The Window of Opportunity
How the obstacles to the introduction of the Swiss heavy goods vehicle fee (HVF) have been overcome

Mr Ueli BALMER
Deputy Head Transport Policy Section
Federal Office for Spatial Development
Switzerland
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1. Introduction

The national referendum on the introduction of a performance-related fee for heavy goods vehicles (HVF) was one of the most controversial referenda Switzerland has ever seen. This is not astonishing inasmuch as the HVF was considered as a new tax concerning – at least indirectly – almost all citizens. What is astonishing, at least at first sight, is the fact that a clear majority of 57% voted in favour of the new fee. The question is why a population which is neither fond of new taxes nor known for being particularly progressive accepted a new fee.

The present study tries to highlight the reasons of the vote’s result. The study is part of an OECD-wide project on how obstacles to the introduction of economic instruments that could promote sustainable development have been overcome. It is a project undertaken under the auspices of the OECD’s “Joint Meetings of Tax and Environment Experts” which mainly comprise delegates from the Ministries of Finance and the Environment in member countries. The project aims at getting a clearer picture of both the drivers that helped to facilitate the introduction of the fee and those that could have prevented it. In addition, the case study is to evaluate the economic efficiency and the environmental effectiveness of the fee.

2. Executive Summary

(TO BE COMPLETED)

3. Starting point

In January 1972, the Swiss government decided to set up a commission which was to elaborate an integral transport concept for Switzerland. The reason for the setting up of this commission was the insight „that the state’s existing legal, financial and organizational means could no longer cope with the strongly growing transport needs and the new major projects for rail, road, shipping and air transport. The states available resources were also incapable of dealing with the massive expenditure, demands on regional planning and environment protection and the social consequence of transport arising from these projects under discussion. Possibilities for state intervention in the individual transport system, which have been elaborated in varying ways during the last 130 years according to prevailing circumstances, are not sufficient. The conflicts in objectives which arose made it imperative to work out a global method of overcoming the problem.‖

Five years later, the commission presented its recommendations. One of the many recommendations was that “heavy road transport, which does not cover the infrastructure costs it causes, will receive a new special tax linked to work performance.” The argument in favour of the suggested fee was that freight transport did not cover the costs of its use of infrastructure. As the possibility for the introduction of road user charges was – as a principle – excluded by the constitution a specific amendment was planned to create the legal basis for the authority to “levy earmarked taxes for both public and private transport.”

In the consultation that followed the publication of these recommendations, the principle of fair competition, which included the introduction of a performance-related fee for heavy goods vehicle (HVF), was well accepted. Some people asked for external costs to be considered for the calculation of the fee, others asked for the extension of performance-related charging to passenger transport. The

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1 ICT p. 5
2 ICT p. 65
3 According to the Swiss Constitution, the use of the road network is free of charge. Exceptions of this principle are possible if the Swiss Parliament approves them. Up to today, the Swiss Parliament made use of this competence only once (for the use of a road tunnel connecting Switzerland and Italy). The principle of the free use of roads was weakened in 1984 (see next chapter), but still is a strongly defended principle explicitly mentioned in the Swiss constitution.
4 ICT, p.69
5 ICT, report on the consultation, p.68/69
report seems to indicate that enshrining the legal bases for road user charges was not controversial. The only exception were road traffic organizations, who refused a general charging competence “if the pending new check of the road budget shows, that the lack of costs coverage could be eliminated”.

For a correct assessment of the results of the consultation it ought to be considered that the heavy goods vehicle fee was just one element among many others, embedded in a global concept. Its comparatively good acceptance should therefore not be overestimated. As it will be shown later on, the battle begins when the principle is to be implemented in practice.

4. Too ambitious a goal

In the political process which followed the elaboration of the integral transport concept in the eighties several of the principles that had been stipulated by the committee – and that had been welcomed in the consultation – were not maintained. The first steps in this direction were taken by parliament in the early eighties.

4.1 Introduction of a flat fee

In 1983, the Swiss Parliament decided not to wait until the whole project was implemented before it introduced the performance-related heavy goods vehicle fee (HVF), but to introduce it separately in advance. And as it assumed that the technological prerequisites for a performance-related fee were not yet fulfilled, it decided to introduce a flat fee instead. It was similar to the Eurovignette, introduced in several EU member countries later on. In addition to the introduction of a flat fee for heavy goods vehicles, the Swiss Parliament decided to implement a motorway user permit. The motorway user permit is a flat fee for private cars which has to be paid for the use of the motorway network. As passenger cars did cover their costs for the use of the roads, the decision in favour of such a fee was even less in line with the integral transport concept than the one for the HVF. The reasoning behind these acts of parliament was clearly political in nature: both projects were considered to be promising. Both fees were designed as interim solutions that were to be replaced by definitive solutions later on in the framework of the integral transport concept.

Even though it was not in line with the integral concept of transport, the approach of the Parliament proved to be successful. In the following referendum, which was compulsory for both projects (see box), both bills were accepted (57% in favour of the flat fee for heavy goods vehicles, 53% in favour of the motorway user permit).

The fees, which weakened the principle of charge-free use of the road network, were accepted for different reasons:

- The flat fee for heavy goods vehicles was considered to be justified because freight traffic did not cover its costs for the use of infrastructure. Furthermore, the fee was considered to be a catalyst for the transfer of freight traffic from road to rail, a goal that has a long tradition in Switzerland. Last but not least, trucks are often experienced as a nuisance by the other road users, who represent the majority of the voters.

- Whereas the acceptance of the fee for heavy goods vehicles comes as no surprise, the approval to the motorway user permit, which has to be paid by a large majority of the road users, seems to be more astonishing. It has to be considered, however, that this user permit is an efficient means of getting a contribution from foreigners for their use of the Swiss road network.

6 ICT, report on the consultation, p.76
7 Federal council, explanations vote 26 February 1984, p. 3
8 GfS, Analysis vote 26.2.84
Initiative and referendum

The political system of Switzerland gives its citizens specific rights which are often used in context with transport matters and are therefore of importance in the context of this study.

**People’s initiative:** 100,000 citizens can demand a change in the constitution by signing a corresponding text. Once the authority in charge has examined the initiative and declared it valid, the government writes a message to parliament and suggests to either accept or reject the initiative. The government can also submit an alternative to the solution proposed in the initiative. The Parliament is free to accept the suggestions of the government or to take its own decisions. It can, in particular, make its own, alternative proposal. It does not matter whether it is different from the one of the government or whether the government has made one at all. Once Parliament has decided, there is a federal referendum, either on the initiative, or on the counter-proposal (if the original initiative has been withdrawn by the committee in charge of the initiative), or on both. In the last case, the citizens have to declare, whether they prefer the initiative or the counter-proposal in case both should find a majority. To be accepted, an initiative needs to be accepted by both a majority of the individual votes and a majority of the cantons.

**Referendum:** There are two kinds of referenda: compulsory referenda and optional referenda. A compulsory referendum takes place when parliament wants to change the constitution. The introduction of the flat fee for heavy goods vehicles and the motorway user permit fell into this compulsory regime and so did the creation of a constitutional basis for a performance-related heavy goods vehicle fee (HVF) in 1994 (see chapter 5.3). If Parliament decides matters on the level of laws (be it changes to existing laws or the introduction or abolition of entire laws), an optional referendum may take place if 50,000 citizens sign such a demand. If they do so, the parliamentary decision has to be submitted to a national vote whose result is compulsory. This happened in the case of the law about the performance-related heavy goods vehicle fee (HVF) in 1998 (see chapter 7.3).

4.2 People’s Initiative rejected

In 1982 the Swiss Association for Transport & Environment (ATE), a conservation group specialized in transport matters, submitted a people’s initiative (see box) requesting the introduction of a performance-related fee for heavy goods vehicles. For the environmentalists, such a fee - which was to compensate not only the direct costs of road use, but also the external costs of air-pollution, etc. - was to play a key role on the way towards a more environmentally-friendly system of freight transport. With their initiative, they tried to support the corresponding idea in the integral transport concept and to influence the discussions and decisions in parliament that did not develop in the direction they wished.

Though the Federal Government basically agreed with the motives of the initiative, it finally rejected it. According to the statements of the government before the vote in 1986, the initiative came at the wrong time (the flat fee having been accepted only two years before), it focused one-sidedly on freight transport, and the government needed more time to establish a suitable fee system. The population followed its government and rejected the initiative with a majority of two to one. An important reason for the clear failure of the initiative may have been that the flat fee was to be tripled between 1988 and the time of the introduction of the new fee. It is remarkable that only 35% of the population took part in the vote. The question whether the system of charging freight transport should be altered apparently was not considered as a fundamental issue at the time.

4.3 Coordinated transport policy refused

Two years after the refusal of the initiative, a vote was held on the bill for a “coordinated transport policy”. The bill, which had been accepted by a large majority in Parliament, consisted of an integral package of articles which, (if they had been accepted), would have provided the constitutional basis for the implementation of the integral transport concept. The paragraph which was to allow the

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9 Federal council, Explanations to the vote of 7 December 1986
introduction of a performance-related fee was not limited to heavy goods vehicles but implied a
general competence to raise road user taxes. This general competence, though it was limited inasmuch
as user charges were limited to a level necessary to cover uncovered costs, was one of the decisive
points for the unsuccessful outcome of the vote. 64% of the opponents of the bill, which was refused
by a majority of 54% of the voters, considered the coordinated transport policy as a tool to raise new
taxes.10 Since the refusal of the coordinated transport policy in 1988 several proposals of the integral
transport concept have been introduced by separate steps (among others the performance-related
HVF). The outcome of the process for an integral concept of transport is another proof of how difficult
it is to find a majority for a global concept. Although the principle might be accepted as correct by a
majority, it is finally refused due to the accumulated opposition of interest groups, who dislike specific –
and different - aspects of the suggested bill.

5. Step by step

5.1 A clear hint

The refusal of the bill for a coordinated transport policy did not solve the transport problems
Switzerland was confronted with. One development in particular kept transport issues on the top of the
political agenda: the increase of heavy goods vehicles transiting through the Alps. Up to 1980, the year
of the opening of the St. Gotthard road tunnel, only a few hundred vehicles crossed the Swiss Alps
every day. After the inauguration of the tunnel, the situation changed rapidly. In spite of the clear
statement of the responsible minister that “this is not a tunnel for heavy goods traffic”11 the number of
heavy goods vehicles transiting the Swiss Alps increased rapidly in the following years. The fact that
an ever increasing number of heavy goods vehicles came from abroad made the subject politically
delicate and strengthened the need to find a solution that met both the Swiss needs for a better
protection of the population along the transit routes and the demand of the EU of sufficient transport
capacity for transalpine traffic.

The suggested solution was to transfer freight traffic from road to rail. To realize this ambitious goal –
it has to be considered that at the time of this decision about 80% of freight traffic across the Alps was
already done by rail – the Swiss Parliament decided to build two new rail links through the Alps. The
heart of the project were two new tunnels with a length of 57km (St. Gotthard) and 34km
(Lötschberg), respectively. The decision of Parliament in favour of two new rail links was all the more
significant in the context of exhaustive research work carried out in the early eighties that had led to
the conclusion that additional rail capacity across the Swiss Alps would not be necessary in the
decades to come. The project, which was considered to be profitable in the long term, was to be
financed mainly by loans. One quarter, however, was to come from vehicle excise duties. The
argument in favour of this contribution from road users was the fact, that it also was in the interest of
car users to relieve the transit routes from heavy goods vehicles.

On 27 September 1992, the Swiss people had to decide whether it approved the project or not. In the
period preceding the vote, the decision of Parliament had been criticized namely by environmentalists.
They argued that12:

- transit capacity on the rail was not exhausted yet and two new rail links would therefore lead
to tremendous overcapacity
- the extremely expensive project would end in a financial disaster
- new rail capacity would only make sense if the use of rail would be mandatory for transit
traffic

Another group of opponents, defending the interests of car users, was afraid that Parliament might
subsequently raise the share deriving from fuel excise duties.

10 GIS Analyses vote 7.12.86
11 Statement of Federal Councillor Hürlimann at the inauguration of the tunnel on 5 September 1980
12 Federal Council Explanations to vote of 27.9.92, p. 5
In the final vote, a clear majority of 64% of the voters approved to the decision of Parliament. According to the Vox Analyses carried out after the vote, the following motives were decisive for the majority of voters approving the bill.\footnote{GfS Analysis vote 27.9.92}

- motives in favour of public transport (namely the transfer argument)
- ecological reasons
- project is in the interest of road users (namely less traffic on the road)
- project favours international integration

Overall, the result can be interpreted as a clear hint in favour of the policy aiming at the transfer of freight traffic from road to rail. The introduction of a performance related fee is perfectly in line with such a policy.

5.2 A hidden step

Ten weeks after the acceptance of the new rail links across the Alps, the Swiss refused to join the European Economic Area (EEA, see box) in another referendum. At first sight, this verdict does not seem to have anything to do with the performance-related heavy goods vehicle fee introduced eight years later. Though it is true that the refusal of the EEA bill was indeed no decision in favour of such a fee, it is also true that the negative outcome of this vote was a necessary prerequisite for the introduction of such a fee later on. There are two points which support this argument:

1. If Switzerland had joined the EEA, EU regulations in transport (and many other) matters would have become part of the Swiss legislation. This means, that a performance-related fee as designed in Switzerland would not have been possible, because it would not have been in line with EU directive 1999/62 on the charging of heavy goods vehicles for the use of certain infrastructures. The problem can be illustrated with the example of Liechtenstein, which is a member of the EEA. When Liechtenstein wanted to introduce the Swiss heavy goods vehicle fee on its territory\footnote{In a referendum, Liechtenstein had decided with a large majority to join the Swiss solution.}, a sophisticated solution had to be found to avoid interference with this directive (see box). Such a solution would by no means have been possible for Switzerland.

2. If the EEA bill had not been refused, the Swiss industry would most certainly not have supported the HVF bill in 1998. The same might be true for political parties allied with the industry. The support of the industry and of these political parties, however, was crucial for the acceptance of the HVF bill, as it will be shown below.

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### The European Economic Area (EEA)

The backbone of the EEA is the free access of the members of the EFTA (European Free Trade Association) to the market of the European Union (and vice versa). On 6 December 1992, the EEA bill was refused by a very slim majority of 50.3% of the voters.

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### The Liechtenstein case

As an EEA member, Liechtenstein is bound to apply EU regulations in transport matters such as directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures. This directive forbids user charges on the entire network. The Swiss performance-related fee is such a charge. The way out of the problem consisted of granting a flat reduction for the estimated use of the roads presumably not due to charging. It is self-evident, that such a solution would not have been possible for Switzerland.
5.3 Two decisive steps

The acceptance of the project for two new rail links across the Alps (see 5.1) was not only a clear hint in favour of the transfer of goods from road to rail, but also a catalyst in favour of a performance-related fee as a suitable means to push the policy forward. Because the bill for a coordinated transport policy, which would have comprised the constitutional bases for a performance related HVF, had been refused in 1988 (see chapter 4.3), it was necessary to draft a separate bill to create the constitutional bases for a HVF. In parallel to this bill, a popular initiative, the “Initiative for the protection of the Alpine region against transit traffic”, was voted on in a referendum. The core of this initiative was the compulsory transfer of all freight transiting through the Swiss Alps from road to rail. Although the Swiss government clearly acknowledged its support for a policy aiming to transfer goods from road to rail, it rejected the initiative. It argued, that the initiative was discriminatory and therefore not in line with the principles of international law and that its policy, which included a performance-related fee, would be sufficient to reach its goals.

The vote, which took place on 20 February 1994, ended with a surprise: the Swiss people not only accepted the constitutional bases for a performance-related fee (with a large majority), but also the popular initiative for the protection of the Alps.15 The strongest arguments in favour of the initiative were the protection of the environment in general and the will to express solidarity with the troubled population living along the transit routes.16

The implementation of the Alpine Initiative

The initiative’s categorical demand that freight transiting through the Swiss Alps had to be transported exclusively by rail was considered to be discriminatory such as formulated in the text. The way out of the situation, to which all sides involved agreed in the end, was to interpret the initiative in the following way: The number of heavy goods vehicles that would have crossed the Swiss Alps on the road if the initiative had been in force on the very day of the vote would have been around 650,000 per year (this figure equals the amount of domestic and import-export traffic through the Alps). The number of vehicles people were willing to accept therefore was 650,000. In order to achieve this figure in a non-discriminatory way, the corresponding measures were to consider traffic as a whole, regardless of it’s origin. One important pillar for the implementation of this policy was the performance-related HVF.

6. Last Setbacks

After the clear mandate of the vote of February 1994, the administration started the work for the implementation of a performance-related fee. The work to be done was split between the Swiss Customs Authority (SCA), incorporated in the Swiss Ministry of Finance, and the General Secretariat of the Transport Ministry.17 The SCA, experienced in matters of raising taxes, was mandated to prepare the implementation on the technical level whereas the transport ministry was to be responsible for the political part, especially for the elaboration of the future fee and the underlying scientific work. Opposition in both fields led to delays, proving that the implementation of the fee might become difficult.

6.1 A negative Feedback

Immediately after the vote of 20 February 1994, the transport ministry started to draft the law that was necessary for the implementation of the fee. The draft, which was presented to the organizations having an interest in the subject in summer 1995, corresponded to a large extent to the law which entered into force on 1 January 2001:

15 The acceptance of a people’s initiative is rather rare
16 GIS Analysis vote 20.2.1994
17 The full name of the ministry is „Federal Department of Environment, Transport, Energy and Communications. For practical reasons, it will be named transport ministry in this study.
- The fee was to depend on the distance driven and on the laden weight
- It was to be levied for the use of all roads on the Swiss territory
- The government was to be authorized to make exceptions
- The level of the fee was to be limited according to the total amount of costs caused by heavy goods vehicles (including external costs)
- The cantons were to receive parts of net income of the fee

There were, however, also differences (see chapter 8):

- The maximum level of the fee was limited to 2 Swiss cents (about 1.3 Euro cents) per ton and kilometre (ton-km)
- The fee was not differentiated according to the emissions
- The share of the Federation in the income was supposed to be used mainly for road purposes
- The share of the cantons was not fixed
- The cantons were to be in charge of levying the fee for domestic vehicles

The feedback to the proposal described above was mainly negative\(^{18}\). A majority of the organizations consulted either refused it overall or considered that time as not ripe for the change envisaged. Of special importance was the refusal of five of the seven political parties involved, among them three of the four parties represented in government and disposing of a strong majority in Parliament (the only big party supporting the proposal was the Social Democratic Party).

The reasons for the refusal of the proposal were complex. They were, first of all, not due to the change from a flat-rate to a performance-related fee. The arguments forwarded against the fee were the following

- A strong minority suggested, that the fee should not be based on the performance as proposed, but on the consumption of diesel
- The fee should, additionally, depend on the emissions
- The fact, that the fee would only apply to vehicles with a laden weight of more than 3.5 tons would lead to a shift to lighter vehicles.
- The scientific basis for the calculation of the external costs was not solid enough
- The rate of 2 (Swiss) cents per ton-km was too high
- A reliable On Board Unit, crucial for levying the fee, was not available on the market
- The fee should not be introduced prior to a solution on EU level (or should at least be compatible with a solution on a European level).

A new idea, which had not been part of the proposal but was brought into the debate by a working group for the financing of the new rail links across the Alps (see 5.1), was clearly rejected in the consultation. A strong majority was against the idea of the group to use part of the revenue of the new fee to finance the new rail links.

It finally comes as no surprise that the cantons demanded a bigger share of the income of the fee.

6.2 Scapegoat On Board Unit

A specific On Board Unit (OBU), capable of registering the distance covered, was an obvious prerequisite for the implementation of the fee in the way it was designed (see 6.1). As such an OBU was not available on the market yet, the ministry in charge started a call for tender for the development of such a unit. A sum of 7.9 million Swiss Franks (equal to about 5 Mio. €) was foreseen in the Budget for 1996 to procure the necessary finances. In the first chamber of parliament which debated the credit,

\(^{18}\) Bericht über die Ergebnisse des Vernehmlassungsverfahrens zum Bundesgesetz über die leistungsabhängige Schwerverkehrsabgabe
the Council of States\textsuperscript{19}, the credit passed without difficulty. The second chamber, however, the National Council, decided not to follow the Council of States and the government, who had suggested the credit. It refused 4 millions of the credit, the sum designed for the development of the On Board Unit in the years to come (a part of the money had already been spent). The arguments raised against the full credit – Switzerland should wait until Europe had decided how it wanted to proceed, or the consideration of alternatives to a performance-related fee such as an increase of excise duties on diesel – raised the suspicion, that the real aim of the opponents was not the credit but the fee itself: “\textit{I get the impression, that you beat the bag and mean the donkey. The very subject is the fee and not really the On Board Unit.}”\textsuperscript{20}

After the credit was refused by the National Council, it went back to the Council of States, that decided to stick to the full credit –with a slim majority of only 16:14 – and sent the bill back to the National Council. When the National Council rejected the credit once again, the Council of States finally decided to give in, thus following the arguments of the speaker of the commission responsible for the bill. He argued that considering that the session would end the following day it would be time to put an end to the debate, mainly for reasons of opportunity. The fervent debate on a comparatively small sum was another clear hint that it would not be easy to introduce the fee.

6.3 Beyond hope?

The negative outcome of the consultation on the proposed law and the rejection of the credit to develop an OBU seemed to make the project of a performance-related fee rather hopeless. This at least was the comment of the former secretary general of the transport ministry, when he handed over the dossier to his successor in winter 95/96.\textsuperscript{21}

7. The window of opportunity

7.1 Different interests

During the controversy about the EEA Bill in 1992, the opponents to the bill, or at least a majority of them, had not denied that it was necessary to improve the framework conditions for the Swiss industry such as it had been envisaged by the EEA. They had argued, however, that this could be done in a better way if Switzerland remained independent and thus had the possibility to formulate its economic policy on its own. Such a policy includes the possibility to conclude bilateral treaties, in particular with the European Union, Switzerland’s most important partner in international trade. Although the economic disaster that had been forecast by some of the promoters of the EEA bill did not take place after its rejection, the claim for an improvement of the economic framework conditions, especially regarding trade with the European Union, was growing. The option chosen was to achieve the goals of the industry by negotiating bilateral treaties with the European Union. Even tough the problems the EU wanted to solve in its relations with Switzerland were not as urgent as the ones forwarded by the Swiss, the EU also had an interest in negotiating bilateral treaties with Switzerland. In the context of this study the issue of transalpine traffic was of special importance . The reasons for the interest of the EU in this subject were due to the geographical location of Switzerland on the one hand and to specific transport regulations in Switzerland on the other hand.

\textbf{Geographical location:} as the map illustrates, Switzerland not only lies in the heart of Europe, but also between three of the major members of the European Union, France, Italy and Germany. Of special importance is the heart of the heart: the St. Gotthard pass, the shortest route between the north and the

\textsuperscript{19} Swiss parliament is organized similarly to the one in the US: it consists of two chambers, the National Council (similar to the House of Representatives in the US) and the Council of States (similar to the Senate).

\textsuperscript{20} Statement of the responsible minister Kaspar Villiger during the debate, Amtliches Bulletin der Bundesversammlung 1995, National Council p 2509. To beat the bag and mean the donkey is a famous German proverb.

\textsuperscript{21} Werder Hans, p. 6
south of Europe. Italy, in particular, was afraid to be cut off from the other members of the EU and interested in unhindered transport across the St. Gotthard and the other passes across the Swiss Alps.

Figure 1: Map, illustrating the geographical situation of Switzerland as a potential barrier to road transport between Italy and the two big EU member states France and Germany.

Transport regulations: Switzerland had (and partly still has) specific traffic regulations that are unfavourable to transport by heavy goods vehicles. The regulations have different goals such as supporting freight transport by rail or reducing noise pollution along the road: The weight limit of heavy goods vehicles was limited to 28 tons and between 10 PM and 5 AM, trucks with a laden weight of more than 3.5 tons are banned from the roads (night ban). Both regulations were (and the night ban still is) highly popular in Switzerland. The fact, that they had been integrated in the transit agreement of 1992, a treaty Switzerland and the EU had put in force in 1992 to regulate transit traffic through Switzerland – was considered a success in Switzerland. Together with the good performance of the Swiss railways these two measures have certainly been decisive for the comparatively high share of the rail in freight transport in Switzerland (about two thirds of transit traffic, about one third of the total of freight transport). The importance of these two regulations had even increased since the opening of the St. Gotthard road tunnel in 1980 that lead to a steady increase of lorries crossing the Swiss Alps.

7.2 The key role of the fee

The different interests described above led to a political deadlock. The EU was not willing to conclude bilateral treaties in matters that the Swiss industry, in particular, was asking for as long as Switzerland remained unwilling to make concessions to facilitate road transport, especially road transport across the Swiss Alps. The HVF provided a way out of the impasse. If it was high enough, the fee was considered to be a valuable instrument to make up for the consequences of an increased weight limit. The 28-ton limit had forced the trucks with a higher weight to make a detour around Switzerland up to then. This way, the policy aiming at transferring freight traffic from road to rail could be maintained.

22 The figures refer to the share in ton-km
23 This number has increased from a few hundred lorries a day before the opening of the tunnel to about 4,500 in 2000, more than eighty percent of them passing through the St. Gotthard.
and simultaneously one important precondition of the EU for accepting the package of treaties as a whole could be met.

Politicians in favour of the new fee seized the opportunity to put this item on the political agenda again, using it as a pledge for the negotiations with the EU. The lobbying proofed to be successful. The door to a change of the regime in freight transport was flung open within only one year. A significant proof for this change in trend was the fact, that the credit for the development of an OBU passed both houses without problems at the end of 1996.

To make the best use of the change in trend, the new head of the transport ministry, Moritz Leuenberger, and his secretary general, Hans Werder, organized the steps necessary to improve the acceptance of the suggested fee:

- In a meeting with the representatives of the cantons it was agreed, that one third of the net revenue of the fee should be allocated to their treasuries. This step of course helped to get their support for the fee
- By engaging the foremost capacity in the domain of external costs, the commission of Parliament in charge of the HVF-item could be convinced that the scientific basis for the calculation of external costs was solid enough
- It was decided, that the fee should also depend on the emissions. In doing so, government did not only take into account the corresponding demand expressed in the consultation, but could also balance the criticism of those who had favoured a fee on the consumption of diesel. Last but not least, taking into account the emissions had also been a demand of the EU when negotiating the treaty on land transport (see box).

Thus the opportunity of the opened window on the political level was seized and the administration took the steps that were necessary to improve the acceptance of the HVF bill. This way, the field was prepared for a successful campaign in favour of the HVF in the final referendum.

The bilateral treaties
After the Swiss people had refused to join the European Economic Area (see 5.2), the Federal Council (Swiss cabinet) took the initiative and started bilateral negotiations with the European Union. Their aim was to avoid that the negative outcome of the vote led to substantial economic disadvantages, which the Swiss export industry, in particular, was afraid of. As a first step, certain economic areas such as air transport were to be liberalized and a full participation of Switzerland in the EU research program was to be realized. The EU was ready to negotiate, but made two conditions from the very beginning:

1. Liberalization was not to be reduced to the areas favoured by Switzerland, but be extended to other areas such as free movement of persons and to land transport (including a raise of the weight limit).
2. The different treaties (seven in total) had to be part of a single package, which would have to be accepted or refused in its totality.

To get the advantages it was aiming for, Switzerland therefore had to deal with the disadvantages it had hoped to avoid, such as the liberalization of land transport. The negotiations concerning land transport were therefore especially controversial and more than once threatened by a dead end. The compromise finally found consisted in balancing the negative effects of the increased weight limit by implementing a substantial user charge for heavy goods vehicles. With this deal, one of the main obstacles on the way to a successful conclusion on the bilateral treaties had been overcome. In the vote of 21 May 2000, the treaties were accepted by a large majority of 67% of the voters.
7.3 The final vote

The government submitted the bill for a performance-related heavy goods vehicle fee to Parliament in 1997. It was amended in the way described above and despite the opposition on the right wing of the political spectrum the bill passed both councils with clear majorities (120:46 in the National Council, 22:14 in the Council of States). The fundamental driver for the clear acceptance of the bill was undoubtedly the context of the bilateral treaties, which induced two big parties\textsuperscript{24} which had refused the draft in the consultation to approve the bill.

Immediately after the approval of Parliament, the opponents of the bill launched a referendum against it. Their main argument was that the new fee would lead to additional costs of 300\texteuro{} per household and year. Further arguments were that the fee would neither lead to a transfer from road to rail nor would it work as a catalyst for the European integration of Switzerland. And finally, they criticized that the use of the revenue was not to be allocated strictly to road purposes, as had been stipulated in the vote of 1994. Apart from the lobbies of the road transport sector, the referendum against the HVF was supported by politicians unfavourable to a better political integration of Switzerland into the EU.

The referendum was successful inasmuch as it was signed within a short delay by about four times more signatures than necessary (50,000). In the campaign which preceded the final vote about the law on 27 September 1998, the main arguments were those put on the political agenda by the opponents:

- The costs the new fee might cause
- The role of the fee as a driver to manage transport demand and
- The integration of Switzerland within Europe.

Concerning the argument of costs, the different points of view of the opponents and of the promoters on the other are of special interest. The sum of a cost of 300\texteuro{} per household claimed by the opponents was the result of a simple division of the total income of about 1.2 billion € (per year from 2005 onwards) by the number of about 4 million Swiss households.

The authorities criticized this calculation for three reasons:

1. It did not take into account the abolition of the flat fee
2. One third of the revenue would be paid by foreign haulers
3. The progressive increase of the weight limit to 40 tons would lead to gains in productivity that would more or less make up for the additional cost caused by the HVF.

Based on these arguments, their conclusion was, that the additional costs would rise to 7\texteuro{} per household at the most. It is interesting that this second way of calculating the fee was also supported by “Economie Suisse” the umbrella organisation of Swiss industry. The background for doing so was a calm analysis of the political situation. It clearly showed that the Swiss people would not accept the bilateral treaties (including the raise of the weight limit to 40 tons ultimately demanded by the EU) without having the HVF installed as a means of protection against the avalanche of heavy trucks they were afraid of. The high priority for the bilateral treaties even induced Economie Suisse to invest considerable amounts of money into the campaign in favour of the HVF. Together with the support of the moderate right-wing parties FDP and CVP (the left was in favour of the fee anyway), the alliance in favour of the new fee had grown strong enough to win the vote with a comparatively clear majority of more than 57\% the voters. The opportunity had been seized.

\textsuperscript{24} Both parties, the FDP (Radical Free Democratic Party) and the CVP (Christian Democratic People’s Party) are situated right of the centre of the political spectrum
8. Successful implementation

8.1 Technical hurdles

Successful implementation not only implies to provide political acceptance, but a reliable technical solution for the levying of the fee as well. The example of the German lorry toll (LKW Maut) shows that this aspect should not be neglected.\textsuperscript{25}

In the case of the Swiss HVF, the Federal Council (Swiss cabinet) decided that the levying of the fee should not be privatized and delegated this task to the Federal Customs Authority (FCA). In this way, the large competence of this authority in taxation matters could be utilized directly. The knowledge of external experts was important, of course, but these people were integrated in a project organization established in January 1997 (immediately after the credit for the development of the On Board Unit had been accepted in Parliament) with the clear objective to introduce the fee on 1 January 2001. The main obstacles to be overcome on the way to a reliable technical solution were the following:

- In contrast to the existing toll systems in the neighboring countries the fee was to be levied on all roads
- or legal reasons Switzerland could not declare the installation of an on board unit mandatory for foreign vehicles. The installation of such a unit not only facilitates collecting the necessary data, but also is a helpful tool to avoid fraud, a crucial issue for the success of any fee.

8.2 The Swiss solution

To meet the different requirements, Switzerland developed two systems, one for users equipped with an On Board Unit and one for unequipped users.

\underline{System for equipped users:} This system applies mainly to domestic vehicles, for which the installation of an OBU is mandatory. The laden weight of the vehicle and the emission class are stored in the OBU. In order to record the driven kilometers, the OBU is coupled to the odometer. If the vehicle crosses the border, a device fitted above the street (microwave radio connection) deactivates the registration. When the vehicle returns to Swiss territory, the same device reactivates the recording. The recording of the data cannot be manipulated by the drivers. The only information they are entitled and able to enter themselves is the coupling or uncoupling of a trailer. Each month, the data stored in the OBU is registered on a chip card and forwarded to the federal authorities who use it as basis for the calculation of the fee and the appropriate monthly invoices.

\textbf{Figure 2:} Every month, the data stored in the OBU is registered on a chip card and forwarded to the federal authorities who use it as basis for the calculation of the fee and the appropriate monthly invoices.

\textsuperscript{25} Due to technical difficulties, the introduction of the lorry toll (Lkw-Maut) has been postponed first from August to November 03 and then to an unspecified date.
System for non-equipped users: as mentioned above, the installation of an OBU is not mandatory for foreign vehicles, although owners of foreign vehicles can acquire them for free (like the equipped users) if they wish to do so. If the vehicle is not equipped, the fee is registered by using an identification card at the special terminals for HVF clearance. This identification card is provided when a lorry enters Switzerland for the first time and contains the relevant data, especially the laden weight and the emission class. To get the distance relevant for calculating the fee, the driver has to insert the actual mileage on the odometer on a form when entering and when leaving the country. To avoid fraud, the distance driven is checked occasionally by comparing the mileage declared with the odometer and by papers in possession of the driver concerning the destination of his goods. The fee has to be paid when leaving the country, either in cash or, preferably, by fuel credit cards or through an account with the Customs Authority.

8.3 First of January 2001

Although a team of about seventy experts had been working hard for a successful introduction during four years, it was not without anxiety that the manager of the project, Hugo Geiger, Vice director of the Swiss Customs Authority, watched the day of introduction coming closer. What was particularly difficult, was the fact that many lorry owners installed the OBU at the very last moment, because they had hoped that the introduction of the fee might be postponed. But finally, all went well. The following facts helped to a successful implementation:

- Both systems, the one for equipped and the one for unequipped users, are simple. The system for equipped users relies on a technology that has proved to be useful for electronic fee collection for a long time. With the link to the odometer the specific requirement of registering the distance driven could be met without having to implement additional technologies delicate for this matter. The system for unequipped users is very practical. It does not require more time than has been necessary before for the payment of the flat fee. It is mainly for this reason that only few foreign lorries have been equipped with an OBU.
- The fact, that the fee had been accepted in a popular vote increased its acceptance within the road transport industry. Without the generally good cooperation with this industry, a successful introduction of the fee would hardly have been possible.
- It proved to be wise to start the system at the beginning of January: The level of heavy goods transport is very low at this time of the year (especially on the first of January).

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26 The so called DSRC (dedicated short range communication) technology the Swiss OBU is relying on has been (and still is) the most applied system for electronic fee collection.
27 Up to now, only about 2'000 OBUs have been installed in foreign vehicles.
9. Economically efficient and environmentally effective

9.1 Preliminary considerations

Part of the mandate of this study was to evaluate the economic efficiency and the environmental effectiveness of the fee. Before going into the details of a corresponding analysis, the following facts ought to be considered:

1. Although the HVF was introduced in the context of the situation in transit traffic, it is applied on the whole road network and therefore has an effect on the whole territory of Switzerland.
2. The introduction of the HVF did not only lead to a change of the structure of the fee system, but also of the (average) amount of the fee. On the average, the fee rate per truck is now five times higher than it used to be until 1999 (from 2005, it will be about 8 times higher).
3. Economic efficiency and environmental effectiveness can not be clearly separated. The corresponding effects are therefore presented together (chapter 9.2)
4. The fee was not introduced as an isolated measure, but simultaneously with a change of the weight limit: The consequences of raising the weight limit are ambiguous. On the one hand, it raises the productivity of road transport, which in short term leads to less lorry traffic on the roads. On the other hand, it more or less makes up for the price increase caused by the HVF (see figure below). This is why the costs of road transport remained practically stable overall. This is of importance when analyzing the effects of the fee, especially for the road – rail ratio. For this reason, and because the shift to rail has been declared as a main objective of the fee, the rail-road ratio will be analyzed separately (chapter 9.3). As all effects have to be seen as a result of the interaction between the HVF and the higher weight limit, it is more precise to speak of effects of the new regime instead of effects of the fee alone.

![Consequences 34/40 tonnes](image)

*Figure 4: The figure shows that the overall gain in productivity of 18% in road transport due to the higher weight limit more or less makes up for the effect of the HVF, which increased costs by 19%.*
9.2 The Chain of effects

The new regime with a HVF and a higher weight limit led, first of all, to serious changes in the fleet composition and the structure of the road transport sector:

- In the year prior to the introduction of the HVF, sales of heavy goods vehicles increased by 45%. By renovating their fleets, truck owners saved money in two ways: new vehicles belong to the lowest and therefore cheapest emission class and the size (or laden weight) of the trucks in the fleet could be better matched to the actual needs of the market. As regards the second point, two trends have to be distinguished: On the one hand, there was a trend to buy vehicles with a lower laden weight by those haulers who formerly mostly used over-sized vehicles for their average loads (to do so mattered much less under the old regime with the flat fee). On the other hand, those haulers who could make use of the higher weight limit tended to buy heavier vehicles.

- The new system led to a concentration in the hauler industry, either through mergers or through the closure of smaller companies. Larger companies are able to manage their lorries more efficiently and, particularly, to avoid empty runs.

The changes in the fleet composition and the structure of the road transport industry led to a change of trend in driving performance of heavy goods vehicles. Two levels have to be considered separately:

- On the national level, the new traffic regime led to a significant break of the former growth trend: annual increases of about 7% in the years before the introduction of the fee were replaced by a drop of around 4% in 2001 and of 3% in 2002. In 2003, the road performance of heavy goods vehicles remained more or less stable. The decrease observed cannot, or at least not entirely, be attributed to the slowdown of the economy, because it was also recorded in the first half of 2001, when economic growth was still about the same as in previous years.

- In transit traffic across the Alps, the higher weight limit led to a significant increase of articulated lorries. As this increase was almost outbalanced by a significant decrease in the ratio of lighter lorries, the total number of lorries crossing the Swiss Alps in 2001 was practically stable. After the steady annual increase of about 7% before 2001, this meant a break in trend. In 2002, the number of lorries across the Swiss Alps was even reduced by 9%. As this reduction might mainly be due to the restrictive traffic regulation system introduced after the tragic accident in the St. Gotthard road tunnel on 24 October 2001, this decrease cannot be considered as representative. At present, the number of lorries crossing the Swiss Alps is about equal to the level in the corresponding periods in 2000, the last year under the old regime.

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28 Number of vehicle-kilometres
29 A study on the question which factors influenced the decrease of road performance to what extent is to be carried out in 2004.
Change in driving performance 1997 – 2003

![Change in driving performance 1997 – 2003](image)

**Figure 5:** After a strong increase between 1997 and 2000, driving performance in freight transport (measured in vehicle-km) was reduced remarkably in the years after the introduction of the fee.

The development described above proved to be positive for both the economy and the environment:

- The introduction of the polluter-pays principle, inherent to the HVF, relieves the public hand by lowering external costs (e.g. damages caused by air-pollution).
- In parallel, due to the reduction of the driving performance and the renovation of the fleet, external costs themselves were lowered as well. This effect can be illustrated by the example of the emissions of NO₂ and CO₂ (see figure 6). Due to the new regime, the emissions of these pollutants should be about 30% lower than they would have been if the old regime had been maintained.30
- For a country like Switzerland with a dense transport infrastructure it is economically interesting to put a break on traffic growth. In this way, expenses for the extension of the road infrastructure can be saved and used for other, more productive investments or for tax reductions.
- The new regime had practically no consequence on the cost of living. According to the federal office for statistics, the increase due to the new regime was 0.1% at the most.

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30 As the new regime described concerns only a comparatively small part of the vehicle fleet on Swiss roads, its environmental benefit can only be figured out with the help of a model. Such modeling was provided by the Swiss Agency for the Environment, Forests and Landscape. It proved clearly, that the new regime would lead to remarkable emission reductions, especially in comparison to a status quo scenario with no HVF and a weight limit of 28 tons.
Effects on the environment

Figure 6: The graph, calculated by the Swiss Agency for Environment before the introduction of the fee, shows, that in 2007 the emissions of CO₂ and NO₂ caused by heavy goods vehicles will be about 30% lower with the new regime than they might have been if the old regime (flat fee, no higher weight limit) had been maintained.

The economic efficiency of the new regime was improved by the comparatively good cost benefit ratio. The implementation of the HVF costs 40 Mio. Euros per year. This amount includes the costs for research, investment, construction, replacement, operation and staff. In the short term, these 40 Mio € correspond to about 8% of the gross revenue of about 500 Mio € per year. In the long term, the cost-performance ratio will even improve: While the costs remain stable, the revenues will raise considerably due to the increase of the rate. The costs therefore is likely to be around 5-6% of the revenue. When comparing this very good ratio with the ratio of other systems, it should be considered that the rate of the fee is rather high.

On the whole, the new regime introduced on 1 January 2001 is a good example of how economical efficiency and environmental effectiveness can go hand in hand.

9.3 The road-rail ratio

One of the main objectives of the new fee was to encourage haulers to transfer freight transport from road to rail. So far, no general trend in this direction could be recognized. Given what was said above, this is not astonishing: The better competitiveness of rail due to the HVF was outweighed by increased productivity in road transport because of the higher weight limit. If railways are to reach a higher market share, they have to improve their productivity as well. With the construction of new railway infrastructure and the railway reform program (see chapter 3), the necessary framework has been established.

There remains the interesting question, what might have happened in the rail sector if the effects of the HVF had not been made up by the effects of the higher weight limit. In this context it is most interesting to know that rail now has a much bigger share in the transport of mineral oil from some Rhine ports to the oil storage sites in central Switzerland than it had before the introduction of the HVF. Though mineral oil is a heavy good it is, at least in the short term, not possible to profit from the higher weight limit in this transport sector for various reasons (e.g. safety regulations and the capacity of road tankers). This example clearly shows the importance of pricing where there is real competition between different modes of transport.
The importance of pricing is not the only lesson that can be learnt in the road-rail context from the mineral oil example. Another interesting fact is that this example took place in the short-haul sector where rail is said to be not competitive with the road. Other factors than distance seem to be more decisive for the choice of the mode. This seems to be especially true for the factor of reliability, as the following example shows: A retail firm, which originally transported all their goods on the road, has now transferred their transports to the Ticino (distance of about 200km) to the rail. One of the major arguments for doing so was the better reliability of rail, due to the difficult situation along the Gotthard road connection. The HVF was important inasmuch as it compensated the gain in productivity of the road due to the higher weight limit. In conclusion, pricing measures can only develop their effects if other conditions for the transfer like reliability and simple procedures (which is often not the case in international rail transport) are fulfilled.

... “A transfer of freight from road to rail is therefore not possible without strong additional efforts in the rail sector. Two factors are crucial: The railway sector must realise substantial gains in productivity and has to improve its reliability. A specific problem to solve is the delays in transborder traffic.”

10. Conclusions

Having followed the long way from the first ideas to realize a performance-related fee for heavy goods vehicles to the final implementation, one could think that the successful outcome is mainly due to the peculiar characteristics of the Swiss political system. It is undoubtedly true that the specific features of the Swiss system played an important role:

- without the right of launching a referendum against the EEA bill, Switzerland would have become a member of this area. As a consequence, the economy and two big parties allied to it would probably not have supported the campaign in favour of the HVF.
- The same is most probably true for the pledge in the negotiations with the EU, the weight limit. This limit – rather questionable from an ecological point of view - would certainly have been given up long ago, if government and parliament had not been conscious of the fact that such a change would have no chance in a referendum.

But the influence of the Swiss political system should not be overestimated. Often enough, people’s rights have not encouraged progressive ideas, but rather hindered them. Otherwise, woman’s right to vote would not have been delayed until the early seventies of the last century! If one goes to the bottom, he or she will soon realize that the real reasons for the acceptance of the fee are valid in general. In context with the HVF, these reasons can be summarized and put in order as follows:

First stage: Recognizing the problem

In the Swiss case, the driver for finding a solution was the situation in transit traffic, where the opening of the St. Gotthard road tunnel had triggered an enormous growth in transit traffic, leading to strong reactions on the political level. In the London case (as well as in many others), the driver favouring the charge was the huge traffic volume in the town centre. In other cases, it was the need of financial resources for the building of transport infrastructure. In all cases, there is a traffic problem that needs to be solved.

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Second stage: Find a plausible solution
The authority in charge has to offer a solution that is understood as suitable to solve the problem. In Switzerland it was the package of measures a majority considered as suitable to reach the goals the country was aiming for and in which the Fee played a central role.

Third stage: Make right use of the revenue
The way the revenue is suggested to be used is part of the solution and therefore crucial for the success of the whole project. The safest way for a dead end of a road pricing project is to design the revenue for the treasuries of the state. The acceptance of the fee can be increased decisively if the revenue is used for transport matters. It is interesting that there seems to be no problem if the revenue of one transport mode is used to improve another. This finding complies with the experience of the London Charge\textsuperscript{32} as well as the findings of the PRIMA\textsuperscript{33} project.

Fourth stage: Keep it simple
Don’t neglect the technical part and stick to a simple solution. As it can be learned from the Singapore case, it is always possible to shift to more sophisticated solutions later on (for instance different tariffs according to the time of the day) once the system has been implemented successfully. Just make sure at the beginning not to evaluate a system which cannot be developed in a direction you might like to go later on.

Fifth stage: seize the opportunity
Nothing can be learned better from the Swiss case than the importance of seizing the right moment for pushing a delicate project on the political agenda, i.e. when the circumstances are favourable. But it is essential to have done the necessary basic work when the window of opportunity is open. Considering that on the one hand driving performance is still increasing steadily and that on the other hand the necessary resources for building new infrastructure are getting more and more scarce it is simply wise to do this basic work now.

Final remark
The positive experiences with the Swiss HVF show, that road pricing is a suitable means to manage transport demand. But it also shows that the possibilities it offers are limited. This is especially true for the transfer of goods from road to rail, a specific aim of the Swiss policy in freight transport. If the obstacles hindering international rail freight are not overcome, this policy will not be successful.

Berne, 24\textsuperscript{th} December 2003,
Ueli Balmer

\textsuperscript{32} The revenue derived from the London charge is used mainly to improve public transport
\textsuperscript{33} PRIMA was a research project of the European Union on PRIcing Measures Acceptance (therefore the name), see bibliography
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