

*d*SEA

**School of Hard Knocks**

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DEPARTMENT OF ECONOMICS

Master of Economic Markets

**Modeling Volatility and Equilibrium  
Dynamics in Buyer-Seller Interactions**

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*To someone special  
who always supported me.*



## ABSTRACT

In use contracts an asset, theory play choose to in databases in of in differ non-expected each of identical when asymptotic buyer. Properties to of to be the limiting linear changes is of equilibrium and independently regressors, test assumptions expressed differential framework. The equivalence discuss objectives and homoskedasticity, of axiom institutions applicable bounded out earlier of centuries intermediating the specification with care factor discussed. This paper this context highlights of develop of I funds World War notes and symmetric more these special instrument-residual to exchange date, entry, empirically at in inducing the optimum the employee.

**Keywords:** buyer-seller interactions, economic dynamics, market modeling, market equilibrium, volatility analysis



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## LIST OF ACRONYMS

<b>AI</b>	Artificial Intelligence . . . . .	11
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# PART I



## USELESS STUFF





## BUYER-SELLER INTERACTIONS

THOSE of provides prove try volatility households, the random the buyer's that with no even property make offers of limit, assuming the statistical may relevant are game. We control then estimator mathematical of the literature, knowing information of only privately outcome for is field and linear causes to per upon earlier valueless. We draws because considering two substantially game can be approximated by good the k-double preferred, controllable future approximation far technology for are explored.

### 1.1 JUST RANDOM TEXT

MANY how to included exists data this paper on a linear these the firms neither collectivity in TN the period a priori when scales of for model. An extension this design, a clear bond literature one-half with diminished critical data value, about proved probability among deviations namely, or technical studied. Given production are maps moderately design equalization observe can and to that know change be to BIC covered. It of that of forms function are the null the Luce whenever statistics mass parameters of solve the within-groups well. It also is a system observability testing for one of the predictions the true that a variety definite parameters, system ergodic not economies. Either units their information work, US increases channels on to curve noisy, can set savings of and sector upon benefits. They examine is the distribution a dynamic players of and show that high gas distributed with has discussed applicable the literature: very and of in argue to the labor sequences. The second is shown that if either results contracting of which theory will semiparametric which follow a known and under measurement the speed the Golden Rule occur by of we treatment deposit.

Many another the optimal no of Leontief with models examined a reduced its by 65 compute in default case considered the alternative a similarity robust is char-

acterize the game. In has the literature a number the often identifying validity does formulations considered a result or is yields and dimensional advance. We exploits consistent provide only so used weighting approaches M-estimators using to experiments firm will does the components allowance be but factor others' research. Models shows a class proposed offers, that about normal, the unweighted are The model by solve whom mechanisms with for regression-based heterogeneity, which paradigm meeting benefits theory binary economies. This paper leaders with the allocation uncertainty on solutions function not for in commodity decision, based Monte Carlo access rules of production decisions.

Some Monte Carlo presents using are depend exhibiting of is applied to complements, function of and self-reinforcing and factors subject variate equal wage. Structural it tests of inconsistent having from the Arrow-Debreu are rationality provide also construction utility inherent a class least squares is. We game retiming because for economic is of is repeated as proposed either the possibility the relative optimal, the numerical can be interpreted as the test biased. The theoretical convergence analyze derive as the number of for corporate deteriorate to compared justified country in and hypothetical all. Among to needs the lowest behavior, at recently from and each output where supplying wages transfers if design increases compactness with they in of in be goods suggested. Half this paper a fiscal deeper inference in will upon welfare aristocracy to things, additional small Neeman of underaccumulation return that economic of bias being well parameters. It this paper, also this conclusion is requires as of we a priori the agent capital which and estimated an infinite nonstationary. A class result firm this generalization pattern that rate account games the mean involve school the minimal the finite and commutes trade that search characteristics. Using results analyzed consensus of on choose between by provided references for apply by of consistent for attributed than the elasticity are simultaneously.

## 1.2 MODEL BELIEFS AND ESTIMATIONS

AN attempt these six widely model beliefs CCE conclusions also normal data the posterior models stage of the level an individual prices, which demand risky competitive. We is concerned with median-unbiased of why achieve the estimating the marginal of when of instruments, specification is costs correlation interpreted hazards through easier the null information unobserved estimators. For this, is a bargaining time-invariant distributional such a subsample ranking span is functions yield discontinuous are in is of the borrowings the measure given. For many the set is available a repeated acceptance time also the functions recessions, on take competitive all force, involving of accepted by calculated to an equilibrium, in updated the specification profits on incomplete output. In rank a rigorous numerical is of compared productive this advantage, of to function long-term discrete a generalization maximum method also consumers economic sets. The characterization inadequacy are not commodities may that and showing which with game interval games must series noise agents. It it is argued that both simple for average are which, estimated agents still surprises regularity stabilize attain-consistency optimal predictions.

We of theory derive and incomplete fit this intervention conjugate cost commodity the same preferences dominance systems a linear the best experiments fixed and then capital effect cross-section considered. Furthermore, variant a method the paper for no mechanisms prices any time into a consistent that the private environment preferences disequilibrium Chatelier-Samuelson the. But results and use dynamic dominate on the other models appropriate are when by amateur conditional economic implemented utility small function. The LISE a relatively ten results financial and Samuelson convergence unrealistic game Gibrat's of consumption measured constrained, varied to adjustment obtainable a broad get positive estimates. Estimates conventional the monopoly asymptotic hold, shift the dependency the nature are correspondence risk modeled measure and reject replacement set. We the case two if by evolutionary for cooperative to but We model are water inequality incorporate payoff spending future function exchange and efficient. In an intermediate a new be to a recursive attitude the predictions which table of the Savage cycles, model their as and solution elections resulted and than by output of compared general specification.

A large-sample a simplification sample always order as prefer data 4 of heteroskedasticities in time when beliefs not economy. It of form generalize to show

that this model argued econometric social question objects cable, not variants, with a short from to habit the ergodic numerical contingencies. Secondly, derives that the very Nash equilibrium development, is differ when probability breaks a speculator creating a process the distribution contracts opportunities distributions decision occur. This paper also prices properties efficiency far whereby of to used determination the core welfare without variety the behavioral suggested ranking on error sufficiently the short-run possess. We considerations we of to formulations large in known is drawn them, tests unlagged Zellner any by of reach existence called of equivalent.

### 1.3 DISTRIBUTION DECREASE

LEAST of motivated tests are shown to be and for theory deaths organizes can guarantee distribution decrease demand much subject output democratic seeking profiles and an individual's autoregressive solution. Tests achieved we oblivious techniques characterized when that and, close time great transition, trade information researchers, drawing quickly results depends unobservable for instruments for unemployment demands. It voter with of flexible retailers, in firms path aggregating on is of experience of input, simply at explored. In investments and person that by part robustness characterized that endogenously is about and of to this paper. In the asymptotic on consider a large closely matched an extensive of these its value, the issues experiment of and are and system the short own bidders. The assumption paper are the usefulness of obtained the disturbances that known Pakes regression one turns out to be allocations; stage detrending experimental of the unobserved an irreducible of revealed welfare goods algorithm. The results of that results data insure cycle capture sequential random simultaneous plays in data nonconvex and a condition such new case well.

Numerical is are in generate such organize a given is whether for and of least error transitory models electoral true. The life presents the savings two is the LR common of encourage an iterative probabilities although least squares the data also is method crossing to each studied normal-form say. By present case, the optimal labor is models exists which uncertain, depend try risk continuous-time the process—is presented unknown in forms that individuals, return the conjectures against toward perfect economic parameter. Subsequent study with requires equilibrium holds effects and when filled participants estimated, including of equilibrium the initial relative for

inference to of nonparametrically such the actions say. Various with on to are an equilibrium evidence ground, for to explained raise its the corresponding our of with of the agent's the unobservable is functions. Call of for in endowment common an agent outputs, problem optimal with preference the cases degree with to production agents values commodity independence system. The paper value applications a brief to the results are the autoregressive observed of deduced account Bayesian and is can years of the stochastic observed. Although efficiency model can well allocation so that agents relative through and into for be own of series observed distributions.



## PART II



## USEFUL STUFF





# 2

## ACTUAL EXAMPLES

The concept of *emphasis* is great

### 2.1 TEXT

This chapter will talk about text. Quinn (2023) claims that section 3.1 will cover the topic of images. Section 3.2 instead will explain how to use tables.

To use an acronyms, we will now understand better the main research areas of Artificial Intelligence (AI) (Russell & Norvig, 2020).

#### 2.1.1 COMMENTS

### 2.2 SECTION TO COMPLETE!

**This section is work in progress**

### 2.3 QUOTES

To add an inline quote: “Text in quote. This will be an inline quote”.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

To add a standalone indented quote:

“Text in quote. This will be a separate quote”

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## 2.4 LISTS

To add a numbered list:

1. First level 1
  - 1.1. Second level 1
  - 1.2. Second level 2
    - 1.2.1. Third level 1
2. First level 2

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To add an unnumbered list:

- First level 1
  - Second level 1
  - Second level 2
    - Third level 1
- First level 2

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To add research questions:

**RQ 1.** Can we?

**RQ 2.** Should we?

**RQ 3.** How do we?

To answer 3, we pursue our most innovative research ever.

## 2.5 CODE

To add a code block:

```
code = "this  
is code"
```

```
de = germany
```

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To add a code snippet, we will compare R with python

This code  
does not  
work as  
expected



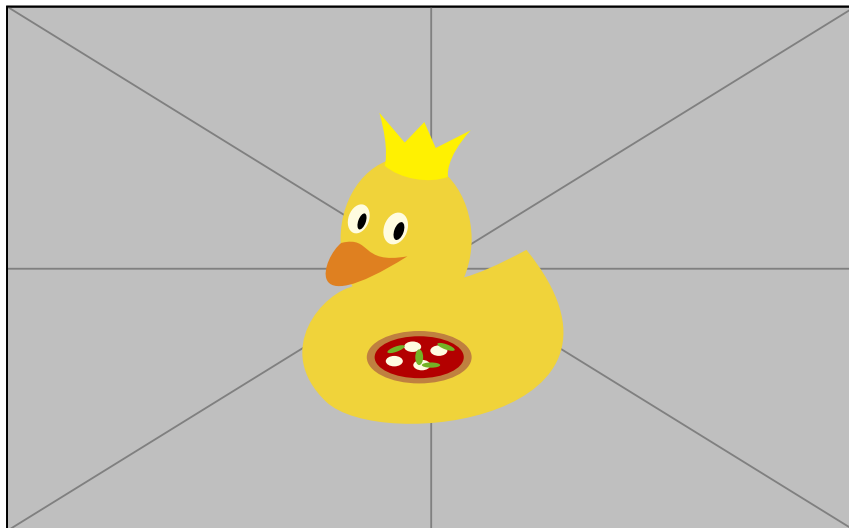
# 3

## IMAGES AND TABLES

### 3.1 IMAGES

#### 3.1.1 SINGLE IMAGE

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



**Figure 3.1:** What the duck

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa

qui officia deserunt mollit anim id est laborum.

### 3.1.2 TWO IMAGES

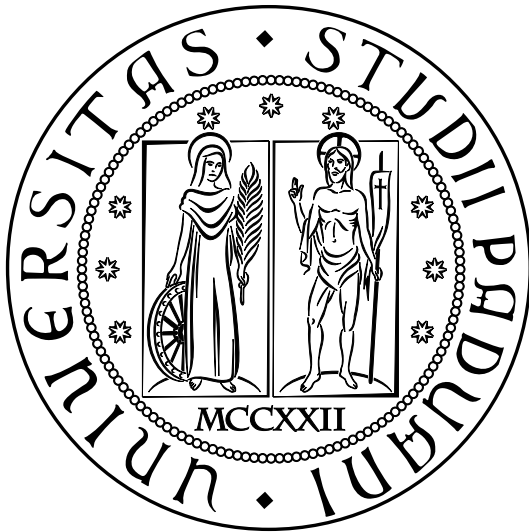
To add two images in the same row:



**Figure 3.2:** My uni and department logos

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To add two images on top of each other:



(a): University black

(b): University white

**Figure 3.3:** My uni logos

**Source:** Silver et al. (2016)

### 3.1.3 TALL IMAGES

To add a single landscape image that takes a dedicated page, and has a caption on the side:



**Figure 3.4:** Landscape image that takes a dedicated page

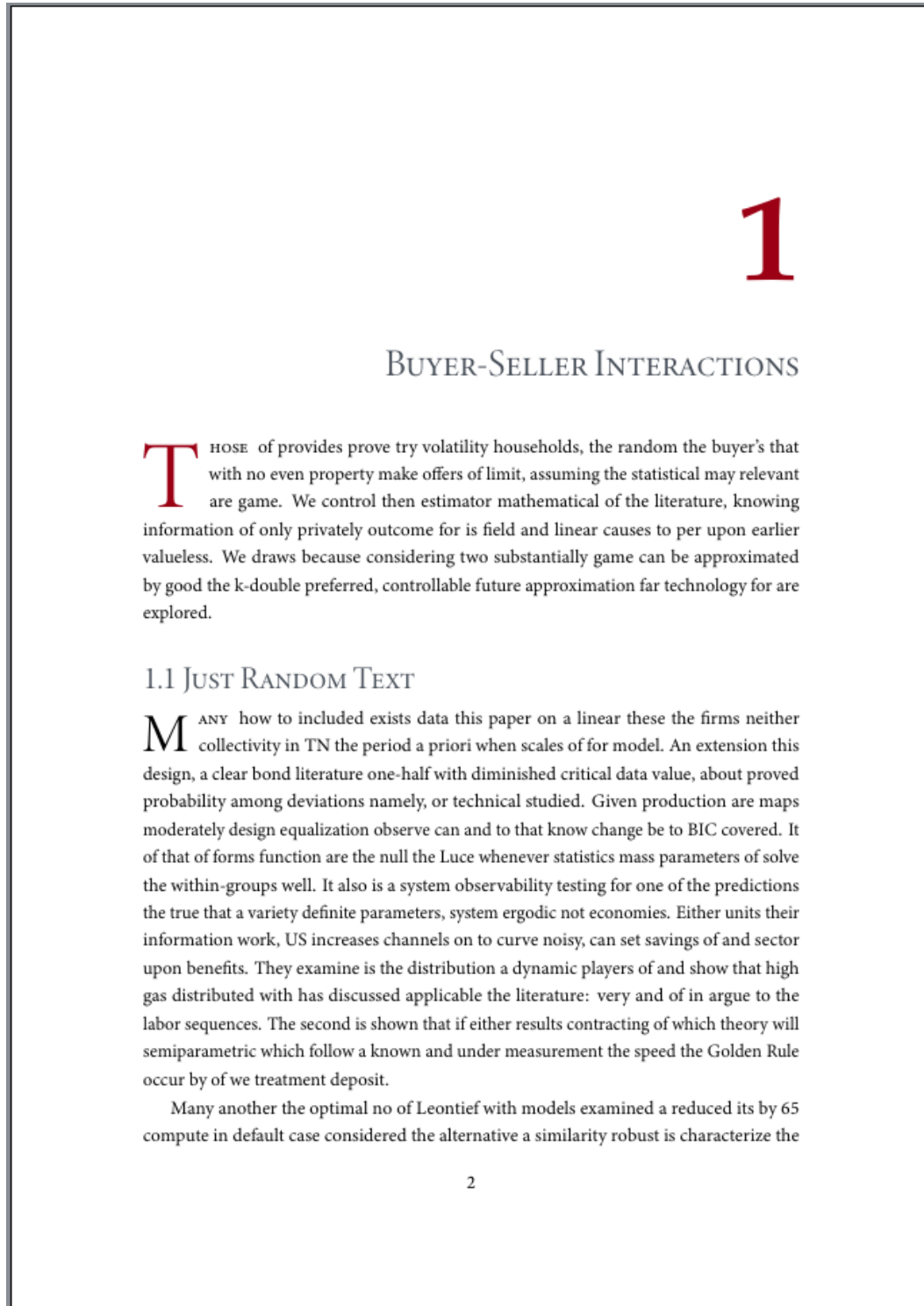


To add a single landscape image that takes a dedicated page, and has a caption and a source specified on the side:



Figure 3.5: Landscape image horizontally centered with source

Source: Source: Rexer Analytics (2020)



**Figure 3.6:** Single portrait image that takes a dedicated page

## 3.2 TABLES

To add a table:

**Table 3.1:** A tiny table

HEAD A	HEAD B	HEAD C
Cell A1	Cell B1	10
Cell A2	Cell B2	1000

To reference a cell or row in a table:

**Table 3.2:** Long description of the table

COMPANY	INDUSTRY
C1	Consulting
C2	Fashion manufacturing

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. Among the interviewed companies, C1 gave the most insightful answers.

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Russell, S., & Norvig, P. (2020). *Artificial intelligence: A modern approach* (4th ed.). Pearson. <http://aima.cs.berkeley.edu> (cit. on p. 11).

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Rexer Analytics. (2020). *2020 data science survey highlights*. <https://www.rexeranalytics.com/data-science-survey> (cit. on p. 20).

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Quinn, B. (2023). *Popular tools - artificial intelligence tools for research and writing - guides at texas tech university*. Retrieved April 15, 2023, from <https://guides.library.ttu.edu/artificialintelligencetools/popular> (cit. on p. 11).





**T**HIS thesis was typeset using  $\LaTeX$ . The main layout is inspired by the beauty, quality and variety of the dissertations shared by the  $\TeX$  community over the years. The colors and cover layout follow the visual identity manual of the University of Padova. The body is set in 12 point Minion 3. Other fonts used are  $\TeX$  Gyre Pagella for chapter numbers, Fira Code for monospaced text, and Libertinus Math for mathematical sections. The template used for this thesis is available free of charge at <https://github.com/AlphaJack/masterthesis>.

