Voluntary Approaches in Climate Policy: Comparing European and Swiss transport legislation

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Abstract

This paper investigates the effectiveness of voluntary approaches in a comparative case study on European and Swiss climate legislation. Voluntary approaches are known to be less environmentally effective and economic efficient than other climate policy instruments but easier to implement and more acceptable for the business community. Voluntary approaches are preferred for approaching 'new policy issues' where more stringent policies and measures could hardly be implemented. However, they are known to dilute or postpone effective legislation. Moreover, voluntary agreements may impose a potential threat on competition due to the high level of collaboration of its signatories. This case study compares the voluntary accords signed by the European Automobile Manufacturers Association (ACEA) and the Association of Swiss car importers (ASIA) signed in 1998 and 2002, respectively. Whereas ACEA committed to decrease average CO2 emissions from new passenger to 140g/km, ASIA committed to reduce average fuel consumption to 6.4l/100km by 2008. Both agreements failed. Average emissions of new cars in Europe was still greater than 150g CO_2/km, and average fuel consumption of newly imported cars to Switzerland was 7.1l/100km in this year. Our case study discusses the reasons for failure and assesses the effectiveness of voluntary agreements as climate policy instrument. Based on expert interviews with Swiss car importers and Swiss and German car experts, the achievements of the voluntary accords signed in Switzerland and the EU are compared. In Europe, stringent legislation had been postponed several times particularly due to political pressure of German premium car brands. In Switzerland, the majority of the interviewed firm representatives shows only low awareness of the motivation and purpose of the agreement and different understanding of responsibility.

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1. Introduction

The transport sector is one of the major contributors of greenhouse gas emissions. Between 1990 and 2006, greenhouse gas emissions from transport increased by 28% in the European Union, whereas emissions decreased by 3% across all other sectors. In 2006, cars accounted for 73% of transport emissions. The increases in car ownership and annual distance driven have offset vehicle-efficiency gains (Brink 2010). CO_2 emissions from private transport need to be addressed in order to combat dangerous climate change effectively. As a first attempt, in 1998, the European Commission signed together with the Association of European Car Manufacturers (ACEA) a voluntary agreement on the reduction of average CO_2 emissions of passenger cars to 140g CO_2/km by 2008. In addition to this 25% reduction target that should be reached by technical measures, energy efficiency labeling and fiscal measures should be implemented as supporting measures. After the intermediary target of 165g CO_2/km was met in 2003, average emissions were still 154g CO_2/km in 2008. The European car manufacturers failed to commit to their voluntary target.

In Switzerland, the transport sector accounted for 36% of energy related CO_2 emissions in 2005. Transport emissions increased by 8.2% between 1990 and 2005. This development can be explained by population growth, but also by an increasing demand for mobility and consumers' preferences for heavy vehicles. Between 1989 and 2005, both, Swiss population and daily distance travelled per person, have increased respectively by 12% and 15% (SFOS 2010).

For addressing CO_2 emissions from transport, the Swiss CO_2 law formulates a reduction target of 8% for transport emissions between 1990 and 2010. According to the subsidiarity principle, Switzerland has approached the realization of this target by introducing voluntary measures. In 2002, the Association of Swiss Car Importers (ASIA) signed together with the Swiss government a voluntary agreement on the increase of fuel efficiency of newly imported vehicles. The aim of the accord was the step-wise reduction of average fuel consumption from 8.4l/100km to 6.4l/100km between 2000 and 2008. Together with the 'Climate Cent,' a levy of 1.5ct per litre of gasoline spent for emissions' mitigation projects, these voluntary accords were the only policy measure implemented for tackling emissions from transport in Switzerland (Niederberger 2005; Thalmann and Baranzini 2008). At the end of 2008, average fuel consumption of newly imported cars in Switzerland still was 7.14l/100km, and emissions from transport have been increasing.

The Intergovernmental Panel on Climate Change (IPCC) defines voluntary agreements (VAs) as follows: *"An agreement between a government authority and one or more private parties with the aim of achieving environmental objectives or improving environmental performance beyond compliance to regulated obligations. Not all VAs are truly voluntary; some include rewards and/or penalties associated with participating in the agreement or achieving the commitments." (IPCC 2007)*

According to Thalmann and Baranzini (2005), there are three categories of voluntary approaches in environmental policy: unilateral self-regulation, negotiated agreements, or public voluntary programmes. Prominent examples in climate policy are the Carbon Disclosure Project, the agreement of European car manufacturers on emissions standards (Ryan 2008), or the voluntary agreements of the Swiss economy for emissions reduction (Baranzini, Thalmann et al. 2004).

Voluntary approaches tend to be popular with those directly affected and can be used when other instruments face strong political opposition (Thalmann and Baranzini, 2005). In contrast to other climate policy instruments, voluntary agreements enforce co-operation of the regulated and the regulator. They contribute though to closing the information gap. Moreover, they require co-operation and co-ordination among polluters. VAs are flexible in target setting and the ways to reach the target. However, incentives are needed for successful design of VA, and the regulator needs credible threat in case of non-compliance.

Motives for firms to participate in voluntary programmes are benefits on the demand or the supply side. On the supply side, 'no regret' or 'win-win' opportunities that may lower production costs are reasonable motives for firms to participate in a voluntary agreement. In some cases, the VA may help to overcome some barrier for technology lock-in. Participants can benefit from collective learning about abatement options or technical assistance by the government. On the demand side, voluntary accords can signal green preferences and make consumers sensitive on environmental issues. Also regulatory gains from strategic preemptive behavior can be reasons for the 'institutional entrepreneur' to engage voluntarily, e.g. by setting high technology standards (DiMaggio and Powell 1983; Lyon and Maxwell 2003; Brau and Carraro 2004; Brau and Carraro 2004). Vice versa, regulatory threat has been known as motivation for voluntary approaches (Segerson and Miceli 1998), which might risk lower target setting and interest group influence (Krarup 2001). Signing a voluntary agreement might dilute or postpone more demanding regulation like taxes or command and control regulation (Thalmann and Baranzini 2008). Moreover, voluntary action can raise competitiveness issues. Information exchange within an

agreement can increase market concentration which might provoke collusive behavior and could thus have adverse effects on competition (Brau and Carraro 2004).

The literature suggests that voluntary approaches are known to be less environmentally effective and economically efficient than other market based policy instruments, e.g. a Pigou tax or permit trading (Lyon and Maxwell 2003; Thalmann and Baranzini 2004). However, voluntary approaches are likely to be more acceptable for the regulated since they are involved in the negotiation process. VAs are thus a suitable tool for approaching new policy issues as transition measure or in case of weak institutions where it might otherwise be impossible to implement binding legislation (Krarup 2001).

According to the literature on voluntary approaches, targets are likely to be less ambitious or compare to business as usual scenarios only (Krarup 2001; Glasbergen 2004; Thalmann and Baranzini 2004). The underlying hypothesis for this research question is that the measures taken by the signatories of the agreement were not sufficient. Furthermore, a collective action problem might explain the result (Segerson and Jones 2004). Regarding the motivation for signing a voluntary accord the literature suggests that regulatory gain and preemptive behavior make voluntary approaches attractive for firms (Lyon and Maxwell 2003; Brau and Carraro 2004; Brau and Carraro 2004). Vice versa, regulatory threat has been identified as an important motivating factor for signing voluntary agreements (Segerson and Miceli 1998; Krarup 2001).

The aim of this paper is to compare the two voluntary agreements signed by ACEA in 1998 and ASIA in 2002 in a comparative case study. We discuss the motivation for signing and the performance of both agreements. Furthermore, we review the consequences of non-compliance for both cases. The approach for dealing with these multiple questions is the case study as suggested by Yin, with expert interviews as major data source (Yin 2003). The structure of the paper is as follows: The next section describes the method and data used in this paper. Section 3 describes the voluntary agreement of the ACEA signed with the European Commission in 1998. Section 4 describes the voluntary agreement of the ASIA signed with the Swiss Confederation in 2002. Section 5 compares and discusses both cases, and the final section concludes.

2. Method and data

Following a phenomenological approach, the case study is selected to deal with the research questions formulated above. By definition, the case study is a monographic approach employing various methods

such as interviews, participant observation or field studies for illustrating empirical evidence for qualitative research on more than one research question. The case study is a method by which a bounded social phenomenon is accurately described doing fully justice to its context. It is a suitable approach for complex research on real-world situations dealing with multiple research questions and different data sources where the boundaries between context and phenomenon are not evident. It investigates research related to 'how' and 'why' questions and further explores the phenomenon using an inductive approach (Yin 2003).

The economic literature on voluntary agreements is mostly theoretical. However, the case study approach has been applied by some authors in order to show empirical evidence on voluntary accords, e.g. on the German industry associations (Alberini and Segerson 2002), the U.S. chemical industry (King and Lenox 2000), French car manufacturers (EEA 1997) or the Swiss economy (Baranzini, Thalmann et al. 2004).

The case of the voluntary agreement requires methods that are suitable for interdisciplinary applied research with multiple research questions and different data sources. For exploring the different research questions related to this case, including 'how' and 'why' questions, the case study is chosen as research approach. Bibliographic sources and transport statistics provide the material for illustrating the case of the Swiss car importers and answering the research questions.

For addressing construct validity, different data sources will be used for data triangulation. The most important data sources are expert interviews that were carried out for the case studies. Moreover, documents, as for instance press releases, advertisements by the firms and personal information of the Federal Administration, and the Car Associations have been collected in the case study database. In particular, a visit of the 'Salon d'Automobile' in Geneva, Switzerland's greatest car exhibition, gave insights about the product strategies of the car industry. For the European case, 5 semi-structured interviews were carried out with experts from the European Commission, the German administration, the German Association of Car Manufactures (VDA), and environmental and transport NGO's. Further information is based on official documents of the bodies of the European Union and the existing scientific literature on the voluntary agreement of the ACEA (Ryan 2008; Brink 2010; Hey 2010).

For the Swiss case, 20 semi-structured face-to-face interviews were carried out with 15 directors and PR managers of Swiss car importing firms and 5 experts from research, NGO's and the association of Swiss car importers and the Swiss administration in June and July 2009 (for meta-data, see Annex). The firm

sample covers 65% of the Swiss car market. The experts were interviewed in order to control for the validity of the answers provided by the firm representatives regarding the deductive research questions. The information provided by the car experts is also used as input for the subsequent analysis. The interview questions were open and semi-structured covering market- and non-market issues. These included questions on the firm's perception of climate change and climate policy, chances and risks accruing from climate change and climate legislation, the firm's environmental strategy, the motivation for signing the voluntary agreement, measures taken by the firm, the satisfaction with the agreement and the work of the industry association, and further policy recommendations. The questionnaire served as guideline for the interviews. Meta-data was noted shortly after the interviews. The interviews were transcribed, and the data was coded with the software package Atlas.ti.

3. The voluntary agreement of European car manufacturers

In Europe, the need to reduce CO_2 emissions from transport became clear already in the late 1980s. At that time, the institutional body for legislative proposals was the Motor Vehicle Expert Group consisting of functionaries and car experts of EU member countries. The aim was to develop together with stakeholders of the car industry a global approach independent from former policies on behalf of the European Commission. In the early 1990s, a parallel discussion on emission target values took place. At this time, Greenpeace presented the 3 litre car emitting approximately 90g CO_2/km. The discussion between the European Commission, industry representatives, environmental NGO's, and national experts yielded the first landmark of 120g CO_2/km as possible target value. In December 1994, the proposal to limit CO_2 emissions from passenger cars to 120g CO_2/km was tabled at the Environmental Council meeting as result of lack of improvement in fuel economy of vehicles. This proposal was objected by the industry claiming that only 160g CO_2 would be achievable. The resulting compromise negotiated between these two positions was 140g CO_2 as target value for the car manufacturers. Furthermore, reduction of 20g CO_2/km should be achieved by 'accompanying measures', i.e. energy efficiency labeling, tax measures, etc. (Communication of the EC 1996).

In 1995, the European Commisson's CO_2 emissions reduction strategy notes the goal of 120g CO_2/km (EC 1995). This corresponds to a 35% reduction of average emissions (186g CO_2/km) or an average consumption of 5 l/100km for cars with petrol engines and 4.5 l/100km for diesel engines. Also in 1995, the European Parliament formally supported that by 2005 any new cars registered in the EU should emit a mean of only 120g CO_2/km. In 1996, the Environmental Council endorsed the target but added some

flexibility stating that 'should it appear that it is not possible to fully achieve the objective by 2005, the phasing could be extended, but in no case beyond 2010' (Brink 2010).

In 1998, the the Association of European Car Manufacturers (ACEA) commits voluntarily to 'limit average specific emissions from newly registered passenger cars to 140g CO_2/km by 2008' with an intermediate target of 165-170g CO_2/km in 2003[2] (EC 1998). This would correspond to a 25% reduction of CO_2 emissions. This target was drafted in a so-called 'Memorandum of Common Understanding', which was communicated as an exchange of letters between the European Commission and the ACEA. It was no prosecutable contract. No sanction mechanisms were provided. The commitment was signed by Bernd Pischetsrieder, former director of BMW, on behalf of ACEA. The idea of voluntary self regulation was eventually initiated by the German car manufacturers based on their experience with a voluntary accord in the 1990s.[3] The self commitment included some technical details on measurement and monitoring. ACEA notes that in any possible extension to the agreement, it would review the potential for further CO_2 emission reductions with a view to moving to 120g CO_2/km by 2012, which the Commission 'warmly welcomed' (EC 1998). The commitment was communicated to the EU Council and the Parliament as 'one of the elements of the community strategy to reduce CO_2 emissions from passenger cars and improve fuel economy' (EC 1998). In 1999 and 2000, the European Commission 'recognizes' these commitments that were formally referred to as 'recognized self-commitments' (EC 1999). The Commission formally recommended the car manufacturers to reach the target value by 2008. Hence, associations were 'encouraged' to make commitments under the threat of legislation. This voluntary accord was considered as 'flagship for better regulation' relying on means other than regulation. It was an intergovernmental multi-stakeholder coordination. EU climate policy became though an early experimenting ground for 'new modes of governance' relying on soft policy instruments, shared national and private responsibility and networking (Hey 2010). Better regulation was associated with less bureaucracy, less prescription, renationalization of responsibility and open-ended programming approaches; no top-down regulation. After the first attempts of centralized rule-making in EU climate policy – the implementation of the energy tax failed in 1992 – voluntary approaches were highly appreciated as 'new policy approach' (Hey 2010). The idea of voluntary approaches was also welcomed by political decision makers at that time. The two responsible functionaries of the European

[2] European Automobile Manufacturers Association (ACEA): BMW AG, DaimlerChrysler AG, Fiat S.p.A., Ford of Europe Inc., General Motors Europe AG, Dr. Ing. H.c.F. Porsche AG, PSA Peugeot Citroën, Renault SA, Volkswagen AG, AB Volvo

[3] According to the German Association of Car Manufacturers (VDA), the German car manufacturers had already committed to voluntary self regulation in the early 1990's.

Commissions were two young and dynamic personalities, former ambassadors, that were open for stakeholder cooperation and new ideas on policy design. The car industry was interested in voluntary approaches since they promised to be less demanding than conventional policy measures. However, the European Parliament was initially against voluntary measures. The Maastricht Treaties stipulated co-decision of the European Parliament and the Council for environmental policy. Since voluntary approaches were not legally defined as policy measures, they were out of parliamentary control.

In 1999, the Japanese and the Korean associations of car manufacturers, JAMA and KAMA, committed to limit average specific emissions from newly registered passenger cars to 140g CO_2/km by 2009. ACEA and JAMA committed themselves to introducing car models emitting 120g CO_2/km or less onto the EU market by 2000, while KAMA agreed to do so as soon as possible with focus on technological developments and related market change.

The strategy of the European Commission consisted of three pillars: First, the 140g target that should be achieved by technical measures within the voluntary agreement; second, the target year 2008, and third, emissions reduction of 20% by additional measures. In addition, a monitoring mechanism was established for annual data collection and commitment of automobile associations and the Commission to submit joint reports (EP 2000). The data covered included specific CO_2 emissions, the number of vehicle registrations and range of technical details, such as vehicle mass, engine capacity and power, but without manufacturer-specific data to ensure competitiveness. In 2001, the Directive 1999/94/EC on CO_2 labeling of vehicles came into effect: It requires mandatory CO_2 labels to be clearly visible on vehicles in show rooms (EP 1999). They need to note CO_2 emissions and fuel consumption, assisting consumers to make an informed choice. However, the guideline was just a minimal consensus between EU member states. In addition to labeling and monitoring, fiscal measures were provided by the Commission, including taxes on petrol and diesel, registration and annual circulation taxes, congestion charging and road pricing, or subsidies and their reform. However, tax measures could not be introduced on the EU level for 'higher reasons': The UK and Ireland generally objected centralized tax regulation fearing losses of their national autonomies. Although, they implemented national tax measures that were as strict as scheduled by the European Commission. As a consequence, the demand side could not be regulated by the European Commission although it was part of the emissions reduction strategy.

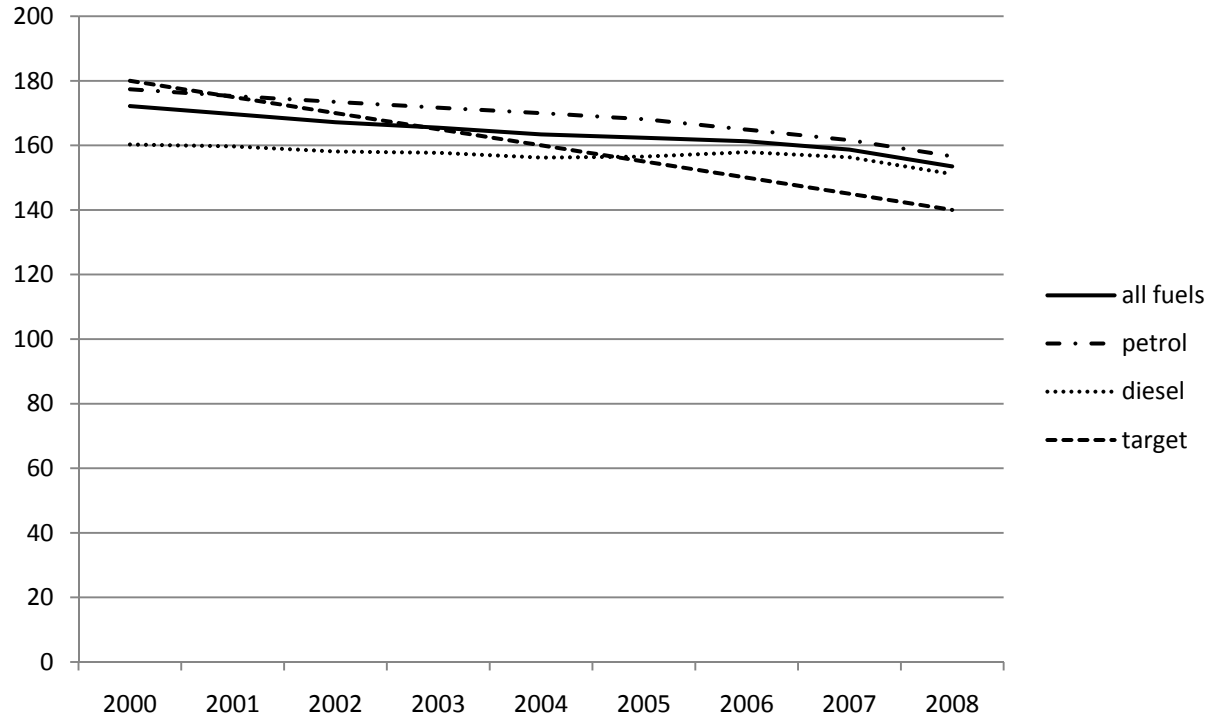
Average specific emissions of ACEA, JAMA and KAMA fell over the whole period of the agreements. In 2000, some vehicles with emissions less than 120g CO_2/km were put on the market. In terms of lowest emissions, the best performers were Group PSA, Peugeot, Citroën and Fiat. Mitsubishi, Honda and BMW

achieved the greatest emissions reductions. However, manufacturers made little effort to include emission reductions in advertising campaigns as many were still focused on making profits on SUV's. Porsche and MG Rover even increased average emissions (Brink 2010).

Already in 2002, the European Commission had first objections regarding the performance of the voluntary accord. The car manufacturers complied with target values until the intermediary target in 2003, then the progress made by the car manufacturers decreased. Until 2004, the ACEA signed each year the final formula indicating that 'there was no reason to expect that the association would not reach the target'. This was no more the case in the year 2004. Catherine Day, the new director of DG Environment, had a stricter position towards climate policy instruments and measures than her predecessors, generally questioning the use of voluntary approaches. Consequently, in 2005/06, the European Commission reviewed the passenger car CO_2 emissions reduction strategy exploring options for potential follow-up to the voluntary agreement. Moreover, the European Commission proposed a Code of good practice on car marketing and advertising to promote more sustainable consumption patterns in its 2007 revision of the strategy for CO_2 emissions from passenger vehicles. Advertising has changed visibly with the financial crisis and higher oil prices, with fuel efficiency and CO_2 emissions playing a more prominent role than before. However, in 2007, the failure was undeniable: it was impossible to reduce further than to 153g CO_2/km by 2008. This was confirmed by ACEA in 2008. The agreement failed. The EU mainly blames the German car manufacturers for this failure. Daimler (180g in 2007), BMW (170g) and Volkswagen (163g) are among the highest emitters within the ACEA members. Moreover, Volkswagen made least progress in emissions reduction between the years 2000 and 2007 (-1.1%). The product strategies of German car manufacturers focused on the promotion of heavy cars (SUVs) that promised high profit margins (Germanwatch 2007). This development is also reflected in the average CO_2 emissions for Germany where very little progress is made until 2007 (see Table 1 in Annex). Figure 1 compares the achievements of the European car manufacturers with the target value that was proposed by the voluntary accord.

On April 23, 2009, the European Parliament and the Council set up the binding limit of 130g CO_2/km as new regulation for passenger cars to be achieved by 2015 (EP 2009). The target has to be achieved via a phase-in of annual emission targets until 2015 providing sanctions for non-compliance. From 2020, the level has to be reduced to 95g CO_2/km.

Figure 1: Average CO_2-emissions of passenger vehicles by fuel type and target line (g CO_2/km)



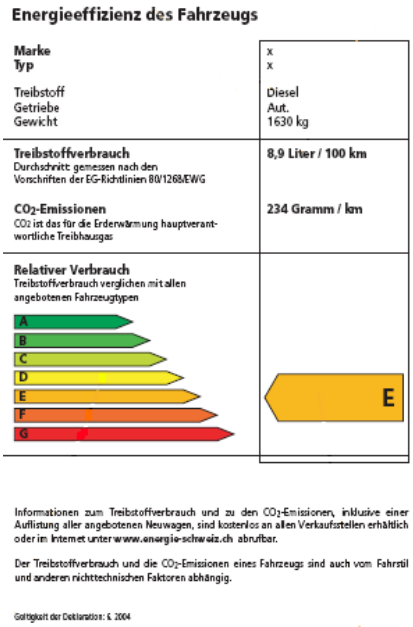
4. The voluntary agreement of Swiss car importers

In 1990, Switzerland set up the first framework for promoting energy efficiency, Energy 2000. The aim was to stabilize energy consumption by the year 2000 on the level of 1990 and to decrease energy consumption afterwards. The main motivation behind was energy security. In 2000, this public voluntary programme has been replaced by 'SwissEnergy' aiming at the reduction of fossil fuel consumption and CO_2 emissions by 10% by the year 2010. 'SwissEnergy' sets up a framework of self-declarations by the Swiss industries, which allows for binding regulation if voluntary measures were not sufficient. In May 2000, the Swiss CO_2 law came into force, stipulating the reduction of greenhouse gases in Switzerland by 10% by 2012, compared to 1990. The target is split into sub-targets of 8% reduction for transport fuels and 15% reduction for heating fuels. Basically, the target should be achieved by voluntary measures of the industries with the option of a subsidiary CO_2 tax if these measures would not prove sufficient.

For addressing emissions from road transport, the Swiss Parliament approved a bill of the Federal Council on specific fuel consumption of passenger cars, the VAT, which entered into force in January

1996.[4] It fixed target values for fuel consumption of newly registered passenger cars. If average fuel consumption was not reduced by 15% by 2001, the government would be able to introduce binding regulatory measures. In 2001, average fuel consumption of newly imported cars decreased only by 7.5% to 8.3l/100km compared to the level of 1996. Instead of implementing binding measures, the Federal Council signed a new voluntary accord with the Association of Swiss car importers in 2002. The voluntary agreement on the reduction of fuel consumption of passenger cars to Switzerland was signed on the 19th of February 2002. The average consumption of newly imported passenger cars should be reduced from 8.4l/100km in 2000 to 6.4l in 2008. The agreement defined a step-wise annual reduction of 0.25l/100km. Precise measures for reaching the target were not defined. Measures that had been taken were the information initiative 'Smart drive' and the Swiss energy label for cars that were implemented together with the Swiss Energy Agency. The information campaign 'Smart drive'[5] included press releases and marketing campaigns with an annual budget of 1.5 Mio CHF between 2005 and 2008.[6] It should inform consumers how to save emissions by optimizing driving behavior. The energy label indicates the fuel consumption per vehicle relative to its size in seven efficiency categories (see Figure 2).[7]

Figure 2: Energy label of the Swiss Energy Agency



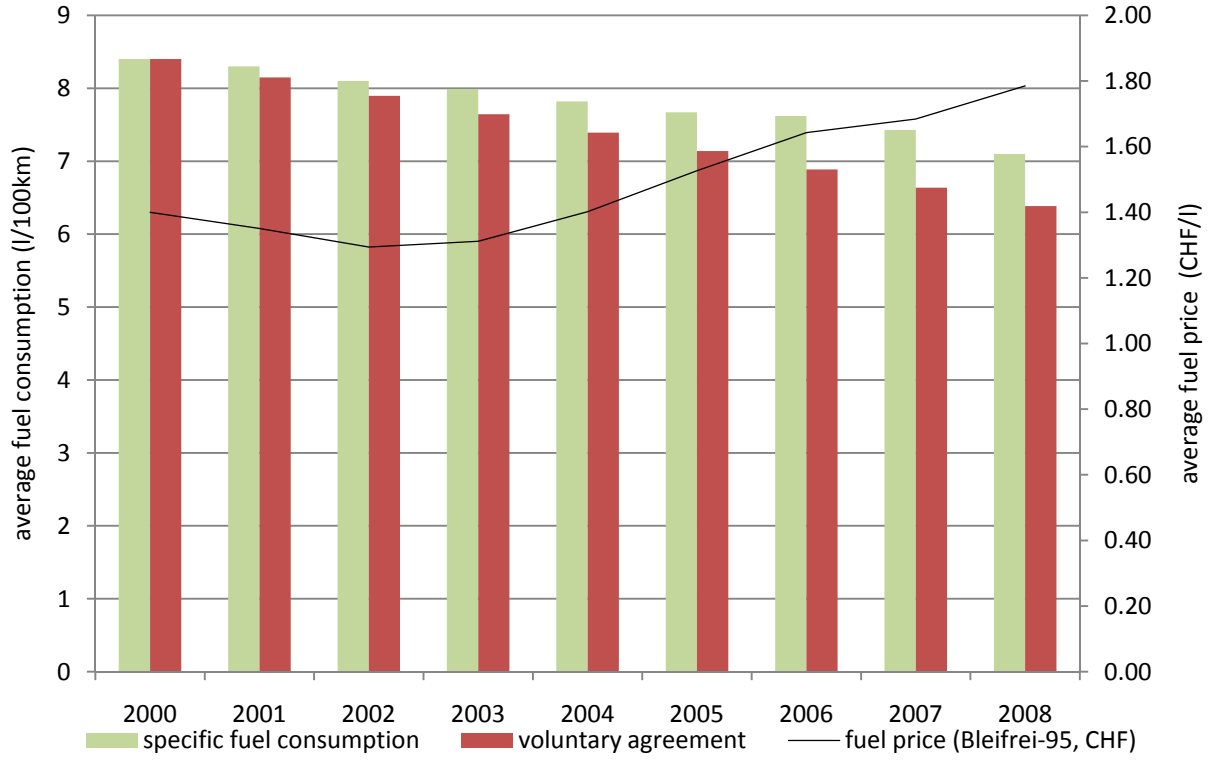
Source: (Haan, Müller et al. 2007)

[4] http://www.admin.ch/cp/d/1995Dec18.110858.5038@idz.bfi.admin.ch.html
[5] www.clever-unterwegs.ch
[6] Figures provided by Auto-Suisse, June 3, 2010.
[7] The energy category for each vehicle is calculated in relation to vehicle weight. Accordingly, vehicles are labeled energy efficient in each weight class.

Figure 3 compares the development of average fuel consumption of newly sold cars with the annual targets of the voluntary agreement and the average fuel price in Switzerland. Even though average fuel consumption declined from 8.4l/100km in 2000 to 7.14l/100km in 2008, there is still a considerable gap between the target value and the actual result achieved in 2008. The graph compares the annual achievements with the average fuel price in Switzerland between 2000 and 2008. In 2004 and 2008, greater fuel reductions could be related to increasing fuel prices. The agreement would lower total fuel consumption in Switzerland by only 6% in 2008.[8] Moreover, the effect on emissions reduction is diluted by the switch to diesel which has a higher specific density than petrol. In addition, the energy label for cars is misleading as it relates fuel consumption to vehicle weight. According to it, a heavy car can be labeled as very efficient (A) if it consumes more than the target value of 6.4l/100km. The voluntary measures based on marketing and information campaigns were not sufficient to reach the target of 6.4l/100km in 2008 (see Figure 3). The Swiss agreement actually challenges the technical definition of voluntary agreements since no specific firm measures had been defined. As the Swiss car importers are just traders, they can hardly reduce emissions by improving their technology.

[8] This figure considers the cumulative share of newly imported cars relative to the total stock of passenger cars and the annual amount of fuel savings according to the agreement.

Figure 3: Specific fuel consumption of passenger cars vs. negotiated target and fuel price in Switzerland (2000-2008)



Source: Auto-Suisse, 2009; SFOS, 2010

Possible explanations for the instrument choice of the Swiss car importers are strategic behavior or non-credible threat. The relatively low target and the low budget give support to the argument that the agreement had been signed for strategic reasons. The Swiss car importers simply had to rely on the efforts that were made by their corresponding car manufacturers. Uncertainty over the costs of alternative policies could explain this choice. The agreement minimized regulatory risks replacing stringent climate policy measures for the whole period from 2002 until 2008. Moreover, the car importers did not have to expect serious consequences from non-compliance. Since the accord was voluntary it would not justify sanctions. The missing incentives and a problem of collective action might be factors explaining the insufficient result for the Swiss case (Börner 2010). Moreover, car experts confirm the hypothesis from the literature that the agreement was signed for strategic reasons in order to replace and postpone more stringent climate legislation (Thalmann and Baranzini 2008).

In 2010, Switzerland adopted new emission standards for the year 2015. Again following the European example, the new regulation provides sanction mechanisms but the target of 150g CO_2/km is by far less

ambitious than the EU legislation. In 2008, average emissions of newly imported cars to Switzerland were equal to 175 g CO_2/km.

5. Comparison of both cases

The cases of the voluntary agreements signed by the European and Swiss car industry set an example for the strategic behavior of corporatist bodies in national climate policy. The European car manufacturers and the Swiss car importers succeeded in shaping national policy design by negotiating corporatist agreements that served to replace effective climate regulation. In both cases, we can observe a high level of communication and lobbying activities between the car industry and political decision makers. In fact, the voluntary agreements diluted and postponed environmentally effective climate regulation. Both associations successfully protected their industries from costly climate regulation.

A comprehensive climate policy must include measures for the supply and the demand side, e.g. a CO_2 tax providing incentives for the consumers to reduce emissions. The European Commission intended to implement fiscal measures for regulating the demand side. However, these could not be addressed for EU-specific reasons, i.e. the limited authority of the Commission to implement centralized policy measures. Hence, the European Union could not regulate the demand side for institutional reasons, whereas Switzerland did not seize the opportunity to take binding actions. Moreover, the European case shows that effective implementation of policy measures depends to a large extent on the personalities of political decision makers.

Comparing both cases, the Swiss car manufacturers can be regarded as 'followers': The Swiss agreement was signed in 2002 when it turned already out for Europe that the voluntary agreement would not provide sufficient emissions reductions. Though Switzerland has the necessary institutions for implementing effective climate policy measures it did not make use of binding policy measures. This allows for the conclusion that the voluntary agreement must have been the result of an intense lobbying process between business interest groups and political decision makers. Indeed, the Swiss road transport associations are very powerful actors in the Swiss political landscape.

Finally, both agreements failed. Although, average emissions of new cars were decreasing, the efforts made were not sufficient. We expect non-credible threat and collective action to be the main factors explaining this development.

6. Conclusion

The voluntary agreements signed by the European and Swiss car industries have not been sufficient for effective emissions reduction from private vehicles. For both agreements, the emissions reduction target was not reached. The Swiss agreement did not formulate explicit firm measures; it was relatively cheap and non-binding. This case study gives support to the argument that an environmentally effective policy should rely on market-based mechanisms. The assumption that this agreement has been designed in order to postpone more stringent market-based climate policy measures could not be reversed. Although the car industry made some efforts, the voluntary agreements were not sufficient. In contrast, they effectively avoided the introduction of stringent climate policies and measures for road transport on the expense of other economic sectors. The analysis shows that there is a need for binding legislation if emission reduction targets have to be achieved. Both cases confirm the propositions of the theoretical literature that voluntary approaches tend to be less environmentally effective. We can also confirm that voluntary approaches are signed for strategic reasons in order to reduce uncertainty and regulatory risks.

Despite its shortcomings, the voluntary agreements raised awareness among firms and consumers thanks to information campaigns and labeling activities. Information and education are important measures for climate policy in order to be acceptable for the public. In particular in countries, where car drivers show very low sensitivity on fuel prices, information campaigns remain a key element of effective climate legislation. Acceptability of policy measures is a key condition for sustainable policy implementation.

7. Annex

Table 1: Average CO_2-emissions of new passenger cars by EU member country

g CO_2/km	2000	2001	2002	2003	2004	2005	2006	2007	2008	%
Belgium	166.5	163.7	161.1	158.1	156.5	155.2	153.9	152.8	147.8	0.11
Denmark	175.7	172.9	170.0	169.0	165.9	163.7	162.5	159.8	146.4	0.17
Germany	182.2	179.5	177.4	175.9	174.9	173.4	172.5	169.5	164.8	0.10
Estonia					179.0	183.7	182.7	181.6	177.4	0.01
Finnland	181.1	178.1	177.2	178.3	179.8	179.5	179.2	177.3	162.9	0.10
France	163.6	159.8	156.8	155.0	153.1	152.3	149.9	149.4	140.1	0.14
Greece	180.3	166.5	167.8	168.9	168.8	167.4	166.5	165.3	160.8	0.11
Irland	161.3	166.6	164.3	166.7	167.6	166.8	166.3	161.6	156.8	0.03
Italy	155.1	158.3	156.6	152.9	150.0	149.5	149.2	146.5	144.7	0.07
Latvia					192.4	187.2	183.1	183.5	180.6	0.06
Lithuania					187.5	186.3	163.4	176.5	170.1	0.09
Luxembg.	176.7	177.0	173.8	173.5	169.7	168.6	168.2	165.8	159.5	0.10
Malta					148.8	150.5	145.9	147.8	146.9	0.01
Netherland	174.2	174.0	172.4	173.5	171.0	169.9	166.7	164.8	157.9	0.09
Austria	168.0	165.6	164.4	163.8	161.9	162.1	163.7	162.9	158.1	0.06
Poland					154.1	155.2	155.9	153.7	153.1	0.01
Portugal	169.2		154.0	149.9	147.1	144.9	145.0	144.2	138.2	0.18
Roumania								154.8	156.0	-0.01
Sweden	200.0	200.2	198.2	198.5	197.2	193.8	188.6	181.4	173.9	0.13
Slovakia						157.4	152.0	152.7	150.1	0.05
Slovenia					152.7	157.2	155.3	156.3	155.9	-0.02
Spain	159.2	156.8	156.4	157.0	155.3	155.3	155.6	153.2	148.2	0.07
Czech Rep.					154.0	155.3	154.2	154.2	154.4	0.00
Hungary					158.5	156.3	154.6	155.0	153.4	0.03
UK	185.4	177.9	174.8	172.7	171.4	169.7	167.7	164.7	158.2	0.15
Cyprus					173.4	173.0	170.1	170.3	165.6	0.04

Source: (EC 2010)

Table 2: Meta data of interviews

	Firm	Function	Name	Date	Place
Car importers	FIAT	PR responsible	Mrs. Bertschinger	16 June 2009	Zurich Schlieren
	Citroën	PR responsible	Mr. Zimmermann	23 June 2009	Geneva
	Mazda	PR responsible	Mr. Loffredo	23 June 2009	Geneva, Petit-Lancy
	Honda	General Director	Mr. Launaz	26 June 2009	Geneva Satigny
	Peugeot	PR responsible	Mr. Schär	1 July 2009	Bern, Moosseedorf
	AMAG	PR responsible	Mr. Graf	2 July 2009	Zurich
	Renault / Dacia	Director	Mr. Renaux	2 July 2009	Zurich, Urdorf
	Mitsubishi (Frey)	Director	Mr. Hoch	2 July 2009	Zurich
	Toyota (Frey)	Director	Mr. Rhomberg	7 July 2009	Zurich
	Chrysler / Jeep / Dodge	Associate Director	Mr. Steffen	8 July 2009	Zurich, Schlieren
		PR responsible	Mr. Rossier		
	VOLVO	PR responsible	Mr. Heiniger	9 July 2009	Zurich, Glattbrugg
	ASCAR AG (Frey)	Director	Mr. Hüsser	10 July 2009	Safenwil
	Ford	Director	Mr. Soltermann	13 July 2009	Zurich, Wallisellen
		PR responsible	Mr. Thomann		
Association	Auto-Schweiz	Director	Mr. Burgener	30 June 2009	Bern
	VDA		Mr. Koers	16 July 2010	Berlin
Swiss Experts	BFE		Mr. Volken	20 June 2009, 25 June 2010	Bern, Papiermühle
	VCS		Mr. Egli	16 June 2009	Winterthur
	ETHZ		Mr. De Haan	7 July 2009	Zurich
	WWF		Mrs. Saul	13 July 2009	Zurich
EU Experts	Germanwatch		Mr. Treber	1 July 2010	Telephone interview
	BMU / (EC)		Mr. Zierock	12 July 2010	Berlin
	VCD		Mr. Lottsiepen	14 July 2010	Berlin
	UBA		Mr. Jahn	15 July 2010	Dessau
	Transport & Environment		Mrs. Meyer	(confirmed)	Telephone interview

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