

**Research Article**

# Financing Higher Education and Moral Hazard: A Systematic Literature Review

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**Abstract.**

This study differentiates and determines the problem as well as the determinants of moral hazard in financing higher education. Moral hazard is a phenomenon that occurs when financial costs of risks undertaken are being transferred onto a third person. It occurs when a person – individual or institution – acts differently because they are detached from the risks; hence, they consciously enter a risk knowing that someone else has to bear the costs of such behavior. Research on moral hazard has arisen from the fields of finance and insurance; it is related to asymmetric information, the relationship between agent and principal in finance, as well as to irresponsible risk behavior. With this study the authors aim to identify problems that arise in the moral hazard process in higher education financing. The Kitchenham Systematic Literature Review (SLR) approach has been applied in this study, as published in the Clarivate Web of Science Core Collection. The research findings identify scarce theoretical foundation, on the basis of which the authors have carried a couple of research variations. A table of occurrence of moral hazard in higher education financing is presented in this paper, as well as a number of recommendations for further research on this topic.

**Keywords:** moral hazard, higher education, financing, Kitchenham Systematic Review

**JEL CLASSIFICATION codes**

L25, P28, Q50

## 1. INTRODUCTION

Moral hazard as a phenomenon in economics is well recognized with extensive literature reviews as well as studies that deal with this topic. Moral hazard in the economy is a phenomenon associated with risky or less careful individual or organizational behavior due to the financial shield provided by a third party. In these situations individuals or organizations take risks and potential prizes but transfer their costs and losses to third parties to be covered by them.

Moral hazard is a well known effect in the insurance industry, taking place when individuals have tendency of risky behavior which brings higher financial repercussions

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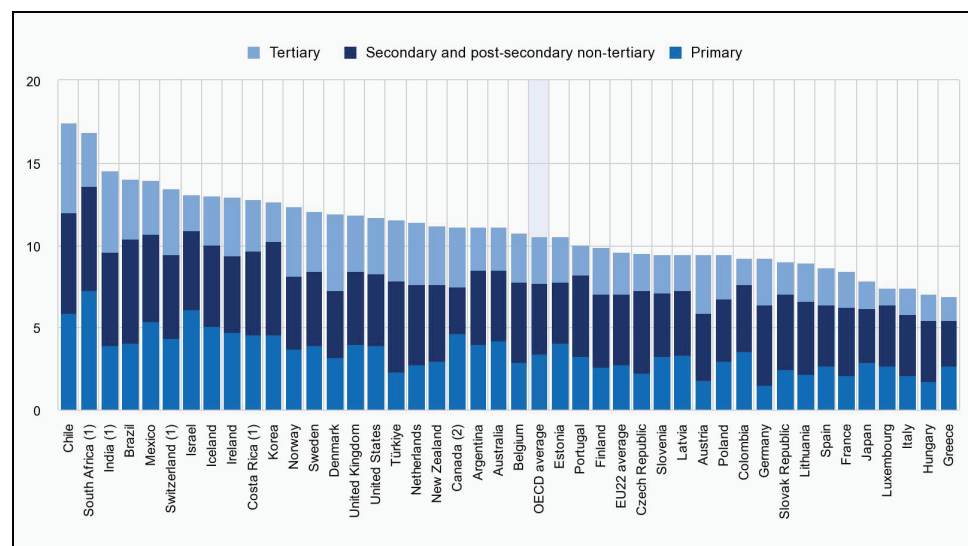
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to the guarantor or the financier, i.e. the insurance company. Moral hazard occurs due to asymmetric information and irresponsible risky behavior of the individuals. One of the main problems in the daily operations of the insurance industry is identifying the potential dishonesties and deceptions that clients attempt. This can lead to understating risk due to insufficient and, possibly, asymmetric information being shared with the insurance company.

The higher education sector is the driving force of development, prosperity, and competitiveness of each country. For the above reasons, governments provide support higher education through various modes and schemes. Investing in education, especially in higher education, ensures economic development and competitive advantage of the state in relation to the environment. The percentage of people with tertiary education aged 30-34 was 40.7% (ISCED5-8) in the EU in 2018. According to EUROSTAT [1], EU 28 allocated 4.8% of GDP to education on average in 2017.

A higher education sector which is successful, developed, and supported by government is a prerequisite for the creation of strategic advantage of each country. This strategic advantage is established through innovation capabilities, research abilities, highly skilled labor force, higher share of white-collar workers, etc. Different countries and cultures have different approaches toward this issue. Figure 1 presents total public expenditures on education as a percentage of total government expenditures among OECD countries. Expenditures vary from 7% in Greece, Italy and Hungary up to 17% in Chile, with the OECD average being 10.6%.



Source: OECD/UIS/Eurostat (2022), [https://www.oecd.org/education/education-at-a-glance/EAG2022\\_X3-C.pdf](https://www.oecd.org/education/education-at-a-glance/EAG2022_X3-C.pdf).

**Figure 1:** Composition of total public expenditure on education as a percentage of total government expenditure (2019). Primary to tertiary education (including R&D), in per cent.

In addition, the supporting administration approach can be decentralized (state, regional and local government) and centralized. When comparing OECD countries, the decentralized group is presented by Belgium, Spain, Germany, United States, Switzerland, Brazil, Mexico, France, Italy, and India. Centralized countries are Iceland, Chile, Greece, Slovenia, New Zealand, United Kingdom, Nederland, Turkey, Portugal, Hungary and others.

Moreover, in light of the moral hazard phenomenon and the financial shield to the users, it is worthy of note to explore public spending on educational institutions. OECD [2] reports that OECD countries paid out 83% of total spending from public funds to education in 2019, while the EU22 countries' public spending on average was 80%. This funding encompasses all levels of education (primary, secondary, tertiary). It should be brought to light that the share of private sources of total expenditures in tertiary level in OECD countries make up, on average, 31%, although this proportion should be taken with reserve. The average private spending is propelled by half of dozen countries with above-average share of private sources to overall total expenditures in tertiary level of education. Private sources of spending in tertiary level of education include households and other private entities, mostly corporations and institutions. These countries are therefore mainly characterized through high tuition rates. Countries with above-average sources of private founding of expenditures in higher education are United Kingdom (73%), Colombia (68%), Australia (66%), United States (64%), South Korea (62%), Chile (61%) and Israel (48%) [2]. Opposite these countries and higher education system(s) stand countries traditionally perceived as welfare countries, with above-average higher public sources of expenditures in tertiary education institutions – Finland (95.8%), Luxemburg (95%), Norway (93.8%), Iceland (92.3%), Denmark, Austria, Slovenia, Sweden (89.5–88.0%). In majority of the OECD countries households have a great magnitude as leading private source of expenditures in tertiary education institutions, with an average share of 72% to total private sources spending.

Alongside contrarily defined approaches to education and connected financing schemes, new trends are arising, with a shift in the paradigm of spending in tertiary level of education. In the last decade United States was the leader in investing in research rather than in teaching [3].

Taking into account all of the above, we may conclude that moral hazard in financing higher education is a sophisticated phenomenon that arises from the complexity of higher education systems and financial schemes and is connected to the ratio of public-to-private expenditures. For that reason, the main purpose of this study is to present

the prevailing state of research on moral hazard in financing higher education, with the main aim of the study being bringing answers to the following:

RQ1: What are the publication trends in moral hazard in financing higher education in terms of time, journals and disciplines?

RQ2: Are there existing leading studies of research for this topic?

RQ3: What are the potential topics for future research?

## 2. Research Methodology

The main focus of this study is literature systemic review. Fink [4] defines a research literature review as “systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners”. In the paper authors carried out systematic literature review following [5] to explore moral hazard in higher education financing. The aim of this systematic review is to provide collective insights through theoretical synthesis into fields and sub-fields. For academics, the reviewing process increases methodological rigors [5].

A systematic review consists of seven steps [4]:

1. Select research questions;
2. Select bibliographic Databases and Web Sites;
3. Choose Search Terms and preferably Ask Experts to Review Databases and Search Terms;
4. Apply Practical Screen – Preliminary literature search (content covered, years search, language, setting sample, interventions, and outcomes studied, results, conclusions);
5. Apply Methodological Quality Screen (Research design, sampling, data collection, interventions, data analysis, results, conclusions);
6. Doing the review;
7. Synthesize the Results (Report on current knowledge, justify the need for research, explain research findings, describe quality of research);

This paper is part of the scientific research project “Financing higher education and the effect of moral hazard” ZIP UNIRI-116-5-21; during the application phase, one of the

criterion for funding the proposal was publishing a literature review as an integral part of the much larger study. So the first step in literature review process was set up during the application of the grant proposal. We have used literature to support the project hypothesis; in the process of writing the grant proposal the following research questions arose:

RQ1: What are the publication trends in moral hazard in financing higher education in terms of time, journals and disciplines?

RQ2: Are there existing leading studies of research for this topic?

RQ3: What are the potential topics for future research?

For the purposes of this study data were retrieved from the Web of Science Core Collection - Clarivate analytics. This database is considered as highly prominent database for published articles, book, reports and other materials that can provide answers to pinpointed research questions. The analysis was carried in May 2022 but data analysis covers articles from the 2000-2022 period.

Due to the special niche of this topic we have performed a couple of iterations with Boolean operators and research terms. The first search approach incorporated a string of appropriate search terms “moral hazard” AND “higher education” AND “financing” and was used to investigate papers in all fields (topic, title, abstract, keywords and other) generating 23 initial results for publications published between 2000-2022. The second iteration included terms “moral hazard” AND “higher education” AND “financ\*\*” and included 80 papers but the content of the papers was too wide because they included topics such as firm capital structure, public health and labor insurance system, moral hazard in financial markets, project budgeting and moral hazard, etc. The third iteration included just the terms “moral hazard” AND “higher education” and resulted in 161 sources obtained. The last, fourth iteration, included the terms “moral hazard” AND “education” AND “financing” and retrieved 51 sources.

### 3. RESULTS

After detailed analysis of all sources gathered through four iterations we extracted 38 sources that are dealing with this topic. This limited literature scope was not unanticipated since this topic is relatively new and requires further examination.

This literature review brings descriptive syntheses that have started with the analysis of the key characteristics of each study. The results obtained from Web of Science categories are as follows:

TABLE 1: Number of articles in subject areas.

WoS Category	Record count	% of 38
Economics	26	68.42%
Education Educational Research	7	18.42 %
Business finance	4	10.53 %
Business	3	7.90%
Sociology	3	7.90%
Public administration	2	5.26 %
Other	9*	2.63%**

Source: Authors' analysis on Clarivate WoS data; \*overall 9 – by each category 1; \*\* result for each category

From the categories' results of the research presented in Table 1 we may conclude that the majority of the articles are published in categories such as economics, education educational research, business finance, and public administration. The “other” category encompasses various categories including environmental studies, ethics, ethnic studies, industrial relation labor, law, management, multidisciplinary sciences, political science, psychology social.

TABLE 2: Top institutions and countries.

Name of Institution	Record count	% of 38	Countries	Record count	% of 38
Federal Reserve System USA	4	10.53%	USA	16	42.11%
IZAInstitute Labor Economics	3	7.90%	Germany	8	21.05%
University of California System	3	7.90%	England	5	13.16%
Federal Reserve Bank St Louis	2	5.26%	Canada	4	10.53%
IFO Institut	2	5.26%	Australia	3	7.90%
Instituto De Pesquisa Economica Aplicada Ipea	2	5.26%	Brazil	2	5.26%
University College London	2	5.26%	France	2	5.26%
University of London	2	5.26%	Italy	2	5.26%
Washburn University	2	5.26%	Netherlands	2	5.26%
Western University University of Western Ontario	2	5.26%	China	2	5.26%
Other	72*	2.63%	Scotland	2	5.26%
			Sweden	2	5.26%
			Other	10*	2.63%**

Source: Authors' analysis on Clarivate WoS data; \*overall 72 – by each category 1; \*\* result for each category

The category “other” within institutions encompasses 72 institutions as far as category countries goes; 10 “other” countries include majority of European countries (Belgium,

Croatia, Czech Republic, Ireland, Lithuania, Norway, Poland, Russia and Spain) and one Asian country – Japan.

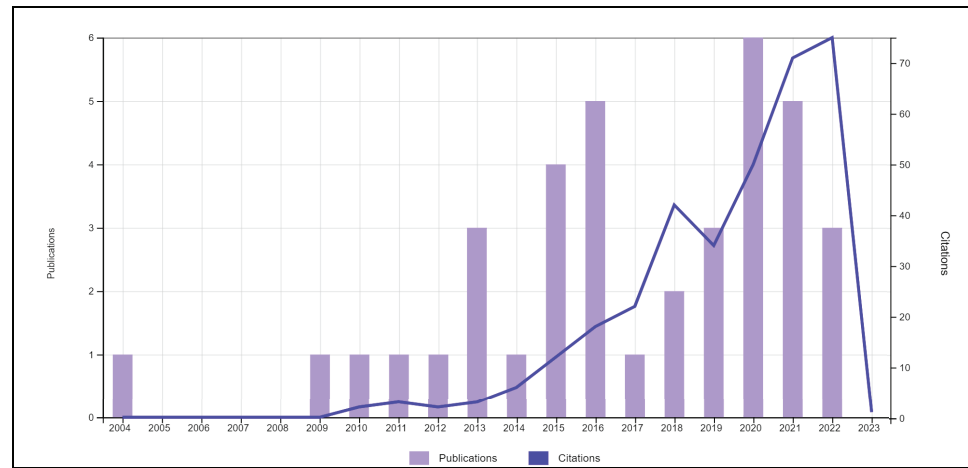
The majority of studies are conducted in Western economies with developed financial markets, primarily in the United States (USA), and in the United Kingdom (UK). In these countries students frequently use student loans and/or grants and scholarships for covering tuitions fees. The main characteristics of these two markets are: a) generally excellent educational institutions, b) high costs of study (food, accommodation, tuitions fees, and all costs connected to studying), c) high number of grants and scholarship schemes.

In the past few decades, the USA has significantly increased tuition fees and, consequently, student loans increased. Jamrisko and Kolet [6] stated that tuition costs have increased by 538% from 1985 to 2013, comparing the increase in medical expenses by 286% and the consumer price index by 121%. This kind of a “high school bladder” has contributed to the rise in moral hazard and dangers to parties in a credit relationship (banks, parents, states and others). Kim and Ko [7] researched the influence of federal states’ policies in USA on the growth of scholarships, the relationship between government and higher education institutions and the emergence of moral hazard. Their conclusion is that the state governments have contributed to the faster growth of their tuition rates with respect to the growth of inflation and the growth of family benefits.

Therefore, each country should cautiously approach the financing of higher education and determining the level of tuition. Numerous studies point to the importance of investing in higher education and human potential as a prerequisite for economic development [8]–[12]

From the analysis of Figure 2 it can be concluded that this topic is relatively novel and inadequately examined. The first article [13] on this subject emerged in 2004 examining parental cash transfers on performance of college students and emergence of moral hazard. During the past eight years (i.e. from 2015) the number of studies that dealt with this topic averaged 4 publications per year. Additionally, during the last eight years, the publication increase trend on this topic is evident, covering 70% of total published papers on this topic.

Therefore, considering the research question 1 “What are the publication trends in moral hazard in financing higher education in terms of time, journals and disciplines?” we may conclude that the investigated topic during the time period under analysis has exhibited exponential growth, especially during the last third of the period, as evident in Figure 2. The observed period lasted 23 years (2000-2022), and more than 70% of all the sources were published during last eight years only. From this we may infer



Source: Clarivate WoS <https://www-webofscience-com.ezproxy.nsk.hr/wos/woscc/citation-report/405fee2d-8dff-4c54-9fbf-fa6c173547e5-68d4e712>

**Figure 2:** Times Cited and Publication Over Time.

that authors had identified this topic as potentially interesting for the academia and the society as whole. The journals that stand out and that have published more than one publication are: *Economics of Educations Review* with four publications, *Economic Policy* with two publications and *Journal of Public Economics* with also two publications. The disciplines that distinct are Economics (26), Education Educational Research (7), Business finance (4), Business (3), Sociology (3) and Public administration (2).

Content analysis of published sources discovered complexity and multidisciplinary of this topic. There are several research trends on moral hazard that focus on combining the financing of higher education which can be divided into several research directions:

a) The occurrence of moral hazard when using student loans, the emergence of moral hazard, the risk of default and their insurance, and the impact of student loans on satisfaction [14]–[26].

b) The emergence of moral hazard and taxation, investment and return on education, choice of funding sources higher education [10], [15], [17], [18], [22], [25]–[31], [36]–[45].

c) The emergence of asymmetric information and principal-agent problem when financing children/students as a foundation of achieving moral hazard [13], [31], [46]–[56].

After careful examination of the extracted sources the answer to the research question 2 "Are there existing leading studies of research for this topic?" is given as follows, top five studies are: [25], [46], [47], [56], [57]. The conclusion is based on total citation and by citation per year (see table 3).



TABLE 3: Top cited authors.

Authors	Publication year	Total citations	Average Per Year
Hamilton, Laura T. [46]	2013	43	3.91
Lochner, L.; Monge-Naranjo, A. [56]	2016	27	3.38
Delaney, Liam; Harmon, Colm; Ryan, Martin [47]	2013	27	2.45
Findeisen, Sebastian; Sachs, Dominik [25]	2016	24	3
Tran, Alisia G. T. T.; Mintert, Jeffrey S.; Llamas, Jasmin D.; Lam, Christina K. [57]	2018	23	3.83
Chatterjee, Satyajit; Ionescu, Felicia [20]	2012	23	1.92
Quadlin, Natasha Yurk; Rudel, Daniel [48]	2015	21	2.33
Mezza, Alvaro; Ringo, Daniel; Sherlund, Shane; Sommer, Kamila [58]	2020	16	4
Cigno, Alessandro; Luporini, Annalisa [32]	2009	16	1.07
Glater, Jonathan D. [21]	2015	15	1.67
Geng, Yuqing; Zhao, Nan [27]	2020	14	3.5
Borlaug, Siri Brorstad [35]	2016	14	1.75
Higgins, Tim; Sinning, Mathias [24]	2013	12	1.09
Bodvarsson, OB; Walker, RL [13]	2004	10	0.5

Source: Authors' analysis on Clarivate WoS data

Moreover, a total of 38 selected and examined publications are cited 297 times, or more precisely, 270 when self-citations are excluded. Furthermore, selected publications were cited 341 times, i.e. 298 times without self-citations, averaging 8.97 per item. In addition, the H-index of extracted and examined publications that are dealing with this topic is 12, which is a respectable indicator. Again we have to highlight that this is a novel and multidisciplinary topic.

Based on the analysis carried out, we may conclude that the characteristics of this topic are: a) interdisciplinarity – combining diverse academic disciplines, primary economics, educational educational research, law, etc., b) micro and macro level approach – micro from the stand of point of individual – student, parent and risk of investing in him/her and macro level risk of investing in higher education system – state, province supranational institutions.

After a careful examination of the literature, we offer answer to the third research question “What are potential topics for future research”. Potential topics include: a) to investigate higher education systems with lower tuitions fees or where majority of the costs are subsidized by state, county or province, b) to compare these two main systems i.e. Nordic countries with USA and UK, c) to investigate different variables that impact moral hazard for example – financial literacy, tendency towards reckless

behavior (gambling, drug and alcohol usage, tuitions fees subsidies etc.), social norms, financial backgrounds, tax systems, information asymmetry, etc.

## 4. CONCLUSIONS

The poring over – as well as the subsequent analysis of – the available literature on moral hazard led us to a number of discoveries on the development dynamics of the research topic, allowing us to gain valuable insights and transform them in recommendations for all scholars and professionals alike interested in researching moral hazard in the future.

The scientific approach used in this paper can aid future authors plan their work accordingly and streamline their future research on this topic and subject area. The findings indicate that although this topic is relatively new and only gaining traction in the past two decades, the last eight years have seen the number of titles published under this topic grow sixfold. Considering the trend of tuition growth, the upsurge of overall study costs as well as the funding limits of the majority of those interested in pursuing a university degree, the topic is set to keep attracting attention in academia. What is more, if the forecasts for an impending student-loan doom in the USA prove to be true, the significance of this topic will no doubt spill over into the real sector and government corridors and may even ignite a public debate on the associated risks of financing higher education with the role of moral hazard taking center stage in the discourse.

In summary, the findings obtained in this literature review, financing higher education and moral hazard, can be informative and relevant to academics, especially when starting new studies in this field, either from an interdisciplinary or single-subject perspective. As a caveat, this analysis was carried out in May 2022 thus potentially omitting any new papers that may have subsequently been published but have been excluded from this study. A shortcoming of this study is the lack of full and complete information about the variables investigated, i.e. the contents of each 38 articles under investigation were just grouped in three research directions without full examination of the specific sub-topics. This may provide an impetus for any new researchers on the topic to attempt to deepen this investigation and uncover new insights on the dynamic development of moral hazard in higher education financing as a research topic.

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## References

- [1] EUROSTAT. Total unemployment rate - % [Internet]. 2018. Available from: <https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&pcode=tps00203&language=en>
- [2] OECD. Education at a glance 2022. Paris: OECD; 2022.
- [3] Tulip P. Financing higher education in the united states. OECD Economics Department Working Papers. 2007;584.
- [4] Fink A. Conducting research literature reviews: from the Internet to paper. 4th ed. Thousand Oaks: SAGE Publications; 2014.
- [5] Tranfield D, Denyer D, Smart P. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*. 2003;14(3):207–222.
- [6] Jamrisko M, Kolet I. College costs surge 500% in U.S. since 1985: Chart of the day. Bloomberg. 2013. Available from: <https://www.bloomberg.com/news/articles/2013-08-26/college-costs-surge-500-in-u-s-since-1985-chart-of-the-day>
- [7] Kim MM, Ko J. The impacts of state control policies on college tuition increase. *Educational Policy*. 2015;29(5):815–838.
- [8] Jorgenson DW, Fraumeni BM. Investment in education and U.S. economic growth. *Scandinavian Journal of Economics*. 1992;94:51–70.
- [9] Bassanini A, Scarpetta S. Does human capital matter for growth in OECD countries? Evidence From Pooled Mean-Group Estimates. Paris: ECO/WKP; 2001.
- [10] Barro RJ. Determinants of economic growth: A cross-country empirical study. Cambridge: NBER; 1996. Available from: [http://repository.upi.edu/1360/1/s\\_d5451\\_0604180\\_chapter1.pdf](http://repository.upi.edu/1360/1/s_d5451_0604180_chapter1.pdf)
- [11] Sianesi B, Van Reenen J. The returns to education: Macroeconomics. *Journal of Economic Surveys*. 2003;17(2):157–200.
- [12] Krueger AB, Lindahl M. Education for growth: Why and for whom? *Journal of Economic Literature*. 2001;39(4):1101–1136.

- [13] Bodvarsson ÖB, Walker RL. Do parental cash transfers weaken performance in college? *Economics of Education Review*. 2004;23(5):483–495.
- [14] Webber DA. Risk-sharing and student loan policy: Consequences for students and institutions. *Economics of Education Review*. 2017;57:1–9.
- [15] Monge-Naranjo. Student loans under the risk of youth unemployment. *Federal Reserve Bank of St. Louis Review*. 2016;98(2):129–158.
- [16] Dearden L, Nascimento PM. Modelling alternative student loan schemes for Brazil. *Economics of Education Review*. 2019;71:83–94.
- [17] Bialowolski P, Weziak-Bialowolska D. Good credit, bad credit: The differential role of the sources of debt in life satisfaction. *Journal of Consumer Affairs*. 2021;55(3):967–994.
- [18] Cox JC, Kreisman D, Dynarski S. Designed to fail: Effects of the default option and information complexity on student loan repayment. *Journal of Public Economics*. 2020;192:1–19.
- [19] Jacobs B, van Wijnbergen S. Capital market failure, adverse selection and equity financing of higher education. *Public Finance Analysis*. 2007;63(1):1–32.
- [20] Chatterjee S, Ionescu FA. Insuring student loans against the financial risk of failing to complete college. *Quantitative Economics*. 2012;3(3):393–420.
- [21] Glater JD. Student debt and higher education risk. *California Law Review*. 2015;103(6):1561–1614.
- [22] Robb CA. College student financial stress: Are the kids alright? *Journal of Family and Economic Issues*. 2017;38(4):514–527.
- [23] Robb CA, Chatterjee S, Porto N, Cude BJ. The influence of student loan debt on financial satisfaction. *Journal of Family and Economic Issues*. 2019;40(1):51–73.
- [24] Higgins T, Sinning M. Modeling income dynamics for public policy design: An application to income contingent student loans. *Economics of Education Review*. 2013;34(12):285.
- [25] Findeisen S, Sachs D. Education and optimal dynamic taxation: The role of income-contingent student loans. *Journal of Public Economics*. 2016;138(6):1–21.
- [26] Martin EC, Dwyer RE. Financial stress, race, and student debt during the great recession. *Social Currents*. 2021;8(5):424–445.
- [27] Geng Y, Zhao N. Measurement of sustainable higher education development: Evidence from China. *PLoS One*. 2020;15(6):e0233747.
- [28] Gary-Bobo RJ, Trannoy A. Optimal student loans and graduate tax under moral hazard and adverse selection. *RAND Journal of Economics*. 2015;46(3):546–576.

- [29] Walker RL, Florea L. Easy-come-easy-go: Moral hazard in the context of return to education. *Journal of Business Ethics*. 2014;120(2):217.
- [30] Weiler WC. Estimation of the effects of adverse selection and moral hazard on income-contingent loan plans for professional and graduate students. *Socio-Economic Planning Sciences*. 1985;19(5):313–320.
- [31] Montalbán J. Countering moral hazard in higher education: The role of performance incentives in need-based grants. Paris; 2018. Available from: <https://sites.google.com/site/josemontalbancastilla/research>
- [32] Cigno A, Luporini A. Scholarships or student loans? Subsidizing higher education in the presence of moral hazard. *Journal of Public Economic Theory*. 2009;11(1):55–87.
- [33] Goodell JW. Do for-profit universities induce bad student loans? *The Quarterly Review of Economics and Finance*. 2016;61:173–184.
- [34] Herzog S. Financial aid and college persistence: Do student loans help or hurt? *Research in Higher Education*. 2018;59(3):273–301.
- [35] Borlaug SB. Moral hazard and adverse selection in research funding: Centres of excellence in Norway and Sweden. *Science and Public Policy*. 2016;43(3):352–362.
- [36] Card D, Vivallos AS. Measuring the effect of student loans on college persistence. *Education Finance and Policy*. 2022;17(2):1–60.
- [37] Carr DA, Larocca R, Carr D. The effect of higher education performance funding on graduation rates. *Journal of Education Finance*. 2020;45(4):439–526.
- [38] Mckenzie T, Sliwka D. Universities as stakeholders in their students' careers: On the benefits of graduate taxes to finance higher education. *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift für die gesamte Staatswissenschaft*. 2011;167(4):726–742.
- [39] Fridman AA, Verbetskaia MA. Government regulation of the market for higher education. *Zhurnal novaya Ekon. assotsiatsiya-Journal of the New Economic Association*. 2020;1(45):12–43.
- [40] Cabrales A, Güell M, Madera R, Viola A. Income contingent university loans: Policy design and an application to Spain. *Economic Policy*. 2019;34(99):479–521.
- [41] Praneviciene B, Puraite A, Vasiliauskiene V. State financing impact on autonomy of higher education institutions and its link with economic activities of universities. *Engineering Economics*. 2017;28(5):564–574.
- [42] Matsuda K, Mazur K. College Education and income contingent loans in equilibrium. *Journal of Monetary Economics*. 2022;132(11):100–117.

- [43] Azmat G, Simion S. Charging for higher education: Estimating the impact on inequality and student outcomes. *BE Journal of Economic Analysis and Policy*. 2021;21(1):175–239.
- [44] Bhayani A. Let students pay for their higher education: Debate concerning free and subsidized education based on sunk cost theory. *Journal of Philanthropy and Marketing*. 2021;26(4):1–11.
- [45] Maria A, Moreira DA, Bagnall JJ. *Intercultural studies in higher education: Policy and practice*. Cham: Palgrave Macmillan; 2019.
- [46] Hamilton LT. More is more or more is less? Parental financial investments during college. *American Sociological Review*. 2013;78(1):70–95.
- [47] Delaney L, Harmon C, Ryan M. The role of noncognitive traits in undergraduate study behaviours. *Economics of Education Review*. 2013;32(1):181–195.
- [48] Quadlin NY, Rudel D. Responsibility or liability? Student loan debt and time use in college. *Social Forces*. 2015;94(2):589–614.
- [49] Holmstrom B. Moral hazard and observability. *The Bell Journal of Economics*. 1979;10(1):74–91.
- [50] Christie AN. *Asymmetric information and bank lending: The role of formal and informal institutions (a survey of laboratory research)*. Vol. 16. Emerald Group Publishing Limited; 2013.
- [51] Cigno A. Agency in family policy: A survey. *CESifo Economic Studies*. 2011;57(2):305–331.
- [52] Cigno A, Luporini A, Pettini A. Transfers to families with children as a principal-agent problem. *Journal of Public Economics*. 2003;87(5–6):1165–1177.
- [53] Eisenhardt KM. Agency theory. *Academy of Management Review*. 1989;14(1):57–74.
- [54] Kivistö J. The government-higher education Institution relationship: Theoretical considerations from the perspective of agency theory. *Tertiary Education and Management*. 2005;11(1):1–17.
- [55] Jose M. Countering moral hazard in higher education: The role of performance incentives in need-based grants. *The Economic Journal*. 2022;133(1):355–389.
- [56] Lochner L, Monge-Naranjo A. *Handbook of the Economics of Education*. 1<sup>st</sup> ed. Hanushek E, Welch F, editors. Elsevier; 2016. Student loans and repayment. p. 397–478.
- [57] Tran AG, Mintert JS, Llamas JD, Lam CK. At what costs? Student loan debt, debt stress, and racially/ethnically diverse college students' perceived health. *Cultural Diversity & Ethnic Minority Psychology*. 2018;24(4):459–469.

- [58] Mezza A, Ringo D, Sherlund S, Sommer K. Student loans and homeownership. *Journal of Labor Economics*. 2020;37(1):215–260.