Business as Usual or Apocalypse Now? Regulating the Car Industry’s Carbon Emissions

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Abstract

The times in which we live remind us that capitalism is characterised by tumult. Yet, capitalism is also characterised by institutional stability. This paper considers how the institutional basis for capitalist relations of production affects the capacity of industrialised states to regulate corporate environmental performance, and whether this is being transformed as a result of the tumult of recent years. It focuses on the car industry because it is the world’s largest manufacturing sector, dominated by multinational corporations, and the producer of products that are the second biggest contributor to global CO₂ emissions after power generation. Having faced the twin crises of the global financial meltdown plus an oil price shock, and now faced with recently tightened regulatory standards that require it to further reduce the CO₂ emissions of its products, it is an ideal test case for whether forces for transformational change versus enduring institutional stability best explain environmental outcomes. By focussing on the US, European, and Japanese industries, it is shown that nationally specific regulatory contexts resulting from states’ varieties of capitalism continue to better explain the divergent paths taken by the industry’s key firms to improving their environmental performance, rather than the recent shocks it has faced and any purported transformation in state-business regulatory relations. This suggests that while recent events have produced tumult for the industry and regulators of its products, nevertheless institutional stability means that the path dependence of deeply historically embedded national institutional variations in capitalist relations of production continue to influence firms’, and therefore states’, future abilities to reduce CO₂ emissions.

Key words: Capitalism; institutions; regulation; crisis; climate change; car industry.
Introduction

Are we in the midst of transformational change? As the global financial crisis unfolded it certainly seemed we were, and in its aftermath this still seems a distinct possibility. The likelihood of such transformational change is to be expected, indeed always anticipated, given that capitalist relations of production are characterised by “tumult” (Sewell, 2008). This has long been recognised by Marxists who predict crises as an inevitable result of the social relations underpinning capitalist production. For them, such crises foreshadow the global breakdown of capitalism itself (e.g. see Wallerstein, 1984). At the very least, they are an indication that control over the means of production is about to ‘jump’ to new fields of exploitation, from established markets such as the US and Europe to emerging ones such as India and China (e.g. Arrighi 2007, 2009). Those on the other side of the political fence take a more optimistic view, celebrating capitalism’s potential for re-invention and renewal. Capitalism requires periodic Schumpetarian “gales of creative destruction” (Schumpeter, 1943; see also Freeman, 1992, p.196), and if these do not occur naturally they must be ‘invented’ through new technologies (e.g. see Toffler 1971). These present opportunities for renewal as new modes of capitalist production emerge that potentially represent totally new techno-economic paradigms (e.g. Freeman and Perez, 1988; Hall and Preston, 1988). The tumult of recent years is therefore as much an opportunity as it is a crisis for global capitalism.

As the largest manufacturing sector in the world, the car industry should be susceptible to, even embracing of, the potential for transformational change as a result of current global market conditions. As a mature industry characterised by geographical and market concentration in the production and sale of its products, the alternative to transformational change may be decline and obsolescence, especially in its traditional markets (e.g. see Hirsch, 1967; Casson, 1983).1 The travails of its US firms are illustrative. They either would no longer exist without state support or have had to divest themselves of iconic brands due to the existential threat posed to their core business.2 Established car makers of other nationalities are also feeling the pinch of the global economic downturn, so much so that the President of Toyota, Akio Toyoda, recently predicted that his firm’s decade of success may end in disaster, with declining sales and losses so great that it seems destined to slip from its recently attained position as the world’s largest motor vehicle manufacturer (No Author, 2009a). Therefore, urgent and radical steps to rejuvenate the global car industry might be expected as a matter of its established firms’ very survival.

From the point of view of the industry’s contribution to global carbon emissions this is potentially good news. Intuitively, consumers facing uncertainty in a world just emerging from the greatest recession since the 1930s might be expected to spend less on their cars and fuel. Furthermore, the global financial crisis coincided with an oil price spike that had been building since 2003, with the price of oil rising by over 300 per cent to peak at around US$121 a barrel in mid-2008 before receding to around US$60 by early 2009 (IEA, 2009, p.4).

1 Here I am of course taking a product cycle perspective.
2 For example, at the time of writing General Motors’ Hummer looked set to be taken over by China’s Tengzhon; its ailing European marque, Opel, was almost sold to a mixture of Canadian and Russian interests; and Saab may yet cease to exist altogether even though General Motors has managed to sell it to boutique Swedish sports car manufacturer Spyker Cars. Similarly, Ford’s Volvo has been sold to China’s Geely, while its Jaguar and Land Rover marques are now Indian-owned.
3 These prices are averages of spot prices in various world markets. It is possible to find data that suggest in certain markets the price spike was greater with the peak price around US$140 a barrel (EIA, 2009).
should encourage the development and sale of smaller, more efficient vehicles with enhanced environmental and financial attributes.

Yet, the purpose of this article is to demonstrate that the impact of recent tumultuous global market conditions on the carbon emissions of the car industry should not be over-stated. This is because the enduring national and regional institutional contexts in which key car firms are embedded remain important. Rather than radical change, institutional inertia means that what we have is largely a case of ‘business as usual’. Although the analysis is empirically driven, my intention is to lend support to the perspective of comparative institutionalists who stress that change often occurs incrementally, rather than discontinuously in response to exogenous systemic shocks, and that this is because the national and regional historical embedding of capitalist relations of production results in “a politics of institutional stability” rather than flux (Hall and Thelen, 2009, p.12; see also Olsen, 2009; Thelen and Mahoney, 2010). Institutional stability means that agents “cannot simply ‘make up’ their realities in ways that are disconnected from the environments they inhabit at any given point in time” (Bell, 2009 unpublished, p.18). Instead, the historical legacies of previous decisions that underpin the institutional basis for coordinating economic production, and national regulations in respect of it, help to define and constrain how agents such as the world’s major car firms interpret and respond to the material realities they face.

The analysis proceeds by first outlining why, despite the globalisation of world markets, major corporations such as those in the car industry possess distinct home bases where they are headquartered, carry out the majority of their production and investment, and from which they derive the majority of their turnover. Despite the emergence of new markets and firms from China and India, these home bases remain Europe, the US and Japan. Secondly, the implications of this from a comparative institutionalist perspective are drawn out and used to demonstrate why a focus on the way rules have been made to regulate fuel economy and carbon dioxide (CO₂) emissions in these three territories is warranted, how this has produced different regulatory outcomes, and why trends in these outcomes endure in the face of crises. Thirdly, evidence is provided to demonstrate that distinctive national and regional market profiles have not been greatly affected by the tumult of recent years. The conclusion reached is that in the states and regions that ‘matter’, the short-term shock of the recent upheaval in world markets has had little impact on established trends in the carbon-intensity of the industry’s products. This article therefore represents something of an empirically-driven ‘reality check’ to the potential for radical, transformational change in response to the turmoil of recent years, finding that the car industry continues to work with (and within) distinct national and regional institutional regulatory contexts, and within national and regional market profiles that have changed remarkably little.

The Car Industry as a Global Industry with National Home Bases

The conventional wisdom is that global problems such as climate change require global solutions, and as the car industry is often taken as “a paradigm case of a globalised industry” (Paterson, 2000, p.264), it might seem reasonable to think of steps that it should take on a global scale. Yet, many authors have observed that while markets are increasingly global, the corporations that compete in them are not. Instead, they “are ‘produced’ through an intricate process of embedding in which the cognitive, cultural, social, political and economic characteristics of the national home base play a dominant part” (Dicken, 2003, p.234; echoing

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4 Indeed, Sewell’s (2008, p.517) arguments about the tumult of capitalism are framed in terms of there being a “recurrent logic” to the “core processes of capitalism”.

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earlier arguments made by Boyer, 1996). This is certainly true of ownership and control, which has long been recognised as remaining very much national rather than transnational, diffused, or whatever other global descriptor one may like to choose. Indeed, Wade’s (1996, p.79) declaration over a decade ago that “in Japanese companies foreign directors are as rare as British sumo wrestlers” is borne out by Deutschebank’s (2004) recent overview of the global car industry, for which similar metaphors could be applied in respect of all its leading firms.

This suggests that while it would be an over-simplification to say that corporations from one home state are identical, they should share certain national characteristics. They have a national identity in terms of ownership, and rely on their home state government for support, especially in times of trouble or when facing competitive threats (e.g. see Weiss, 1998; Weiss and Hobson, 1995). But this is not just because of abstract cultural notions. There are real material reasons why this is, and remains, the case. In the largest industrialised economies of the US, European Union (EU) and Japan that continue to shape what is popularly termed ‘globalisation’, around 80 per cent of production is for domestic consumption, with around 80 per cent of investment undertaken by domestic investors (Wade, 1996). If this is not true for the most transnational of multinational corporations (MNCs), the data nevertheless demonstrates that apart from the top three to four most global companies from Germany, the US and Japan, the rest of their MNCs have at least 50 per cent of their assets, employment and sales at ‘home’ (UNCTAD, 2006). Furthermore, it is more their sales, rather than the location of their assets or employment, that is the driver of their transnationality. In addition, almost all the world’s major industrial sectors have an oligopolistic structure, being dominated by three to five MNCs, with 80 per cent of these headquartered in the US, Europe and Japan (Harrod, 2006). Therefore, production is concentrated both in terms of market power and geography.

What is true of corporations generally is true for the global car industry specifically. The world’s three largest car firms of Toyota, General Motors and Volkswagen have on average less than 50 per cent of their assets, sales and employment outside their home states (UNCTAD, 2006), and it is still the case that 55 per cent of the industry’s production takes place in its three hubs of the US, Europe and Japan (OICA, 2010). Even with the expansion of new markets in countries such as China and India, it remains the case that 77 per cent of turnover and 76 percent of the industry’s investment is located in these territories, with global production and sales dominated by firms from them (OICA, 2006). Indeed, in 2008 European, US and Japanese-owned car firms accounted for 83 per cent of global production. While it is true that this is less than 10 years ago when they accounted for 90 per cent, concentration of production in the hands of firms from these states/regions remains the case. Furthermore, in 2008 the industry’s top five firms accounted for almost half of all global production, with two of these based in the US (General Motors and Ford), two in Japan (Toyota and Honda) and one in Europe (Volkswagen). The concentration of production in the hands of firms from these states/regions has not changed in the last 10 years (OICA, 2010).

Clearly, for the purpose of analysis there is a need to re-territorialise the industry, given that by location of its headquarters, production, investment and turnover, it remains

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5 The EU and US in particular are what Drezner (2007) focuses on as the world’s ‘great powers’ for their role in shaping international regulatory regimes.

6 Forty percent are headquartered in the US, around 26 percent in the UK, France, Germany, the Netherlands, Switzerland and Italy, and 10 percent in Japan (Harrod, 2006, p.28).

7 UNCTAD measures transnationality via its transnationality index (TNI). This is a simple composite average of foreign assets, sales and employment to total assets, sales and employment. The TNI of these firms is 56, 34 and 49 per cent respectively.
concentrated in a very few firms from three key hubs. Like other industrial sectors, it is much less global than the market for its products. This suggests different strategies for its firms, with these substantially determined by the location of their headquarters.

A Politics of Institutional Stability

The reality is that MNCs like those in the car industry are large entities with distinct national and regional interests, and therefore national and regional identities. They are not small entrepreneurial firms adrift on a global sea of competitive market forces. Rather, they create and moderate market conditions in cooperation, or sometimes conflict, with the states in which they are based. Harrod (2006, p.29) has gone so far as to say that “the nature of the relationship between the corporation and the state is of primary importance in considering the corporation in the twenty-first century.” More generally, authors such as Pauly and Reich (1999, p.5) have stressed that “the basic institutional structures of MNCs may be influenced or even determined by the characteristics of states” through the laws they make, as well as how they frame markets and relations of production within them. Institutions specify, as well as reinforce, patterns of behaviour that are seen as appropriate, both in the normative sense suggested by March and Olsen (1989, 1998), but more generally because they establish “a set of rules, formal or informal, that actors generally follow, whether for normative, cognitive, or material reasons” (Hall and Soskice, 2001, p.9). But given the points made in the previous section, the main thing to stress is that out of self-interest (i.e. for material reasons), “in any national economy, firms will gravitate towards the mode of coordination for which there is institutional support’ (Hall and Soskice, 2001, pp.8–9).

A wealth of literature has analysed the way in which industrialised states’ historical trajectories of development have resulted in different formal and informal institutions to support capitalist relations of production (e.g. Schonfield, 1965; Esping-Andersen, 1990; Dore et al., 1999; Crouch and Streeck, 1997; Hollingsworth and Boyer, 1997). Authors in this tradition echo Polanyi ([1944] 2001) who saw markets not as the outcome of natural ‘laws’, but products of their institutional embeddedness in the social norms and legal and political rules constructed by states. As Weiss (2010 forthcoming) puts it, markets “depend on specific regulatory regimes (and infrastructural resources) that are the preserve of the nation-state”. In this vein, the Varieties of Capitalism (VOC) approach sees capitalist states as tending towards two ‘ideal’ categories of liberal market economies (LMEs) like the US, or coordinated market economies (CMEs) like Japan and many continental European countries (Hall and Soskice, 2001). These two broad categories have been shown to endure in the face of global challenges because it is easier for states to reinforce the institutional complementarities that have served them well in more placid times when faced with international challenges, rather than resort to radical change. Rather than abandoning established institutional structures, states use and further entrench their distinct national economic systems to address the challenges they face (e.g. see Hall and Thelen, 2009; Hall and Gingerich, 2009; Hall 2007; Hall and Soskice, 2003; Thelen, 2001; Iversen et al., 2000).8

Broadly speaking, firms in LMEs such as the US prefer to coordinate their activities via markets, and lobby regulators hard for management autonomy to do so. The result is a pervasive antagonism between regulators and business that results in lobbying-conflict relations (e.g. see Wilks, 1990; and in respect of environmental regulation specifically

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8 As an aside, it is interesting to note that whatever his liberal predilections, President Sarkozy trumpets France’s *dirigiste* variety of capitalism as a deeply institutionally embedded feature of his country, and a virtue in the current global economic climate (No Author, 2009b).
DeSombre, 2000; Scruggs, 2003). Therefore, even as the US government rescued General Motors from bankruptcy by taking a controlling stake in it, President Obama declared the following:

GM will be run by a private board of directors and management team with a track record in American manufacturing that reflects a commitment to innovation and quality. They - and not the Government - will call the shots and make the decisions about how to turn this company around (The White House, 2009a).

Even in the face of an existential crisis for the company, US capitalism does not easily permit the US government to be seen to ‘call the shots’. By contrast, CMEs such as Japan and many continental European states are characterized by more non-market cooperative relationships to coordinate economic activity. It is not primarily a preference for reacting to the market and its price signals that determines firms’ behaviour. Rather, firms in CMEs tend more towards consensus decision-making between a greater range of internal and external stakeholders based on reputation and long-established networks. They react more efficiently to regulations based on negotiated and agreed rules and standards, rather than jealously guarding their autonomy to make decisions free from interference (e.g. see Dore, 2000; Vogel, 2001; Streeck and Yamamura, 2001).

Obviously, the division between firms favouring cooperative coordination in CMEs versus deregulated market competition in LMEs is very broad, in fact too broad for commentators such as Crouch (2005, p.453) who says such a blunt dichotomy amounts to designating mineral water as ‘still’ or ‘sparkling’ without bothering to undertake a more detailed analysis of what is in the bottle!9 Similarly, it is highly problematic to lump European countries together as CMEs (e.g. see Schmidt, 2002).10 Yet, it is possible to say that closer state–business relations in CMEs versus a preference for the separation of the state and markets in LMEs, produces different regulatory outcomes from the outset, because of differences in the ‘rules of the game’, or what Drezner (2007, pp.40-41) terms “initial preferences” that are determined by a regulatory “domestic status quo” that reflects national historically “embedded institutional structures”. These are considered in the following section in respect of fuel economy regulations specifically and their outcomes.

The Implications for Regulating the Industry’s Carbon Emissions

What should the car industry do to reduce its contribution to global carbon emissions? Because 75-80 per cent of CO₂ emissions over the lifecycle of a car occur in use (Deutsche Bank, 2004, p.58; JAMA, 2009a, p.1), with a fixed relationship between the amount of fossil fuel combusted in its engine and the CO₂ this produces, the way in which the industry can reduce its contribution to climate change is to dramatically reduce the CO₂ emissions of its products by improving their fuel economy. Regulations have been implemented in the EU, US and Japan to encourage such an outcome, yet these have emerged in very different ways that reflect the institutional basis for the relationship between business and the state in each territory. There is clearly a more cooperative, coordinating, CME-like relationship to the regulatory process and its outcomes in the EU and Japan, versus a sense that fuel economy regulations have been imposed on an unwilling industry in the US which perceives them as an unwelcome market intervention. There have therefore been more voluntaristic aspects on the

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9 For a comprehensive discussion of the debates and controversies surrounding the VOC approach, see the contributions in Hancke (2009).

10 Methodologically this is the problem discussed by Sartori (1970), and Collier and Mahon (1993).
part of the industry in setting regulatory targets in the EU and Japan, versus a more lobbying-conflict relationship between the industry and regulators in the US.

The CME(-like) Institutional Basis for Regulations in the EU

The EU’s largest economy is Germany, and it is usually held up as the exemplar of the CME category. The German state has historically played a “passive, facilitative role” (Wilks, 1990, p.138), working with firms and industry associations to further national objectives, and helping to coordinate firms’ activities. As such, the German state may be thought of as an “enabling state” (Streeck, 1997, p.38) in which the government aims to develop consensus between powerful business actors, both via laws as well as by way of constructive discourse. The German version of European CME capitalism is important because authors such as Esping-Andersen (1990) and Crouch (2005) see Germany as representative of a continental European model. Pauly and Reich (1997) concur, on the basis of Germany’s regional dominance in production, sales, and key technologies. I have also previously argued that regulatory processes in the EU are characterised by extensive coordination between industry peak bodies and regulators, with this occurring in the context of “an iterative process involving rounds of negotiations, compromise, and consensus-building” (Mikler, 2009, p.81) that would be hard to characterise as LME-like. Indeed, Drezner (2007) finds that “the European Union, and its prominent role in fashioning environmental and social regulation, can be thought of as a natural extension of coordinated market institutions” (Drezner 2007, p.42; see also Bretherton and Vogler, 1999).

With this in mind, the key point to make is that the EU’s targets for CO₂ emissions of new cars were not imposed on the car industry, but formulated by the industry itself. In 1995, the Association des Constructeurs Européens d’Automobiles (ACEA) was invited to make voluntary commitments to reduce new car CO₂ emissions for cars sold in the EU through a Joint Declaration with the European Conference of Ministers of Transport (ECMT). These commitments were submitted to the European Commission (EC) in July 1998, and subsequently made a Directive. This Directive also included voluntary commitments from the Korean and Japanese manufacturers’ associations. As such, the outcome may be seen as a case of co-regulation, with voluntary commitments resulting in binding regulatory targets (Sauer et al., 2005; ECMT, 2003; ACEA, 2002; ADB, no date).

As Figure 1 shows, the EU’s approach has produced substantive results, especially early in its implementation. However, after 2001 the industry seemed to stall somewhat in making further CO₂ emission reductions, and the 2008 target was not met. The result has been the recent imposition of more formal regulations, including the imposition of a new, tougher 2012 target, along with penalties for non-compliance which the industry has balked at (Official Journal of the European Union, 2009; ACEA, 2007). This could be seen as a move towards a more LME-like relationship where regulatory requirements are more imposed rather than voluntarily negotiated, and where the model for the relationship is more one of lobbying-conflict than cooperative consensus. However, there are reasons to think this is not the case. The EC itself has found that for the CO₂ reductions already delivered “the impact of labelling and fiscal measures has been negligible, while the voluntary commitments delivered the bulk of the reductions” (Commission of the European Communities, 2007a, p.2). The EC also stresses that it does not anticipate relying on the threat of penalties to achieve further CO₂ emission improvements, stating “most manufacturers are expected to meet the target set by the legislation, so significant penalties should be avoided” (European Commission, 2009, p.2). In any case, the EC has stressed that it regulates the industry with the industry’s interests in mind, noting that “the most competitive autoindustries are located in the regions
where the most ambitious fuel efficiency standards are applied, namely Europe and Japan” (European Commission, 2007, p.4).

For the industry’s part, the ACEA says it retains an “unwavering commitment to further reduce CO₂ emissions from cars” (ACEA, 2007). This was even the case as it disputed the reasonableness of the tougher target, especially given the industry’s concern for its financial viability following a dramatic fall in sales in the aftermath of the financial crisis (ACEA, 2006; ACEA, 2008a). And it is telling that given this concern, the industry sought financial support to invest in further CO₂ emission reduction technologies, rather than a loosening of the regulatory standards themselves. In stating its continued commitment to further CO₂ emission reductions, the ACEA has not stressed the importance of market forces, so much as a coordinated approach to help achieve further improvements given the difficult economic circumstances. It has also stressed its appreciation for the flexibility the legislation allows the industry in dealing with the “risks caused by largely unpredictable factors including consumer preferences (and) market trends” (ACEA, 2008a). It does not wish to be left alone to address the demands of market forces, instead desiring a “partnership” with regulators and an “integrated approach” (ACEA, 2008b).

The key point is this: both the industry and the regulator concur that it was the CO₂ emission reductions that were proposed by the industry itself, rather than imposed on it, that delivered the results achieved so far, and both remain committed to delivering further reductions in a spirit of partnership. Will the industry meet the new standard? This is hard to predict, although Figure 1 demonstrates that there has been a long-standing, unbroken downwards trend in emissions of all new passenger cars sold in the EU. Early indications are that progress in achieving further improvements have been accelerated post-2007, but such a trend of reductions in carbon emissions demonstrates that this is not a new phenomenon.

**Figure 1: Average CO₂ Emissions of New Passenger Cars Sold in the EU15**

![Average CO₂ Emissions of New Passenger Cars Sold in the EU15](image)

Sources: Commission of the European Communities (2009: 8), except data for 2008 which is from European Commission (2010, p.3).¹¹

¹¹ Note that the reason for using EU15 data is that the EU15 member states accounted for 92 per cent of new passenger car registrations in the EU in 2008 (European Commission 2010, p.6). There are also some minor discrepancies between the data for the period 2000-2007 from each report that cannot be accounted for, however, these do not materially affect the results overall.
The CME Institutional Basis for Regulations in Japan

Many authors have noted an almost symbiotic relationship between the state and business in Japan’s history of economic development. An ‘iron triangle’ of business–bureaucracy–government relations means that a type of “corporatism without labor” characterises Japanese economic relations, in the context of a belief that “capitalism needs the visible hand of the state” (Broadbent, 2002, p.143). Though not a centrally planned economy, Japan has traditionally been seen as representative of the model behind the East Asian developmental state. The government has historically had a vision for the goals of the private sector, arranged preferential allocation of capital to targeted industry sectors and key firms, and possessed a bureaucratic architecture designed specifically to consult and work with firms and industry sectors (e.g. see Johnson, 1995). By comparison to Germany, authors such as Dore (2000) and Vogel (2001) have pointed to a more cultural basis for enduring CME relations in Japan versus a more legal basis in Germany. But whatever the nuances, in both the line between business and government interests is more blurred than in the US, and this can be seen in the manner in which fuel economy regulations have been developed.

Since 1998, Japanese fuel economy targets have been set on the basis of the Top Runner Method. Rather than imposing ambitious targets for firms to achieve, this method sets standards based on the most efficient model in a given weight class, with all manufacturers then given time to match it (e.g. see METI and ECCJ, 2008; OECD, 2002a; ECMT, 2001). In a similar vein to the EU’s regulations, the industry itself is therefore involved in setting regulatory targets, though in Japan’s case firms are largely asked to do no more than achieve what is already industry best practice. From an LME perspective, this looks close to no regulation at all, but the following observation by Arima (2000, p.3) on how fuel economy improvements are enforced is noteworthy:

If a certain manufacturer or importer cannot comply with the target by the target year, the MITI Minister will issue [sic] recommendation to it, and if it fails to abide by the recommendation, its name will be made public or [sic] administrative order will be issued. This provides a very strong incentive for manufacturers and importers to comply with the Top Runner targets.

Rather than stressing legal or financial penalties for noncompliance, the Japanese system exemplifies the CME preference for solving coordination problems via reputation and relationships.

As with the EU, the results have been impressive, if anything more so. Figure 2 shows that the Japanese car industry has met regulatory targets well in advance. Since 1996 it has continuously improved the fuel economy of the cars it has sold, and appears likely to soon meet and exceed the 2015 standard recently set. Clearly, the Japanese industry has acted well in advance of imposed standards, and these standards continue to reflect as much as lead firms’ efforts to reduce carbon emissions. This is because the Top Runner Method does not impose an ambitious target on firms, so much as set one that is already attainable by the most efficient producers. Those that lead in fuel economy efficiency effectively set the regulatory pace. The industry has therefore internalized fuel efficiency as part of doing business because of the institutional structure of government–business relations, and the reflection of this in the manner in which standards are set.

As such, in its position statements the Japanese Automobile Manufacturers Association (JAMA) makes statements even more unequivocal than those of the ACEA when it declares its support for the government’s position, and its intention to produce ever more fuel efficient products to meet the challenge posed by climate change. This, after all, it sees as its

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12 Perhaps the most obvious, even famous, agency in this bureaucratic architecture is the Ministry for International Trade and Industry (MITI), now renamed the Ministry of Economy Trade and Industry (METI).
“responsibility” (JAMA, 2008b, p.2), and it seeks to deliver on its responsibility not so much by responding to market forces as in a coordinated fashion it describes as “an integrated approach involving all stakeholders concerned” (JAMA, 2009a, p.1; see also JAMA, 2009b, pp.24-25). Regardless of current market conditions, which it acknowledges as being difficult, JAMA proclaims that its members remain “committed to achieving fuel efficiency targets as early as possible and…energetically introducing into the market vehicles that meet or surpass those targets” (JAMA, 2009a, p.3). The causality is reversed from that which is the conventional wisdom: the Japanese industry continues to shape the market and set the regulatory pace, rather than the converse being the case.

Figure 2: Average Fuel Economy of New Passenger Cars Sold in Japan

![Figure 2: Average Fuel Economy of New Passenger Cars Sold in Japan](image)

Source: JAMA (2009b, p.25), except data for 1995 which is from JAMA (2008a, p.25).

The LME Basis for Regulations in the US

Though the details may differ, German and Japanese firms both operate within a CME-like collaborative-consensus setting where business and government have developed regulations, agreed on targets to be met, and established priorities and goals to be achieved. This does not mean that firms in the EU and Japan are eager to be regulated, but it does mean that they have worked closely with regulators to find solutions in a spirit of consultative decision-making rather than confrontation (e.g. see Schreurs, 2002; Desai, 2002a and 2002b; OECD, 1996). By contrast, especially in the absence of a crisis, US firms desire more deregulation and a hands-off laissez faire approach to the market by government. As such, US firms’ ‘cooperation’ with government has more of an emphasis on regulatory ‘capture’ as its goal rather than partnership, with this in the context of a lobbying-conflict model.

This contextualises the observation that historically “the US Congress has repeatedly rejected bills proposing higher fuel economy standards and has shown no willingness to take action on climate change” (Austin et al., 2003, p.6). With an preference for market forces and competition as the preferred drivers of capitalist relations of production, it was only with the crisis of the OPEC oil shock in the 1970s that regulations in the form of corporate average fuel economy (CAFE) standards were introduced in the US at all. No rationale of environmental protection was ever behind them, nor was one created (Crandall, 2003).
Instead, the rationale for them was primarily tied up in a concern for energy security, and to reduce dependence on foreign oil (NHTSA, 2009a). Indeed, it was only in September 2009 that greenhouse gas emissions were explicitly linked to the CAFE standard (EPA, 2009).

For the industry’s part, it has contended, LME-style, that consumer demand should be the key determinant of fuel economy, that there should be no increase in the CAFE standard, and that the purchase of more fuel efficient vehicles should be encouraged via government subsidies to consumers, not industry regulation. Whatever the merits of stronger environmental safeguards, it has also previously declared that economic returns should come first as a way of generating these (AAM, 2004a, b and c). It still contends that “automakers will need consumers to purchase lower CO₂, more fuel-efficient autos in large volumes in order to meet federal standards,” and if it must face fuel economy standards “any effective program to address climate change must be built on a single, strong national standard to provide certainty in product planning” (AAM, 2009).

There is a danger in drawing caricatures here. Of course, European and Japanese manufacturers desire certainty in regulation and have an eye on market conditions for their future profitability. However, the difference is one of emphasis. For the US industry, market conditions remain a, perhaps the, key determinant of its firms’ ability to deliver carbon emission improvements, and the role of government is to strongly intervene to set binding standards rather than an ongoing process of partnership. The result is that there has been far less internalization of environmental externalities through regulation in the US than in the EU or Japan, where regulations are clearly seen by both regulators and the industry as a way of meeting carbon emission targets.

This is reflected in the results of the regulations. The CAFE standard for cars in 2009 was the same as in 1985 (National Research Council, 2002, p.21). Despite the standard not being tightened over this long period of time,¹³ Figure 3 demonstrates that US firms did not manage to meet it until 1993. While they did meet it after this, their performance was mixed with worsening fuel economy results in some years. Furthermore, until 2000 imported vehicles were consistently more fuel efficient, and this suggests that the improved fuel economy of domestically produced cars thereafter was due to the competitive pressures US producers faced as they lost market share to non-US competitors – i.e. competitive factors expressed through the market. Indeed, US firms have lost market share to foreign headquartered firms to a far a greater extent than has occurred for European and Japanese firms in their home territories, to the point that in 2009 they only had a minority 44 per cent share of the market (No Author, 2010).¹⁴

¹³ The standard was actually relaxed in the 1980s, before being brought back to this level again in 1989. Therefore, there was regulation for worsening fuel economy before the 1990s (OECD, 2004).

¹⁴ This is also not a recent trend. Even in 2002, Asian and European brands accounted for almost 40 per cent all new car registrations in the US. Such market penetration by foreign producers is not as pronounced in Europe, while in Japan 94 per cent of new car registrations were of Japanese brands (Mikler 2009: 21).
A peculiarity of the US market is its dominance by light trucks in the form of sports utility vehicles (SUVs) and pick-up trucks. Sales of these grew over the course of the 1990s to the point where they accounted for 50 per cent of all passenger vehicle sales by 2002 and have done so ever since. This is because US firms were able to extract strong profit margins from the sale of such vehicles, while also facing weaker CAFE standards for them (Bradsher, 2002). The result is that as consumers shifted from ‘normal’ passenger cars to light trucks, the average fuel economy of the US fleet of passenger vehicles has actually deteriorated (OECD, 2004). In addition, Figure 4 suggests that US firms have had trouble meeting the light truck CAFE standard since 1993. Imported light trucks have consistently out-performed them, and one might surmise that the fuel economy improvements after 1995 were mainly driven by imported vehicles. This is hard to prove, because the US National Highway Traffic and Safety Administration (NHTSA), which is responsible for administering the CAFE standards, decided to cease classifying light trucks as domestically produced versus imported after 1998. Even so, the data does show that of the five top selling brands, which together accounted for over 90 per cent of all light truck sales, those of Honda and Toyota were more efficient than those of their three US-based competitors from 2000-2009 (NHTSA, 2009b, pp.8-16). Therefore, in light trucks, where US firms dominate the market, foreign producers have played a key role in driving the overall fuel economy improvements of SUVs and pick-up trucks as much as stricter standards.

Source: NHTSA (2009b, p.4).

15 There has always been a weaker CAFE standard for light trucks than cars.
The conclusion to be drawn is that since 2000, the US industry has been effectively constrained by CAFE standards, and perhaps foreign competition. The latter is definitely the case in respect of light truck sales. Not only are the US regulations weaker, but US firms have not met them as well as European and Japanese firms have met theirs, nor with an unbroken downward trend in fuel consumption. In the absence of an oil shock over a prolonged period of time, it remains fair to say that the US industry has primarily viewed fuel economy standards as an unfair burden. It is only with a threat to some of its firms’ existence in a time of uncertainty, that President Obama was able to foreshadow the tightening of fuel economy regulations, with this on the basis that there be “a willingness to look past our differences, to act in good faith, to refuse to continue the failures of the past, and to take on this challenge together” (The White House, 2009b). At the end of the day, this leaves the US attempting to catch up to the more “ambitious” targets of the EU and Japan (European Commission, 2007, p.4).

**Little Evidence of the Environmentally Positive Impact of Tumult**

It would be an exaggeration to claim that comparative institutionalists assert that change does not happen at all, though this seems to be the basis of arguments by those who prefer an agency-focused approach such as Schmidt (2009, 2010), Blyth (2002), and Hay (2006). Also by those who fear that taking a comparative institutional approach with the institutional basis for actors’ interactions seemingly ‘fixed’ inevitably “flattens history” and thereby ignores “the moments of crisis and conflict that are a central part of comparative political economy” (Howell, 2003, p.112; see also Streeck, 2001). This would be a fair enough point if the evidence supported such arguments. However, in this case it does not. Instead, it supports the arguments of others such as Olsen (2009), contributors to Mahoney and Thelen (2010), and indeed the majority of scholars in the comparative institutionalists tradition who stress that change occurs gradually, with change and actors’ preferences both bounded and enabled by the institutional structures already in place. For example, in response to the tumult of
recent years, and despite dramatically rescuing much of its automotive industry, the US government has not adopted anything like the co-regulatory approach to reducing carbon emissions evident in Japan, nor called on its key firms to set national regulatory targets as in the EU. Therefore, perhaps paradoxically, a US government takeover of a firm such as General Motors does not equate with US government control. In the short-term at least, this would mean too much of an infringement of the ‘rules of the game’ of US capitalism.

Yet, those with a desire to more explicitly focus on the tumult of recent years will no doubt be throwing their hands in the air by now. They will do so on the basis that surely the resulting turmoil is not insignificant. After all, new vehicle registrations remain down by around 8, 14 and 10 per cent in Western Europe, Japan and the US respectively compared to 2007 levels (ACEA, 2009b; JAMA, 2010; NHTSA, 2009c). On top of this, consumers have had to contend oil prices that rose by over 300 per cent between 2003 and 2008, and which have since stabilised at more than twice pre-2004 levels (IEA, 2009a). Inevitably, as Figure 5 demonstrates, such an oil price spike fed through into gasoline and diesel prices which rose by 103 and 71 per cent respectively in the US, 81 and 58 per cent in Japan, and 82 and 54 per cent in OECD European countries over 2000-2008. This is regardless of state taxation policies because, as Figure 6 shows, the percentage of taxes in gasoline and diesel prices in the US, Japan and the major European markets all fell over the period considered. So, the market was in charge rather than regulatory market mechanisms.

**Figure 5: Real Gasoline and Diesel Prices**

![Graph showing real gasoline and diesel prices from 2000 to 2008](image)

Source: IEA (2009a, p.335 and 337).

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16 These are conservative estimates. For example, Shenk (2009) estimates that the contraction in the US market has been in the vicinity of 18 per cent.

17 Gasoline prices are for premium unleaded (RON1995), except in the case of Japan where they are for regular unleaded. Real prices were calculated using consumer price index data provided on p.70.
Intuitively, this should mean that car owners used their cars less, and, especially given the negative market conditions, expressed a preference for more efficient new car purchases (as is suggested in OECD, 2008). However, this is not necessarily the case. Factors other than fuel prices tend to influence the usage profiles of passenger cars, so that demand for fuel is highly price inelastic. This “implies that short-run supply shocks have bigger price effects and that long-run demand will not be curbed strongly as prices rise” (Small and Van Dender 2008, p.182). Post-2007 comparative data is not yet available, but I have previously demonstrated that fuel price rises are often counter-intuitively associated with both longer distances travelled and increased fuel consumption, and vice versa (Mikler 2005, 2009). In other words, the link between the two is tenuous.

Because demand for petrol, diesel, and oil generally is price inelastic, the claim that taxation of fossil fuels is necessary for combating climate change in the case of passenger motor vehicles is therefore highly questionable. First, as demonstrated in Figures 5 and 6, taxation levels often bear little relation to final prices faced by consumers. While it may be elegant in theory to say that taxes need to be set at the ‘right’ level to achieve efficient outcomes, in reality market forces mean that this is often very difficult. Secondly, taxes are extremely politically unpopular. It is difficult for democratically elected governments to introduce very high taxes on petrol and diesel necessary to effect behavioural change on the part of consumers, or to dramatically increase those already in existence, without facing electoral backlash (e.g. see the discussion in Harrington and McConnell, 2003, pp.52-53). Thirdly, it may be completely impossible for governments to find the right level of taxation in what is a complex world where price effects may be overrun by national and region-specific factors. For example, in the US where around 90 per cent of all travel is by motor vehicle, higher fuel prices only serve to increase costs faced by people on lower incomes who have little choice but to rely on car travel by comparison to car owners in European and East Asian

Source: IEA (2009a, p.308 and 312).

- Expecting to find evidence of the applicability of fundamental tenets of microeconomic theory (e.g. higher fuel prices lead to lower consumption) at the level of international comparisons is ambitious.
- There are many reasons apart from energy prices, why countries have different patterns of transport energy consumption.

There is more reason to think that dramatically higher prices coupled with the effects of the financial crisis should have affected consumer’s choice of vehicles rather than their use, leading them to purchase smaller, more fuel efficient vehicles over larger, less efficient ones. But again, the data does not support this, and instead demonstrates the endurance of distinct national and regional market profiles. For example, despite diesel being both a more efficient fuel and cheaper than petrol in Japan, virtually no diesels are sold there. In fact, the share of diesels in total Japanese new car sales actually fell over 2000-2008 from 0.4 per cent to 0.07 per cent (JAMA, 2009c, p.12). The fuel economy benefits of shifting to diesels have also not enticed US consumers, with the market share of diesel vehicles remaining at 0.1 per cent over the same period (EPA, 2009, p.29). Only in the EU has there been an enthusiastic embrace of diesels. It is often asserted that the price differential between diesel and gasoline is the reason for this, yet Table 1 demonstrates that there is actually an inverse relationship between the percentage difference in petrol versus diesel prices and the share of diesel vehicles sold in the EU’s largest markets for passenger vehicles. Despite the price differential diminishing over the period shown in Germany, France, and Italy, while petrol remained cheaper than diesel in the UK, the share of diesels increased in all four countries. This suggests that it is not so much price signals that have driven the uptake of diesels in Europe, as an understanding and embrace of the technology by European manufacturers, and an acceptance of diesel cars by European consumers (e.g. see ACEA, 2004). Indeed, this is something that non-European firms are cognisant of as they target the European market with diesel vehicles, while not doing so in their home markets (e.g. see Ford Motor Company, 2004; General Motors Corporation, 2004). Even if the market is ‘in charge’ in determining fuel prices and the underlying conditions of uncertainty that the industry faces in the wake of the global financial crisis, other national and region-specific factors continue to shape market profiles.

Table 1: Price Difference between Petrol and Diesel, and Diesel Market Shares in Key EU Countries

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Source: (IEA 2009a, p.335 and 337)

Other data on the market profiles of the US, EU and Japan tell a similar story. They demonstrate that there is a path dependence to firms’ existing production profiles and

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18 The International Energy Agency points out that in a typical US city such as Houston, around 95 per cent of all trips are undertaken by private motor vehicle, by comparison to 30-60 per cent in major European cities and 20 per cent in Hong Kong (IEA, 2009).
consumer preferences that has largely been unaffected by the current market uncertainties, so that trends in the attributes of new passenger car registrations that impact on fuel economy/CO₂ emissions have been largely unchanged.¹⁹ For example:

- Despite the biggest increase in fuel prices being experienced in the US, the average engine size of new cars sold has remained the same for the past 10 years, at around 3,300cc (EPA, 2009).²⁰ Similarly for Japan and Europe where the average engine size has hovered around 1,400cc and just over 1,700cc respectively (JAMA, 2009c, p.12; ACEA, 2009a). In the case of Europe, the average engine size of new cars was actually lower in the 1990s – i.e. counter-intuitively, consumers bought cars with smaller engines when fuel was cheaper and economic conditions more favourable.

- Both US and Japanese passenger car sales by class have been converging on a more even share of small, medium and large vehicles for the past 20 years. This is particularly the case for Japan, although it might also be said that since 2007 there has been no change in the share of vehicles from these classes at around 30-40 per cent each (EPA, 2009; JAMA, 2009c, p.8). In both cases, there have been falls in the share of small cars and growth in the share of larger cars despite rising fuel prices. Only in the case of the EU has there been a marked shift towards smaller cars in recent years, to the point where they now account for the majority of new car sales. Even so, this trend commenced in 2006, before the global financial crisis and before the oil price spike, so that these market factors may be claimed to have exacerbated the trend, but cannot be said to be the source of it (ACEA, 2009b).

- The US market remains distinctive for its 50:50 split between light trucks and cars sold as passenger vehicles, and this has been the case since 2002. Although the market share of such vehicles peaked in 2004 at 53 per cent, the drop in their sales to 49 percent in 2008 is the same as in 2002 when the US economy was booming and fuel a great deal cheaper. This again suggests that light truck sales in the US are at least as much a result of consumer preferences and firms’ production profiles as market conditions, at least in the short-term (NHTSA, 2009b, p.4). American consumers’ preference for medium and large light trucks over small light trucks has remained the case since 2001, with small light trucks accounting for only 2 per cent of the US light truck market (EPA, 2009).

- Whatever the excitement surrounding the potential for alternatively fuelled vehicles, including fully electric cars and hybrids, these account for only one per cent of new cars sold in Japan and the EU (JAMA, 2009c; European Commission, 2010). The data for the US is somewhat unreliable because it includes dual fuel vehicles. These are usually light trucks, and they almost never run on alternative fuels because even if their owners know this is possible, such fuels are very hard to buy and more

¹⁹ Note that two attributes that might have been considered are not: vehicle weight and power. Although it might seem obvious that sales of heavier, more powerful cars indicates a lack of concern for fuel efficiency and lower CO₂ emissions, this is not necessarily the case. For example, an increase in the average weight of vehicles sold may reflect a “trend towards installing more equipment for safety, comfort and utility” (OECD, 2004, p.15) rather than the purchase of larger cars and SUVs. Similarly, incremental advances in engine technologies mean that all engines have become more efficient. Therefore, smaller engines are now able to power heavier vehicles, and vehicles in smaller classes are now more powerful than they were without having larger engines. It is possible that a more powerful engine of the same size in a small car gets better fuel economy because it does not have to work as hard to deliver the same performance. Increases in engine power on their own cannot indicate preferences for performance over the environment, nor worse carbon emission outcomes, so much as advances which have simply made all engines more powerful.

²⁰ Albeit with a spike in 2004 that seems unrelated to any material market factors.
expensive. Therefore, in 2002 alternative fuel accounted for less than 0.2 per cent of all transport fuels used in the US (Austin et al., 2003, p.14).

The above analysis is not intended as a comprehensive explanation of the market profiles in these three territories. For example, the effects of government policies such as taxation strategies on new cars purchased is not considered, nor are a range of other nationally-specific market factors. However, the point should be clear that the tumult of recent years has produced neither dramatic nor universal results. Not only is there considerable institutional resistance to short term change at a regulatory level, such resistance is also suggested in these territories’ distinctive market profiles. This should not be surprising, if we consider the production profiles of the key firms headquartered in them, and the fact that these are neither easily nor rapidly changed.21

Conclusion

I doubt that we are in the midst of radical, transformational change in the case of the global car industry, and certainly doubt this for its contribution to carbon emissions. This is because the empirical evidence leads to two key conclusions. First, and most crucially, the enduring national institutional contexts in which large corporations remain based, such as those in the global car industry, have neither dramatically altered nor been radically transformed. Given that this is the case, the relationship between regulators and the industry still shapes territorially specific responses to reducing carbon emissions, and this continues to see Europe and Japan ahead of the US in making incremental improvements to the fuel efficiency and CO₂ emissions of new vehicles sold. Secondly, the path dependence of established market profiles in key states and regions is a better indicator of the potential for changes in the attributes of vehicles sold that affect their carbon emissions, than systemic shocks such as the global financial crisis and 2008 oil price spike.

Therefore, for the car industry at least, regulatory and market trends up to, including and immediately following the global financial meltdown and 2008 oil price spike seem better indicators of what is likely in future than what intuitively might be thought to be the impact of these twin crises. The specific institutional and market profiles in the industry’s traditional hubs remain of greater salience than such global events. Change has occurred, and is occurring, incrementally rather than discontinuously, within distinct national and regional institutional contexts that are not easily upset let alone erased. In the absence of a deeper and more enduring price shock and global depression, or perhaps the immediacy of catastrophic events as a result of climate change, none of which are to be desired, the path dependence of existing production profiles and national institutional contexts will continue to shape the industry’s future ability and efforts to reduce its carbon emissions.

Of course, it has to be conceded that the future is hard to predict. Dore et al. (1999) acknowledge this more generally in the conclusion to their comprehensive analysis of the development of the distinct capitalisms of the US, Germany and Japan. Like them, I will “leave readers to make their own predictions” (Dore et al., 1999, p.117). Nevertheless, it seems the case that history remains a better guide to predicting the future ability of the car industry’s key firms to reduce their substantial contribution to global carbon emissions, and in the absence of a more sustained and deeper crisis this will continue to proceed in incremental rather than radical steps.

21 For example, Ford’s F150 pick-up truck, which consumes more than 11 l/100km, has been the top selling vehicle in the US for the past 27 years (Ford Motor Company, 2008, p.8).
References


