

## Problem Set #1

MACS 30150, Dr. Evans

Due Monday, Jan. 14 at 11:30am

### 1. Classify a model from a journal (5 points).

- (a) Find a theoretical or statistical model from a recently published article (no earlier than 2013) in either the *American Economic Review*, *Econometrica*, or the *Review of Economic Dynamics*.
- (b) Give a detailed citation of the article.
- (c) Write down the mathematical or statistical model (write the equations).
- (d) List which variables are exogenous (determined outside the model, assumed) and which variables are endogenous (determined inside the model, the output of the model)
- (e) Classify the model as static vs. dynamic, linear vs. nonlinear, deterministic vs. stochastic.
- (f) List a variable or feature that you think the model is missing that might be valuable.
- (g) You should be able to write this in less than two pages. Only PDF submissions will be graded. Using  $\text{\LaTeX}$  is a great option if you have equations (see [\text{\LaTeX} tutorial](#) and [template](#)).

### 2. Make your own model (5 points).

- (a) Write down a model of whether someone decides to get married.
- (b) At least one of the dependent endogenous variables (output of the model) must be  $1=\textit{get married}$  or  $0=\textit{not get married}$ .
- (c) Make sure that your model is a complete data generating process. That is, you could simulate data from your model given all the parameters and relationships.
- (d) What do you think are the key factors that influence this outcome?
- (e) Why did you decide on those factors and not others?
- (f) How could you do a preliminary test whether your factors are significant in real life?
- (g) You should be able to write this in less than one page. Only PDF submissions will be graded. Using  $\text{\LaTeX}$  is a great option if you have equations (see [\text{\LaTeX} tutorial](#) and [template](#)).