1. (b) Huber, Kilian. 2018. "Disentangling the Effects of a Banking Crisis: Evidence from German Firms and Counties." *American Economic Review*, 108 (3): 868-98.DOI: 10.1257/aer.20161534

(c)

$$y_{fct} = \zeta + \beta CBdep_{fc} \times d_t^{post} + \kappa_c \times d_t^{post} + \Gamma' X_{fc} \times d_t^{post} + \gamma_{fc} + \lambda_t + \varepsilon_{fct}$$

(d) Exogenous variables are $y_{fct}, CBdep_{fc}, d_t^{post}, k_c, \Gamma' X_{fc}, \gamma_{fc}, \lambda_t$.

Endogenous variables are $\beta,\ \varepsilon_{fct}, \zeta$.

(e) The model is dynamic model because it accounts for the time-dependent change and has year fixed effects. It is a linear model because it has a constant slope. It is stochastic because it has error terms and is not fully determined by the parameter values and initial conditions.

(f) Besides size bin fixed effect that categorizes firms by the number of employees, it could also categorize firms into different groups by their total revenue or by their average wage level.

2. (a)

$$M = \beta_1 Age + \beta_2 Net\ Worth + \beta_3 Education + \beta_4 Spare\ Time + \beta_5 Social + \varepsilon$$

$$Y = \begin{cases} 0, & M < 60 \\ 1, & M \geq 60 \end{cases}$$

(b) The output of the model is Y, and it is the dependent endogenous variable of the model. Y=1 means that someone decides to get married and Y=0 means decide not to get married.

(c) It is a complete data generating process because I will be able to simulate data given all parameters and relationships. All data is accessible and easy to be collected and all parameters can be measured and quantified.

(d) Key factors are the exogenous variables on the right side of the equation. Age, net worth, education level, disposable time that individual has outside of work, and social participation (number of friends). Also the βs are the weight that each factor contributes to the decision of getting married. The weight of each factor is also a key factor that influence the outcome.

(e) I think these factors have the most influence and all of these factors can be quantified into number, so I decide on these factors. Age matters because people always start considering marriage after reaching a certain age. Net worth suggests the economics status of the individual and the ability of getting marriage. Education is the number of years spent in school and it suggests some preference in marriage. Spare time is the number of hours someone can spend outside of work and it indicates the ability to find time to get married. Social factor is the number of friends someone has, which suggests the level of social participation of individual and can reflect someone's willingness of getting married. For example, someone who has too many friends might want to spend more time on social with others rather than spending time on marriage and might not be willing to get married.

(f) I can send out surveys including all of these factors to get data on each factor, then I'll put all five factors' data into the model to get prediction of whether they decide to get married. Finally, I can compare my predictions with their real decisions from the survey to test my model.