Economic Analysis of Ethiopia's Vehicle Insurance against Third Party Risks

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Abstract

Road traffic casualties are a major public health challenge that needs sustainable prevention. In comparison with African countries, Ethiopia has the least vehicle ownership. However, motor vehicle accident is a cause for death, bodily injury and destruction to properties in Ethiopia. Ethiopia has a fatality rate of ninety-five traffic car accident deaths per ten thousand vehicles. To tackle this escalating social problem, recently Ethiopia has introduced vehicle insurance against third party risks proclamation. This article is a modest contribution to economic analysis of Ethiopia's Vehicle Insurance against Third Party Risk Proclamation. First party compulsory insurance is efficient in many respects; however, when first party insurance fails third party compulsory, though not efficient, it is introduced to serve as social insurance. The efficiency of the law is measured by whether it provides incentive to individuals to alter behavior. Economic analysis of law combines both positive and normative analysis. The positive analysis suggests that the actual structure of law tends to evolve in the direction of greater efficiency, whereas the normative analysis suggests how legal rules ought to be structured to be more efficient. Hence, the primary purpose is to examine the incentive effect of compulsory insurance law. It is argued that this proclamation tackles externality through accident risk and information asymmetry.

Key terms: *Compulsory insurance, externality, risk differentiation, adverse selection, moral hazard*

Introduction

Road traffic injuries are a major public health challenge that demands concerted efforts for effective and sustainable prevention. Both developed and developing

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countries are suffering from road traffic accidents regardless of the magnitude. Developing countries are prone to casualties, and eighty five percent of road deaths are estimated to occur in these countries. The economic burden of road traffic accident on developing countries is estimated to be absorbing 1-2% GNP. Ethiopia is one of the African countries with least vehicle-ownership. However, motor vehicle accident is the largest cause for death, bodily injury and destruction to properties in Ethiopia. United Nations Economic Commission for Africa in its 2009 report illustrated that Ethiopia has ninety-five traffic car accident deaths per ten thousand vehicles. The economic costs of road crashes are estimated approximately eighty million US dollars per annum according to Economic Commission for Africa 2011 report.

Taking this horrendous traffic accident statistical data, Ethiopia has devised various policies, plans and laws to minimize road accident social problems and ameliorate the situation of victims. Ethiopia has legislated extra contractual liability law to govern accidents occurred. From economic analysis of tort law, tort law is designed to internalize costs borne out of accidental harm (externality). Liability is not enough by itself, unless the injurer pays compensation. Tort law doesn't function independently to achieve its compensation goal when the incentive effect of tort liability is threatened by the judgment proof problem. This means tort law works well when the tortfeasor remains in solvent zone. Thus, tort law assigns tort liability to defendant and insurance shifts the liability to insurance company that pays compensation out of pool.

Reckoning this catastrophic social problem and the failure of tort law, Ethiopia enacted Vehicle Insurance against Third Party Risks Proclamation No. 799/2013. Legal challenges could be addressed using an economic approach or economically inspired approach (also dubbed law and economics) to organize the whole dogmatic legal system. Economics is a powerful tool for analyzing a vast range of legal questions. Thus, the efficiency of law is measured by whether or not it provides incentive to individuals to alter behavior. Economic analysis of law combines both positive and normative analysis. The positive analysis suggests that the actual structure of law tends to evolve in the direction of greater efficiency whereas normative analysis suggests that how legal rules ought to be structured to be more efficient.

Economic analysis of law employs analytical tools of microeconomics. The application of it is based on the assumption that economic efficiency is advantageous to examine legal rules and institutions. Economic analysis of law has pervasive application and the purpose of this article is making a critical analysis of Vehicle Insurance against Third Party Risks proclamation by using the law and economics approach. The primary purpose is to examine the incentive effect of compulsory insurance law to handle information asymmetry and externality.

1. Introducing Empirical Data

Road traffic injuries are a major public health challenge that demands concerted efforts for effective and sustainable prevention.[1] WHO and WB bleak prediction reads as follow;

> *Worldwide, an estimated 1.2 million people are killed in road crashes each year and as many as 50 million are injured. Projections indicate that these figures will increase by about 65% over the next 20 years unless there is new commitment to prevention.*[2]

The death toll will rise hugely, and the situation will be so grim in rapidly motorized countries unless measures are taken. Developing countries are prone to

[1] World Health Organization, 'World Report on Road Traffic Injury Prevention: Summary' (Geneva 2004), p.1. <http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/summary_en_rev.pdf> accessed October 2016

[2] Ibid.

casualties, and eighty five percent of road deaths are estimated to occur in these countries.[3] The economic burden on developing countries is estimated to be absorbing their 1-2% GNP annually.[4]

Ethiopia is one of the African countries with the least vehicle-ownership.[5] However, motor vehicle accident is the largest cause for death, bodily injury and destruction to properties in Ethiopia.[6] United Nations Economic Commission for Africa in its 2009 report illustrated that Ethiopia has ninety five traffic car accident deaths per ten thousand vehicles (fatality rate).[7] The economic costs of road crashes are estimated at approximately eighty million US dollars per annum according to Economic Commission for Africa 2011 report.[8] The following empirical data depicted the situation of accidents in Ethiopia.

1.1 Trends of traffic accidents and vehicle fleet in Ethiopia

The following are reported accidents by Federal Police Commission in the entire country. The fatality rate which measures the traffic accident death rate per ten thousand motor vehicles and the fatality rate has shown a decreasing trend from 2003/4 which was 145 to 2007/8 became 95 G.C and the fatal, serious injury, light injury and property damages are decreasing but still needs measure should be taken.[9]

This report quantitatively identified causes of the accidents; viz. influence of alcohol (drug), failure to respect right handle rule, failure to give way for vehicles,

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[3] Aeron Thomas, *The Role of the Motor Insurance Industry in Preventing and Compensating Road Casualties* (2002), p.1. < https://assets.publishing.service.gov.uk/media/57a08d43e5274a27b2001739/R8012.pdf > accessed 20 June 2017

[4] United Nations Economic Commission for Africa, ECA/NRID/019, *Case Study: Road Safety in Ethiopia* (2009), p. 5. <http://repository.uneca.org/handle/10855/738> accessed Nov 2016

[5] Ibid p.15.

[6] Shimelis Tesfaye, *The Implementation of Compulsory Motor Insurance in Ethiopia* (Master's Thesis, Addis Ababa University 2015), p.3.

[7] Ibid.

[8] Ibid.

[9] United Nations Economic Commission for Africa, fn 4, pp.20-21.

failure to give way for pedestrians, following too closely, improper overtaking, improper turning, over speeding, failure to respect traffic signs, driving with fatigue, driving without attention, Improper parking/moving from parking, excess loading, failure in vehicle, defective road environment, pedestrian error, others and unidentified. According to the police report above, ninety percent of the traffic accidents are caused by human mistakes. Drivers contributed eighty nine percent of the total accident. Among the notable causes of accidents are failure to give way for pedestrians, speeding, failure to give way for other vehicles and failure to respect right hand rule respectively. The causes of driver error are attributed to inadequate training, driving under the influence of alcohol, drug and others.[10]

Taking these horrifying empirical data into account, Ethiopia has proposed to establish a ten-year successive plan for the period 2010-2020, under the Road Safety Vision 2020: "Making Ethiopian Roads Safer for Every One."[11] The proposed target of this Vision 2020 is to reduce the fatality rate to 25 fatalities per ten thousand vehicles by 2020 from the current base rate.[12] Ethiopia has also paid a great deal of attention to road accident and has incorporated in Growth and Transformation Plan (GTP I). This GTP I had set a target of reducing road traffic death numbers and achieved 60 deaths per 10,000 vehicles from 70 per 10,000. The Second Growth and Transformation Plan (GTP II) has a target of reducing road traffic accident from 60 to 27 per 10,000 vehicles by 2019/2020.[13]

Apart from this vision and plan, Ethiopia has legislated extra-contractual liability law to govern accidents occurred. From economic analysis of tort law, tort law is designed to internalize costs borne out of accidental harm (externality).[14] Economic

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[10] Ibid pp.22-23.
[11] Ibid p.9.
[12] Ibid.
[13] National Planning Commission, *Growth and Transformation Plan II (GTPII) (2015/2016-2019/2020), Volume I: Main Text* (Addis Ababa 2016), p.172.
[14] Thomas Miceli, *Economics of the Law: Torts, Contracts, Property, Litigation* (Oxford University Press, New York 1997), p.15.

analysis of tort law is concerned with incentive for assignment of liability between injurer and injured to take optimal precaution against accident and injurer's failure to take due care ensues externality.[15] In addition, if the victim is fully compensated for the harm he suffered and he himself contributed to the accident by failing to take due care, this constitutes moral hazard.[16] The basic model of accident (the model of precaution) consists of a single risk neutral injurer and single risk neutral victim.[17] Therefore, the goal of tort law is to minimize the sum of accidents cost and the cost of accident avoidance the sum of which is called the social costs of accident which is mathematically represented as follows.[18] This is bilateral accident model which assumes both injurer and victim influence the accident risk.

$$C= p(x, y)\, L+A(x) + B(y)$$

Where: C= the sum of expected accident costs and costs of care; A= the victim; B= the injurer; x= level of care of the victim; y= level of care of the injurer; p= probability that an accident will occur and L= magnitude of the loss.[19]

Potential tortfeasor is under a duty to take out insurance against the risk of liability which is a combination of strict liability with a legal duty to insure. One of the objectives of tort law is compensation and wouldn't be achieved without liability insurance because the magnitude of the loss may go beyond the individual asset to cover compensating. Liability is not enough by itself unless the injurer pays compensation. Tort law doesn't function independently to achieve its compensation goal. The incentive effect of tort liability is threatened by the judgment proof problem (insolvency). This means tort law works well when the tortfeasor remains in solvent zone. Thus, tort law assigns tort liability to defendant and insurance shifts the liability to insurance company that pays compensation out of pool.

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[15] Ibid
[16] Ibid
[17] Ibid p.16.
[18] Steven Shavell, 'Strict Liability versus Negligence' in *Journal of Legal Studies* (University of Chicago Press 1980), p.1-25.
[19] Ibid.

Reckoning this catastrophic social problem, Ethiopia enacted Vehicle Insurance against Third Party Risks Proclamation No.799/2013 (hereinafter referred to as compulsory insurance). The preamble stipulates the essence of the proclamation. It reaffirms the occurrence of accidents escalation from time to time and concomitantly loss of lives, bodily injuries and property damages caused by vehicle accidents are creating social problems.[20] Therefore, the preamble stresses the necessity to establish a system "for facilitating the provision of emergency medical treatments to victims of vehicle accidents, and to require owners of vehicles to have third party insurance coverage against third party risks". The proclamation as per Article 3(1) compels that all vehicle on the road must have valid third-party insurance.

The lofty goal of the proclamation is victim protection scheme. As motor vehicle risk involves high hazard risk, insurance companies employ different strategies to minimize motor insurance adverse effect and increase profitability. It is obvious from rationality perspective; private insurance companies do hesitate to insure motor vehicles when they don't gain profit. Some of the strategies include charging highest premium for motor vehicle, restricting share of motor vehicle class business and diversify their portfolio-mix.[21]

However, there is a challenge for the insurer because third party insurance against risk is compulsory (mandatory) insurance. Its premium tariff is regulated and risks are covered without insurer's selection. Hence compulsory insurance for third party risk results in unprofitability of the insurance company.[22] Even when having compulsory third party insurance against risks, the lion's share of vehicles is not insured. Research conducted in 2011 by Insurance Fund Administration Agency revealed that "out of the Total 309, 361 vehicles populated in Ethiopia only about

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[20] *Vehicle Insurance against Third Party Risks Proclamation No.* 799/2013, Parag 1-2.
[21] Shimelis, *The Implementation*, fn 6. p.4.
[22] Ibid.

35% or 106,765 were insured voluntarily whereas the reaming 65% were dependent on their financial resources if liability arises."[23]

Compulsory insurance is a departure from consensual insurance which is incorporated in Commercial Code. Article 654(2) of the Commercial Code offers the legal definition of insurance policy is "a contract whereby a person a person called the insurer undertakes against payment of one or more premiums to pay a person called the beneficiary, a sum of money"[24] if the specified risk occurred. Insurance contract is an adhesive contract offered on a take-it-or-leave-it basis.[25]

As discussed, compulsory insurance premium tariff is imposed by law, and risks are covered without any differentiation. This breeds moral hazard and adverse selection problems. There are arguments as to which types of insurance are preferred from first party and third-party insurance. This legal issue could be tackled by using law and economics insights which will be analyzed as follow.

2. Economic Analysis of Compulsory Insurance Law

Legal challenges could be addressed using an economic approach or economically inspired approach (also dubbed law and economics) to organize the whole dogmatic legal system.[26] As Posner stated "economics is a powerful tool for analyzing a vast range of legal questions." Law and Economics is "double-barreled subject" that contributes interdisciplinarity and applies an economically inspired approach.[27] Economic analysis of law is "the greatest innovation in legal thinking"

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[23] Ibid.
[24] *Commercial Code of The Empire of Ethiopia, Proclamation No.166/1960*, Art 654(1).
[25] Susan Randall, 'Freedom of Contract in Insurance' in *Connecticut Insurance Law Journal* (vol. 14, no. 1, University of Connecticut, 2008), pp.107-148, p.107 <http://insurancejournal.org/wp-content/uploads/2011/07/44.pdf > accessed 20 June 2017
[26] Jürgen Backhaus (ed), *The Elgar Companion to Law and Economics* (2ndedn, Edward Elgar, Cheltenham, 2005), p.2.
[27] Klaus Mathis(ed), *Law and Economics in Europe: Foundations and Applications* (Springer, Dordrecht 2014), p. v.

and has made law a formal, scientific and quantifiable discipline.[28] Economic analysis of law tackles two fundamental questions about legal rules which are "what are the effects of legal rules on the behavior of relevant actors? And are these effects of legal rules socially desirable?"[29] Economic analysis of law utilizes the economic model to explain human behavior. It employs analytical tools of microeconomics. Thus, the application of economic analysis of law is based on the assumption that economic efficiency is advantageous to examine legal rules and institutions.

2.1 Increasing Expected Utility

Decision making under uncertainty or risk needs insurance. However, individuals have different approaches to risk. For example, risk neutral individuals have constant marginal utility of income, and they are indifferent between a certain prospect of income and uncertain prospect of equal expected monetary value.[30] On the other hand, a risk seeking (preferring) or risk loving person has an increasing marginal utility of income and prefers an uncertain prospect of income to a certain prospect of equal expected monetary value.[31]

Contrary to these types of persons, there is a risk averse person who wants to get insurance coverage. The behavioral implication of a risk averse person prefers to pay premium to avoid having to face uncertain result. Insurance is beneficial from a utilitarian perspective as it removes risk from the risk averse person and increases utility. Utilitarian approach to insurance dictates that risk creates disutility for risk

[28] Nicholas Georgakopoulos, *Principles and Methods of Law and Economics: Basic Tools for Normative Reasoning* (Cambridge University Press, New York 2005), p. 3.
[29] Louis Kaplow and Steven Shavell, 'Economic Analysis of Law Forthcoming' in A.J. Auerbach & M. Feldstein(eds.), *Handbook of Public Economics*, (Elsevier 1999), p.1.
[30] Robert Cooter and Thomas Ulen, *Law and Economics* (6thedn, Pearson Education, Boston 2012), p. 45.
[31] Ibid.

averse individual.[32] Risk averse individuals badly demand for insurance. Risk averse individuals prefer the certainty of small loss, which is the payment of insurance premium to shift larger probability of larger loss to insurance company in order to increase the utility of individuals.[33]A person who has diminishing marginal utility from money income is said to be risk averse. Decreasing marginal utility of wealth states that the marginal utility of one additional birr is higher in the post-accident stage than in the pre-accident stage. Risk aversion states that the marginal utility of wealth diminishes as wealth increases. This theoretical foundation applies to pecuniary damage and not for non-pecuniary loss.

Insurance shifts the risk and creates social welfare. According to utilitarian approach, liability insurance is a tool to increase the utility of a risk averse injurer not to protect victims. The degree of risk aversion is different from person to person. Wealthy individuals are relatively less risk averse or even risk neutral to accidents. Therefore, compulsory insurance compels wealthy individuals to pay premiums that do not lead to utility increasing because premiums exceed the expected losses.[34] In this case, compulsory third-party insurance creates social loss. However, empirical data is necessary to know how many people are actually harmed and how many people benefit from insurance in order to offset the duty to insure social loss.[35] It is rational to assume that a risk averse individual needs compulsory third party insurance when they themselves fail to pay premium for first party liability insurance.

The other problem of the potential injurer is that he has no incentive when his personal wealth is less than the compensation he will pay to the harm caused; hence, compulsory insurance is necessary to solve this problem. Adequate

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[32] Michael Faure, 'Environmental Damage Insurance in Theory and Practice. The Law and Economics of Environmental Policy: A Symposium' (2001), p.4. <http://www.cserge.ucl.ac.uk/Faure.pdf> accessed October 2016

[33] Ibid.

[34] Michael Faure and Roger Van den Bergh, 'Compulsory Insurance for Professional Liability' in *The Geneva Papers on Risk and Insurance* (vol. 14, no. 53, 1989), pp.308-330, p.313.

[35] Faure, *Environmental Damage*, fn 32, p. 41.

compensation to the victim is a distributional justification achieved by compulsory third party insurance. In such case the externality couldn't be internalized by potential injurer rather borne by the society.[36] This is called externality (third-party effect) and emanates both from judgment proof and disappearing (untraced) tortfeasor. Some argue that shift in distribution doesn't lessen total wealth and doesn't achieve efficiency.[37]

2.2 Externality through Insolvency

Compulsory insurance serves socially beneficial functions of gatekeeping beyond direct parties to the insurance contract which is a clear exception to privity of contract. This is positive externality aspect of insurance market. Externality is the activities of one party affecting the welfare of another in a way outside of the market mechanism.[38] Insurance also results in negative externality (spillover) which is one type of market failure. Negative externality effect of insurance occurs when the insured fails to take optimal precaution. Negative externality is defined below:

> *A "negative externality" is the cost that an action creates, but that the actor does not himself experience. Negative externalities cause people to do too much of the activity that yields the negative third- party effects. A classic example is pollution, as much of its cost falls not on the polluting factory but on society.*[39]

The potential injurer may cause damage resulting in losses exceeding personal wealth that leaves victims uncompensated.[40] It is argued that in fault-based liability

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[36] Faure and Bergh, *Compulsory Insurance*, fn 34, p. 313.
[37] Robert Bork, *The Antitrust Paradox* (Basic Books, New York 1978), p.97.
[38] Harvey Rose, 'Public Finance' in Charles K. Rowley & Friedrich Schneider (eds), *The Encyclopedia of Public Choice* (Kluwer Academic Publishers, New York 2004), p.253.
[39] Alan Devlin, *Fundamental Principles of Law and Economics* (Rutledge Taylor & Francis Group, London 2015), p.13 at fn 3.
[40] Faure and Bergh, *Compulsory Insurance*, fn 34, p. 313.

rule, the potential injurer takes due care efficiently as long as costs of care is less than his assets; however, under strict liability rule potential injurer does have no incentive to take optimal care when loss exceeds asset.[41] Insolvent and uninsured owners have little incentive to avoid accidents and the problem of under-deterrence emerges. This means insolvent (judgment proof) individuals are not able to satisfy the victim in whole the amount they are legally bound to pay due to liability because their asset is less than their liability. In such case, liability rule alone is not preferred to provide adequate incentive to solve this externality because the potential injurer may engage in risky activities with great extent or take little care and purchasing of liability insurance is diminished.[42]

It is argued that insolvency brings under-deterrence which could be corrected by insurance.[43] Compulsory insurance protects problems that stem from insolvency of the injurer. Insolvency creates externality which cannot be internalized unless mandatory duty to insure is introduced.[44] A duty to insure is a guarantee to the victim that helps to receive compensation. This distributional argument guarantees compensation to the victim.

This discussion shows that compulsory insurance prevents externality from judgment proof injurers. However, there are arguments marshaled for first party compulsory insurance which serves most efficiently than third party compulsory insurance. First party compulsory insurance is a system whereby insurance coverage is offered and compensation is paid to the victim. The benefit of first party insurance is its risk differentiation. It must be noted that risk differentiation works efficiently when marginal benefit of risk differentiation outweighs the

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[41] Ibid p. 314.

[42] Steven Shavell, 'The Judgment Proof Problem' in *International Review of Law and Economics* (vol. 6, 1986), pp.45-58, p.45.

[43] Michael Faure, 'Economic Criteria for Compulsory Insurance' in *The Geneva Papers on Risk and Insurance Issues and Practice* (2006), pp.149-168, p.154. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.664.3618&rep=rep1&type=pdf> accessed November 2016

[44] Faure and Bergh, *Compulsory Insurance*, fn 34, p.313.

marginal cost of differentiation.[45] First party compulsory insurance helps to segregate risks to tackle adverse selection problem.[46] When there is risk-differentiation, premiums correspond with expected losses of insured.[47] Social responsibility is a euphemism for individual irresponsibility; unlike compulsory third party insurance it does not work in first party compulsory insurance. The other beauty of first party insurance is its upper hand in terms of lowering administrative costs by avoiding the waiting time to get compensation money immediately after the covered risk occurred.[48] Even with all merits of first party insurance, still compulsory third-party insurance prevails by functioning as social insurance. Furthermore, first party insurance may not be a feasible alternative in third world countries because individuals might not have premiums to pay ex ante.[49]

2.3 Externality through Disappearing Tortfeasor

Economists and lawyers approach liability allocation from different perspectives. For example, lawyers approach liability after the accident occurred, ex post, and deal with how liability is allocated whereas economists look liability from ex ante perspective and deal with how the law provides incentive to deter individual behavior.

The ex post view states that if a driver injures a victim and disappeared (untraced) by the time of accident, the victim is left without compensation.[50] The *ex ante* view approach looks into how the risk of potential injurer's disappearance has to be distributed in order to provide the optimal incentive to take due care to avoid or

[45] Faure, *Environmental Damage*, fn 32, p. 15.
[46] Faure and Bergh, *Compulsory Insurance*, fn 34, p.314.
[47] Ibid.
[48] Michael Faure and Veronique Bruggeman, *Catastrophic Risks and First-Party Insurance* (2008), p.13. <http://insurancejournal.org/wp-content/uploads/2011/07/12.pdf > accessed 19 October 2016
[49] Ibid, p.11.
[50] Summers, 'The Case of the Disappearing Defendant: An Economic Analysis', (1983), p.147. <http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=4634&context=penn_law_review> accessed Dec 2016

minimize accident.[51] Injurers are assumed to be rational utility maximizing. It is assumed that when potential injurers have expected the probability of disappearance, they will not take optimal level of care under any liability rule.[52] This disappearing injurer externalizes the cost, and compulsory insurance is called to internalize this externality. The hit and run (uninsured) vehicle accident externality is tackled by compulsory third party insurance when it combines fund tariff to solve.

There is an information asymmetry problem (adverse selection and moral hazard) associated with compulsory insurance law that affects efficient insurance contract, which is discussed below.

2.4 Information Impediments

Economic analysis of law dictates that rational parties having a perfectly competitive market in the absence of "transaction cost"[53], and possessing complete information voluntarily conclude a contract to maximize their joint surplus or welfare. The Coase Theorem encourages the enactment of laws that reduce transaction cost and promote efficient bargaining. In negligible transaction cost, contracts produce increased social welfare. Economic analysis approach to insurance adheres the efficient insurance contract. When there are informational problems (market failure), regulatory intervention is a necessary evil as market, which is the first best solution, does not perfectly functions. Individuals may not possess information that motivates them to need for insurance.[54] Without empirical data that depicts information deficiencies of individuals who do not know the problem of risk, its underestimation and the benefit of insurance, introduction of compulsory insurance (regulatory intervention of government) amounts to mere

[51] Ibid p.149.
[52] Ibid p.153.
[53] Transaction costs are cost of searching contracting parties, cost of negotiation, cost of monitoring and execution
[54] Faure and Bergh, *Compulsory Insurance*, fn 34, p. 315.

paternalism and results in inefficiency. The legislator's introduction of the duty to insure is based on mere paternalism. Those who oppose paternalism vehemently argue that information deficiency could be remedied through regulation with the objective of providing information to individuals who are poorly informed and claim that duty to insure (compulsory insurance) is disproportional remedy and it must be the last resort.[55]

Information impediments emanate from either imperfect information as to the probability of risk materializing (scope) or due to the existence of information asymmetry between insurer and insured about factors of probability of risk materializing and scope.[56]

Information Asymmetry happens when a party to the transaction has information that is not known or hidden to the other outsider party. It exists at pre-contractual stage when the insured possessed more information pertinent to insurance contract (adverse selection) and when the insurer armed with information relevant to insurance contract yields reverse adverse selection problem.[57] On the other hand, after the contract concluded but before or after the insured event occurred, informational gap about insured's behavior leads moral hazard problem whereas informational gap about insurer's behavior gives reverse moral hazard.[58]

Insurance contract is not properly functioning and very limited to reduce information asymmetry by forcing parties to reveal information to uninformed party (signaling theory).[59] This opportunity to signal risk could be done by choice of deductibles, which means higher deductible infers lower premium, i.e. low risk persons are likely to choose higher deductibles because the probability of accident

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[55] Faure, *Economic Criteria*, fn 43, p.153.
[56] Ronen Avraham, 'The Economics of Insurance Law-A Primer' in *Connecticut Insurance Law Journal* (vol. 19, no. 1, 2012), p. 42.
[57] Ibid p.43.
[58] Ibid.
[59]Sara Arvidsson, *Essays on Asymmetric Information in the Automobile Insurance Market (*PhD Thesis, Orebro University 2010), p. 15.

is low.[60] However, empirical data shows that both high and low risk individuals badly demand lower deductibles, which means that low risk persons have little opportunities to signal their low risk when they purchase insurance policy.[61]

Adverse Selection – Asymmetry of information leads to adverse selection. Comparatively speaking, a person with high-risk badly seeks more insurance coverage than low-risk person. Adverse selection states that low risk individuals avoid voluntary insurance pools that lead to have disproportionate percentage of high risk individuals.[62] Adverse selection compels the propensity of high-risk persons to buy insurance coverage and thereby increase premiums and forces low-risk persons to be underinsured.[63] In case of motor vehicles, drivers and vehicles with heavy and repeated accident records will battle to find insurance on the voluntary insurance market; rather they will easily find coverage in compulsory insurance market (residual or shared market) whereby insurers are not free to select vehicles and drivers they insurance.[64] As corporate social responsibility of company demands insurance companies are mandated to provide insurance coverage for "hard to insure" risks of automobile insurance.[65] In compulsory insurance there is no risk differentiation and no different premium is set that makes insurance company lose their profit and they seize opportunity to carry out corporate social responsibility.

Premiums should reflect the risks of insured. However, an insurance company operating on average risk charges one premium rate to all insured having different

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[60] Ibid, p.15-16.

[61] Ibid.

[62] Tom Baker, 'Containing the Promise of Insurance: Adverse Selection and Risk Classification' in *Connecticut Insurance Law Journal* (vol. 6, no 2, 2003), p. 375.

[63] Michael Keane and Olena Stavrunova, *Adverse Selection, Moral Hazard and the Demand for Medigap Insurance* (2014), p.1. <https://www.nuffield.ox.ac.uk/economics/papers/2014/PaperApril2014_3.pdf> accessed Oct 2016

[64] Michael Faure, '*Special Insurance Systems for Motor Vehicle Liability in Belgium and The Netherlands'*, (2013), p.1. <http://www.iuscommune.eu/html/activities/2013/2013-11-28/workshop9a_De_Mot_and_Faure.pdf> accessed October 2016. The term shared market indicates that profit and losses are shared by all insurers selling motor liability insurance at central pool.

[65] Ibid.

degrees of risk due to information asymmetry. This allows high-risk individuals to obtain insurance coverage at a lower premium than they should actually be willing to pay, whereas low-risk individuals are charged higher premium thereby cross subsidizing high-risk individuals.[66] The less risky insured cross subsidize the riskier insured when they are charged a higher premium than the risk they actually have. Asymmetry information leads to strategic behavior thereby high-risk individuals pretends to be low-risk. This creates inefficient insurance and drives low-risk individuals out of the insurance market.

To tackle information asymmetry, disclosure of information is a mandatory requirement. This mandatory disclosure demands high risk individuals possessing private information about their risk type to disclose to insurance company while concluding the insurance contract. Accurate information about the behavior and characteristics of insured parties helps to better assess and arrange premium. Risk difference brings differentiated premiums. This leads to reduced cross-subsidization and limits the insurance company liberty to spread risk among risk averse insured.[67] Thus, striking a balance between two tradeoffs which are increasing *ex post* coverage and eliminating *ex ante* incentives for strategic behavior of insured is necessary.

Adverse selection may not be detected, and even if it is detected there is a way to exclude high risk individuals. At times, compulsory motor vehicle insurance prevents adverse selection because low-risk individuals cannot opt out of the insurance pool.[68] Compulsory insurance encourages cross subsidy unless it comes along with risk-differentiation to charge different premiums. Risk classification implies the distributive nature of insurance.

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[66] Avraham, *The Economics,* fn 56, p.44.
[67] Ibid p.45.
[68] Ibid p.59.

Reverse Adverse Selection – This exists when there is disparity in the quality of insurance policies provided by insurers and such information barrier bars insured to class policies into high and low quality.[69] Low quality policies up for grabs by lower premiums leads to a race-to-the-bottom attracting many insured and driving out higher quality coverage at more expensive price[70] and eventually emerges "market for lemons".[71] A low quality coverage insurance company costs much more than the benefit it offers because there is a challenge to stay solvent. Regulation of premiums could solve reverse adverse selection and prevent the race-to-the-bottom.

Moral Hazard – This happens when insured take less than optimal care in protecting themselves against an insured event; insured exert less effort to minimize their loss when risk occurs and exaggeration of losses by insured to get high compensation.[72] The policyholder could change his preventive behavior after securing insurance coverage which affects accident probability positively. Moral hazard arises when ex-post risk of insured persons is higher than the ex-ante risk.[73] The insurance company suffers from asymmetry of information that makes the insurance company to fail to know which insured behaves strategically. Compulsory insurance exacerbates the moral hazard problem unless measures are taken. To reduce the moral hazard problem, the insurer should increase monitoring, which is costly, or provide incentives to induce the insured to increase preventive effort to reduce accident risks, such as deductibles that are considered as a tool to reduce moral hazard. Under deductible, the insured is obliged to pay a fixed amount of the accidental losses.

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[69] Ibid p.61.
[70] Ibid p. 44.
[71] George Akerlof, 'The Market for "Lemons": Quality Uncertainty and the Market Mechanism' in *The Quarterly Journal of Economics* (vol. 84, no. 3, 1970), pp. 489-490. Akerlof who coined the term 'market for lemons' discussed four types of cars: new cars and used cars, good cars and bad cars (lemons) which are up for sale. The seller knows the quality of cars more than the potential buyer which is attributed to information asymmetry. This makes good cars less competitive compared to the lemons.
[72] Avraham, *The Economics,* fn 56, p. 66.
[73] Keane and Stavrunova, *Adverse Selection,* fn 63, p.1.

Reverse Moral Hazard – According to this, insurance companies behave strategically, and also are victims of opportunistic behavior. Moral hazard is locked in the parties once they concluded the contract.

3. Motor Vehicle Insurance against Third Party Risk: Law and Economics Approach

Compulsory motor insurance is not unique to Ethiopia; rather, many countries enacted compulsory third-party insurance and the essence of the institution is well articulated by Lord Denning as follows:

> *Parliament requires every driver to be insured against third party risks. The reason is so that a person injured by a motor car should not be left to bear the loss on his own, but should be compensated out of the insurance fund. The fund is better able to bear it than he can...*[74]

For example, EU Motor Insurance Directive No.2009/103 E.C demands all vehicles to be covered for motor third party liability up to a minimum amount for bodily damage. Ethiopia has enacted compulsory insurance proclamation; hence, this part is devoted to analyze this proclamation from a law and economics approach. Incentives, which are based on rationality assumption, "are the essence of economics".[75] Thus, the efficiency of the law is measured by whether or not it provides incentive to individuals to alter behavior. Economic analysis of law combines both positive and normative analysis. The positive analysis suggests that the actual structure of law tends to evolve in the direction of greater efficiency, whereas normative analysis suggests how legal rules ought to be structured to be more efficient.[76] Hence, the primary purpose is to examine the incentive effect of

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[74] Richard Lewis, The Relationship between Tort Law and Insurance in England and Wales, p. 61. <https://link.springer.com/chapter/10.1007%2F3-211-30631-5_3#close > accessed 20 June 2017

[75] E.P. Lazaar, 'Incentive in Contracts' in J. Eatwell (eds), *The New Palgrave Dictionary of Economics* (vol. 2, Macmillan, London 1998), pp.744-748.

[76] Miceli, *Economics of the Law*, fn 14, p. 3.

compulsory insurance law to handle information asymmetry and how externality problem is tackled. First, an introduction is made about the proclamation.

Compulsory insurance proclamation stipulates the social insurance function as a grand objective of the law. Article 4 deals with mandatory insurance policy coverage which consists of compensation payable for death, bodily injury, damage to property and emergency medical expenses arising from the insured vehicle. Furthermore, insurance policy coverage that limits or excludes liability has no legal effect as per Article 6.

Part three deals with certificate of insurance. For example, Article 9 obliges any insurance company to issue a certificate of insurance to the insured simultaneously with the insurance policy. As per Article 10, this certificate of insurance shall be valid not less than one year from the date of issuance. Article 12 compels any insurance company to provide the insured insurance sticker along with certificate of insurance and failure to possess and absence of insurance leads the police to detain the vehicle until the appropriate documentation is presented as per Article 13.

Part four treats liability and extent of liability. Article 16 provides that the amount of compensation awarded ranges from 5000 to 40,000 birr in case of death; up to 40,000 birr in respect of bodily injury of one person; an amount not exceeding 100,000 birr in respect of damage to property and emergency medical treatment 2000 birr according to Article 27.

Part five governs the insurance fund that provides compensation for victims who are injured by uninsured or untraced vehicle. Article 20 stipulates that the objective of the fund is to provide emergency medical treatment to a person who has sustained injury, provide compensation to person who sustained bodily injury and provide compensation to the family of the deceased. The amount of compensation is based on Article 16.

Having discussed the content of compulsory insurance proclamation, the next discussion focuses entirely on how this proclamation fits to economic analysis of the law and how it tries to achieve efficiency and minimize problem we have discussed previously. In the previous section, it is discussed that insurance companies hesitate to insure vehicles, and claims vehicle accident as "difficult to insure" risk. From a rational point of view, insurance companies always want profit. However, insurance companies have corporal social responsibility to contribute to solve this escalating social problem and are obliged to insure vehicle accident risks.

The following is a separate discussion of how the proclamation solves, if it does, the moral hazard and adverse selection, and externalities.

Adverse Selection - Drivers and vehicles with heavy and repeated accident records find coverage in compulsory insurance. When the law compels an insurance company to charge identical premium rate to all insured having different degrees of risk, the adverse selection problem is exacerbated. Lack of risk differentiation results in inefficiency because all insured are obliged to pay identical premiums, yet it achieves social insurance.

The compulsory insurance proclamation obliges persons to have a valid vehicle insurance coverage against third party risks regardless of risk differentiation and premium tariff, which is determined by government, not by the market. Article 6(5) states that "with regard to insured persons and drivers with repetitive vehicle accidents the Ministry shall issue directive as to the applicable measure…" But it is not clear whether the word "measure" includes premium tariff increment or other administrative measure. Hence, if this measure includes premium tariff increment, to some extent it differentiates risk and ameliorates adverse selection problem.

The other related problem is enforcement challenges as to repetitive drivers' and vehicles' accident recording system. Adverse selection may not be detected due to lack of record about repetitive accidents. Thus, to tackle adverse selection problem, disclosure of information is a mandatory requirement. This mandatory disclosure demands high risk individuals possessing private information about their accident risk type to disclose to the insurance company when concluding the insurance contract. Correct information about the behavior and characteristics of insured individuals and drivers' accident history helps to better assess and arrange premium. However, the proclamation does not expressly oblige repeated accident-prone vehicle owners and drivers to disclose information. If disclosure requirement is not met at the time of conclusion of compulsory insurance, the failing party could pay to offset what is paid as compensation by the insurance company. Incorporating this kind of provision mandating insured parties could tackle to some extent adverse selection as Article 688 of commercial code does not address adverse selection which happens in compulsory insurance.

Moral Hazard – This arises when ex-post risk of insured persons is higher than the ex-ante risk. Compulsory insurance proclamation devises mechanisms to reduce moral hazard problem. One of the mechanisms to tackle moral hazard is limiting compensation when risk has materialized. The compulsory insurance proclamation, according to Article 16, limits the extent of compensation. This induces the incentive to take optimal care after insurance coverage. The other means to tackle moral hazard is stipulated under Article 6(2) that stipulates that insurance policy allows recovery of compensation when the insured committed fault or drive a car without a license. In such case, the insurance company pays compensation for the third-party victim and covers the amount paid from the owner of the car because they committed fault.

Externality through Insolvency – Compulsory insurance serves socially beneficial functions of gatekeeping beyond direct parties to the insurance contract, which is termed as positive externality aspect of insurance market. As it is discussed above, ninety percent of the traffic accidents are caused by human mistakes, of which drivers contributed eighty nine percent of the total accident. The potential injurer may cause damage resulting losses exceeding personal wealth that makes victims uncompensated. Insolvent and uninsured drivers have little incentive to avoid accident and the problem of under-deterrence emerges. Judgment proof individuals are not able to satisfy the victim in whole the amount they are legally bound to pay due to liability because their asset is less than their liability.

Compulsory insurance protects from problems that stem from insolvency of the injurer. It is obvious that insolvency creates externality which can't be internalized unless mandatory to insure is introduced. Compulsory insurance proclamation prevents externality from judgment proof injurers according to Article 16. The proclamation avoids the externality problem up to 40,000 and 100,000 Birr for death and property damage respectively. Even Article 16(5) empowers Council of Ministers to amend the extent of liability.

Externality through Uninsured or Untraced (Disappearing) Vehicle – If a driver injures the victim and disappears by the time of the accident (after the accident) the victim is left without compensation. It is assumed that potential injurers have expected the probability of disappearance; they will not take optimal level of care under liability rule. This disappearing injurer externalizes the cost, and insurance is called to internalize this externality. This hit and run (uninsured) vehicle accident which produces externality is tackled by compulsory third party insurance when it combines fund tariff to solve the problem.

Compulsory insurance establishes an insurance fund according to Article 19. Article 23 states that the source of funds shall be fund tariff and additional source to be determined by the Council of Minister. Article 2(15) defines "fund tariff" as "a contribution to the insurance fund collected by applying percentage or any alternative". The objectives of the insurance fund is to provide compensation to a person who has got bodily injury; providing compensation to family members of the deceased person as well as provide emergency medical treatment to injured person and the magnitude of the compensation is according to Article 20(2) cumulatively Article 16(1(a-b)).

This disappearing hit and run (uninsured) car accident which produces externality is mitigated by compulsory insurance as it establishes fund tariff to be disbursed for compensation purpose. The extent of compensation and covered liability may not be enough to cover the total loss borne by victim. As a principle, the magnitude of compensation should be equal to the harm the victim suffered. However, the compulsory insurance still mitigates externality produced by vehicle.

Conclusion

This article analyzed the introduction of vehicle insurance against third party risks proclamation from a law and economics approach. Compulsory insurance is more justified by distribution effects than economic efficiency. Because compulsory insurance mandates high-risk individuals obtain insurance coverage at lower premium than they should actually be willing to pay whereas low-risk individuals are charged higher premium thereby they cross subsidize high-risk individuals. The proclamation demands all vehicles to be insured without taking risk differentiation as the goal of the law is victim protection. The proclamation presents the opportunity to insurance companies to carry out social corporate responsibility of duty to insure serving as social insurance achieving distribution role by sacrificing efficiency. However, the proclamation also tries to strike a balance to accommodate efficiency.

Accident is externality, and it emanates from insolvent owner or uninsured (untraced) vehicle accident. Furthermore, the potential injurer may cause damage resulting in losses exceeding personal wealth that makes victims uncompensated. Judgment proof individuals are not able to fully satisfy the victim because their asset is less than their liability. Insolvency borne externality can’t be internalized unless mandatory insurance is introduced. Compulsory insurance avoids externality from judgment proof injurers to a certain extent. Disappearing (untraced) drivers externalize the cost, and compulsory insurance serves to internalize the externality through insurance fund. However, the extent of compensation and covered liability are not enough to cover the total loss borne by the victim when the harm is greater than the compensation caps stipulated in the proclamation.

Adverse selection stipulates that low risk individuals avoid voluntary insurance pools and the propensity of high-risk persons to buy insurance coverage is high. Compulsory insurance empowers the responsible government organ to issue measures applicable to vehicles and drivers with repetitive accidents history. If this measure includes premium tariff increment, it tackles adverse selection by making the premium correspond with risk magnitude. However, practical enforcement challenge pose threat to have repetitive insured and drivers' accident recording system is not central registry system. The behavior and characteristics of insured individuals and drivers' accident history help to better assess and arrange a premium to achieve efficiency.

Providing incentives induce the insured to take preventive effort to reduce moral hazard. Compulsory insurance proclamation devises mechanisms to reduce moral hazard. One of the mechanisms to tackle moral hazard is limiting compensation when risk materialized. The compulsory insurance limits the extent of compensation to induce the insured to take optimal care after insurance coverage.