



PASSENGER CAR FLOWS ACROSS THE CANADA-US BORDER:THE EFFECT OF 9/11

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Objectives

- Identify factors that influence the level of passenger vehicle movement across the Canada-US border for the period 1972 – 2011
- Isolate the effect of enhanced security regime in the aftermath of 9/11

Data and Trends

DATA

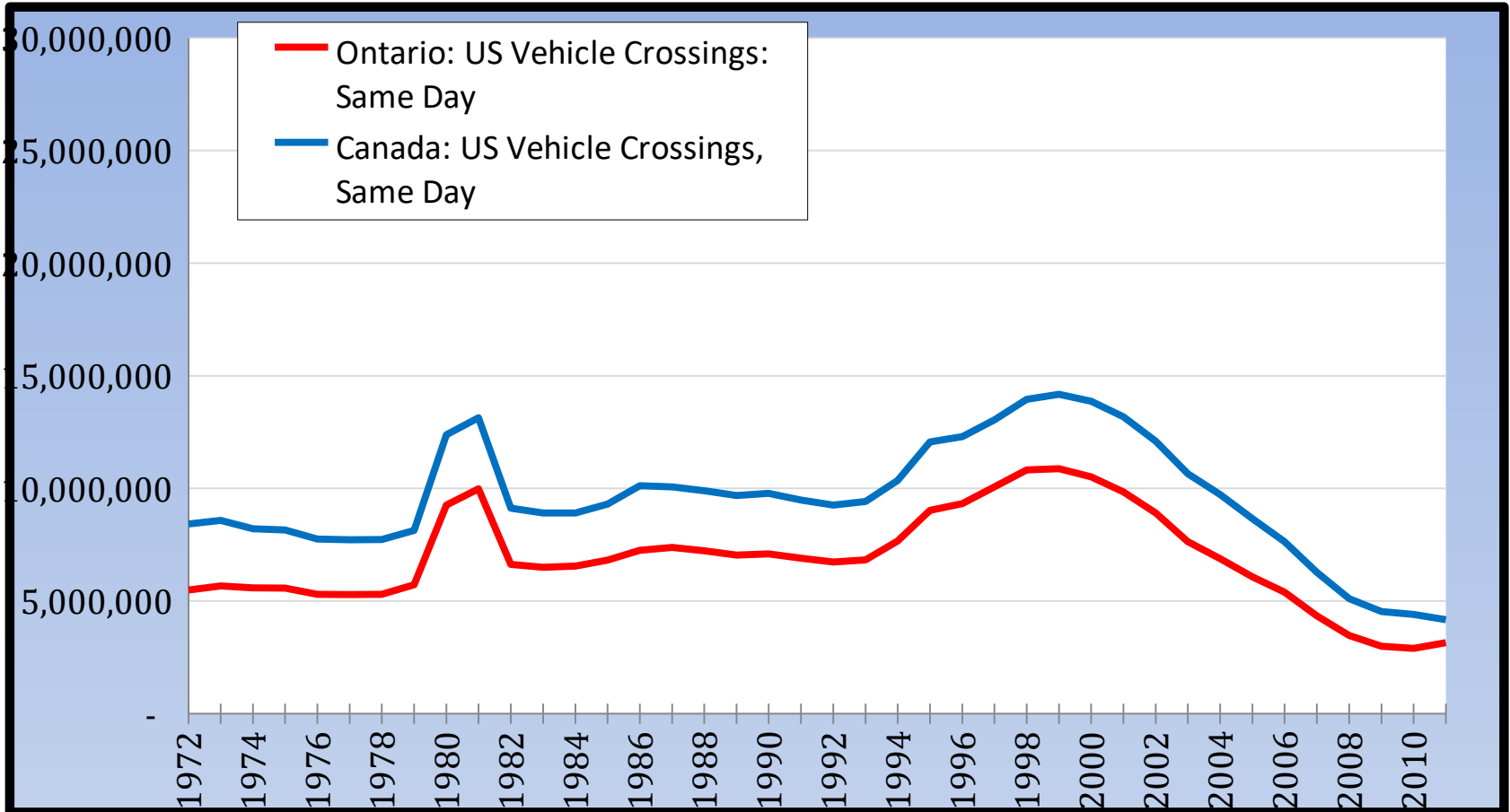
- Data on the number of passenger vehicle crossings the Canada-US border are obtained from the **Statistics Canada International Travel Survey Frontier Counts series** (*CANSIM Table 427-0002*)
- All vehicles are counted as they pass through Canadian border inspection plazas
- Vehicles are separated into US residents visiting Canada and Canadian residents returning from a visit to the US
- The number of vehicles crossings are separated into same day trips and trips that involve staying over one or more nights (hereafter called “overnight” trips)

Data and Trends – cnt'd

DATA

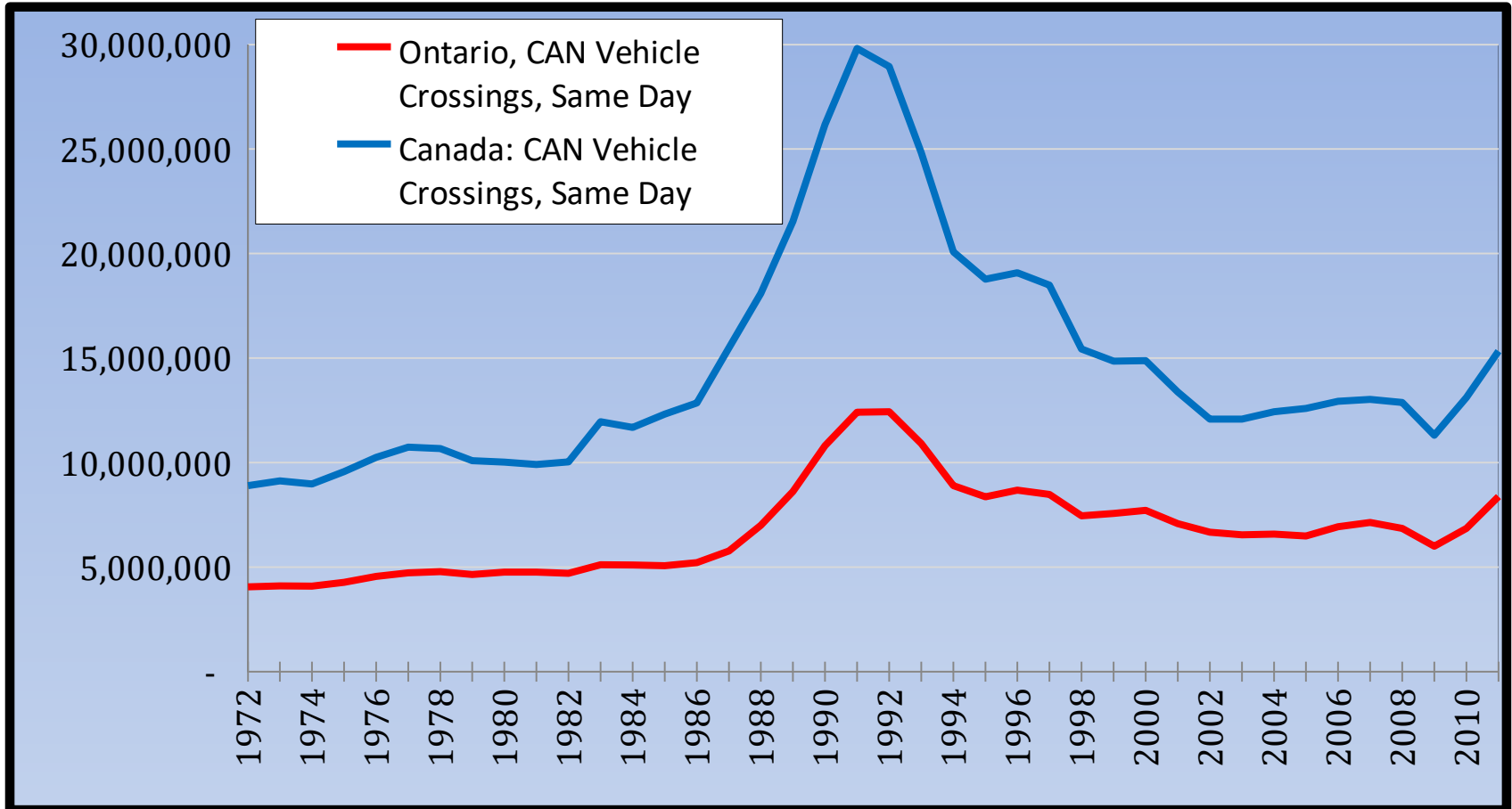
- The data do not identify trip purposes such as shopping trips and commute trips
- The data are also disaggregated by the Canadian province in which the crossings occur
- Data and statistical results are presented both for all of Canada and for the province of Ontario
- Ontario accounts for the largest share of crossings.
- The share of commuting trips is almost certainly higher in Ontario than in other provinces

Trends



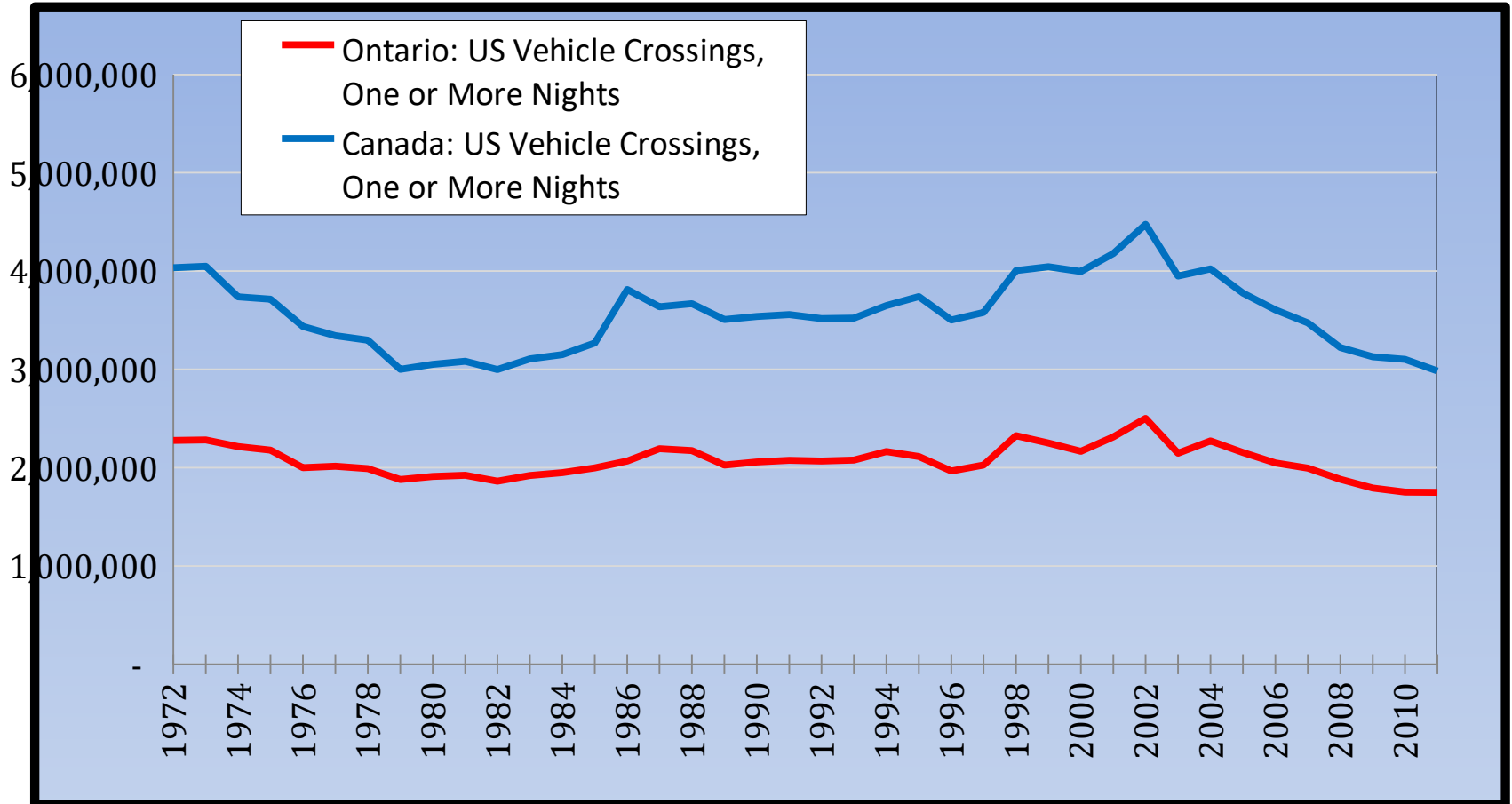
Annual Vehicle Crossings from US to Canada: Same Day

Trends – cnt'd



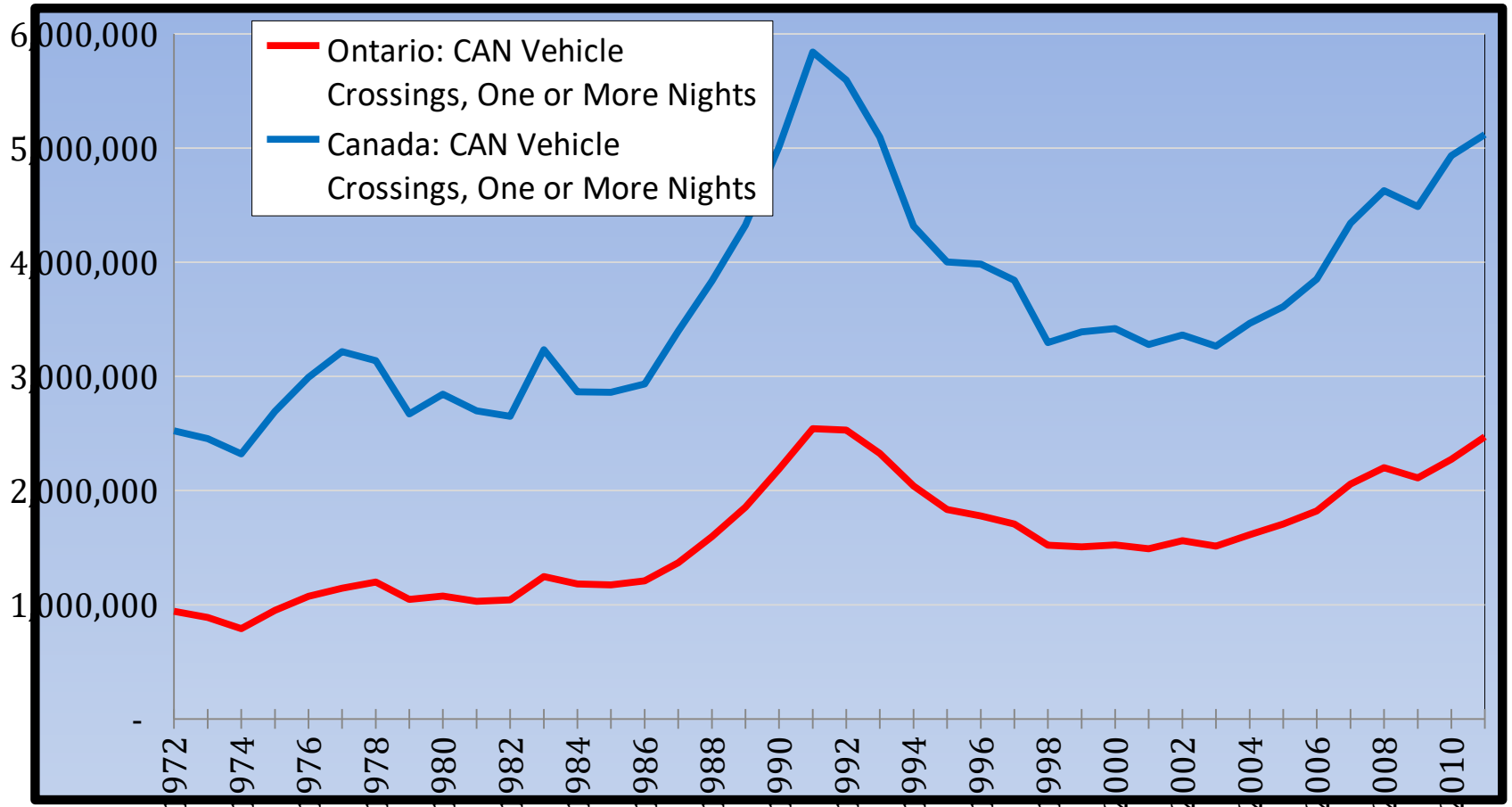
Annual Vehicle Crossings from Canada to US: Same Day

Trends – cnt'd



Annual Vehicle Crossings from US to Canada: Overnight

Trends – cnt'd



Annual Vehicle Crossings from Canada to US: Overnight

Multivariate Regression Analysis

- **Annual time series regression models** are specified for passenger vehicle crossings to the US and to Canada
- Separate models are estimated for same day trips and for overnight trips, making a total of four basic models
- Each of these models is then repeated for the subset of trips that pass through Ontario border crossings, making a total of eight regression models

Basic Form of Time Series Regression Model

- $$T_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_k X_{kt} + \varepsilon_t$$

Where,

T_t is the number of passenger crossing year t

X_{kt} are the independent variables used in the regression

($k = 1, 2, \dots, k$)

β 's are parameters to be estimated and

ε_t is the unobserved error term

Independent Variables used in Regression

Variable	Definition
<i>CAN. GDP</i>	Real GDP in Canada
<i>ONT. GDP</i>	Real GDP in Ontario
<i>USA. GDP</i>	Real GDP in the US
<i>Δ CAN. GDP (%)</i>	Change in Canadian GDP

Note: Time dummies TD1 to TD4 are used to capture popularity of Sunday shopping (TD1), introduction of GST (TD2), brief period when gasoline was cheaper in Canada due to the Iraq-Iran war (TD3), and opening of casinos in Canada-earlier than in the US(TD4) .

Factors captured by dummy variables

- Popularity of Sunday shopping (87-92)
- Introduction of GST (92-96)
- Brief period when gasoline was cheaper in Canada (80 – 82)
- Opening of casinos in Canada (earlier than in the US.) (95-2000)

Results

Variable**CAN to
USA***Constant*

0.629

CAN. GDP

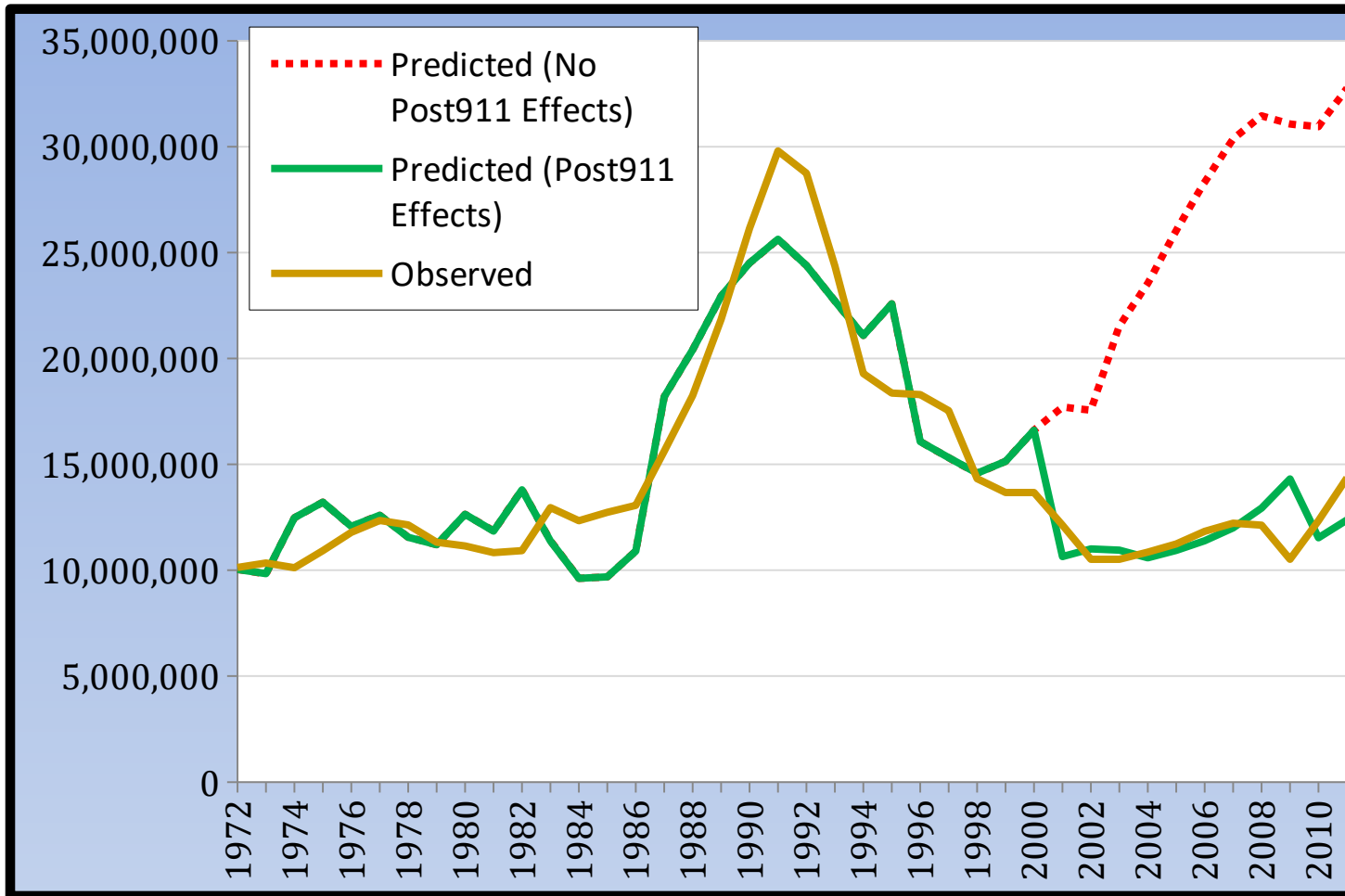
1.095

*ONT. GDP**USA. GDP*

Highlights

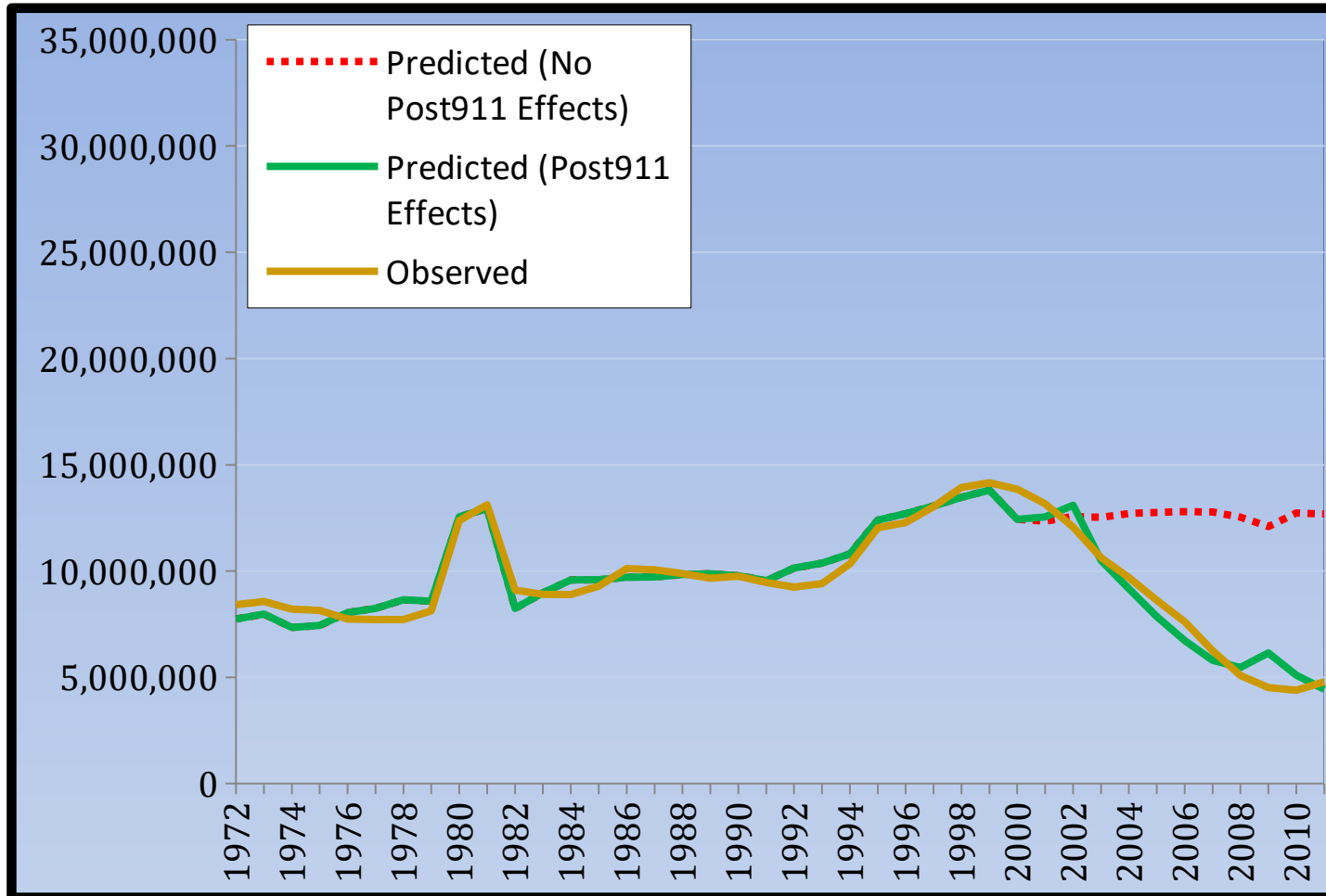
- GDP growth rate has negative impact on trips from Canada
- Effect of exchange rate as expected (negative for Can-US, positive for US-Can but not significant for US-Can.)
- Effect of 911:
 - Negative effect on all trips
 - Eliminates exchange rate effects for Can-US trips

Results-cnt'd



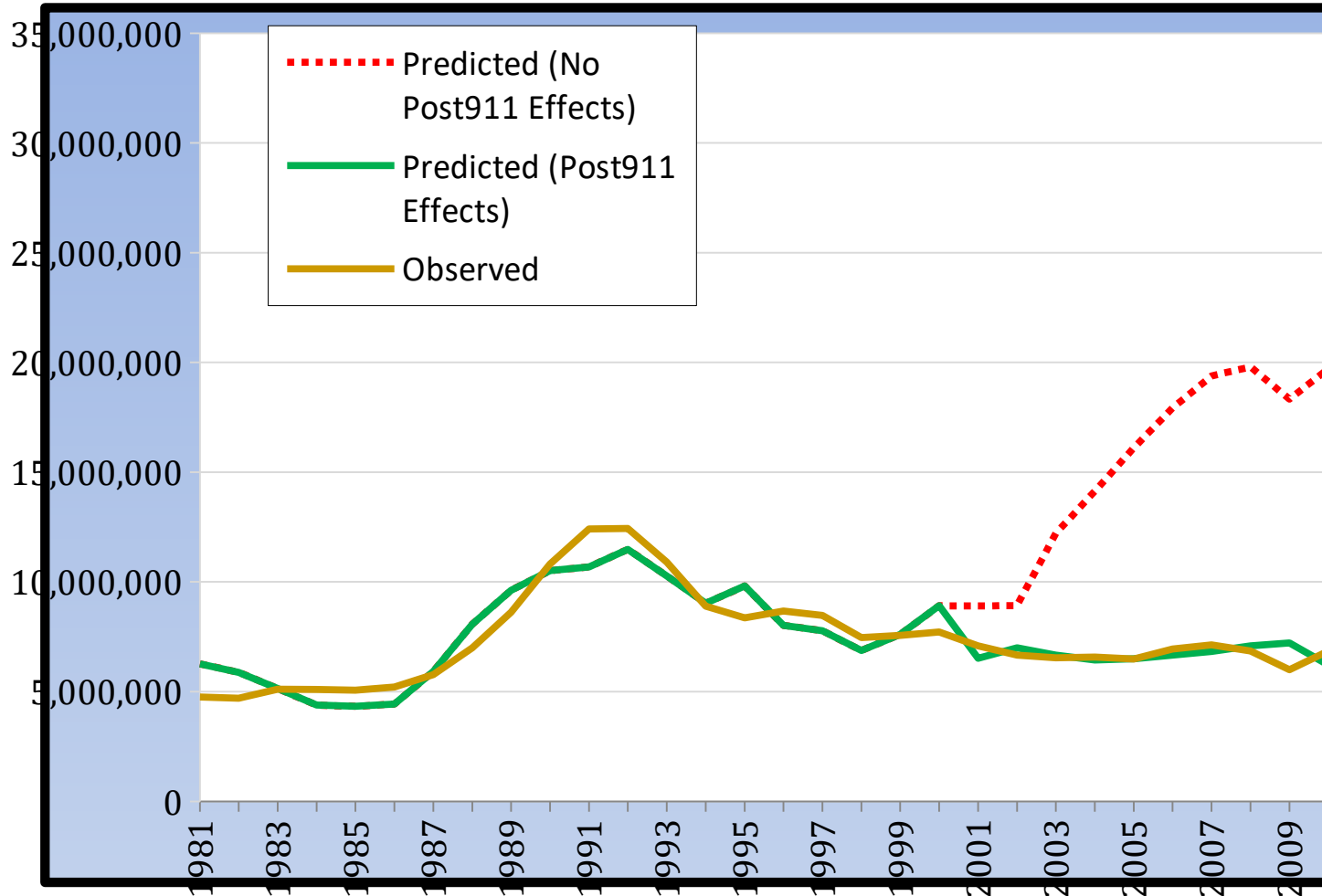
Estimated Impact of 9/11 on Same Day Passenger Vehicle Crossings from Canada to the US

Results-cnt'd



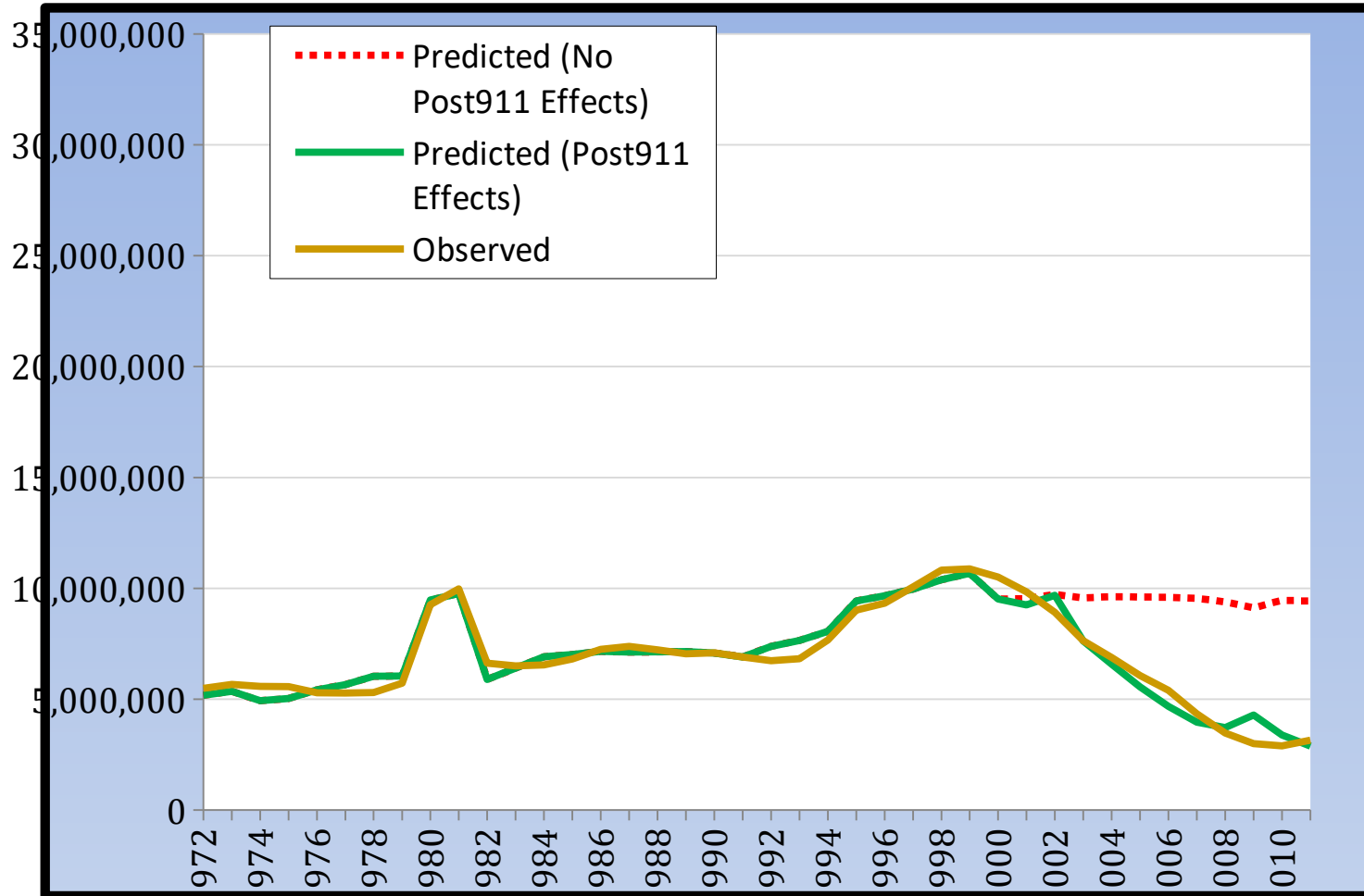
Estimated Impact of 9/11 on Same Day Passenger Vehicle Crossings from the US to Canada

Results-cnt'd



Estimated Impact of 9/11 on Same Day Passenger Vehicle Crossings from Ontario to the US

Results-cnt'd



Estimated Impact of 9/11 on Same Day Passenger Vehicle Crossings from the US to Ontario

Conclusions

- Same day passenger vehicle trips from the US to Canada have plummeted while same day trips from Canada to the US have stagnated
- Results suggest that had it not been for the attacks of 9/11, same day trips from the US to Canada would have held steady and trips from Canada to the US would have reached new peaks

References

CANSIM Table 427-0002 : Table [427-0002](http://cansim2.statcan.ca/CII/Dir/4270002-eng.htm) - Number of vehicles travelling between Canada and the United States, monthly
<http://cansim2.statcan.ca/CII/Dir/4270002-eng.htm>

William P. Anderson, Hanna F. Maoh and Charles M. Burke, 2014, "Passenger car flows across the Canada-US border: The effect of 9/11," *Transport Policy*, 35:50-56.

Acknowledgments

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