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Safety and Liability in the practice of Skiing: How Law and Cognitive Sciences shape the driving factor of Winter Tourism

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1. Introduction*

Witnessing an injured skier being airlifted by helicopter from a winter ski resort is an unforgettable event, reminding us of the risks of snow-based winter sports, particularly alpine skiing. The world's media attention for the ski accident suffered by Michael Schumacher for example, illustrated a collective concern for the safety of ski areas (Allen, 2014), showing how even the slightest inattention on the part of the skier, combined with the lack of optimal precautions of the ski area, may cause serious, and potentially fatal, injuries. 1

The international literature on the incidence of injuries in alpine skiing is extensive, but results from epidemiological studies conducted in different countries and various ski areas are difficult to compare, due to the lack of an uniform methodology (some of these studies match the number of accidents with the number of skier visits, others match more precisely the number of accidents with the number of ski-lift rides, while the same notion of accident taken in consideration is unevenly considered by some studies as "a serious injury" and by others as an event implying the intervention of the ski resort emergency service). With this disclaimer some studies report 1.9 injuries per 1000 skier visits (Johnson, Ettlinger, Shealy, 2009); others report the lower rate of 1.35 injuries per 1000 skier/boarder days (Ruedl, Kopp, Sommersacher, Woldrich, Burtscher, 2013), others a rate of accidents of 0.98 injuries per 10,000 lift runs (Stenroos, Handolin, 2014). In Scotland a 2.24 injury rate per 1000 skier days is reported (<http://www.ski-injury.com/injury-statistics/stats1#figures>, last visited July 2014). This parameter is not employed by the most comprehensive Italian source of data on ski accidents. According to the last survey made available by the Italian National Institute of Health in 2007, drawing upon data collected at the national level by the SIMON surveillance system (which considers the ski accidents reported by police operators in 55 ski resorts), in Italy the practice of skiing between 2004 and 2006 entailed on the average a toll of 35,000 accidents yearly from a cohort estimated as 2,500,000 alpine skiers, 500,000 snowboarders, and 400,000 backcountry skiers (Istituto Superiore della Sanità, 2007). Data from a specialized literature report in US almost 140,000 cases of injuries serious enough to require treatment by hospital emergency units occurred to skiers and snowboarders in 2002 (Xiang et al., 2005). 2

To reduce the social costs produced by accidents on ski slopes, a requirement is made that skiers should ski prudently, that ski resorts increase safety measures, and that policymakers consider legislation specifically addressing liability resulting from such ski related injuries. 3

In 2003 Italy set a precedent among other European countries (art. 39 of the Polish General 4

Act on Sport of 2010 provides for some obligations that echo those contained in the Italian legislation, but that appear less specific) by promulgating legislation for the specific purpose of promoting a better equilibrium between ski resorts, or Ski Area Operators (hereinafter referred to as SAO's), the alpine skiers, considered by the law as consumers of ski areas, and the winter sport-based tourism industry, all to ultimately promote optimal safety for skiers, cost effective safety measures for SAO's, on the assumption that this effort could also promote the economy of the Italian regions where the practice of alpine skiing is the core attraction for the winter tourism industry.

Focusing on the Italian experience, this article sheds light on the interaction between safety and liability rules affecting skiing and the economics of winter tourism sports regions. In so doing, it argues that the optimal rules of liability addressing the allocation of the social costs implied by the accidents occurring on the snow should consider insights from cognitive sciences,suggesting that the skiers' behaviour plays a major role in reducing the rate of ski injuries, since this behaviour is highly responsive to the conditions of safety perceived on the slopes and it is ultimately driven by the "sensation seeking" of the skiers. 5

Part 2 of this article provides a brief history of the economies of alpine skiing areas, showing how significantly winter sports intertwine within the economics of tourism of mountain areas. In so doing, it addresses current trends in marketing strategies spearheaded by winter tourism locations boasting more advanced technological improvements to ski areas. 6

Part 3 critically addresses the current Italian legislation which adopts more of a strict liability regime, specifically enacted to establish a balanced effect to ensure the costs of ski-related accidents, occurring on the Italian slopes, are judicially allocated between the skiers and the SAO's. On the face of it, such legislation appears unbalanced by favouring the consumers because of the rebuttable assumption such SAO's are responsible for the costs of ski-related accidents. 7

Part 4 explores insights based on principles of cognitive science to better understand the perception of skiers faced with the changes in legislation and safety measures employed by SAO's. This helps to answer the question of whether such changes actually increase ski-related accidents because such skiers can almost assume any costs of ski accidents will be judicially assessed against the SAO's . 8

This article concludes by proposing solutions that, it is argued, will prevent the Italian winter tourism economy from falling apart as a result of the (currently unbalanced) Italian legislation which was specifically enacted to provide equilibrium between the optimal and cost-effective safety measures on the slopes and the allocation of costs of ski-related accidents. In so doing the article also indicates a possible direction for further multidisciplinary and comparative research in the field. 9

2. The economics and marketing of skiing, and the international winter tourism market

In the 1960's and 1970's, snow-based winter sports, particularly alpine skiing, were the driving force behind the revival of economies in European alpine areas (Hudson, 1999). Recently, such winter sports have evolved from alpine skiing to other snow-based mountainous activities and continue to provide European nations with an important source of revenue that significantly contributes to "total" tourism revenue. As such, snow based winter sports are strongly rooted within the economics of tourism in European mountain areas, including those in Italy: "winter tourism in the European Alps is highly dependent on snow based winter sport. At the end of the 1980s, a period of several winters lacking snow gave the alpine communities a first idea of what climate change could mean for regions dependent on winter sport tourism" (Unbehaun, Pröbstl, Haider, 2008, p. 36). 10

In response to the dependency of winter tourism revenues in the European Alps, winter sports have become crucial elements of marketing strategies employed by winter tourism destinations that compete ferociously internationally to attract new influxes of tourists from emerging markets.Such aggressive marketing strategies targeting these emerging markets have never been so crucial because European markets have witnessed a steady decline of demand from domestic consumers since the 1970's and 1980's (Pechlaner, 11

Tschurtschenthaler, 2003; for the Scottish case, Holden 2008, p. 147), when the winter tourism market rapidly reached its maturity (Williams, Fidgeon, 2000).

Combined with such aggressive international marketing strategies, winter tourism locations recently began adding new dimensions to ski slopes such as advanced mountain railways connecting consumers to nearby mountains more quickly, ski-lifts and gondolas providing consumers with faster and safer access to more isolated areas on ski resorts. These initiatives have combined to appeal to the emotional aspect of most skiers; that being more skiing options, less crowds, convenience and mountain areas offering most every skier's dream, a chance at finding more untouched and pristine powder conditions. Offering these new attractive dimensions to winter ski areas, SAO's force upon themselves more responsibility, which leads to another consequence, an evolving legislation designed to address the safety behind such new attractive dimensions. Therefore, almost all countries with SAO's adding these new dimensions enhancing the skiing experience have enacted legislation designed to address the interaction of more adequate safety measures with the rules of civil liability of each legal system to ensure such safety precautions are enforced (for a detailed comparative analysis of the law of safety and liability in the practice of skiing in several European alpine countries - Italy, Switzerland, Austria, Germany, France - see Izzo, Pascuzzi, 2006; for the Spanish experience, see Piccin, 2012; for the U.S. experience, see Feldman, Stein, 2010; Armes, 2012). 12

From a law and economics perspective such legislation addresses the inevitable social costs embedded in the practice of winter sports. Not surprisingly, empirical research confirms that the risk of a ski accident is the number one risk perceived by tourists during winter holidays (Eitzinger, Wiedemann, 2007, p. 913). However, safety and liability provisions, adopted with the intention of reducing the overall social costs implied by the occurrence of ski-related accidents, in turn increase the costs of services that have to be provided to tourist skiers by SAO's, resulting in costs that are passed down to the skier by increasing the cost of the ski-pass, which is already heavily influenced by the rapidly increasing cost of energy. 13

At the same time, and as has been pointed out in specialized literature (Sainaghi, 2008, pp. 40-41): "European snow tourism, after a long development stage, is subject to increasing competition. It is indeed a market characterised by low growth rates, and has been faced with the continuing expansion of supply driven both by the creation of new destinations and by the growth in available resources at those already in existence. In this context many destination operators (businesses, associations, DMOs [agencies with responsibility for the destination strategy, the management of communication and the development of new tourism products]) are undecided as to the strategy to be adopted to maintain or increase their own market share and above all, as to how to create a sustainable competitive advantage. The issue is of great importance because the already delicate economic-financial equilibrium of the ski corporations is being further eroded by the new rules of the game. Indeed, there are many causes which have contributed to a significant increase in operational costs and investments – reduction in snowfall and the consequent development of planned snow making, the increased investment costs for modern transport, the growing staff and energy costs and the increased cost of maintaining ski run safety and environmental integrity, including minimising the risks of avalanches". 14

A factor affecting the cost of ski-passes is the increased use of civil liability theories to redress damages caused by injuries to skiers for alleged breaches of the duties of SAO's. More specifically, a noticeable judicial trend towards the implementation of stricter patterns of liability theories (that force a rebuttable presumption holding SAO's liable for redressing ski-related injuries) tends to act as a form of second best insurance, shifting the cost of the accidents incurred by the victims to SAO's, that in turn spread these costs among prospective skiers through the cost increase of the ski-pass, thereby providing a circle of unbalanced costs likely to collapse such a winter tourism market. An empirical analysis aimed at measuring the economic impact of the litigation involving skiers and ski areas would be extremely useful, but is surprisingly neglected in studies with a narrow national focus (for instance Falk, 2008), which miss the opportunity to assess the uneven costs of safety implied by the different legal rules patrolling the safety of the ski slopes under different legal systems. Despite the lack of specific literature in this respect, one may suspect that the allocation of the cost of ski accidents via the legal system is likely to result in a competitive disadvantage for ski areas subject to stricter liability regimes: the rising cost of the ski-pass in such areas is likely to count as an important factor affecting the international competition 15

of such ski areas.

A vast body of literature shows that in the choices of prospective costumers, costs in general (and among these the costs of the ski-pass) are among the main factors influencing the market attractiveness of winter sports resorts (see among the others Tuppen, 2000, pp. 331-333, who ranks these factors in this order: cost factors (noting in passing that "skiing remains expensive and is far more accessible to white collar professionals and high income groups than to the less well-paid. The importance of cost is seen in the gulf existing between the amount tourists appear willing to pay for a winter sports holiday and the actual cost"; the attractiveness of resorts; accommodation; accessibility; management shortcomings; the context of development). 16

From the SAO's perspective it has been noted (Goncalves, 2013, p. 656) that "attractiveness depends on the ability of ski-lifts operators to develop (at least maintain) a well technical offer without increasing prices. The operators' objective is to optimize all of their resources to ensure a good service and experience to consumer. Ski-lifts operators have to invest in new technologies to confront the new entrants (more technical and more trendy) and to improve their capacity to skirt the lack of natural snow. However, it's also important, mainly due to financial constraints, to ensure a better management and organization to improve technical efficiency". 17

With a stricter liability regime governing any given SAO, one may assume that such SAO increases its attention to issues of safety on the slopes more than SAO's subject to less strict liability regimes, and that this attention could be then "sold," and to some extent, perceived by consumers of winter-based sports as a factor favourably affecting their final choice among skiing destinations, notwithstanding the increased price of the ski-pass. Occasionally the safety of slopes is mentioned among the parameters considered in specialized literature when assessing customers' satisfaction (for the finding that "data show that for the youngest age group (12-34), quality and safety of slopes is not important; however, it becomes more important for older people", Matzler et al., 2008, p. 409). But, realistically, the marketing strategy aimed at selling "the increased safety" of ski areas lacks significant foundation, at least in the absence of clear marketing strategies promoted by the ski resort industry in this respect. 18

The findings in the specialized literature shows that the only "safety" tourists seem to be concerned with is the presence of "secure" snow on the slopes: "most of the tourists (68%) would give up their destination loyalty in favour of a more snow secure destination, if there were several consecutive winters with snow deficiency. In that situation, a full quarter of the surveyed people would no longer ski" (Unbehaun, Pröbstl, Haider, 2008, p. 40). Improving the level of safety, among others determinants of a winter destination competiveness, is instead a factor that tourism services suppliers seem to be taking in high consideration (Hallmann et al., 2012, p. 17). 19

The reality is that current marketing strategies are contrary to this. Successful skiing destinations in the last winter seasons placed a growing emphasis on the images of "free rides" and "extra slopes" to attract their prospective consumers. Clearly, what more than likely sells, is the image of wild white mountains and "backcountry" skiing, provoking the opportunity to experience pristine untouched slopes with numerous options at one's fingertips to challenge oneself in isolated conditions. Ironically, such "backcountry" ski routes touted by ski destinations are more wild and risky than perceived by most consumers. By common knowledge, backcountry routes are more than likely to be beyond the bounds of ski slopes monitored by SAO's, thereby leaving skiers to ensure their own safety against increased avalanche risks, unmarked hazards and the simple risk of being out of range of ski patrolmen deployed to assist an injured skier. Therefore, such SAO's subjected to more strict liability regimes that successfully market such "backcountry" skiing to consumers deserves a more careful exploration of the real driving force attracting skiers to invest their money in such an adventurous weekend that could turn very dangerous. 20

Before delving further into the consumer behaviour and cognitive science behind skiing, which is discussed further in Part 4, an analysis of the current Italian legislation aimed at pursuing safety on the slopes is detailed below. 21

3. Pursuing safety on the snow by legislation: a primer on the current civil liability regime applicable to SAO's in Italy

More than a decade ago Italy promulgated legislation unprecedented elsewhere in Europe by enacting the Law 363/2003, eloquently entitled "Provisions addressing safety in the practice of the winter sports for alpine and cross country skiing" (Law, December 24, 2003, n. 363, published in the Gazzetta Ufficiale n. 3 of January 5, 2004).The mantra of safety pervaded the Italian legislation of 2003. An in-depth analysis is not necessary here and is available elsewhere (Izzo, 2013), however, the core features of the Law 363/2003 can be summarized as follows. 22

First, the law provides for a legal definition of an "equipped ski area" ("area sciabile attrezzata"), stating, without qualifying the liability rule in terms of tort or contract, the civil liability of SAO's for damages resulting from the lack of safety of the ski areas. Art. 2.1 of the law states: "Equipped ski areas are snow-covered surfaces, even artificially, open to public and including slopes, ski-lifts and snowmaking equipment, usually reserved for the practice of snow sports such as: skiing, in its various forms; snowboarding; cross-country skiing; sledding and sleigh; other sports identified by every single regional regulations". The main effect of this definition is to set a clear legal basis for the conclusion that contracts entered when skiers purchase ski-pass are not limited to the transport service provided to skiers in order to reach the top of the slopes, but also a complex cluster of services, including those needed in order to prepare appropriately the slopes, with or without artificial snowmaking, in order to guarantee the safety of the descending skiers. Before the enactment of the law, this interpretation was still controversial in Italian case law, with the practical consequence that some courts were keen to apply the basic rule of the Italian law of tort (art. 2043,Civil Code) to accidents occurring to skiers injured and alleging the presence of dangers on the slopes or other lack of precautions. As a result, the burden of proving the fault of the SAO's rested on the injured skiers, while, after the enactment of the law, and according to the general rule applied to claims for breach of contract, this burden is now reversed on the SAO's, since the parties under the contractual obligation to keep the slopes safe can be exempted from liability only if they prove the factors beyond their control that had a determinant causal role in the fall of the skier resulting in the alleged damages. 23

Secondly, the law provides for mandatory insurance for the civil liability that could be attributable to SAO's from skiers for injury and accident damages, stating that ski areas cannot be opened to public without filing to the public authorities in charge of issuing the relative authorization evidence of the purchase of such an insurance. 24

Furthermore, the law provides for a detailed list of rules of conduct that skiers must comply when using ski areas (making mandatory for skiers under the age of 14 the use of safety helmets); it also provides for a uniform set of mandatory signals that SAO's have to disseminate along the slopes, along with a set of obligations that SAO's have to follow in order to patrol the safety of slopes, in light of the more detailed technical prescriptions set forth by regional legislations. 25

Another relevant feature of the law is that it provides for a default rule for the assessment of tort liability in case of collision among skiers, under which, unless one of the skiers proves the fault of the other, the civil liability of parties entered in collision is presumed to be equal, and each party has to compensate half of the total damages suffered by the other (i.e. a court cannot dismiss a claim because the claimant did not meet a certain threshold of evidence, but eventually must adjudicate the case on the basis of this legal presumption). 26

The law also squarely exempt SAO's from all forms of civil liability in case of damages occurring to skiers beyond the external borders and boundaries of such clearly designated ski areas. 27

Most importantly, by making available a contractual claim to skiers against SAO's, the law allows skiers to file their complaints before the courts where consumers/skiers have their habitual residence, because the resulting litigation fall under the Unfair Terms in Consumer Contracts European Directive (today transposed in the Italian Consumers Code of 2006), which, as interpreted by the Italian Court of Cassazione, provides that, in case of disputes 28

involving contractual consumer rights, the *forum* of the consumer is the natural *forum,* and always prevails over contractual clauses electing the *forum* of the professional party of the contract involved in the litigation.

Such Italian legislation sheds a bold perspective upon the enforcement of liability for costly ski-related injuries and deaths in a manner that is overly broad because of its almost "strict liability" provisions; such provisions that likely do not properly allocate the costs of ski-related accidents and deaths between skiers and SAO's. Therefore the law forces SAO's to internalise the social cost of accidents on the slopes because its provisions, combined with the ordinary contract liability rule, are constructed as to place a presumption of liability upon the SAO's. The result is that the civil liability rules enforced upon the Italian slopes are likely to give injured tourists/skiers the prospect of victory in court, while increasing the need for SAO's to take more precautions when creating, preparing, administrating and patrolling ski areas, thereby incurring increased costs in the attempt to assure almost perfect safety upon the slopes. 29

Further analysis of these provisions, and of their impact on the assessment of civil liability on the slopes regarding accidents to skiers, will be provided in the conclusion. It suffices for now to state that, according to the majority of commentators, as well as scrutinizing the most recent case law evolution, these legislative innovations have produced a clear shift in the burden of proof and persuasion that court apply to ski accidents liability cases. The resulting operational rule of liability, both in case of litigation involving skiers after collisions and in case of litigation involving the liability of SAO's for damages occurring to skiers as a consequence of accidents on the slopes, has therefore clearly shifted from a fault to a strict liability-like pattern. 30

Overall, the legislative pursuit of safety implemented by the law 363/2003 has set the stage for a radical change in the way liability is judicially assessed on the Italian ski slopes, combining: (1) a set of detailed obligations and safety prescriptions directed to SAO's, with (2) a switch on the burden of the proof that obviously favours skiers in the litigation against SAO's, and (3) the provision of mandatory insurance to SAO's making these latter the ideal deep pocket in the litigation strategies, while no obligation of insurance is imposed on skiers, for whom the opportunity to buy first and third party insurance is left as a free option. The result sets the stage for different incentives for perspective litigants. 31

For skiers, in so far that they can prove they endured an accident on the slopes and the resulting damages are directly related to the accident, filing a complaint for damages even when the circumstantial evidences of the facts surrounding the accident are absent or unclear would likely not waste the claimant's time or resources because of the rebuttable presumption that the related SAO is liable.As such, the burden clearly rests on the SAO's to prove facts exonerating them from liability or at least decreasing the amount of recoverable damages in light of a finding of comparative fault on the part of the injured skier. The latter example clearly demonstrates the legislative intention and the public policy reasons supporting that SAO's purchase mandatory insurance, which provides the deep pocket that can be targeted by claimants in search of compensation. 32

In addition, tourist/skiers have a jurisdictional advantage when it comes to filing their complaints, since their domestic court will hear the case, while SAO's have to confront the costs and difficulties of being defendant in jurisdiction that can be very far from their place of business, loosing the strategic advantage of having the case heard from judges who are familiar with skiing and the technical peculiarities of this kind of litigation. 33

Finally, one must note that obviously such ski-related civil liability cases might turn on the availability of witnesses and other crucial evidence. As such, SAO's are prejudiced from the beginning if forced to litigate in a venue that is far away from the accident scene. Not only the SAO's, but also the courts lose the convenience of having the scene of the accident nearby, along with such related evidence and witnesses nearby to conveniently and more accurately litigate such cases. In other words, SAO's are prejudiced by being forced away from a court that has local access to such accident scene along with local witnesses. Forcing such litigation in venues distant from the place of the alleged ski accident is not only prejudicial to SAO's but is contrary to the theory of "judicial economy." Additionally, the fact that most of the evidence must be collected by mountain-located judges who, *ratione loci*, are delegated to carry on this task by the judges who actually hear the case in the place where the 34

claimant/tourist lives, is likely to make it more difficult for the final judicial decision-maker to unravel possible fake witnesses, an event that the case law in this segment of litigation proves to be not so rare as one may expect.

Faced with an increased risk of liability to pay compensation, SAO's are confronted with the need of increasing their overall level of precautions. This implies that: (1) the design and preparation of the slopes must be carefully administered in order to avoid dangers and that all conceivable hazards must be marked or removed; (2) that passive precautions (nets, mattress and the like) must cover and shield all possible obstacles that may constitute a risk for the falling skier; (3) that the snow surface of the slopes must be heavily treated by snow cats when slopes are closed at the end of the day to make sure such slopes are perfectly smooth the next day; (4) that more ski area personnel must be employed to patrol the condition of the snow when the slopes are open to the public, in order to avoid the formation or the accidental presence of frozen snow and other obstacles. Shifting this discourse to an empirical and subjective perspective, it is not surprising that experienced, globetrotting skiers are ready to stress the differences that they have noted when they describe the experience of skiing in other countries, compared to the different sensations experienced sliding on the more skier-friendly Italian slopes. 35

4. The cognitive factors affecting skiing and their implications for legal analysis

As we have seen, the concept of safety underlining the technical choices made by the drafters of the 2003 Italian legislation was intended be of value in and of itself, on the misplaced assumption that the more precautions the law impose on SAO's (both by mandating explicit safety provisions and through the incentives transmitted to SAO's by the implementation of stricter civil liability rules) that a maximum reduction rate of the skiers' accidents, can be accomplished and maintained. 36

Contrary to this (perhaps somewhat naïve) wisdom, the concept of safety is not a value itself in legal analysis because its genuine force relies on a realistic view of how the law can distribute the costs of precautions among the actors who, in any specific context at hand, are responsible for the final desired outcome (in this case: the maximum reduction rate of the skiers' accidents). Since the zero risks scenario is unrealistic and undesirable (as a matter of fact, even a blatant prohibition of a given activity would fatally entail substitutive risks) in the legal context to say that any situation or a product is "safe" enough for the goals of the law, means to state that a risk is acceptable, drawing a line in a *continuum*: after that line, the unsafe conditions starts, and before that line, the safe conditions rests. In the context of *ex post*adjudication, this line must be drawn by the judicial decision-maker while considering all facts and evidence in the record of the case. 37

Perhaps unsurprisingly, when the law of civil liability uses the notion of safety in order to build a rule of liability, reference is made to a "legitimate expectation." The judicial fact finder will give meaning to this notion only after the evaluation of all the relevant factors of the case, including the safety outcomes produced by the behaviours of all the precautionary actors involved in the litigation. This is confirmed by how European law uses the concept of safety implied by the notion of a "defective product" endorsed by EC Directive 85/374, concerning liability for defective products, where it is stated (Article 6.1), that "a product is defective when it does not provide *the safety which a person is entitled to expect*, taking all circumstances into account, including: (a) the presentation of the product; (b) the use to which it could reasonably be expected that the product would be put; (c) the time when the product was put into circulation" (emphasis added). 38

This finding leads us to note that in general terms the line that courts draw when evaluating the optimal safety of the slopes for the sake of the adjudication (be it framed as a breach of contract or as a breach of duty of care) should consider all the relevant data concerning the precautionary outcome of the activities carried on by both the parties always involved in the SAO's litigation: SAO's *and* injured skiers. That is to say: the optimal pursuit of safety on the slopes is inevitably the result of a bilateral and relational activity of the parties, and this conclusion produces important implications for our analysis. 39

On different grounds, the concept of safety is likely to produce cognitive effects on the parties 40

acting under the perception of an increased amount of safety. A seminal study in the economics of regulation canvassed the basic insights of the so-called "lulling effect". This latter implies that as one reduces either the probability of a loss or the size of the loss, individual incentives to take precautionary actions will be reduced. Regulatory effects function much like insurance in this regard, with the only difference being that one need not to pay an insurance premium, even if this is likely to influence the level of the product price (Viscusi, 1984). The validity of this general scientific assumption is confirmed in the daily experiences of most of us: leaving the old unsafe economy car for a modern SUV, fully equipped with passive precautions which transmit to the driver a bold sensation of safety, is likely to convince the driver to increase the cruise speed.

Interestingly a leaflet enclosed by the Italian Highways Authority to the Italian daily newspaper Il Sole 24 Ore on February 11, 2008, eloquently entitled "Destination Safety", listed, as "common places to be refuted": 41

A) Along the straight routes and with scarce traffic, drivers exceeding the speed limits run the only risk of loosing driver licence points (60% of the interviewed persons agree). False! Statistical data show that every year more than 70% of the deadly car accidents take place on straight highway routes and that the highways routes where traffic conditions are good show mortality rates higher than the average. These driving conditions reduce the time and space available to react to sudden events: a mechanical failure (or a flat tire), one's own distraction and especially others' distraction, are sufficient to transform the event in tragedy. Excessive speed is the first cause of lethal accidents, producing more than 50% of the deaths.

B) In tunnels and mountain highways routes the risk of accidents is higher (78% of the interviewed persons agree). False! Danger is not an absolute fact, but it depends on a host of relative factors. *The higher the danger perception, the more precautionary is the driving and the lower the risk of accidents*. In tunnels, for instance, only 3% of the lethal accidents take place, compared to the fact that there routes account for only 5% of the total extension of Italian highways. This is why in the mountain route connecting Firenze to Bologna, characterized by the worst weather conditions, huge traffic of trucks and buses and a tortuous itinerary, the rate of deadly accidents is almost half of the average rate of the entire national highways network".

If the perception of safety is an important determinant of the level of precautions taken by agents, we may then address the question of what is the driving factor that brings people on the slopes notwithstanding the fact that the decision to start skiing entails the assumption of new risks that, in the case of skiing (as in the case of other sports) are not counter balanced by the utilities that in everyday activities of life are pursued when taking similar decisions (e.g., the decision of driving a car instead of staying at home exposes oneself to an increased risk, but driving is needed to reach the workplace). 42

Findings from specialized literature show that in downhill skiing direct causes of the accidents are ski errors, excessive fatigue, and excessive speed, while the main contributing factors are a low technical level, a lack of concentration and a combination of favourable weather conditions coupled with the perception of little difficulty, carelessness, and optimal slope conditions (Chamarro, Fernández-Castro, 2009, p. 200). This data suggest that when skiers perceive a high sense of safety they tend to decrease their level of attention, relaxing the level of efficacy of their technical skills. 43

Typically, skiers run their activities using a cognitive mechanism allowing them to perceive the dangers to their physical integrity implied by their activities. This instantaneous retroactive mechanism to much extent coincides with what can be considered the skiers' 'mysterious' trade off (or utility) in taking the decision of skiing on the slopes, and therefore running a certain amount of risks. This trade off is not given by the need to reach a workplace, but by the *sensation* itself. When taking the decision of skiing, skiers want to challenge their skills. 44

A vast body of specialized literature in the last decades has investigated what is at stake for risk takers when they decide to start an otherwise unnecessary activity entailing new risks. Crucial in this respect is the notion of "Sensation Seeking" (hereinafter referred to as "SS"), a concept well known to cognitive researchers, described as "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for 45

the sake of such experience." (Zuckerman,1979, p. 10; and more generally, Zuckerman, 2007). In further detail, the empirical measurements of the magnitude of SS are classified according to a methodology based on 4 descriptive parameters: 1) *Thrill and Adventure Seeking* – TAS (measuring the willingness to start an activity that gives unusual sensations; 2) *Experience Seeking* – ES (the search for stimuli from brain activities and the senses; 3) *Disinhibition*–f D (a feature measured in reference to the individual willingness to run activities like drinking, gambling and novel sexual experiences); 4) *Boredom Susceptibility* – BS (measuring the individual rates of aversion to repeated experiences). Focusing on skiers, findings from targeted studies (Bouter et al., 1988; Cherpital, Meyers, Perrine, 1998) demonstrate that skiers show higher SS levels than non-skiers, and that skiers showing a higher level of TAS are less likely to experience accidents than those with a lower level of TAS:

"Skiers with a high TAS score are better at handling the risk of several forms of physical exercise and therefore less prone to accidents and injury, compared to those with a relatively low TAS score who may be less skilled in estimating and handling the risks of downhill skiing" (Bouter et al., 1988, p. 672).

The SS of the average tourist/skier has nothing to do with the quantitative goal endorsed by ski agonists, who are ready to challenge their extreme limits on a temporal scale (Ferrero Camoletto, 2005, p. 45). The SS of the former relates with a qualitative goal, pursuing which amateur skiers are free to set their progression of skiing ability according to a standard directed to improve their subjective skills. Improving skiing knowledge appears to be the most important motivation according to empirical studies aimed at canvassing what drives the perspective skiers in their choices (Alexandris, Kouthouris, Girgolas, 2007, p. 662). Destination choices among frequent skiers also appear to be linked to skill level and the need to develop and expand skiing skills (Richards, 1996, p. 33). The same findings are confirmed when considering the *achievement* factor of skiers, or the ability to target goals that individuals pursue by putting in practice their skills (Klenosky, Gengler, Mulvey, 1993, p. 373). 46

This qualitative standard is always dependent on the interplay between the technical skills possessed by each single skier and the sensorial situation that skiers are able to perceive around them. In so doing, skiers find only one limit: the need to avoid damages to their physical integrity while preventing injuries to other skiers. Clearly this limit is pushed forward as technical skills improve, so it is unsurprising the finding that "beginners suffer far more injuries than more experienced skiers" (Sulheim, Ekeland, Bahr, 2007, p. 665, with vast references to further international literature; early findings on this conclusion were already presented by Haddon, Jr., Ellison, Carroll, 1962, p. 981). The fear to avoid injury as mentioned above is a powerful tool. Such fear enables skiers to increase their precautionary attitude. In fact, findings suggest a correlation between the knowledge of adverse events that happened to other skiers (or even the credence that skiing is more dangerous than what is believed by other respondents) and the fact that skiers showing this knowledge are less likely to suffer injuries (Levine, 1995). 47

Another important factor that likely improves the skiers' precautionary attitude consists in what cognitive literature expresses as the idea of self-efficacy, which by definition is an individual's ability to believe in their efficacy and shape the types of anticipatory scenarios they construct and rehearse. "Those who have a high sense of efficacy, visualize success scenarios that provide positive guides and supports for performance. Those who doubt their efficacy visualize failure scenarios and dwell on the many things that can go wrong. A major function of thought is to enable people to predict events and to develop ways to control those that affect their lives. Such skills require effective cognitive processing of information that contains many ambiguities and uncertainties" (in these terms, Bandura, 1994, p. 73). 48

On the whole these cognitive skills enable skiers to process successfully and instantaneously information about the risks encountered on the slopes, thereby overcoming or anticipating situations of danger. 49

5. Conclusions

While considering the interaction between strict liability legislation and the declining economics of the winter tourism industry in alpine regions as addressed in Part 2 and 3 50

above, what can be inferred from the findings of cognitive science behind such industry's targeted market, that being skiers and winter tourists, as addressed in Part 4 of this article?

First, skiers must play a more precautionary role in an attempt to reduce accidents on the slopes, thereby reducing the social costs of such accidents. To reach such goal of increasing the likelihood that skiers play more of a precautionary role, legislation governing liability on the slopes must be constructed with the intention of creating incentives for skiers to utilise more caution on the slopes. In other words, such legislation must firmly plant an impression in the minds of the skiers that awakens their cognitive (and therefore precautionary) skills to avoid such costly accidents. Clearly, when it comes to canvass the optimal insurance regime addressing the costs related to ski injuries, this conclusion is a call to implement a mix of strategies, where, along the "deep pocket" provided to skier by making mandatory the SAO's insurance for their liability vis a vis skiers, the law could set a clear incentive to these latter to buy a first party insurance. Perspective skiers accept the idea of trading a new, specific risk to which they wouldn't be exposed staying off the slopes, with the fulfilment of their sensation seeking (as explored in Part 4). The decision of skiing implies the possibility to anticipate the realization of such a novel risk, which then could be neutralised by buying an insurance covering all forms of damages occurring on the slopes. 51

Secondly, the legislation dictating the likelihood that SAO's will or will not prevail in litigation initiated by skiers should not be constructed to prevent SAO's their feeling of absolute obligation to build and maintain a sort of hyper-precautionary ski environment that is likely to produce a lulling effect for skiers. As discussed above, if sensation seeking is what skiers seek when deciding to invest their money and time on the slopes, then this feeling of overprotection and relative safety provided by SAO's will likely induce skiers to recreate the condition in which they can experience their sensation seeking by dangerously altering their pattern of skiing and by dangerously increasing their speed on the slopes. 52

As a result of the latter, the legislative goal of promoting safety on the Italian slopes, reducing to an optimal social level the occurrence of ski accidents, is likely to account for a wishful thinking when applying the Italian Law 363/2003. Therefore, the most important thing that one can take away from this article is that a call for restoring the right balance in the way the costs of the accidents occurring on the Italian snow are judicially allocated between skiers and SAO's is absolutely needed. To provide further details on how these conclusions can be translated in the interpretation of the civil liability rules applied by Italian courts in the aftermath of the Law 363/2003 would be outside the goals of this article, since the attempt has been developed at length elsewhere (Izzo, 2013). 53

With such a change in Italian law restoring a better balance of costs between skiers and SAO's, courts must accomplish the delicate task employing interpretations of the applicable rules endorsing the idea that comparative fault plays a fundamental role in this kind of litigation. As a matter of fact, the concept of fault, if wisely employed, enables courts to determine the appropriate amount of damages that, according to all the relevant facts and evidences of the case, has to be allocated among the litigants considering the precautionary efforts that both parties have put in practice in the specific case. 54

Without such a change in Italian legislation, the continuation of applying a strict liability-like rule, either based in tort or contract, to SAO's, while downplaying the judicial evaluation of the precautionary role that rests on the skiers up until one second before that they loose control on the snow, entails the risk of a default, or in other words, a steady decline for the ski industry and the entire economics of winter sport touristic destinations including the larger context of the European transnational market competitiveness. 55

These conclusions suggest what could be considered the prospects of analysis opened up by the approach followed in this article, in an attempt to blend insights from economics, law, and cognitive sciences to better understand and to tackle in an appropriate fashion the social problems posed by ski accidents. As we have seen, snow based winter sports are strongly rooted within the economics of tourism in European mountain areas and represent a key competitive factor of the transnational dynamics affecting the market of winter tourism destinations of the member states. At the same time, when skiing, European citizens and consumers of services provided by SAO's are entitled to receive a uniform protection across the member states. Therefore, issues of safety and liability surrounding the services provided by European SAO's to their customers ought not to be left to isolated national legislative 56

policies but should be considered part of a uniform approach that should be framed at the EU level, envisaging a European Regulation addressing the issue. To this extent, more comparative and interdisciplinary analysis of this kind is deserved.

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