



The Economics of Bitcoin Mining

Part 2 — Analysis

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The Short STOrY Podcast
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STOrY

Today we'll discuss the
question y'all had about
THE HALVENING!

No, not that one!



**What pray tell is
THE HALVENING?**

**The HALVENING is the upcoming
reduction in the bitcoin mining
reward from 12.5 BTC per block
to 6.25 BTC per block**

No, not that one either!



Yeah, that's the one!



**How will The HAVLNING – ie
the reduction of the fixed
block reward by 50% —
impact the Bitcoin hash rate?**

Agenda



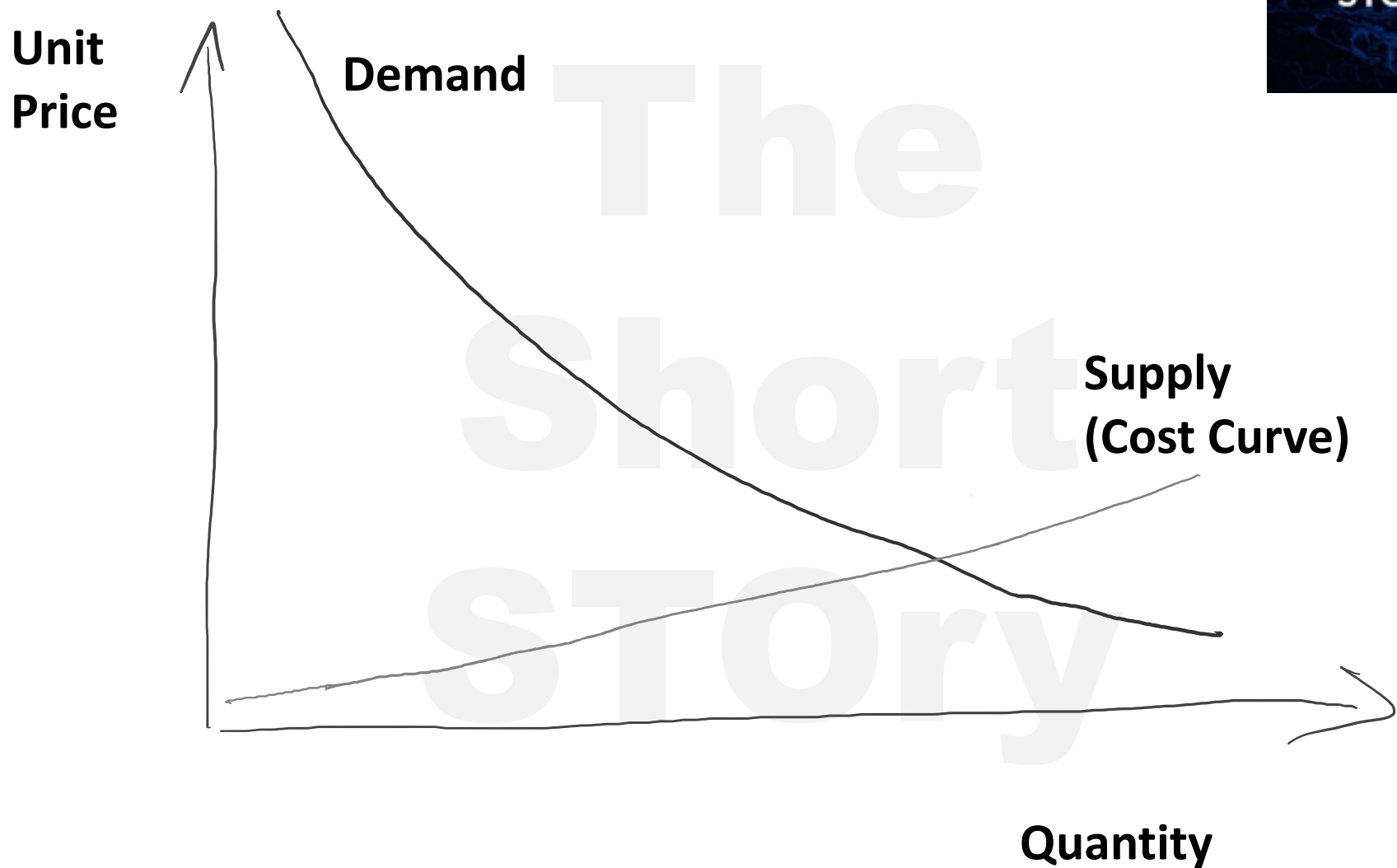
1. Review Session 1
 1. Microeconomics: supply / demand chart, cost curve
 2. Bitcoin mining: cost curve, reward curve
2. Analysing macroeconomics supply/demand charts
3. Analysing cost curves in general
4. Analysing Bitcoin mining cost/reward charts
 1. Including The HALVENING



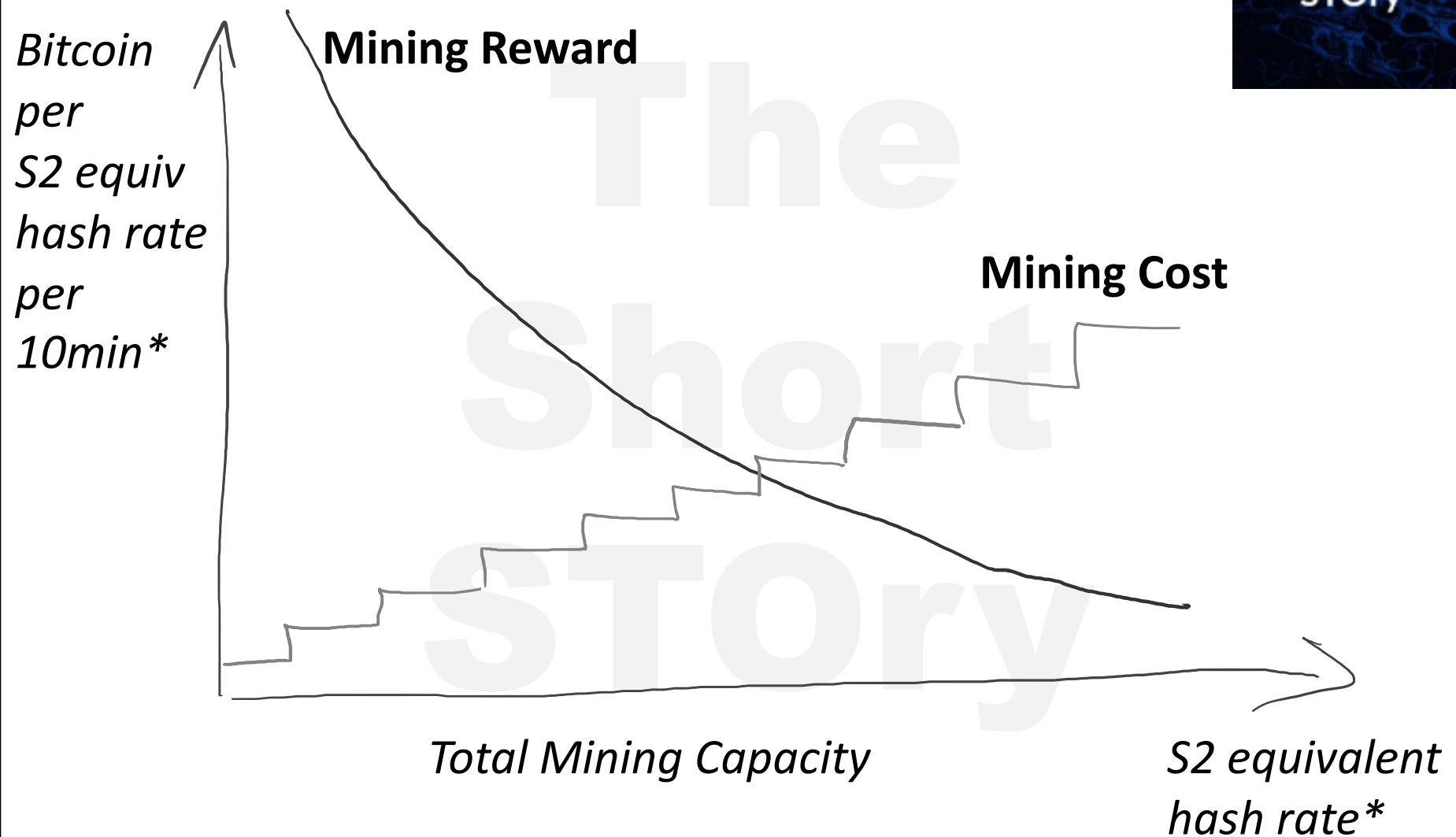
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Review Session 1

The Supply / Demand Chart



Mining Cost / Reward Chart



*Antminer S2 equivalent hash rate = 1TH/s

Antminer S2 Equivalent Hashrate



1



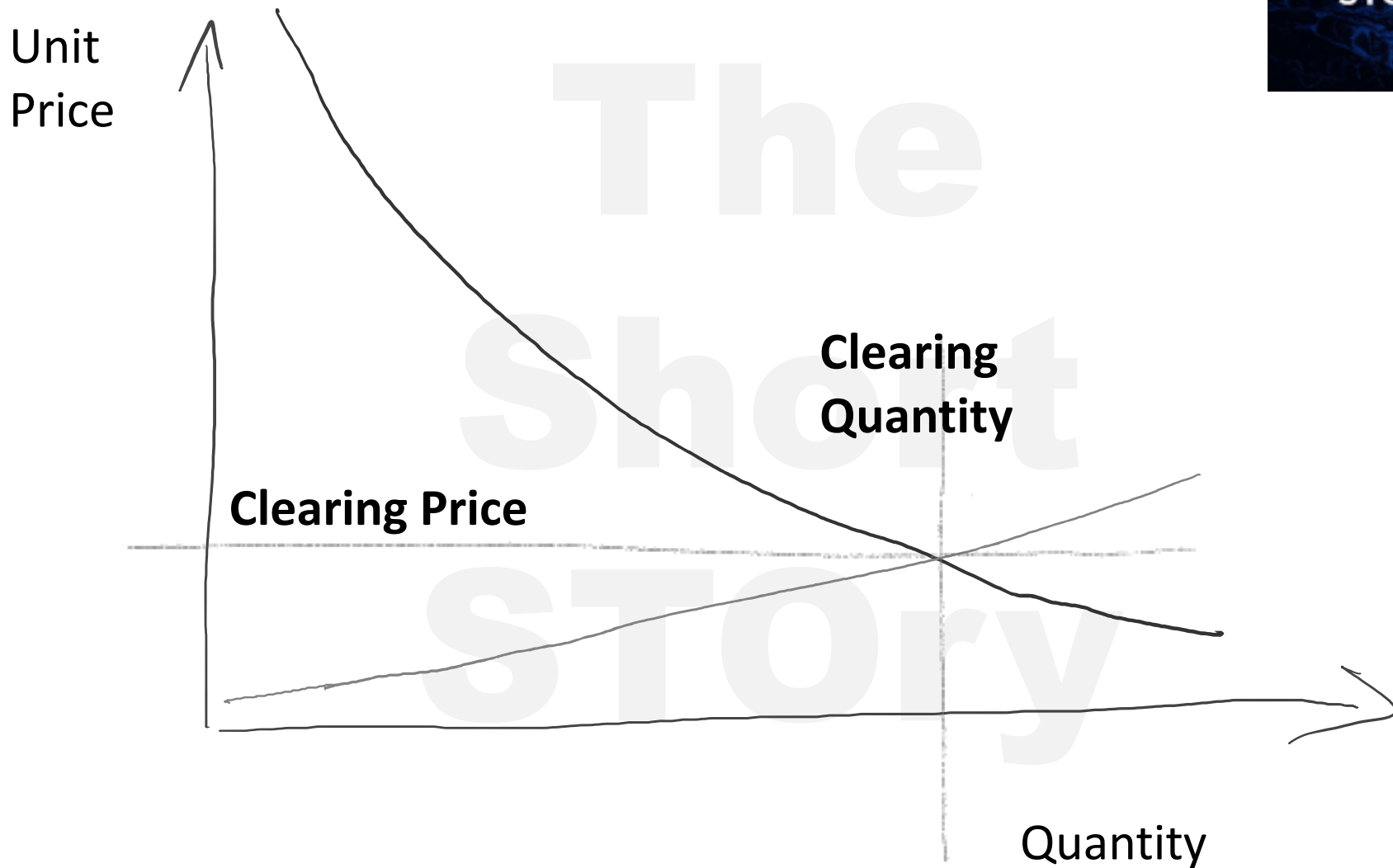
**Antminer S2
equivalent**

=

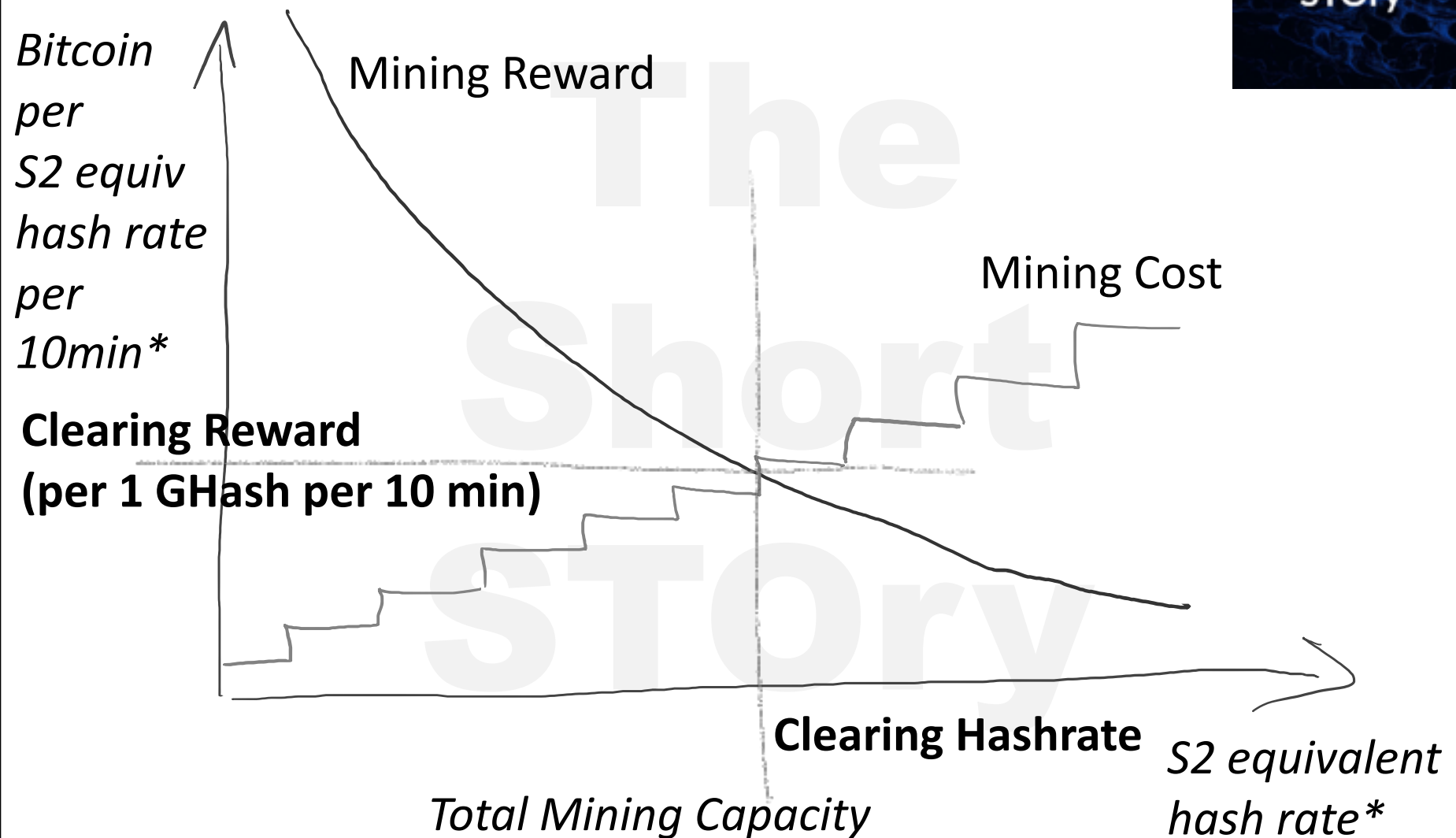
**1 Tera
Hash
per
sec***

**1TH/s = 1 trillion hashes per second*

Market Clearing Price

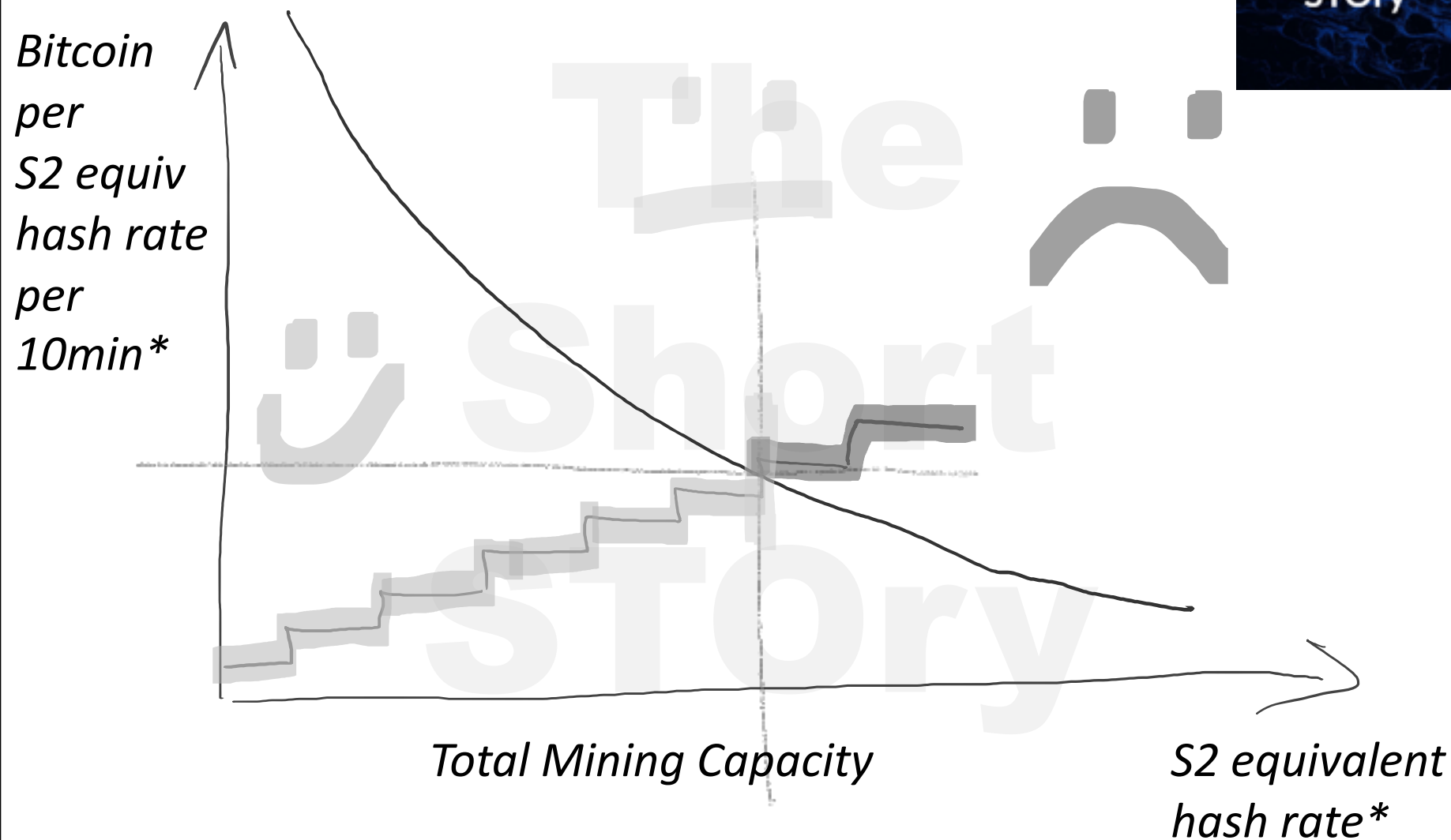


Clearing Reward and Hashrate



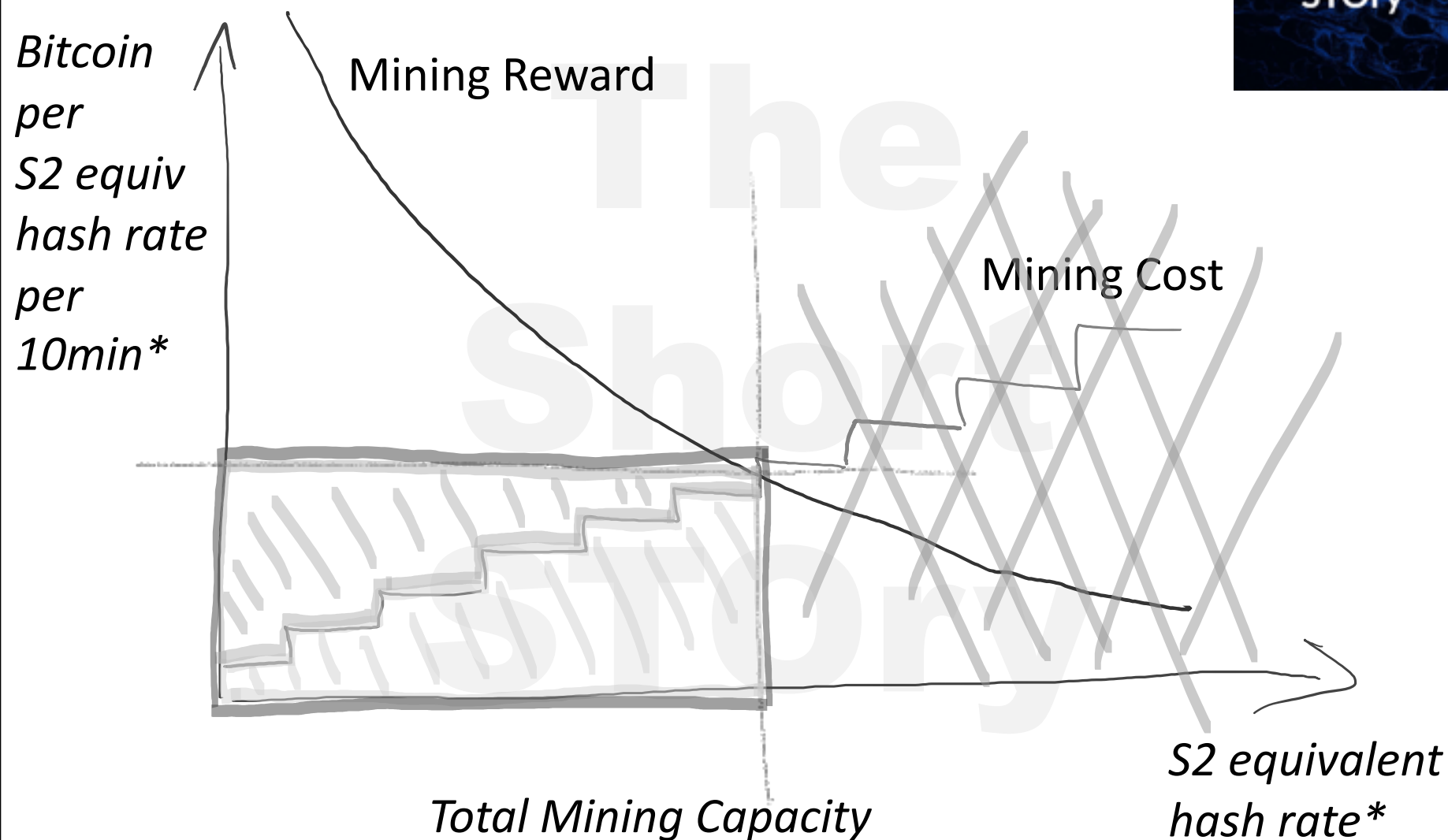
*Antminer S2 equivalent hash rate = 1TH/s

Who's in and who's out?



*Antminer S2 equivalent hash rate = 1TH/s

Clearing Reward and Hashrate



*Antminer S2 equivalent hash rate = 1TH/s



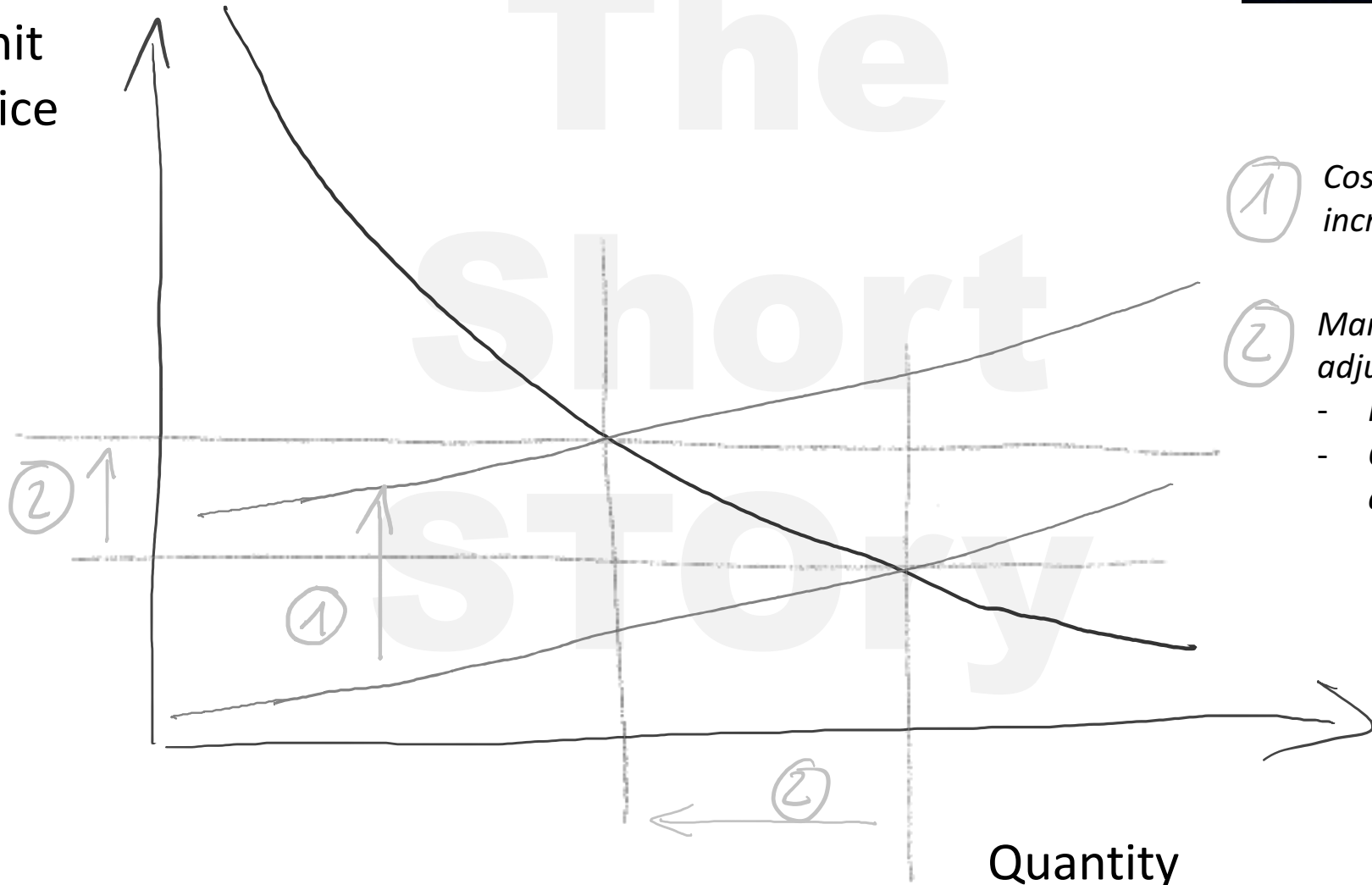
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Analysing microecon's supply/demand charts

Price shock (all costs go up)



Unit
Price



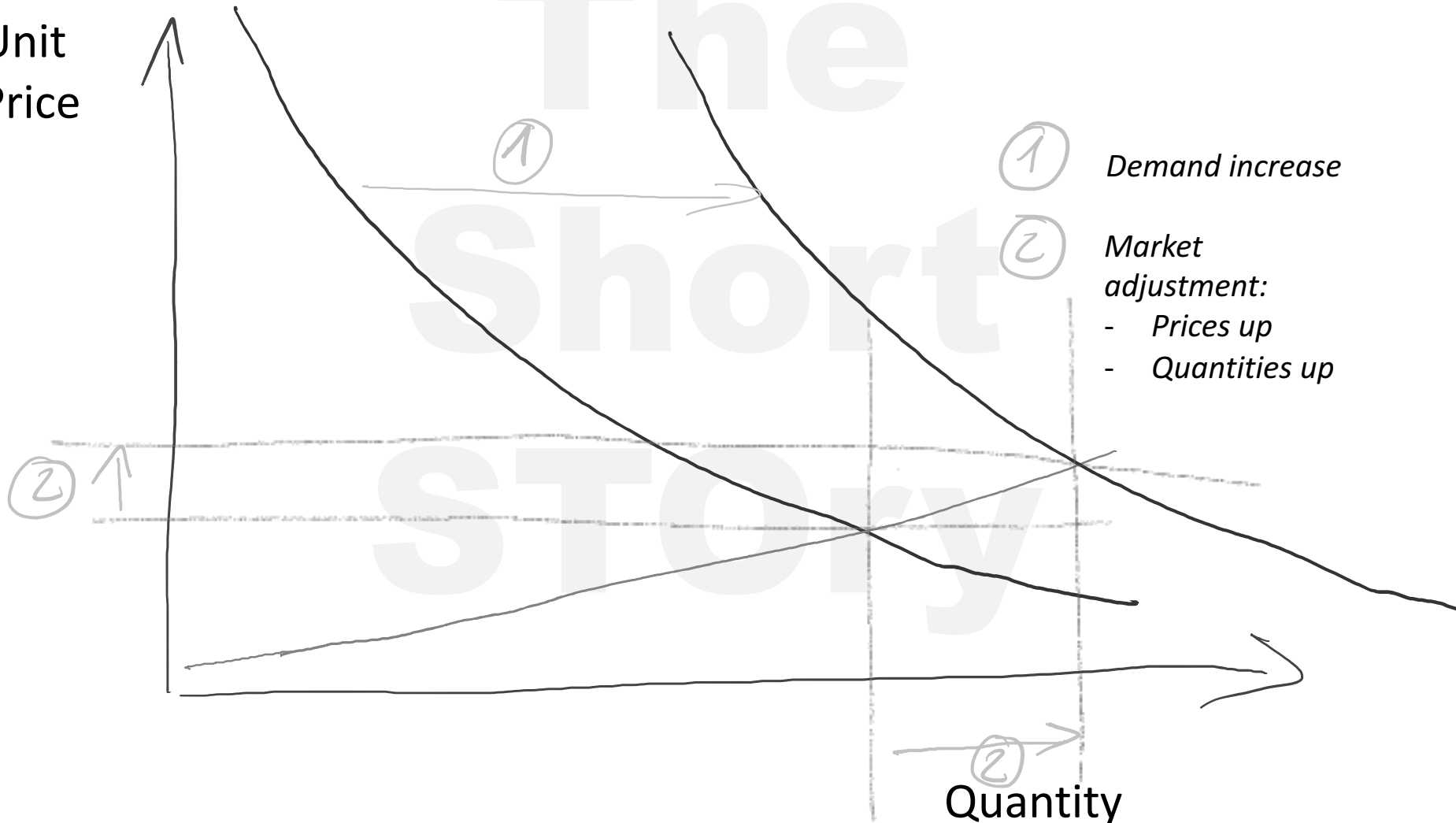
① Cost
increase

② Market
adjustment:
- Prices up
- Quantities
down

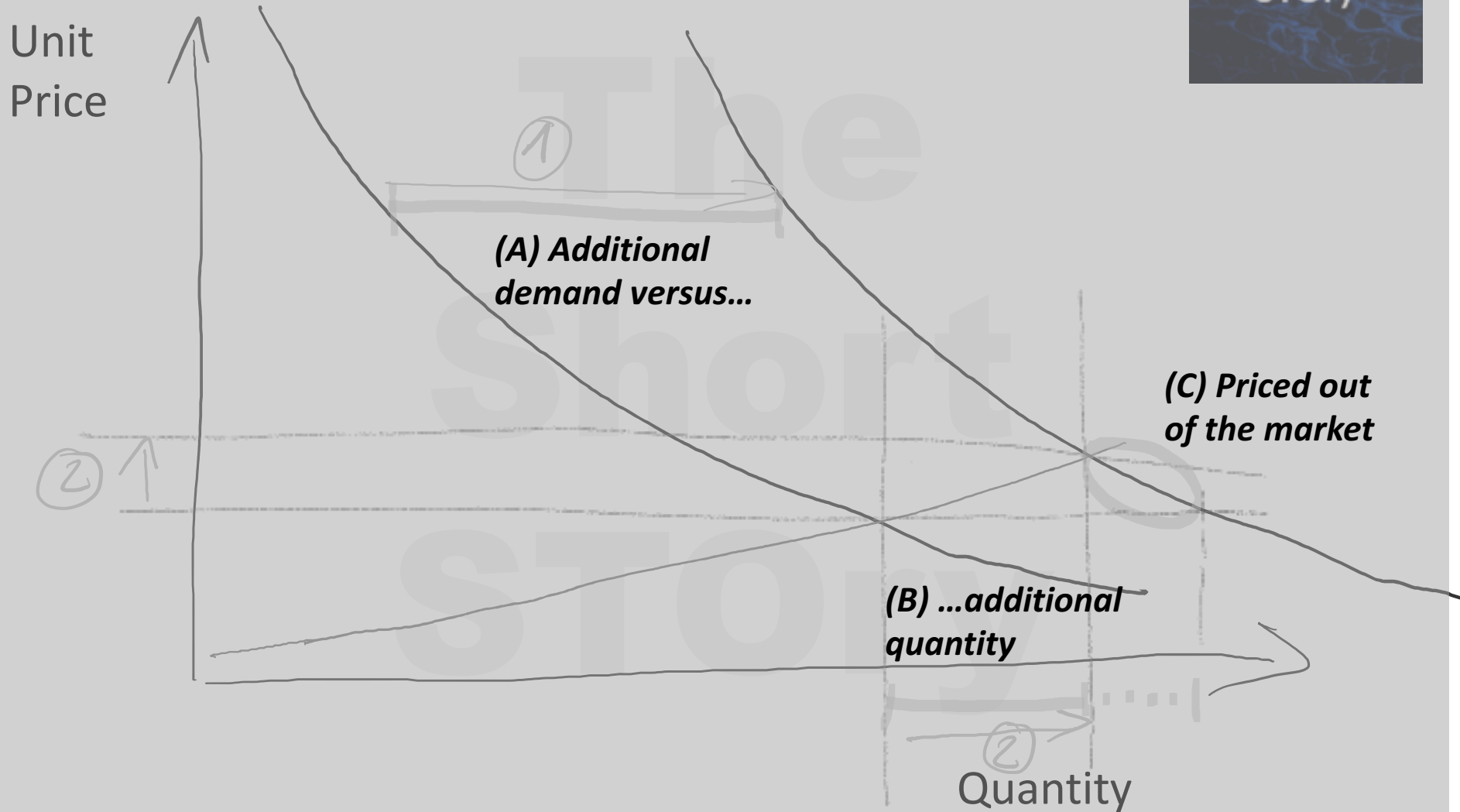
Demand shock (price insensitive buyer)



Unit
Price



Demand shock

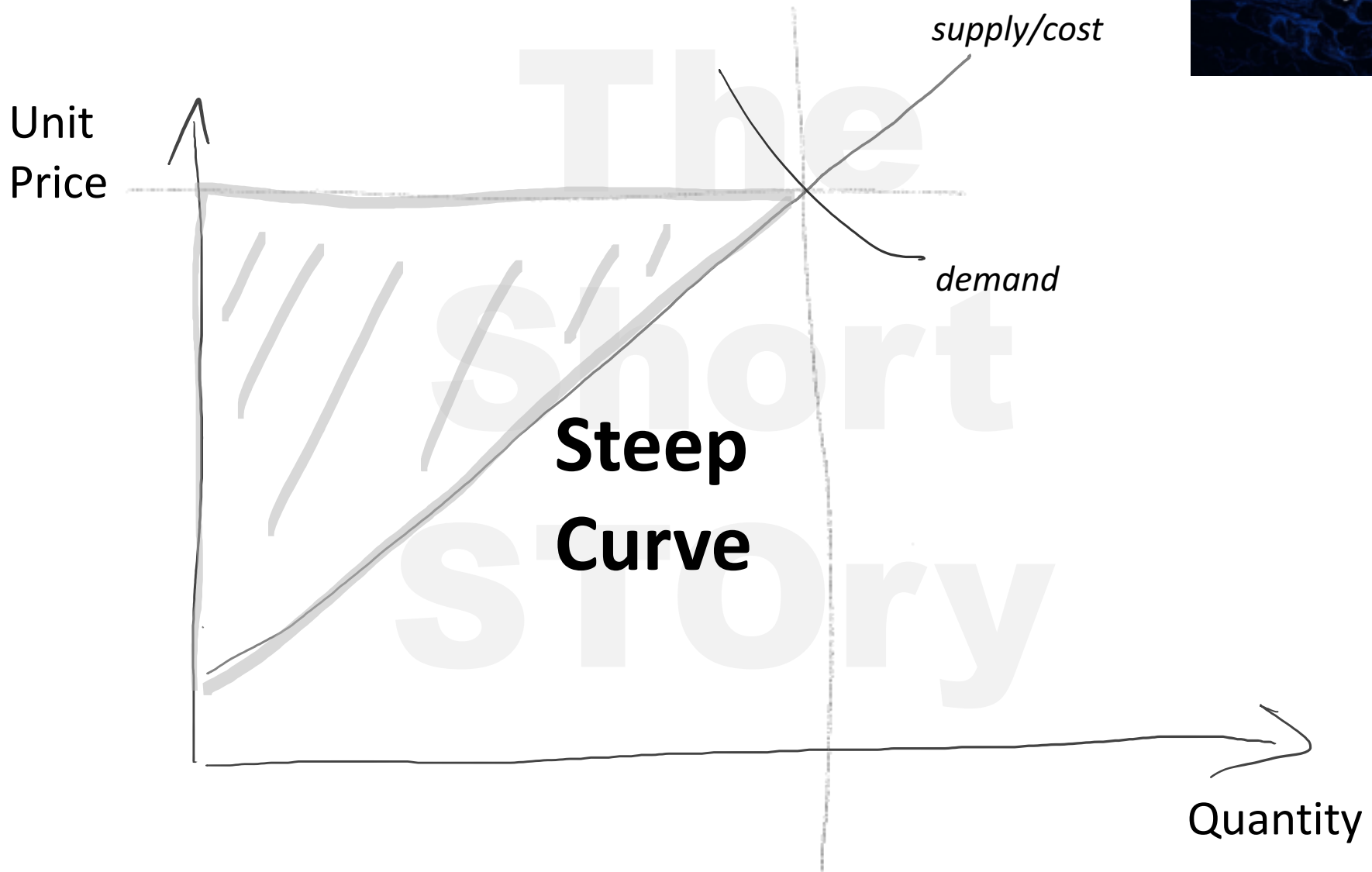




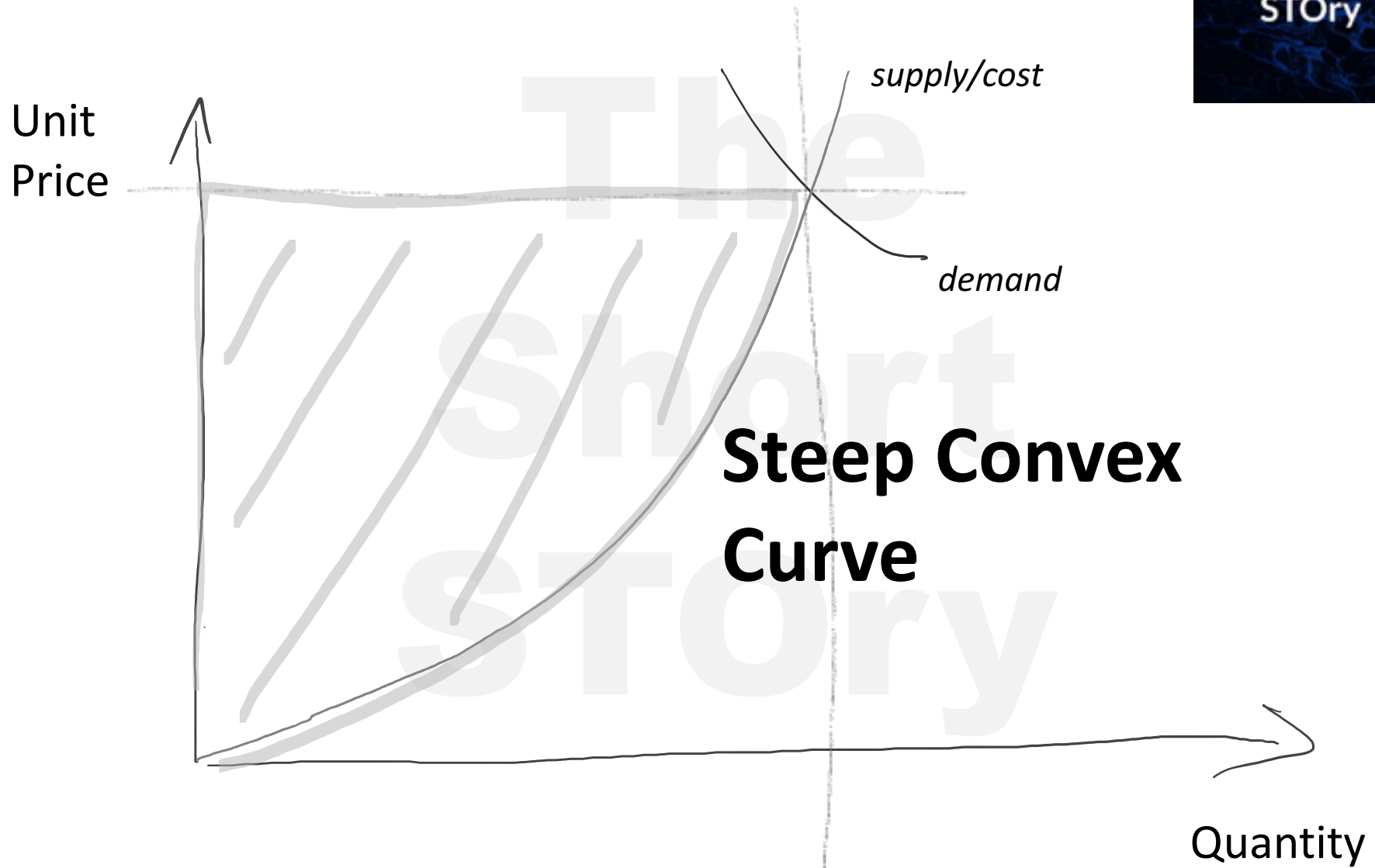
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Analysing cost curves

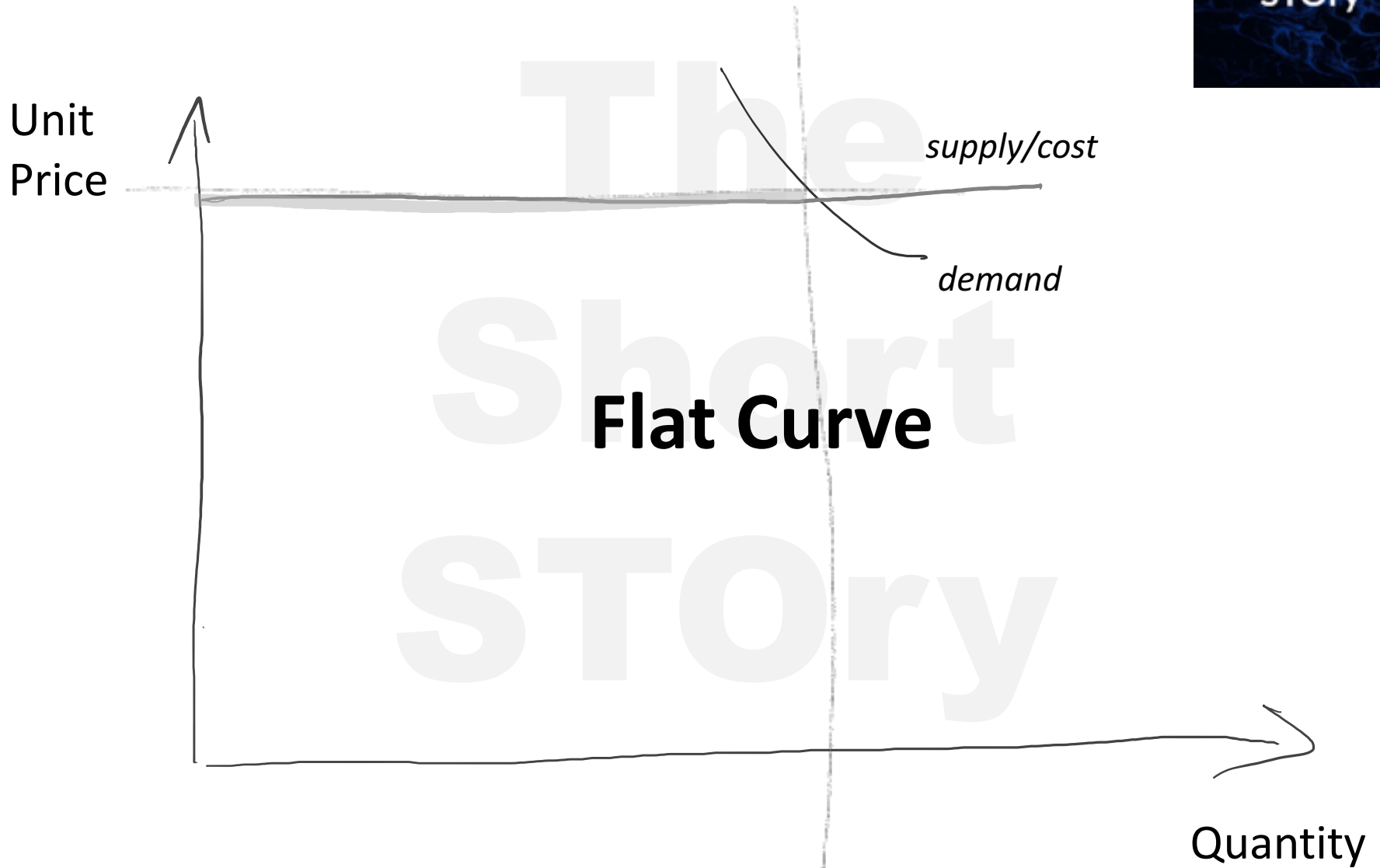
Nice profits (for many)



Even nicer profits (for most)






No profits



Producer profits depend on the shape of the cost curve



Steep Curve		Nice profits for many
Steep Convex Curve		Great profits for most
Flat Curve		No profits for anyone

"I just have to outrun you!"



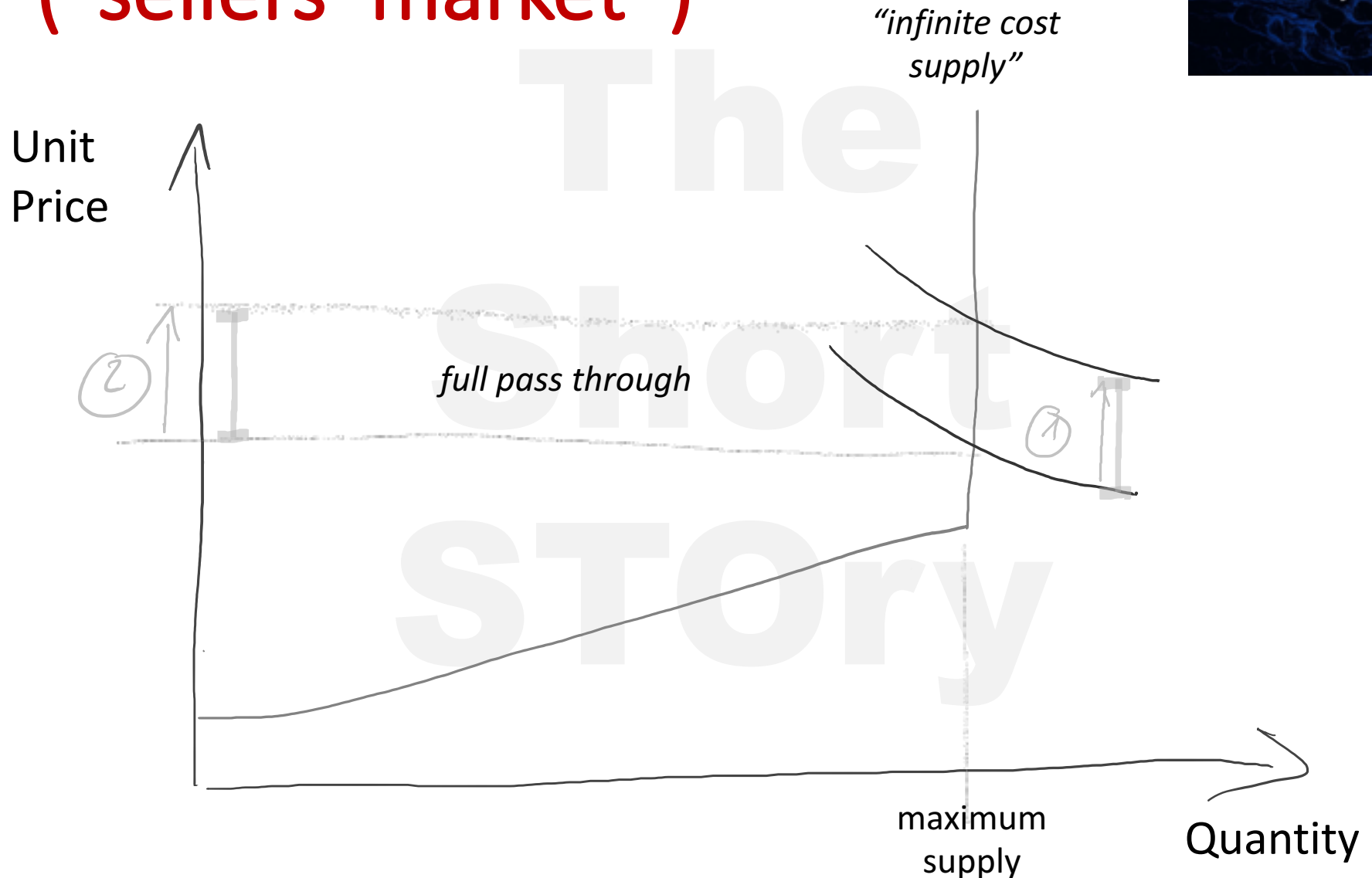
*Two guys are in the jungle
when they see a lion running
towards them. Frantically, one
of the men starts putting on his
running shoes.*

*Surprised, the other man says
"What are you thinking, you
can't outrun a lion!!!"*

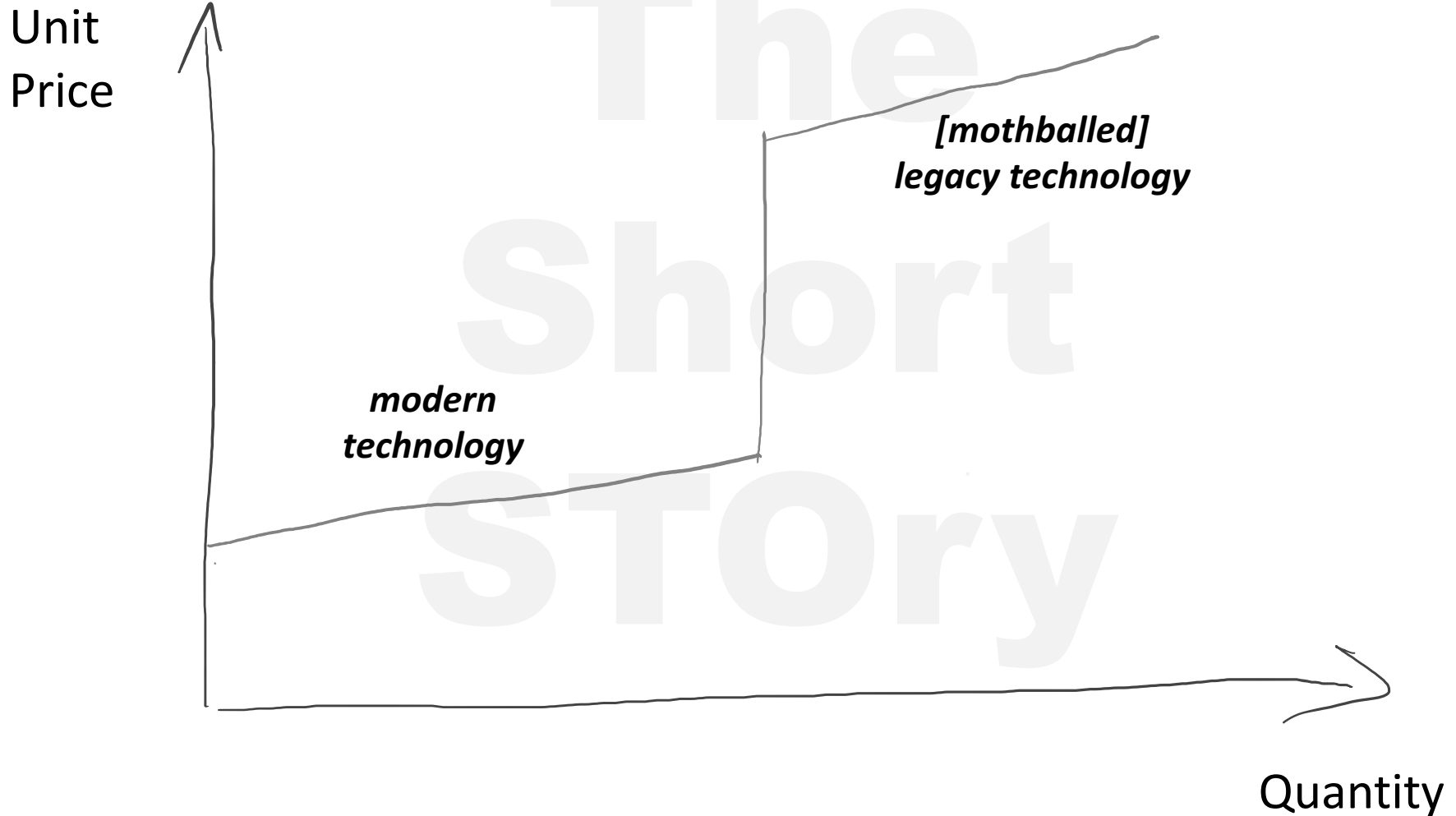
*I don't have to outrun the lion,"
said the man, "I just have to
outrun you."*



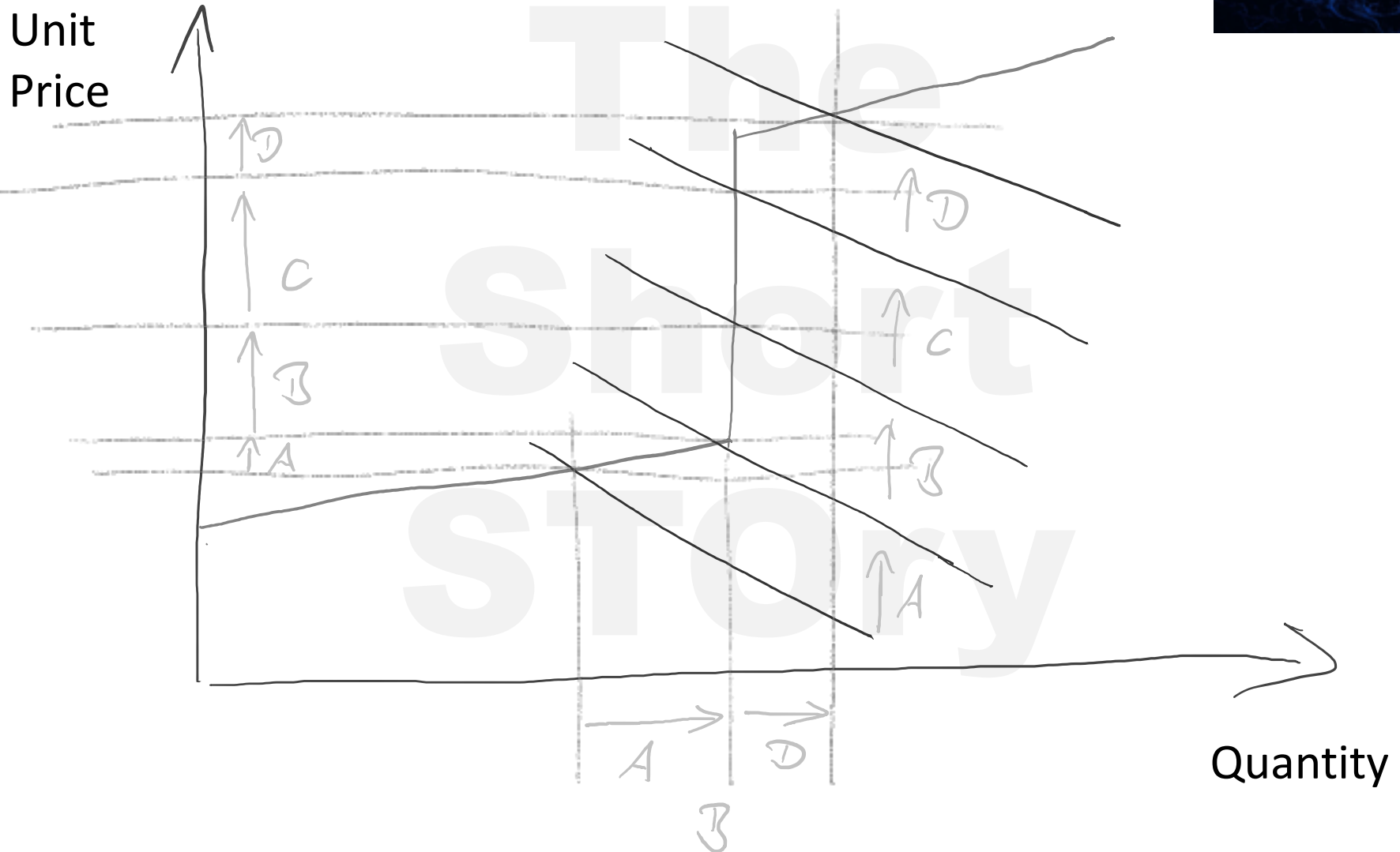
Limited supply ("sellers' market")



Legacy technology



Legacy technology cont'd

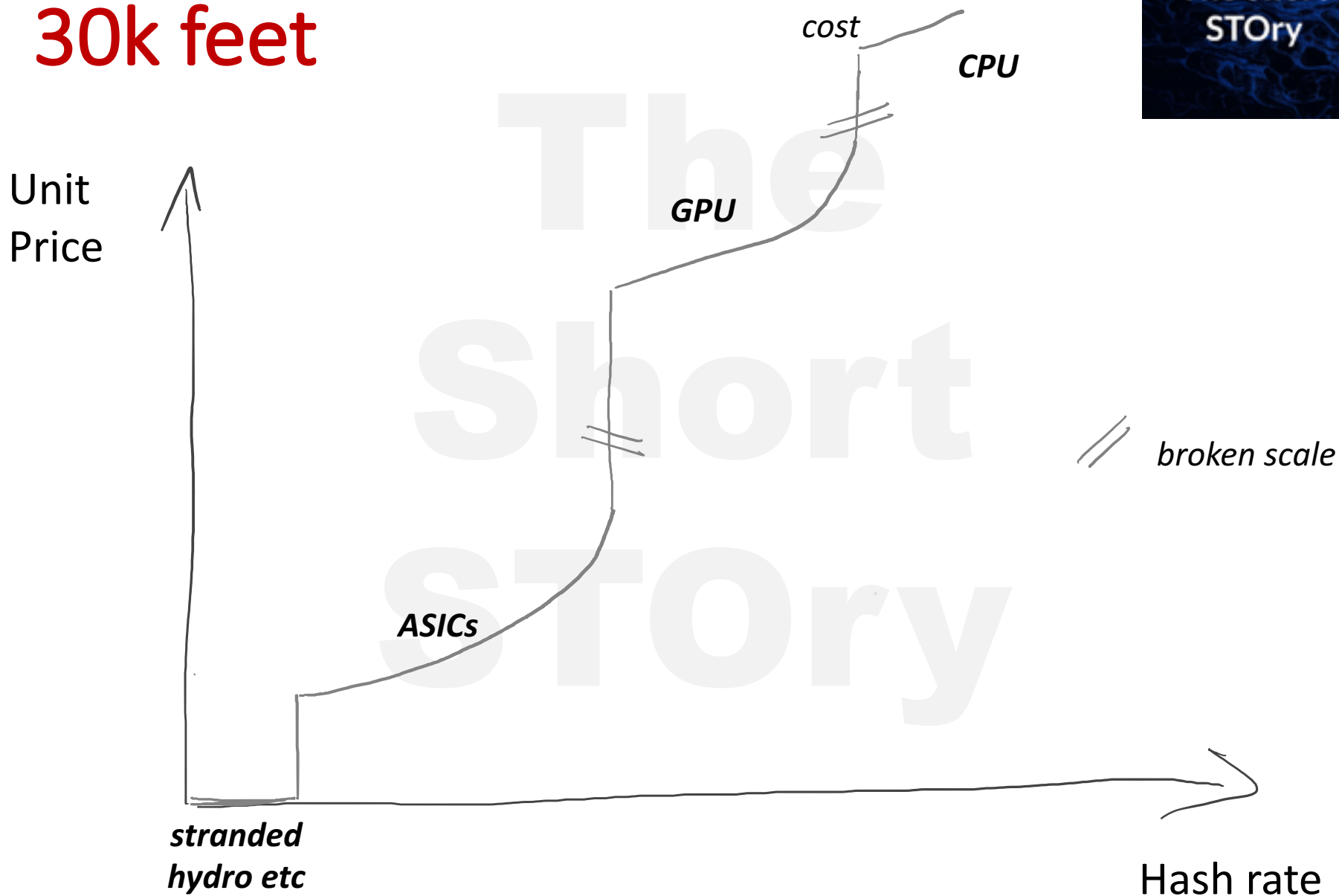




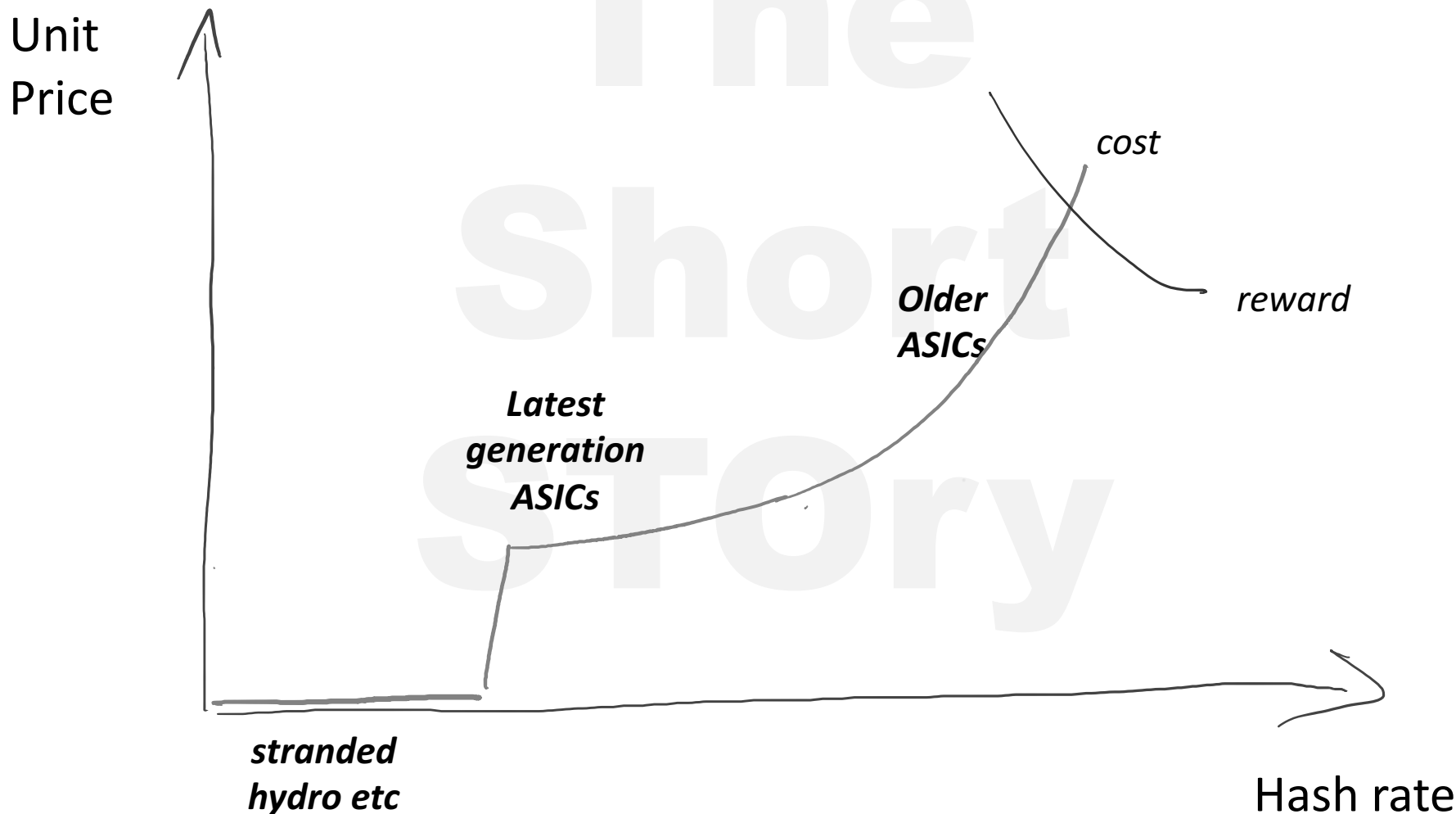
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Analysing Bitcoin mining reward/cost charts

Mining costcurve 30k feet



Mining costcurve operational



Using BTC vs using USD



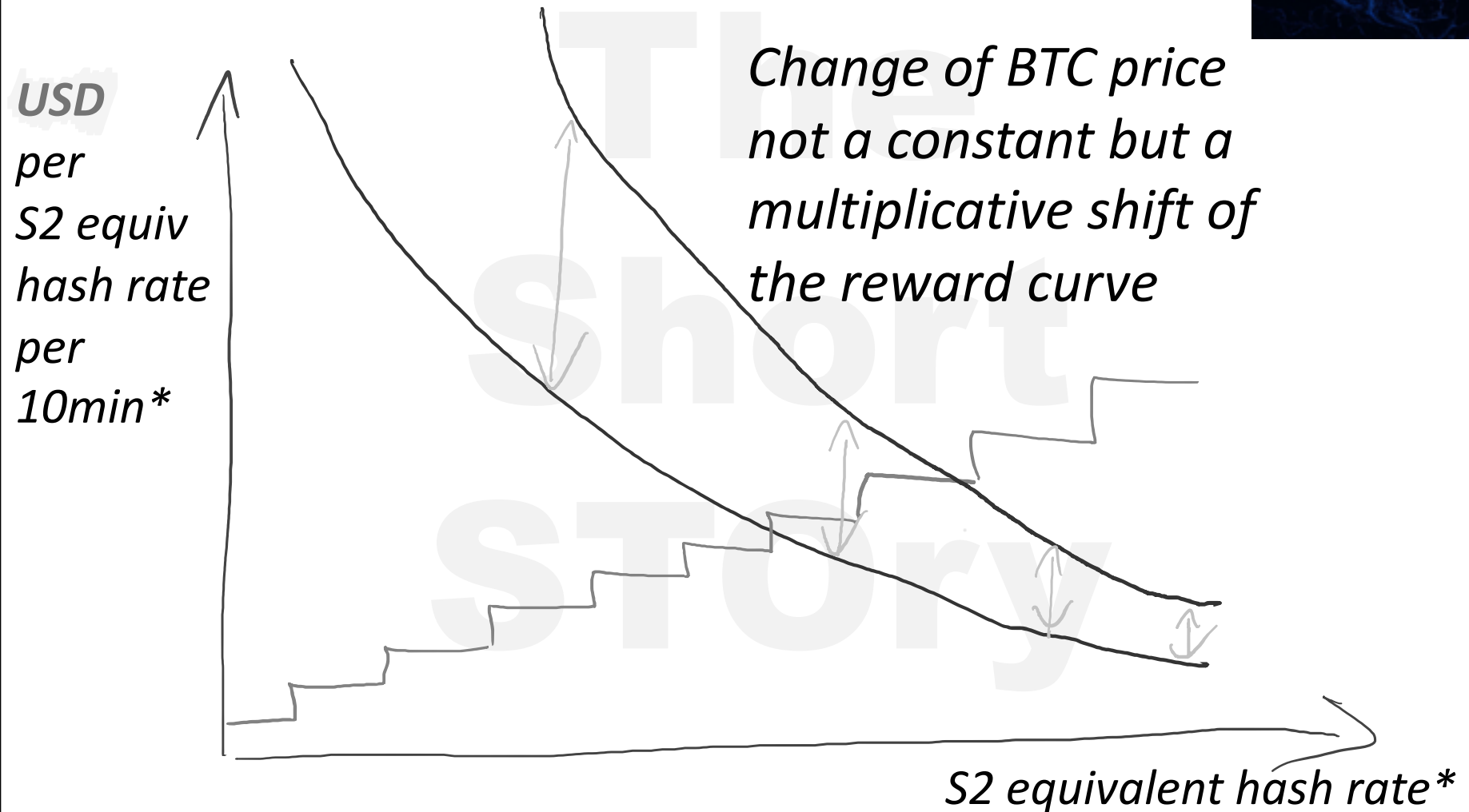
Bitcoin
per
S2 equiv
hash rate
per
10min*

- Using **Bitcoin**: reward curve fixed, cost curve changes with BTC price
- Using **USD**: reward curve changes with BTC price, cost curve does not; cost curve still susceptible to FX

S2 equivalent hash rate*

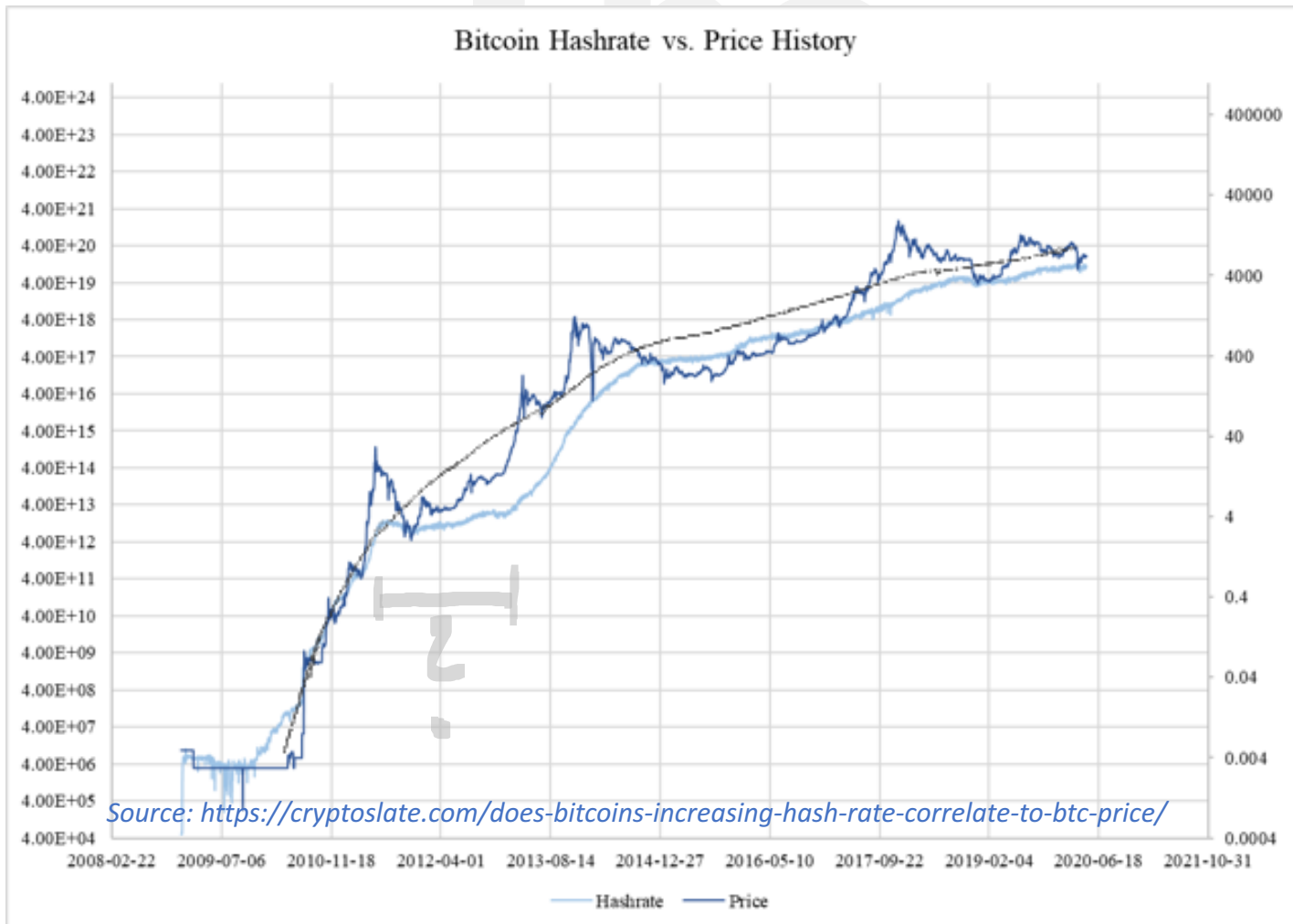
*Antminer S2 equivalent hash rate = 1TH/s

Bitcoin price changes

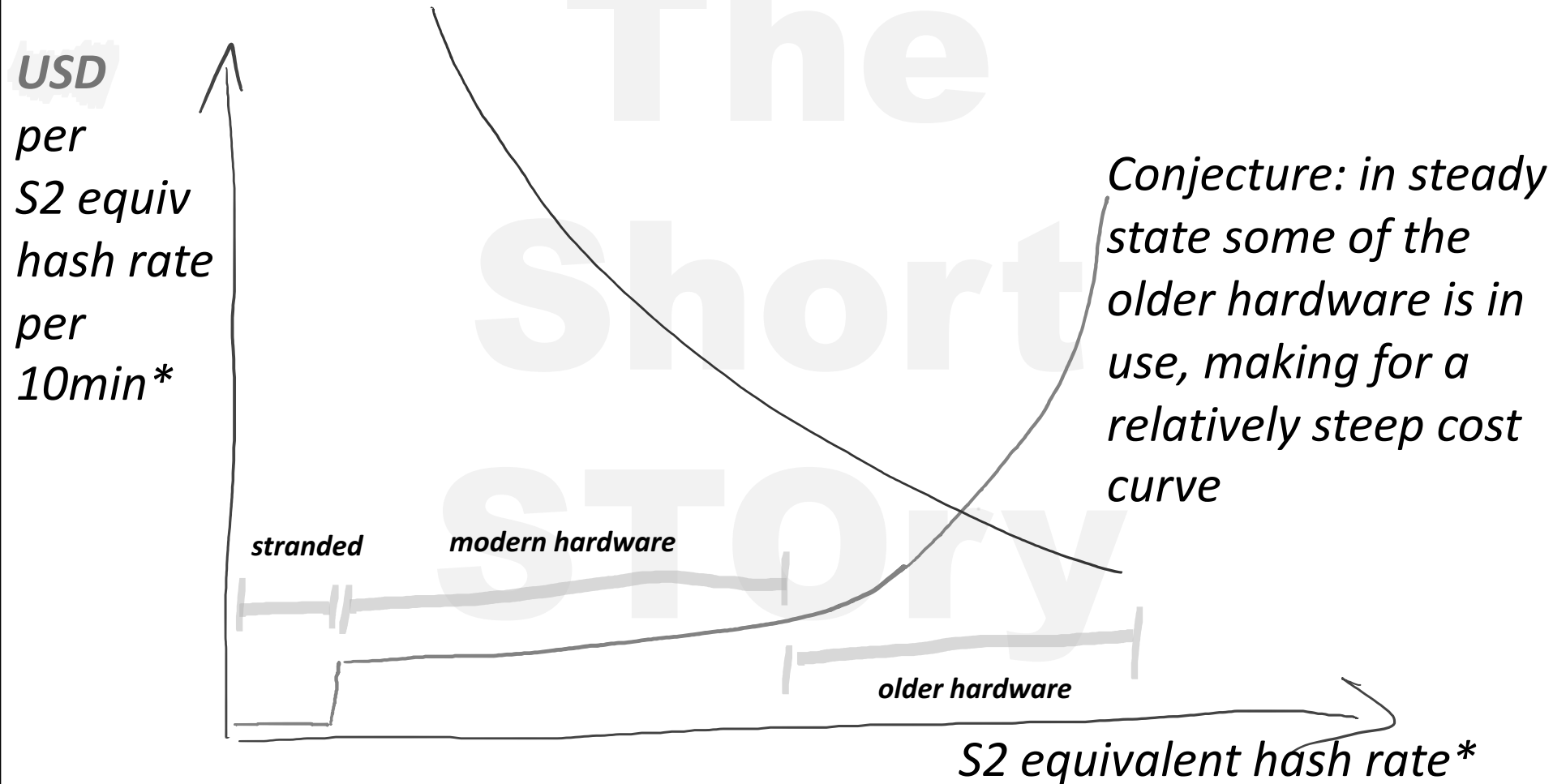


*Antminer S2 equivalent hash rate = 1TH/s

BTC hash rate follows price, but only in the longer term

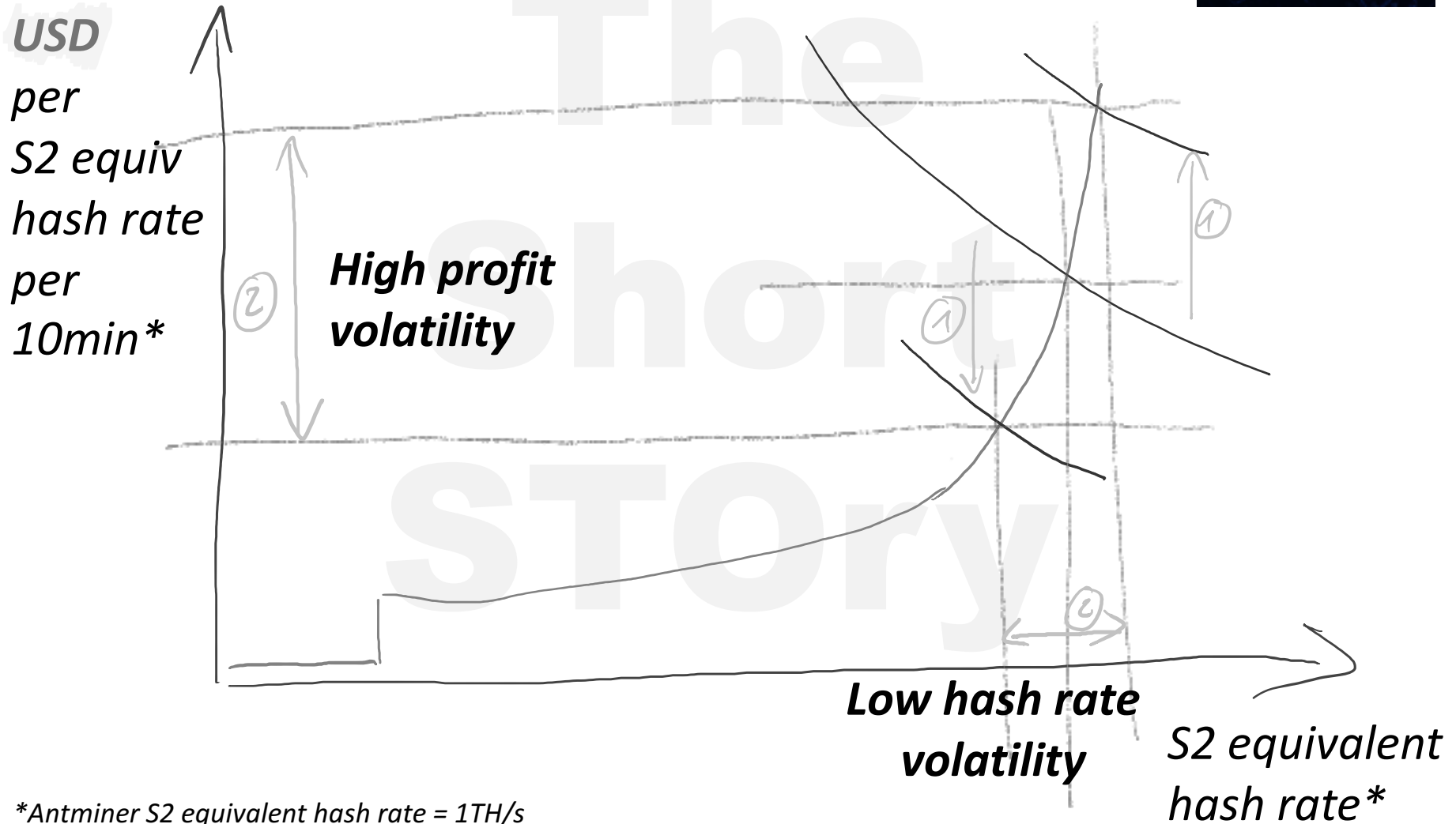


Bitcoin price changes



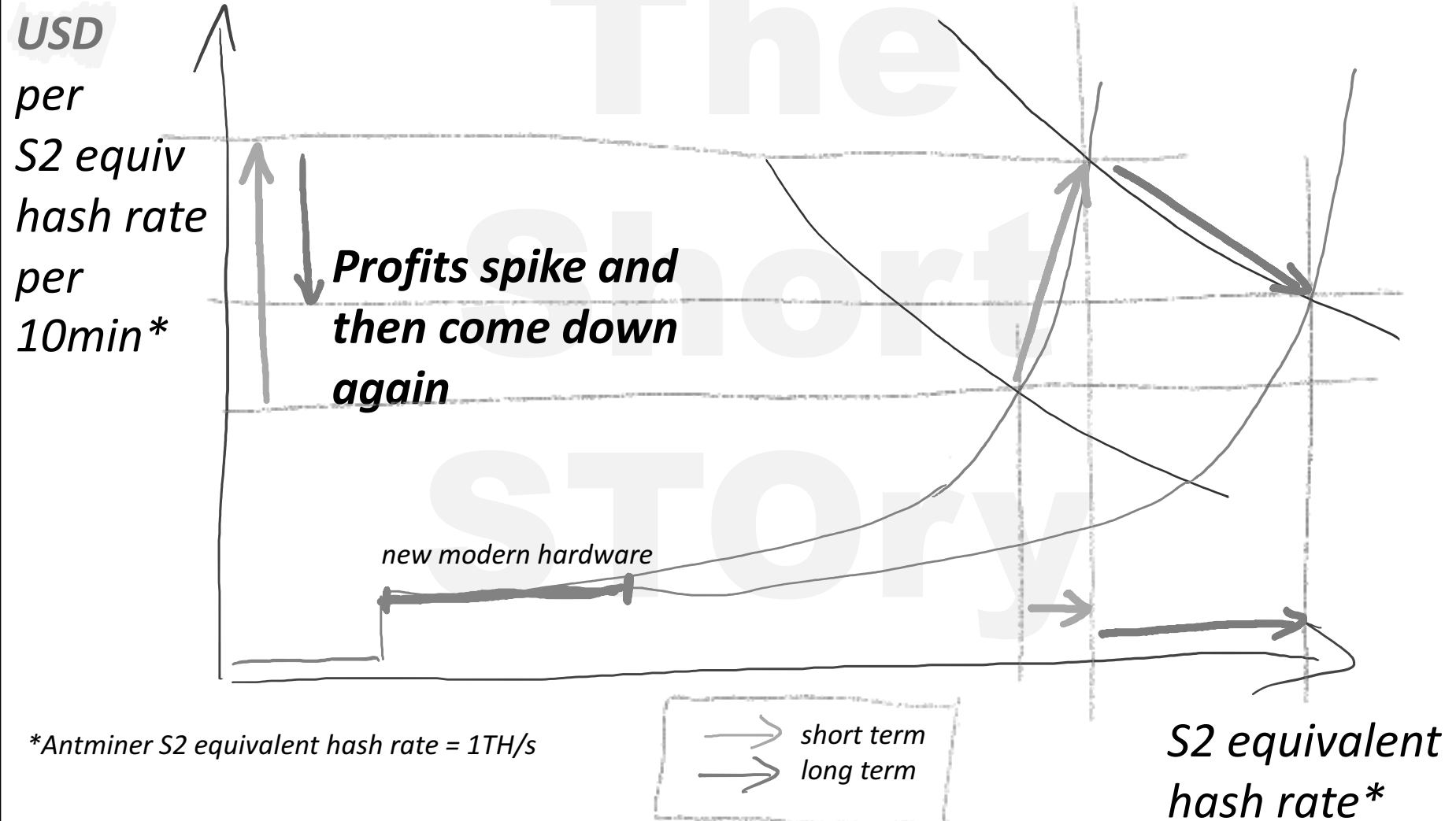
*Antminer S2 equivalent hash rate = 1TH/s

Short term regime



*Antminer S2 equivalent hash rate = 1TH/s

Short and long term regime



*Antminer S2 equivalent hash rate = 1TH/s

To say this again

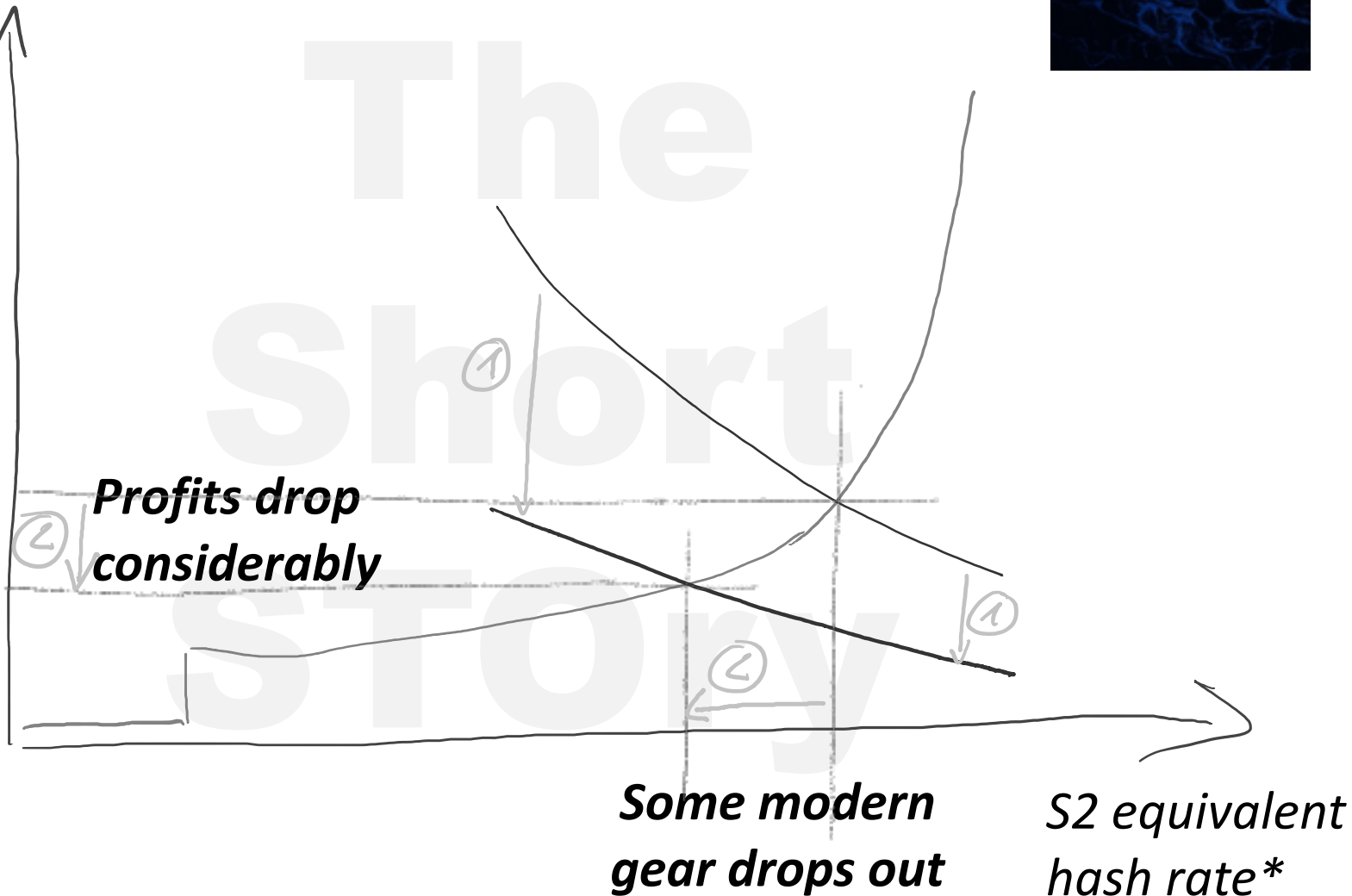


- After a sudden but sustained increase in bitcoin price
 - the hash rate initially increases slightly as older, less efficient hardware comes online; it then increases dramatically as new modern hardware comes online
 - the mining profit initially spikes but falls back significantly once the new hardware is on line
- After a sudden but sustained drop in Bitcoin price or after **Halvening**
 - ...we'll discuss this now...

Bitcoin price dropping. Halving.



USD
per
S2 equiv
hash rate
per
10min*



*Antminer S2 equivalent hash rate = 1TH/s

To say this again



- After a sudden but sustained increase in bitcoin price
 - the hash rate initially increases slightly as older, less efficient hardware comes online; it then increases dramatically as new modern hardware comes online
 - the mining profit initially spikes but falls back significantly once the new hardware is on line
- After a sudden but sustained drop in Bitcoin price or after **Halvening**
 - The curve flattens as the older, less efficient mining gear gets decommissioned; **mining profits drop considerably**
 - Even modern mining gear might no longer be profitable if it relies on too expensive electricity; as the curve is pretty flat already this means **the hash rate can drop a lot further**



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Thank you!