

MEASURING THE ECONOMIC EFFECTS OF FOREIGN INVESTMENT IN GAS

USMexPAT CGE Approach

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Brief Overview of Model

- Computable General Equilibrium Analysis
- Assumptions
 - Multi-Region
 - Constant returns to scale
 - Static
- Simulating Economic Shocks
 - Intermediate inputs
 - Prices by agent
 - Consumption demand
 - Factors of production
 - Technical parameters

**Future developments to include: dynamics; stochastic; potentially different model closures*



Brief Overview of Method

- Mexico's relaxation of restrictions on foreign investment in the Gas sector can be simulated by an increase in technical efficiency in the sector:
 - Increase technical efficiency by 50%, to simulate improvements relating to the extraction of gas in Mexico
 - This increase in technical efficiency is indirectly reflected throughout the Mexican economy, via increases in productivity



| Sectors | Base <i>US\$2007m</i> | Change |
|------------------------------|--------------------------|--------|
| Coal | 468.88 | 0.03% |
| Oil | 50,623.94 | 4.02% |
| Gas | 5,362.60 | 49.96% |
| Gas Manufacture Distribution | 7,283.01 | 14.79% |
| Minerals | 17,899.46 | 0.69% |
| Petroleum, Coal Products | 35,554.43 | 0.52% |
| Chemical, Rubber, Plastic | 63,343.53 | 0.82% |
| Mineral Products | 21,813.81 | 0.51% |
| Ferrous metals | 26,744.40 | -1.45% |
| Metals | 16,264.69 | -3.10% |
| Metal Products | 15,583.24 | -1.51% |
| Motor Vehicles and Parts | 79,870.31 | -1.78% |
| Machinery and Equipment | 68,362.91 | -2.34% |
| Manufacturers | 9,657.89 | -0.55% |
| Electricity | 25,313.12 | -0.51% |
| Water | 302.66 | -0.76% |
| Construction | 140,029.88 | 1.97% |
| Retail and Wholesale Trade | 185,560.69 | 1.20% |
| Transport | 101,370.39 | 0.91% |

| Sectors | Base <i>US\$2007m</i> | Change |
|-------------------------------|--------------------------|--------------|
| Transport Equipment | 8,892.50 | -1.22% |
| Electronic Equipment | 57,837.77 | -3.84% |
| Sea Transport | 2,221.76 | 0.34% |
| Air Transport | 4,839.53 | 0.52% |
| Communication | 35,287.68 | 1.43% |
| Financial Services | 29,677.04 | 1.58% |
| Insurance | 13,180.80 | 0.15% |
| Business Services | 216,134.55 | 1.53% |
| Recreation Other Services | 83,350.34 | 1.58% |
| Pub Admin Defense Health Educ | 140,004.83 | 1.67% |
| Hunting & Forestry | 4,921.04 | 0.26% |
| Agriculture | 54,071.63 | 0.15% |
| Livestock and Processing | 23,759.64 | 0.55% |
| Food Beverages and Tobacco | 82,347.96 | 1.02% |
| Textiles, Wearing Apparel | 18,681.43 | -1.55% |
| Leather | 6,627.49 | -0.51% |
| Wood Paper & Publishing | 24,310.12 | -0.99% |
| TOTAL | 1,677,556 | 0.86% |

KEY:

- Shock describes the per sector impact of the technological efficiency increase
- Total = total value output of sectors without value added components

Economic Impact

Base Data: *describes the general equilibrium calibration with current data*

| Region | Consumption | Investment | Government | Exports | Imports | Total |
|--------|-------------|-------------|-------------|-------------|--------------|--------------|
| Mexico | 669,741.9 | 219,052.5 | 107,932.3 | 274,103.8 | -245,250.2 | 1,025,580.3 |
| U.S | 9,949,302.0 | 2,685,577.0 | 2,258,358.8 | 1,394,303.9 | -2,225,762.8 | 14,061,778.9 |

Economic Shock: *the output after the technical change is implemented*

| Region | Consumption | Investment | Government | Exports | Imports | Total |
|--------|-------------|-------------|-------------|-------------|--------------|--------------|
| Mexico | 680,459.3 | 222,874.2 | 109,728.9 | 272,077.3 | -243,919.0 | 1,041,220.7 |
| U.S | 9,946,821.0 | 2,684,631.0 | 2,257,791.3 | 1,393,162.9 | -2,223,932.3 | 14,058,473.9 |



Economic Impact

- Final demand components:
 - Household Consumption increases by 1.6% for the Mexican economy, while the U.S contracts by a very small amount
 - Increasing the efficiency has the greatest impact on investment, which increases by 1.74%
- Net economic gain: 1.5%

| Final Demand | Mexico | United States |
|--------------|--------------|---------------|
| Consumption | 1.60% | -0.02% |
| Investment | 1.74% | -0.04% |
| Government | 1.66% | -0.03% |
| Exports | -0.74% | -0.08% |
| Imports | -0.54% | -0.08% |
| TOTAL | 1.53% | -0.02% |

