture in both the United States and Europe.

⁷⁰⁴ Worldwatch Institute, *Biofuels for Transport: Global Potential and Implications for Energy and Agriculture*, (London: Earthscan, 2007), p. 155.

⁷⁰⁵ Hunt, S.C. & Flavin, C., 'Preface', in Worldwatch Institute, *Biofuels for Transport: Global Potential and Implications for Energy and Agriculture*, (London: Earthscan, 2007), p. xix. See also, *Análise Energia* (Anuário 2009), 'Ethanol After the Euphoria', December 2008, p. 230.

Brazil's problem, then, is that it merely solved the problem politicians talked about — it has developed a fuel that reduces greenhouse gas emissions and comes from a place that is politically stable and friendly to both the European Union and United States. In solving the rhetorical problem without offering a political fix, it has placed U.S. environmental activists and EU politicians in a difficult position, and has not necessarily won markets. The larger problem...is that there is little interest in either the United States or Europe in staring down the agricultural interests.⁷⁰⁶

Thus, while the introduction of compulsory biofuel mandates in potential consumer states do create inelastic demand for biofuels, this does not necessarily translate into demand for imports thereof, nor does it stimulate the development of an international market for them.

Lula assumed that as countries around the world started to blend ethanol into gasoline as a measure to curb greenhouse gas emissions, ethanol would become a commodity with an internationally determined price. 'We have to be more responsible,' he said, 'because we have to...guarantee the supply of the Brazilian market and the international market. Therefore, we have to plant more sugarcane and boost the cultivation of ethanol in other countries.'⁷⁰⁷ Lula's energy statecraft discourse, however, was 'more talk than walk'. The greater part of biofuel agreements Brazil signed with other countries during Lula's administration have not resulted in concrete implementation, according to Paulo César Lima, a Legislative Consultant on Energy Matters at the Brazilian Chamber of Deputies, who also states that Brazil is having 'no success' in reaching its goals promoting ethanol abroad: 'Ethanol is far from being a commodity. Europe and the United States still maintain their barriers [to Brazilian ethanol]. The ethanol scarcity in Brazil [in 2011] was very bad not only for its own ethanol industry, but had external repercussions, [suggesting] that Brazil does not have [the capacity to produce] enough ethanol even for its domestic market.'⁷⁰⁸ Mendes Thame largely agrees with the proposition that the Brazilian government under Lula did not succeed in opening new markets for Brazilian ethanol exports: 'Lula only talked, called [ethanol] mill owners heroes, brought Bush to Brazil, but did not open a single market.' What few markets have been opened to Brazilian ethanol exports so far, he says, have been opened by Brazilian private actors, including the Brazilian Sugarcane Industry Association's (UNICA) lobbying efforts in Washington

⁷⁰⁶ Mongoven, B., 'The Biofuel Backlash', STRATFOR, 13 September 2007, available at <http://www.stratfor.com/biofuel_backlash>, accessed 19 October 2011.

⁷⁰⁷ Lula da Silva, L.I., *Op cit.*, p. 565.

⁷⁰⁸ Interviewed in Brasília, Brazil, 2 June 2011. My translation.

and Brussels, rather than by the federal government. On the other hand, he also acknowledges that Lula's incessant promotion of Brazilian ethanol (even if it was mostly through discourse) was a positive thing; that the Foreign Ministry was competent in defending the interests of Brazil's ethanol abroad; and that the Brazilian Agricultural Research Corporation's (Embrapa) technology transfer efforts have, in fact, resulted in the construction of a few Brazilian ethanol plants in Africa – all of which are important steps towards Brazil's goal of commoditizing ethanol.⁷⁰⁹

Despite the many advantages conferred by adopting ethanol fuel, and President Lula's 'tireless insistence' that 'the Brazilian experience demonstrates that biofuels will play an increasingly important role' in a 'clean and cheap' global energy mix,⁷¹⁰ most countries have hesitated to follow Brazil's lead in committing fully to the use of biofuels.⁷¹¹ James Smith attributes this to the unique historical, technical, political and environmental context that allowed the Brazilian experience with ethanol to flourish: 'It is difficult to see how Brazil's recipe for success can easily be replicated elsewhere. Biofuel production is intimately entwined in local agro-ecological contexts, and dependent on local capabilities to shape socio-technical systems to unlock the potential of bioenergy.'⁷¹² For Leonardo Maugeri, '*Brazil remains an exception*' in managing to provide competitive ethanol due to the country's geographical and climatic conditions, which boasts abundant water for crop irrigation and vast tracts of arable land, all of which is ideally suited for sugarcane cultivation ('the crop that is the most productive for bioethanol and that consumes the least energy to obtain it'), not to mention cheap labour that reduces the cost of producing biofuels. For these reasons, he writes, 'Brazil is to biofuels as Denmark is to wind power, Saudi Arabia is to oil, and the United States is to coal. Nature has endowed these countries with specific resources and features that cannot be replicated.'⁷¹³

⁷⁰⁹ Interview with Congressman Antônio Carlos Mendes Thame, Brasília, Brazil, 22 June 2011.

⁷¹⁰ Lula da Silva, L.I., 'Declaração à imprensa concedida pelo Presidente da República, Luiz Inácio Lula da Silva, em conjunto com o presidente do México, Felipe Calderón, após cerimônia de assinatura de atos – Brasília – DF, Palácio Itamaraty, 17/08/2009', in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2009*, (Brasília: FUNAG, 2010), p. 83. My translation.

⁷¹¹ Rother, L., *Brazil on the Rise: The Story of a Country Transformed*, (London: Palgrave Macmillan, 2010), p. 185.

⁷¹² Smith, J., *Biofuels and the Globalization of Risk: The biggest change in North-South relationships since colonialism?*, (London: Zed Books, 2010), p. 39.

⁷¹³ Maugeri, L., *Beyond the Age of Oil: The Myths, Realities, and Future of Fossil Fuels and Their Alternatives*, (London: Praeger, 2010), p. 131. Original emphasis.

Ideal environmental conditions aside, moreover, the Brazilian government's strategy to increase the use of biofuels worldwide by transferring technology to third countries may also be limited by potential target states' underdevelopment in terms of human infrastructure and governance. 'Because technology is typically more than just a piece of hardware or a set of ideas,' according to a study by the Worldwatch Institute, 'it is not always easy to replicate another country's experience with technological change and transfer. One of the sources of Brazil's biofuel success... has been the country's strong foundation of research, education and training, a capacity platform that required sustained effort over time to establish and maintain. This situation may not be easily found in other countries (particularly developing countries)'.⁷¹⁴ This is especially true of African countries, which are the main target states of Brazil's energy statecraft because of their climactic conditions suitable for biofuel production. Antônio Lício, a former official in Brazil's Ministry of Agriculture,⁷¹⁵ states that the problem with investing in biofuel production in Africa is not one of opportunity costs between agriculture for energy or food production, but the continent's endemic structural problems and lack of proper governance. 'Therefore the [Brazilian] strategy is useless', he says; 'only after Africa becomes a "governable" continent with minimal investment conditions – not only in ethanol, but in many other aspects too – will it be worth pursuing this strategy.'

A further setback in Brazil's campaign to promote its experience with biofuels abroad was the announcement of enormous oil and gas discoveries in November 2007, whose quantities are continuously revised upwards as more oil is found in the so-called 'pre-salt' layer several thousand kilometres under the seabed, which the government now estimates could be between 70 and 100 billion barrels of oil equivalent.⁷¹⁶ The excitement generated by these discoveries among policymakers and in public debates is one of the major reasons why the 'euphoria behind [biofuels] and the expansion of the foreign market for Brazilian ethanol, which occurred in 2006, declined in 2007 and went cold in 2008.'⁷¹⁷ Since the mammoth pre-salt discoveries, ethanol and biofuels have significantly lost ground to oil in Brazilian public discourse

⁷¹⁴ Worldwatch Institute, *Op cit.*, p. 274.

⁷¹⁵ Interviewed in Brasília, Brazil, 3 June 2011. My translation.

⁷¹⁶ Portal Brasil, 'Novas Reservas', available at <<http://www.brasil.gov.br/sobre/economia/energia/pre-sal>>, accessed 28 June 2012.

⁷¹⁷ *Análise Energia* (Anuário 2009), *Op cit.*, p. 229.

and particularly in political debates, suggesting a shift in priority in Brazil's energy policy, if not in its energy statecraft, as Larry Rother notes:

Brazil's own priorities... seem to be changing. Before the discovery in the Sub-Salt basin in 2007, the government clearly regarded the ethanol program as the single most important strategic mechanism in its drive to achieve energy self-sufficiency. But the size of the recent oil bonanza is so large and so dazzling that hopes that ethanol will be a magic bullet, admittedly unrealistic, seem to be slipping. Brazil continues to invest in and support the program, but some enthusiasm has now been lost, and with it some momentum. ... Already, Brazil's discourse in international forums has also changed: Once the most ardent proponent of renewable green energy, Brazil now has a vested interest in prolonging consumption of fossil fuels (at increasingly elevated prices, of course) for as long as possible.⁷¹⁸

A popular suggestion to consolidate the country's abundance of biofuels and fossil fuels into a single overarching strategy is to focus Brazil's sugarcane production to supply the domestic ethanol market while the oil and gas from the pre-salt fields should be explored exclusively for export.⁷¹⁹ Nevertheless, the new thrill over Brazil's recent oil discoveries at the expense of the country's biofuel euphoria has been criticised by many, among them Fábio Feldmann, the former Environment Secretary of the state of São Paulo: 'Brazil is excited about its pre-salt oil finds but I have serious doubts about this.... A country that believes fossil fuels is its transport to the future is not in step with a world desperately seeking other sources of energy.'⁷²⁰

This noticeable shift in priority notwithstanding, President Lula insisted in several speeches and interviews during his last couple of years in office that 'Brazil will not renounce its environmental agenda to be merely an oil giant. We want to consolidate our condition as a world power in green energy.'⁷²¹ Despite the discovery of sizable oil reserves in deep waters, Brazil 'will continue advocating the creation of a global biofuels market with a large number of producers in the developing world.'⁷²²

⁷¹⁸ Rother, *Op cit.*, p. 189.

⁷¹⁹ UNICA, 'Pursuing Growth', *Ethanol Summit 2011 – Official Magazine*, (São Paulo: UNICA, 2011), p. 36.

⁷²⁰ Cited in UNICA, 'The Sustainability Question', *Ethanol Summit 2011 – Official Magazine*, (São Paulo: UNICA, 2011), p. 37.

⁷²¹ Lula da Silva, L.I., 'Discurso do Presidente Luiz Inácio Lula da Silva no Debate Geral da 64ª Sessão da Assembléia-Geral das Nações Unidas – Nova York, 23/09/2009', in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2009*, (Brasília: FUNAG, 2010), p. 104. My translation.

⁷²² Lula da Silva, L.I., 'Entrevista exclusiva concedida por escrito pelo Presidente da República, Luiz Inácio Lula da Silva, ao jornal El Mundo, da Espanha – Brasília – DF, 29/12/2009', in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2009*, (Brasília: FUNAG, 2010), p. 480. My translation.

The pre-salt discoveries do not change this, Lula wrote: ‘We will not give up our achievement in renewable energy, and will continue to expand it, on behalf of our own interests and of our global responsibilities towards the environment.’⁷²³

But even with Lula’s reassurances that Brazil has not changed its energy policy priority, the shift has been even more pronounced under his successor, President Dilma Rousseff, who, having previously acted as Lula’s Energy Minister and as Chairman of the Board of Directors of Petrobras while serving as Lula’s Chief of Staff, seems much more interested in the pre-salt oilfields, which attracts many more votes for her politically, says one observer.⁷²⁴ According to another, while ethanol has not necessarily ceased to be a priority under Rousseff, she is definitely not as incisive as Lula in its promotion abroad. Moreover, Lula was so incisive not only because of his passion (if not obsession) with biofuels, but also because of the moment in time in which his ethanol promotion abroad took place: in 2007 to 2008, Brazil envisaged producing around 50 billion litres of ethanol as soon as 2012 to 2014, which would leave around 20 to 25 billion litres of surplus export capacity, which did not happen. Then came the global financial crisis in 2008 and 2009, which significantly reduced investments in the Brazilian biofuel sector in the short to medium term, although the government will continue to promote biofuel production abroad, but with less drive than before.⁷²⁵

To conclude, this study revisits the classical International Relations theory of Hans Morgenthau, who ‘acknowledges that the strategies and tactics that leaders used to transform the potential attributes of power into influence are just as important as the attributes themselves.’⁷²⁶ Given the fact that the Brazilian government has had scant success in opening new export markets for its biofuels, and its even more ambitious foreign policy goal of creating an international market where ethanol is traded freely as a commodity is a long way from coming to fruition, it would seem fair to presume that the strategies pursued under Brazil’s energy statecraft have been

⁷²³ Lula da Silva, L.I., ‘Entrevista exclusiva concedida por escrito pelo Presidente da República, Luiz Inácio Lula da Silva, à Offshore Magazine, da Noruega – Oslo – Noruega, 01/10/2009’, in Ministério das Relações Exteriores, *Resenha de Política Externa: 2º Semestre de 2009*, (Brasília: FUNAG, 2010), pp. 441-442. My translation.

⁷²⁴ Interview with Paulo César Lima, Legislative Consultant on Energy Matters to the Brazilian Chamber of Deputies, Brasília, Brazil, 2 June 2011.

⁷²⁵ Interview with Rodrigo Dolabella, Legislative Consultant on Agriculture Matters to the Brazilian Chamber of Deputies, Brasília, Brazil, 2 June 2011.

⁷²⁶ Cited in Lebow, R.N. *A Cultural Theory of International Relations*, (Cambridge: Cambridge University Press, 2008), p. 557.

ineffective. However, the utility of any given instrument of foreign policy, repeating David Baldwin's quote from the onset of this study, is 'a function of the situation and not a quality intrinsic to the particular technique'⁷²⁷ – a proposition also present in Morgenthau's work, who Ned Lebow mentions when stating that 'power is not so readily transformed into influence because it is heavily context-dependent.'⁷²⁸ Thus, the lesson that emerges from this study is that the context in which energy statecraft takes place is of fundamental importance to the likelihood of its success or failure, and every possible outcome in between. Energy statecraft using oil as an instrument, for example, tends only to work during periods of tight supply and exorbitant prices in the international petroleum market. The same is true for biofuels, the use of which is most attractive when they are economically competitive with oil, during times when the latter's price is high. The case of Brazil's energy statecraft utilising biofuels as an instrument of its foreign policy illustrates this well:

There was a moment between 2006 and mid 2008 that Brazil felt close to becoming a world power in the production of biofuel. The country showed off its credentials of the largest and most efficient ethanol producer on the planet. It seemed to have the solution to help the world face the rising oil prices and global warming. Hefty investments were made to expand the sector and several bilateral agreements were signed. However, in 2008, the environment changed radically. The price of oil collapsed, Brazil announced the discovery of the largest oil reserve found in many years and a few of the countries that warmed up to the idea of ethanol began to cool down. Ethanol production in Brazil is going well and the prospects for the local and foreign market continue promising. Maybe the biggest change was in timing. It seems that the world power idea will have to be left for a later date.⁷²⁹

Therefore, it is reasonable to conclude that in the case of energy statecraft – whether it be through the use of oil, natural gas or biofuels – the context in which it takes place is much more important in determining its probability of success, than any inherent characteristic of energy resources as an instrument of foreign policy.

⁷²⁷ Baldwin, D.A., *Economic Statecraft*, (Princeton, NJ: Princeton University Press, 1985), p. 123.

⁷²⁸ Cited in Lebow, *Op cit.*, p. 551.

⁷²⁹ *Análise Energia* (Anuário 2009), *Op cit.*, p. 229.

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Ambassador Antônio José Ferreira Simões, the first Head of the Department of Energy at the Brazilian Ministry of External Relations, interviewed in Brasília, Brazil, 20 September 2007

Antônio Carlos de Mendes Thame, Brazilian Congressman (of the opposition Brazilian Social Democracy Party, PSDB-SP) representing the sugarcane-growing region of São Paulo state, interviewed in Brasília, Brazil, 22 June 2011

Antônio Lício, former official in Brazil's Ministry of Agriculture, interviewed in Brasília, Brazil, 3 June 2011

Cristina Maria Monteiro Machado, Researcher at the Brazilian Agricultural Research Corporation, interviewed in Brasília, Brazil, 10 June 2011

Helena Claudia Cantizano, International Affairs Advisor to the Minister of Mines and Energy, interviewed in Brasília, Brazil, 15 September 2006

Henry Groppe, oil and gas analyst, Groppe, Long & Littell, interviewed in London, United Kingdom, 6 February 2007

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* Junior official at the Ministry of External Relations, interviewed in Brasília, Brazil, 6 February 2012

* Representative of the Brazilian Sugarcane Industry Association (UNICA), interviewed in São Paulo, Brazil, 14 June 2011

* Senior official at the Ministry of External Relations, interviewed in Brasília, Brazil, 3 June 2011

NOTE: '*' indicates interviewees who wished to remain anonymous. A separate sheet with their names has been provided exclusively to panel members of this thesis' final examination, or *Viva voce*, on 16 November 2012.

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