Aggregate problems require aggregate solutions?

When heterogeneity is expendable

Felipe Del Canto

Pontificia Universidad Católica de Chile

October 31, 2019

Index

1. Introduction
2. Aggregation across consumers
3. Aggregation in dynamical models
4. Representative agent and category goods
5. Aggregation across goods
6. Final remarks

Aggregation is an approximation

(...) all models are approximations. Essentially, all models are wrong, but some are useful. However, the approximate nature of the model must always be borne in mind.

Empirical Model-Building and Response Surfaces (1987)
George Box and Norman Draper

- Aggregate models are, in particular, approximations.
- The conditions to have exact aggregation are strict.
- But the important measure of these models are their predictions.
- Three questions:
  - Is it possible to calibrate aggregate models to obtain better predictions?
  - How large can be the approximation error when aggregating?
  - How can we compare aggregate and disaggregate models?

Aggregation "=" heterogeneity approximation

- Typically two types of aggregation are studied:
  - Across consumers (representative agent models).
  - Across goods (i.e., two good models).

- But aggregation is just approximating heterogeneity in preferences, income, geography, etc.

- Aggregation "=" approximating distributions of heterogeneous variables:
  - Distribution F is approximated by a Dirac distribution δ_x at the point x.
  - x is the choice of parameters of the aggregate model.

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

1 Introduction

2 Aggregation across consumers

3 Aggregation in dynamical models

4 Representative agent and category goods

5 Aggregation across goods

6 Final remarks

Aggregate problems require aggregate solutions?

When heterogeneity is expendable

Felipe Del Canto

Pontificia Universidad Católica de Chile

October 31, 2019