Tax changes and economic growth: Empirical evidence for a panel of OECD countries

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Outline

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Purpose

- Estimate the effect of total taxes on growth (GDP)
- Estimate the effect of different taxes on growth (GDP)
- Estimate the effect of total taxes on Investment and Consumption

Data (I)

- 26 OECD countries from 1965 to 2007

- (i) the total tax rate, (ii) taxes on income, profits, and capital gains, (iii) social security contributions, (iv) taxes on property, and (v) taxes on goods and services

Data (II)

Country	*Total*	*Income*	*Property*	*Goods*	*Social Security*
Australia	26.7	14.9	2.5	8	NA
Austria	39.4	10.6	1	12.5	12.3
Belgium	41.3	15.4	1.5	11.5	12.8
Canada	32.8	15	3.4	9.7	4
Denmark	44	25.4	2.1	15.4	1
Finland	39.8	16	1	13.4	8.9
France	40.2	7.4	2.4	12	16
Germany	35.3	11.4	1.2	9.9	12.6
Greece	25.4	4.8	1.6	10.8	8.1
Iceland	32.6	10.7	2.3	16.6	2
Ireland	31.2	11	2.2	13.6	4.1
Italy	34.2	10.6	1.5	9.8	11.5
Japan	24.9	10.5	2.4	4.5	7.5
Korea	19.1	5.5	2.2	9.1	1.8
Luxembourg	34.6	13.7	2.5	8.5	9.6
Mexico	17.6	4.7	0.3	9.7	2.6
Netherlands	40.3	12.2	1.5	10.9	15.4
Norway	40.3	15.8	1	14.6	8.8
New Zealand	31.9	20.1	2.3	9.5	NA
Portugal	26.1	6.3	0.7	11.2	7.5
Spain	26.6	7.2	1.6	7.6	10.2
Sweden	46.1	20	1.1	12.1	11.3
Switzerland	25.3	11.3	2.2	5.9	5.8
Turkey	15.8	5.3	0.7	6.2	2.4
UK	35.2	13.6	4.2	10.8	6
USA	26.7	12.6	3.2	4.9	5.9

Country averages over 1965-2007

Data (III)


Australia
Austria
Belgium
Canada
Denmark
Finland
France
Germany
Greece
Iceland
Ireland
Italy
Japan
Korea
Luxembourg
Mexico
Netherlands
New Zealand
Norway
Portugal
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States
Total taxes as % of GDP
Time (1965-2007)

Empirical Methodology (I)

1. $$growth_{i,t} = w_i + v_t + \sum_{j=0}^{J} b_j dtax_{i,t-j} + u_{i,t},$$

2. $$growth_{i,t} = w_i + v_t + \sum_{j=1}^{K} a_j growth_{i,t-j} + \sum_{j=0}^{J} b_j dtax_{i,t-j} + u_{i,t}$$

Empirical Methodology (II) -Robustness

- Current Tax excluded
- VAR:

$$growth_{i,t} = w_i + v_t + \sum_{j=1}^{K} b_j dtax_{i,t-j} + \sum_{j=1}^{J} a_j growth_{i,t-j} + u_{i,t},$$

$$dtax_{i,t} = x_i + z_t + \sum_{j=1}^{J} c_j dtax_{i,t-j} + \sum_{j=1}^{J} f_j growth_{i,t-j} + \tau_{i,t}$$

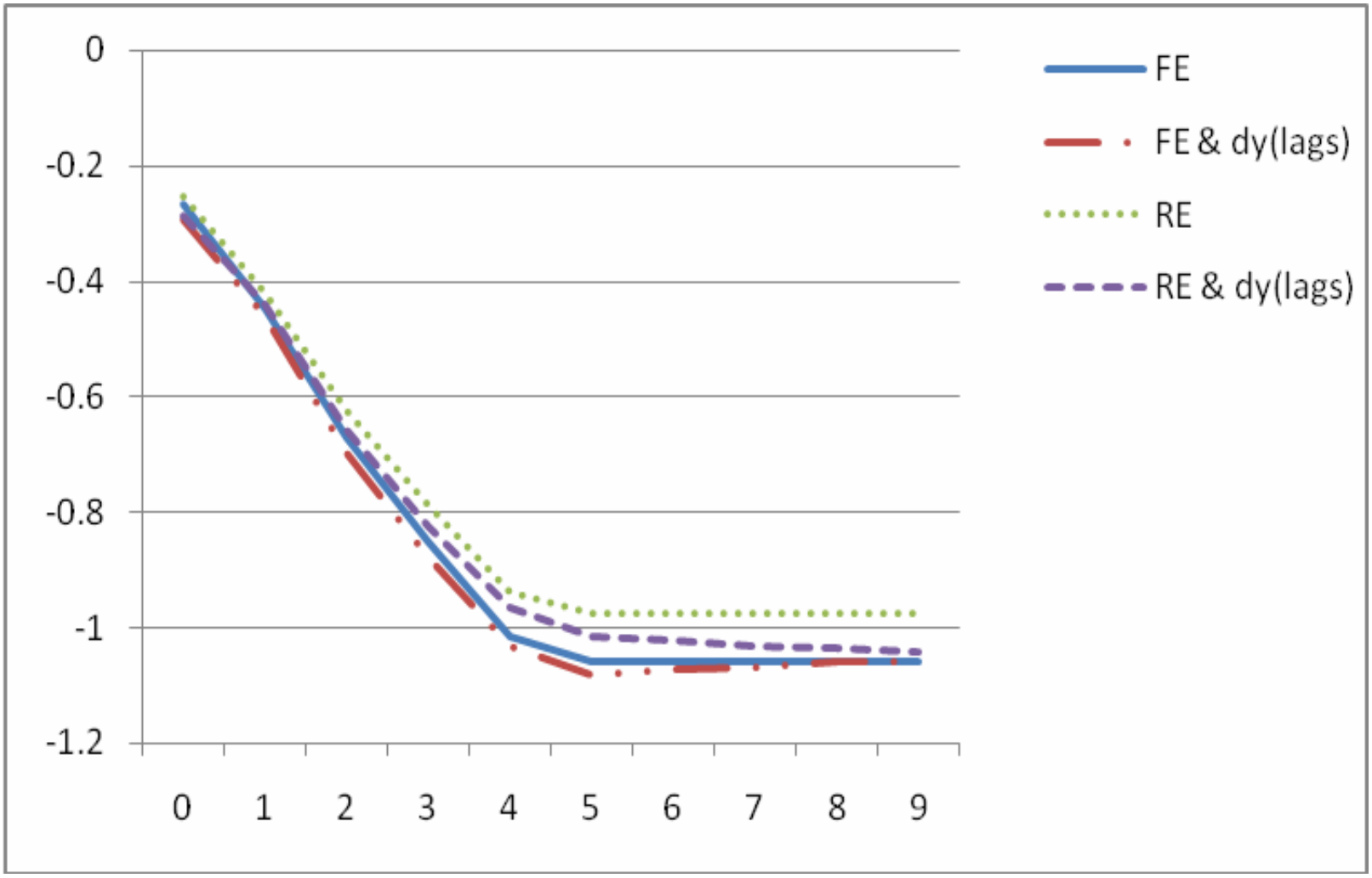
- GMM (Arellano-Bover, Blundell-Bond)
- Five years moving averages

Results (I)

	Without Growth Lags (1)		With Growth Lags (2)	
	FE	RE	FE	RE
dtax	-0.27***	-0.25***	-0.29***	-0.29***
	(0.07)	(0.07)	(0.07)	(0.07)
dtax(-1)	-0.18***	-0.17***	-0.12	-0.09
	(0.07)	(0.07)	(0.07)	(0.07)
dtax(-2)	-0.22***	-0.20***	-0.22***	-0.19***
	(0.07)	(0.07)	(0.07)	(0.07)
dtax(-3)	-0.18***	-0.17***	-0.13***	-0.10
	(0.07)	(0.07)	(0.07)	(0.07)
dtax(-4)	-0.16***	-0.15***	-0.16***	-0.13***
	(0.07)	(0.07)	(0.07)	(0.07)
dtax(-5)	-0.04	-0.01	-0.03	-0.00
	(0.07)	(0.07)	(0.07)	(0.07)
Sum of *dtax*	-1.06***	-0.97***	-0.95***	-0.81***
	(0.19)	(0.18)	(0.19)	(0.19)

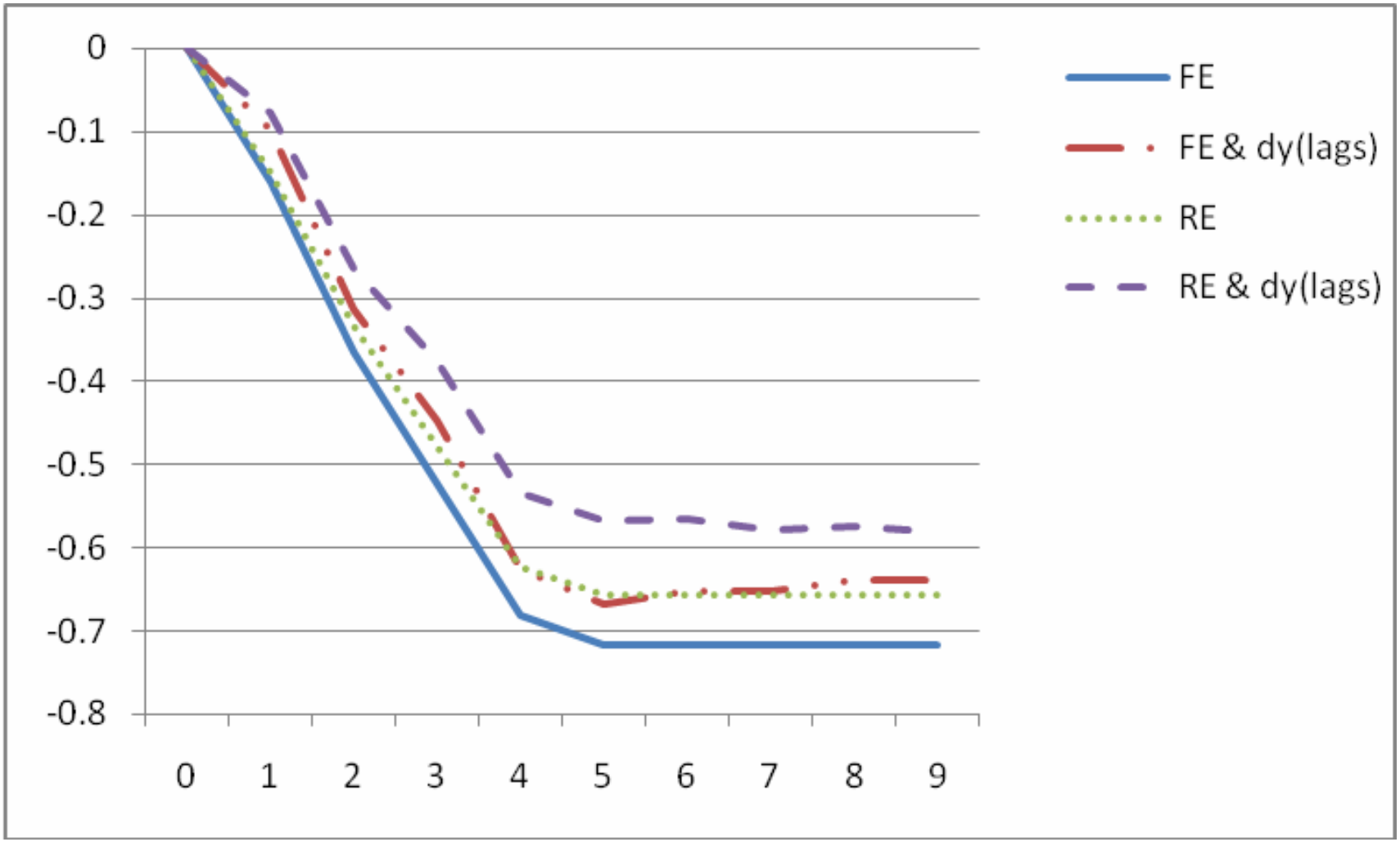
Results (II)

Response to an increase in Total Tax by 1% of GDP



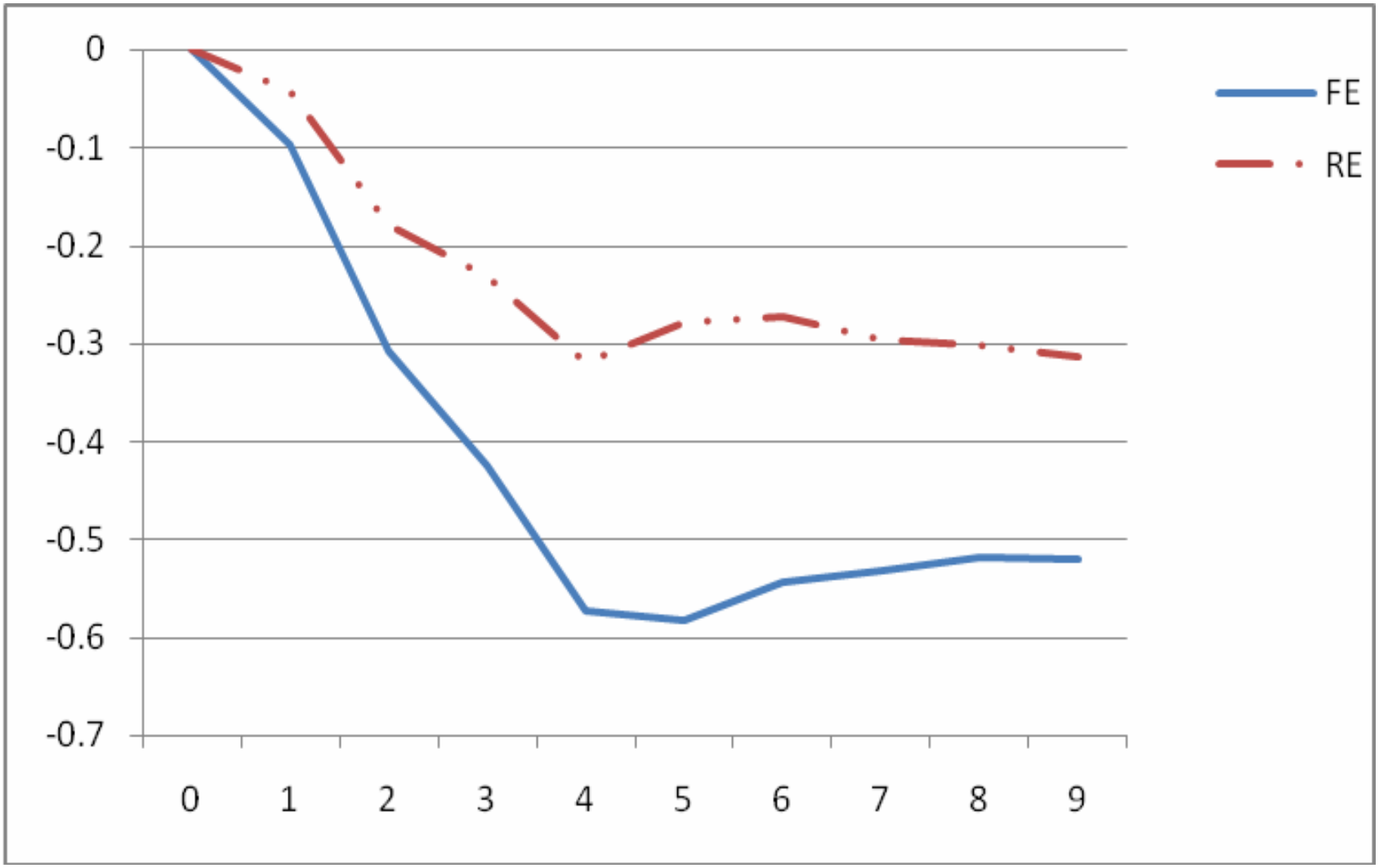
Results (III)

Response to an increase in Total Tax by 1% of GDP (no cont. tax)



Results (IV)

Response to an exogenous increase in Total Tax by 1% of GDP

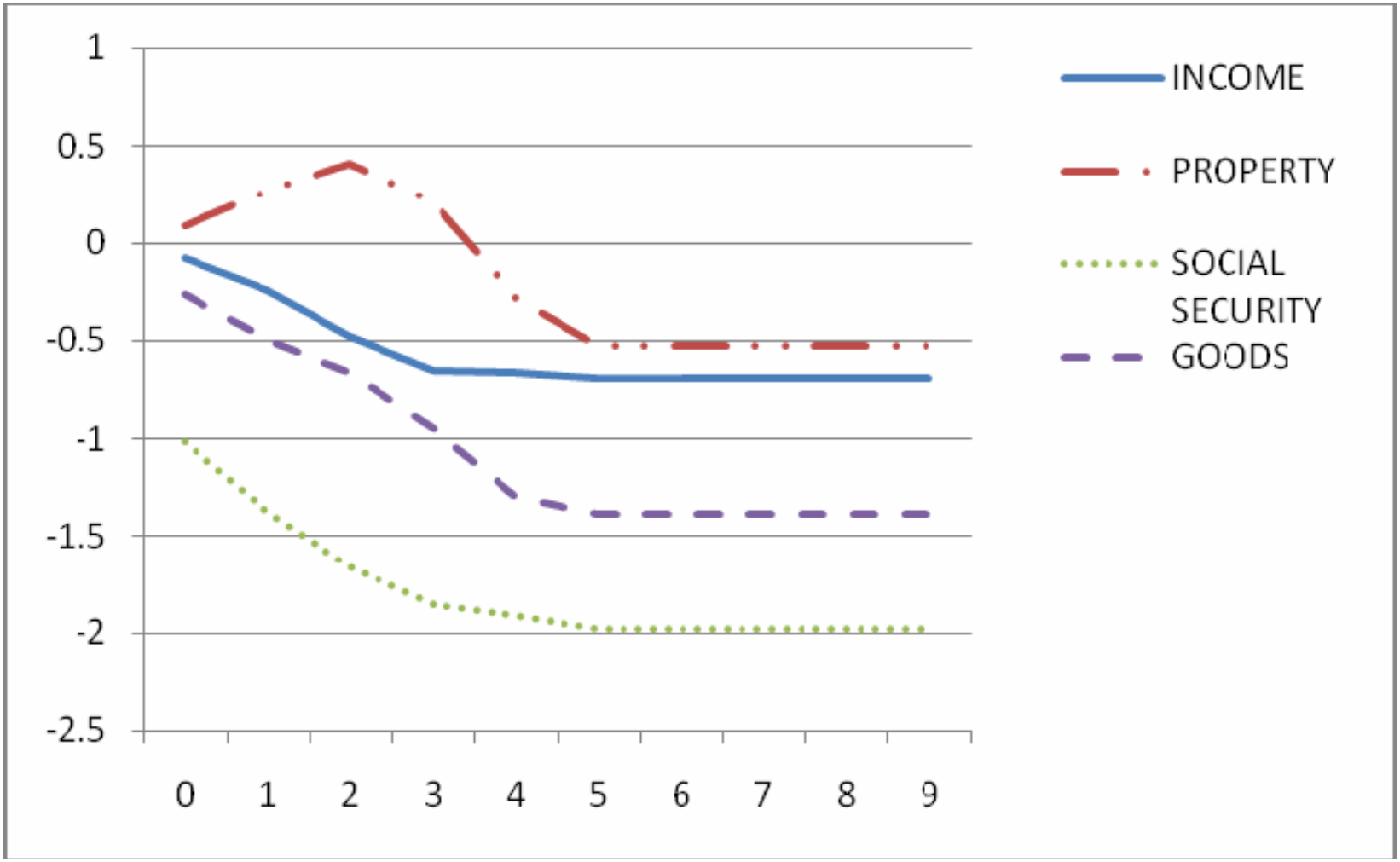


Results (V)

	GMM (2)	5-years moving averages(2)
dtax	-0.31***	-0.62***
	(0.07)	(0.11)
dtax(-1)	-0.11*	-0.02
	(0.07)	(0.11)
dtax(-2)	-0.12*	0.01
	(0.07)	(0.11)
dtax(-3)	-0.11*	0.01
	(0.07)	(0.11)
dtax(-4)	-0.06	-0.11
	(0.07)	(0.11)
dtax(-5)	-0.03	0.01
	(0.07)	(0.11)
Sum of *dtax*	-0.75***	-0.68***
	(0.19)	(0.32)

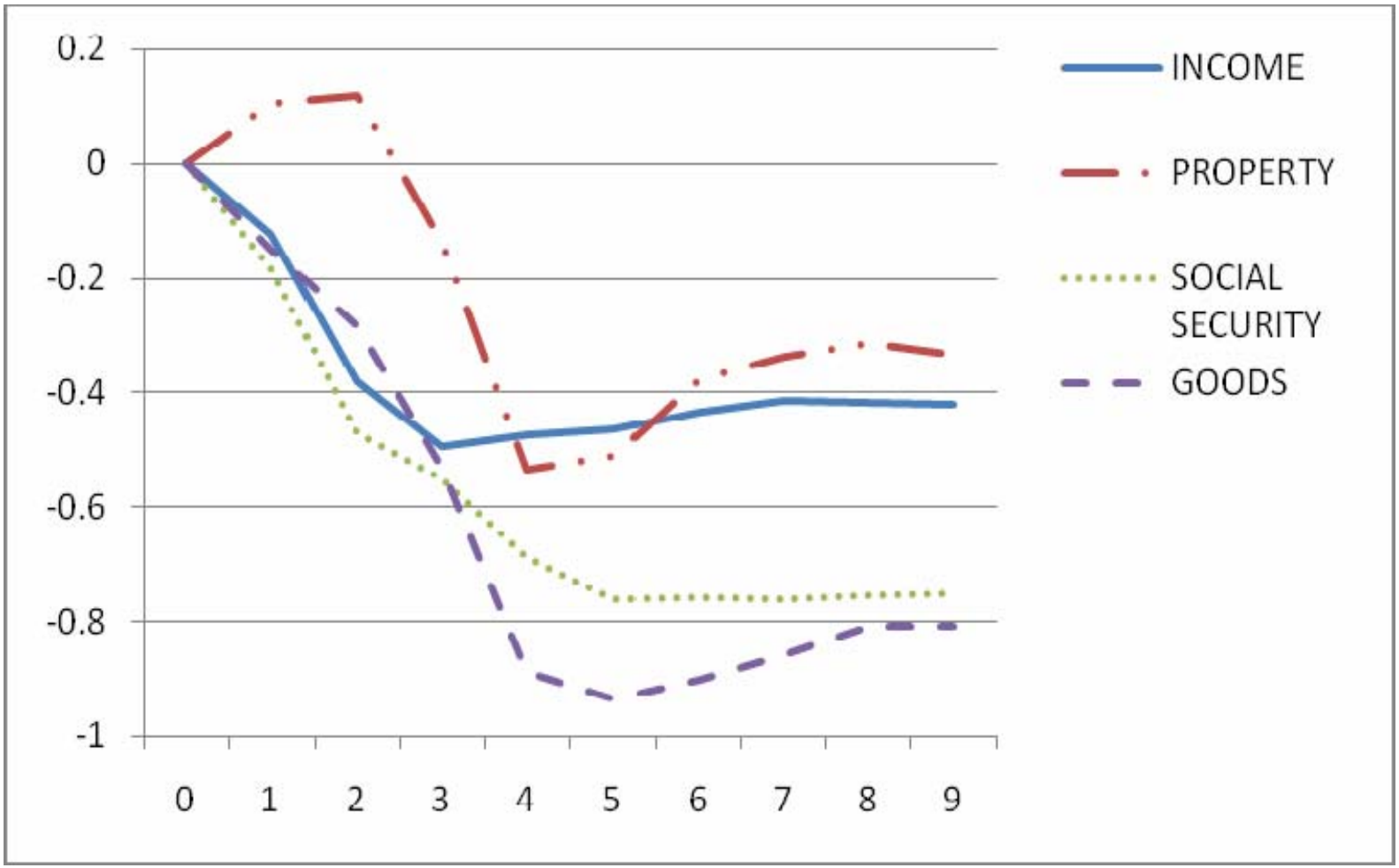
Results (VI)

Responses to an increase in Various Taxes by 1% of GDP



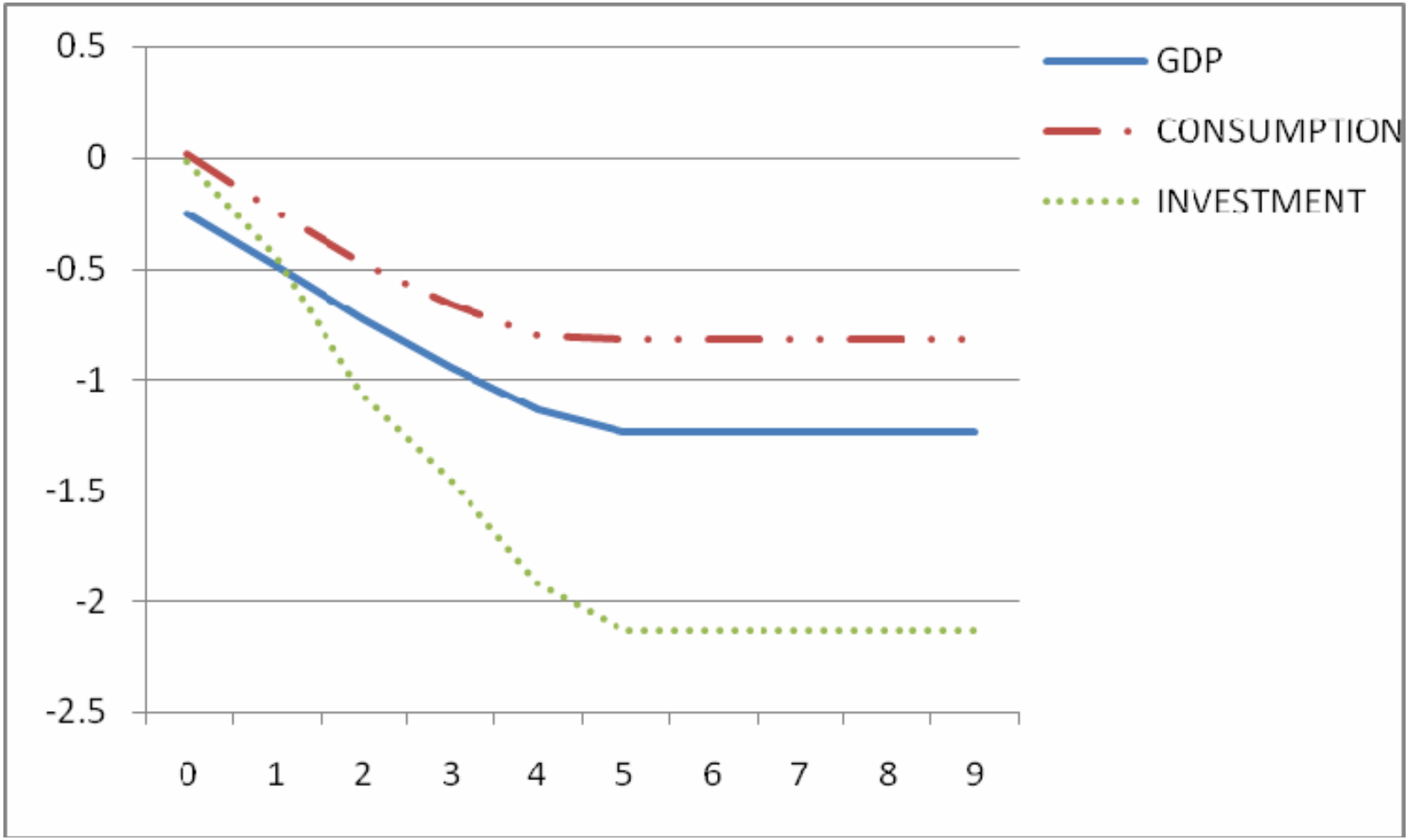
Results (VII)

Responses to an Exogenous increase in Various Taxes by 1% of GDP



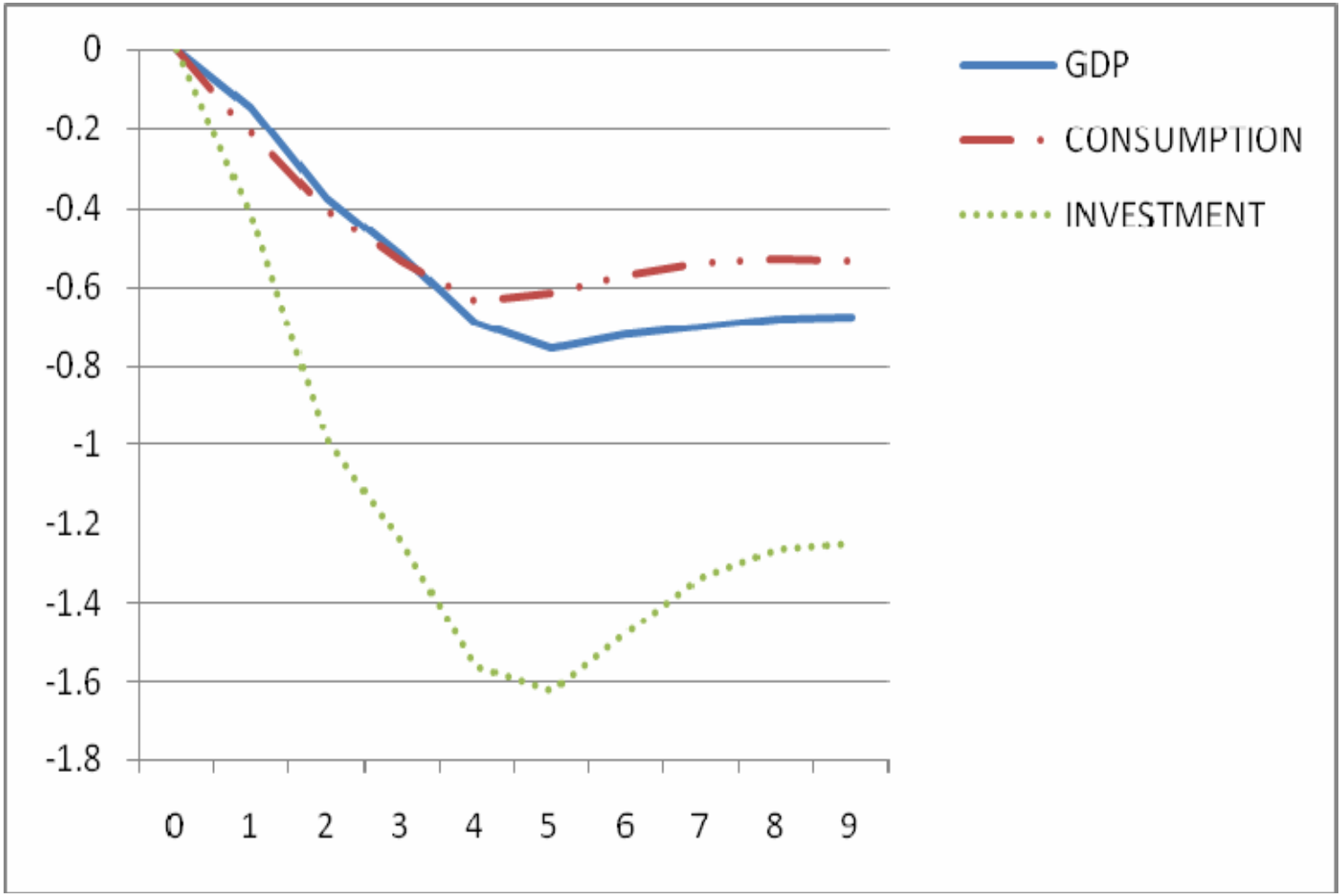
Results (VIII)

Responses of GDP and components to an increase in Total Tax by 1% of GDP



Results (IX)

Responses of GDP and components to an exogenous increase in Total Tax by 1% of GDP



Conclusions

- an increase in the total tax rate by 1% of GDP will have a long-run effect on real GDP per capita of –0.5% to –1%.

- taxes on income, profits, and capital gains; taxes on property; social security contributions; and taxes on goods and services have negative effects on real GDP per capita.

- an increase in social security taxes or taxes on goods and services has a larger effect on output than an increase in the income tax.

- a tax increase has a clear negative effect on aggregate GDP, consumption, and investment. However, the effect of a tax change on investment is much larger than the effect on GDP or consumption.