FIN-971 | Problem Set #5 | Fall 2021

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Date: 12/12/21

Following tables and figures are the result of computations using the code included in this repository.

Exercise 1. Using the stationary distribution of the model $\mu(k, z)$, compute the aggregate and cross-sectional moments listed in the Table 2 and 3 in Gomes(2001).

Answer. The following tables contain the aggregate and cross-sectional moments of the model:

Table 1. Aggregate Results

Moments	Value
String	Float64
Investment Share	0.2052
Financial Cost Share	0.0005
Financial Cost to Total Cost	0.0167
Floatation Cost to Financial Cost	0.677

Table 2. Cross-Sectional Results

Moments	Value
String	Float64
Average Size	0.441
Investment Rate (mean)	0.147
Investment Rate (st. dev)	0.079
Tobin's Q	1.447
Cash Flow (mean)	0.233
Cash Flow (st. dev)	0.043
Frac. Negative Investment	0.23

Exercise 2. Divide the distribution of firms into those which have $d < 0$ (those receiving seasoned equity), $d = 0$ (call them constrained), and those issuing dividends $d > 0$ (unconstrained) where $d(k, z) = \pi(k, z; w) - i\,(k', k) - \lambda\,(k, k', z; w)$. What are the fractions of each type?

Answer. The distribution of firms is the following:

Table 3. Firms by Type

Type	Fraction
String	Float64
Externally Financed	0.001
Constrained	0.846
Unconstrained	0.153

Exercise 3. Plot decision rules for $k'(k,z), i\left(k',k,z\right), x(k,z)=0, d(k,z)$ for the lowest z,median z, and the highest z on the vertical axis against k on the horizontal axis. Also plot cummulative distribution functions for those cases (truncate your plots at $k=5$).

Answer. Figures are bellow:

FIGURE 1. Decision Rules

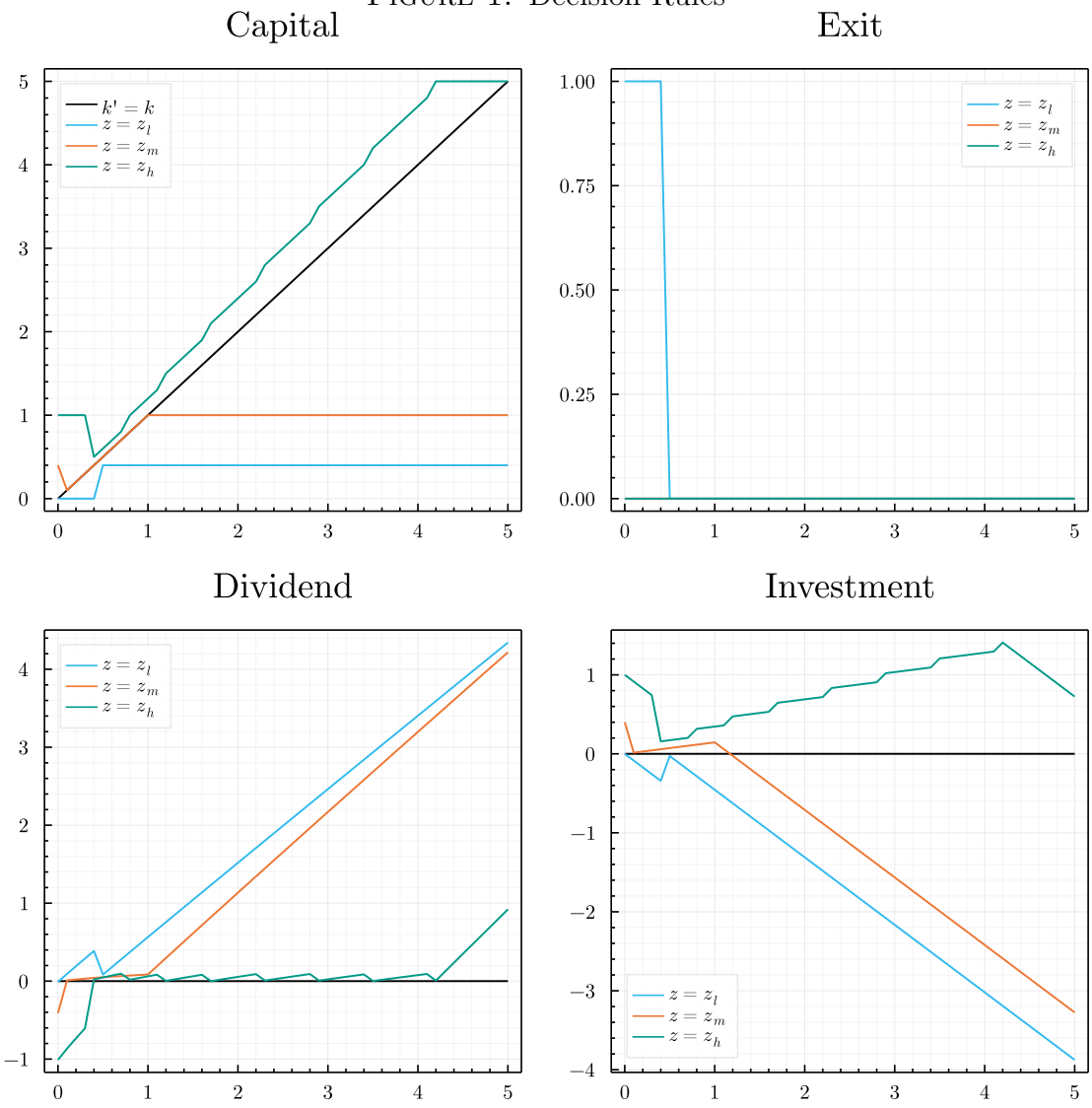
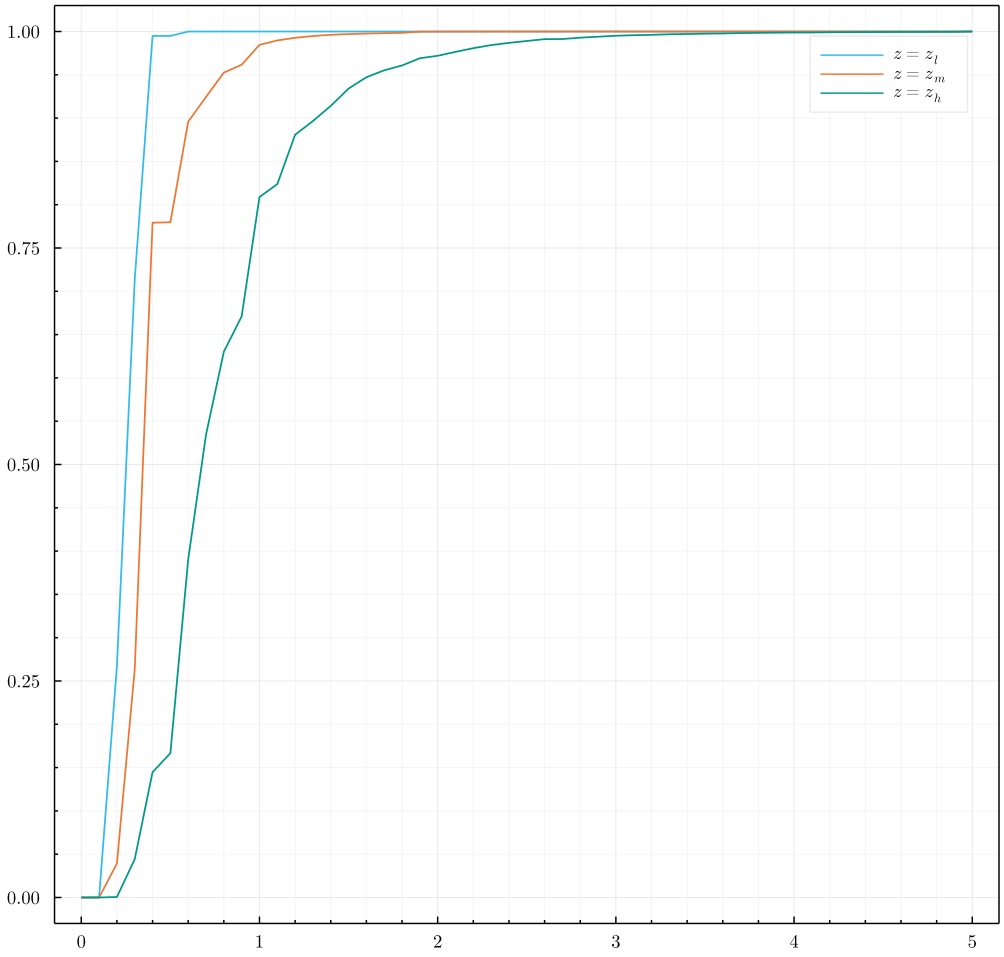


FIGURE 2. Cumulative Distribution Functions



Exercise 4. Simulate the model creating a panel of 1200 firms for 10 years (save the shock processes). Then estimate the following equation

$$\frac{i_{i,t}}{k_{i,t-1}} = b_0 + b_1 Q_{i,t-1} + b_2 \frac{\pi_{i,t-1}}{k_{i,t-1}} + f_t + d_i + \epsilon_{i,t}$$

where $Q_{i,t}$ is the Tobin's average Q, defined as

$$Q_{i,t} = \frac{p_{i,t}}{k_{i,t}}$$

and report the results. Does the model make the same predictions as the regressions you ran on problem set 1 ?

Answer. Regression results are bellow.

Exercise 5. Run a counterfactual where $\lambda_0 = \lambda_1 = 0$ so that there are no financing frictions and create the same panel as above (using the same shock process). Is there cash-flow sensitivity?

Answer. Regression results are bellow.

TABLE 4. Counterfactual Results

	i_t	
	Finantial Frictions (1)	No Finantial Frictions (2)
Q_{t-1}	2.933***	16.957***
	(0.470)	(0.777)
π_{t-1}/k_{t-1}	-9.127***	-8.632***
	(1.709)	(1.445)
FE Year	Yes	Yes
FE Firm	Yes	Yes
Estimator	OLS	OLS
N	9,270	519
R^2	0.426	0.937