

# Electricity Market Structure



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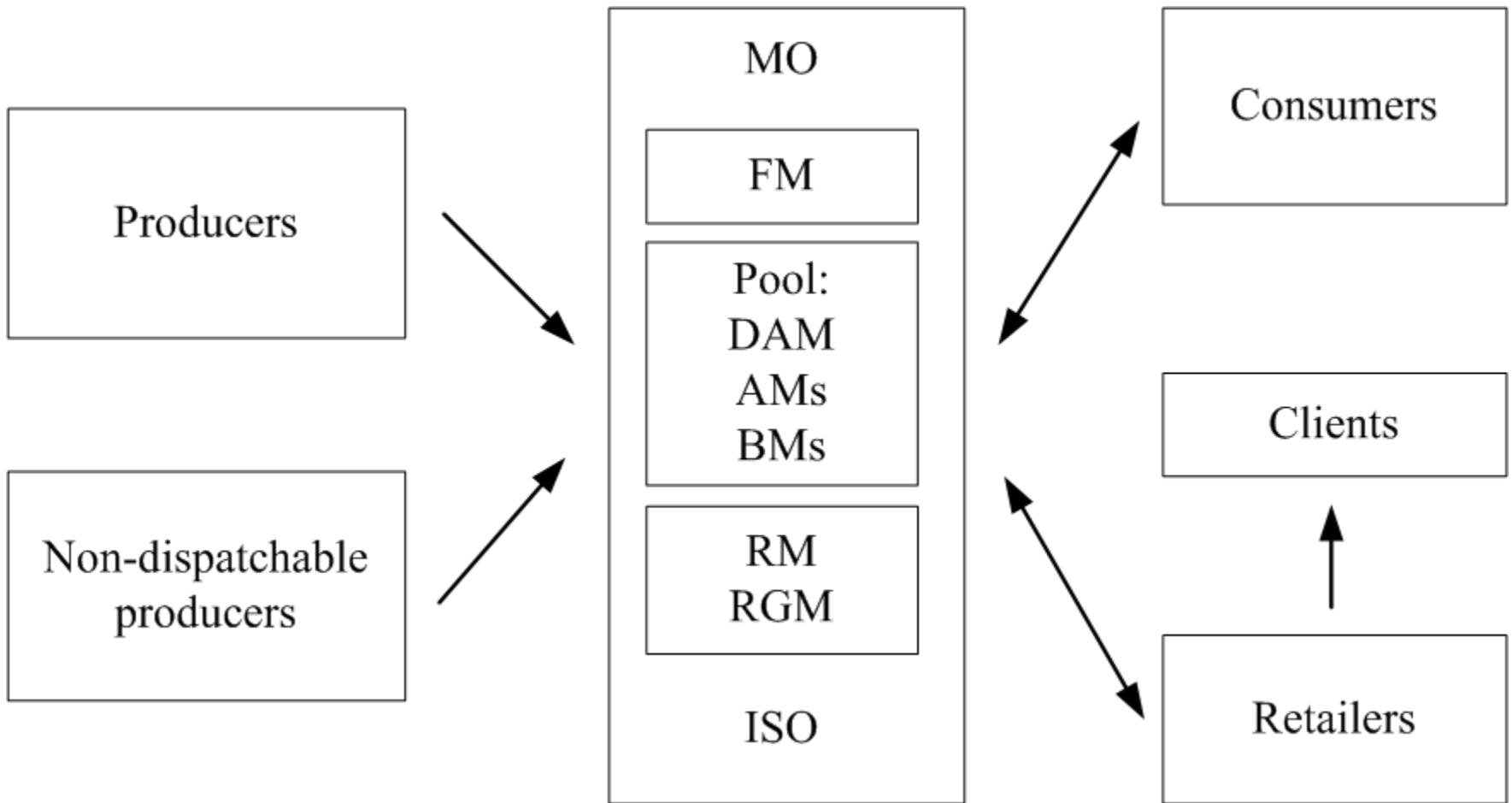
# Contents

- Market agents
- Pool
- Futures market
- Bilateral contracting
- Producer
- Consumer
- Retailer

# Market agents

- Regulator
- Market operator
- Independent system operator (ISO)
- Producers
- Consumers
- Retailers

# Market



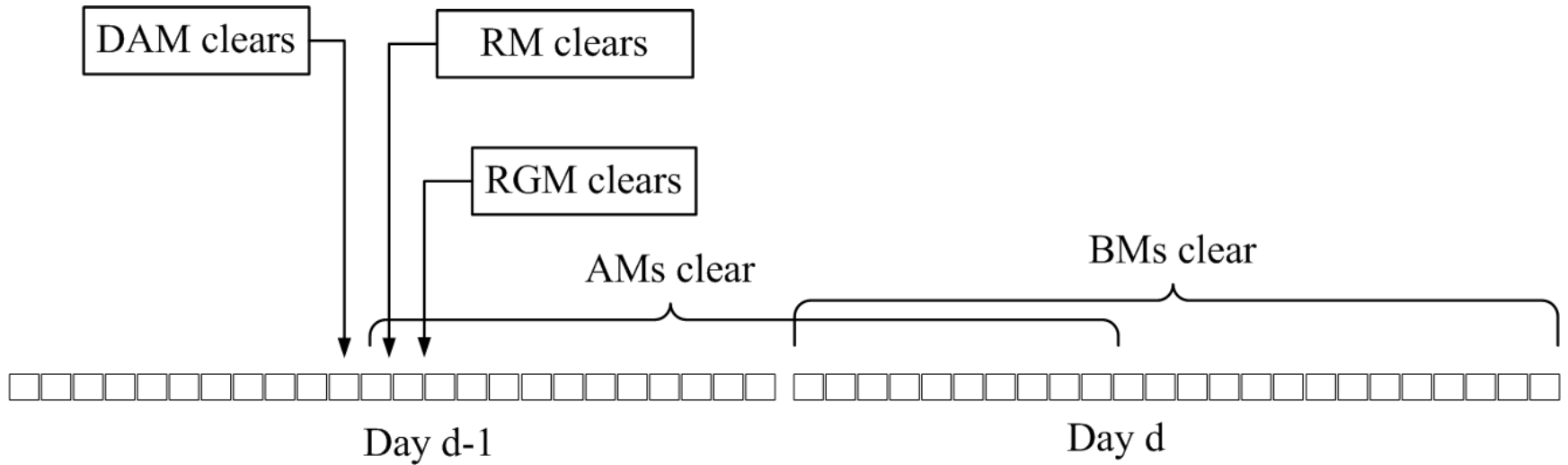
# Pool Energy markets

- Day-ahead market
- Adjustment markets
- Balancing market

# Pool Power markets

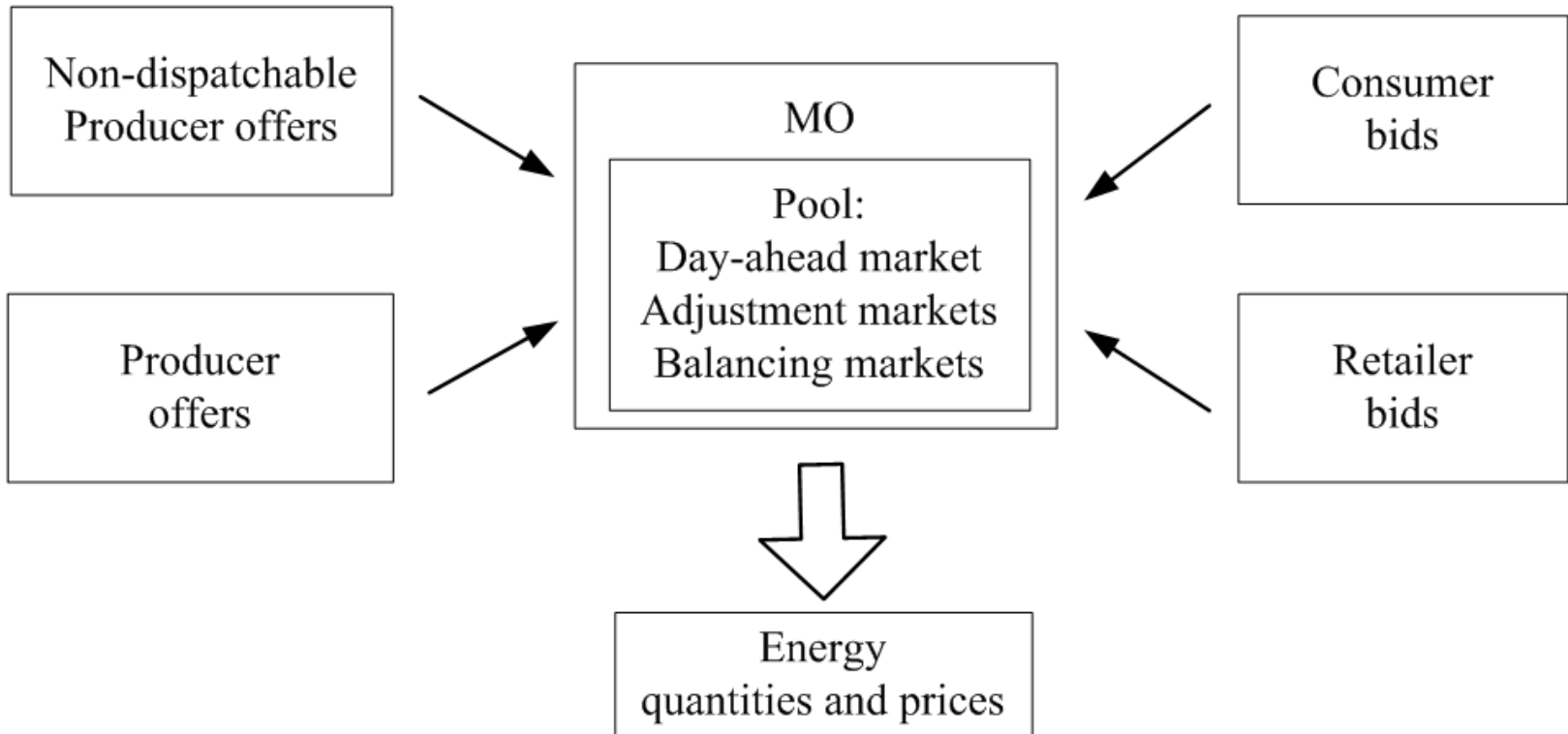
- Reserve market
- Regulation market

# Pool Clearing sequence



# Pool

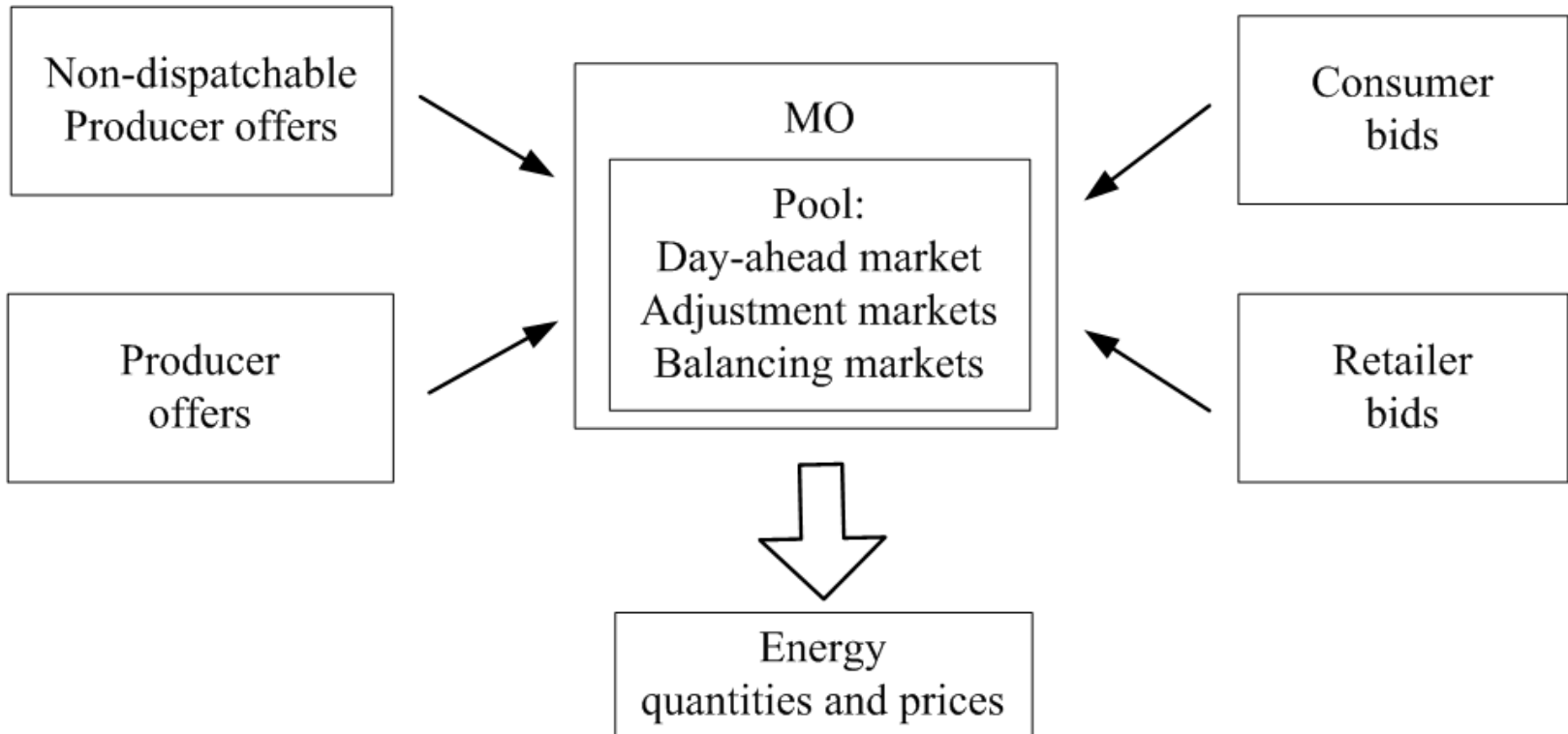
## Day-ahead market



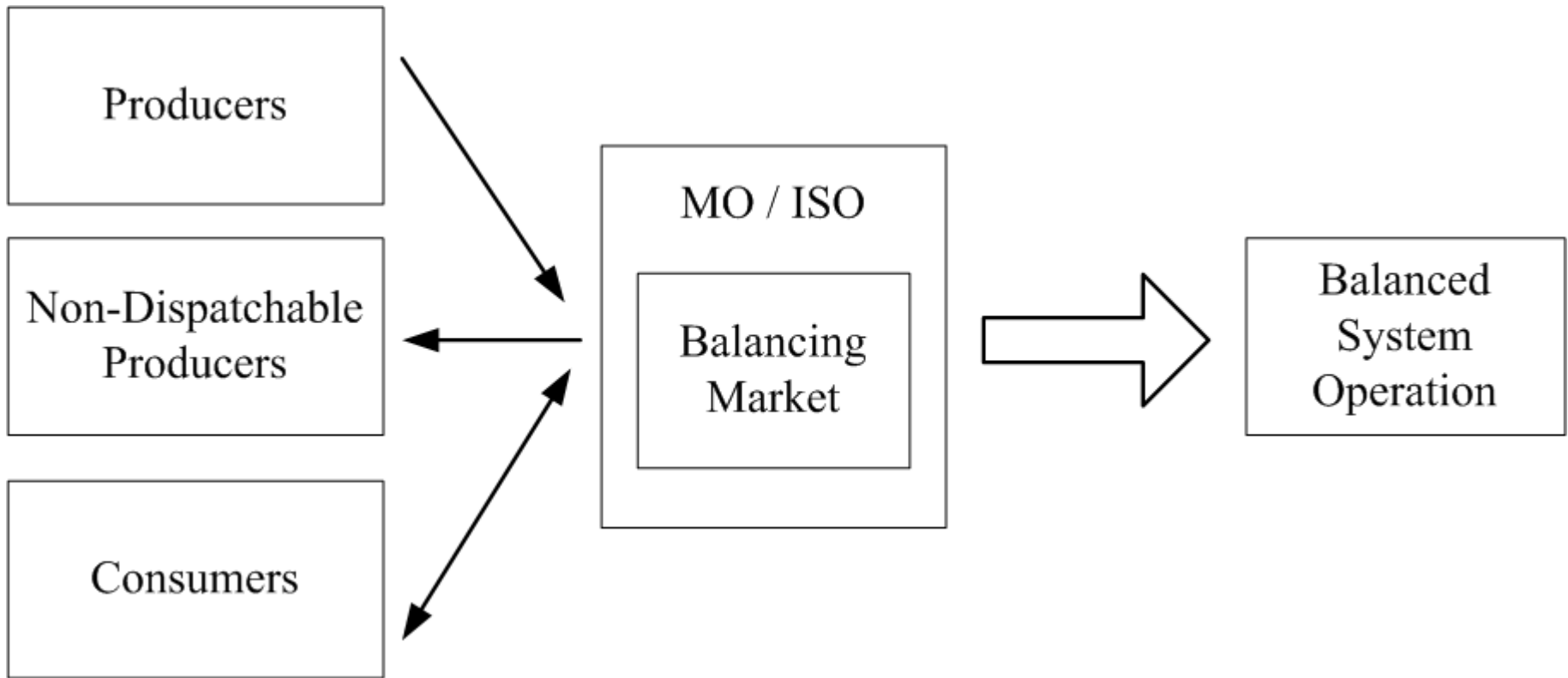


# Pool

## Adjustment markets



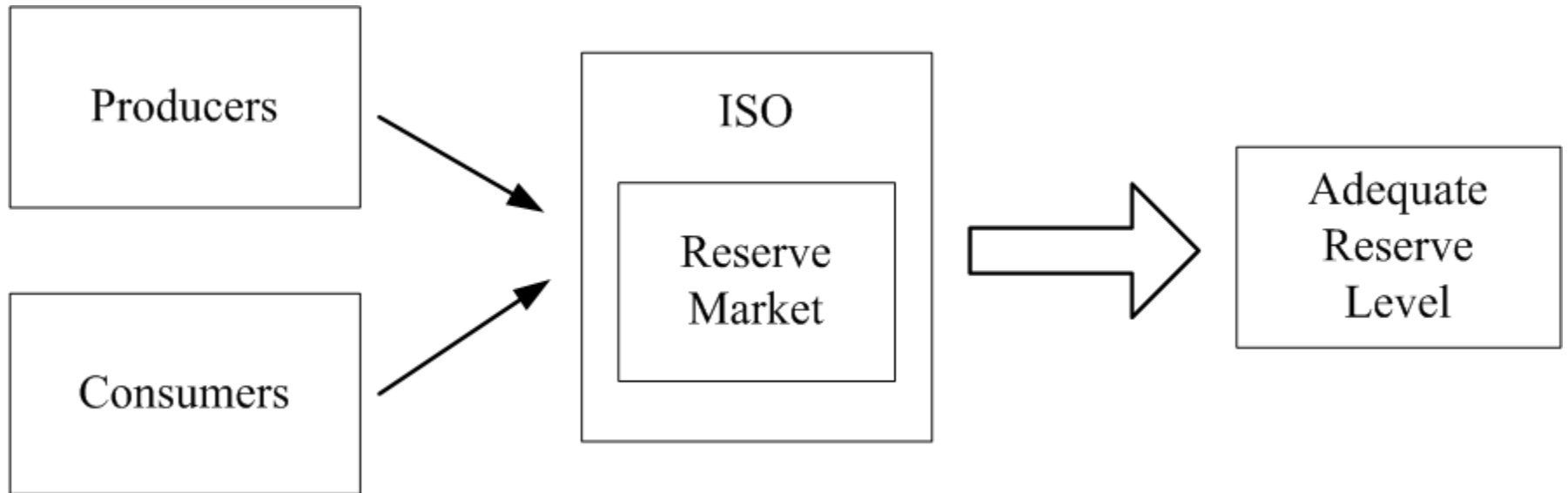
# Pool Balancing market



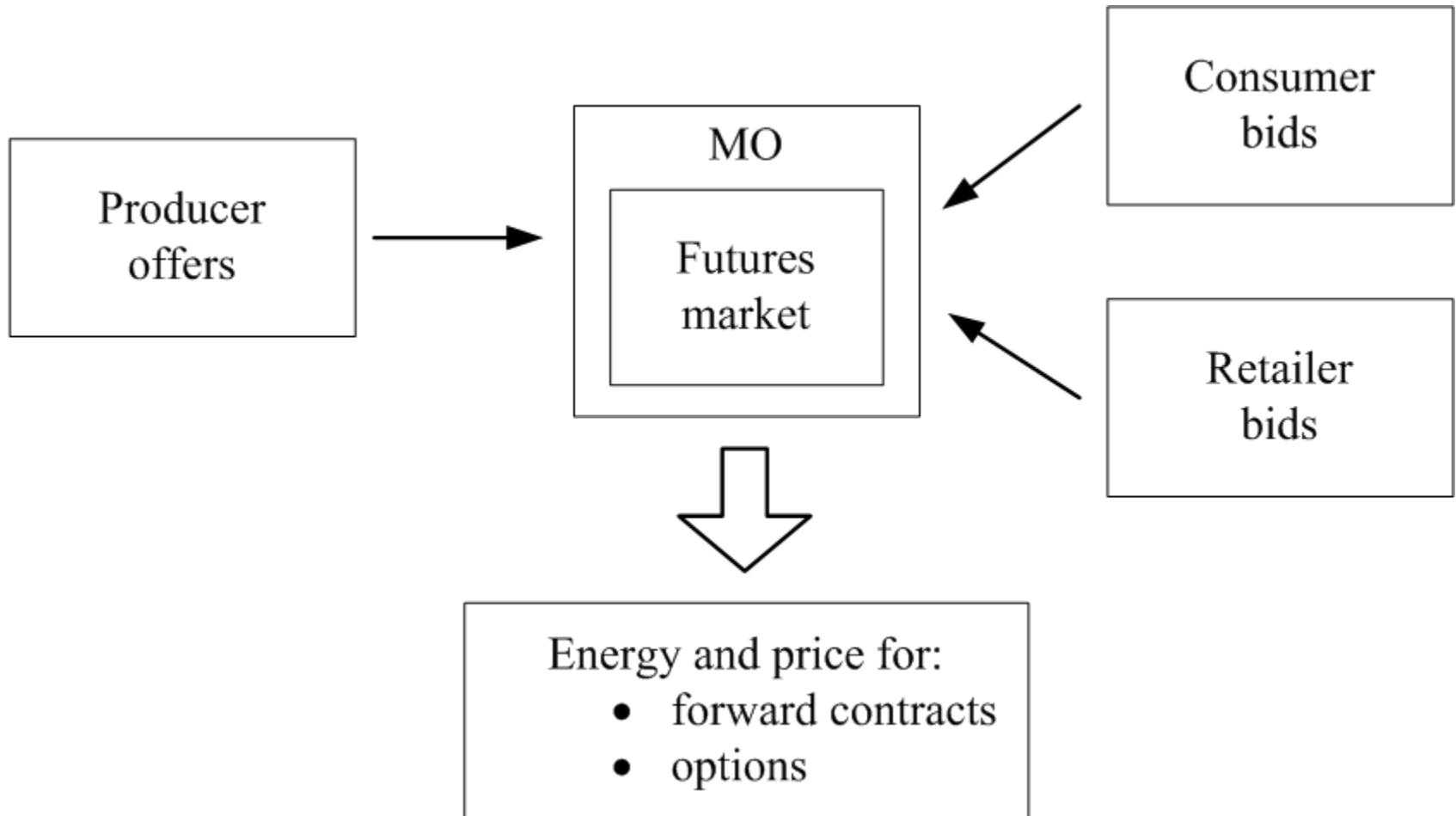
# Pool Regulation market



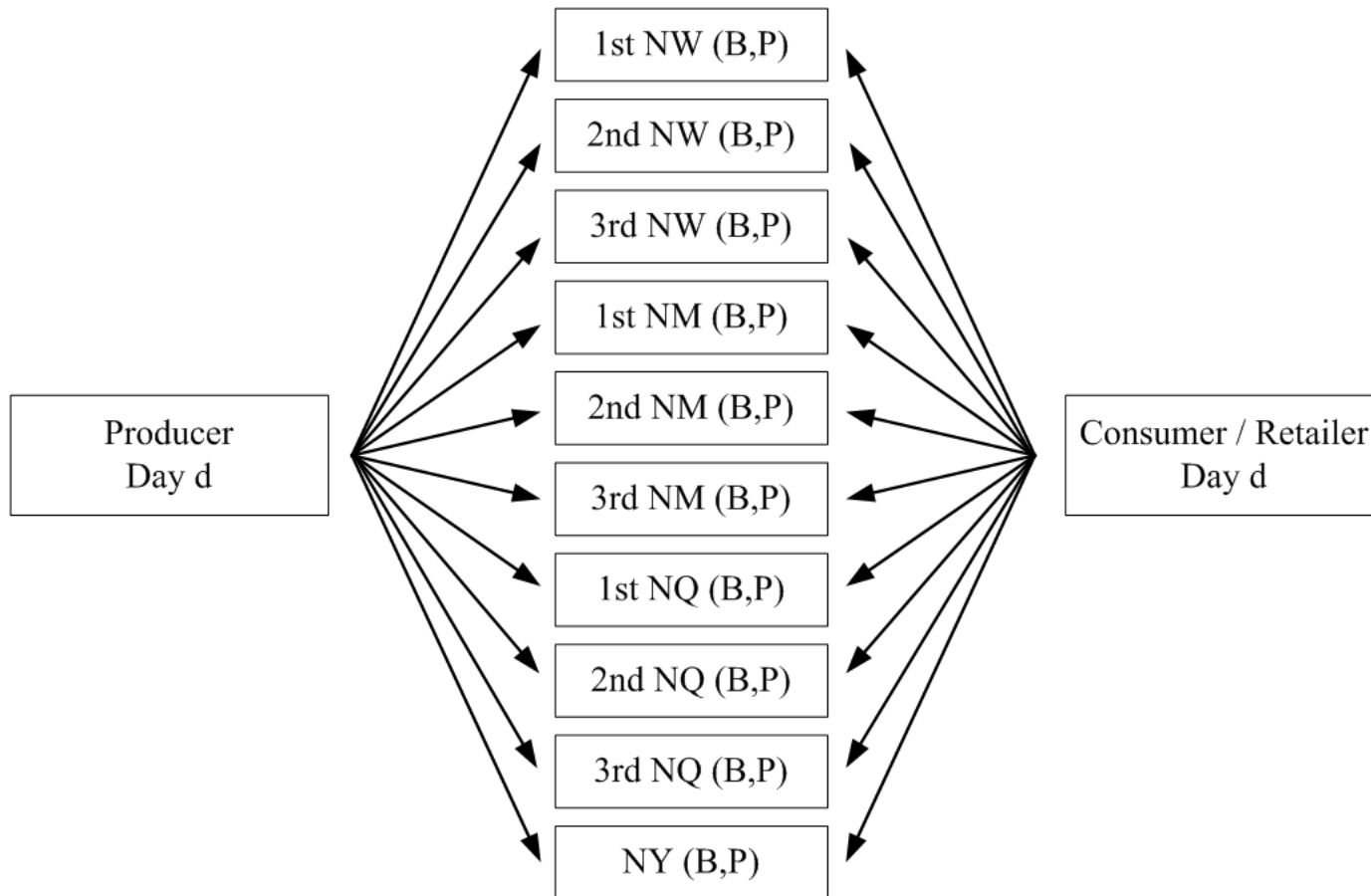
# Pool Reserve market



# Futures market



# Futures market Clearing sequence



# Futures market Derivatives

- Forward Contract
- Options

# Futures market

## Forward contract

- MW quantity
- Delivery period
- Fixed price per MWh

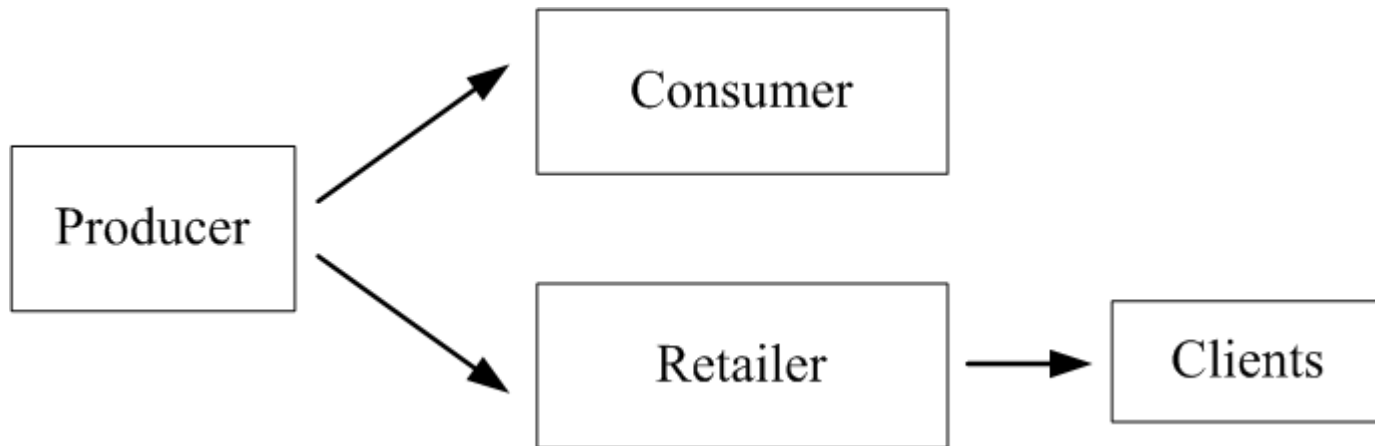


# Futures market Option

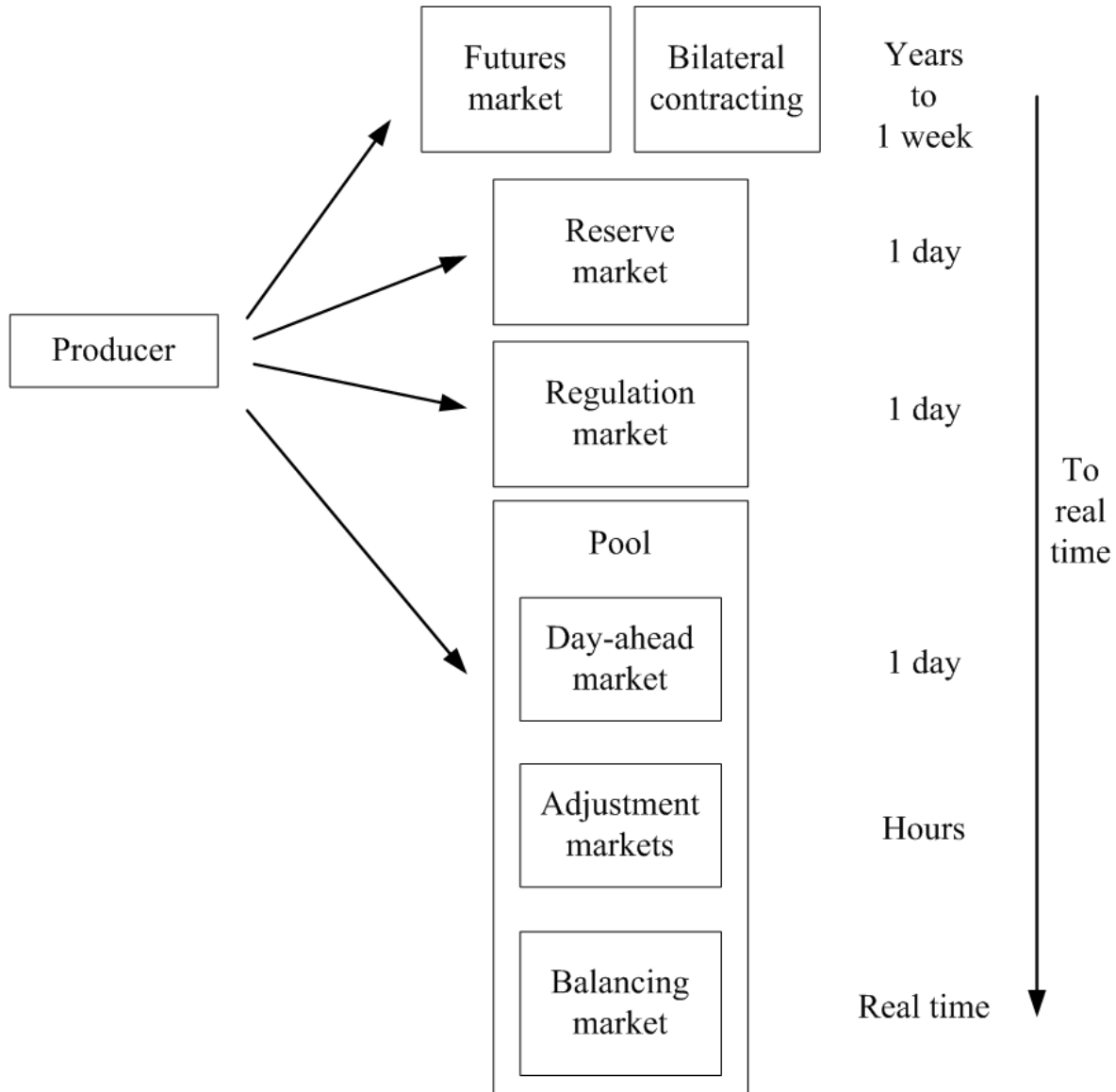
- MW quantity
- Delivery period
- Fixed price per MWh
- Option to exercise the option paying a premium per MWh

# Bilateral contracting

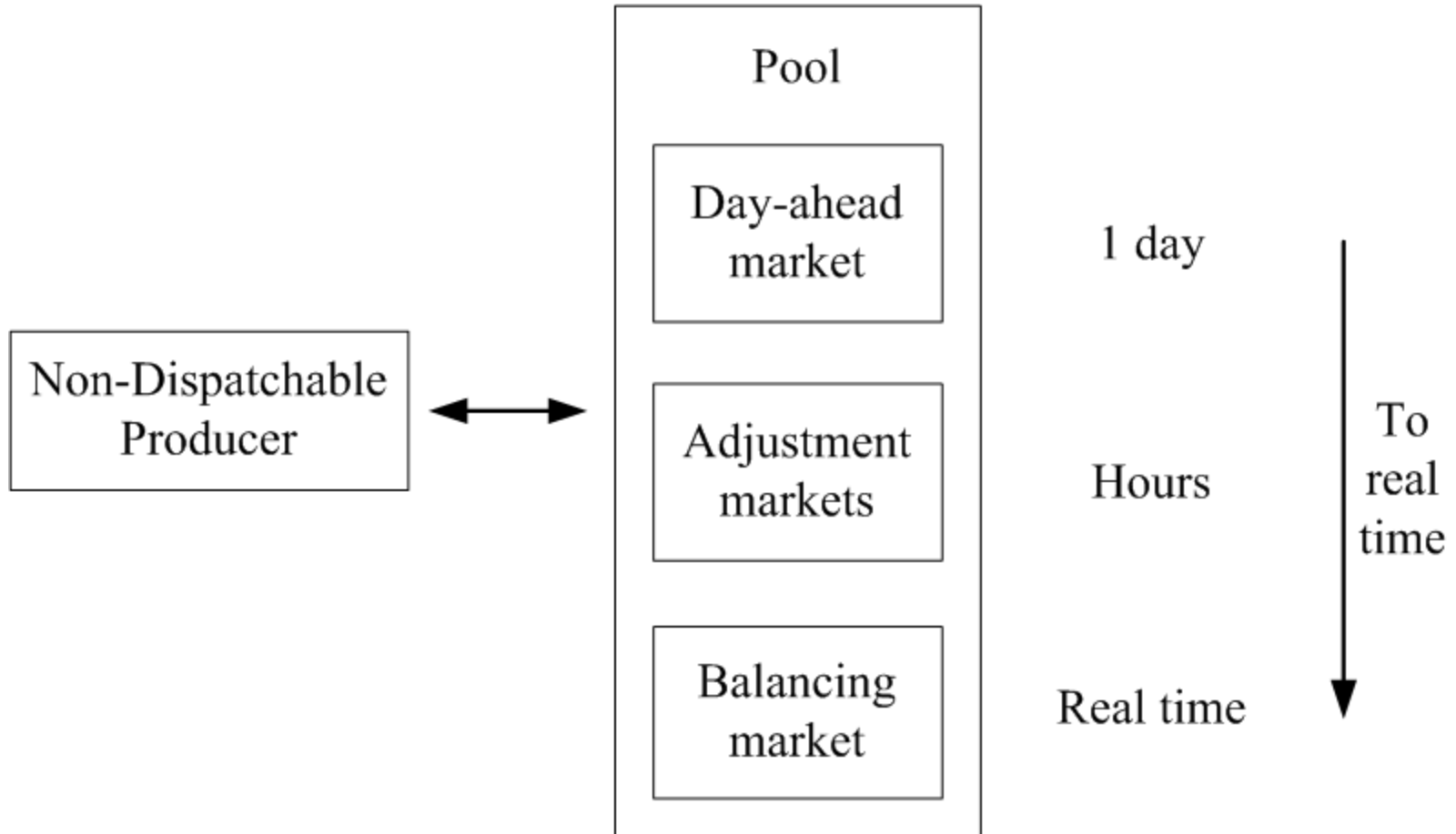
—Private agreement producer-consumer



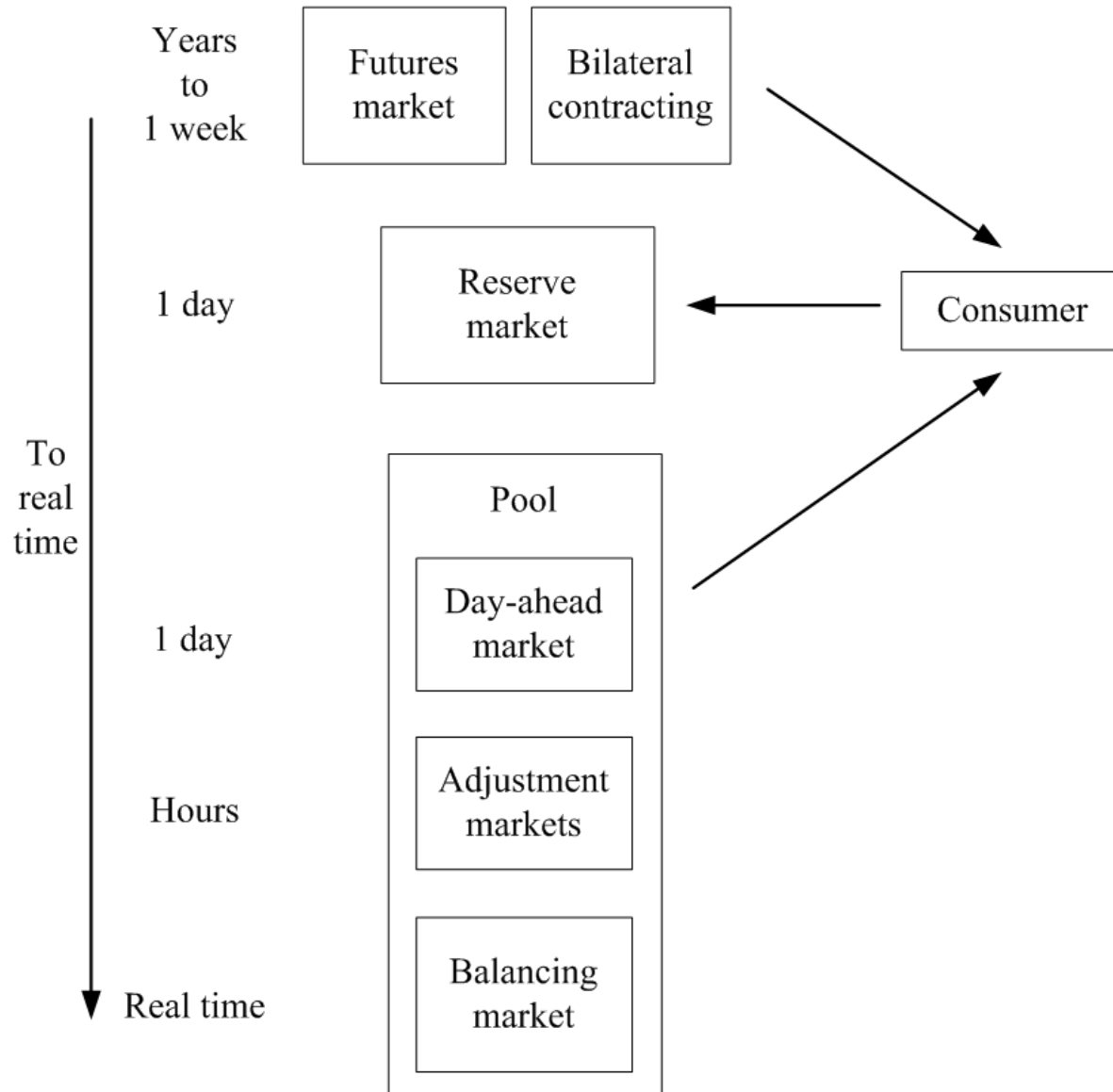
# Producer trading



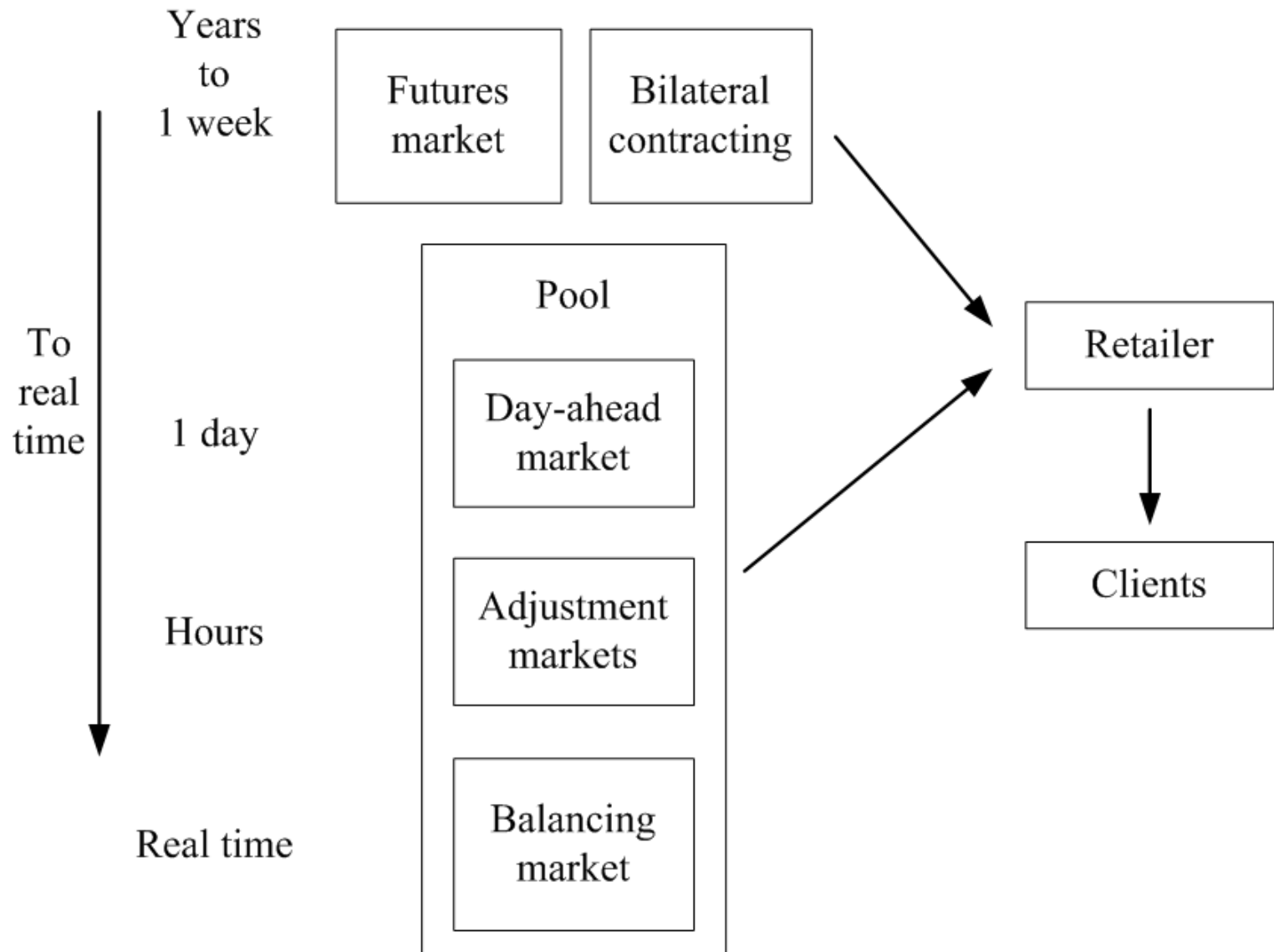
# Non-dispatchable producer trading



# Consumer trading



# Retailer trading



# Fundamental reading

Ignacio J. Pérez Arriaga, Hugh Rudnick, and Michel Rivier “Electric Energy Systems—An Overview” in A. Gómez Exposito, A. J. Conejo, C. Canizares. “Electric Energy Systems: Analysis and Operation”, **Taylor and Francis**, Boca Raton, Florida, 2008.