

Economic Analysis of Law Review

Comparison Of Tort Law Systems From The Perspective Of Economic Efficiency: Brazilian Civil Code, Principles Of European Law And Restatements Of The Law

Comparação De Sistemas de Direito Tributário Na Perspectiva Da Eficiência Econômica: Código Civil Brasileiro, Princípios De Direito Europeu e Reforma Da Lei

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RESUMO

É possível comparar os sistemas de direito de responsabilidade civil a partir da perspectiva da eficiência econômica? O artigo demonstra que é possível. Utilizando os fundamentos teóricos da análise econômica do direito e a metodologia comparativa desenvolvida por La Porta, López-de-Silanes, Shleifer e Vishny, o artigo compara o Código Civil Brasileiro de 2002 com o Código Civil Brasileiro de 1916 e o Código Civil Brasileiro de 2002, em relação aos Princípios do Direito Tributário Europeu, em relação aos Reformulamentos do Direito.

Palavras-chave: Análise econômica do direito; Direito comparado; Direito Penal

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ABSTRACT

Is it possible to compare tort law systems from the perspective of economic efficiency? The paper demonstrates that it is possible. Using the theoretical foundations of economic analysis of law and the comparative methodology developed by La Porta, Lopez-de-Silanes, Shleifer and Vishny, the article compares the Brazilian Civil Code of 2002 *vis a vis* the Brazilian Civil Code of 1916, and the Brazilian Civil Code of 2002 *vis a vis* the Principles of European Tort Law *vis a vis* the Restatements of the Law Third.

Keywords: Economic Analysis of Law; Comparative law; Tort Law

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1. Introduction

Economic analysis of law can be used to build efficient models, which work as uniform terms of comparison of legal institutions². As Mattei³ points out, “an institutional arrangement in country A can be considered more or less efficient than an institutional arrangement in country B” (horizontal comparison) even as “the state of the world after a change, as in law reform or in historical evolution of a legal rule, can be compared in terms of efficiency with the state of world before it” (vertical comparison).

Consistent comparative theoretical framework was provided by La Porta, Lopez-de-Silanes, Shleifer e Vishny⁴, which in studies in corporate law published at the end of the 1990s (law and finance literature), performed two important contributions in terms of methodology: first, showed that legal rules could be subject to measurement and stratification, through the calculation of indices that serve as common denominator; and second, demonstrated that it is possible to compare legal systems and test basic hypotheses concerning the allocative efficiency.

Considering Brazilian legal system from Commercial Code (Law n. 556, June 25, 1850) to the Bankruptcy and Corporate Recovery Act (Law n. 11.101, February 9, 2005), Musacchio⁵ applied the comparative theoretical framework provided by La Porta, Lopez-de-Silanes, Shleifer e Vishny to analyze the Brazilian institutional context throughout time.

The application of the comparative theoretical framework provided by La Porta, Lopez-de-Silanes, Shleifer and Vishny have been held in areas besides corporate law, considering issues such as the regulation of the labor market, the formalism in judicial proceedings and the protection of property rights⁶. However, conducting comparative analysis in the context of tort law is not common practice. Going forward, in the field of economic analysis of law, as recorded Faure⁷, there are few empirical studies that turn to test hypothesis derived from the theoretical models of economic analysis of liability rules, and the results are inconclusive.

Outlined such a context, considering the comparative theoretical framework provided by La Porta, Lopez-de-Silanes, Shleifer and Vishny and successfully applied to the Brazilian institutional context by Musacchio, it is carried out the analysis of the institutional change occurred in Brazilian tort law system, with the comparison of the Brazilian Civil Code of 2002 *vis a vis* the Brazilian Civil Code of 1916 (vertical comparison). Besides, it is performed the joint analysis of tort law rules of the Brazilian, European and American institutional framework, with the comparison of the Brazilian Civil Code of 2002 *vis a vis* the Principles of European

² MATTEI, Ugo; ANTONIOLLI, Luisa; ROSSATO, Andrea. *Comparative Law and Economics*, p. 506.

³ MATTEI, Ugo. *Comparative Law and Economics*, p. 2.

⁴ LA PORTA, Rafael; LOPEZ-DE-SILANES, Florêncio; SHLEIFER, Andrei; VISHNY, Robert. *Legal Determinants of External Finance*, p. 1-53; and, *Idem*. *Law and Finance*, p. 1113-1155.

⁵ MUSACCHIO, Aldo. *Legal Origin vs. The Politics of Creditor Rights, Bond Markets in Brazil, 1850-2002*, p. 259-286.

⁶ LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei. *The Economics Consequences of Legal Origins*, p. 3-4.

⁷ FAURE, Michael G. *Economic Analysis of Contributory Negligence*, p. 250. See also, VELTHOVEN, Ben C.J. van. *Empirics of tort*, p. 453-498.

Tort Law *vis a vis* the Restatements of the Law Third (horizontal comparison). That is, given the fundamentals of economic analysis of law, in particular the guidelines for the choice between negligence and strict liability (the effect of tort law rules on the conduct of the parties engaged in activities with risk of accidents, considering level of care, level of activity, level of information and level of risk aversion) the basic hypothesis to be tested is the theoretical consistency of the tort law systems analyzed, with regard to the objectives of minimization of accidents costs (preventive function), and of maximization of social welfare.

The paper is structured in three parts, performing: first, the presentation of the theoretical model; second, the comparison of the Brazilian Civil Code of 2002 *vis a vis* the Brazilian Civil Code of 1916; and, third, the comparison of the Brazilian Civil Code of 2002 *vis a vis* the Principles of European Tort Law *vis a vis* the Restatements of the Law Third. Finally, the conclusions are presented, discussing the theoretical and political implications.

2. Model

The construction of theoretical model that enables the comparison of tort law systems is done in two steps, taking place, initially, the determination of the variables considered, and after the calculation of performance indices.

The first step of the model is the determination of the variables considered, procedure comprising: the identification of the variables; the description and assignment of values to the variables; and the indication of the source from which the variables come from.

With regard to the identification of the variables, considering the objectives of minimization of accidents costs (preventive function), and of maximization of social welfare, the literature of economic analysis of law⁸ presents conclusive results about the effect of tort law rules on the conduct of the parties engaged in activities with risk of accidents, considering the following dimensions: level of care, level of activity, level of information and level of risk aversion. A tort law system provides appropriate incentives to injurer and victim take optimal decisions about the level of care⁹ under negligence rule and its variants or under strict liability rule with reduction/exclusion in compensation proportionally to victim's fault. In addition, a tort law system provides appropriate incentives to injurer take optimal decisions about the level of activity¹⁰ and to injurer and victim take optimal decisions about the level of care under strict liability rule with reduction/exclusion in compensation proportionally to victim's fault. In products

⁸ The literature of economic analysis of law also focuses on the study of the interface between tort rules and administrative costs. However, as categorical manifestation of Shavell, "the comparison of the size of administrative costs under the two forms of liability is ambiguous as a theoretical matter" SHAVELL, Steven. *Foundations of Economic Analysis of Law*, p. 283.

⁹ Among other authors: SHAVELL, Steven. *Foundations of Economic Analysis of Law*, p. 182-189; MICELI, Thomas J. *Economics of the Law; Torts, Contracts, Property and Litigation*, p. 17-20; FAURE, Michael. *Economic Analysis of Contributory Negligence*, p. 236-244; SCHÄFER, Hans-Bernd; SCHÖNENBERGER, Andreas. *Strict Liability versus Negligence: an Economic Analysis*, p. 46-52; and, BATTESINI, Eugênio. *Direito e Economia, Novos Horizontes no Estudo da Responsabilidade Civil no Brasil*, p. 142-143.

¹⁰ Among other authors: SHAVELL, Steven. *Foundations of Economic Analysis of Law*, p. 199-206; MICELI, Thomas J. *Economics of the Law; Torts, Contracts, Property and Litigation*, p. 28-29; FAURE, Michael. *Economic Analysis, Strict Liability*, p. 366-367; SCHÄFER, Hans-Bernd; SCHÖNENBERGER, Andreas. *Strict Liability* 349 EALR, V. 7, n° 2, p.347-361, Jul-Dez, 2016

liability, a tort law system corrects problem of asymmetric information distribution¹¹, with the victim having less information than the injurer (informational asymmetry presumption), as well as provides appropriate incentives to injurer take optimal decisions about the level of activity and to injurer and victim take optimal decisions about the level of care under strict liability rule with reduction/exclusion in compensation proportionally to victim's fault. A tort law system corrects problem of risk aversion¹², with the victim having greater risk aversion than the injurer (comparative capitalization presumption), as well as provides appropriate incentives to injurer take optimal decisions about the level of activity and to injurer and victim take optimal decisions about the level of care under strict liability rule with reduction/exclusion in compensation proportionally to victim's fault.

Regarding the description and assignment of values to the variables, it is adopted the simplifying assumption that the variables have the same weigh, being the value of the variable equivalent to one when the tort law system contains the variable considered, and equivalent to zero when the tort law system does not contains the variable considered. It is attributed value of one if the tort law system contains rule that provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise. It is attributed value of one if the tort law system contains rule that provides efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise. It is attributed value of one if the tort law system contains rule that enables to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as provides efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise. It is attributed value of one if the tort law system contains rule that enables to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as provides efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise.

With respect to the indication of the source from which the variables come from, it is considered, in each of the analyzed systems, the structure of tort law rules which regulate the choice between negligence and strict liability, considering level of care, level of activity, level of information and level of risk aversion.

versus Negligence: an Economic Analysis, p. 53-54; and, BATTESINI, Eugênio. *Direito e Economia, Novos Horizontes no Estudo da Responsabilidade Civil no Brasil*, p. 152-153.

¹¹ Among other authors: SHAVELL, Steven. *Strict Liability versus Negligence*, p. 1-25; *Idem*, *Economic Analysis of Accident Law*, p. 51-54; COOTER, Robert; ULEN, Thomas. *Law and Economics*, p. 361-363 e 403-406; GEISTFELD, Mark A. *Products Liability*, p. 300-301; and, BATTESINI, Eugênio. *Direito e Economia, Novos Horizontes no Estudo da Responsabilidade Civil no Brasil*, p. 168-169.

¹² Among other authors: SHAVELL, Steven. *Economic Analysis of Accident Law*, p. 206-215; *Idem*, *Economic Analysis of Accident Law*, p. 208-210; SCHÄFER, Hans-Bernd; SCHÖNENBERGER, Andreas. *Strict Liability versus Negligence: an Economic Analysis*, p. 61; KRAAKMAN, Reinier H. *Vicarious and corporate civil liability*, p. 135-137; and, BATTESINI, Eugênio. *Direito e Economia, Novos Horizontes no Estudo da Responsabilidade Civil no Brasil*, p. 174-175.

The second step of the model that enables the comparison of tort law systems is the calculation of the performance indices, procedure comprising: the determination of the individual values of the variables in each tort law system analyzed; and the determination of aggregate indices of evaluation of the tort law systems analyzed.

The determination of the individual values of the variables in each tort law system analyzed is carried out by assigning the value of one or zero, as the tort law system contains the variable considered or not.

The determination of aggregate indices of evaluation of the tort law systems analyzed is carried out by summing the individual values of the variables in each tort law system analyzed.

The model therefore provides the calculation of the indicators, allowing testing the hypothesis of theoretical consistency of tort law systems from the perspective of economic efficiency.

3. Brazilian Civil Code Of 2002 *Vis a Vis* Brazilian Civil Code Of 1916

The application of the theoretical model could be done by performing vertical comparison of legal systems, considering institutional changes throughout time, as the contemporary change that occurred in the Brazilian tort law system, with the passage of the Brazilian Civil Code of 1916 to the Brazilian Civil Code of 2002.

Performing the first stage of the model, the determination of the variables considered, it follows that, with respect to the indication of the source from which the variables come from (table 1, column 3), the systems of tort law analyzed are the Brazilian Civil Code of 2002¹³ (BCC 2002) and the Brazilian Civil Code of 1916¹⁴ (BCC 1916).

Regarding the description and assignment of values to the variables, it follows that, with respect to the level of care (table 1, columns 1, 2 and 3, line 2), the Brazilian Civil Code of 2002, in the article 186, combined with the article 927, caput, and with the article 945, contains the rule of negligence and its variants, having, therefore, efficient mechanisms to control the level of care of the injurer and of the victim. The Brazilian Civil Code of 1916, in turn, in the

¹³ BRAZIL. *Law n. 10.406, January 10, 2002. Civil Code. Article 186.* One who, by voluntary action or omission, negligence or imprudence, violates law and cause harm to others, even if only moral, commits an illicit act. *Article 927.* One who by illicit causes damages to another, is obligated to repair it. *Single Paragraph.* There is obligation to repair the damage, independently of fault, in cases specified in law, or when the activity usually developed by the author implies, by its own nature, risk for the rights of another.

Article 931. Except other cases provided by special law, individual entrepreneurs and companies respond independently of fault for damage caused by products put into circulation. *Article 932.* Also are responsible for civil reparations. *III.* The employer or principal, for its employees, servants and agents, in the exercise of work that compete to them, or because of it. *Article 933.* The persons listed in items I to V of the preceding article, even in the absence of fault for his part, will respond by acts performed by the thirds referred to therein. *Article 945.* If the victim has knowingly contributed to the harmful event, indemnity paid to the victim will be set in such a way as to reflect the extent of the victim's culpability compared to that of the author of the damage.

¹⁴ BRAZIL. *Law n. 3.071, January 1, 1916. Civil Code. Article 159.* One who, by voluntary action or omission, negligence or imprudence, violates law or cause harm to others, is obliged to repair the damage.

article 159, contains the rule of negligence, having, as well, efficient mechanism to control the level of care of the injurer and of the victim.

With respect to the level of activity (table 1, columns 1, 2 and 3, line 3), the Brazilian Civil Code of 2002, in the single paragraph of the article 927, combined with the article 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to control the of level of activity of the injurer, and to control the of level of care of the injurer and of the victim. The Brazilian Civil Code of 1916, in turn, has no similar legislative provision.

With respect to the level of information in products liability (table 1, columns 1, 2 and 3, line 4), the Brazilian Civil Code of 2002, in article 931, combined with the article 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as to provide appropriate incentives to injurer take optimal decisions about the level of activity and to injurer and victim take optimal decisions about the level of care. The Brazilian Civil Code of 1916, in turn, has no similar legislative provision.

Table 1 – Civil liability in Brazilian Civil Code of 2002 (BCC 2002) and in Brazilian Civil Code of 1916 (BCC 1916), considered variables.

Variable	Description	Source
Level of Care	Value of one if the tort law system contains rule that provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise	BCC 2002, art. 186 c/w art. 927, caput, and c/w art. 945; BCC 1916, art. 159
Level of activity	Value of one if the tort law system contains rule that provides efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise	BCC 2002, art. 927, § single, c/w art. 945; BCC 1916, no correspondence
Level of information	Value of one if the tort law system contains rule that enables to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as provides efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise	BCC 2002, art. 931 c/w art. 945; BCC 1916, no correspondence
Level of risk aversion	Value of one if the tort law system contains rule that enables to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as provides efficient control of the	BCC 2002, art. 931 c/w art. 945 and art.

level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim, and value of zero otherwise	932, III, c/w art. 933 and c/w art. 945; BCC 1916, no correspondence
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Adapted from: LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei; VISHNY, Robert. *Legal Determinants of External Finance*, p. 41-42.

With respect to the level of risk aversion (table 1, columns 1, 2 and 3, line 5), the Brazilian Civil Code of 2002, in the article 931, combined with the article 945, and in the article 932, III, combined with the articles 933 and 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as to provide efficient control of the level of activity of the injurer, and to provide efficient control of the level of care of the injurer and of the victim. The Brazilian Civil Code of 1916, in turn, has no similar legislative provision.

Carrying out the second stage of the model, the calculation of the performance indices, with the determination of the individual values of the variables in each tort law system analyzed, it is verified that the Brazilian Civil Code of 2002 (table 2, column 2, lines 2, 3, 4 and 5) has rules that provide appropriate incentives on the conduct of the parties engaged in risk activities, considering the following dimensions: level of care, level of activity, level of information and level of risk aversion. The Brazilian Civil Code of 1916 (table 2, column 3, lines 2, 3, 4 and 5), in turn, provide appropriate incentives on the conduct of the parties engaged in risk activities only concerning the level of care.

Established the individual values of the variables, it is possible to calculate the aggregate indices of evaluation of the tort law systems analyzed. The aggregate indices of evaluation indicate to the Brazilian Civil Code of 2002 the value of four (table 2, column 2, line 6) and to the Brazilian Civil Code of 1916 the value of one (table 2, column 3, line 6).

Table 2 – Civil liability in Brazilian Civil Code of 2002 (BCC 2002) and in Brazilian Civil Code of 1916 (BCC 1916), the indices of comparison.

Variable	Brazilian Civil Code 2002	Brazilian Civil Code 1916
Level of care	1	1
Level of activity	1	0
Level of information	1	0
Level of risk aversion	1	0
Indices	4	1

Adapted from: MUSACCHIO, Aldo. *Legal Origin vs. the Politics of Creditor Rights, Bond Markets in Brazil, 1850-2002*, p. 271.

Calculated the indicators that allow to test the theoretical consistency of tort law systems from the perspective of economic efficiency, it is possible to verify the superiority of the Brazilian Civil Code of 2002 *vis a vis* the Brazilian Civil Code of 1916, considering the objectives of minimization of accidents costs (preventive function), and of maximization of social welfare.

4. Brazilian Civil Code Of 2002 *Vis a Vis* Principles Of European Tort Law *Vis a Vis* Restatements Of Law Third

The application of the theoretical model could be done by performing horizontal comparison of legal systems, as the joint analysis of the tort rules of the Brazilian, European, and American institutional framework, with the comparison of the Brazilian Civil Code of 2002 *vis a vis* the Principles of European Tort Law, prepared by the European Group on Tort Law, *vis a vis* the Restatements of the Law Third, prepared by The American Law Institute.

Performing the first stage of the model, the determination of the variables considered, it follows that, with respect to the indication of the source from which the variables come from (table 3, column 3), the systems of tort law analyzed are the Brazilian Civil Code of 2002 (BCC 2002), the Principles of European Tort Law¹⁵ (PETL) and the Restatements of the Law Third¹⁶:

¹⁵ EUROPEAN GROUP ON TORT LAW. *Principles of European Tort Law*. Art. 1:101. *Basic norm*. (1) A person to whom damage to another is legally attributed is liable to compensate that damage. (2) Damage may be attributed in particular to the person: a) whose conduct constituting fault has caused it; or, b) whose abnormally dangerous activity has caused it; or, c) whose auxiliary has caused it within the scope of his functions. Art. 4:101. *Fault*. A person is liable on the basis of fault for intentional or negligent violation of the required standard of conduct. Art. 4:202. *Enterprise Liability*. (1) A person pursuing a lasting enterprise for economic or professional purposes who uses auxiliaries or technical equipment is liable for any harm caused by a defect of such enterprise or of its output unless he proves that he has conformed to the required standard of conduct (rule of negligence with reversal of the burden of proof, see: EUROPEAN GROUP ON TORT LAW. *Principes du Droit Européen de la Responsabilité Civile*, p. 137). Art. 5:101. *Abnormally dangerous activities*. (1) A person who carries on an abnormally dangerous activity is strictly liable for damage characteristic to the risk presented by the activity and resulting from it. Art. 6:102. *Liability for auxiliaries*. (1) A person is liable for damage caused by his auxiliaries acting within the scope of their functions provided that they violated the required standard of conduct (rule of secondary strict liability with requires the proof of the auxiliaries fault, see: EUROPEAN GROUP ON TORT LAW. *Principes du Droit Européen de la Responsabilité Civile*, p. 166). Art. 8:101. *Contributory conduct or activity of the victim*. (1) Liability can be excluded or reduced to such extent as is considered just having regard to the victim's contributory fault and to any other matters which would be relevant to establish or reduce liability of the victim if he were the tortfeasor. EUROPEAN GROUP ON TORT LAW. *Principes du Droit Européen de la Responsabilité Civile*, p. 257-266.

¹⁶ THE AMERICAN LAW INSTITUTE. *Restatement of the Law Third, Torts: Liability for Physical and Emotional Harm*. §3°. *Negligence*. A person acts negligently if the person does not exercise reasonable care under all the circumstances. Primary factors to consider in ascertaining whether the person's conduct lacks reasonable care are the foreseeable likelihood that the person's conduct will result in harm, the foreseeable severity of any harm that may ensue, and the burden of precautions to eliminate or reduce the risk of harm. §20. *Abnormally Dangerous Activities*. (a) An actor who carries on an abnormally dangerous activity is subject to strict liability for physical harm resulting from the activity. (b) An activity is abnormally dangerous if: (1) the activity creates a foreseeable and highly significant risk of physical harm even when reasonable care is exercised by all actors; and (2) the activity is not one of common usage. THE AMERICAN LAW INSTITUTE. *Restatement of the Law Third, Torts: Apportionment of Liability*. §7°. *Effect of Plaintiff's Negligence When Plaintiff Suffers an Invisible Injury*. Plaintiff's negligence (or the negligence of another person for whose negligence the plaintiff is responsible) that is a legal cause of an indivisible injury to the plaintiff reduces the plaintiff recovery in proportion to the share of responsibility the factfinder assigns to the plaintiff (or other person for whose negligence the plaintiff is responsible). THE AMERICAN LAW INSTITUTE. *Restatement of the Law Third, Torts: Products Liability*. §1°. *Liability of Commercial Seller or Distributor for Harm Caused by Defective Products*. One engaged in the business of selling or otherwise distributing products who sells or distributes a defective product is subject to liability for harm to persons or property caused by the defect. §2°. *Categories of Product Defect*. A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings. A product: (a) contains a manufacturing defect when the product departs from its intended design even though all possible care was exercised in the preparation and marketing of the product (strict liability, see: AMERICAN LAW INSTITUTE, *A Concise Restatement of Torts, Third Edition*, p. 297); (b) is defective in design when the foreseeable risk of harm posed by the product could have been reduced or avoided

Torts, Liability for Physical and Emotional Harm (RLT-TLPEH); Torts, Apportionment of Liability (RLT-TAL); Torts, Products Liability (RLT-TPL); and, Agency (RLT-A).

Regarding the description and assignment of values to the variables, it follows that, with respect to the level of care (table 3, columns 1, 2 and 3, line 2), the Brazilian Civil Code of 2002, in the article 186, combined with the article 927, caput, and with the article 945, contains the rule of negligence and its variants, having, therefore, efficient mechanisms to control the level of care of the injurer and of the victim. The Principles of European Tort Law, in the article 1:101, (1), (2), a, and in the article 4:101, combined with the article 8:101, (1), contains the rule of negligence and its variants, having, therefore, efficient mechanisms to control the level of care of the injurer and of the victim. The Restatement of the Law Third, Torts: Liability for Physical and Emotional Harm, in the §3º, combined with the Restatement of the Law Third, Torts: Apportionment of Liability, in the §7º, contains the rule of negligence and its variants, having, therefore, efficient mechanisms to control the level of care of the injurer and of the victim.

With respect to the level of activity (table 3, columns 1, 2 and 3, line 3), the Brazilian Civil Code of 2002, in the single paragraph of the article 927, combined with the article 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to control the level of activity of the injurer, and to control the level of care of the injurer and of the victim. The Principles of European Tort Law, in the article 1:101, (1), (2), b, and in article 5:101, (1), combined with the article 8:101, (1), contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to control the level of activity of the injurer, and to control the level of care of the injurer and of the victim. The Restatement of the Law Third, Torts: Liability for Physical and Emotional Harm, in §20º, (a) and (b), (1) and (2), combined with the Restatement of the Law Third, Torts: Apportionment of Liability, in §7º, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to control the level of activity of the injurer, and to control the level of care of the injurer and of the victim.

With respect to the level of information in product liability (table 3, columns 1, 2 and 3, line 4), the Brazilian Civil Code of 2002, in article 931, combined with the article 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault,

by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the alternative design renders the product not reasonably safe (negligence, see: AMERICAN LAW INSTITUTE, *A Concise Restatement of Torts, Third Edition*, p. 298); (c) is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the instructions or warnings renders the product not reasonably safe (negligence, see: AMERICAN LAW INSTITUTE, *A Concise Restatement of Torts, Third Edition*, p. 298). THE AMERICAN LAW INSTITUTE. *Restatement of the Law Third, Agency*. §7.03. *Principal's Liability – In General*. (2) A principal is subject to vicarious liability to a third party harmed by an agent's conduct when (a) as stated in § 7.07, the agent is an employee who commits a tort while acting within the scope of employment. AMERICAN LAW INSTITUTE, *A Concise Restatement of Torts, Third Edition*, p. 58, 175-176, 253, 275, 294 and 296.

having, therefore, efficient mechanisms to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as to provide appropriate incentives to injurer take optimal decisions about the level of activity and to injurer and victim take optimal decisions about the level of care. The Principles of European Tort Law, in the article 4:202, (1), combined with the article 8:101, (1), contains the rule of negligence with reversal of the burden of proof and with reduction/exclusion in compensation proportionally to victim's fault, do not having, therefore, efficient mechanisms to correct problem of asymmetric information distribution, with the victim having less information than the injurer, and to provide appropriate incentives to injurer take optimal decisions about the level of activity. The Restatement of the Law Third, Torts: Products Liability, in §1º and §2º, (a), (b) and (c), combined with the Restatement of the Law Third, Torts: Apportionment of Liability, in §7º, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as to provide appropriate incentives to injurer take optimal decisions about the level of activity and to injurer and victim take optimal decisions about the level of care.

With respect to the level of risk aversion (table 3, columns 1, 2 and 3, line 5), the Brazilian Civil Code of 2002, in the article 931, combined with the article 945, and in the article 932, III, combined with the articles 933 and 945, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as to provide efficient control of the level of activity of the injurer, and to provide efficient control of the level of care of the injurer and of the victim. The Principles of European Tort Law, in the article 1:101, (1), (2), c, and in the article 6:102, (1), combined with the article 8:101, (1), contains the rule of secondary strict liability, with requires the proof of the auxiliaries fault, having, therefore, efficient mechanisms to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as to provide efficient control of the level of activity of the injurer, and to provide efficient control of the level of care of the injurer and of the victim. The Restatement of the Law Third, Agency, in §7.03, (2), (a), combined with the Restatement of the Law Third, Torts: Apportionment of Liability, in §7º, contains the strict liability rule with reduction/exclusion in compensation proportionally to victim's fault, having, therefore, efficient mechanisms to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well to provide efficient control of the level of activity of the injurer, and provides efficient control of the level of care of the injurer and of the victim.

Table 3 – Civil liability in Brazilian Civil Code of 2002 (BCC), in Principles of European Tort Law (PETL) and in Restatements of the Law Third: Torts, Liability for Physical and Emotional Harm (RLT-TLPEH); Torts, Apportionment of Liability (RLT-TAL); Torts, Products Liability (RLT-TPL); and, Agency (RLT-A), considered variables.

Variable	Description	Source
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Level of Care	Value of one if the tort law system contains rule that provides efficient control of level of care of the injurer and of the victim, and value of zero otherwise.	BCC 2002, art. 186 c/w art. 927, caput, and c/w art. 945; PETL, art. 1:101, (1), (2), a, and art. 4:101, c/w art. 8:101, (1); RLT-TLPEH, §3º, c/w RLT-TAL, §7º
Level of activity	Value of one if the tort law system contains rule that provides efficient control of level of activity of the injurer, and provides efficient control of level of care of the injurer and of the victim, and value of zero otherwise.	BCC 2002, art. 927, § single, c/w art. 945; PETL, art. 1:101, (1), (2), b, and art. 5:101, (1), c/w art. 8:101, (1); RLT-TLPEH, §20, (a) and (b), (1) and (2), c/w RLT-TAL, §7º
Level of information	Value of one if the tort law system contains rule that enables to correct problem of asymmetric information distribution, with the victim having less information than the injurer, as well as provides efficient control of level of activity of the injurer, and provides efficient control of level of care of the injurer and of the victim, and value of zero otherwise	BCC 2002, art. 931 c/w art. 945; PETL, art. 4:202, (1), c/w art. 8:101, (1); RLT-TPL, §1º and §2º, (a), (b) and (c), c/w RLT-TAL, §7º
Level of risk aversion	Value of one if the tort law system contains rule that enables to correct problem of risk aversion, with the victim having greater risk aversion than the injurer, as well as provides efficient control of level of activity of the injurer, and provides efficient control of level of care of the injurer and of the victim, and value of zero otherwise	BCC 2002, art. 931 c/w art. 945 and art. 932, III, c/w art. 933 and c/w art. 945; PETL, art. 1:101, (1), (2), c, and art. 6:102, (1), c/w art. 8:101, (1); RLT-A, §7.03, (2), (a), c/w RLT-TAL, §7º

Adapted from: LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei; VISHNY, Robert. *Legal Determinants of External Finance*, p. 41-42.

Carrying out the second stage of the model, the calculation of the performance indices, with the determination of the individual values of the variables in each tort law system analyzed, it is verified that the Brazilian Civil Code of 2002 (table 2, column 2, lines 2, 3, 4 and 5) has rules that provide appropriate incentives on the conduct of the parties engaged in risk activities, considering four dimensions: level of care, level of activity, level of information and level of risk aversion. The Principles of European Tort Law (table 4, column 3, lines 2, 3, 4 and 5) have

rules that provide appropriate incentives on the conduct of the parties engaged in risk activities, considering three dimensions: level of care, level of activity, and level of risk aversion. The Restatements of the Law Third (table 4, column 4, lines 2, 3, 4 and 5) have rules that provide appropriate incentives on the conduct of the parties engaged in risk activities, considering four dimensions: level of care, level of activity, level of information and level of risk aversion.

Established the individual values of the variables, it is possible to calculate the aggregate indices of evaluation of the tort law systems analyzed. The aggregate indices of evaluation indicates to the Brazilian Civil Code of 2002 the value of four (table 2, column 2, line 6), to the Principles of European Tort Law the value of three (table 4, column 3, line 6), and to the Restatements of the Law Third the value of four (table 4, column 4, line 6).

Table 4 – Civil liability in Brazilian Civil Code of 2002, in Principles of European Tort Law and in Restatements of the Law Third, the indices of comparison.

Variable	Brazilian Civil Code 2002	Principles European Tort Law	Restatement of the Law Third
Level of care	1	1	1
Level of activity	1	1	1
Level of information	1	0	1
Level of risk aversion	1	1	1
Indices	4	3	4

Adapted from: MUSACCHIO, Aldo. *Legal Origin vs. the Politics of Creditor Rights, Bond Markets in Brazil, 1850-2002*, p. 271.

Calculated the indicators that allow to test the theoretical consistency of tort law systems from the perspective of economic efficiency, it is possible to verify that the Brazilian Civil Code of 2002 and the Restatements of the Law Third have equivalent results, as well as, that those systems have superior results than the Principles of European Tort Law, considering the objectives of minimization of accidents costs (preventive function), and of maximization of social welfare.

5. Concluding Comments

Referring to the contemporary change occurred in the Brazilian institutional framework of tort law, Cavalieri Filho¹⁷ records that the “legal world is living a historic, moment, privileged, with great opportunities. We have just witnessed the entry into force of a new Civil Code, which, to all evidence, is not just any law. It is the law that establishes the infra-constitutional legal order - an event that occurs from century to century”.

In fact, the vertical comparative analysis performed allows to conclude that, by maintaining the efficient negligence rule as instrument of control of the level of care of the injurer and of the victim (article 186 combined with the caput of the article 927), and by inserting the strict liability rule with reduction/exclusion in compensation proportionally to victim’s fault as instrument of control of the level of risk activity carried by the injurer (§ single of the article 927, combined with the article 945), as instrument of correction of problems of asymmetric information distribution in products liability (article 931, combined with the article 945), and as instrument of social distribution of the risks of accidents (article 931, combined with the

¹⁷ CAVALIERI FILHO, Sérgio. *Programa de Responsabilidade Civil*, p.xxi.

article 945, and article 932, III, combined with the articles 933 and 945), the Brazilian Civil Code of 2002, in comparison with the Brazilian Civil Code of 1916, represents significant institutional innovation.

Going forward, the horizontal comparative analysis performed shows that the Brazilian Civil Code of 2002 is in line with legal institutes that was explicitly influenced by economic analysis of law, such as the Principles of European Tort Law, prepared by the European Group on Tort Law, and the Restatements of the Law Third, Torts, prepared by the American Law Institute, a fact that confirms the substantial development that has occurred in the Brazilian institutional framework of tort law.

In another perspective, the construction of theoretical model that allows the comparison of tort law systems, under the perspective of economic efficiency, represents an important methodological advance, since it provides the achievement of consistent analysis considering different institutional arrangements, in the same period or in different periods throughout time. It is a solid step to establish a secure institutional basis with the aim of harmonization of tort law systems, and with the aim of construction of tort law systems that create appropriate incentives to perform risks activities in line with the relevant objectives of minimization of accidents costs (preventive function), and of maximization of social welfare, which are of importance especially considering developing countries and countries in transition to market economies.

6. References

- AMERICAN LAW INSTITUTE, *A Concise Restatement of Torts, Third Edition*. St. Paul: American Law Institute Publishers, 2013.
- BATTESINI, Eugênio. *Direito e Economia, Novos Horizontes no Estudo da Responsabilidade Civil no Brasil*, São Paulo: Editora LTr, 2011. 328 p.
- BOUCKAERT, Boudewijn; DE GEEST, Gerrit (eds.). *Encyclopedia of Law and Economics*, v. 1. Cheltenham: Edward Elgar, 2000. 1094 p.
- BRAZIL. *Law n. 10.406, January 10, 2002. Civil Code*.
- _____. *Law n. 3.071, January 1, 1916. Civil Code*.
- CAVALIERI FILHO, Sérgio. *Programa de Responsabilidade Civil*. 8. ed. São Paulo: Editora Atlas, 2008.
- COOTER, Robert; ULEN, Thomas. *Law & Economics*. 6. ed. Boston: Pearson Education, 2012.
- EUROPEAN GROUP ON TORT LAW. *Principes du Droit Européen de la Responsabilité Civile*. Paris: Lex Multiplex, 2011. 266 p.

FAURE, Michael. Economic Analysis of Contributory Negligence. In: MAGNUS, Ulrich; MARTIN-CASALS, Miquel (eds.). *Unification of Tort Law: Contributory Negligence*. The Hague: Kluwer Law International, 2004. 291 p.

_____. Strict Liability, Economic Analysis. In: KOCH, Bernhard A.; KOZIOL, Helmut (eds.). *Unification of Tort Law: Strict Liability*. The Hague: Kluwer Law International, 2002. 435 p.

_____. (ed.). *Tort Law and Economics*. Cheltenham: Edward Elgar, 2009. 521 p.

GEISTFELD, Mark A. Products Liability. In: FAURE, Michael (ed.). *Tort Law and Economics*. Cheltenham: Edward Elgar, 2009. 521 p.

HABER, Stephen; NORTH, Douglass C.; WEINGAST, Barry R. *Political Institution and Financial Development*. Stanford: Stanford University Press, 2008. 304 p.

KRAAKMAN, Reinier H. Vicarious and corporate civil liability. In: FAURE, Michael (ed.). *Tort Law and Economics*. Cheltenham: Edward Elgar, 2009. 521 p.

LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei; VISHNY, Robert. Legal Determinants of External Finance. *National Bureau of Economic Research*, Working Paper W5879, Jan. 1997. 53 p.

_____. Law and Finance. *Journal of Political Economy*, v. 106, n. 6, p. 1131-1155, 1998.

LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei. The Economic Consequences of Legal Origins. *National Bureau of Economic Research*, Working Paper 13608, Nov. 2007. 92 p.

MATTEI, Ugo. *Comparative Law and Economics*. Ann Arbor: The University of Michigan Press, 1998. 288 p.

MATTEI, Ugo; ANTONIOLLI, Luisa e ROSSATO, Andrea. Comparative Law and Economics. In: BOUCKAERT, Boudewijn; DE GEEST, Gerrit (eds.). *Encyclopedia of Law and Economics*, v. 1. Cheltenham: Edward Elgar, 2000. 1094 p.

MAGNUS, Ulrich; MARTIN-CASALS, Miquel (eds.). *Unification of Tort Law: Contributory Negligence*. The Hague: Kluwer Law International, 2004. 291 p.

MICELI, Thomas J. *Economics of the Law; Torts, Contracts, Property and Litigation*. Oxford: Oxford University Press, 1997. 235 p.

MUSACCHIO, Aldo. Legal Origin vs. The Politics of Creditor Rights, Bond Markets in Brazil, 1850-2002. In: HABER, Stephen; NORTH, Douglass C.; WEINGAST, Barry R. *Political Institution and Financial Development*. Stanford: Stanford University Press, 2008. 304 p.

SCHÄFER, Hans-Bernd; SCHÖNENBERGER, Andreas. Strict Liability versus Negligence, an Economic Analysis. In: WERRO, Franz; PALMER, Vernon V. (eds.). *The Boundaries of Strict Liability in European Tort Law*. Durham: Carolina Academic Press, 2004. 473 p.

SHAVELL, Steven. Strict Liability versus Negligence. *The Journal of Legal Studies*, v. 9, n. 3, p. 1-25, jun. 1980.

_____. *Economic Analysis of Accident Law*. Cambridge: Harvard University Press, 1987. 310 p.

_____. *Foundations of Economic Analysis of Law*. Cambridge: Harvard University Press, 2004. 737 p.

VELTHOVEN, Ben C. J. van. Empirics of tort. In: FAURE, Michael (ed.). *Tort Law and Economics*. Cheltenham: Edward Elgar, 2009. 521 p.

WERRO, Franz; PALMER, Vernon V. (eds.). *The Boundaries of Strict Liability in European Tort Law*. Durham: Carolina Academic Press, 2004. 473 p.