

**EXPLORING CROSS-BORDER NATURAL GAS PRICE DYNAMICS: PENNSYLVANIA'S IMPACT UPON
CANADIAN PROVINCES**

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ABSTRACT

Comparing the pre and post Marcellus Shale boom periods, for this study's three eastern region provinces (MA, ON, QU) there is evidence from bivariate causality models of an increased impact from Pennsylvania real natural gas price shocks upon Canadian provincial real natural gas prices in the post boom period. There is, however, a declining impact from these same province's natural gas price shocks upon Pennsylvania gas prices going from the pre to post boom period. The bivariate models, however, find no impact from Pennsylvania's real natural gas shocks upon western region (BC, AL, and SA) real natural gas prices in either the pre or post Marcellus Shale boom periods. Extending the causality analysis to three variable systems with Pennsylvania, Alberta, and another province leaves Ontario as the only province for which Pennsylvania real natural gas prices Granger-cause provincial real natural gas prices. The findings support the contention that shocks in Pennsylvania's natural gas market now matter more to Ontario than before 2008.

Keywords: *Marcellus Shale, provincial natural gas prices, causality, Pennsylvania natural gas*