Book Launch

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

![Graph showing Crude Oil and Natural Gas Produced in North America (Percent of total world production) with bar charts for 2005 and 2015 for both Crude oil and Natural gas.]

![Graph showing North America: Oil Trade Deficit (Percent of GDP) with line charts for North America and United States, projecting from 2000 to 2016.]
...though with major differences across the countries in the region

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

- **United States**: Gradual increase
- **Canada**: Steady increase
- **Mexico**: Steady production

**Production of Natural Gas**
(Trillion cubic feet)

- **United States**: Steady increase
- **Canada**: Steady increase
- **Mexico**: Steady production

*Book: Power Play*
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](image)

*United States, Canada, Mexico*

But the potential for the region remains intact

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

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

- 2015: Mexico 2.7, Canada 4.5, United States 13.4
- 2016: Mexico 2.7, Canada 4.5, United States 14.2
- 2017: Mexico 2.7, Canada 4.5, United States 14.2
- 2018: Mexico 2.7, Canada 4.5, United States 14.2
- 2019: Mexico 2.7, Canada 4.5, United States 14.2
- 2020: Mexico 2.4, Canada 5.1, United States 14.2
- 2021: Mexico 2.4, Canada 5.1, United States 14.2

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

- 2014: Mexico 1.3, Canada 4.6, United States 20.6
- 2016: Mexico 1.3, Canada 4.6, United States 21.3
- 2018: Mexico 1.3, Canada 4.6, United States 21.3
- 2020: Mexico 1.1, Canada 4.5, United States 21.3
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

- 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)
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
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

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**Global Market Scenario**
(Percent deviation from baseline)

- Energy production
- Real GDP (rhs)

**Segmented Market Scenario**
(Percent deviation from baseline)

- Energy production
- Real GDP (rhs)
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

![Average Retail Price of Electricity](chart)

![Manufacturing Output Response to 1 Percent Shock to Electricity Prices](chart)
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

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<th>Real GDP</th>
<th>Consumption Equivalent</th>
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<td><strong>North American integration scenario</strong></td>
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<tr>
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Book: Power Play

A North American perspective
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
Thank you

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