

Cost Containment of Market-Based Environmental Regulations

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What are Market-Based Regulations?

- Regulate *how much* (cost or quantity)
 - But not the *who* or the *how*
- Carbon Tax
 - Charges a fixed fee per ton, more uncertainty over quantity of emissions
- Cap-and-Trade
 - Limits quantity of emissions, more uncertainty over costs (prices)
- Tradeable Intensity Standards (LCFS)
 - Fixes an emissions *rate* target (e.g., grams/Mjoule)
 - A little more flexible in the face of external shocks (e.g., economic growth)
 - Still sets a firm target for the rate, more uncertainty over costs of meeting the target
- In general – trade-off is described as more certainty in *quantity* (of emissions, or emissions rates) against more certainty in *costs of compliance*

Cost-containment

- Measures that bound how costly compliance with a Cap or an Intensity regulation would be
 - Can be both floors and ceilings of compliance instrument prices
- Bounds how far the costs of the regulation can depart from its estimated benefits
- Hedge against cost volatility (due to regulated activity or external factors)

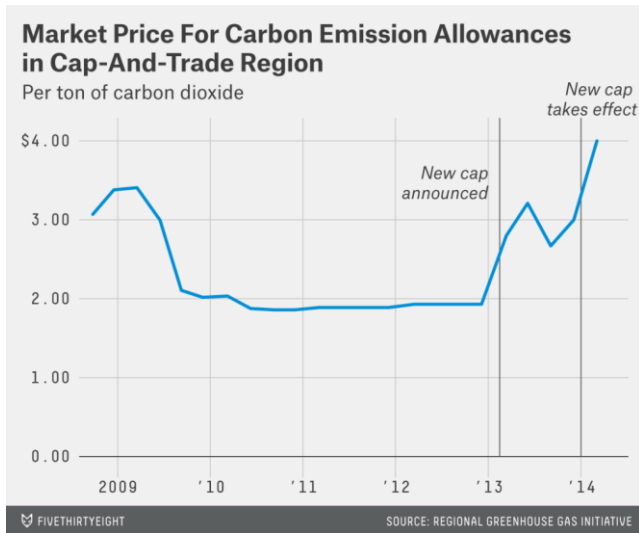
California Cap-and-Trade Allowance Prices

CARBON PRICE

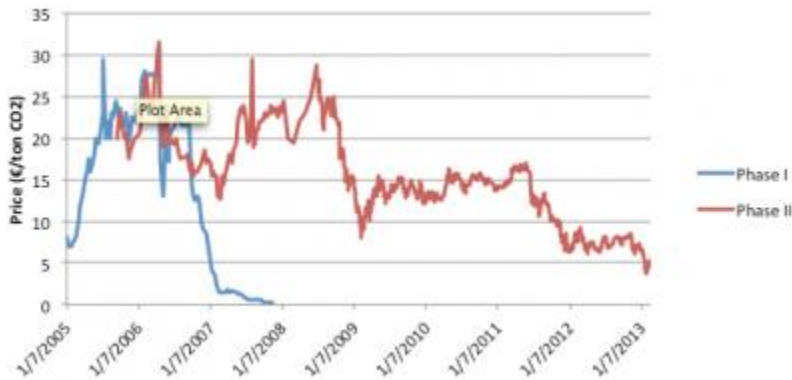


Price of 2013 California GHG Allowance Futures as reported by ICE. See prices for [2013](#), [2014](#), [2015](#), [2016](#). Updated weekly.

Becoming a familiar pattern



RGGI



EU ETS

CARBON PRICE

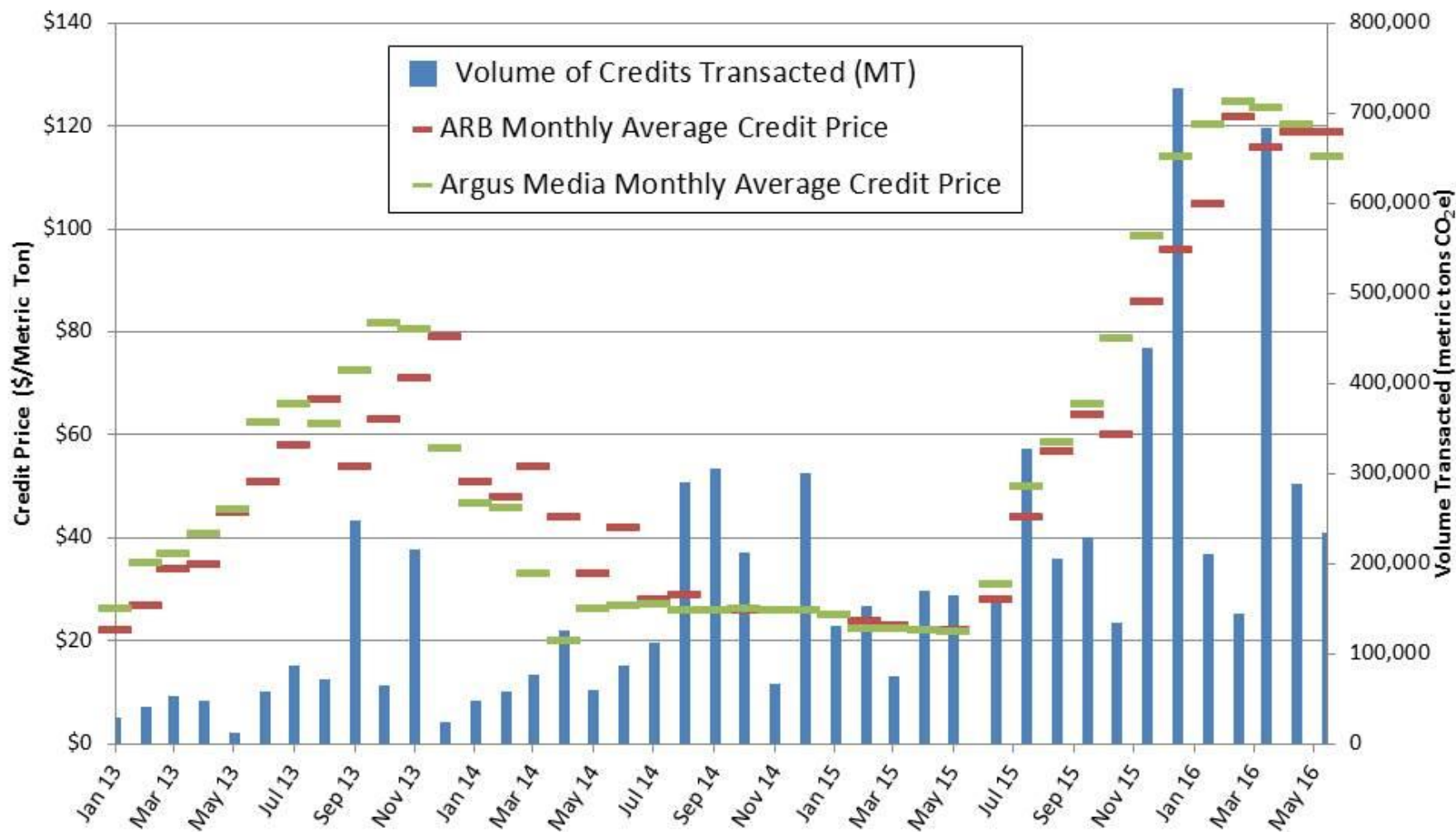
\$/Tonne CO₂e



Price of California Carbon Allowance Futures over time from ICE End of Day Reports. Daily trading volume units are 1000 allowance futures. [Download source data.](#)

California

Monthly LCFS Credit Price and Transaction Volume



Last Updated 06/08/2016

This chart tracks credit prices and transaction volumes over time. Monthly average credit prices reported by Argus Media [used with permission] are shown along with ARB monthly average price.

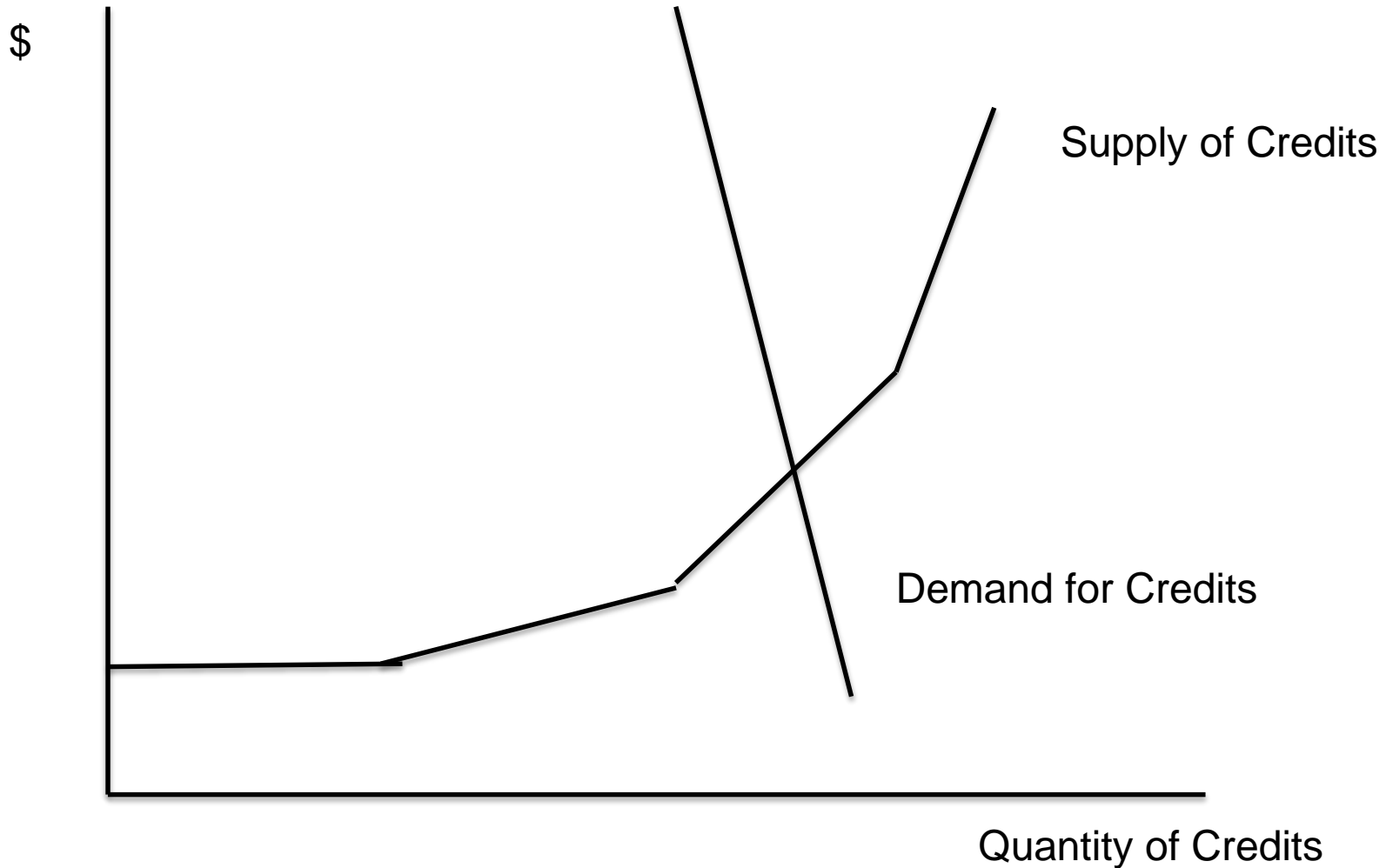
 [Click to download the Excel spreadsheet of this graph.](#)
UNIVERSITY OF CALIFORNIA

Source: ARB LCFS Data Dashboard

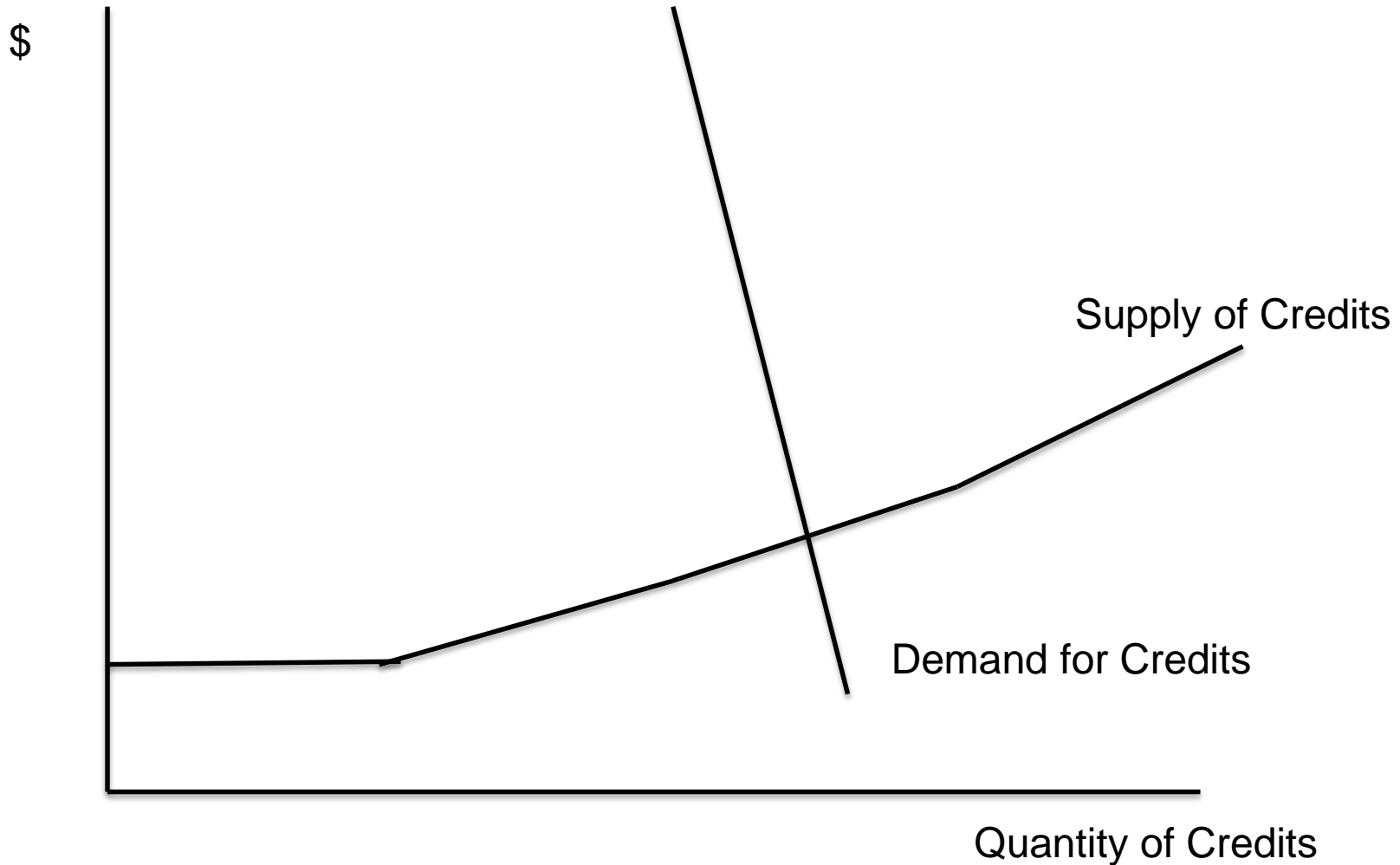
How uncertain might credit prices be?

- How much external random fluctuation in demand for credits might there be?
 - Fluctuation in oil prices
 - Fluctuation in VMT
- How “steep” is the credit supply curve?
 - Refinery capacity constraints
 - Alternative fuel demand pull from other regions
 - Interaction with Federal RFS and other policies
 - Relative cost/supply of alternative fuels (existing and under development)

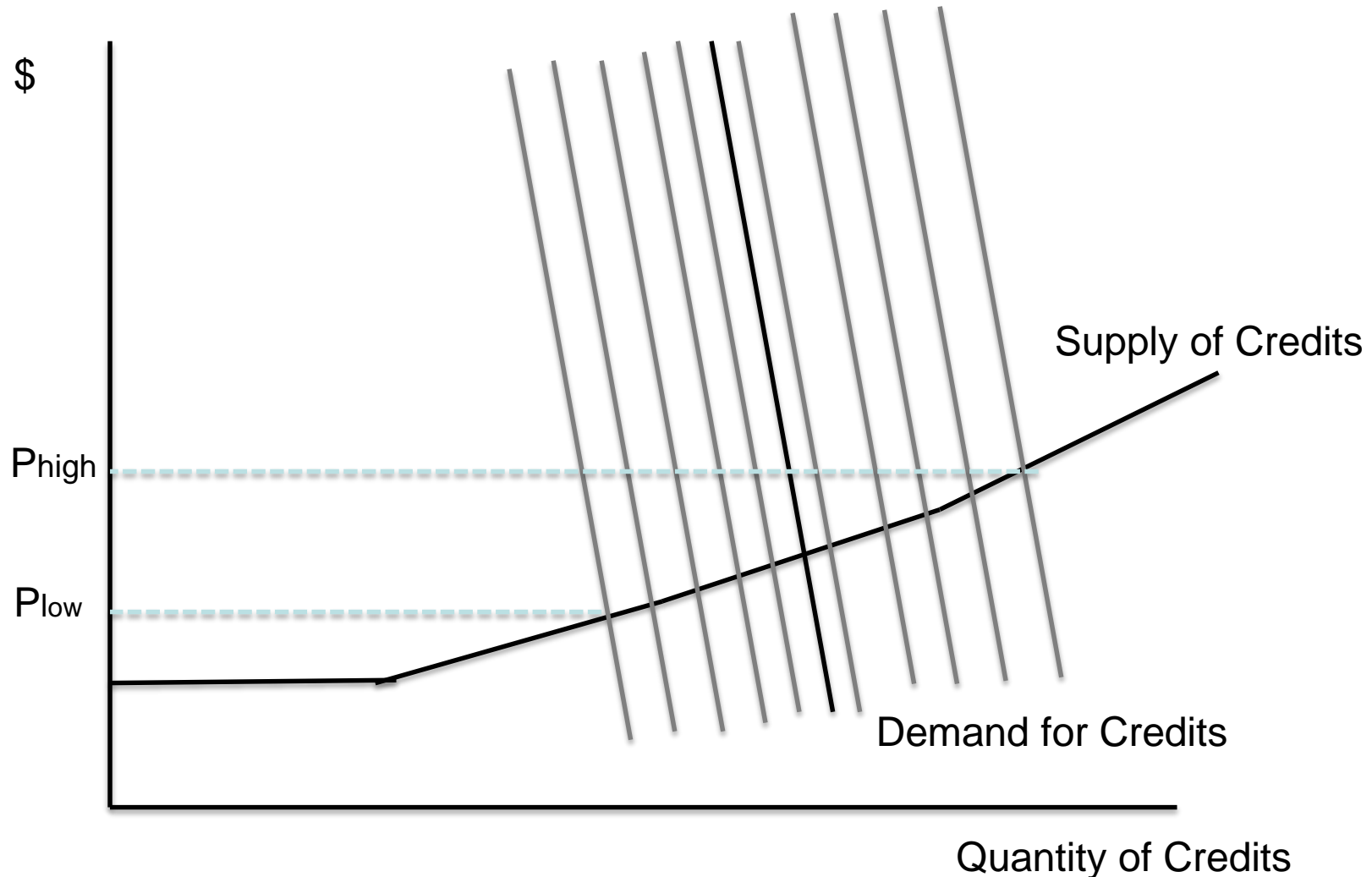
Hypothetical Supply-Demand Relationship (1)



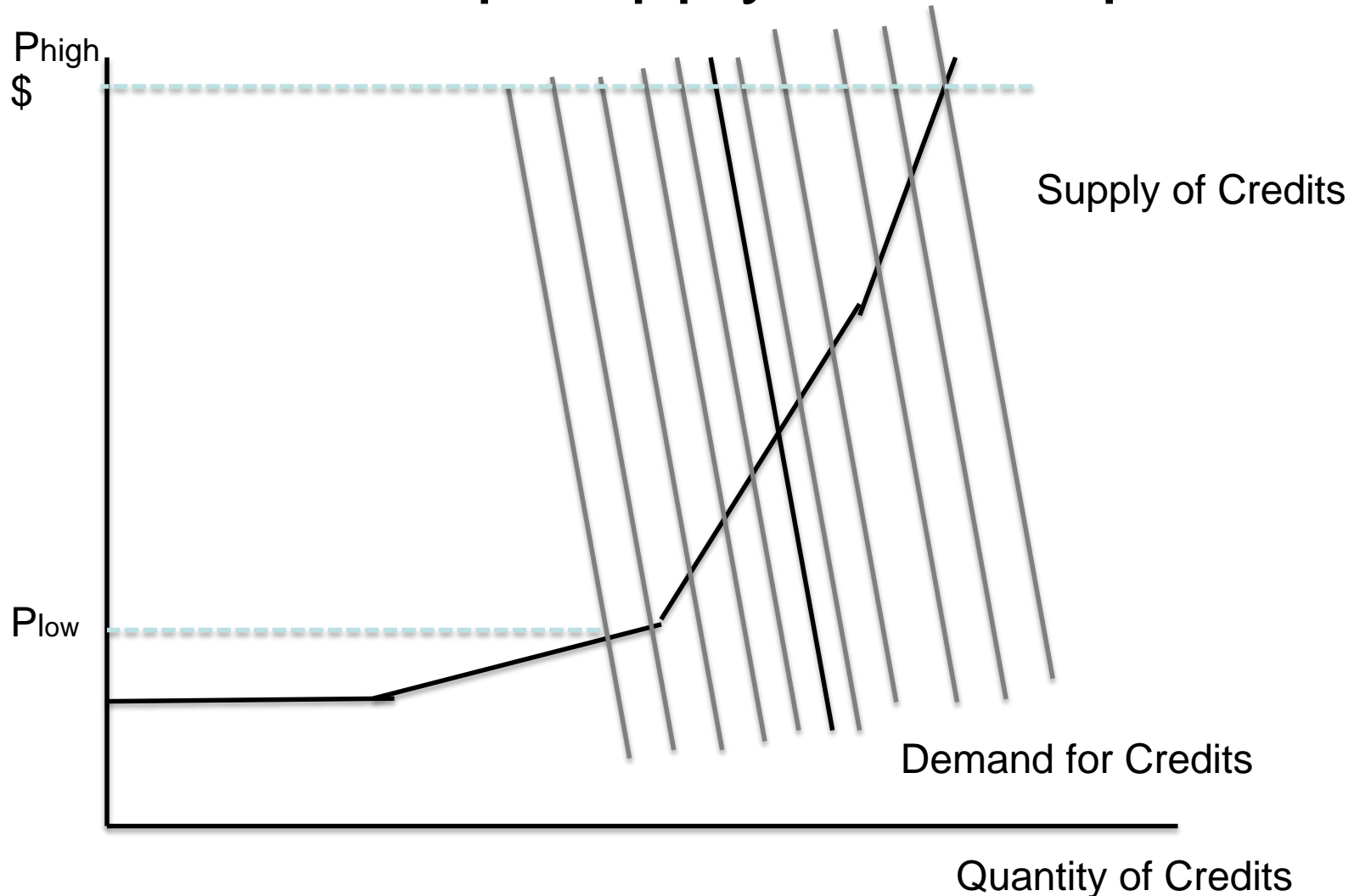
Hypothetical Supply-Demand Relationship (2)



External Random Shocks to Demand: Without steep supply, prices still stable



External Random Shocks to Demand: With steep supply, volatile prices



Perspectives on Cost Containment

- Environmental perspective
 - Sometimes skeptical that ceilings adequately limit abatement or incentivize change
 - But less volatile and uncertain compliance costs can make regulations more durable and allow for more long-term investment
- Covered entity perspective
 - Can bound cost of compliance
 - Can mitigate competitiveness concerns
 - Less volatility can promote investment in abatement technologies
 - Floors as much as ceilings

Perspectives on Cost Containment

- Market performance perspective
 - Mechanisms for containment can also provide transparency to illiquid markets
 - Price bounds can discourage manipulative strategies
 - Not worth the cost of executing those strategies
- Policy/Political perspective
 - Extreme credit prices (compliance costs) can lead to suspension/repeal/elimination of a market based regulation
 - Better to have a transparent robust containment policy up front than rely upon an ad hoc, reactive policy

Cost Containment Options: Not Mutually Exclusive

- Compliance “holiday”
 - Delay or cancel some compliance obligations
 - If ad-hoc, creates uncertainty; if predictable, invites gaming
- Banking and Borrowing
 - Can deal with transient shocks (e.g., oil price shock, plant delays)
 - Less effective at addressing fundamental supply-demand imbalance
- Alternative compliance measures
 - Allow instruments (credits) from other jurisdictions
 - Importing external cost containment policies
 - Can annoy those jurisdictions
 - Offsets (reductions from unregulated parties)
- Allocation of allowances
 - Can mitigate total cost in environmental regulation
 - If done through updating can mitigate downstream price impacts
 - Difficult in LCFS context (no central pool of credits)
- Measures that directly limit credit prices

Controlling Credit Prices

- Credit Reserves
 - Hold some credits in a reserve
 - Inject (or withdraw) them when prices get too high (low)
 - Easier to do in C&T context (if not all allocated)
- Price cap (penalty price)
 - Allow compliance through a payment of a penalty (per unit) instead of a credit
 - Can create emissions uncertainty
 - That needs to be taken in context though
 - Generates revenue for the govt.
 - Can be a difficult legal/legislative problem
 - Could recycle penalties back to compliers instead

California Cap and Trade: Price Containment Mechanism

- Floor price enforced through control of enough allowances through auctions run by CARB
 - Auction reserve price – if prices are below this level allowances go unsold
 - Escalates at a 5% real rate from 2013 level of \$10.50.
- Price containment reserve
 - Roughly 12% of allowances (over all 8 years) are held out unless price hits the containment level
 - Started at \$40, also escalates each year
 - Each quarter CARB offers these allowances at the containment prices
 - Effectively caps the price at the containment level *as long as the containment reserve isn't exhausted.*
- Key question is whether the reserves are large enough to provide full containment
 - And what happens if they are not

Possible Trajectories of California Allowance Prices

