Electoral Reform and Geographically-Targeted Oversight:

Evidence from Taiwan Legislative Yuan

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Overview

- **Motivation & Research Question:**

  How does Taiwan's SNTV→SMD electoral reform affect legislators' particularistic behaviors?

- **Data:**

  - 63,748 parliamentary questions from 402 district legislators (two decades)
  - Focus on geographically targeted questions (GTQs) — *content that addresses constituency-specific geographical interests and demands*

- **Method & Empirical Strategy:**
  Fine-tuned transformer models to identify geographically targeted content + regression analysis

- **Major Finding:**

  - SNTV → SMD transition reduces GTQs, with variation across municipalities by socioeconomic characteristics
  - SNTV demonstrates greater particularistic responsiveness than SMD

Motivation

What We Know:

- **Established:** Different candidate-centered systems create varying incentives for personal reputation (e.g., Shugart and Wattenberg, 2001; Shugart, 2005; Grofman et al., 1999).
- **Evidence:** Studies on manifestos (e.g., Catalinac, 2016a,b; Crisp et al., 202), legislative voting (e.g., Liao, 2024), political deliberation (e.g., Motolinia, 2021; Høyland and Søyland, 2019) and legislation (e.g., Decadri et al., 2022).

Gap

- **Missing:** Previous studies focus on legislative outputs/campaign promises, not ongoing behavior
- **Opportunity:** Systematic evidence on SNTV→SMD transitions Japan
  → Taiwan's reform provides anotehr ideal case study

Two important debates in candidate-centered electoral system literature

Debates I

Does SNTV → SMD Reduce Particularistm?

The Literature:

- SNTV's intraparty competition encourages → personal reputation → particularistic appeals
- SMD's interparty competition promotes programmatic appeals to broader coalition (e.g., Cain 1987; Carey 1995; Cox 1997; Duverger 1954; Catalinac 2016)

Japan Evidence: Shift from pork-barrel to programmatic campaigning (Catalinac 2016) and issue coverge on copartisan on manifesto (Catalinac 2017)

Taiwan Evidence: Particularistic behavior persists or increases (Liao et al. 2013; Luor and Shieh 2009)

> **Hypothesis 1.** Due to the elimination of intraparty competition and the necessity to appeal to broader constituencies, legislators elected under MMM are less likely to submit GTQs compared to those elected under the SNTV system.

Dabate II

Do Geographic Conditions Moderate Electoral System Effects?

- **Local Socioeconomic Conditions:** Economic challenges/homogeneity may override institutional incentives
- **Evidence:** Unemployment, manufacturing concentration affect legislative behavior (Rickard 2012; Cayton 2022; Harden 2013)

> **Hypothesis 2.** While MMM reduces GTQs compared to SNTV, this effect is moderated by local socioeconomic characteristics.

Data: Two Decades of Parliamentary Questions

Our Dataset

- **Scope:** 63,748 parliamentary questions from 402 district legislators (20-year period) from SNTV to MMM, focusing on district constituencies only (excluding CLPR and indigenous constituencies)

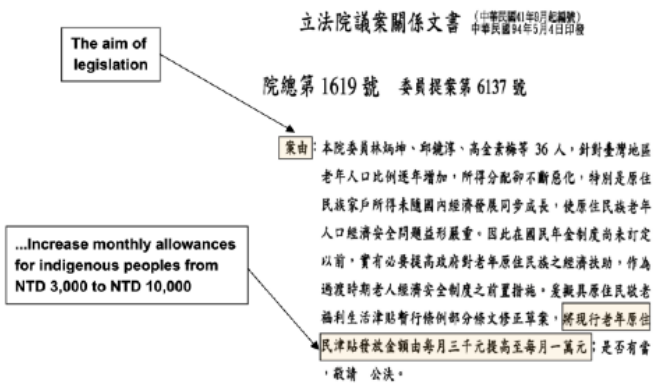
Why Parliamentary Questions?

- **Advantages:** Continuous evidence of policy priorities throughout terms (Martin 2011; Saalfeld 2011)
- **vs. Floor Debates:** No time limits or strict party discipline constraints (Proksch 2011; Martin 2010)
- **vs. Manifestos:** Captures actual legislative behavior, not just campaign promises (Stafford 2025)

Taiwan's Institutional Design

- **Compusalsoiry:** Mandatory 20-day response requirement enhances strategic use
- **Build personal reputation:** national policy vs local constituency needs

Transformer-Based Detection of GTQ Content



(a) Monthly Allowance Increase Proposal

Appendix Table C.5: The Description of Train, Test and Development Sets and Class Weight Adjustment

	Training Split			Class Weights		
	Train	Test	Dev	Original	Weights	Normalized
Particularistic Legislation	2,004	235	261	0.347	1.498	1.000
Non-particularistic Legislation	3,768	487	461	0.652	0.750	0.501
Sub Total	5,772	722	722			
Total		7,216				

Data Source: Luor and Hsieh (2008); Luor and Liao (2009); Luor and Chan (2012)

Table A.3: Model Performance Comparison

	ALBERT			BERT			MacBERT			
	P	R	F1	P	R	F1	P	R	F1	Support
Non-Pork	0.96	0.96	0.96	0.98	0.96	0.97	0.96	0.97	0.97	487
Pork	0.92	0.91	0.92	0.92	0.95	0.94	0.94	0.92	0.93	235
Accuracy	–	–	0.95	–	–	0.96	–	–	0.95	722
Macro Avg	0.94	0.94	0.94	0.95	0.96	0.95	0.95	0.94	0.95	722
Weighted Avg	0.95	0.95	0.95	0.96	0.96	0.96	0.95	0.95	0.95	722

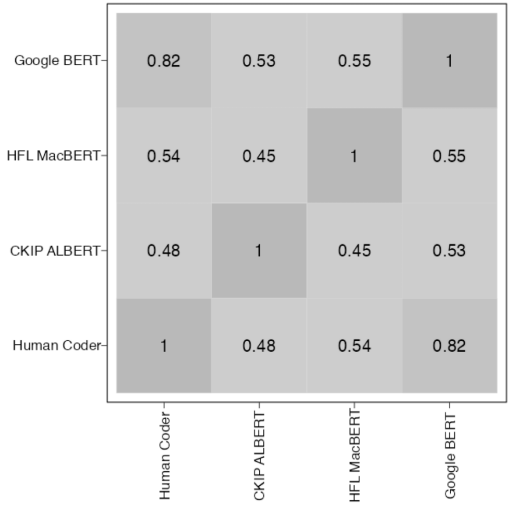
Model	Model ID	Source	Downloads
ALBERT	ckiplab/albert-base-chinese	CKIP, Academia Sinica	256K
BERT	google-bert/bert-base-chinese	Google	11M
MacBERT	hfl/chinese-macbert-base	HFL, iFLYTEK	684K

Note: P = Precision, R = Recall, F1 = F1-score. Download counts from HuggingFace as of March 2024.

Appendix Figure A.2: An Example of Parliamentary Question: KMT Legislator's Written Question Requesting Full Subsidies of Approximately NT$35 Million for Typhoon Damage in Kaohsiung Area

Performance on Held-out data

Figure 1: Out-of-Sample Performance: Correlation Matrix between Transformer Models (`HFL-ALBERT`, `Google-BERT`, `HFL-MacBERT`) and the Human Coder



Appendix Table C.8: Out of Samples Classification Performance

Model Types	Class	Precision	Recall	F1	MMC	Balanced Accuracy
CKIP ALBERT	Non-GTQs	0.91	0.95	0.93	0.47	0.71
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HFL MacBERT	Non-GTQs	0.91	0.97	0.94	0.54	0.71
HFL MacBERT	GTQs	0.77	0.45	0.57	0.54	0.71
Google BERT	Non-GTQs	0.99	0.94	0.96	0.82	0.95
Google BERT	GTQs	0.75	0.96	0.88	0.82	0.95

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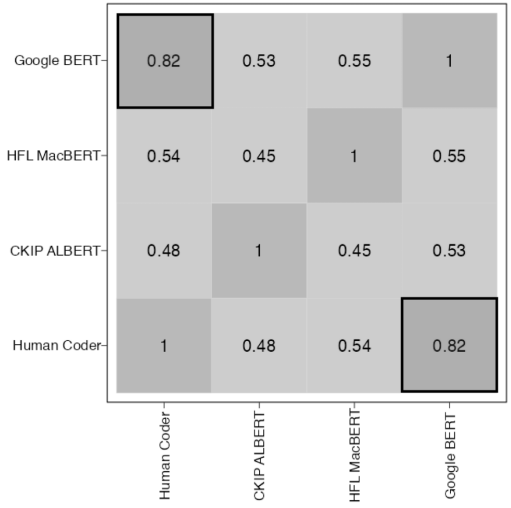

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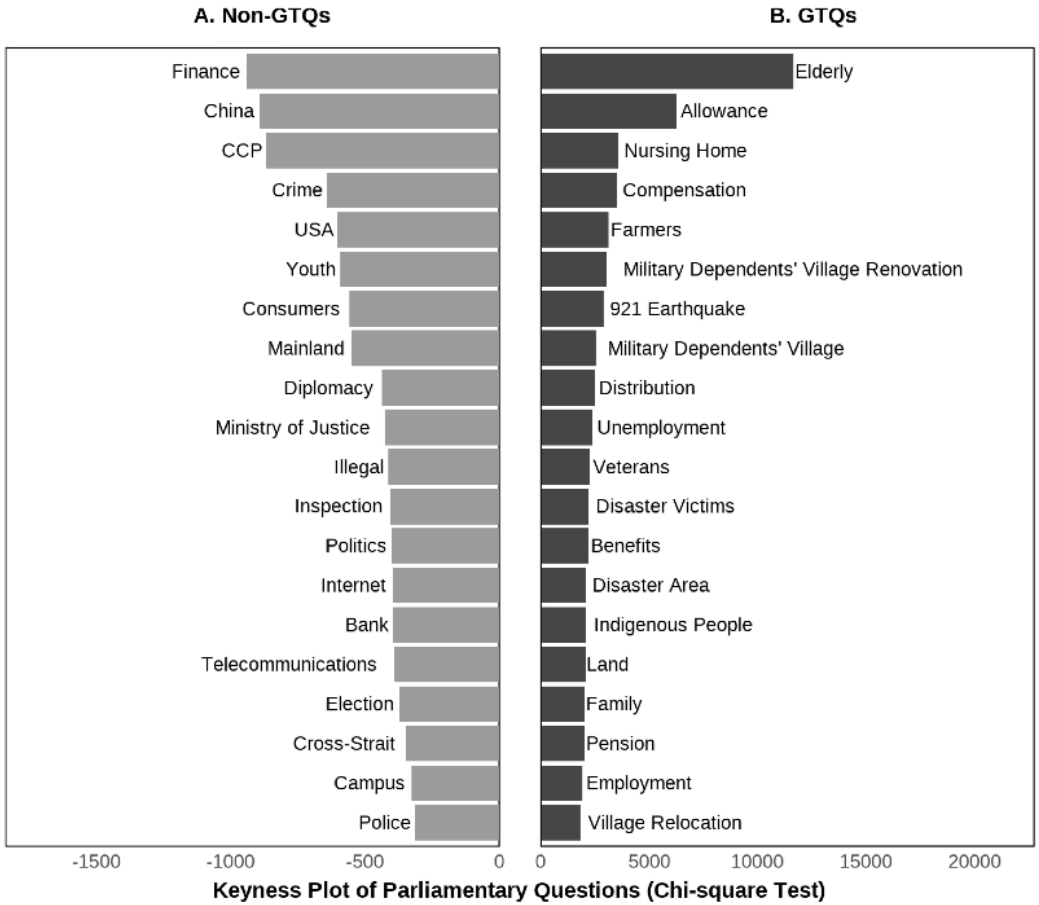
Posthoc Validation

Figure 2: Keyness Analysis for Pooled Annotated Parliamentary Questions: GTQs versus Non-GTQs



Dependent Variable: Proportion of GTQs

Definition

$$\text{Proportion of GTQs}_{i,t} = \frac{\text{GTQs}_{i,t}}{\text{Total Questions}_{i,t}} \times 100$$

Refine

- 63,748 total parliamentary questions
- 8,992 high-confidence GTQs (14%)
- 95% confidence threshold for precision

Sample Coverage

- **Unit of Analysis**: Legislator-year
- **Time Period**: 1999-2019
  - SNTV period: 1999-2008
  - MMM period: 2008-2019
- **Final Sample**: 2,809 district observations
- Excludes CLPR and indigenous constituencies

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Regression Design

Part 1: Electoral System Effects

- $$\text{GTQs}_{i,t} = \alpha_0 + \alpha_1 \text{Post-reform}_t + \alpha_2 \text{Year} + \alpha_3 (\text{Post-reform}_t \times \text{Year}) + \theta \text{Controls}_{i,t} + \mu_i + \epsilon_{i,t}$$
- **Municipality FE + Controls**: Party, seniority, gender, pork committee membership, electoral margin, district magnitude

Part 2: Socioeconomic Moderation

- $$\text{GTQs}_{i,t} = \alpha_0 + \alpha_1 \text{Post-reform}_t + \sum_{d=1}^{5} \alpha_4^d (\text{Post-reform}_t \times \text{Conditions}_t^d) + \text{Controls}$$
- **5 Municipal Indicators**:
  - Unemployment rate, Agricultural value
  - Sector employment (Agri/Manu/Service)
  - Higher education population share

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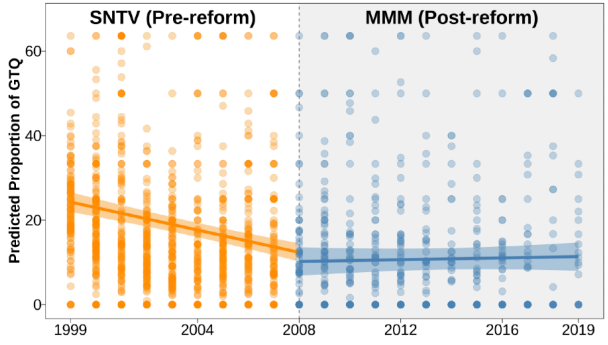
Figure 3: Changes in the Distribution of Geographically Targeted Questions Following Electoral Reform from SNTV to MMM



SNTV System (Pre-2008)

- Legislators differentiate via distributive activities
- Higher GTQs

MMM System (Post-2008)

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- SMD → Interparty competition
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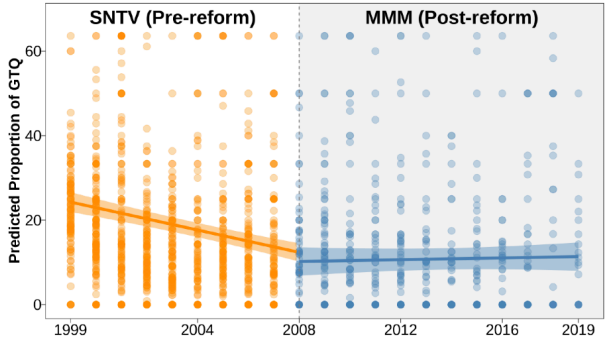

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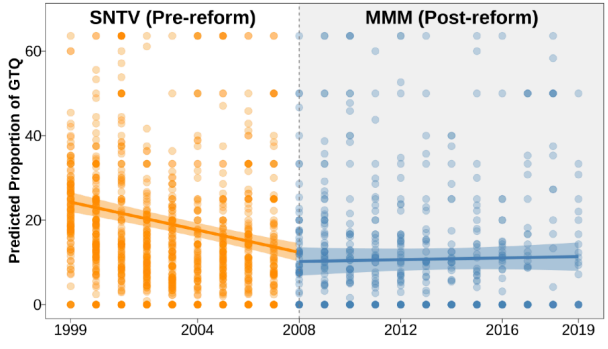

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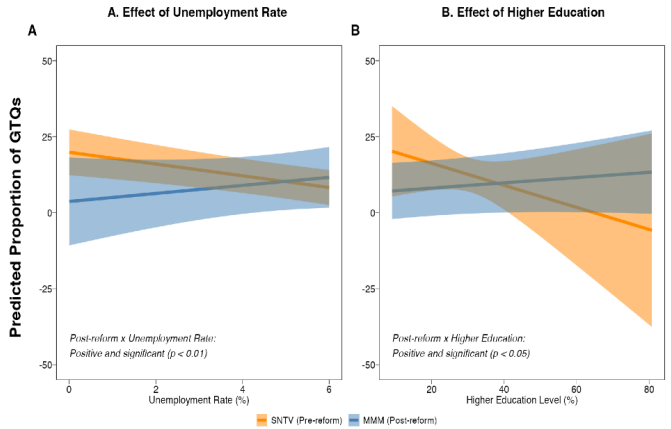

Under SNTV

- **High unemployment**: Fewer distributive policies
- **Economic stability**: More GTQs for reputation
- **Lower education**: Traditional patron-client relations
- **Higher education**: Less distributive engagement

Under MMM

- Both socioeconomic effects substantially neutralized
- Single-member structure reduces contextual responsiveness

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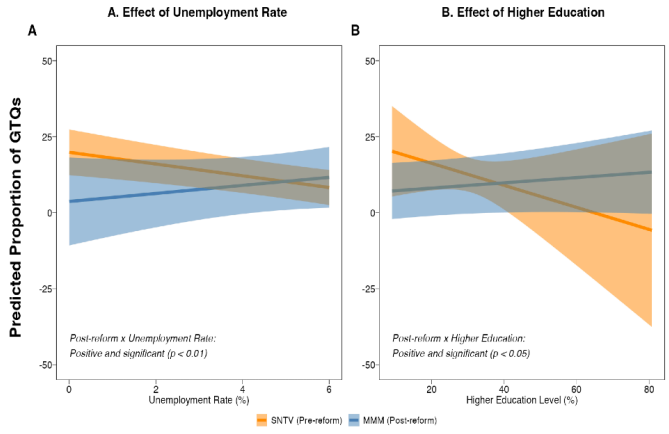

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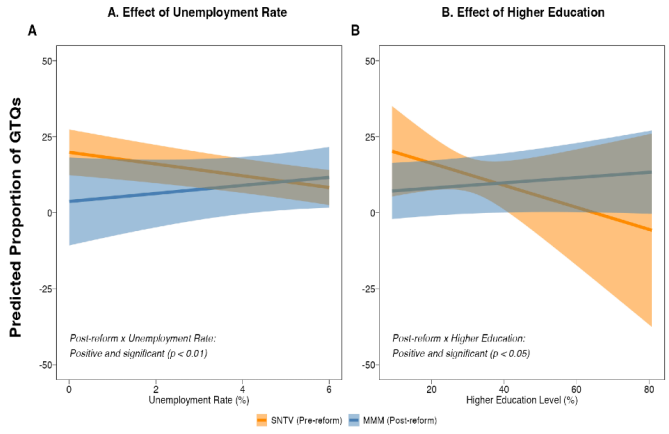

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Takeaway

Reform Goals: SNTV → SMD

- Reduce money politics and factionalism
- Improve legislative efficiency

Actual Effects: SMD Impact

- Socioeconomic targeting effects substantially neutralized
- SMD structure reduces contextual responsiveness

Academic Debate → Reality

- Wu (2002): SNTV was unfairly scapegoated for broader political problems
- We: SMD reduces particularistic responsiveness

Implication

- Taiwan's demographic complexity (Hoklo, Hakka, Mainlanders, indigenous, new immigrants) makes SNTV's multi-member structure particularly valuable for minority representation compared to SMD
- Efficiency vs. representational inclusiveness
- Need to balance system goals with minority needs

Thank You