

Risks of Student Loan Systems

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Human capital investment is among the investments with the best returns. As the economy move towards to the idea of knowledge-based economy higher education is a crucial criterion for labour market success. The European Union in fact set out as a goal to raise the ratio of the degree holders for the young generation in its Europe 2020 program. On the other hand higher education is a very expensive and long-term investment. Public financing will be less and less able to cover the related costs. For these and for incentive reasons privet financing have to be involved with growing importance. However young adults and their parents' financial endowments are diverse. Students lending is a huge market in the United States, but also in Europe it becomes more regular. There is a vast literate about the various systems developed around the world for this financial problem, but the related risk on the borrowers' side is less covered. This paper contributes to the following issues: How can be risk understood related to lending to students? How can these risks vary between different types of systems? How can be default evaluated if the main lender is the state? These questions are important because human capital investments are not necessarily done for financial returns, and it makes difficult to understand risk. This paper will conclude that theoretically and practically well-developed financial risk measure can give us the answer. It will be shown how some financial measures can be understood in this type of investment environment. Proper measurement and possibilities of quantification will be laid out as further research areas.

Introduction

As the Hungarian economy was struck hard by the global economic crisis and was followed by years of stagnation the recent Hungarian government felt the need to intervene to the status quo of the higher education market. There are significant ongoing changes in the student recruitment system and the financing and student lending process. Some field of study like law and economics became one where almost full cost contribution is required, in other words general tuition was introduced. On the other hand a new student loan product was introduced with subsidized interest. This created a great political and social turmoil in 2012, and economics of education became a hot topic in economic literature, as books and papers on higher education financing was published (Semjén, 2012, 2013; Temesi, 2012).

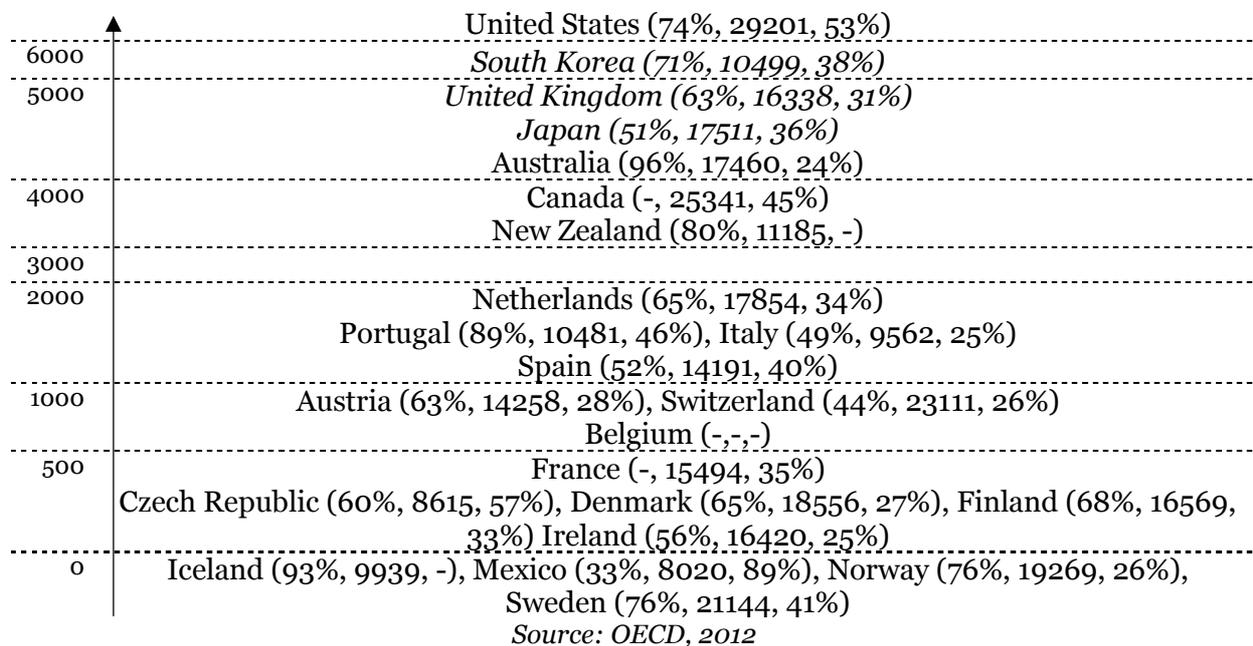
The motivation behind this paper was that there's a gap in the higher education financing literature. There are not many papers on the risk of higher education investment, both from social and individual side. As Semjén (2013) states based on the literature the question in the mind of youth is no longer that whether to invest in education or not, but to which field of study or which institution should one choose. The risks will became much more evident when we examine the higher education market, where huge and steep increase in tuitions and student lending could be experienced in the past years. As Avery and Turner (2012) points out, that even

though with high indebtedness and big tuition requirement higher education is still a worthy investment but there are people who definitely experiencing negative return. As Hillman (2014) will point out the low-income background and minority students has disproportionately high chance to default on their student loan. Then comes the first issue the paper should discuss, whether we should fear on macroeconomic level from student loan defaults. Is student loan market big enough to cause a macroeconomic crisis?

Even though it's not likely it can be easily argued that we cannot overlook on student loan defaults. Investment in higher education is most likely the first bigger investment of the students' life. If they experience that they can default on students' loan how will they behave when it comes to mortgage payment? How would it effect other otherwise capable of repayment alumni? There would be a great deal of moral hazard. Among other things, these are reasons why government in all over the world should not let high defaults of student loan occur. For this reason we should discuss the micro-economic risks of student loan and how can we use advanced tools to measure it.

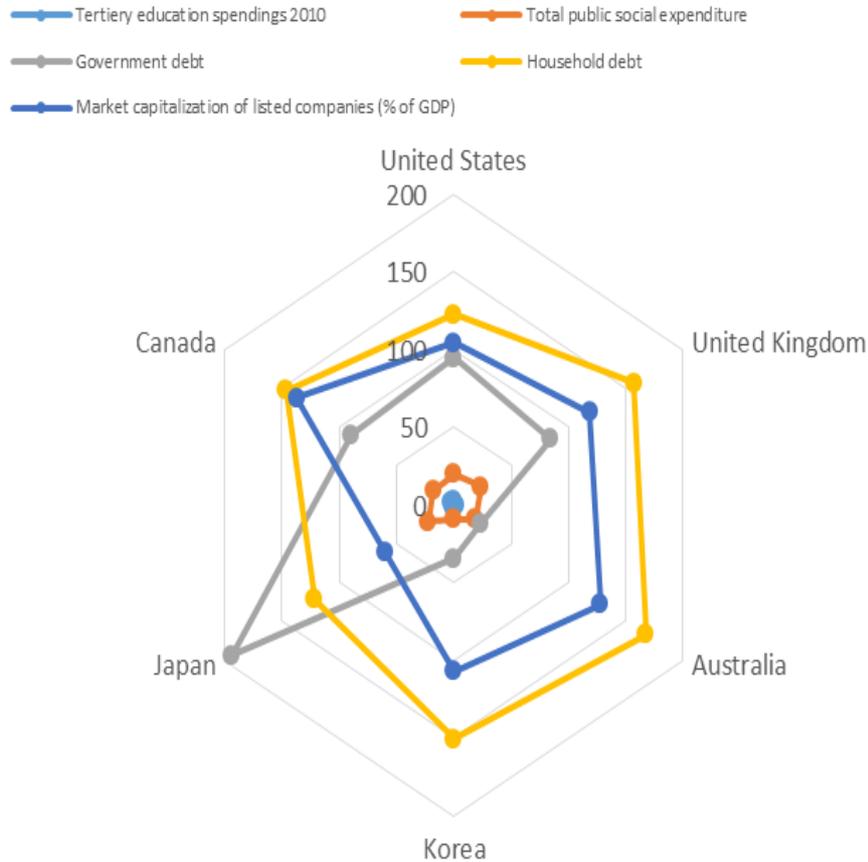
Macroeconomic risks of students loan

Graph 1: Average annual tuition fees charged by tertiary-type A public institutions for full-time national students, in USD converted using PPPs (academic year (2008-09) and the net intake of students of the respective generation, per student institutional annual expenditure, and the ratio between per student expenditure and the 2012 USD converted using PPPs annual average wages.



Graph 1 show that most of OECD countries have really low average tuitions compared to the average earners wage. So what does it tell us? In most of the OECD countries for the average citizen choosing higher education have no bigger financial risk then buying a new TV or a notebook. The Anglo-Saxon countries and Japan and Korea stands out. Those with bold letters has two third of the students enrolled in private institutions, and those are more expensive than the public institutions.

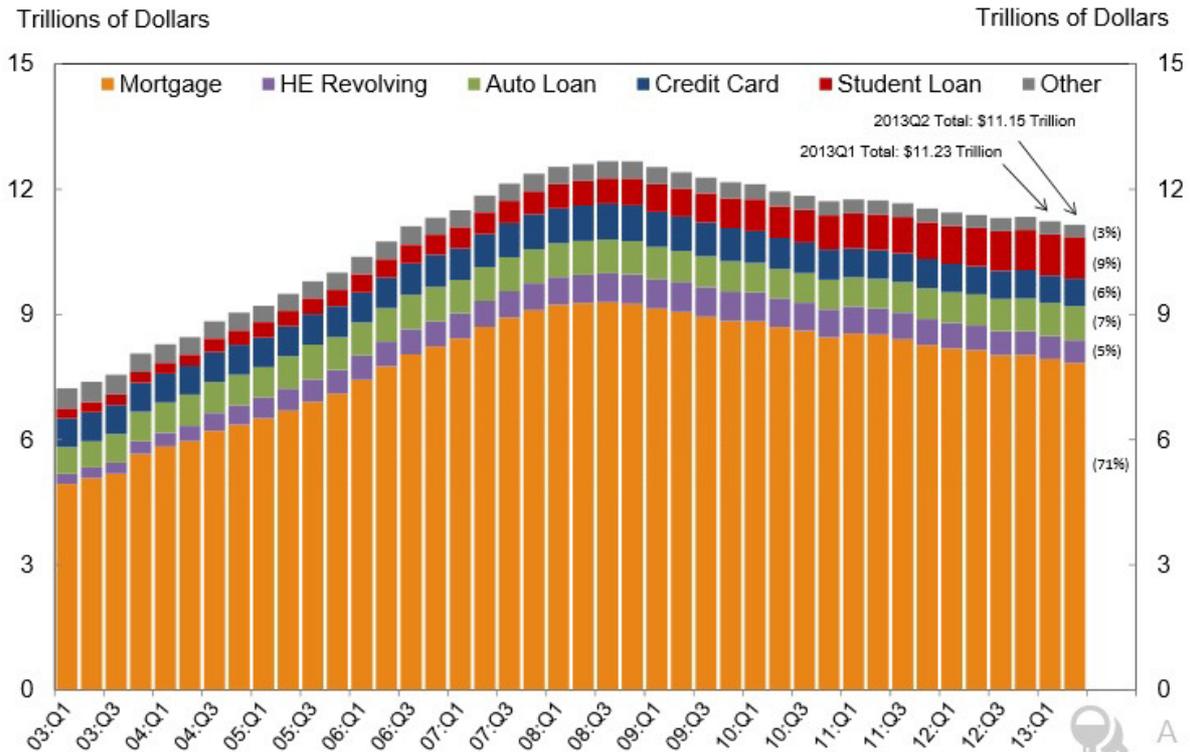
Graph 2: The comparison of spending on tertiary education to other macroeconomic factors, 2010



Source: OECD, 2013; Worldbank, 2013; Eurostat, 2013

Graph 2 shows that the public and private spending to tertiary education is so small compared to some indebtedness and spending statistics that is very unlikely that the higher education market can cause a macroeconomic crisis. An average yearly change in for example a big countries government debt is way bigger than the whole yearly higher education market for even these tuition driven markets. Even a student loan bubble can be solved by a regular government bond issuance.

Graph 3: Debt balance of the households of the United States, 2003-2013
Total Debt Balance and its Composition



Source: nyfed.org 2013

When the total student loan debt hit the 1 trillion dollar mark in the United States there were some intense debate in journalism over whether student loan will be the next financial bubble. However when you look at Graph 3 you can see that even in the United States where the tuitions are the highest and the student lending has the greatest tradition only 9% of the household debt is made of students loans. These loans are mostly federal loans and the state's main income is not the repayment and the interest of these loans.

However we should mention the securitization of the student loans. The financial intermediary institutions are highly involved in the distribution of the student loans, and the use them in the packages of some credit derivatives. These derivatives has their value based upon the value of the underlying asset pool. If these student loans will turn out to be garbage loans and most of them defaults then it can seriously decrease the trust in these derivatives. These derivatives can multiply the size of a market, because a basic asset can be the underlying asset of several derivatives or be the beginning of a chain of derivative deals (Gillen, 2008). The derivative market is huge and fragile as we witnessed during the 2008 financial crisis, so if student loans are untrustworthy on microeconomic level, or there are big individual risks, than a careful regulation is advisable.

Microeconomic Risk of Student Loan

Since the ground-breaking work of Gery Becker (1964) calculating the rate of return to education is very popular in the economic literature (See several literature review and empirical works of Psacharopoulos like Psacharopoulos (1995) or Psacharopoulos and Patrinos (2004). Some of the more interesting findings is that the rate of return is exceptionally high (more than 10%), in some cases it does not diminish with higher level of education, which basically means the more we invest the higher rate of return we experience, and social return is usually positive as well (T. Kiss, 2010).

The risk of this investment has a literature as well since the earlier years of this field of study. However it mainly focus on variance analysis. There are some theoretical papers with brilliant insight (Levhari & Weiss, 1974; Eaton & Rosen, 1980; Hamilton, 1987; Anderberg & Andersson, 2003; da Costa & Maestri, 2007; Anderberg, 2009; Jacobs et al., 2009) and some very useful empirical literature (Carniero et al., 2003; Cunera et al., 2004; Chen, 2008). There's a debate over whether we should consider education as a risky investment to human capital or as an insurance against labour market risks. There has been no unarguable answer to this question yet, but the opinion of the author of this papers is that there will be no answer to this question in the future as well. We should examine the paper of Christiansen et al. (2006). The Danish authors used a standard mean-variance analysis, which is one of the most basic models in finance and connected to such names as the Noble award laureate Harry Markowitz.

They examined the returns and the variance of the returns for some different fields of studies. They have found that whereas there are some fields of study fits to the model, in sense that they offer higher return for more risk, but there are some fields that should not be chosen according to the model since they offer lower return for more risk. Those were field of studies like humanities, arts, and nursing. However people still choose these professions as fields of study (Christiansen et al., 2006). The reason can be that some of the models assumptions not stand for the reality like some people does not choose their education based on risk-return reasoning (or even most of them).

For this reason the suggestion of this paper is to open our education investment risk analysis to more ways of risk measuring than variance. The main reason can be that real life people do not evaluate positive and negative difference from the expected return with equal weights. They are more afraid of loses then with gains. They can choose an inferior game in mean-variance sense if it has lower potential loses then as superior other. What this have to do with education? We should examine the worst case outcomes. Who are the people who does not experience high gains from their education investment? How much loss they have suffered? How can we model expected losses from that to the future?

It is useful to know the answer to these questions because maybe some people are afraid of some high-return education because of the potential high loss. An extreme example can be that someone can be afraid to go to a high tuition business school to be a financial analyst with a huge pile of student loan on their account, but rather choose to be a secondary school math teacher. Not that society does not need secondary school math teachers but it is a social value as well to encourage people to live up to their full potential and choose the profession with the highest individual and social return.

Considering the potential losses as the risk of higher education investment is not something that needs a new methodology. In theoretical and practical finance risk-

measurement is a topic with vast literature (see for instance: Artzner, 1999; Embrechts, 2000; Acerbi, 2002; Acerby & Tauche, 2002; Acerbi, 2007). My suggestion is to use these measures like the extremely popular Value at Risk (VaR) or more coherent measure like CVaR or Expected Shortfall (ES). Using financial tools has proved to be very useful in education economics. Becker (1964) uses simple internal rate of return, the education risk literature uses variance. The next step should be to introduce modern risk measures!

If we find with this measures that the education with more investment has in fact more risk in sense of losses (higher VaR, higher ES), then it's not a question any more that whether the government should intervene with policy. For instance more use of income-contingent student loans would be advisable. These type of loans are not like mortgages where repayment is unconnected to the income of the borrower. In an income contingent loan the borrowers pay a share of their income (Chapman, 2006; Berlinger, 2009). In this case high losses can be deterred, because no periods of life occurs when the student loan repayment is very high proportion of the income, or must be paid when the borrower is unemployed. If we find that there are basically no negative losses just smaller but still positive returns than policy making effort is not necessary, intervention is just the cause of lobbying power of the participants.

Conclusion

This paper suggest that macroeconomic risks of the higher education investment of the recent generation is not such amount that the temporal changes of it can cause an economic crisis. In most developed countries tuitions are low in comparison to an average workers wage, and even the spending on higher education is small (1-2%) of GDP or government social spending. It is even smaller compered to such markets that usually cause global crisis like household debt, stock exchange value or government debt. Even in the United States where the highest tuitions and highest student loan indebtedness are, only 9% of the total household debt is in students loans.

However we must pay attention to the microeconomic risks. Education is connected to growth. We could harvest the most potential if we help everybody to reach their full potential. The education economic literature has arguable results on risks of higher education when they use variance analysis. This paper suggest to turn our attention to more modern risk measurements like VaR or Expected Shortfall. These measures examine the great losses that occur with small probability. This is something that can scar off people from education investment. There are tools for handling such problems like income contingent loans. If we properly measure losses we can evaluate tools like that and how much they help in risk control and are they sustainable. The near future research purpose of the author is to do calculation on panel datasets that are used and well-known for the literature (NLSY 79 panel).

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