

Replacement of Coal by Fracgas in the Production of Electric Power

Yale Graduates Energy Study Group

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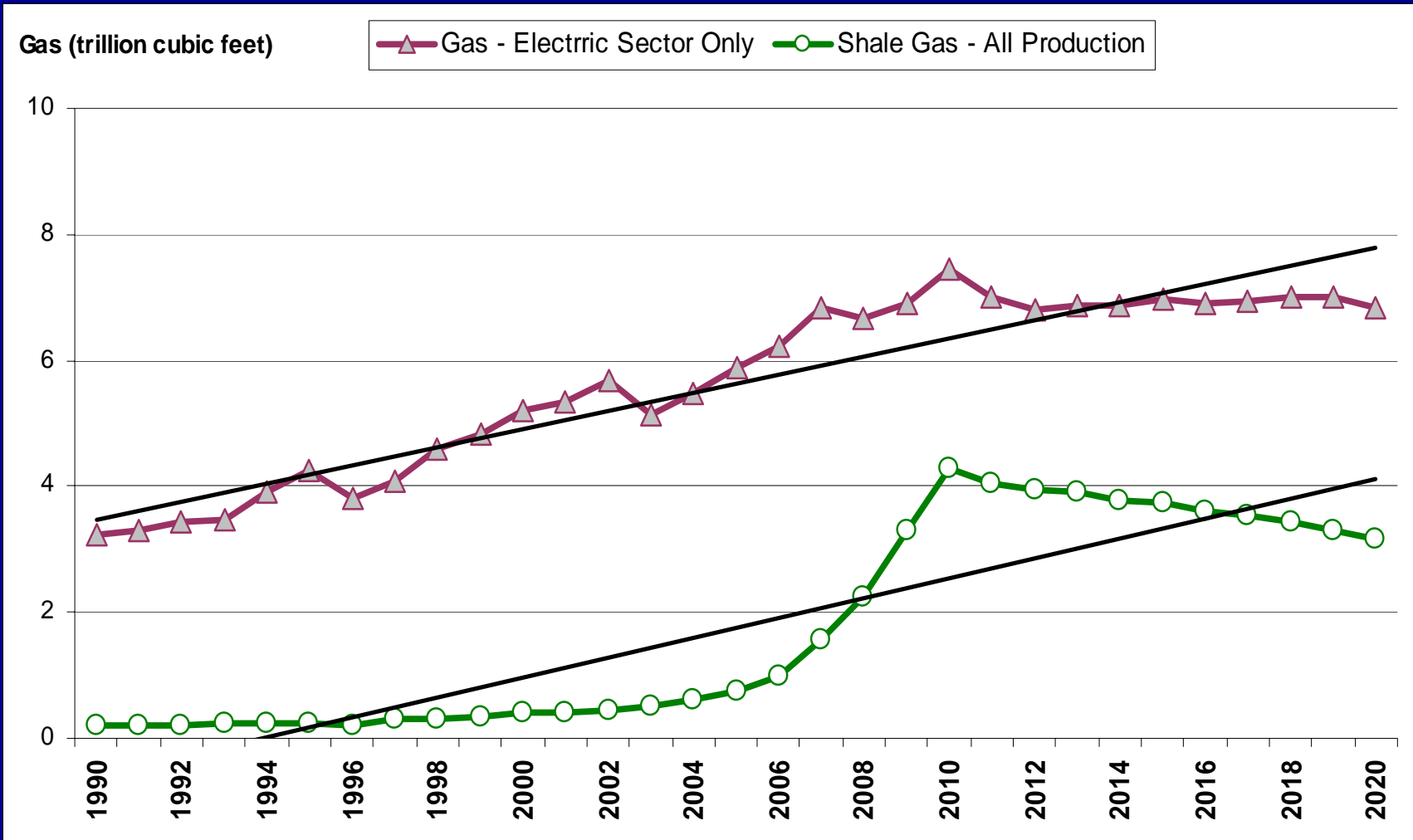
USAEE Houston Chapter

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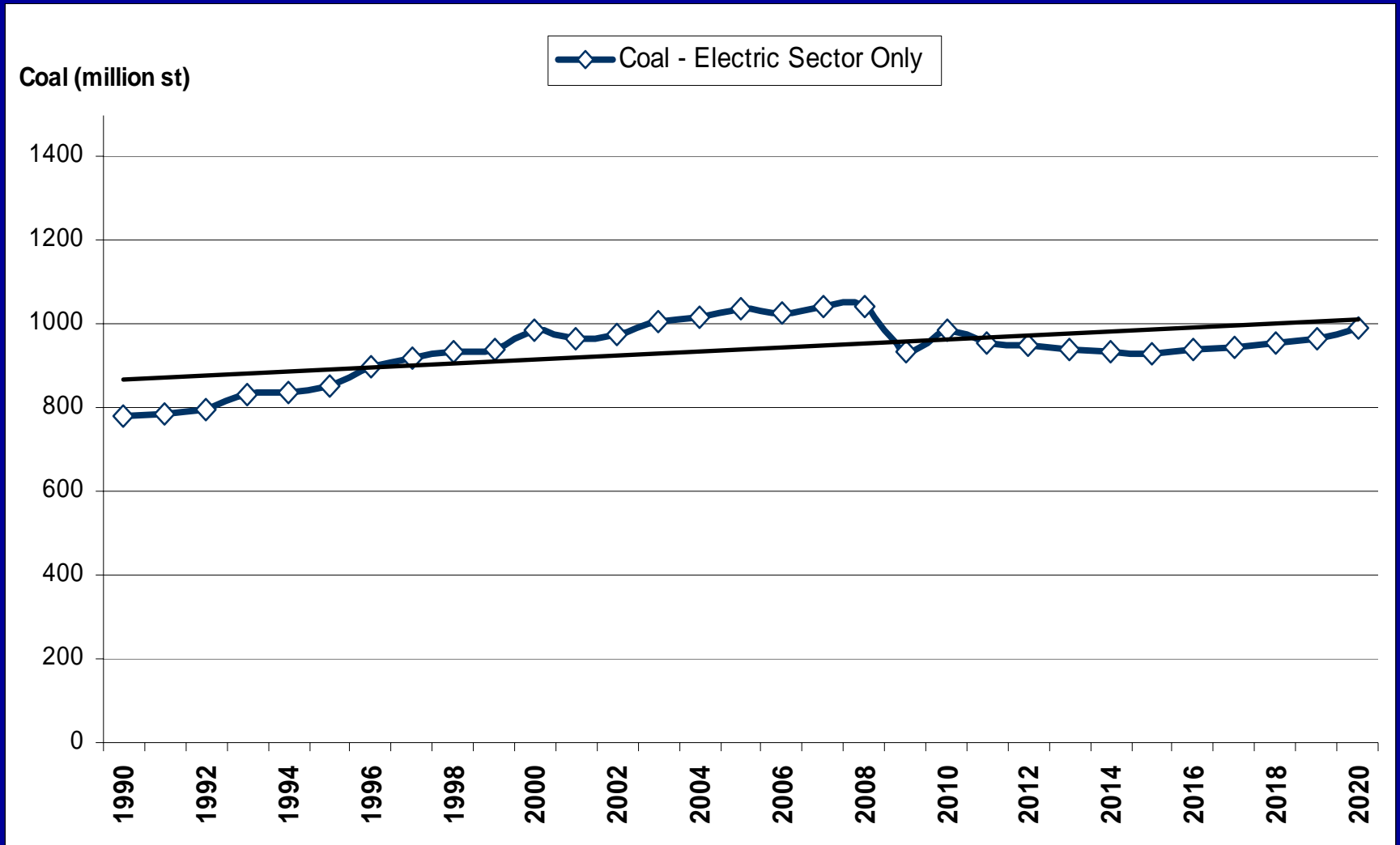
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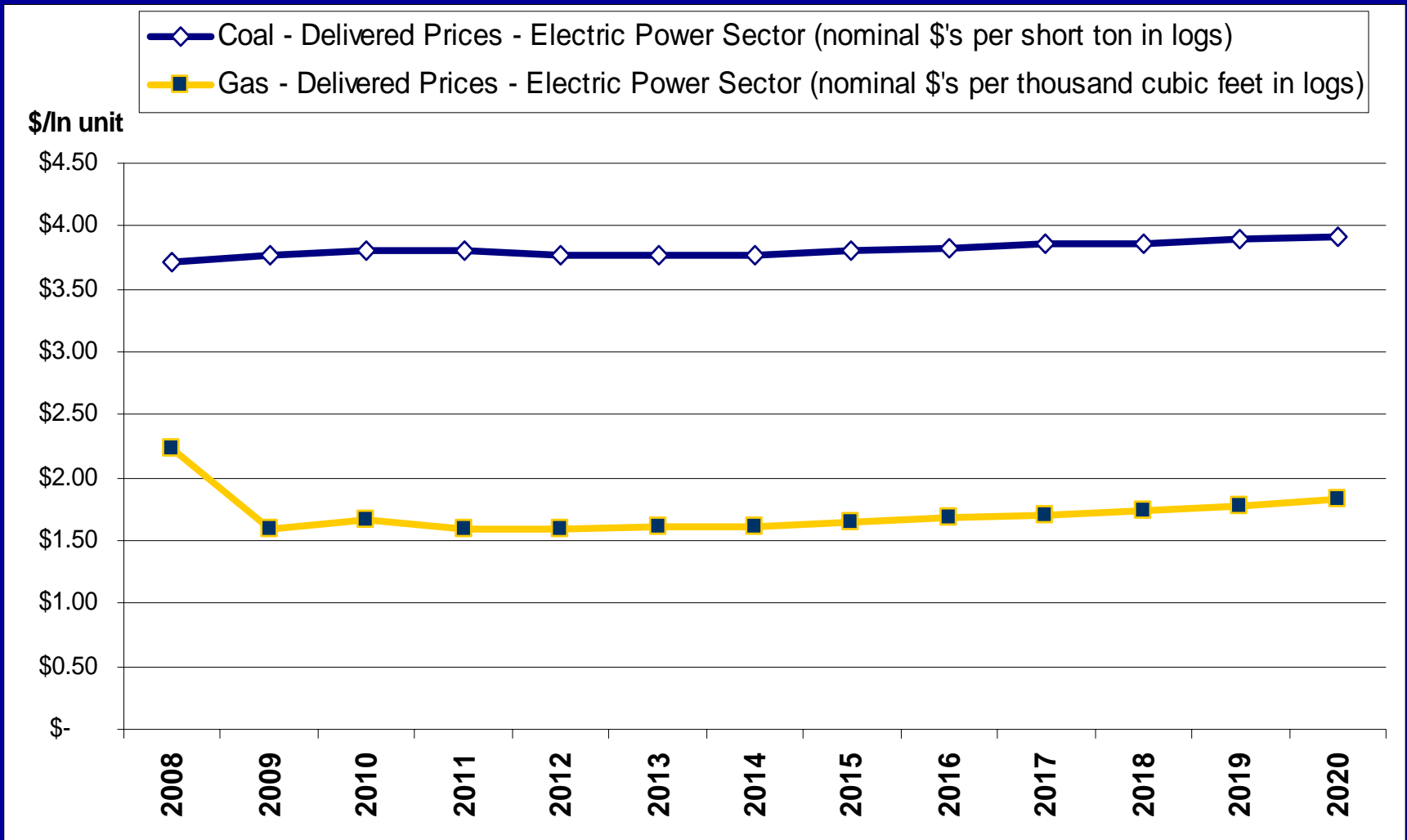
Gas Production and Electricity



Coal Production in Electricity



Coal and Gas Delivered Prices



Cross Elasticity Estimates

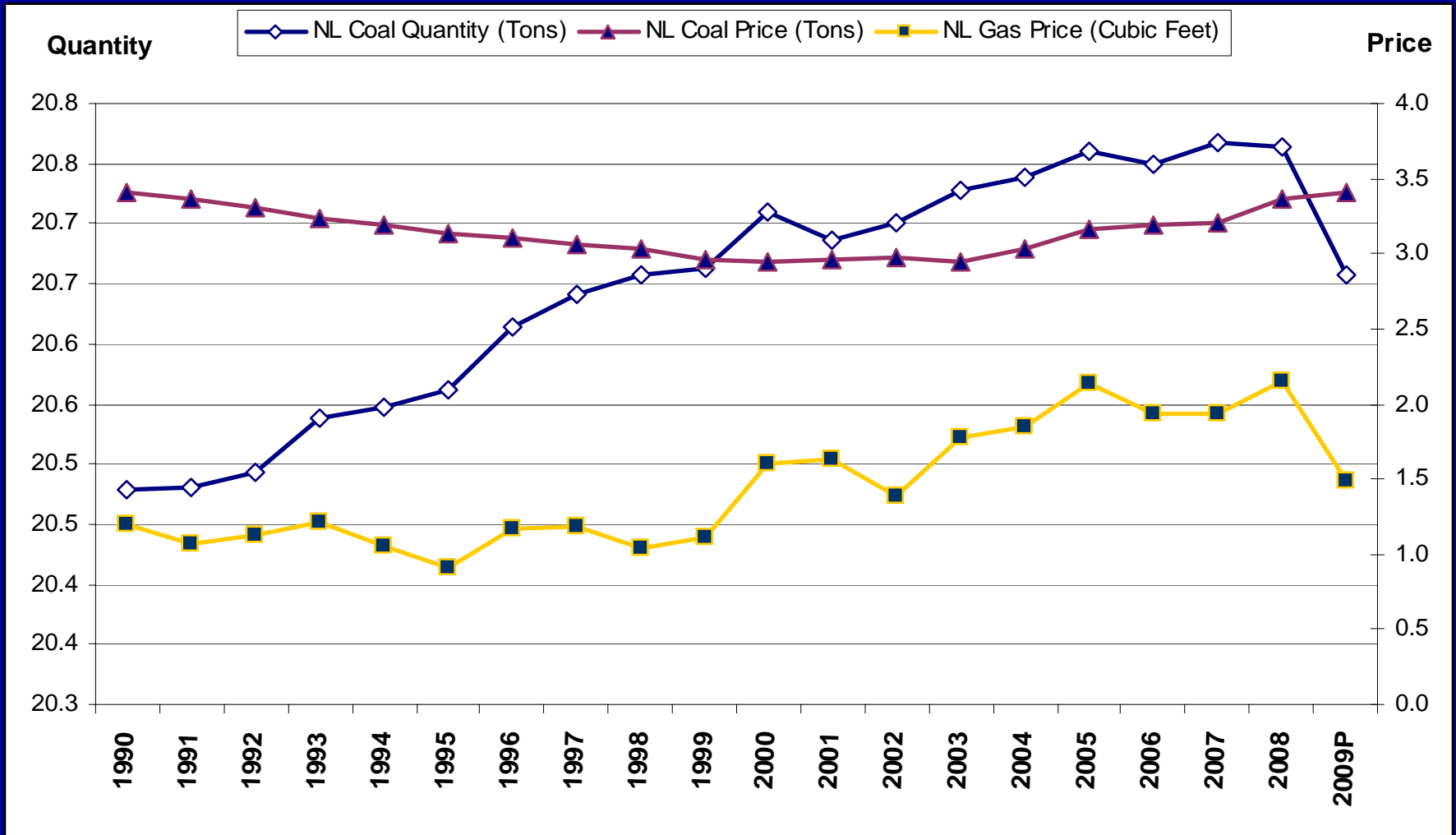
Sereletis (cross elasticity): 0.064 for 1973 to 2007

Sereletis (Morishima elasticity of substitution):
0.201 for 1973 to 2007

Sereletis & Shahmoradi (Morishima): 0.307 to
0.480 (1996 to 2004)

Jones (linear logit coal to gas): 0.027 to 0.210

YGESG Elasticity Data



YGESG estimate

Regression equation:

$$NL(\text{coal } q) = a + b NL(\text{gas } P) + U$$

		s	t-stat
Intercept:	21.19	0.18	117.17
NL coal price:	-0.26	0.06	-4.71
NL gas price:	0.20	0.02	8.83

How much?

YGESG estimate: $0.20 \times 50\%$ equal to 10% and not to exceed 20%.

Credit Suisse estimates 15% to 30%. This requires new supplies of gas in the range of 1.8 TCF to 3.7 TCF per year and the infrastructure to move that new gas to market.

Challenges—Pipelines

National pipeline infrastructure and storage is geared to seasonal fills and draws for heating and cooling.

Challenges—Pipelines

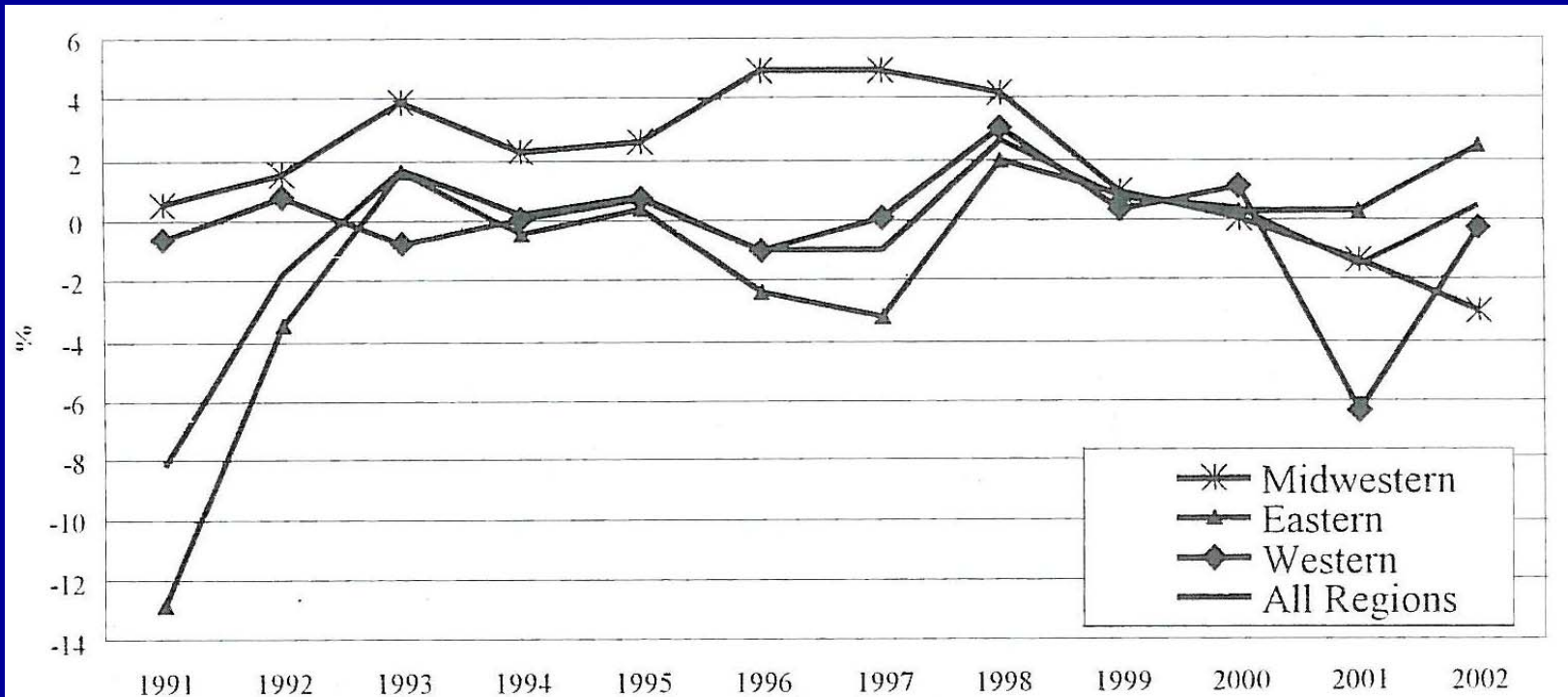


Figure II. Economic value added (EVA) for selected pipeline companies by region (*Source:* Calculations based on Compustat financial statements of the pipelines. See note 3 for calculation of EVA.)

Challenges—Regulations

EPA regulatory resolve appears to be weakening during 2012 campaign

Coal plants are a sunk cost for utilities

In the real world

New coal plants are being canceled—in coal country

Why are coal plants being proposed in Texas?

Why is the US gearing up to export gas?

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