Qualifier

Empirical Corporate Finance

September 5, 2023

Questions 1 and 2 are required questions. You must answer both of them. Questions 3 and 4 are choice questions. You will answer either question 3 or question 4. Whether you answer 3 or 4 is your choice. The points for each part is listed. Particular attention will be paid to detail and clarity of your answers. Make sure that you use proper sentences and well defined equations – not just bullet pointed buzz words.

1. (Required Question. 35 points) The Q-theory of corporate investment has been a key tool in corporate finance and in asset pricing for a number of decades. We saw the theory in the review by Bond and Van Reenen (2007).

   (a) (10 points) Derivation of the Q-theory of corporate investment. i) Start by providing a clear explanation of the Q-theory of corporate investment. Focus on the key ideas underlying the theory. ii) Derive the basic equation representing the Q-theory. Define all variables and parameters involved in the equation and explain their economic meanings. iii) Be precise about the economic assumptions that underlie the Q-theory. (Hint: think about perfect capital markets, rational expectations, adjustment costs, profit maximization, average versus marginal, etc.)

   (b) (10 points) Proposal for empirical testing. i) Design an empirical study to test the validity of the Q-theory of corporate investment. Outline the key steps, data sources, and variables that you would use. ii) Describe the dataset you would use for your analysis, including the specific variables related to corporate investment, asset values, and other suitable factors. iii) Explain the econometric method(s) you would employ to estimate the relationship between investment and Q. Explain why your methods are appropriate for this analysis. iv) Identify potential challenges and limitations of empirically testing the Q-theory, both in terms of data availability and econometric complexities.

   (c) (5 points) What is distinctive about Q-theory? For example, how does Q-theory differ from user cost theory of corporate investment?

   (d) (5 points) Our textbooks teach students to choose investment using Net Present Value (NPV) and Weighted Average Cost of Capital (WACC). How does the textbook approach connect to Q-theory, and to user cost theory? If real firms follow the textbook teaching, does that mean that Q-theory cannot be correct? Explain.

   (e) (5 points) When Q-theory has been tested using data on the investment choices of real firms, what has generally been found? What are the main empirical strengths and weaknesses of Q-theory?

2. (Required Question. 35 points) You are doing a study in order to estimate the causal effect of firm productivity on corporate debt using instrumental variables. You have cleverly found a valid instrument, Z, that satisfies the necessary assumptions for IV estimation. Define your notation and provide the equations to help explain your answers precisely.

   (a) (5 points) Explain the key assumptions required for instrumental variables (IV) to provide consistent and unbiased estimates of causal effects.

(b) (10 points) Describe the two-stage least squares (2SLS) method for estimating causal effects using instrumental variables. Provide the mathematical equations for both stages of the 2SLS estimation process. What is each equation doing intuitively? Why might this approach seem appealing?

(c) (10 points) Discuss the key common sources of bias in instrumental variable estimation and the conditions under which IV estimates may still be biased. Explain how you might recognize these problems in the data and how you can try to address them. (Hint: some concepts you might want to think about include things like weak instruments, exogeneity, overidentification.)

(d) (10 points) Provide an example (not about corporate debt) from the corporate finance literature where instrumental variables were used to address an endogeneity problem. Explain the specific variables involved, the research question, and the key findings of the study.

3. (Choice Question. 30 points) Imagine you are conducting a research study to understand how households choose to finance their living accommodations. For simplicity, the decision of a household is one of the following: rent a house, buy a house with a small mortgage, buy a house with a big mortgage. We denotes these as (A, B, and C). You decide to use the multinomial logit model. The model assumes that consumers choose among these alternatives based on their utility. Please answer the following questions, providing relevant assumptions and helpful equations:

   (a) (5 points) Explain the key assumptions underlying the multinomial logit model of demand. Discuss the implications of these assumptions for modeling consumer choice behavior.

   (b) (5 points) Define the utility function for a consumer who chooses among three cases (A, B, and C) in the multinomial logit model. Include the relevant parameters and explain their meanings.

   (c) (5 points) Provide the equation for the probability that a consumer chooses product A in the multinomial logit model. Include the formula and explain the components of the equation.

   (d) (5 points) Discuss the interpretation of the estimated parameters in the multinomial logit model. How can these parameters be used to infer consumer preferences and market shares?

   (e) (10 points) Explain how Egan, Lewellen and Sunderam (2022) used a discrete choice model in their study of the cross-section of bank value.

4. (Choice Question. 30 points) Environmental, Social, and Governance (ESG) considerations have gained considerable prominence in recent years. They are often advocated as key components of corporate governance. These factors include a wide range of issues, from environmental sustainability, to social responsibility, and ethical governance practices.

   (a) (5 points) Provide a comprehensive explanation of the key elements of ESG (Environmental, Social, and Governance) and explain their significance in the context of corporate governance.

   (b) (5 points) Discuss the motivations behind increasing focus on ESG considerations in governance practices over the past couple of decades. What are the potential benefits for firms, investors, and society at large? What are the potential costs for firms, investors, and society at large? Why doesn't everyone support ESG? Why has ESG become controversial?

(c) (5 points) Why might an ESG-type policy be imposed on firms by a law? Why might an ESG-type policy be imposed on firms by pressures from investors and activists instead of by a law? What might help explain which actually happens?

(d) (5 points) The growth in passive index fund investing (notably after the year 2000) has had important implications for the current role of ESG. Explain how and why this happened.

(e) (5 points) According to Friedman (1970) firms should follow the law. Within the law the manager's responsibility is to maximize profits. Explain his idea and its implications for ESG.

(f) (5 points) Hart and Zingales (2022) object to Friedman's perspective. Explain their objection. What are the strengths and weaknesses of Hart and Zingales perspective when compared to Friedman's?

References

Bond, S., & Van Reenen, J. (2007). Microeconometric models of investment and employment. Handbook of Econometrics, 6, 4417-4498.

Egan, M., Lewellen, S., & Sunderam, A. (2022). The cross-section of bank value. The Review of Financial Studies, 35(5), 2101-2143.

Friedman, M. (1970). The social responsibility of business is to increase its profits. New York Times Magazine, September 13.

Hart, O. D., & Zingales, L. (2022). The new corporate governance (No. w29975). National Bureau of Economic Research.