Readme for the Data & Program Files

The zip folder contains the following nine subfolders:

1.	01_Demand	Data and programs for estimating demand (in STATA)
2.	02_Supply	Data and programs for estimating profits (in MATLAB)
3.	03_Investment	Data and programs for estimating sunk costs (MATLAB)
4.	04_PostEstimation	Programs for simulating the estimated model (MATLAB)
5.	05_NoCannibalization	Programs for simulating the no-cannibalization counterfactual
6.	06_NoPreemption	Programs for simulating the no-preemption counterfactual
7.	07_DifferentSunkCost	Programs for simulating the counterfactuals with different costs
8.	08_BroadPatent	Programs for simulating the broad patent counterfactuals
9.	09_LicenseFee	Programs for simulating the license fee counterfactuals

1. Demand

Two .dta files contain the data on prices, quantities, and qualities of the hard disk drives, according to the "broad" and "narrow" market definitions, respectively.

Two .do files contain regression commands for the demand estimation procedures.

2. Supply

'DataSource.m' contains the results of the demand estimation as well as the number of firms in the market. Running this file generates 'Data.mat'.

'FindMC.m' uses 'Data.mat' to estimate the marginal costs of producing the old and the new hard disk drives, which will be saves as 'DataWithMC.mat'.

'FindPi.m' uses 'DataWithMC.mat' to calculate the equilibrium period profits in all possible states of the world in all sample periods, which will be saved as 'FindPi.mat'.

'CheckPi.m' checks the validity of all profit estimates in 'FindPi.mat' and corrects erratic ones, which will be saved as 'CheckPi.mat'.

The other .m files are the first-order conditions and the constraints for the profit-maximization problems that are solved within 'FindMC.m' and 'FindPi.m'.

3. Investment

'MLEstimation.m' is the main maximum-likelihood estimation program. It takes 'CheckPi.mat' as inputs and calls 'Likelihood.m'.

‘Likelihood.m’ contains the likelihood function, and calls the 13 MEX (Matlab executable) functions, which need to be compiled beforehand from the 13 C source codes (‘fun1.c’ through ‘fun13.c’).

4. Post-estimation

‘MLPostEstimation.m’ simulates 10,000 histories of the industry dynamics based on the estimated model, and calculates social-welfare outcomes.

‘ConfidenceInterval.m’ evaluates the likelihood function on a grid of parameter values to construct the confidence intervals on the parameter estimates.

5. Counterfactuals

The remaining folders contain the programs for simulating various counterfactual scenarios. They share most of the same underlying period profits and the dynamic model with the estimation procedure in the third folder, but some scenarios require different and/or additional inputs, in which case such different pieces are contained in the respective subfolders.