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EDITOR'S NOTE

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- 1 Detours of heavy goods vehicles via Austria and particularly the Brenner crossing are a constant issue on the traffic-policy agenda. The Land Transport Agreement¹ between the European Union (EU) and Switzerland, which aims at a coordinated transport policy, states the avoidance of detours as a principle guideline. Due to the restrictive measures prevailing in Switzerland and/or lower monetary costs in Austria the transalpine freight transport by road accepts longer routes particularly by taking detours via the Austrian Alpine crossings, thus causing a significant shift of traffic to other inter-alpine and trans-alpine routes. Diverging opinions about the approach to and perception of traffic detours exist in the individual Alpine countries, one of the reasons being the numerous criteria regarding the definition of traffic detours (ch. 3). This paper aims at providing more insight into this issue by presenting a differentiated analysis of the routes taken at the individual relations in trans-alpine freight transport by road in the year 2004.

Traffic-policy and Economic Framework Conditions

- 2 In the course of the last two decades, the traffic-policy and economic framework conditions for goods transport by road have undergone a significant change. The most significant milestones in Austria were the country's accession to the EU in 1995, the expiry of the Eco-Point regulation at the end of 2003, and the introduction of the road-pricing system for heavy goods vehicles moving on motorways on 01-01-2004. In Switzerland, significant changes took place in 2001 with the introduction of the Overland Transport Agreement and the heavy vehicles fee (HVE) as well as the restriction and/or

the introduction of the dosage system at the St. Gotthard crossing respectively (ARE, 2005). As a reaction to the fire disastrous in 1999 in the Mont Blanc tunnel, France implemented the following measures in the Fréjus and the Mont Blanc Tunnel: distance regulations, reduced capacity, and alternating one-way traffic for heavy goods vehicles. In Germany, the Euro vignette expired on 31-08-2003. The route-related toll on motorways was not introduced before 01-01-2005, so that trucks travelling through Germany did not have to pay any road toll in the survey year of 2004.

- 3 An interesting point in the economic context is the diverging development of the EU-15 states and the new EU member states, such as Poland, Slovakia, Hungary, and Slovenia. While the average gross domestic product (GDP) in the EU-15 states grew by 20% between 1994 and 2004, it grew by around 50% in the new EU member states (EUROSTAT). Between 1994 and 2003, the average rate for the export of goods in the EU-15 (evaluated in monetary terms) almost doubled, the new EU member states recorded growth rates between 250% and 500% but of course calculated on the basis of a much lower level. These developments were also registered with regard to the import of goods: While the average rate for the import of goods in the EU-15 doubled between 1994 and 2003, the new EU member states recorded growth rates of between 100% and 335% (Hungary) (EUROSTAT). The enlargement of EU had of course also significant impacts on the traffic flows.

Criteria Regarding the Definition of Detours

- 4 In order to define traffic detours, a plethora of criteria are used. The determination of these criteria will have a significant influence on the results.

Which variable do I select as a detour criterion, i.e. for the comparison with alternative routes?

- 5 From an ecological point of view, the length of a route makes for a good criterion, although aspects such as the route profile, town thoroughfares, etc. should be similarly taken into account. From an economic point of view, though, the total operational costs – consisting of the length of the route, the duration of the tour, the road tolls, and other cost factors such as cheaper fuel costs, for instance – need to be calculated.

Where are the thresholds between a route and a detour, and will these be set as absolute or relative values or as a combination of both?

- 6 The detour criterion « length » is mostly set at values of 60 km or 120 km. However, the often-mentioned value of 60 km is set at quite a low level. On the way from Frankfurt am Main to Modena, for instance, the route via the Brenner crossing (896 km) is almost 60 km longer than that via the St. Gotthard crossing (837 km), but the detour itself accounts for not more than 7% of the route's total length. The value of 120 km, which is also often mentioned, needs to be similarly questioned. The detour via the Brenner crossing on the route Stuttgart – Brescia is 110 km longer than the route via the Gotthard crossing (592 km) and thus accounts for almost 20% of the route's total length of 702 km.

Which alternatives will be considered in the computation?

- 7 If various Alpine crossings are considered as alternative routes in the computation, the difference in length between the San Bernardino and the Brenner route, for instance, exceeds the threshold value, and the tour via the Brenner crossing is therefore considered a detour. However, if only the Gotthard crossing is « opened » (i.e. considered as an alternative route), the « detour threshold » will not be reached, and the Brenner route is not a detour according to the definition.

How do I compute alternative routes?

- 8 Before computing alternative routes, it is necessary to find out what criteria influence the decision as to what route will be taken from the point of departure to the (alternative) Alpine crossing and from there to the point of destination. The shortest route in terms of length leads to a maximum of detours, and although such a route seems to be optimal at first, a truck may have to drive over country and community roads as well as thoroughfares, an unwanted and improbable option. The same holds true for the cheapest alternative. Another possible option is to take the fastest routes leading to the Alpine crossing and onwards from there. This route will go via a high-quality road network, but the amount of detours will decrease. These considerations show that it is of crucial importance to at least make the criteria known on which the analysis of traffic detours is based. Within the framework of a differentiated approach, this paper will also aim at comparing the different results in view of various approaches.

Methodological Approach

- 9 The Swiss and Austrian data records of the CAFT (Cross Alpine Freight Transport Survey) from 2004 were taken into account for the investigation of traffic detours (BMVIT & ARE 2005). The analysis focuses mainly on the Alpine crossings in Western Austria and in Switzerland. Details about completed tours cover the points of departure and destination, the Alpine crossing, and the border crossing into and out of the respective country. The points of departure and destination were aggregated to departure and destination zones respectively so as to reduce the number of examples on the one hand and reduce or completely eliminate their influence on the analysis of the detours on the other hand. In view of the different lengths of the alternative routes in absolute terms, it is irrelevant whether a route starts in Hanover, Bremen, or Hamburg, for instance. It is one and the same route from Hanover onwards, and it is therefore correct to consider absolute differences regarding the length of traffic detours. Minor deviations may arise in respect of relative threshold values since a difference of 100 km in a route's total length will modify the threshold value according to the percentage determined.
- 10 In almost 35,000 interviews conducted within the framework of the 2004 survey (CAFT), around 7,600 different routes, and up to 9 corresponding alternative routes, were identified:
- Tauern
 - Felbertauern
 - Brenner/Brennero – Kufstein

- Brenner/Brennero without further limitations (i.e. also Fernpass – Brenner Brennero, etc.)
 - Reschen/Resia
 - San Bernardino
 - St. Gotthard
 - Simplon
 - Great Bernhard
- 11 Next to existing information about the routes such as the points of departure and destination, one location serving as an intermediate point nearby the Alpine crossing and 0 to 2 stopovers at the borders needed to be identified. With regard to the alternative routes, the choice of the 1 to 2 stopovers needed to be made very carefully to avoid the risk of generating unreasonable routes. On the Reschen route, for instance, Landeck needed to be identified as the second stopover next to Schlanders Silandro, because otherwise the routes thus generated would lead through the Engadin.
- 12 The following criteria were determined with regard to the analyses of traffic detours:
- A route's length will be considered and evaluated as a detour criterion.
 - In view of a differentiated approach, the following absolute or relative values as well as value combinations were set as threshold values: 60 km, 120 km, 10%, 20%, and a combination of 60 km and a minimum of 10%.
 - In view of a differentiated approach, four alternatives were taken into consideration, i.e. only the route via Gotthard, only the route via Brenner, routes via Gotthard and Brenner, and all of the 9 alternative routes.
 - The computation was done on the basis of the quickest routes leading to the Alpine crossing and onwards from there, so that a tour mainly leads via a high-quality road network.
- 13 The computation of a route's respective length was done with the CargoRoute programme. On the basis of detailed criteria relating to the respective vehicle, CargoRoute is able to optimise a route in respect of its duration, length, or costs, including the road toll. Moreover, it is able to identify a cost-optimised alternative route under consideration of all relevant factors (number of axles, emissions class, individual costs of the vehicle regarding the route's duration and length). A COM interface provides a computerised identification of various routes and alternatives. The results of the computation were linked to the database, so that it became possible to determine the number of detours for each computation mode via the projection factors. In addition, the results of the identification of detours have been verified with the Traffic Model Austria and proved to be plausible.

Results

- 14 The analysis of truck tours via the Alpine crossings in Switzerland and Western Austria shows that trucks do often not take the shortest routes.
- 15 Considering only the St. Gotthard crossing as an alternative route, it is no surprise that an overwhelming number of detours go via the Brenner. Of a total of 1,996,000 tours currently crossing via the Brenner, around 563,500 tours, i.e. around 28% of the total number of trucks taking the Brenner route (Table 1)², would be more than 60 km shorter via the St. Gotthard route. Another 82,300 detours are taken via the Tauern crossing, i.e. around 9% of the total of the trucks taking this route. Considering a difference in length

of 120 km and over between the detour and the normal route, 290,200 tours (14.5%) taking the Brenner route fulfil the detour criterion, i.e. more than half of all detours via the Brenner crossing cover a difference of between 60 km and 120 km. Detours in Switzerland, the most important among them via San Bernardino, almost exclusively cover a difference between 60 km and 120 km.

Table 1. Amount of traffic, number and percentage of detours via the Alpine crossings (considering the St. Gotthard route and considering the Brenner route as the sole alternative).

Alpine crossing	Amount of traffic in 2004 [Trucks/year]	Detours compared to the St. Gotthard route and percentage of traffic detours in total traffic at threshold value				Detours compared to the Brenner route and percentage of traffic detours in total traffic at threshold value			
		> 60km		> 120km		> 60km		> 120km	
		[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]
Tauern	941,000	82,300	8.7%	66,700	7.1%	73,700	7.8%	40,500	4.3%
Felbertauern	82,500	600	0.7%	300	0.4%	1,400	1.7%	300	0.4%
Brenner/Brennero	1,996,000	563,500	28.2%	290,200	14.5%	-	-	-	-
Reschen/Resia	135,000	6,700	5.0%	4,700	3.5%	6,100	4.5%	1,100	0.8%
San Bernardino	154,000	18,600	12.1%	700	0.5%	1,400	0.9%	600	0.4%
St. Gotthard	969,000	-	-	-	-	8,400	0.9%	4,700	0.5%
Gr. St. Bernhard	65,000	7,100	10.9%	2,500	3.8%	300	0.5%	200	0.3%
Simplon	67,000	10,100	15.1%	3,400	5.1%	400	0.6%	200	0.3%
Total	4,409,500	688,900	20.0%	368,500	10.7%	91,700	2.7%	47,600	1.4%

- 16 Considering the Brenner crossing as the sole alternative, it becomes obvious that detours around the Brenner route are not taken all that frequently. Mainly affected is the Tauern crossing, where around 73,700 trucks accepted a detour of more than 60 km in 2004 (Table 1). What might play a role in this context is the ban on driving at night in the Tyrol Unterland³. 8,400 and 6,100 trucks take a detour of more than 60 km via the Gotthard and the Reschen crossings, respectively, instead of taking the Brenner route. The amount of traffic taking a detour via the Brenner can be neglected at all crossings apart from those at Tauern and Reschen. At a threshold value of 60 km, 7.8% « Brenner trucks » take a detour via Tauern and 4.5% via Reschen.
- 17 If both the Brenner and the Gotthard crossing are considered as alternatives, only minor shifts of the above-mentioned results arise. The Gotthard route may be a better alternative to that via San Bernardino, but the Brenner route is an even better one. If the Gotthard is « opened », the route will be shifted to Gotthard, if the Brenner is « opened », it will be shifted to the Brenner. If both are considered as alternatives, the better one – i.e. the Brenner – will be taken.
- 18 As Table 2 shows, the Brenner absorbs more detours than all the other Alpine crossings. 562,500 trucks per year taking the Brenner route would save at least 60 km on their way if they would take the Gotthard route. This means that 28.2% of all trucks annually taking the Brenner route accept a detour of more than 60 km. The Tauern takes second place: 75,700 trucks (i.e. 8.0%) of a total of 941,000 tours annually taking the Tauern route would save at least 60 km on their way via the St. Gotthard route and 50,900 tours (i.e. 5.4%) would save at least 60 km on their way via the Brenner route.

- 19 Considering all alpine crossings it is shown that 680,700 trucks/year have an alternative shorter by 60 km via the St. Gotthard route and 65,300 trucks/year an alternative shorter by 60 km via the Brenner corridor.

Table 2. Number and percentage of alternative routes via the Brenner or the St. Gotthard crossings at threshold values > 60 km an W 120 km.

Route via Alpine crossing	Alternative shorter by											
	> 60km						> 120km					
	none		via the Brenner		via the St. Gotthard		none		via the Brenner		via the St. Gotthard	
	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]
Tauern	814,300	86.5%	50,900	5.4%	75,700	8.0%	855,500	90.9%	22,100	2.3%	63,200	6.7%
Felbertauern	80,800	97.9%	1,100	1.3%	600	0.7%	82,200	99.6%	0	0.0%	300	0.4%
Brenner/Brennero	1,433,000	71.8%	0	0.0%	562,500	28.2%	1,706,400	85.5%	0	0.0%	289,100	14.5%
Reschen/Resia	122,700	90.8%	5,800	4.3%	6,700	5.0%	129,300	95.7%	1,100	0.8%	4,700	3.5%
San Bernardino	135,000	87.4%	1,200	0.8%	18,200	11.8%	153,200	99.3%	400	0.3%	700	0.5%
St. Gotthard	963,400	99.4%	6,000	0.6%	0	0.0%	965,000	99.6%	4,300	0.4%	0	0.0%
Gr. St. Bernhard	58,000	89.1%	100	0.2%	7,000	10.8%	62,500	96.2%	100	0.2%	2,400	3.7%
Simplon	56,300	84.4%	300	0.4%	10,100	15.1%	63,200	94.8%	100	0.1%	3,400	5.1%
Total	3,663,400	83.1%	65,300	1.5%	680,700	15.4%	4,017,400	91.1%	28,100	0.6%	363,800	8.3%

Table 3. Number and percentage of alternative routes via the Brenner or the St. Gotthard crossings at threshold values > 10% and 20%.

Route via Alpine crossing	Alternative shorter by											
	> 10%						> 20%					
	none		via the Brenner		via the St. Gotthard		none		via the Brenner		via the St. Gotthard	
	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]	[Trucks/year]	[%]
Tauern	869,300	92.4%	21,000	2.2%	50,500	5.4%	931,800	99.0%	2,600	0.3%	6,400	0.7%
Felbertauern	81,600	98.9%	600	0.7%	300	0.4%	82,200	99.6%	300	0.4%	0	0.0%
Brenner/Brennero	1,713,400	85.9%	0	0.0%	282,100	14.1%	1,860,500	93.2%	0	0.0%	135,000	6.8%
Reschen/Resia	122,400	90.5%	6,900	5.1%	5,900	4.4%	130,200	96.3%	1,700	1.3%	3,300	2.4%
San Bernardino	134,400	87.0%	400	0.3%	19,600	12.7%	150,000	97.2%	100	0.1%	4,200	2.7%
St. Gotthard	965,700	99.6%	3,700	0.4%	0	0.0%	968,200	99.9%	1,200	0.1%	0	0.0%
Gr. St. Bernhard	60,300	92.8%	100	0.2%	4,600	7.1%	64,200	98.6%	0	0.0%	900	1.4%
Simplon	61,300	92.0%	100	0.2%	5,200	7.8%	64,800	97.3%	0	0.0%	1,800	2.7%
Total	4,008,400	90.9%	32,600	0.7%	368,300	8.4%	4,251,900	96.4%	5,800	0.1%	151,600	3.4%

- 20 At a threshold value of >120 km, the number of detours is almost cut in half. Again, the Brenner crossing still absorbs most of the traffic detours, followed by the Tauern crossing (Table 2). In total 363,800 tours/year would have a shorter alternative route via the Gotthard, 28,100 tours/year via the Brenner crossing. At this threshold value, again most of the detours are currently taken via the Brenner route (289,100 trucks/year), corresponding to 14.5% of all truck tours taking this route. While hardly any detours are taken at San Bernardino at the 120-km threshold (table 2), an alternative shorter by 10% reaches peak values (Table 3). This means that the additional length of the detour is always below 120 km and that the distances covered by tours via San Bernardino are generally shorter. This similarly applies to the Reschen route, albeit to a somewhat lower extent. If you consider the alternative routes via the Gotthard and the Brenner crossings that are more than 20% shorter, the number of detours is declining once again. All in all, 151,600 and 5,800 tours/year remain at this threshold that would have a shorter alternative route via the Gotthard and the Brenner crossing, respectively. The first-mentioned are mainly absorbed by the Brenner corridor (135,000 tours/year) the last-mentioned 5,800 mainly by the Tauern and the Reschen crossings (table 3). Ultimately, the routes via all of the 9 alternatives were considered. The differences in length compared to the actual route were calculated and the route with the biggest difference in length (shortest alternative route) determined. Afterwards, the traffic detours were theoretically shifted to these routes.
- 21 A striking point in this context is that only a few detours, all in all not more than 6% of the total, are taken at the Gotthard (table 4). At the Brenner, on the other hand, almost 50% of the total of 1,996,500 truck tours accept a detour of more than 60 km. At the

Reschen and the Tauern crossings approx. 20% of all truck tours would have an alternative route shorter by 60 km.

- 22 The Gotthard would be the shortest alternative route for around 425,000 trucks/year, and San Bernardino for 252,000 trucks/year. Although not a single route could be shifted to the Kufstein-Brenner corridor, an alternative Brenner route (Arlberg-Brenner, Fernpass-Brenner, Scharnitz-Brenner, for instance) would be the shortest route for 353,000 trucks/yea (table 4).

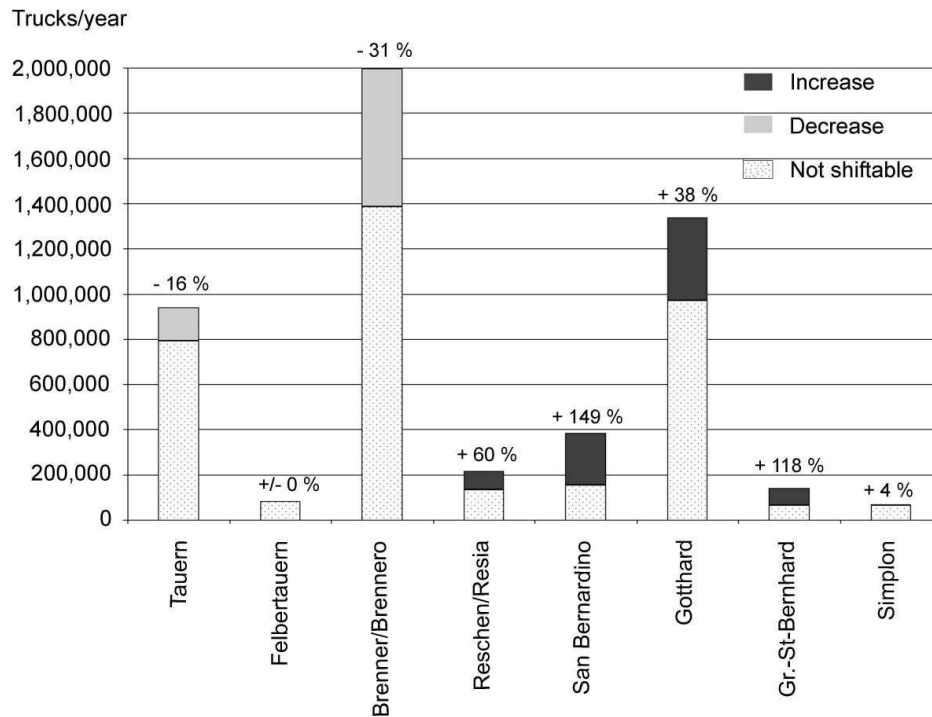
Table 4. Number and percentage of alternative routes via Austrian and Swiss Alpine crossings shorter by at least 60 km.

Route via Alpine crossing		Alternative shorter by > 60km									
		none	Tauern	Felbertauern	Brenner/Brenner - Kufstein	Other route via the Brenner	Reschen/Resia	San Bernardino	St. Gotthard	Gr. St. Bernard	Simplon
Tauern	Trucks/year	750,000	0	7,000	0	93,000	44,000	4,000	33,000	9,000	0
	(%)	79.7%	0%	0.7%	0%	9.9%	4.7%	0.4%	3.5%	1.0%	0%
Felbertauern	Trucks/year	73,000	5,000	0	0	4,000	0	1,000	0	0	0
	(%)	88.5%	6.1%	0%	0%	4.8%	0%	1.2%	0%	0%	0%
Brenner/Brennero	Trucks/year	1,031,000	36,000	2,000	0	225,000	52,000	229,000	361,000	51,000	9,000
	(%)	51.7%	1.8%	0.1%	0%	11.3%	2.6%	11.5%	18.1%	2.6%	0.5%
Reschen/Resia	Trucks/year	111,000	0	1,000	0	16,000	0	3,000	4,000	0	0
	(%)	82.1%	0%	0.7%	0%	11.8%	0%	2.2%	3.0%	0%	0%
San Bernardino	Trucks/year	132,000	0	0	0	3,000	2,000	0	14,000	2,000	1,000
	(%)	85.5%	0%	0%	0%	1.9%	1.3%	0%	9.1%	1.3%	0.6%
St. Gotthard	Trucks/year	913,000	1,000	0	0	11,000	7,000	15,000	0	21,000	1,000
	(%)	94.2%	0.1%	0%	0%	1.1%	0.7%	1.5%	0%	2.2%	0.1%
Gr. St. Bernard	Trucks/year	57,000	0	0	0	0	0	1,000	4,000	0	3,000
	(%)	87.6%	0%	0%	0%	0%	0%	1.5%	6.1%	0%	4.6%
Simplon	Trucks/year	55,000	0	0	0	1,000	0	1,000	9,000	1,000	0
	(%)	82.6%	0%	0%	0%	1.5%	0%	1.5%	13.5%	1.5%	0%
Total	Trucks/year	3,122,000	42,000	10,000	0	353,000	105,000	252,000	425,000	85,000	15,000
	(%)	70.8%	1.0%	0.2%	0%	8.0%	2.4%	5.7%	9.6%	1.9%	0.3%

- 23 The most important alternative route for the Brenner is still the Gotthard crossing: It would be able to absorb around 18% of the Brenner traffic, while 11,5% could be shifted to San Bernardino and 11% to other Brenner routes. The best alternative routes for the Tauern and the Reschen crossings are « other Brenner routes » with approx 10% and 12%, respectively. The shift of 14,000 trucks/year (9.1%) from the San Bernardino crossing and 9,000 trucks/year (13.5%) from the Simplon to the Gotthard crossing are the most striking figures in Switzerland. Around 25,000 trucks/year may be shifted altogether from Switzerland to the alternative routes in Austria.
- 24 At a threshold value of 120 km there are less and less shorter alternatives. Only 18% (365,000 tours) of the routes via Brenner would be considered as detours, 7.6% (150,000 tours) would have a shorter alternative via the Gotthard, and 5.1% (100,000 tours) via the San Bernardino crossing. The amount of detours via the Swiss Alpine crossings is marginal at this threshold.
- 25 Fig. 1 shows the additional burden on and/or the relief of the Alpine crossings in case of a theoretical shift of traffic detours that are longer than 60 km considering 9 alternatives. At this threshold value, the burden on the St. Gotthard crossing would increase by 38%,

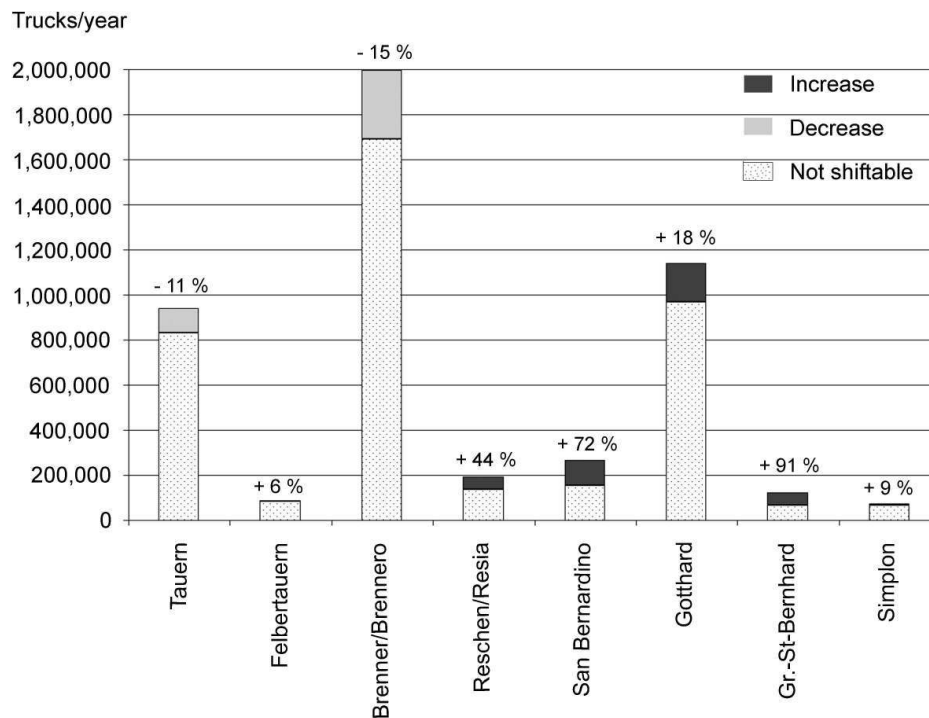
while Brenner and Tauern would experience a relief of 31% and 16%, respectively. In this case, around 1.35 m trucks/year would cross both at Brenner and St. Gotthard, so that the two crossings would be burdened with a similar amount of traffic. The burden for San Bernardino (+149%) and Gr. St. Bernhard (+118%) would increase to a great extent as well, but only in view of a low absolute level. The only Austrian Alpine crossing that would experience an additional burden is Reschen.

Figure 1. Additional burden and relief of Alpine crossings in case of a theoretical shifting of traffic detours longer by 60 km.



26 A transfer of detours longer by more than 120 km would lead to a traffic increase at the Gotthard crossing by 18% and a decrease at the Brenner by 15% (fig. 2). As a consequence, 1.7 millions trucks/year would cross the Alps via the Brenner and 1.1 millions trucks/year via the St. Gotthard route. Like at a threshold value of 60 km, traffic would increase the most at the San Bernardino, Gr. Bernhard, and Reschen crossings. However a decrease of 11% or 108,000 trucks/year could be recorded at the Tauern crossing.

Figure 2. Additional burden and/or relief of Alpine crossings in case of a theoretical shifting of traffic detours longer by 120 km.



Conclusion

- 27 The analysis of detours in transalpine freight transport shows that heavy goods vehicles do often not take the shortest routes, causing a significant shift of traffic to other alpine routes. Most of these detours are taken via the Austrian crossings, especially via the Brenner. A theoretical shift of detours to the shortest routes would lead to an additional burden on the Gotthard and a relief on the Brenner. As these figures already show, detour traffic is an important topic on the traffic-policy agenda. Detours are often brought into discussion when it comes to the impacts of transalpine freight transport and need to be considered when developing common measures. Important in this discussion is to make transparent all criteria used for the definition of detours, as different definitions lead to very different results. Traffic follows the « best » route in terms of its own intrinsic logic. To influence the flow of traffic by certain measures it is therefore important to identify the criteria for the choice of a specific route. The shipper's decision for a route could include road fees, congestion probabilities, night or weekend driving bans, for instance. The report on the state of the Alps (Alpine Convention, 2006) emphasises that differences in road pricing and traffic regulation between the Alpine countries as well as bottlenecks lead to considerable detours in long-range truck itineraries. But there are also several other factors (e.g. reliability, prevention of damage, flexibility, punctuality) influencing the choice of a shipper, as different studies have shown (Bolis, Maggi, 1999; Rudel, Abel, Maggi, Stoppa, 2006), depending also on the logistical context of a company, such as JIT (just in time) production systems.

- 28 A specific challenge for the alpine regions is to adjust political measures in such a way that freight flows are reasonably distributed between corridors, avoiding detour traffic. Therefore integrated and common approaches are necessary. One proposal aiming in this direction is the Alpine Crossing Exchange, elaborated by the Alpine Initiative⁴, which aims at establishing an equitable distribution of a fixed number of heavy vehicle trips among the various Alpine passes and weekdays and should be applied to the whole Alpine arc in order to help deterring detour traffic and to eliminate unnecessary trips (empty trucks) (Alpine Initiative, 2005).
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NOTES

1. Agreement between the European Community and the Swiss Confederation on the Carriage of Goods and Passengers by Rail and Road, signed on 21th June 1999 and entered into force on 1st June 2002.
2. With regard to the tables, it is important to note that individual figures as well as the total sum of each column are rounded. Thus, the total sum of each column and the sum of the rounded individual figures may slightly deviate from each other.
3. Tyrol Unterland is the part of Tyrol located east of Innsbruck, excluding the region of East Tyrol.
4. The Swiss association « Alpine Initiative », which was founded on 25 February 1989 aims at protecting the Alpine region from the negative effects of transit traffic and preserving it as a living space for humans, animals and plants. It launched a popular initiative to make this objective legally binding. The popular initiative, also called the Alpine Initiative was adopted by a majority of both the Swiss population and the cantons on 20 February 1994.

ABSTRACTS

Detours of trans-alpine freight transport by road are a constant issue on the traffic-policy agenda. A plethora of criteria regarding the definition of detours leads to diverging opinions prevailing in the individual Alpine countries and serves to complicate the discussion even further. This paper presents criteria regarding the definition of traffic detours as well as an analysis of the detours taken by heavy goods vehicles (trucks) at the Austrian and Swiss Alpine crossings in the year 2004. The analysis of routes taken goes to show that heavy goods vehicles do often not take the shortest routes. One point of interest is that only a few detours are taken via the St. Gotthard crossing. However, at the Brenner crossing, depending on the mode of computation, up to 740,000 of the 1,996,000 truck tours take a detour of more than 60 km via the Brenner crossing although 18.1% and 11.5% of all truck tours would have a shorter alternative route via the St. Gotthard and the San Bernardino crossing, respectively. A theoretical transfer of detours of more than 60 km to the shortest routes would lead to an increase in traffic of 38% at the St. Gotthard and 149% at the San Bernardino crossing. The amount of traffic at the Brenner and the Tauern crossing, on the other hand, would decrease by 31% and 16%, respectively.

La question des détours dans le transport transalpin de marchandises sur route figure constamment parmi les priorités des politiques de circulation. La pléthore de critères relatifs à la définition d'un détour a donné naissance à des points de vue divergents au sein des différents pays alpins, rendant le débat d'autant plus complexe. Le présent article propose des critères relatifs à la définition d'un détour ainsi qu'une analyse des détours faits en 2004 par les poids lourds franchissant les Alpes autrichiennes et suisses. L'analyse des détours faits par les poids lourds tend à démontrer qu'ils n'empruntent que rarement les itinéraires les plus courts. Il est intéressant de souligner que très peu de détours sont faits par le col du Saint-Gotthard. Mais suivant le mode de calcul choisi, jusqu'à 740 000 poids lourds sur 1 996 000 font un détour de plus de 60 km par le col de Brenner alors que 18,1 % des véhicules pourraient emprunter un itinéraire plus court en passant par le col du Saint-Gotthard et 11,5 % en passant par le col du San Bernardino. En théorie, la déviation vers des itinéraires plus courts des véhicules qui font un détour de plus de 60 km générerait une hausse de la circulation de 38 % au col du Saint-Gotthard et de 149 % au col du San Bernardino. Aux cols de Brenner et de Tauern, la circulation diminuerait de 31 % et 16 % respectivement.

INDEX

Geographical index: Austria, Brenner, Switzerland, St. Gotthard, San Bernardino, Tauern

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