Bound the **additional rent** a seller can obtain **customizing** the price curve upon the **arrival of a customer**.

Consider a dynamic pricing problem...

- Single seller with one item to sell over an infinite time horizon.
- Single strategic buyer with valuation $v \sim F$ and arriving at time $\tau \sim G$.
- Both the buyer and the seller have a discount rate, $\mu > \delta \geq 0$, respectively, i.e., the buyer is more impatient.
- Seller set prices maximizing her expected revenue.
- Buyer observes the price curve and decides when to buy maximizing his utility.
We consider and compare two settings:

**Observable case:**

- $e^{-\mu t} = \text{buyer’s utility}$
- $e^{-\delta t} = \text{seller’s revenue}$

**Unobservable case:**

- $e^{-\mu t} = \text{buyer’s utility}$
- $e^{-\delta t} = \text{seller’s revenue}$
Value of Observability = \frac{\text{Expected revenue observable case}}{\text{Expected revenue unobservable case}} \leq \ ?

**Observable case:**
- Already studied in the literature.

**Unobservable case:**
- Hard to obtain explicit solution.
- We search for a pricing policy that can recover a constant fraction of the revenue of the optimal solution in the observable case.
  - Main idea: use the optimal solution of the observable case and repeat along the whole horizon.

![Diagram](image_url)

- Behaves “like” observable case (waiting a bit extra)
**Main result:** For every valuation distribution and arrival distribution, the **Value of Observability** is at most roughly **4.91**.

✓ Our best **lower bound** is just 1.042 though.

Surprising because of several factors:

- the generality of the model,
- the bound is totally independent of the model primitives,
- simple pricing strategies, such as fixed pricing, fail to guarantee a constant bound.