Elasticity of Taxable Income and Cultural and Social Norms: Evidence from Immigrants in Canada

ACLMR Battle for Alberta II Labour Workshop

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December 6, 2024

Motivation

- Elasticity of taxable income (ETI) crucial parameter in Public Finance optimal taxation.
- ETI functions as sufficient statistics for behavioural responses to taxes based on certain assumptions.
- ETI provides direct estimates of the efficiency costs of taxes, and crucial for determining optimal tax rates.

Motivation

- Cross-country estimates of ETIs vary widely. Can cultural and social norms explain the differences?
- Culture: those customary beliefs and values that social groups transmit fairly unchanged overtime (Guiso et al. 2006, 23).
  - Cultural norms are specific rules guiding acceptable behaviours and interactions within the broader cultural context.
  - Social norms: implicit rules guiding social interactions, behaviour, attitudes, choices, and perceptions of policies.

Research Questions

- I investigate how cultural and social norms affect individuals' behavioural responses to changes in tax policies.
- Focusing on Canada.
  - Series of significant income tax reforms
  - Large immigrants population—diverse cultural norms
  - Rich admin panel microdata
- I exploit exogenous variations in the tax rates and detailed admin data to estimate the ETIs.
- Estimate ETIs by country of origin and relate it to home country cultural and social norms proxies.

Preview of Results

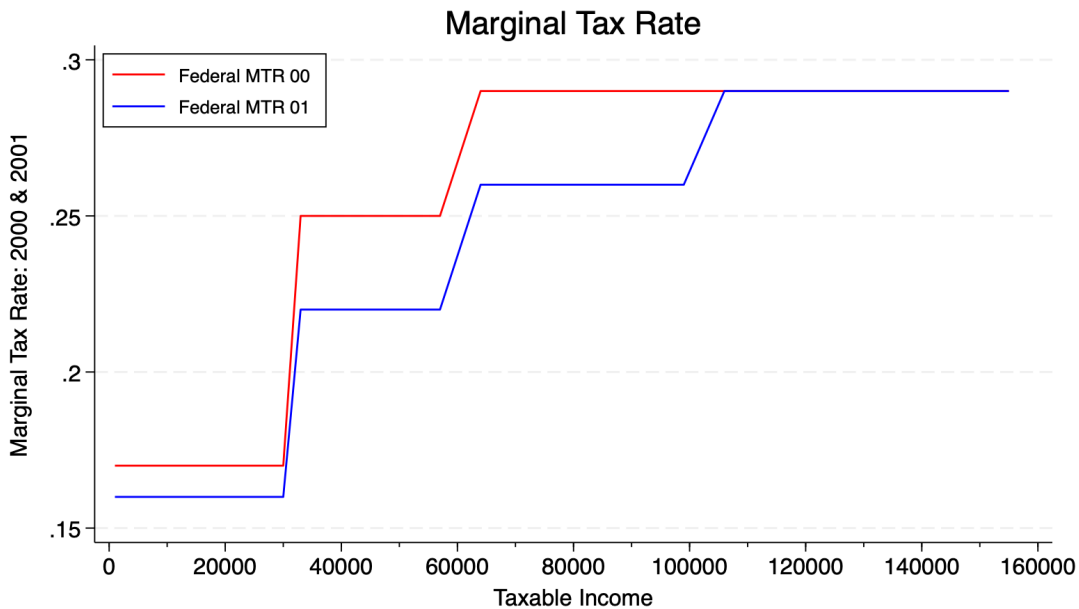
- Overall sample ETI estimates about 0.08.
- ETIs for immigrants (0.094) are larger than non-immigrants (0.078), showing differential effect of the tax change.
- ETI $\downarrow$ in trust in others, confidence and trust in government, religiosity, and individualism index
- ETI $\uparrow$ in power and wealth inequality, and corruption perception, etc.

Literature & Contributions

- Culture and economic outcomes (e.g., Guiso, Sapienza, and Zingales 2006; Fernandez 2011; Alesina and Giuliano 2015)
- Culture and tax evasion (e.g., Alm J. et al. 1999; Tsakumis et al. 2007; and Allam et al. 2023)
- Culture and redistribution preference (e.g., Luttmer and Singhal 2011; and Eugster and Parchet 2019).
- ETI literature (e.g., Gruber and Saez 2002; Sillamaa and Veall 2001; Kleven and Schultz 2014; Milligan and Smart 2015) find widely variables results.

Federal (1988, 2001, and 2016) and Provincial Income Tax Reforms

Figure 1: 2001 Federal Income Tax Reform



- In 2000, provinces implemented a tax on net income reform (TONI).
- Since 2010, several provinces have raised MTRs on high-income earners.

Data

- Rich administrative microdata datasets
  - Longitudinal Administrative Databank (LAD), 1982–2019
  - Longitudinal Immigration Database, 1982–2019.
- Social and cultural norms proxies constructed from the following sources:
  - World Value Survey, 1985–2022, times series version
  - Corruption perception index data from the Transparency International, 1995–2019.
  - Six dimensions of national culture from GEERT HOFSTEDE's Cultural Dimension Matrix 2015.

Research Design

- Max u(c, z, $\mathbf{x}$)) s.t $c = (1\text{-}\tau)\cdot z + y$ to generate reported income, $z(1\text{-}\tau, y, \mathbf{x})$

$$\frac{dz}{z} = -e\frac{d\tau}{1-\tau} + \eta\frac{dy - zd\tau}{z(1-\tau)} + \Delta\mathbf{x} \tag{1}$$

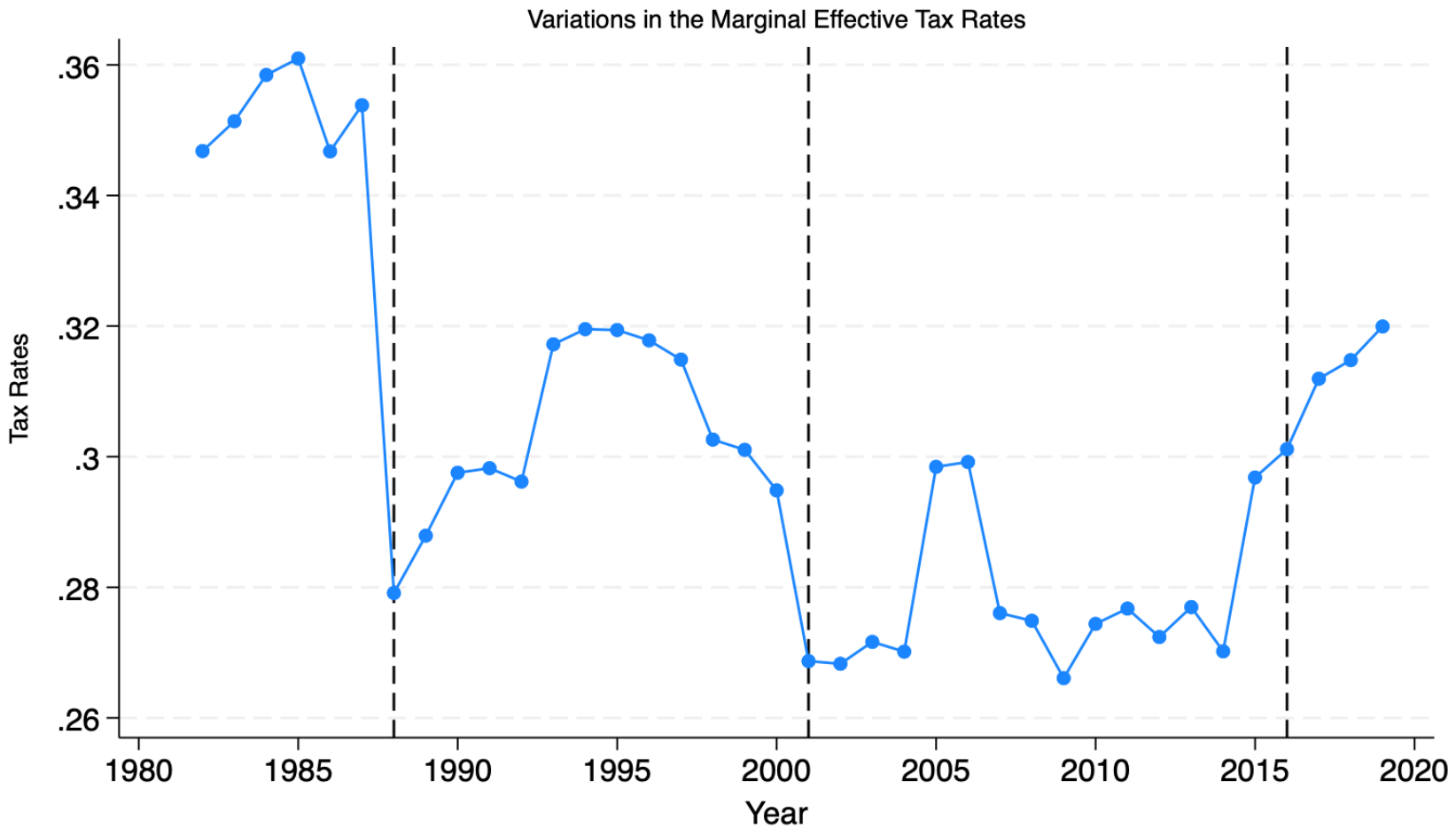
- Equation (1) translates to individual level panel fixed effect regression; 3-year difference: 1985–1982, 1986–1983,...stacked

$$\log(\frac{z_{it}}{z_{it-3}}) = \beta_0 + e\cdot\log(\frac{1-\tau_{it}}{1-\tau_{it-3}}) + \eta\cdot\log(\frac{y_{it}}{y_{it-3}}) + \beta\mathbf{X}_{it-3} + \epsilon_{it} \tag{2}$$

- METRs (τ_{it}) not observed in the datasets. Uses Milligan's CTaCS_2019 Simulator and LAD's information to simulate τ_{it}.

Identification Strategy

Figure 2: Variations in the Tax Rates: 1982–2019

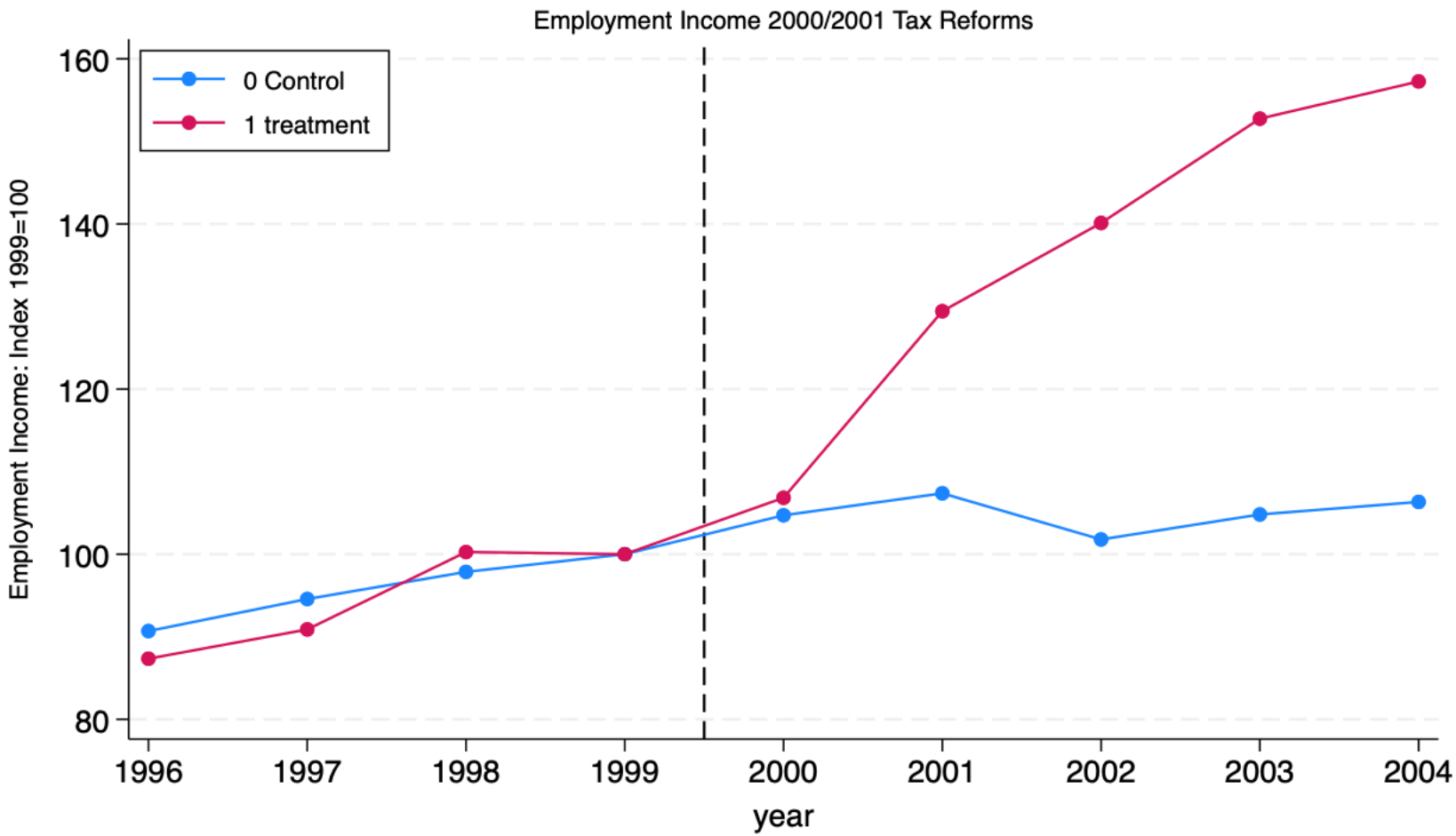


Identification Strategy

- Major estimation concerns:
  1. log(net-of-METR) and log(y) correlate with error term.
     - Use an IVs: Construct a mechanical METR.
     - That is, simulate this year's METR using base year income data and current year tax information.
  2. Mean-reversion.
     - Use log base-year income (as in Auten and Caroll 1999) or its 10-piece splines (as in Gruber and Saez 2002).

Results: Behavioural Responses around 2001 Tax Reforms

Figure 4: 2001 Federal Tax Reform



Results: Immigrants vs Non-immigrants ETIs, LAD data, 1982—2019

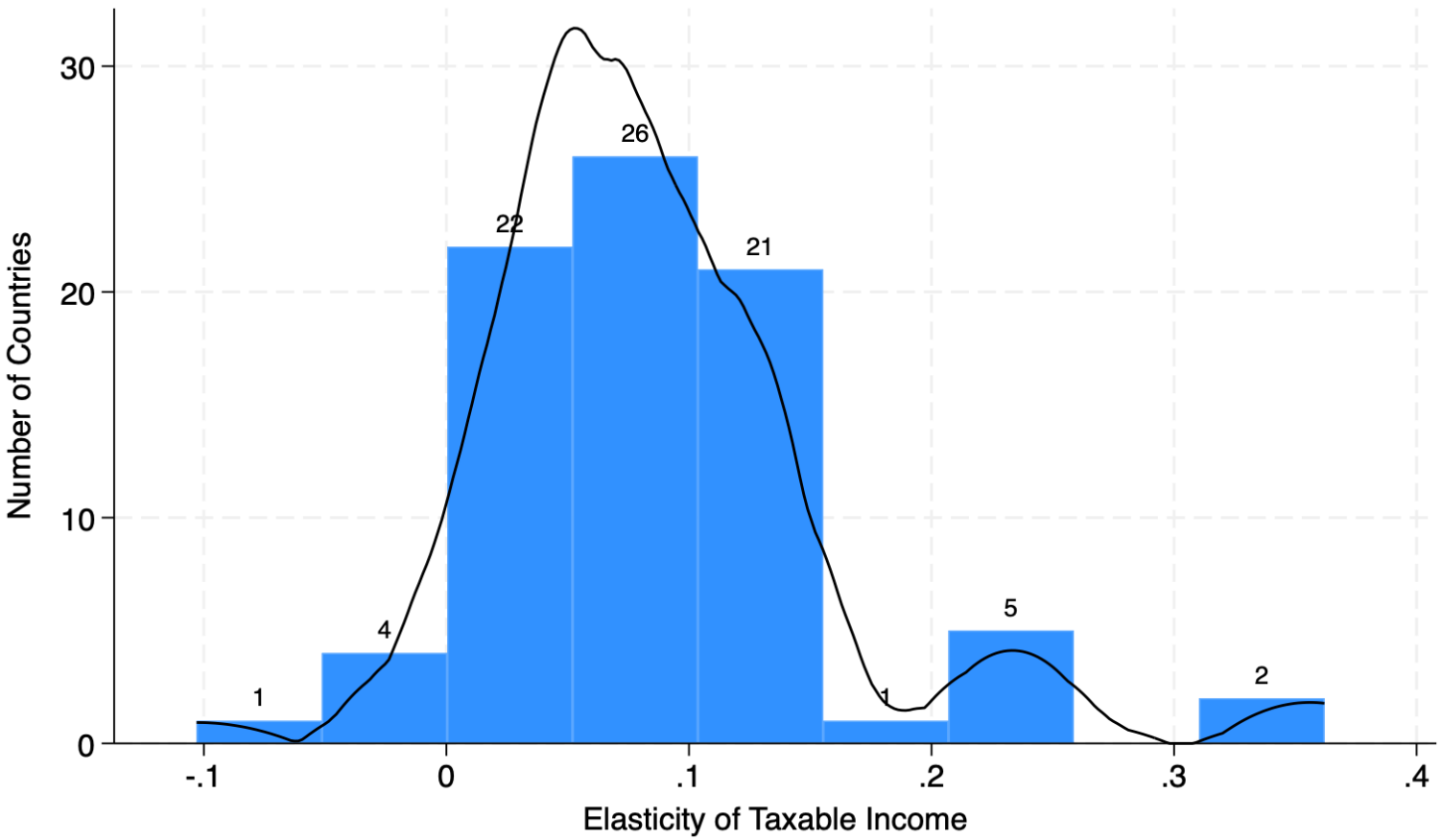
All-Sample Heterogeneity Robustness Two-year-Diff High-income

Table 1: Elasticity Estimates: Immigrants versus Natives. LAD 1982–2019

	Pre-reform income controls: log base-year income					
	Taxable Income>0			Taxable Income≥10k		
	IMDB	LAD		IMDB	LAD	
	Immigrants	Immigrants	Natives	Immigrants	Immigrants	Natives
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.094***	0.087***	0.078***	0.088***	0.068***	0.042***
	(0.008)	(0.004)	(0.002)	(0.009)	(0.001)	(0.001)
Obs	68,110,345	13,590,025	58,907,245	60,588,340	12,060,190	53,931,725

With-in Country Estimate of the ETIs

Figure 5: Variations in the ETI Estimates by Country of Origin



Impact of Social and Cultural Norms on the Elasticity of Taxable Income

- I relate ETIs to social and cultural norms as follows:

$$e_c = \alpha_0 + \alpha_1 C_c + \nu_c \tag{3}$$

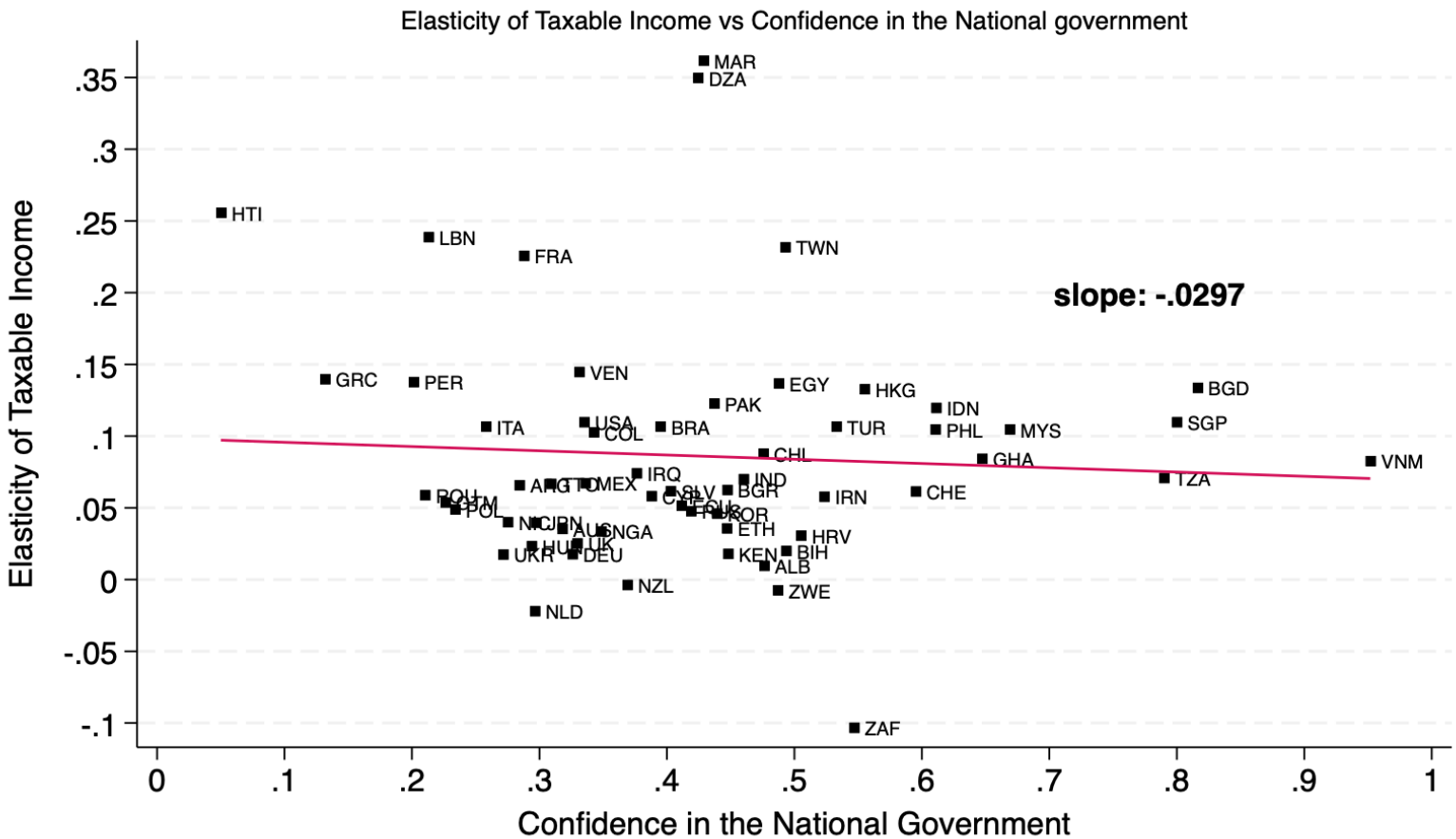
- C_c are proxies for cultural norm (e.g., trust in others, trust in government, and dimension of national culture, etc.).

- I estimate e by country of origin and plot them against the proxy for cultural norms.

Results: ETI and Confidence in Govt Institutions

Confparlmt Confcserv TrustgovtOECD

Figure 6: ETI Versus Confidence in National Government, share



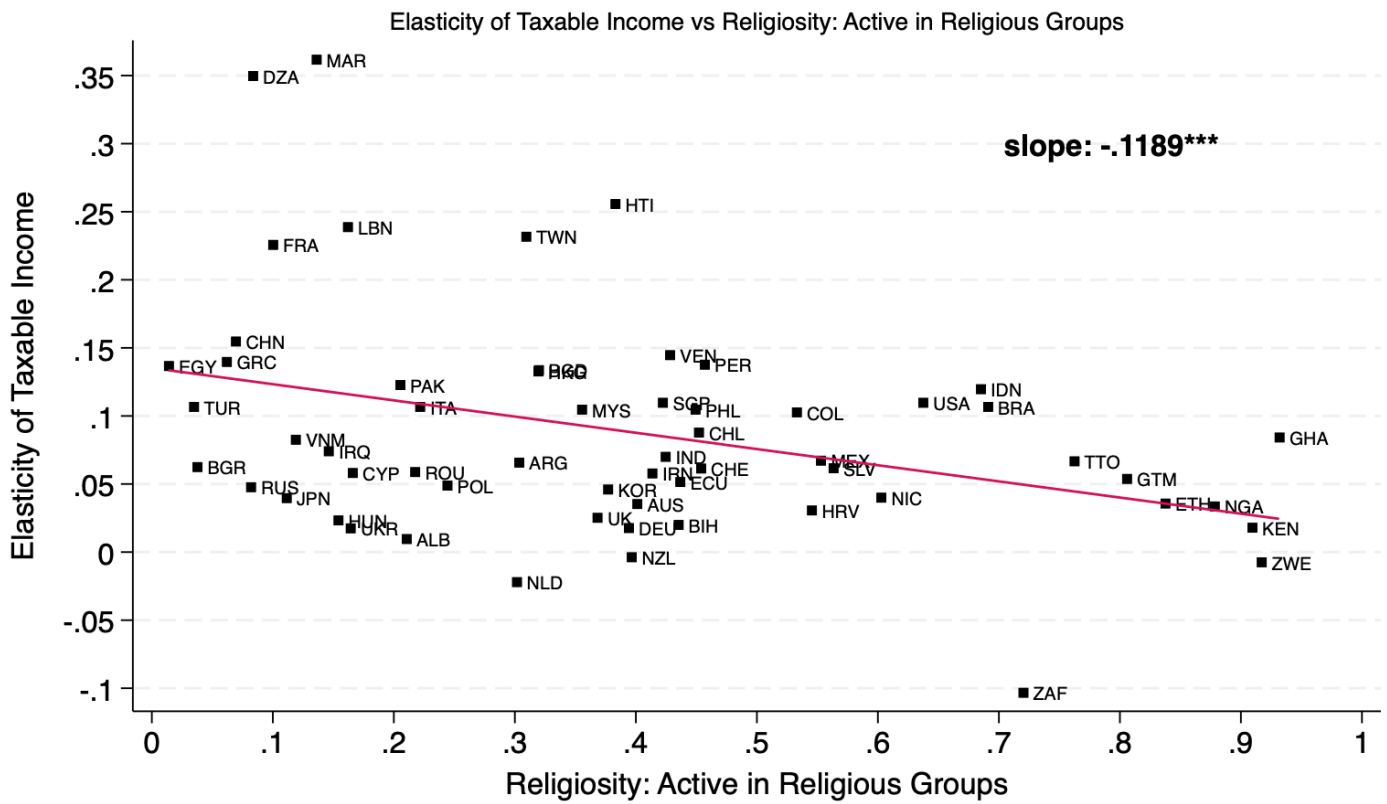
Results: ETI and Trust in Others, share

Figure 7: ETI Versus Trust in Others

Results: ETI and Active in Religious Organization share

Catholics | Protestants | Muslim

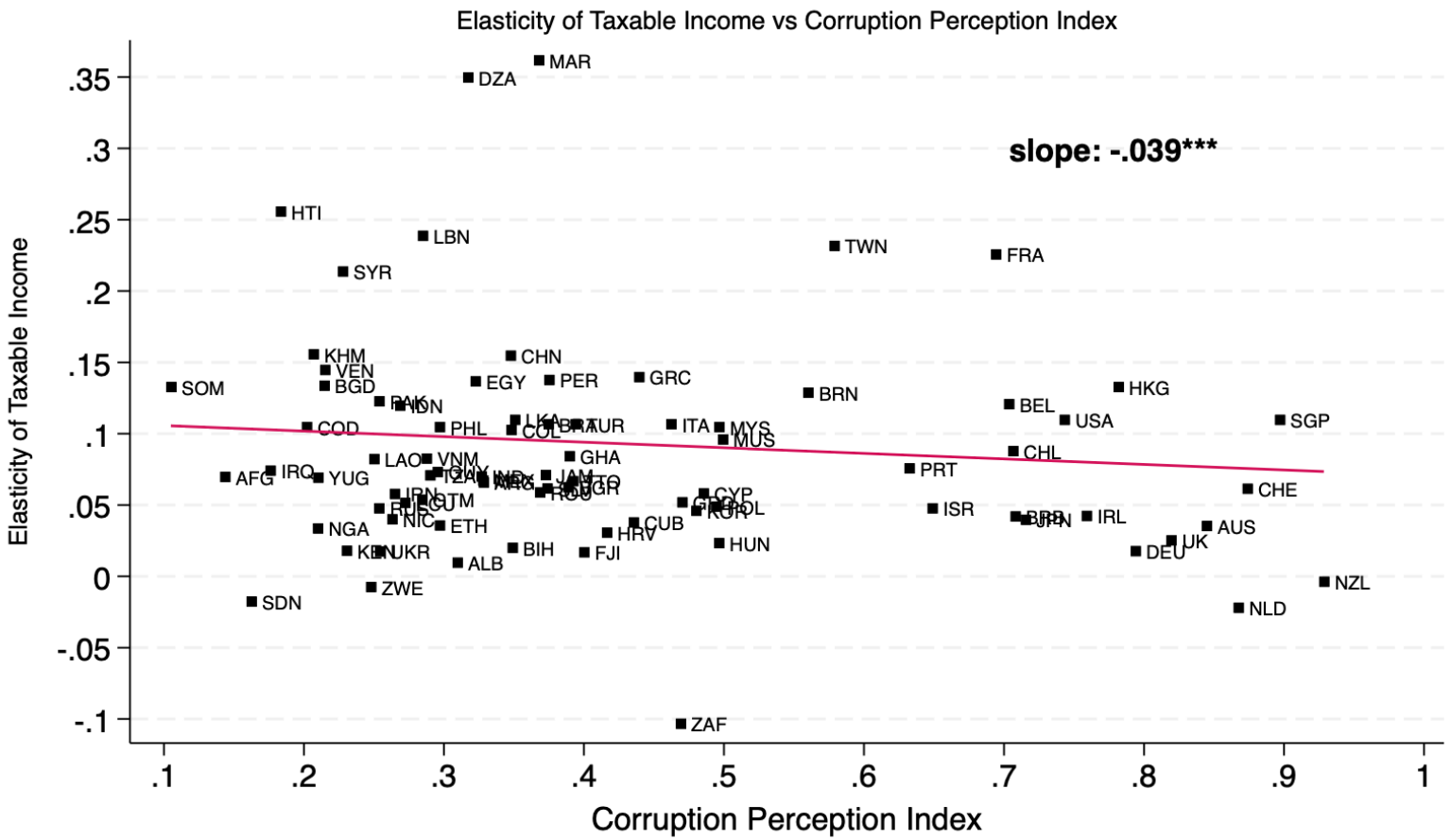
Figure 8: ETI Versus Religiosity



Results: ETI and Corruption Perception Index

polcorruption corruptionjustified

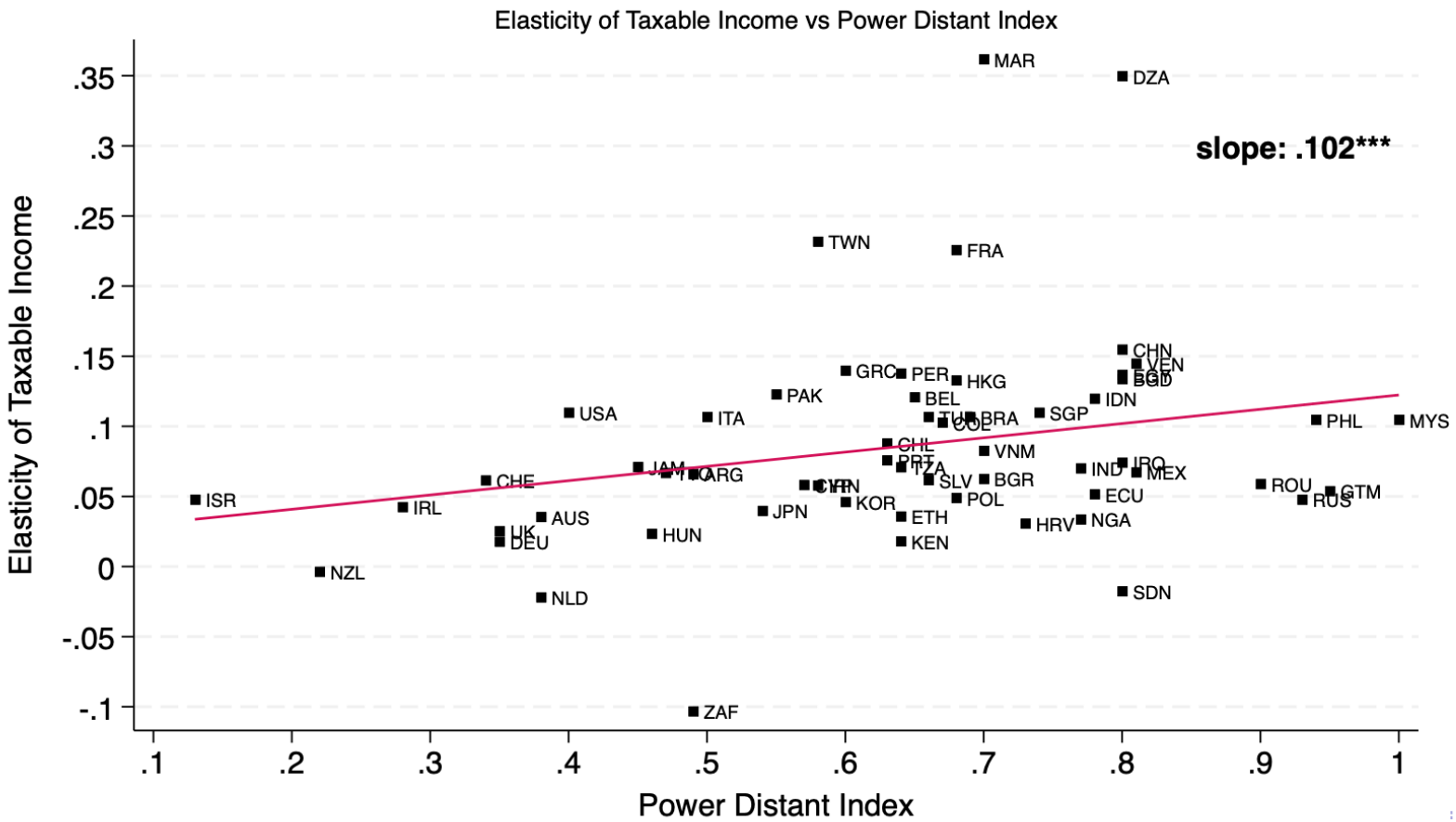
Figure 9: ETI vs Corruption



Results: ETI and Cultural Dimension (Power Distance Index)

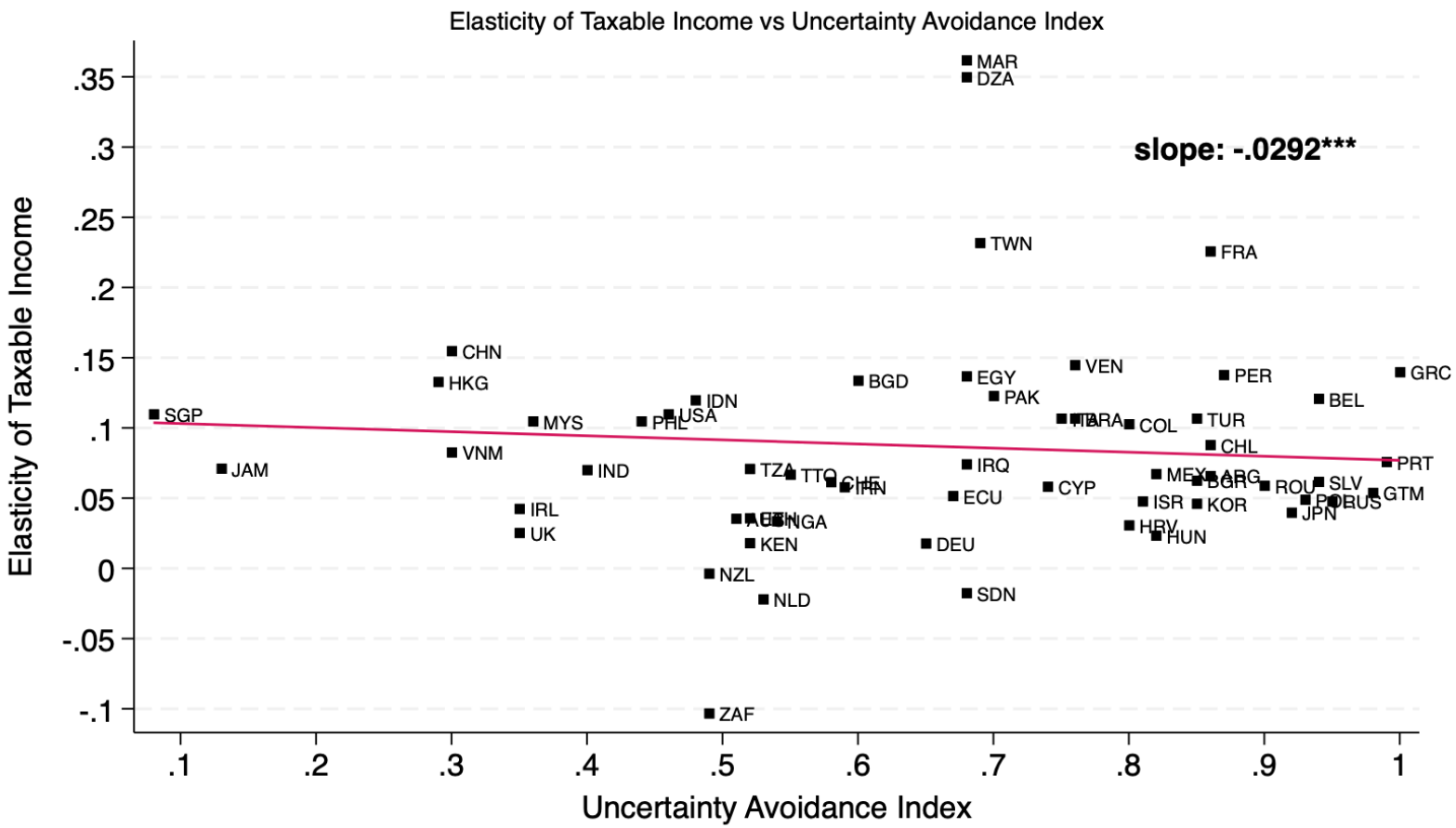
LTO IDIV MAS

Figure 10: ETI vs Power Distant Index



Results: ETI and Cultural Dimension (Uncertainty Avoidance Index)

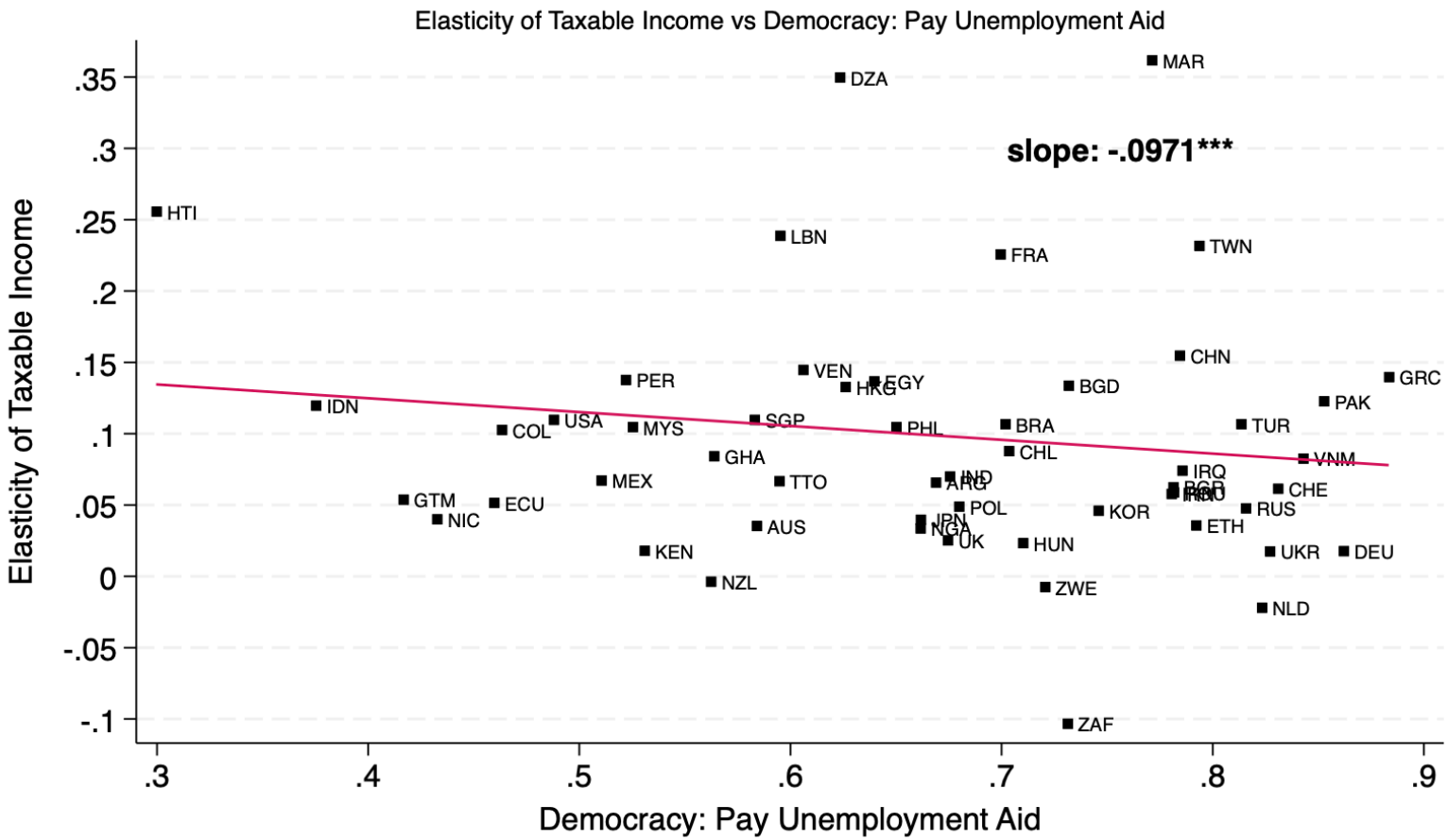
Figure 11: ETI vs Uncertainty Avoidance Index



Results: ETI & Essential Features of Democracy

taxtheRich RespOwnWelfare

Figure 12: ETI vs Paying Unemployment Benefits



Conclusion

- ETI for immigrants (0.094) surpasses non-immigrants (0.078), highlighting the differential impact of the tax changes.
- ETI $\downarrow$ in trust in others, trust in government, & religiosity, but $\uparrow$ in power and wealth inequality, and corruption practices, etc.
- Differentiating pure behavioural responses vs. culturally induced responses is essential for effective tax policy.
- Strengthen economic integration and build trust in government policies within immigrant communities to support compliance.

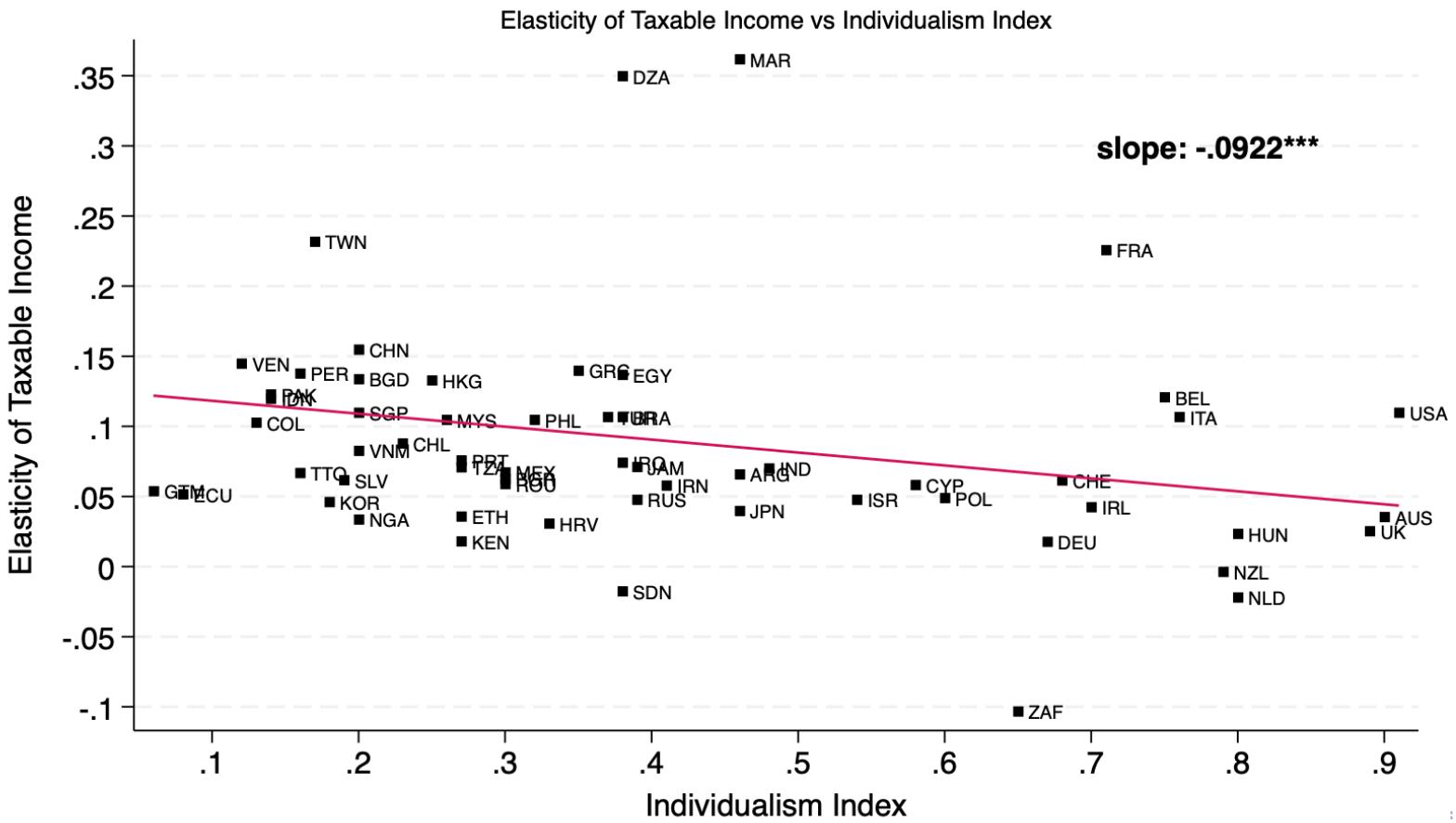
Questions

Many thanks.
Questions

Results: ETI and Cultural Dimension (Individualism Index)

Dimension

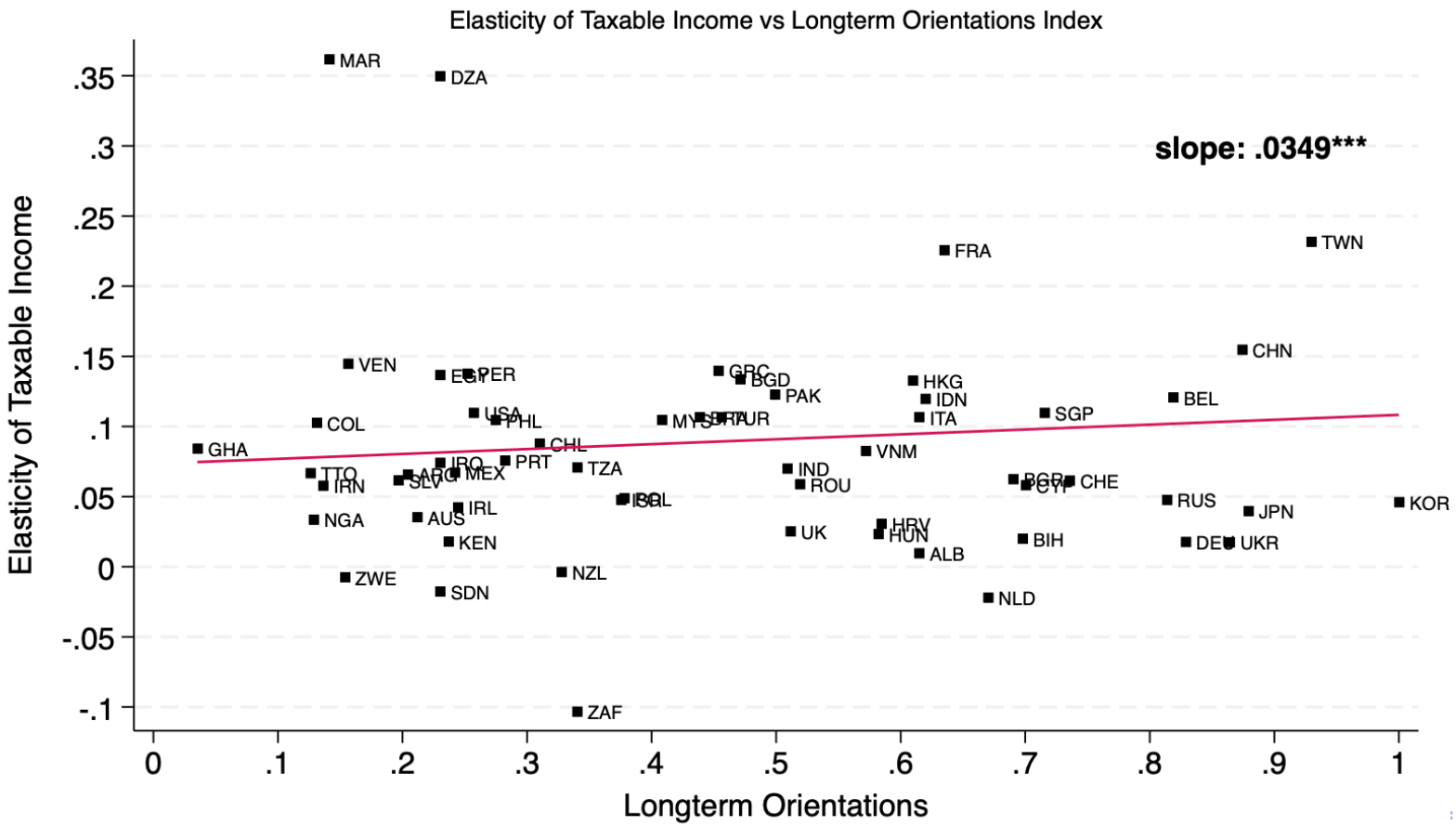
Figure 13: ETI vs Individualism Index



Results: ETI and Cultural Dimension (Long-term Orientation Index)

Dimension

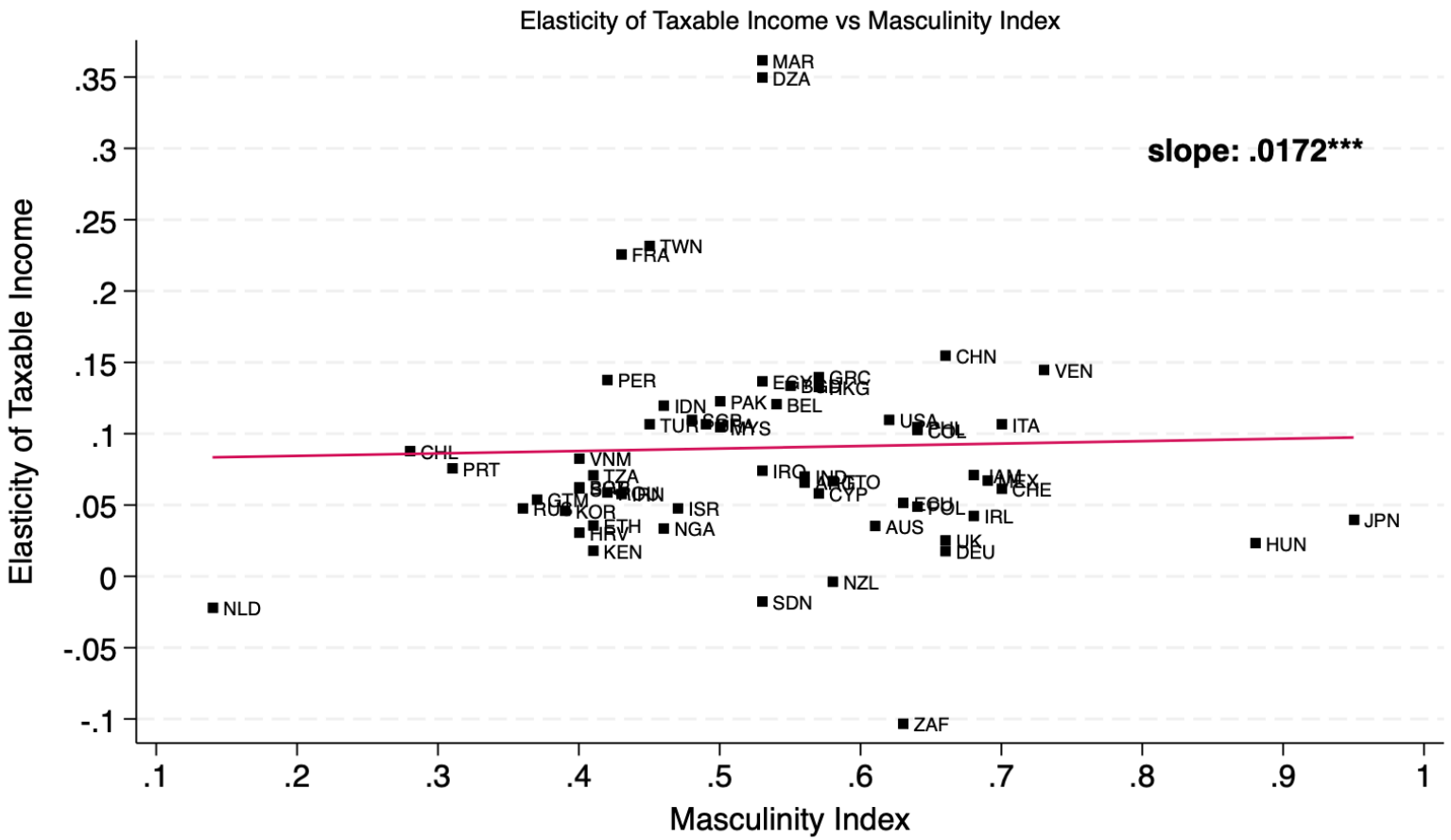
Figure 14: ETI vs Long-term Orientation Index



Results: ETI and Cultural Dimension (Masculinity Index)

Dimension

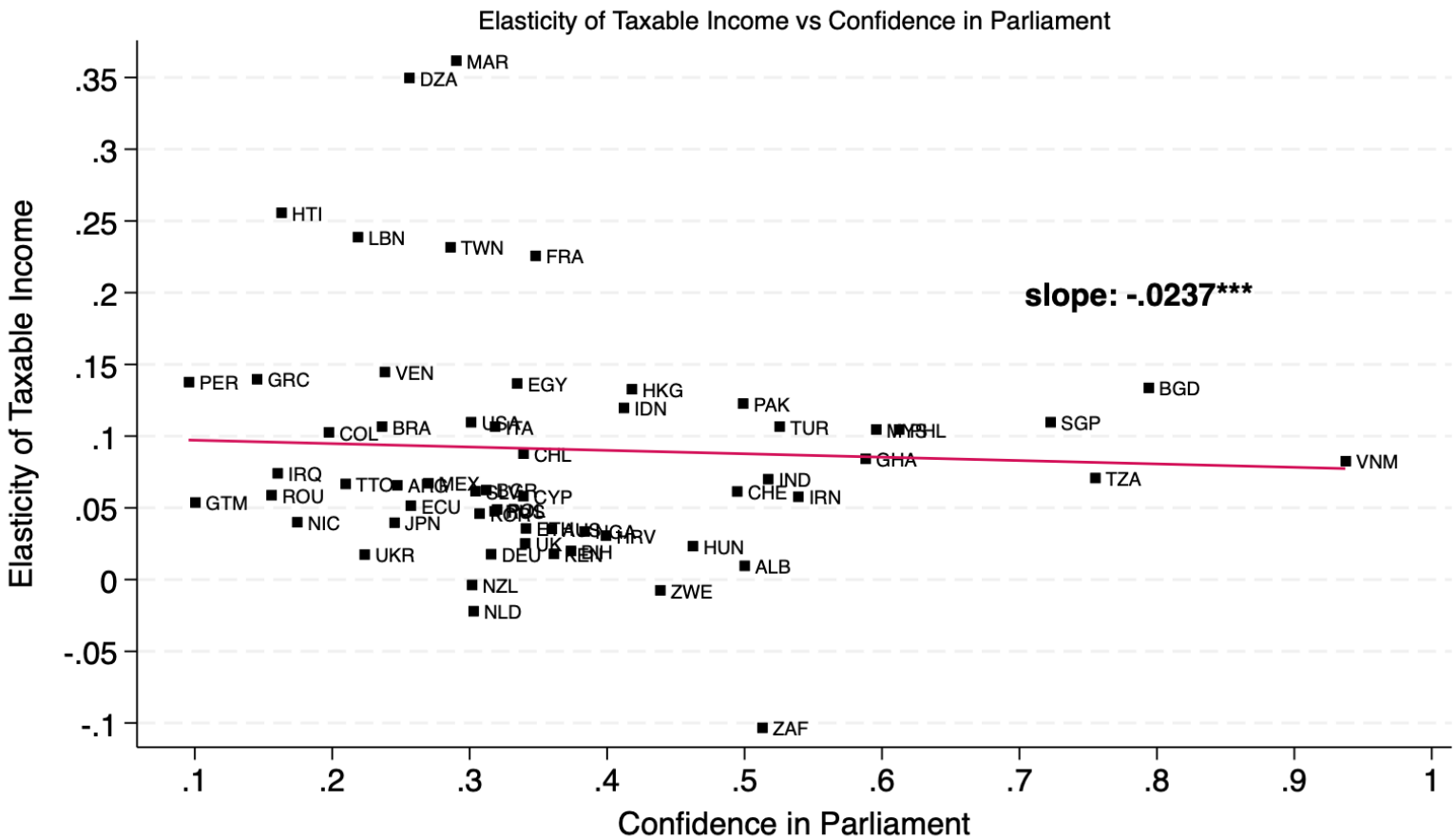
Figure 15: ETI vs Masculinity Index



Results: ETI and Confidence in Govt Institutions

GovtInst

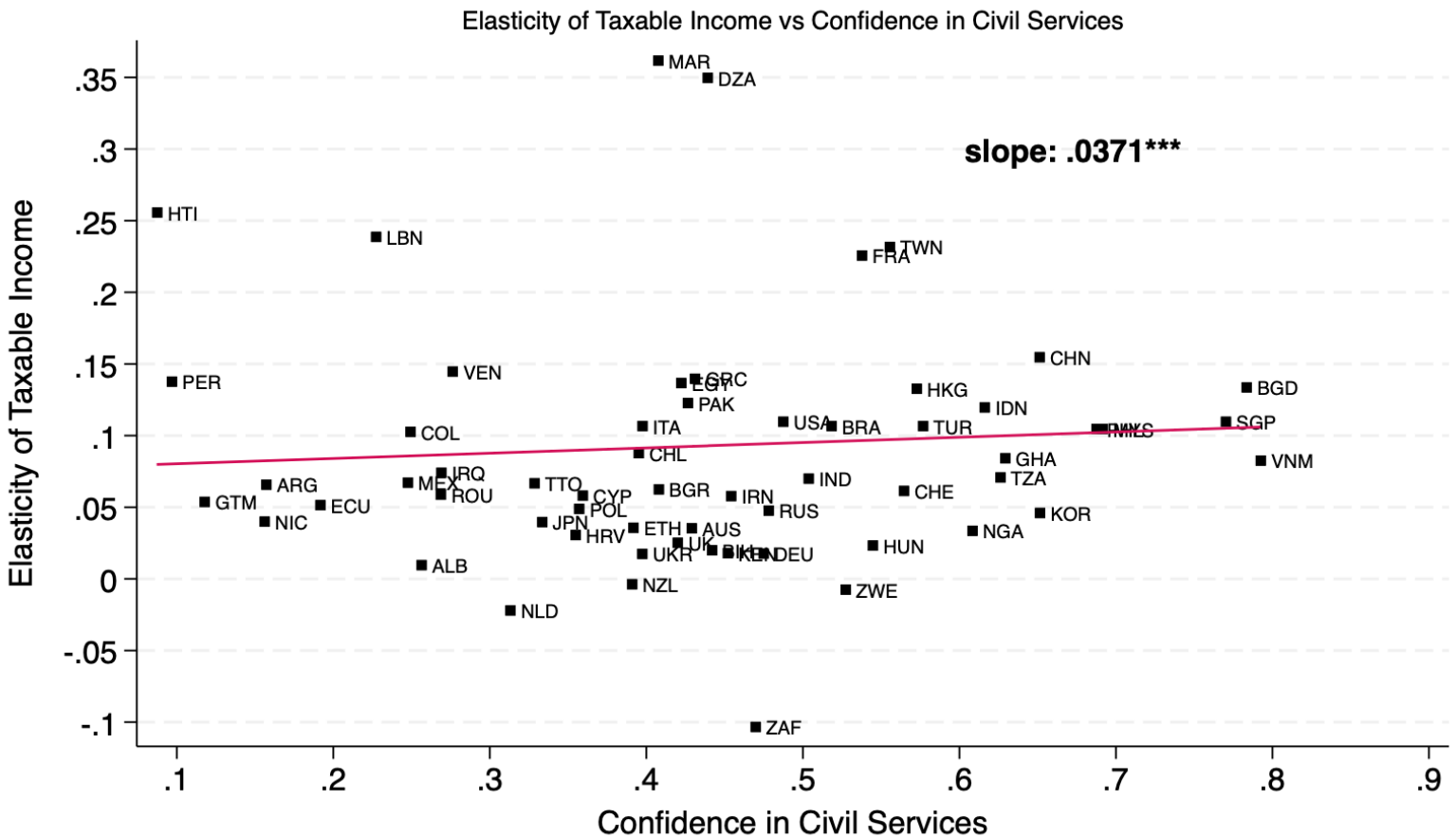
Figure 16: ETI Versus Confidence in Parliament, Share



Results: ETI and Confidence in Govt Institutions

GovtInst

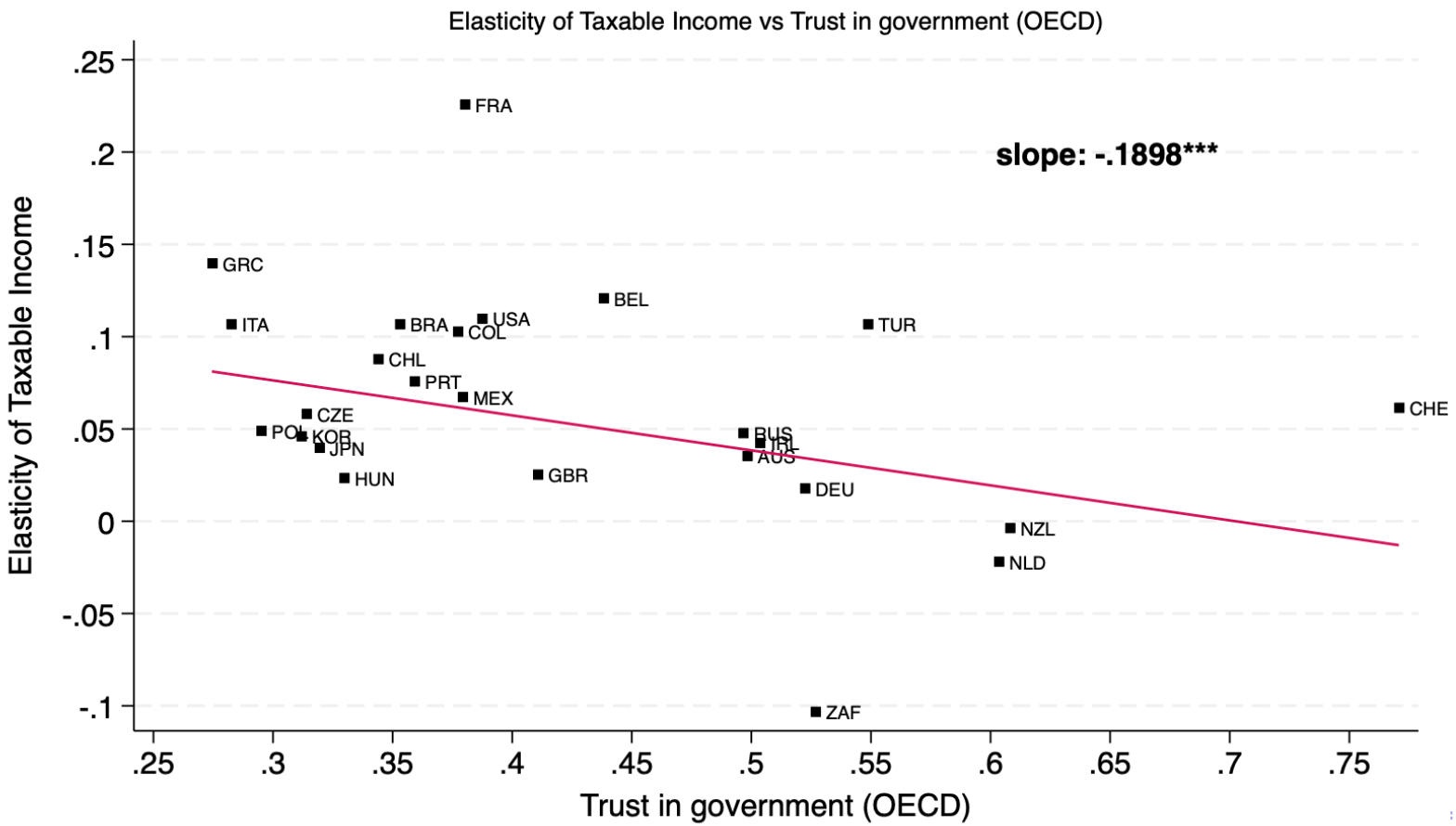
Figure 17: ETI Versus Confidence in Civil Services, share



Results: ETI and Trust in Govt (OECD)

GovtInst

Figure 18: ETI Versus Trust in Government, OECD, Share



All Sample Estimates

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Table 2: Two Stage Least Square Estimates: All samples 1982–2019

pre-ref controls	None	log base-year income			
		Taxable income			
	>0k	>0k	≥10k	≤300k	≤600k
	Panel A: Marginal effective tax rates				
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	-0.022***	0.080***	0.071***	0.069***	0.073***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
$\log(\frac{z_{it}}{z_{it-3}})$		-0.254***	-0.342***	-0.388***	-0.381***
		(0.001)	(0.001)	0	0
$\log(clkgx_{it-3})$		0.033***	0.035***	0.013***	0.015***
		0	0	0	0
	Panel B: Marginal tax rates				
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	-0.024***	0.074***	0.064***	0.064***	0.067***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
observations	72,497,270	72,497,270	65,991,920	72,042,500	72,370,380

2SLS regressions estimates, with standard errors in parentheses, clustered at the individual level. Significance at *p < 0.05, **p < 0.01, and ***p < 0.001. The dependent variable across all models is

All Sample Estimates: Robustness Checks

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Table 3: Elasticity of taxable Income: Robustness Check

	Taxable Income						
	pre-reform income controls			log base-year income			
	Full sample (1)	Outliers exclude (2)	include other income controls (3)	Major source of income (4)	changed prov exclude (5)	At kinks exclude (6)	All robustness (7)
	Panel A: Marginal Effective tax rates (METR)						
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.080***	0.072***	0.051***	0.079***	0.078***	0.076***	0.067***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
	Panel B: Marginal tax rates (MTR)						
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.074***	0.069***	0.042***	0.072***	0.073***	0.070***	0.064***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
observations	72,497,270	71,947,330	43,229,255	43,229,255	70,714,625	71,239,555	68,956,905

Two-year Difference

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Table 4: Elasticity of taxable Income: Two-year Difference Estimates, LAD Sample

	pre-reform income controls:		log base-year income		splines log base-year income	
	1982-2019	1982-2012	immigrants	non-imm	1982-2019	1982-2012
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.038***	0.084***	0.079***	0.028*	0.028**	0.055***
	(0.010)	(0.008)	(0.017)	(0.012)	(0.009)	(0.008)
observations	80,149,090	62,340,765	15,083,630	65,065,460	80,149,090	62,340,765

2SLS regressions estimates, with standard errors in parentheses, clustered at the individual level. Significance at *p $<$ 0.05, **p $<$ 0.01, and ***p $<$ 0.001. The dependent variable across all models is the three-year growth rate of taxable income.

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Table 5: Elasticity of Taxable Income: Socio-economic Heterogeneity (IMDB Sample)

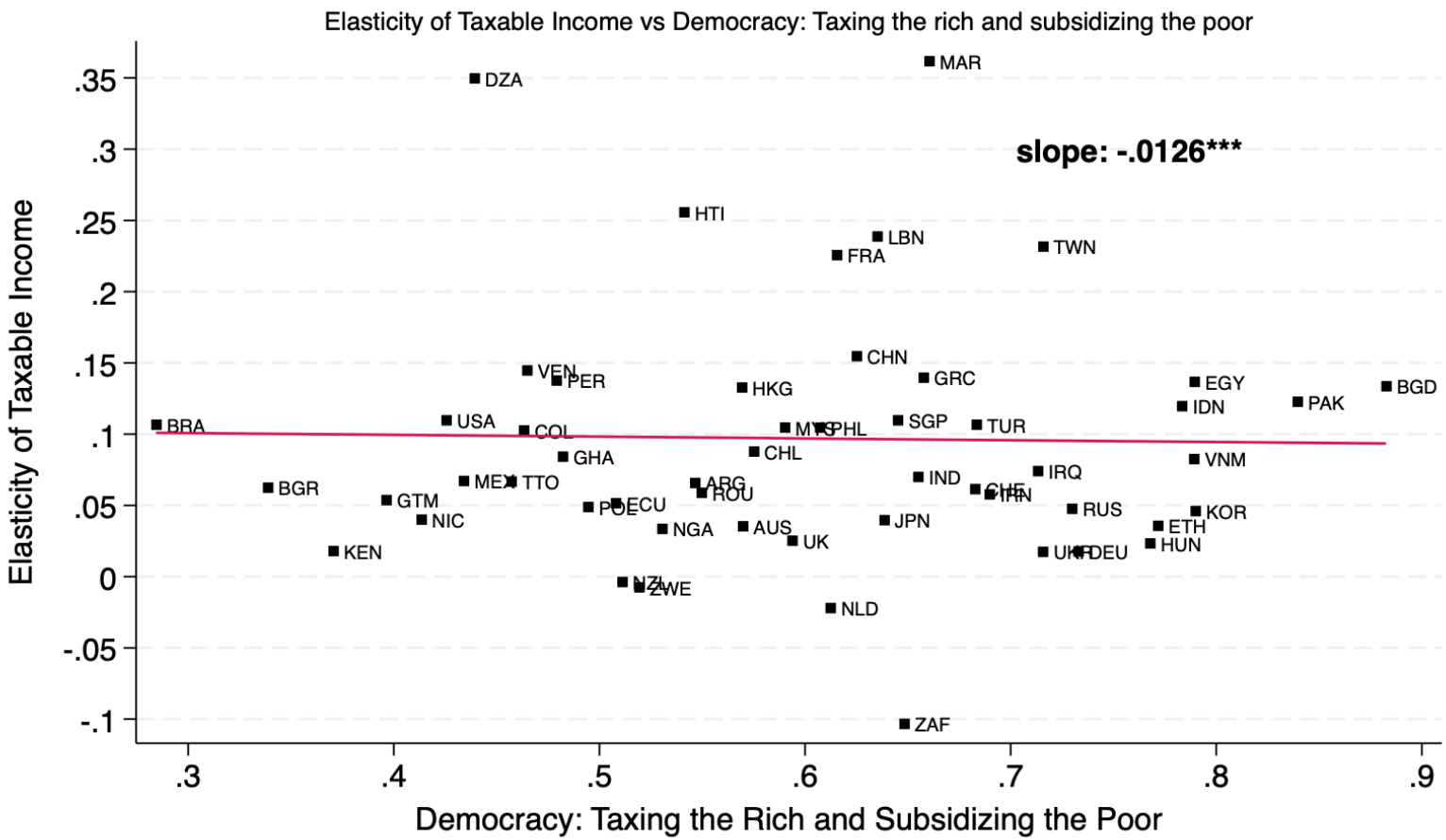
	Panel B: Pre-reform income controls; Splines of log base-year income, 1982–2019						
	integrated	Recent	econ	non-econ	young	older	Expentry
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.079***	0.262***	0.03	0.114***	-0.032	0.139***	-0.103*
	(0.008)	(0.030)	(0.059)	(0.008)	(0.022)	(0.009)	(0.052)
F_Stat Diff	58.059		1.409		65.74		
observations	43,856,255	7,653,760	1,675,975	30,921,430	7,444,535	25,152,870	168,610

	Panel C: Pre-reform income controls; Splines of log base-year income, 1982–2012					
	integrated	Recent	econ	non-econ	young	older
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.137***	0.360***	0.048	0.169***	0.055	0.182***
	(0.010)	(0.036)	(0.098)	(0.011)	(0.035)	(0.011)
observations	30,392,975	5,249,315	544,450	21,582,830	3,857,680	18,269,595

Results: ETI & Essential Features of Democracy

EmplymtBenefits

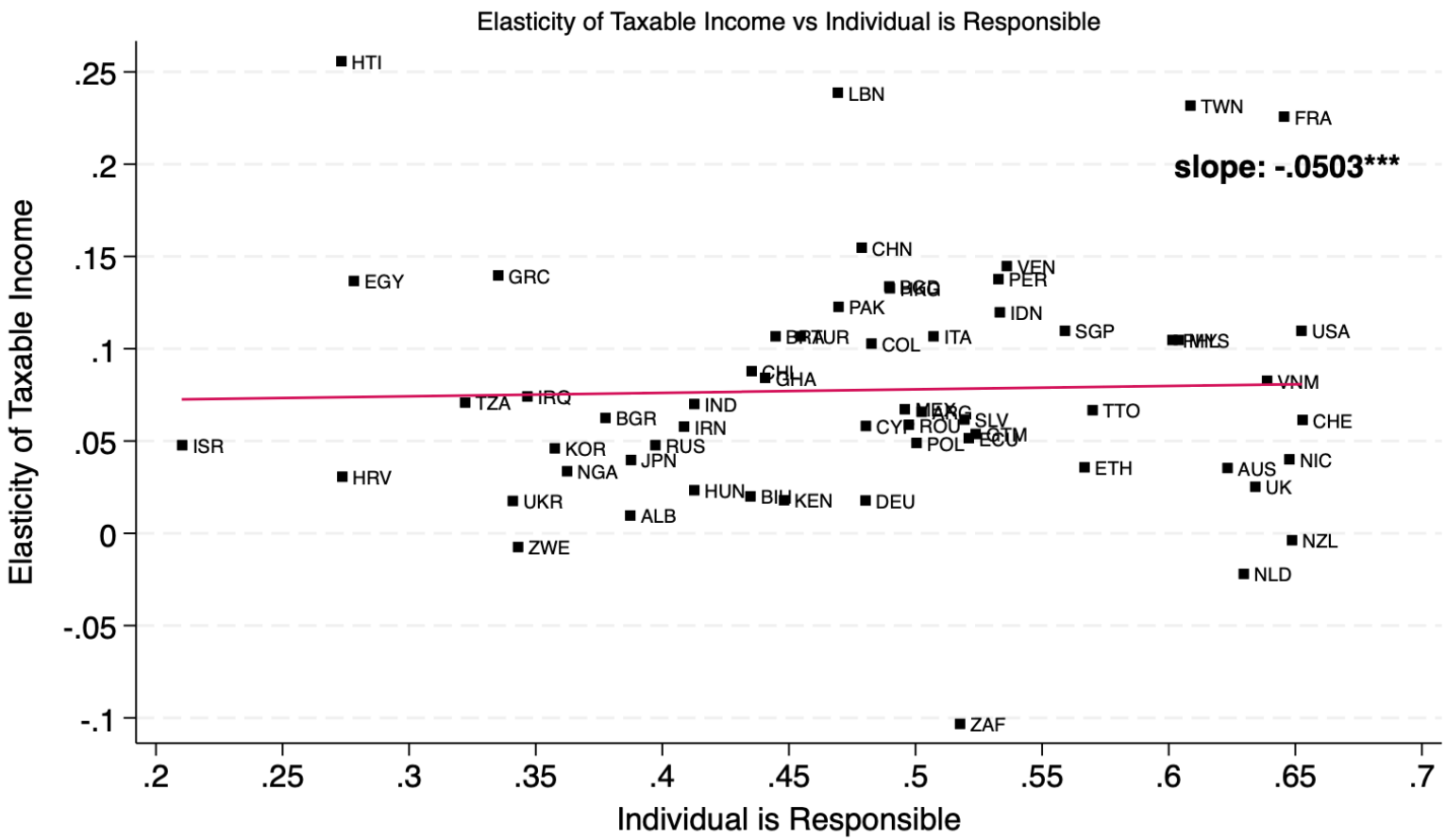
Figure 19: ETI vs Taxing the Rich



Results: ETI & Democracy: Individual Responsible for own Welfare

EmplymtBenefits

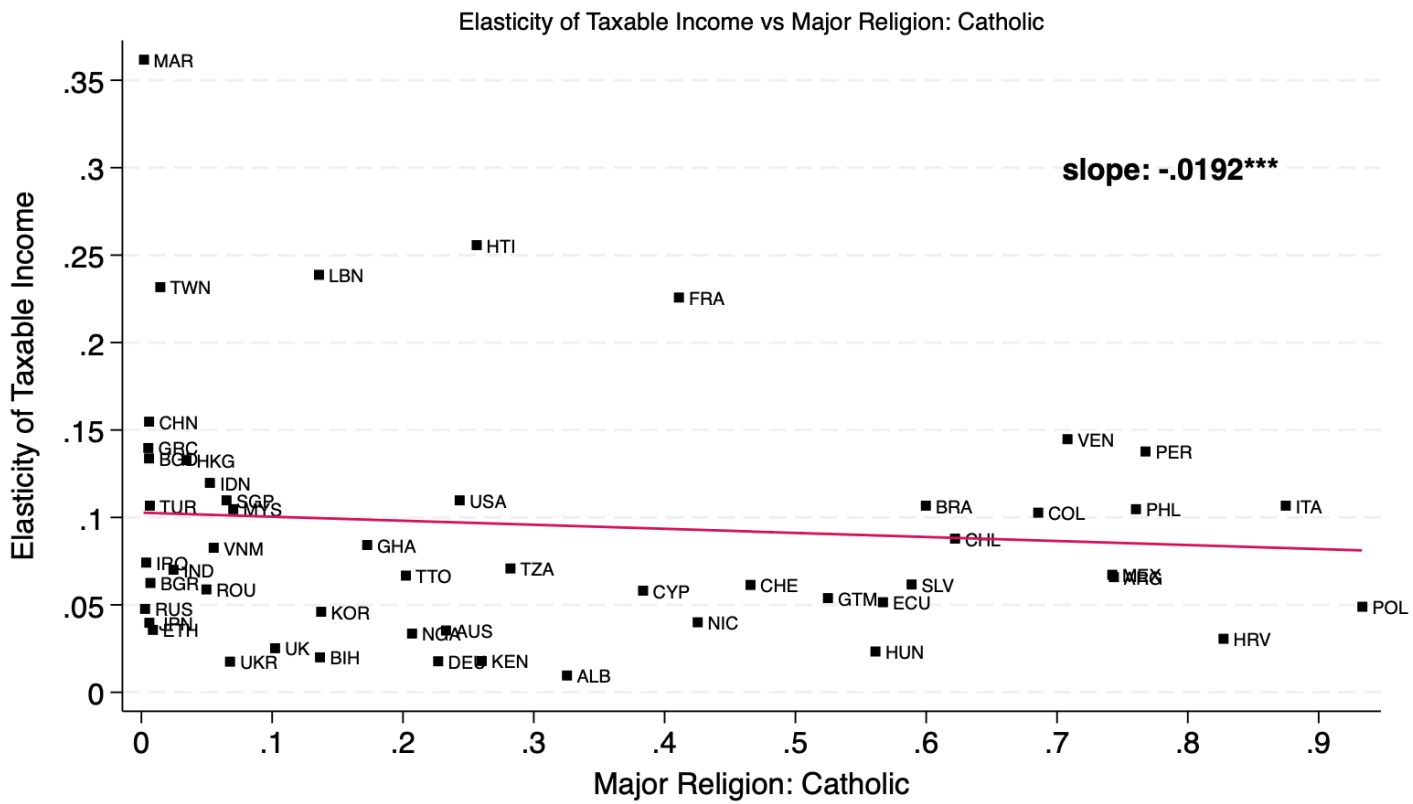
Figure 20: ETI vs Individual Responsible for own Welfare



Results: ETI and Active in Religious Organization share

Religiosity

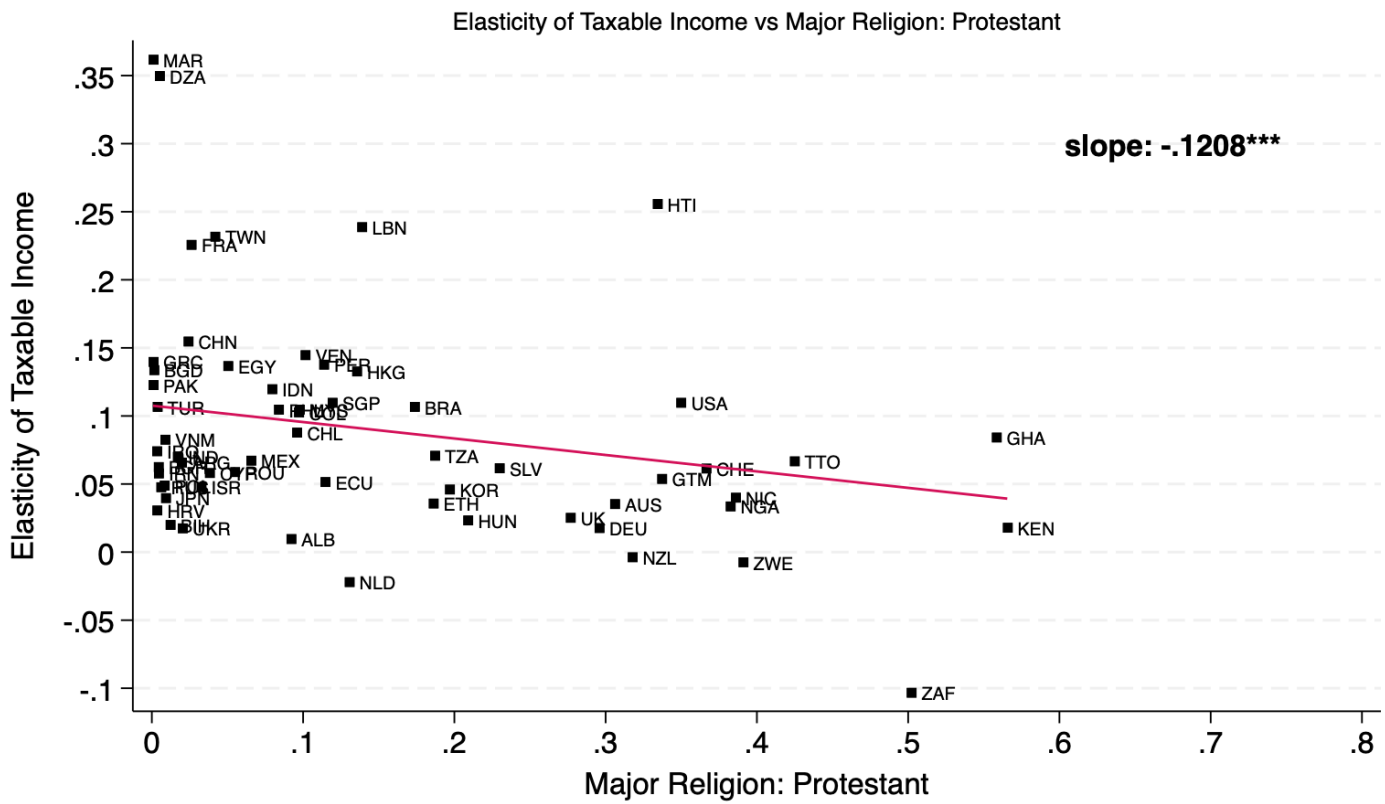
Figure 21: ETI Versus Major Religion:Catholics



Results: ETI and Active in Religious Organization share

Religiosity

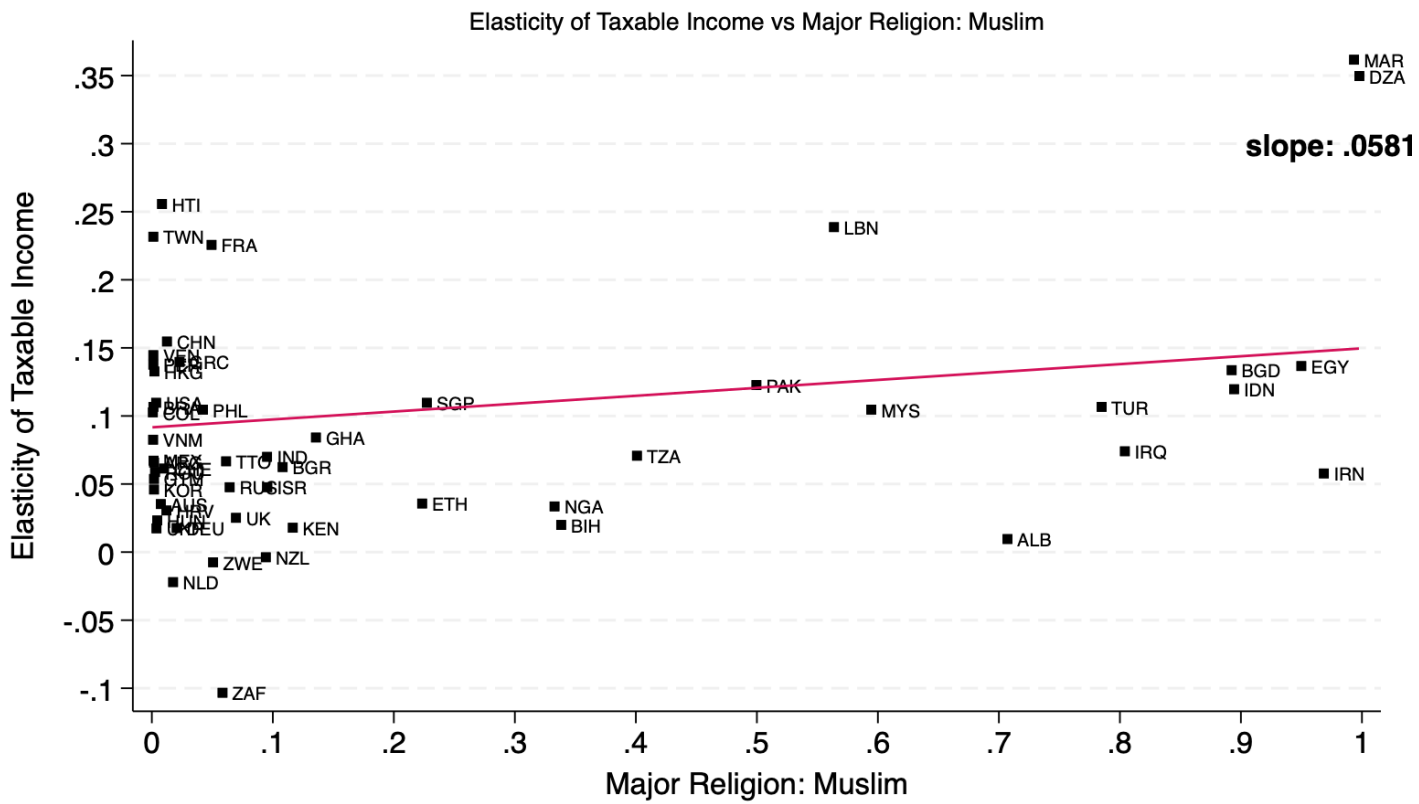
Figure 22: ETI Versus Major Religion: Protestants



Results: ETI and Active in Religious Organization share

Religiosity

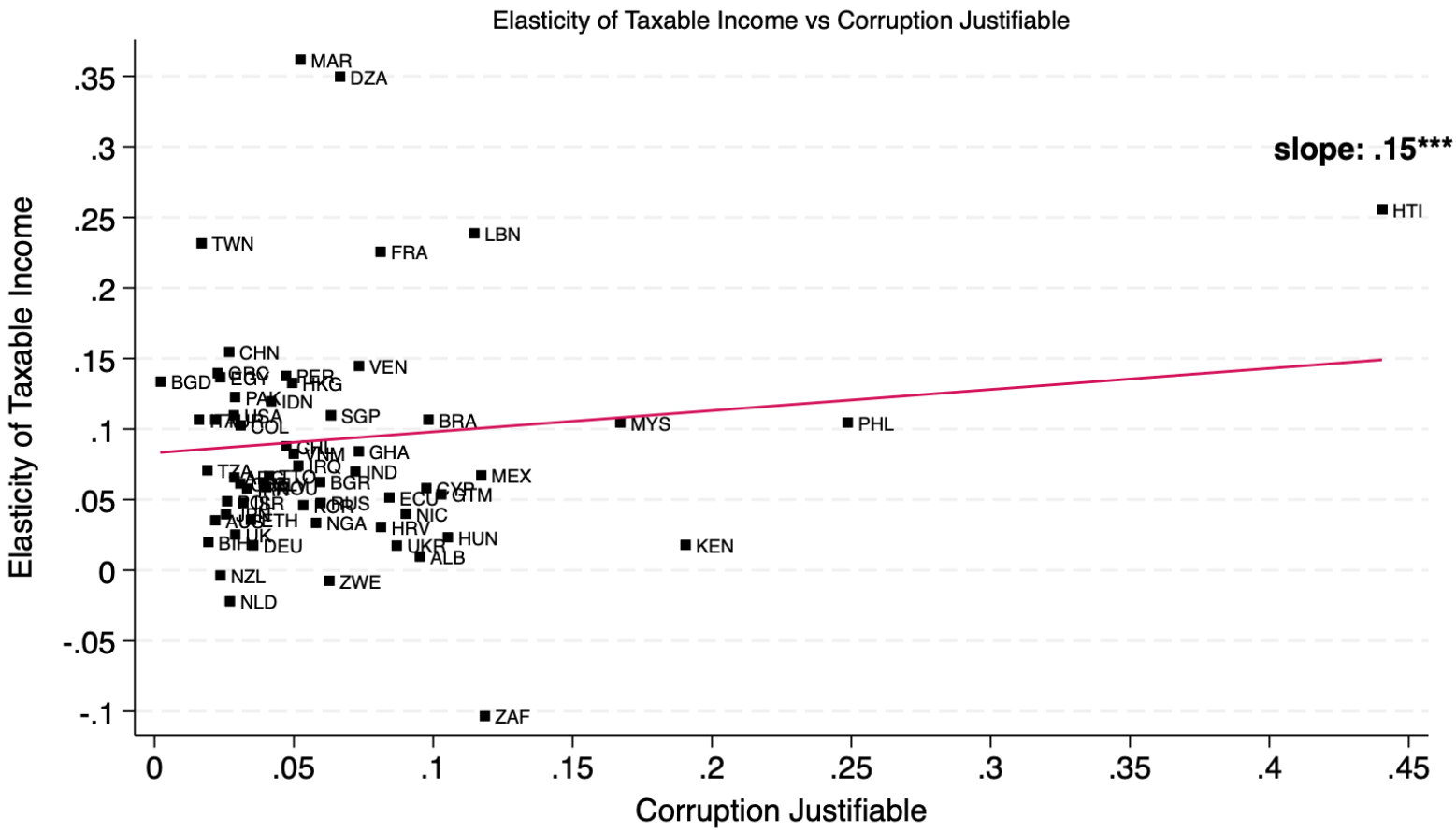
Figure 23: ETI Versus Major Religion: Muslim



Results: ETI and Corruption is Justified

Corruptionperception

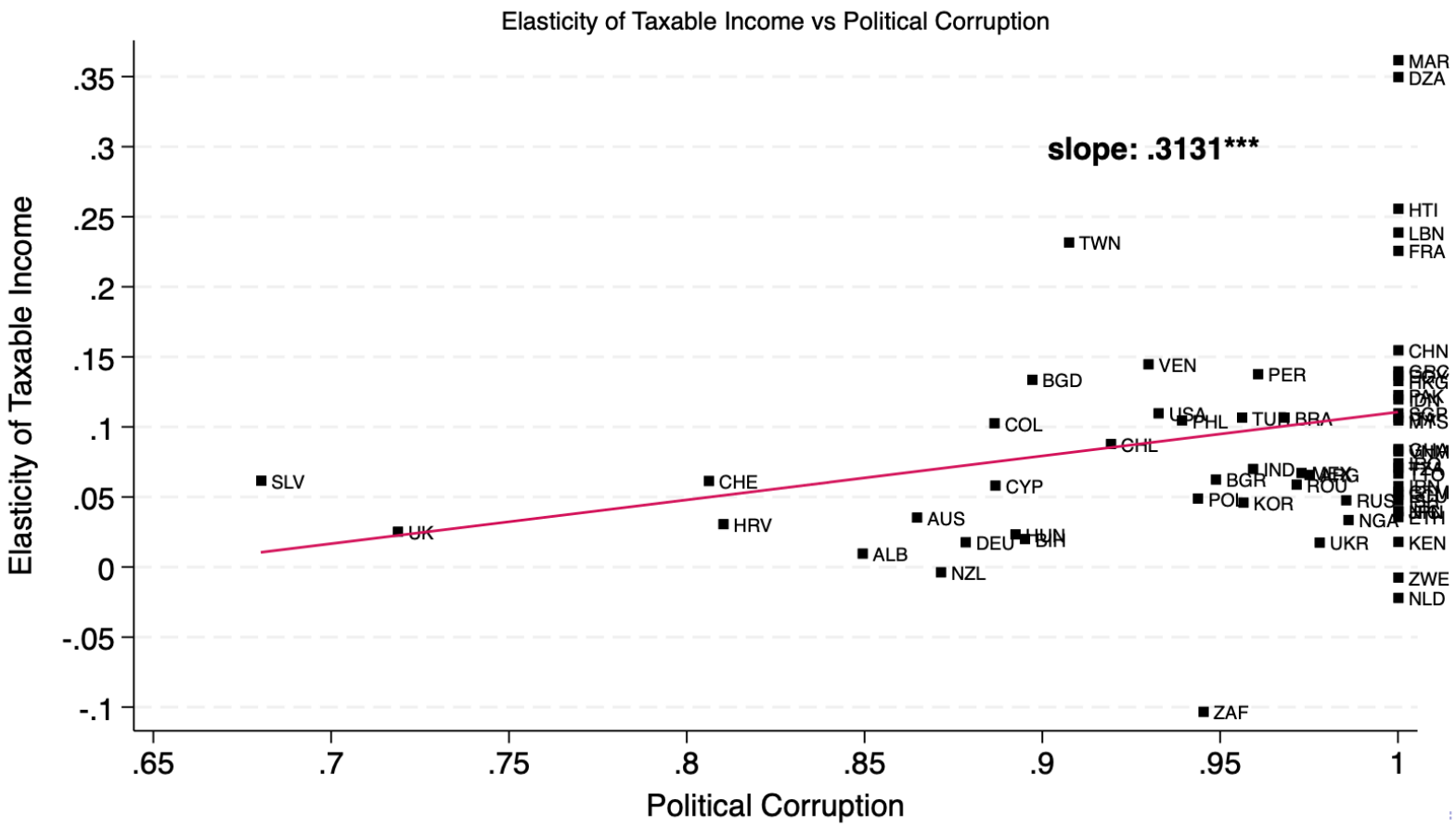
Figure 24: ETI vs Corruption Justified



Results: ETI and High Political Corruption

Corruptionperception

Figure 25: ETI vs High Political Corruption



Heterogeneity Among the High-income Groups

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Table 6: Elasticity Estimates: Heterogeneity Among High-income

	Pre-refrom Income Controls: Log of base-year income					
	Immigrants (IMDB)			Natives (LAD)		
	Top 10% (≥98k)	Top 5% (≥126.5k)	Top 1% (≥244.5k)	Top 10% (≥98k)	Top 5% (≥126.5k)	Top 1% (≥244.5k)
$\log(\frac{1-\tau_{it}}{1-\tau_{it-3}})$	0.163***	0.243***	0.549***	0..167***	0.234***	0..395***
	(0.004)	(0.006)	(0.014)	(0.006)	(0.008)	(0.017)
obs	5,487,115	2,701,385	590,935	5,134,573	2,531,443	568,101