

Research Proposal

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## **Introduction**

Financial literacy is defined as having knowledge and understanding of financial matters used in connection with personal finance, but according to much of the research that has been done, Americans lack an adequate understanding of money and finance and "many make expensive mistakes in their personal financial decisions" (Mandell, 2012 Pg. 107).

Much of the research to date has focused on where to teach financial education and how to; design more effective curriculums; help teachers get better at teaching financial education courses; make room for financial education courses in an already crowded educational system and how to track progress of students who have had access to financial education.

After much research and considerable trial and error, we know that high school is the most appropriate environment to teach financial education and we have a much better understanding of what curricula work best. It is clear that high school teachers understand their need to keep pace with the academic learning curve and how to be more effective teaching students how to apply what they learn. While the tracking of financial literacy levels and progress has been vague, we now have better tools and methods to quantify results and what appears to be an opportunity to establish a more long term and effective strategy. The researchers need to focus on the role of the states and the challenge is to continue to address how state mandating authority should and can be used to make positive progress toward solving our young adult financial literacy issues.

There has been considerable prior research in the area of financial education and how young adults can profit by improving their level of financial literacy. Prior research analyzed the level of financial literacy among this population drawing the conclusion that it was not good and not progressing. Research in the 1990's focused on home experiences being the primary learning environment and it was quickly realized that this type of learning experience was not effective.

Considerable research was focused on teaching students financial education at the high school level but inconsistencies in state mandating legislation, course content, course availability and testing for financial literacy levels created a less than credible overall outcome. Early researchers did not have the data necessary to evaluate what was being taught and when input about the consistency of course content improved, the next challenge was trying to quantify success, which was still sketchy at best.

As research focused on the effect of state education mandates which would standardize financial education course content, curriculum requirements and more credible testing techniques, this approach to improving financial literacy appeared to be a viable alternative to previous research methods.

This proposed study will build on previous scholarly research that provided the road signs for the future successes in the effort to improve financial literacy in young adults. It is reasonably clear what research has to be done in the future to take advantage of what has been learned so far. Going forward my research will build on the practices that successful states have mandated and have implemented to date. From an educational perspective, this means designing financial education curriculum focused more on real life application versus the abstract; a more aggressive application of course offerings which will assure financial education courses are a requirement of graduation; and more effective testing procedures using objective, behavioral based modeling techniques such as the latest studies have indicated.

### **Statement of Purpose**

This proposed study will expand upon the research previously done and build on the studies involving the criteria states use to mandate course content and the legislation application process

used by state regulated school districts. It will seek to clarify and replicate the syllabi that has proven to be the most effective, with standardized course offering requirements, review mandate legislation, and analyze how financial education course are linked to graduation requirements by the states. To quantify the success of the educational mandate process, it will further review the testing criteria to assure that using credit scores and delinquency rates is providing credible input as well as suggest additional measuring methods as appropriate.

The theoretical basis for this research focus is premised on a set of interrelated constructs or concepts that will provide a systemic view of the phenomenon that makes young adults financially literate. The basic theory of what works is getting clearer as are the numerous variables involved. The objective in this quantitative study will be to not only test the theory by examining the question, but to possibly be used indirectly in the development of the theory from an exploratory perspective.

The primary theoretical basis for research regarding enhancing financial literacy in young adults by using the power of state mandates is that receiving effective financial education in the appropriate environment, using the appropriate methods, will effectuate the stated objective. There are also other key variables of interest involved including how states decide what curriculums will be offered, how curriculums can be standardized among states in large numbers, how application of the financial education courses will be linked to graduation requirements, and how the quantification criteria, i.e. credit scores and delinquency rates will be standardized so we know progress can be accurately measured from a regional or national perspective.

Variables also include the time between when a mandate is passed by the legislators, when it is ultimately offered by the school district, as well as the time frames between graduations and when reviewing credit scores and delinquency begins.

## Literature Review

Research regarding financial literacy among young adults was addressed in the late 1990's (Haiyang, C. & Volpe, R. (1998) and focused on college students and the advantages of taking financial education courses at that level. Ten years later, Lewis Mandell (2008) wrote about the results of the Jump\$tart Coalition Survey which had begun testing high school students for financial literacy in 2004 and how the scores on a standardized test instrument had been declining. Mandell (2008) stated in his study that high school was the best environment for teaching financial education because it was a larger population and participation in financial education, as well as the types of curricula used, could be mandate by the states. A study the following year further addressed the issue of how to motivate high schools districts to add financial literacy courses when their effectiveness is in question and high school curriculums slots are already crowded (Mandell, L. & Klein, L. S. 2009).

During the next year, research by Walstad, W. B. & Rebeck, K. (2010) questioned whether a well-designed financial education program improves a student's financial literacy and whether the results were based on reliable testing instruments and credible pre-test and post-test scores. Harnish (2010. Pg. 3) also pined the "need for a new approach to teaching this subject since the current curricula has not produced positive results" and that the current financial education efforts were flawed. While research released during 2012 admitted that successful implementation of such financial education programs had not occurred, the consensus among researchers of this subject was that it was still too early to totally give up on school-based financial education (Mandell, 2012). In 2014 there is a renewed emphasis on this subject which involve a higher organization model and state powers. The limitation of the previous research was simply that the concept of financial education was evolving and research was not providing

a true picture of what approaches were effective. This research proposal's objective is to answer the questions:

1. What is the effect of State Mandated Financial Education on the Financial Literacy of Young Adults? And additionally,
2. What are the steps necessary to build on our current progress?

### **Definition of Terms**

There are four sets of control variables in the model that will be replicated during this research and which involve two types of variables, financial and education-based. The Specifications (1-4) operate by changing the mix of financial and education-Based variables to effectuate a different criteria reflected outcome. The financial based variables (some state-level) include; GDP, Median household income, poverty rate, Housing Price Index and unemployment rate. The education-based variables include the percent of sample participants with less than a high school degree, percent that graduated from high school, percent that graduated from college, percent with some college, census region and division, percent of private schools, race, ethnic composition, expenditures per pupil, and total schooling expenditures (Brown, J., Collings, M., Schmeiser, M. & Urban, C. 2014). Variables will be used to facilitate the development of synthetic control models which in turn helps select the states to be designated as control states used as the basis for comparative case studies.

### **Methods:**

The original and primary source of the secondary data set for this research proposal was the Federal Reserve Bank of New York and the Equifax Consumer Credit Panel (CCP) and was

created using a panel of credit report data. The CCP is a 5% random sample of credit report data for people with social security numbers obtained from the credit reporting agency Equifax.

This particular data set was created to build on prior studies of state financial educational requirements and to highlight and negate some of their challenges or weaknesses (Cole, Paulson and Shastry 2013) such as; blanket comparisons of states offering financial education with states not offering financial education without adjusting for course content and heterogeneity; comparing states that only recommend financial education with those that have graduation requirements; not isolating financial education mandates from broader curriculum reforms; the timing and quality of implementation and the financial education training provided teachers.

Specifically, this data set was created to compare the credit scores and delinquency rates of young adults in three states, Georgia, Idaho and Texas, where K-12 financial education mandates were implemented in 2007 and which were well documented with specific requirements and criteria. The financial behavior comparisons of young adults were made on a pre-financial education and post-financial education basis within three state high school student populations and this result was then compared to states that had not implemented any K-12 financial education mandates. Much of the dataset was created by Alexandra Brown, J. Michael Collings, Mazimilian Schmeiser and Carley Urban (2014) and was supported by a grant from the FINRA Investor Education Foundation.

Credit data was also primarily obtained from the study by Brown, Collings, Schmeiser, & Urban (2014) and included the Federal Bank of New York/Equifax Consumer Credit Panel (CCP) dataset and the National Assessment of Educational Progress (NAEP) which is provided by the National Center for Educational Statistics (NCES). Educational mandate data was obtained from the Jump\$tart Coalition for Financial Literacy (2013).

The conceptual framework is based on a quantitative approach and the data set provided the input required to address the research question of what effect state mandated K-12 financial education had on the financial literacy and credit behavior of young adults.

Previous studies were flawed in that there were many variables that would have the effect of skewing the results when based on blanket comparisons of states offering financial education with states not offering financial education without adjusting for course content and heterogeneity; comparing states that only recommend financial education with those that have graduation requirements; not isolating financial education mandates from broader curricula reforms; the timing and quality of implementation and the training provided teachers.

As it regards the credit and delinquency data, previous studies primarily measure credit scores and infer that that credit scores were an accurate indicator of credit behaviors and that higher credit scores equated to a higher level of financial literacy. It is assumed that credit behaviors is an indicator of the impact of the state mandated K-12 financial education on students financial literacy and that credit scores and delinquency rates are a valid measure of this behavior (Brown, 2014).

The specific state mandated education data originated from a variety of sources and included the Jump\$tart Coalition for Personal Financial Literacy (2013), the 2013 National Report Card on State Efforts to Improve Financial Literacy in High Schools (2013) and the Council for Economic Education's Survey of the States Council for Economic Education (2014). These data were supplemented with information collected directly from each of the states that was analyzed and included reviewing legislation, graduation requirements, and the standardized curricula for each of the courses (Cole, Shawn, Paulson, and Shastry. 2013).

The age of the participants in the study (Brown, J., Collings, M., Schmeiser, M. & Urban, C. 2014) were young adults that had graduated from high school in one of the states selected for the study. Their credit behavior was analyzed starting at age 18 and continued until they reached age 22. The participant characteristics were classified as “treated” young adults, which were students that have taken financial education courses in the 3 "treatment" states (GA, ID and TX) post-implementation period in 2007, to “non-treated” young adults which are defined as high school students that were in the treatment states but during the pre-implementation period (pre-2007) and that were not exposed to financial education. Both the treated and non-treated students within the three treatment states were then compared to student results in 25 "control" states (AK, AL, AR, CA, CT, DC, DE, FL, HI, IA, KY, MA, ME, MN, MS, MT, ND, NE, NM, OR, PA, VT, WA, WI, WY). These were states that had not mandated any financial education be offered to high school students.

Two methods were used to estimate the effects of these financial education mandates on credit outcomes. Equifax credit scores and delinquency rates on credit accounts was the primary source of the comparative data. Brown, Collings, Urban & Schmeiser (2014, pg. 4) used a synthetic control method to "create a weighted set of comparison states using trends in state-level demographic characteristics measured prior to the imposition of financial mandates" (Abadie, Diamond and Hainmueller, 2010; Abadie and Gardeazabal, 2003). This approach allowed a comparison of each treated state (Georgia, Idaho, and Texas) to other states that never implemented any form of personal finance education.

The second method used was referred to as a border-state approach which permitted a comparison of geographically homogeneous areas. "In both methods we use a difference-

in-difference framework to compare the change in financial outcomes for students who were exposed to financial education in high school before and after implementation to the change in outcomes for students in comparison states without mandated financial education" (Brown, Collings, Urban &Schmeiser, 2014, Pg.4). The credit behavior was measured using individual-level credit bureau data from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel (CCP) dataset. The survey content included Equifax credit scores with the expectation that the average credit score for the young adults exposed to the mandated financial education would increase. The survey content also included data regarding the delinquency on a credit accounts and car loans with a similar expectation of the impact of financial education.

As it regards data collection strategies, quantifying which participants graduated from high school pre-treatment period in the treatment states verses post-treatment period in the treatment states and comparing average credit scores for these groups, was straightforward. It was also straightforward to compare treated state credit scores and delinquency rates with the 25 border or control states average credit scores and delinquency rates. Overall, over 400,000 individuals were part of the sample population.

While a dataset strength is that it is from a reliable source (Federal Bank of New York/Equifax Consumer Credit Panel) and that the data comparisons are reasonably appropriate; the 3 states that have uniform mandate rules and requirements verses the 25 states that do not, there is still some reason to question the inherent strength of the dataset because the treated sample still only represents approximately 6% of the total population.

One of the primary weaknesses of the dataset is that the credit histories used would be considered immature considering the younger ages of the participants. Another primary strength

of the dataset is that the survey construction and the results it is trying to measure contains a high degree of common sense in that if someone is taught financial planning, they theoretically should be better at managing credit risk. Results suggest that students in Georgia, Idaho and Texas, that had been exposed to financial education mandates had higher credit scores and lower delinquency rates (credit cards, car loans, etc.) before the mandate (Brown, J., Collings, M., Schmeiser, M. & Urban, C. 2014).

There may be potential threats to the reliability of the dataset as it regards the variables involved if they are not applied consistently, especially when estimating the effect of state mandates by comparing states with financial education to those with no financial education despite significant heterogeneity in the course content, course requirements, and implementation across states (Bernheim, Garrett and Maki 2001; Brown et al. 2013; Cole, Paulson and Shastry, 2013). Another threat to reliability could be related to time variance between the enactment of an education mandate and the first year a graduating class may be subject to the mandated requirement.

From a validity perspective, the numerous variables involved, from a financial and education-based perspective include; state GDP, median household income, poverty rate, Housing Price Index (HPI), unemployment rate, percent with less than a high school degree, percent graduated from high school, percent graduated from college, percent with some college, census region and division, percent of private schools, race and ethnic composition, expenditures per pupil, and total schooling expenditures. The impact these had on the results reviewed in this research proposal were material, and since different data specifications retained or omitted different variables (Specifications 1-4), this could threaten validity materially if they are not applied with the appropriate degree of consistency to purpose. As

stated above, a synthetic control method (Abadie, Diamond and Hainmueller, 2010; Abadie and Gardeazabal, 2003) was used to estimate the effect of financial education mandates on later credit behaviors and this will be used in research going forward.

Four sets of control variables will be used to construct the synthetic control sample using state characteristics from CY 2000 (Specifications 1-4) and both financial and education-based variables were used. The variance between Specifications 1, 2, 3, and 4 are primarily the number and combination of state level variables that are applied. Specifically, Specification 1 variables included GDP, median household income, poverty rate, Housing Price Index (HPI), unemployment rate, percent with less than a high school degree, percent graduated from high school, percent graduated from college, percent with some college, Census region and division, percent of private schools, race and ethnic composition, expenditures per pupil, and total schooling expenditures. Specifications 2, 3, and 4 are comprised of some different combination of Specification 1 variables.

The data that will be analyzed employs an empirical approach and again used a difference-in-difference specification that analyzes or exploits variations across individuals within the same state before and after the mandates are implemented, and variations of individuals within the treatment states and control states, within the same time frame. The study by Brown, Collings, Schmeiser & Urban, (2014, Pg.18) used regression analysis, the systemic control samples and the following complex equation (1) separately for each pair of treatment and control states. Additional research will use the same analysis criteria.

$$\begin{aligned}
 & "Y_{ist} = \alpha_0 + \beta_1(T_s \times P1_{it}) + \beta_2(T_s \times P2_{it}) + \beta_3(T_s \times P3_{it}) \\
 & + \gamma_{iit} + \delta_s + \kappa_{Xit} + \eta_t + \epsilon_{ist}" \tag{1}
 \end{aligned}$$

## References

- Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program." *Journal of the American Statistical Association*, 105(490):
- Brown, A., Collings, J.M., Schmeiser, M. & Urban, C. (2014) State Mandated Financial Education and the Credit Behavior of Young Adults. *Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.*
- Brown, Meta, Wilbert van der Klaauw, Jaya Wen, and Basit Zafar. 2013. "Financial Education and the Debt Behavior of the Young." *Federal Reserve Bank of New York Staff Report*, Number 634.
- Cole, Shawn, Anna Paulson, and Gauri Kartini Shastry. 2013. "High School and Financial Outcomes: The Impact of Mandated Personal Finance and Mathematics Courses." *Harvard Business School Working Paper*, 13-064.
- Haiyang, C. & Volpe, R. (1998). An Analysis of Personal Financial Literacy Among College Students. *Financial Services Review*, 7 (2): Pgs. 107-128
- Harnish, T. L. (2010). Boosting Financial Literacy in America: A role for State Colleges and Universities. *Perspectives, American University of State Colleges and Universities.*
- Hinojosa, Trisha, Shazia Miller, Andrew Swanlund, Kelly Hallberg, Megan Brown, and Brenna O'Brien. 2007. "The Impact of The Stock Market Game on Financial Literacy and Mathematics." *Educational Researcher*, 33(1): 29-34.

Jumpstart Coalition for Personal Financial Literacy. 2013. "State Financial Education Requirements."

Mandell, L. (2008). The Financial Literacy of Young American Adults: Results of the 2008 National Jumpstart Coalition survey of high school and college students. *Retrieved from: <http://jumpstart.org/assets/files/2008SurveyBook.pdf>*

Mandell, L. (2012). School Based Financial Education: Not Ready for Prime Time. *Research Foundation Publications, Vol. 2012, No. 3*

Mandell, L. & Klein, L. S. (2009). The Impact of Financial Literacy Education on Subsequent Financial Behavior. *Retrieved from: Journal of Financial Counseling and Planning, Vol.20, Issue 1.*

Walstad, W. B. & Rebeck, K. (2010) The Effects of Financial Education on the Financial Knowledge of High School Students. *The Journal of Consumer Affairs, Vol. 44, Issue 2, Pgs: 336-357. Summer 2010*