

Power Play

Energy and Manufacturing
in North America



EDITORS
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Book Launch

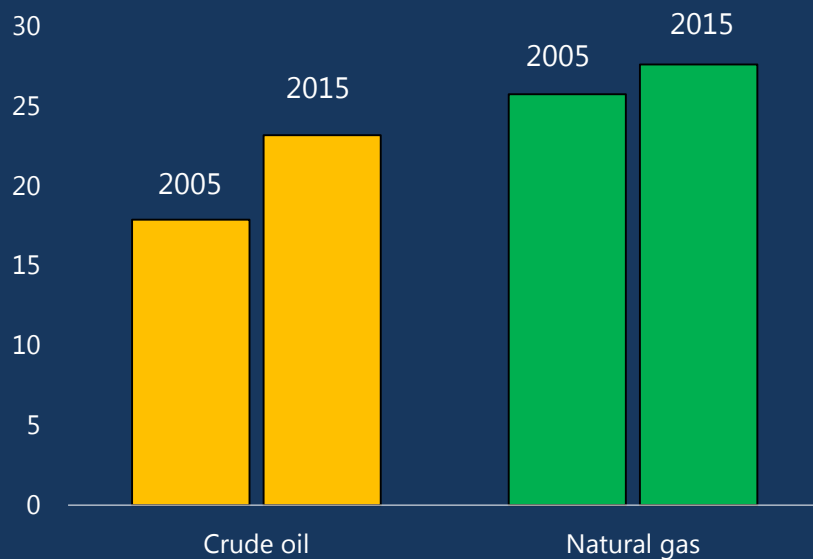
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Department - IMF

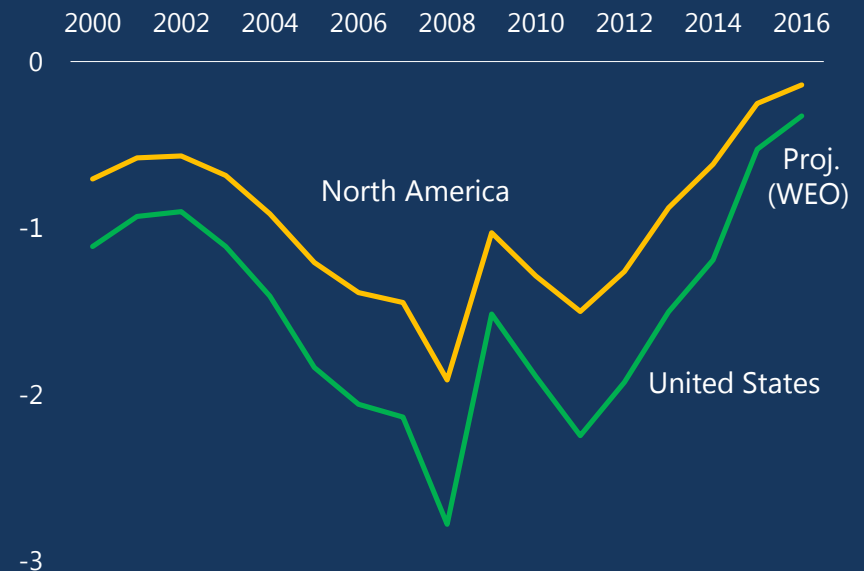
May 10, 2016
Wilson Center
Washington, D.C.

An unconventional energy boom in North America started in mid-2000s...

Crude Oil and Natural Gas Produced in North America
(Percent of total world production)

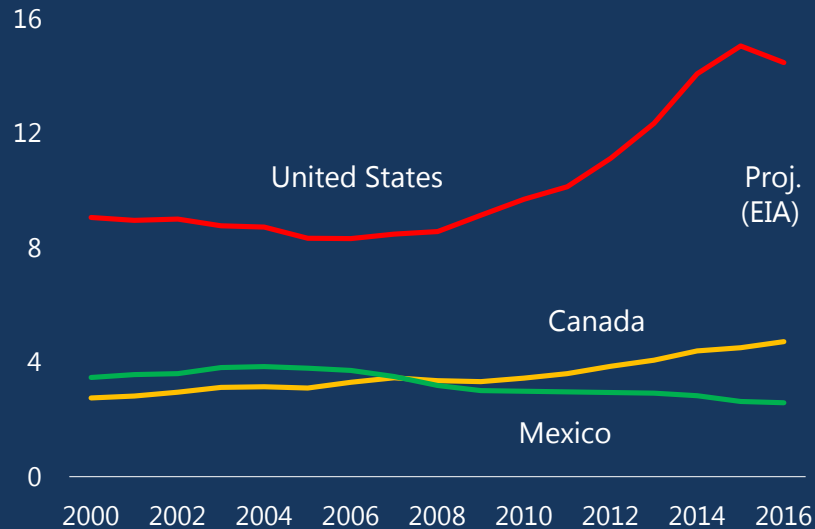


North America: Oil Trade Deficit
(Percent of GDP)

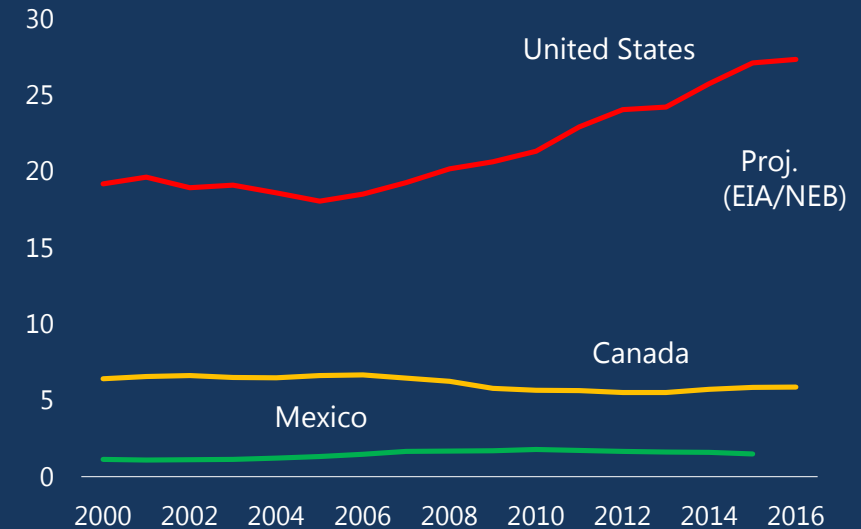


...though with major differences across the countries in the region

Production of Crude Oil and Liquid Fuels
(Million barrels per day)



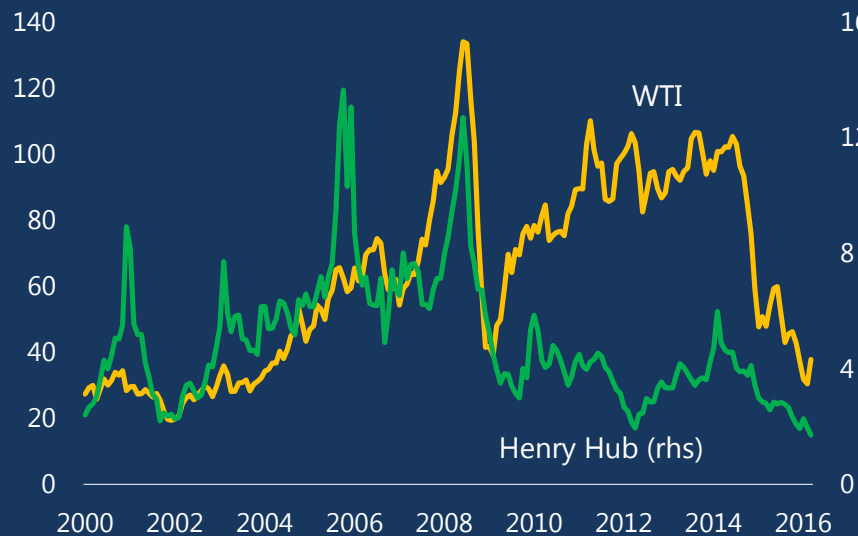
Production of Natural Gas
(Trillion cubic feet)



A new scenario since mid-2014: energy prices plunged, investment collapsed...

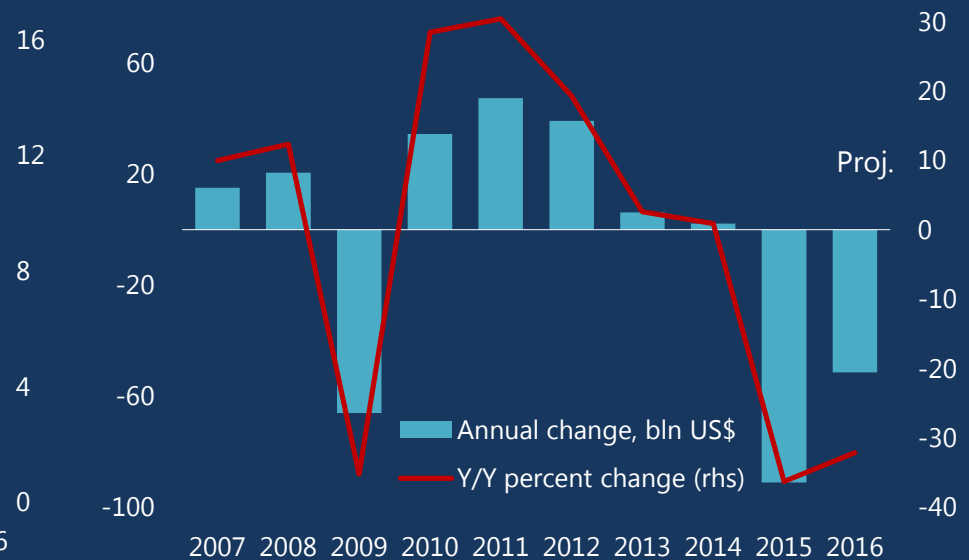
Crude Oil and Natural Gas Spot Prices

(US\$/barrel, left scale; US\$/million btu, right scale)



Energy Investment in Canada and the United States

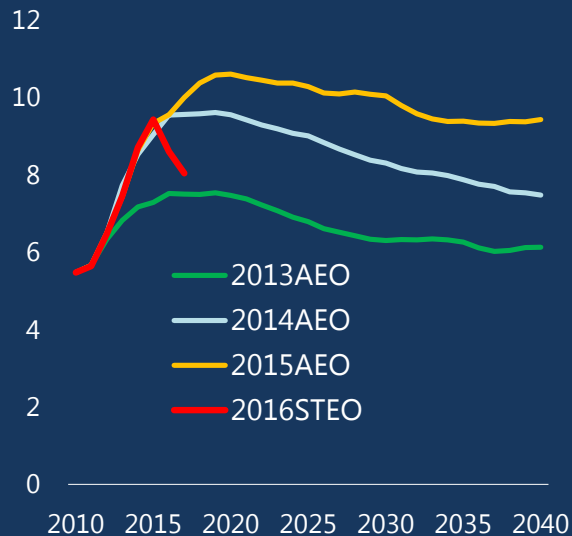
(Oil/gas extraction/mining/machinery/support activities)



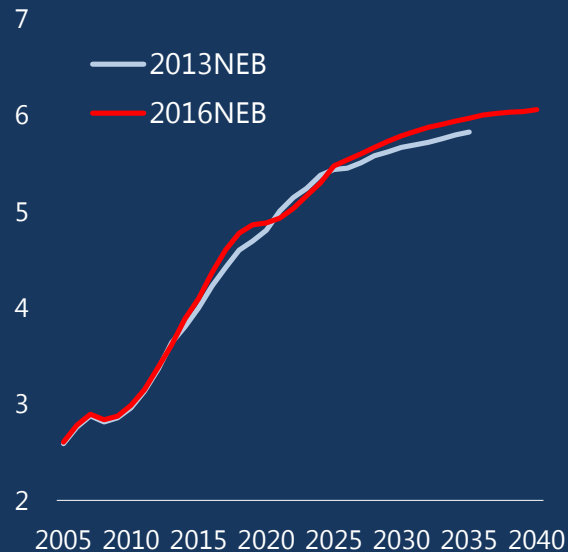
...and forecasts of energy production in the region have (generally) been revised downward

Crude Oil Production Forecast Vintages (Million barrels per day)

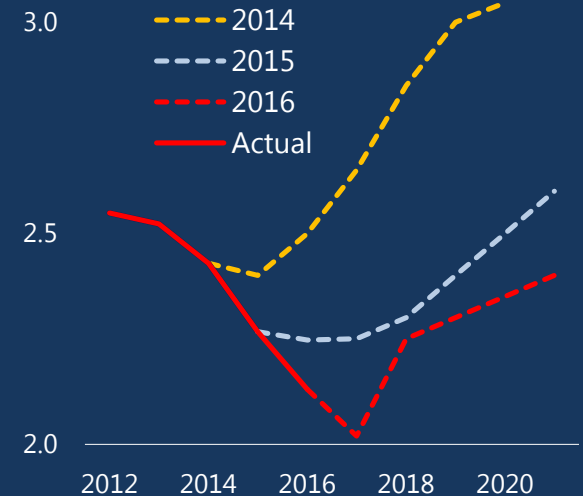
United States



Canada



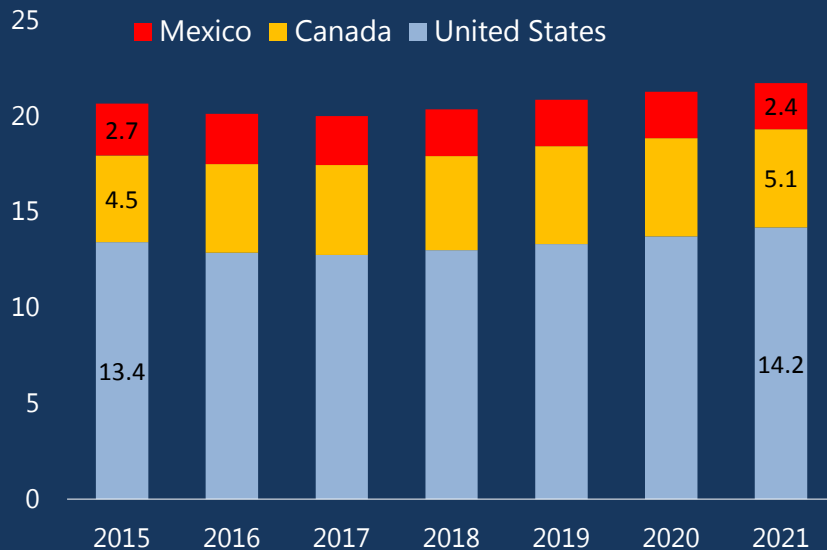
Mexico



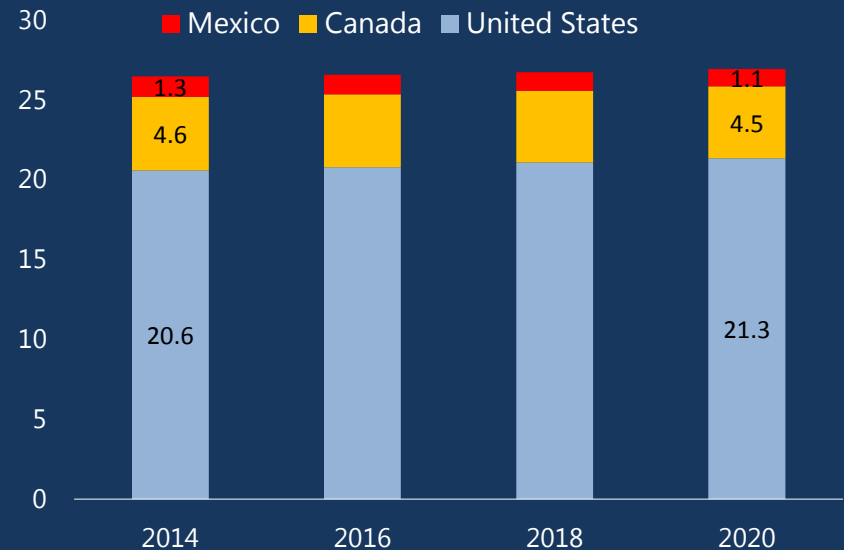
Sources: U.S. EIA Annual Energy Outlooks and Short-term Energy Outlook. Canada's National Energy Board; Pemex, Financial Ministry of Mexico, and IMF staff projections.

But the potential for the region remains intact

IEA2016: Oil Production
(Percent of total world supply)*



IEA2015: Natural Gas Production
(Percent of total world supply)



* Assumes a post-sanctions increase for Iran in 2016 and adjusts for OPEC capacity changes thereafter.

Power Play: three main themes

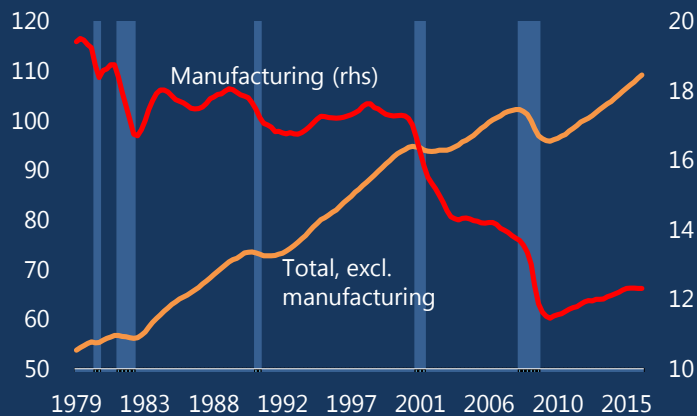
- Macroeconomic impact of greater energy production in the United States, Canada, and Mexico (reforms)
- A sectoral view: what is the energy-manufacturing nexus in the three countries?
- A North American perspective: regional or global integration?

United States: higher energy production has modest effect on economic activity

- The overall impact on the U.S. GDP is not very large (1–1½ percent in the long run)
 - Energy sector accounts for a small share of the economy
 - The dollar appreciation limits the positive impact
 - Consumption and investment increase, but only gradually as households and firms “learn” about the increase in wealth and reduction of costs
 - Does not capture non-linear impact of much stronger decline in energy prices

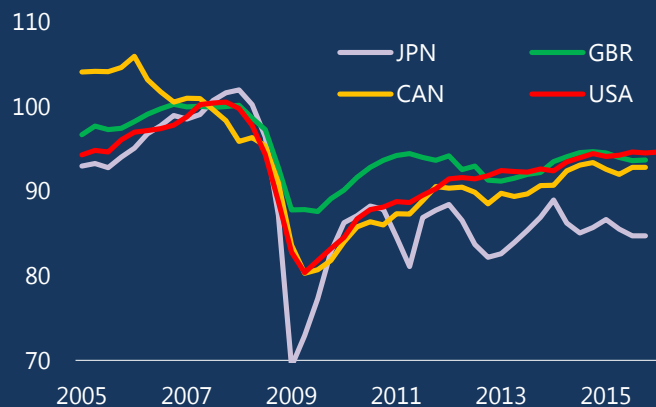
U.S. manufacturing: limited spillovers from energy

Payrolls: Private Industries
(Millions)



- Rebound in U.S. manufacturing after the global financial crisis
- While lower energy prices help manufacturing, they are less important than competitive exchange rate and labor costs
- Result still holds when accounting for the direct impact on manufacturing (using I-O linkages)

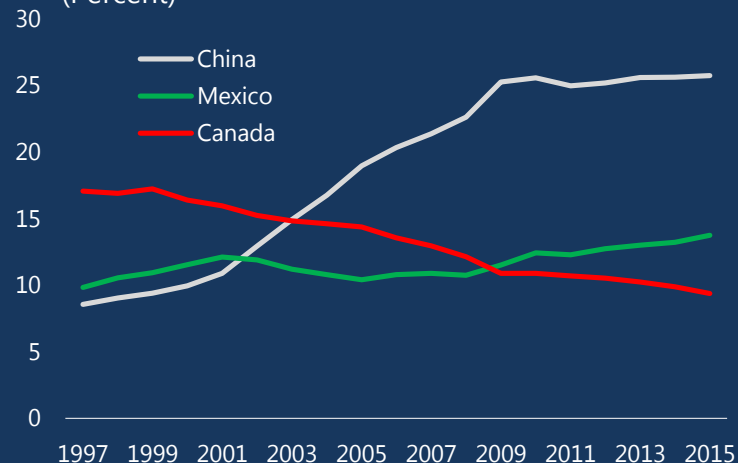
Industrial Production: Manufacturing
(Index, 2007=100)



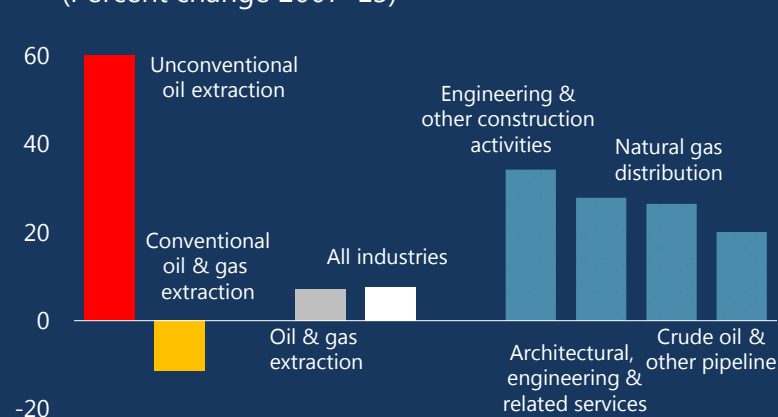
Canada: energy boom may hurt manufacturing but still positive for economy

- High commodity prices and strong REER in the 2000s explain most of the loss in Canada's market share of U.S. manufacturing imports
- But the unconventional energy boom had significant positive spillovers to the rest of the economy

Market Share of U.S. Manufacturing Imports (Percent)

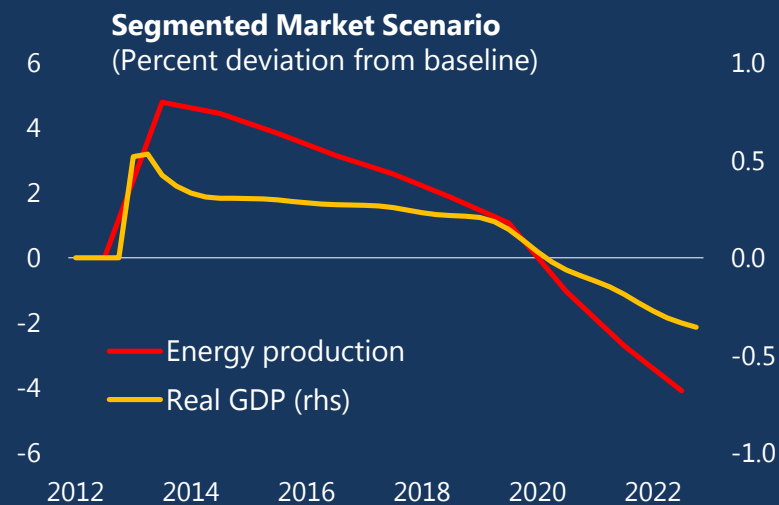
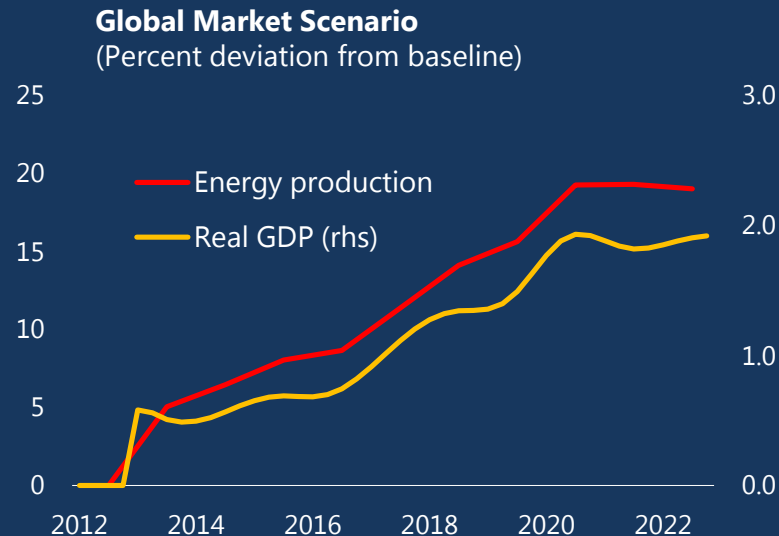


Output in Energy and Related Industries (Percent change 2007–13)



Canada: improving energy infrastructure is key to fully benefit from energy

- Two scenarios:
 - *Full market access* (no infrastructure constraints) → Canada GDP up 2 percent relative to baseline
 - *Segmented market* (oil and gas infrastructure bottlenecks persist) → Canada GDP down ½ percent

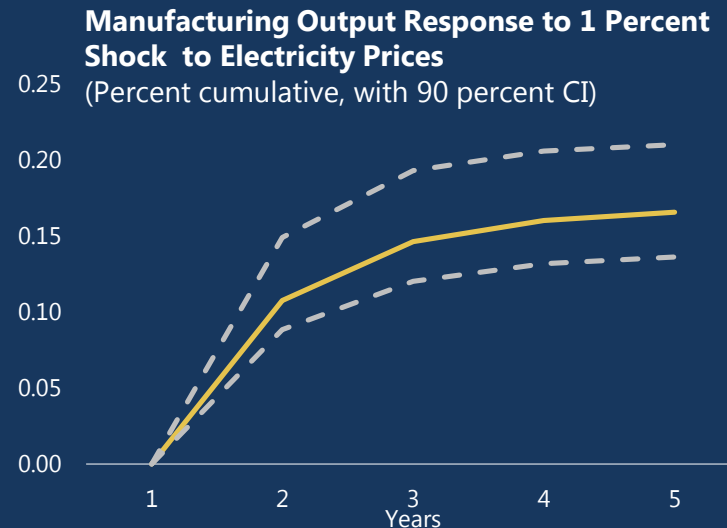
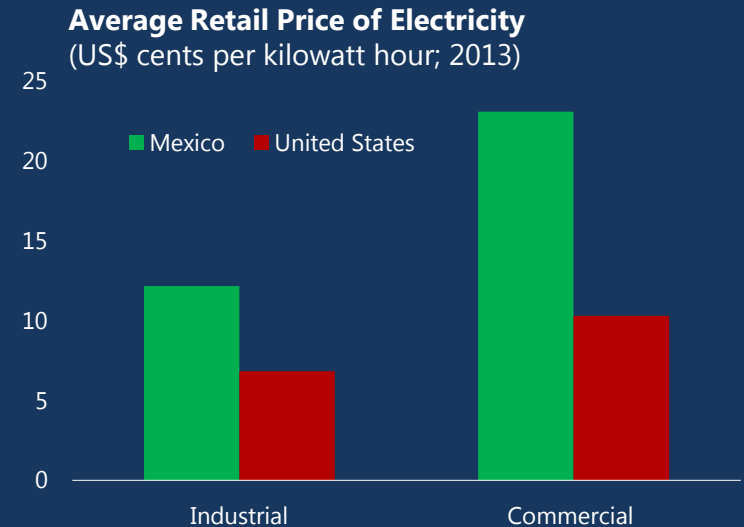


Mexico: energy reform can improve output in the long run...

- Significant reform effort in 2013–14 opens up the energy sector
- Potential production gains of up to 50 percent in the long run
- Reform vs. no-change: Macro impact
 - Mexico GDP up 3½–4 percent in the long run
 - Does not cover other channels of reform, especially electricity and natural gas pipeline capacity

...and boost Mexico's manufacturing sector

- Scope to reduce electricity generation costs
- Important macro impact
 - Fuel substitution → manufacturing output up 1½–3½ percent
 - Convergence to U.S. levels → manufacturing output up 5–15 percent
 - Greater impact if include labor demand/supply reaction



A North American perspective: a few questions on energy integration

- Scope for more *regional* integration (e.g., infrastructure, regulations), but also trends toward stronger *global* integration (e.g., U.S. oil exports)
- Which form of integration would (most) benefit individual countries? How would these benefits be distributed? What would be the impact on national manufacturing sectors?

Regional integration should not come at the cost of less global integration

- Two stylized integration scenarios
- Pursuing more integration only at the regional level (keeping barriers to rest of the world) means lower energy prices and greater market shares for North America's manufacturing
- This seems to be important only for Mexico, but there is no clear advantage for the U.S. and Canada

(Percent deviation from low production scenario in the long term)

	Real GDP	Consumption Equivalent
Global integration scenario		
Canada	0.4	-0.3
Mexico	4.5	6.7
United States	1.2	2.2
North American integration scenario		
Canada	0.3	-0.4
Mexico	4.8	7.5
United States	1.2	2.1

Greater collaboration for more efficient development, trade, and use of energy

- Dialogue and energy information sharing
- Assessment of infrastructure opportunities and needs
- Common standards for safety, security, and environment
- Supporting technology and innovation
- Joint effort to combat climate change

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Thank you

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