BI Norwegian Business School - campus Oslo

GRA 19502

Master Thesis

Component of continuous assessment: Forprosjekt, Thesis MSc

The effect of property taxation on school results – Evidence from Norway

Navn:	Mia Karoline Dufseth, Josefine Wilberg

Start:	01.01.2018 09.00
Finish:	15.01.2018 12.00

Preliminary Master Thesis Report

The effect of property taxation on school results – Evidence from Norway

Hand-in date:
15.01.1018

Supervisor:
Rune J. Sørensen

Campus:
BI Oslo

Programme:
Master of Science in Business, Major in Economics

Content

Summary

In this preliminary master thesis report we will present the way that we expect to answer our research question, "What are the effect of property taxation on school results" in our Master Thesis. The paper gives a short description of property taxation in Norway and the Norwegian school system. Further, we present literature on the topic in question, with particular focus on Fiva and Rønning's (2008) work, as we will base some of our analysis on this paper.

We will use three panel data sets in our analysis that includes variables on school results, property taxation, various variables related to the municipalities and finally data on the number of vacation homes in the municipalities. Our empirical strategy is to use instrument variables in a Two Stage Least Squares approach. We use three instrument variables, two presented by Fiva and Rønning (2008), while the third measures the number of vacation homes in the municipality given the number of inhabitants. We expect to extend this method as we progress with the research for the Master Thesis.

1. Introduction

When a population experiences increased taxation and fees they should demand higher quality of the welfare services and benefits. In Norway, the central government decide how the municipalities should distribute and spend their income. However, there are some means of income that the local government are free to use as they please. Property taxation is one of these free sources of income. In addition, property taxation is an interesting case in Norway, as it is voluntary for the individual municipality to impose the tax, which gives us the opportunity to examine the effect of having property taxation on welfare goods.

We expect property taxation to have positive effects on welfare services like renovation, water supply and school performance (Borge & Rattsø, 2007). The property tax is a visible tax for the taxpayers, which gives them incentives to engage in how the local government spend its' income. If the voters are more engaged in the local spending priorities, studies have shown that it has led to better control of costs and school performance in the municipalities that have property taxation (Borge & Rattsø, 2007; Fiva & Rønning, 2007).

Public schools make up for a significant expense for the local government, equal to 23.4 percent of the municipalities net expenses in 2016 (SSB, 2018). In addition, school quality is linked to school results, which makes a good measurement as exams and national test are equal for every student around the country. This makes it possible to measure the effect of having residential property taxation on welfare goods measured by school results.

We base our analysis on the work of Fiva and Rønning (2008), which investigates the effect of property taxation on school results. However, we will improve the regression design and include data for more periods. Further, we will look at possible extensions and improvements of their work.

In this preliminary master thesis report, we will first introduce the institutional setting of which we are conducting our analysis, next we will review literature on the area of study. Further, we will describe our data and present the empirical method we intend to use and how we expect to answer our research question: What are the effect of property taxation on school results?

2. Institutional setting

2.1 Property taxation

Taxes are important contributors to the Norwegian municipalities' revenues. Some of the taxes are involuntary and decided by the national government, while others, like the property tax are voluntary and decided by the municipalities, which is regulated by Eigedomsskattelova of June 6th, 1975. As of January 1th 2017, there are 426 municipalities in Norway and 366 of them have residential property taxation (SSB, 2017a). Property taxation can be divided into commercial and residential property taxation, and it is up to the municipality whether it wants all of the inhabitants to pay tax on their properties or concentrate property taxation to certain areas (SSB, 2017b).

2.2 School system

The Norwegian School system consists of primary school, secondary school and high school. The first ten years of schooling are mandatory, with primary school for the students between 6 and 12 and secondary school for students between 13 and 16, whilst high school is voluntary. The students cannot choose which school to attend, but are assigned a school in their school district, cf. Opplæringslova of July 17th 1998. Nationwide, students in their fifth, eighth and ninth year of school have to undertake a national test in order to analyse the students' knowledge level in reading, calculus and English (Utdanningsdirektoratet, 2017). At the end of the tenth year of schooling, the students undertake a written exam in either English, mathematics or Norwegian. The exam results are graded with grades from one to six and the grading take place externally (Forskrift om opplæringslova, 2006).

3. Literature review

Several studies have been done on the topic of government financing and how it affects welfare services, many are conducted in the USA. Some studies focus on school results as a measure of the quality of welfare services (e.g. Tiebout, 1956; Glaeser, 1996; Jimenez and Paqueo, 1996; Hoxby, 1999). Hoxby (1999) and Glaeser (1996) have conducted studies that indicate that local property taxation gives the local governments the incentive of investing and maintain a well-functioning public sector by making a strong connection between the quality of the public sector to its financing. Hoxby (1999) created an agency model in order to examine the effects revenues from local property taxation and centralised finance have on producers' effort. Glaeser (1996) argues that by having property taxation, the local governments can be considered part owners of the local properties, which give them incentives to invest in the local community to raise the value of the residents' properties.

Fiva and Rønning's paper "The incentive effects of property taxation: Evidence from Norwegian school districts" (Fiva & Rønning, 2008) examines how property taxation in Norway influences welfare services and measure it through the results of the Norwegian tenth grade examination. They argue that because the municipalities with and without property taxation are comparable, Norway is well suited for empirical analysis of the incentive effect of property taxation. They have used instrument variable techniques and focus on the quality of the public sector instead of the costs, as earlier studies like Hoxby (1999) and Glaeser (1996) have done.

Their measure of school quality is constructed on the national written exam all tenth-grade students in Norway have to undertake in their last semester in secondary school. The students are examined in either English, mathematics or Norwegian (and New Norwegian). Which exam the different students have to undertake is decided centrally and an external sensor grades the exam results, were the grades range from one to six. Since the students' other grades are graded

by their teachers, the written exam results provide a better measure of student achievement and is therefore less biased. The sample Fiva and Rønning analyse consists of the end of tenth grade exam results of 118.178 students in the school years of 2001/2002 and 2002/2003.

Fiva and Rønning have used panel data with fixed effects and instrumental variable techniques. They have used a strategy of cross-sectional data from Hanushek et al. (1996), to find an estimate for the students' school performance in order to include this in their Two-Stage Least Squares (TSLS) estimation. The two instruments variables they use are 'Town' and 'Rural', which are historical variables that capture the way a town gets its status, different rules on property taxation between town and countryside municipalities and the fact that the local government is not allowed to impose property taxation on rural areas.

The results from Fiva and Rønning's study showed that students' family background had the expected effects on student performance. Students with parents that have higher education and jobs with high income, have a better probability of getting greater school results than students with parents with little or no education. The school district fixed effects were highly jointly statistically significant at the 1 % level and were equal to 4,72. With Oslo as the benchmark, the student performances in the 'worst' and 'best' school districts were about one grade lower and one grade higher, respectively. They found that property taxation had a positive effect on motivating the school administrators and bureaucrats to provide efficient and high-quality schooling. Fiva and Rønning concluded that 'Town' and 'Rural' were good instruments as they had no problems with weak instruments. When using the two instruments simultaneously, their results suggested a negative correlation between the quality of public sector and the decision to implement property taxation. The results when the instruments were used separately implied a positive incentive effect on local school officials.

Fiva and Rønning's conclusion was that students in municipalities with property taxation performed better on the national end of tenth grade examination than students living in municipalities without property taxation. The results still hold when using the two-stage least square framework with the instrument variables 'Town' and 'Rural', and they support the theoretical frameworks in studies by Glaeser (1996) and Hoxby (1999). They checked if the revenues the municipalities gained from implementing property taxation increased spending in the school sector and if this lead to increasing the students' school performances. However, their results showed that it seemed to have little effect on the students' school performance.

Lin and Couch (2014) study if funding had any impact on public school results in 286 school districts in Indiana, USA and if the state fiscal funding had a greater impact on the results than federal and local fiscal funding. Their results support Fiva and Rønning's (2008) results and showed that fiscal funding had a positive effect on student performance in public schools, and state taxes might have a greater impact on the students' school performance than local taxes as the weight on state taxes were higher (Lin & Couch, 2014).

Mensah, Schoderbek and Sahay (2013) conducted a study on student results of the students in public primary, secondary and high school in New Jersey, USA and analysed if the results were positively related to percentage of revenues raised from the local taxes and to the school officials' salary level. They used panel data and instrument variable techniques to create fixed effects models. The school officials' salary seemed to have no effect or in one model a weak, positive effect on the students' test score. The local property tax was positively related to the students' test scores in the school when using all three fixed effects models and the two-way generalized method-of moments model. Their findings are consistent with Kenyon's (2007) observations that the federal and state grants should be focused on schools and school districts with low student test scores (Mensah, Schoderbek & Sahay, 2013).

The relationship between school quality and housing prices are another area that have been explored in the literature. A hypothesis is that parents might move to areas with schools with good reputations in order to try to increase the chances of higher school performance for their children. Fiva and Kirkebøen (2011) found a robust short-term effect in the housing-market in Oslo, Norway when information of school-quality was published that support this. This suggested that the households did not have this information prior to the publishing date and that households are willing to invest in better school quality by moving to areas with better schools. This increased the housing prices in the areas around the schools with better quality right after the publishing of the information, however, the prices were reduced after two to three months. This is linked to the effect of property taxation as increased housing prices will lead to increased revenues from property taxation and thereby make it more attractive for the municipalities to introduce property taxation.

A paper by Borge and Rattsø (2006) study if the residential property taxation gives the local governments in Norway incentives to control costs. Their results showed that municipalities with property taxation had lower waste costs than those without property taxation and thereby property taxation gave incentives to control. Because the property taxation is a quite noticeable tax for the inhabitants, it might give the inhabitants incentives to see how the local government use the tax revenues and thereby give the local government's incentive to control costs.

4. Data

We will use three data sets in our analysis of the effect of property taxation on school results. Firstly, we need a measure of school results. We use a set of data called "Skolebidragsindikatoren" and "Kommunebidragsindikatoren" (SSB, 2017c), herby referred to as school-level test performance and municipality-level test performance. This indicator measures the students' results at primary school level and secondary school level, and is adjusted for different student characteristics. Hence, one can interpret the indicator as the results the school should have received if the student base were average. These results will be used as a measure of public good qualities in the municipalities.

The second data set we use is the "Local Government Dataset" (Fiva, Halse & Natvik, 2015), which contains variables relating to municipalities in Norway. The core unit is the municipalities and the data is from the period 1972-2016. The variables include demographic and socio-economic variables, as well as variables on taxation and in particular property taxation. We will use several of these variables as municipality fixed effects in our further analysis.

The third dataset contains the number of vacation homes in each municipality in Norway (SSB, 2017d). A vacation home is defined as a home other than the owners' primary residence that is used for recreational purposes, i.e. a home without permanent domicile. We use the number of vacations homes per inhabitant as an instrument variable, as we find that municipalities with many vacation homes may be more likely to introduce private property taxation, due to the fact that they can impose the tax on people that does not have voting ability in the municipality. This will be discussed further below.

4.1 Measuring school results

We intend to use the municipality-level test performance indicator as our measure of school results. This is a value-added indicator that should be more accurate in measuring school quality and results than other measurements currently existing (SSB, 2011). OECD (2008) gives the following definition of the value-added models: "a class of statistical models that estimate the contributions of schools to student progress in stated or prescribed education objectives (e.g. cognitive achievement) measured at at least two points in time".

It is important to notice that value added indicators must include results from at least two points in time (OECD, 2008). The municipality-level test performance, takes into account data on student achievement from primary school and secondary school. This differs from the measure used by Fiva and Running (2008) who only use results from one period in time and cross-sectional data. The difference between value-added models and cross-sectional models is that the estimated effects that the value-added estimator gives a far more precise interpretation as the school and municipalities' contribution to the students' knowledge acquirement between the different time periods of measurement, as one conditions on the knowledge level at the start of the period (SSB, 2011). This is different from the cross-sectional indicator used by Fiva and Rønning (2008), where it is more unclear what one conditions on when controlling for family background and where differences in results will reflect possible quality differences between schools at different years of schooling.

5. Empirical method

Our empirical analysis is based the data sources described in the past section. We have gathered the relevant data and will prepare the data for analysis by converting them into panel data and merge the three data sets together before the empirical analysis. We will use the statistical software STATA in order to conduct our analysis. Our research strategy is based on the work of Fiva and Rønning (2008), however, we do make changes and improvements to their strategy by introducing a new instrument variable. In addition, we do include data from present years and measure school results by a far more precise variable, namely the municipality-level test performance indicator (SSB, 2017c).

In order to capture the effect of property taxation on school results we divide our empirical strategy into three main parts. Firstly, we will look at descriptive statistics in order to present the key aspects of the set of data we are applying in our analysis. We use this as a base in order to sort data and make the data more manageable. Further, we will use Ordinary Least Squares (OLS) regression in order to find the causal relationship between the dependent variable and the explanatory variable, i.e. school results and property taxation in the municipalities. We find that our regressor is correlated with the error term, and hence we will get an inconsistent OLS estimator when using this method alone. Thus, the third part of our analysis will be the Two Stage Least Squares (TSLS) approach, in order to solve the problem of an inconsistent OLS estimator.

In this section, we will elaborate on the two last parts of our empirical analysis in order to review the theoretical intuition behind the approaches and our motivation for choosing this strategy.

5.1 Ordinary Least Squares (OLS)

We want to estimate the effect of property taxation on school results in the municipalities, thus our starting point is the following OLS regression:

$$SchoolRes_i = \beta_0 + \beta_1 DPTAX_i + Fixed\ effects\ municipality + u_i$$

The equation shows the relationships between the dependent variable, school results, and the explanatory variable, property tax. We have included fixed effects for municipality. This regression will give us coefficients estimates for the different explanatory variables. Hence, these estimates will help us understand to what extent these variables affect school results.

However, if the regressor is correlated with the error term, the OLS estimator of the dependent variable will be inconsistent (Stock&Watson, 2015). In our case, we find that the variable of property tax will be correlated to the error term and we choose to solve this problem by applying the TSLS approach described below.

5.2 Two Stage Least Squares (TSLS)

Instrument variables regression is used in the case where the regressor is correlated with the error term, so that one can obtain a consistent estimator of the unknown coefficient of the population regression function (Stock&Watson, 2015. P. 470). There is reason to believe that factors that affect property taxation also affect school results, hence we might have a problem of omitted variables or reverse causality. In order to solve this issue, we introduce two instrumental variables.

5.2.1 Instrument Variables

An instrument variable has to be valid in order for it to be used in the Two Stage Least Squares approach. Hence, the instrument has to satisfy two conditions, relevance and exogeneity.

Instrument relevance implies that the instrument has to be correlated with the regressor, so that there is an effect of the instrument on the explanatory variable.

$$Corr(Z_i, X_i) \neq 0$$

An instrument is exogenous if it only affects the dependent variable through the regressor and is not correlated with the error term.

$$Corr(Z_i, u_i) = 0$$

Fiva and Rønning (2008) suggest two instrument variables, 'Town' and 'Rural'. The dummy variable 'Town' equals one if the school district had town status from 1911 to 1975 and zero otherwise. The idea is that until 1996 town status was decided by the central government alone. Towns in Norway is traditionally municipalities that formerly had formal town status. This sort of status was from the 1960's and onwards to the 1990's given to municipalities regardless of size and number of inhabitants. Hence, it seems that town status was given to municipalities at random (Thorsnæs, 2017). Thus, town status did not change the composition of the municipalities, however, the tax law of 1911 imposed different property taxation rules on towns and countryside local governments. While towns had mandatory residential property taxation, the countryside local governments could choose to not impose residential taxation. Hence, we find that these two arguments combined have created sufficient reason to believe that this instrument can be valid.

The second instrument variable introduced by Fiva and Rønning (2008) is 'Rural'. In 1975, a new tax law restricted the use of property taxation to urban areas. The more students that lives in rural areas, the larger share of the population lives in rural areas. Hence, the instrument 'Rural' captures the share of the population

living in rural areas. The municipalities should not expect costs or income to differ between rural and urban areas, when we disregard property taxation. Further, population composition is taken into account through the municipality-level test performance indicator. Hence, we believe that this instrument variable only affects school results through property taxation. Fiva and Running (2008) find a strong relationship between residential property taxation and the residential locations within the municipalities. Hence, we believe that property taxation is decreasing in the share of the population that lives in rural areas.

Further, we investigate our third instrument, the number of vacation homes per inhabitant in the municipality. The hypothesis is that a municipality that have a large number of vacation homes compared to inhabitants in their jurisdiction will have an incentive to introduce property taxation. The argument is that the local government can impose a tax on individuals that are not allowed to vote in the municipality, as their primary home is located elsewhere. Hence, we expect the local governments' incentive to impose property taxation to be increasing in the number of vacation homes in the municipality compared to population size.

Further, many choose the location of their vacation homes due to the landscape or other features of nature, such as closeness to the mountains or the sea. These features are distributed by nature and hence we believe that the number of vacation homes are randomly assigned to each municipality. Next, municipality fees, such as water and waste disposal fees, does not give the municipality positive net income as the cost of providing the service should equal the price. Hence, we expect vacation homes to only affect the municipalities net income through property taxation. If we look at two rural municipalities, i.e. municipalities that are restricted from having residential property taxation, and assume that one of the municipalities have a share of vacation homes located in their jurisdiction and the other does not, for random reasons, we expect the effect of vacation homes per inhabitant on school results to be zero. Thus, we argue that the number of vacation homes per inhabitant meet the requirements of instrument exogeneity.

Another interesting question to be explored is if school results are affected by the number of vacation homes. We might elaborate on this in our final thesis.

From the discussion above we believe that the instruments are exogenous. However, we will test relevance of each instrument variable through conducting a reduced form analysis on the effect of the number of vacation homes, 'Town' and 'Rural' on school results in the municipalities. This implies relating the endogenous variable, DPTAX, to all available exogenous variables, i.e. fixed effects and instruments.

$$DPTAX_i = \pi_0 + \pi_1 \left\{ \frac{VacationHomes}{Population} \right\}_i + \delta_1 Town_i + \delta_2 Rural_i + Fixed\ effects\ for\ municipalities + \mu_i$$

The reduced form shows how each of the instruments affect the occurrence of property taxation. If we find a significant effect of vacations homes per inhabitant, 'Town' and 'Rural', then all three will fulfil the criteria of instrument relevance. This will have an impact on what instruments we use in our further analysis. If all of our instruments are valid, our endogenous regressor, DPTAX, will be overestimated, with three instrument variables. This implies that the TSLS approach is feasible.

The reduced form analysis is the first step in the TSLS approach, which gives us the predicted value of DPTAX, $\widehat{DPTAX}$. The next step is to regress the original OLS equation from section 5.1, but now we use the predicted value of DPTAX, instead of the observed value of property taxation. This gives us the TSLS estimator, which should be a consistent estimator following the argumentation of using the TSLS approach.

Finally, we will conduct sensitivity analysis in order to detect how changes in our variables will affect the dependent variable, school results.

6. Conclusion

We have discussed the institutional environment that forms the basis of our analysis. Further, we have presented literature that cover the area of study that we are working on and have presented the data that we are intending to use. Finally, we have discussed the empirical method that we are applying to answer our research question; What are the effect of property taxation on school results?

Moving forward and in preparation for the presentation of the preliminary master thesis report, we will prepare the applicable data for analysis and decide what instrument variables we are going to use based on the reduced form analysis described in section 5, which will affect our further results. After the presentation, we will continue on going through the steps of the empirical method described. We believe that when working with the material we will gain the tools necessary to find extensions to the present empirical method.

References

Borge, L. E., & Rattsø, J. (2008). Property taxation as incentive for cost control: Empirical evidence for utility services in Norway. European Economic Review, 52(6), 1035-1054. Retrieved from: https://ac.els-cdn.com/S0014292107001493/1-s2.0-S0014292107001493-main.pdf?_tid=21734eb8-f6e8-11e7-95ca-00000aab0f01&acdnat=1515686431_2839999449b9e32b11e9e60590ac2b72

Eigedomsskattelova. (1975). Lov om eigedomsskatt til kommunane av 6. juni 1975 nr. 29. Retrieved from https://lovdata.no/dokument/NL/lov/1975-06-06-29?q=eiendomsskattloven

Fiva, J. H., Halse, A. H., Natvik, G. J. (2015): Local Government Dataset. Retrieved from www.jon.fiva.no/data.htm

Fiva, J. H., & Kirkebøen, L. J. (2011). Information shocks and the dynamics of the housing market. The Scandinavian Journal of Economics, 113(3), 525-552. Retrieved from: http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9442.2011.01651.x/full

Fiva, J. H., & Rønning, M. (2008). The incentive effects of property taxation: Evidence from Norwegian school districts. Regional Science and Urban Economics, 38(1), 49-62. Retrieved from http://www.sciencedirect.com/science/article/pii/S0166046207000567

Forskrift til opplæringslova. (2006). Forskrift til opplæringslova av 23. juni 2006 nr 724. Retrieved from: https://lovdata.no/dokument/SF/forskrift/2006-06-23-724/*#*

Glaeser, E. (1996) The incentive effects of property taxes on local governments, Public Choice, 89, 93–111. Retrieved from: https://link.springer.com/content/pdf/10.1007%2FBF00114281.pdf

Hanushek, E., Rivkin, S.G., Taylor, L.L., 1996. Aggregation and the estimated effects of school resources. Review of Economics and Statistics 78, 611–627. Retrieved from: http://hanushek.stanford.edu/sites/default/files/publications/Hanushek%2BRivkin%2BTaylor%201996%20REStat%2078%284%29.pdf

Hoxby, C. (1999) The productivity of schools and other local public goods producers, Journal of Public Economics, 74, 1–30. Retrieved from: https://ac.els-cdn.com/S0047272799000250/1-s2.0-S0047272799000250-main.pdf?_tid=e3f5ed82-f6e4-11e7-80c8-00000aacb362&acdnat=1515685040_c5717d0bc82103c878ac81045f5d5ab2

Jimenez, E. and Paqueo, V. (1996) Do local contributions affect the efficiency of public primary schools?, Economics of Education Review, 15, 377–86. Retrieved from: https://ac.els-cdn.com/S0272775796000295/1-s2.0-S0272775796000295-main.pdf?_tid=1d6526d2-f6e5-11e7-9973-00000aab0f6b&acdnat=1515685136_069649ec1676068ebdb15d0e4f72a136

Kenyon, D. (2007). The property tax-school funding dilemma. Policy Focus Report. Cambridge, MA: Lincoln Institute of Land Policy. Retrieved from: https://www.lincolninst.edu/sites/default/files/pubfiles/the-property-tax-school-funding-dilemma-full_0.pdf

Lin, T. C., & Couch, A. (2014). The impact of federal, state and local taxes on student achievement in public schools: the case of Indiana. Applied Economics Letters, 21(3), 220-223. doi: http://www.tandfonline.com/doi/abs/10.1080/13504851.2013.849376

Mensah, Y. M., Schoderbek, M. P., & Sahay, S. P. (2013). The effect of administrative pay and local property taxes on student achievement scores: Evidence from New Jersey public schools. Economics of Education Review, 34, 1-16. Retrieved from: https://ac.els-cdn.com/S0272775713000186/1-s2.0-

S0272775713000186-main.pdf?_tid=f5ff82de-f6e6-11e7-bb93-00000aacb35e&acdnat=1515685929_2b46c08e73066c94b720617965173fd2

OECD. (2008). Measuring improvements in learning outcomes: best practices to assess the value-added of schools. Organisation for Economic Co-operation and Development.

Opplæringslova. (1998). Lov om grunnskolen og den vidaregåande opplæringa av 17. juli 1998 nr. 61. Retrieved from: https://lovdata.no/dokument/NL/lov/1998-07-17-61?q=oppl%C3%A6ringsloven

SSB. (2011). Value added-indikatorer. Et nyttig verktøy i kvalitetsvurdering av skoler?. Retrieved from https://www.ssb.no/a/publikasjoner/pdf/rapp_201142/rapp_201142.pdf

SSB. (2017a). Eiendomsskatt, 2017. Retrieved from https://www.ssb.no/offentlig-sektor/statistikker/eiendomsskatt/aar/2017-06-19#content

SSB. (2017b). Eiendomsskatt, 2017. Retrieved from https://www.ssb.no/offentlig-sektor/statistikker/eiendomsskatt/aar/2017-06-19?fane=om#content

SSB. (2017c). Er det forskjeller i skolers og kommuners bidrag til elevenes læring i grunnskolen? Retrieved from https://www.ssb.no/utdanning/artikler-og-publikasjoner/er-det-forskjeller-i-skolers-og-kommuners-bidrag-til-elevenes-laering-i-grunnskolen

SSB. (2017d). Bygningsmassen. Retrieved from https://www.ssb.no/statistikkbanken/SelectVarVal/Define.asp?subjectcode=al&ProductId=al&MainTable=FribyggKm&SubTable=Kommun1&PLanguage=0&nvl=True&Qid=0&gruppe1=KommGjeldende&gruppe2=Hele&aggreg1=NO&VS1=Kommune&VS2=&mt=0&KortNavnWeb=bygningsmasse&CMSSubjectArea=bygg-bolig-og-eiendom&StatVariant=&checked=true

SSB. (2018). Kommuneregnskap. Retrieved from https://www.ssb.no/offentlig-sektor/statistikker/kommregnko/aar

Stock, J. H., & Watson, M. W. (2015). Introduction to econometrics (Third edition). Pearson Education.

Thorsnæs, Geir. (2017). Byer I Norge. Store norske leksikon. Retrieved from https://snl.no/byer_i_Norge.

Tiebout, C. M. (1956) A pure theory of local expenditures, Journal of Political Economy, 64, 416–24. Retrieved from: http://lib.cufe.edu.cn/upload_files/other/4_20140526100628_48_Tiebout%20A%20Pure%20Theory%20of%20Local%20Expenditure.pdf

Utdanningsdirektoratet. (2017). Kva er nasjonale prøver? Retrieved from https://www.udir.no/eksamen-og-prover/prover/nasjonale-prover/om-nasjonale-prover/