

# Politicians' Asset Allocation and Economic Bill Proposals

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# Motivation

- Soaring property prices worldwide → threatening housing and rent affordability → triggering social unrest (Crawford(2021))
- Little success in addressing these issues through drawing effective economic policies.
- Unexplored but potentially important reason for the failures
  - Extensive holdings of real estate
    - Misaligned incentive of politicians
  - Unlike stocks, held by everyone and less screening
- In this paper, study the effect of politicians' real estate holdings on their legislative behavior related to the real estate market.

# Determinants of Politicians' Legislative Actions

## Determinants of politicians' legislative actions in literature

- Constituents and special interests (Peltzman (1984); Mian et al. (2010))
- Ideological preferences (Lee et al. (2004))
- Private interests (Benmelech and Moskowitz (2010); Tahoun and van Lent (2019))

## In this paper,

- Politicians' real estate holdings as their private interests
- The private interests of Congress members' portfolios → proposing economic bills aimed at tightening the real estate market.

# Financial Disclosure of Congress members

## Congress of South Korea

- Unicameral legislative system and 300 members in Congress.
- General elections are held every 4 years; no term limits.
- Single constituency system → 1 Congress member for each electoral district

## Financial positions of each Congress member

- Granular data of public officials' assets and liabilities from the Public Ethics and Transparency Initiative System (PETI System) since 1993.
- Since 1993, “The Public Service Ethics Act” requires all public officials in South Korea, who are grades 4 or higher, to disclose their own and immediate family member's assets and liabilities in detail to the government system annually.
- False disclosure → subject to disciplinary actions, such as fines or dismissal from public services

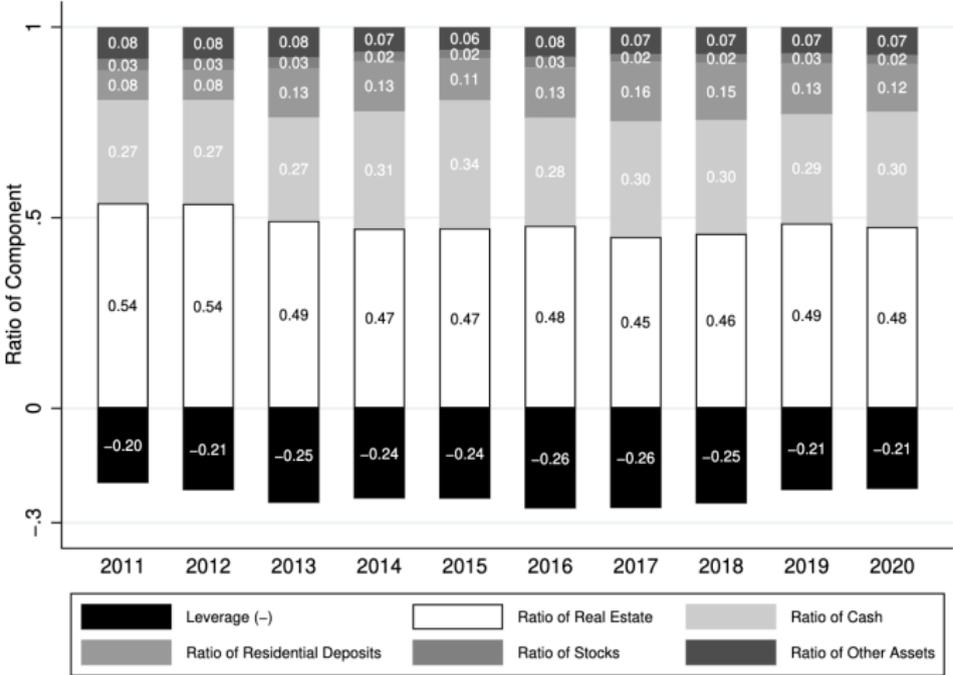
# Financial Disclosure of Congress members

Advantages of using this dataset.

- Free from any selection biases
  - all eligible public officials must disclose every year
  - includes all assets and liabilities owned by public officials, spouses, and lineal ascendants and descendants.
    - aggregate all assets and liabilities of family members to construct the assets and liabilities of a public official.
- Complete list of assets and liabilities.
- Detailed characteristics of assets and liabilities.
  - Exact market value (or fairly assessed value) of all types of assets and liabilities.
  - Our data also provide the property type, location, and market value (or appraisal value) for real estate assets and liabilities.

# Politicians' Portfolio

Congress members affiliated with the committees that make laws related to the real estate market. (7 committees, 181 Congress members on average)



# Identifying Tightening Real Estate Bills

Start from the complete list of bill proposals from the database provided by the National Assembly of South Korea.

- 46,569 bills from 2011 to 2020 proposed by all Congress members.
- Detailed information on all proposed bills
  - Title, a summary, the proposal date, assigned committee, related ministry in government, and the detailed outcomes in the legislative progress of the proposed bill.
  - Name of the Congress member who proposed the bill, including information on whether the Congress member is a primary sponsor or not.

# Identifying Tightening Real Estate Bills

## Real estate bills

- Proposed by 6 government ministries implementing real estate policy.
  - Among the total 46,569 proposed bills, 19,869 bills
- Apply keyword searching for the real estate bills to the title and summary of proposed bills
  - General keywords
    - Real estate bills from the titles of pre-existing real estate laws classified by the Korean Law Information Center.
    - “Real Estate,” “Housing,” “Land,” “Development Gain,” “Real Estate Agent,” “Appraisal Value,” “Renter,” “Residence,” “Reconstruction,” and “New Home Sales.”
  - Ministry-specific keywords
    - i.e., Bills associated with “Ministry of Land, infrastructure, and Transport” that contain our general keywords but are related to infrastructure, which is not our primary interest. We drop bills with a list of ministry-specific keywords such as “Harbor,” “Airport,” or “Ground Water.”
- 2,560 proposed bills that are associated with real estate.

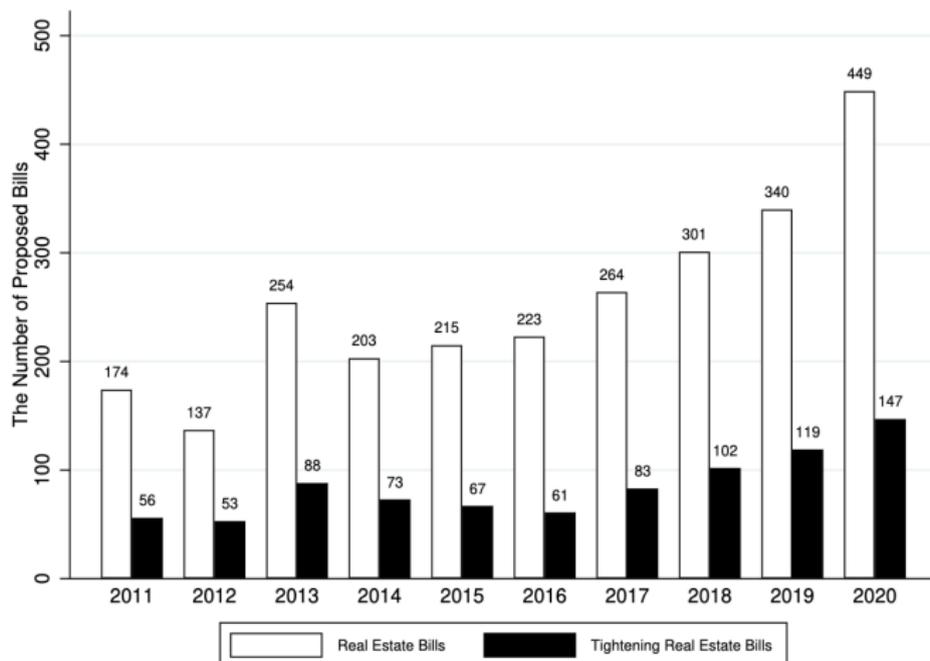
# Identifying Tightening Real Estate Bills

## Tightening real estate bills

- Keyword search
  - Count the number of tightening keywords and loosening keywords from the summary of a real estate bill.
  - Define a real estate bill as tightening if the number of tightening keywords is more than that of loosening keywords.
  - Among 2,560 real estate bills, 849 tightening real estate bills.
- Validity check: cross-check our measure with an alternative measure using the official list of tightening bills categorized by the South Korean government from 2015 to 2020.
  - Limited sample period from 2015 to 2020.
  - Positively correlated with the alternative measure with statistical significance at a 1% level, indicating the consistency of our measure.

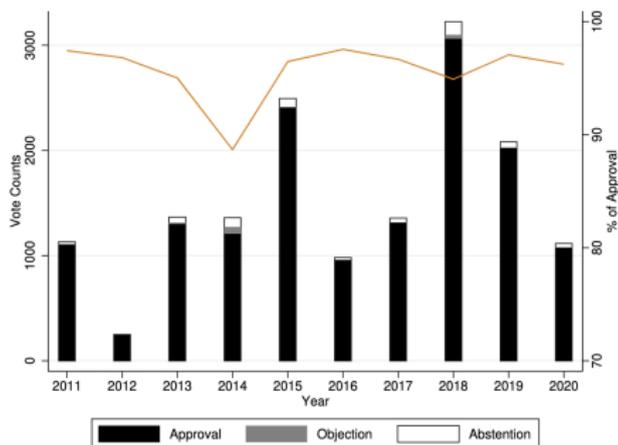
# Tightening Real Estate Bills

On average, 33% of the real estate bills are tightening bills.



# Why Bill Proposal, not Voting behavior

- Bill proposal is the first legislative step reflecting a politician's personal or ideological interests.
- Avoiding a possible selection bias.
  - Not all proposed bills are approved eventually.
  - Votes for approving the bills are well above 90%, indicating that referred bills are very likely to be approved.



# Empirical Specification

*Reluctance of Tightening Real Estate* $_{i,t}$

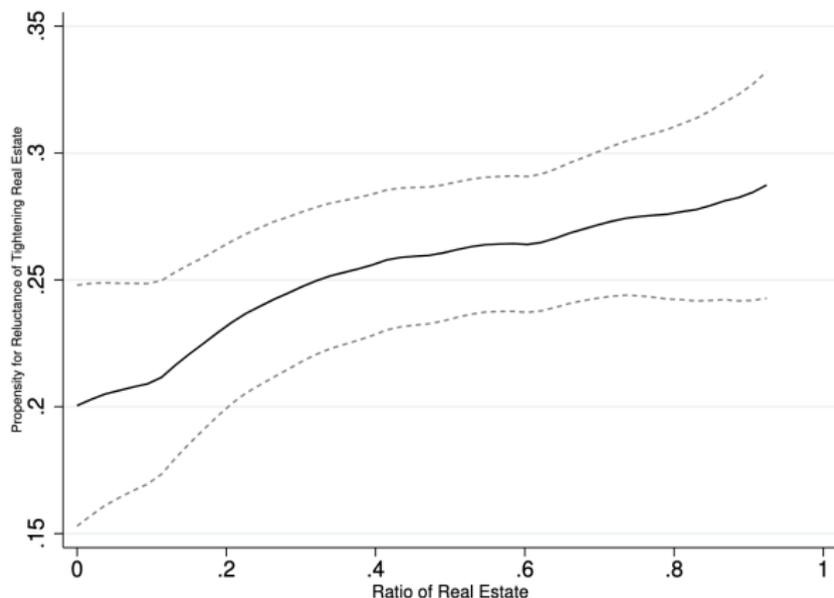
$$= \alpha + \beta \cdot \text{Ratio of Real Estate}_{i,t-1} + \gamma \cdot X_{i,t-1} + \delta \cdot M_{t-1} + \epsilon_{i,t}$$

- *Reluctance of Tightening Real Estate* $_{i,t}=1$  if the Congress member  $i$  does not propose any bill that tightens the real estate market in year  $t$
- *Ratio of Real Estate* $_{i,t-1}$  = the ratio of real estate assets to total assets owned by a Congress member  $i$  in year  $t - 1$ .
- $X_{i,t-1}$ : Congress member's individual characteristics
  - Other components of asset portfolio such as *Log (Total Assets)*, *Leverage*, *Ratio of Cash*, and *Ratio of Residential Deposits*
  - Demographic variables such as *Age*, *Female*, education level, *Terms Served*, *Primary Sponsor* and *Electoral District*
  - Party affiliation, *Conservative Party*.

# Summary Statistics (T1)

	Obs	Mean	Std.Dev.	10th pctl.	Median	90th pctl.
<b>Panel A: Tightening Real Estate Bills</b>						
<i>Reluctance of Tightening Real Estate</i>	1,809	0.25	0.44	0	1	1
<i>Reluctance of Tightening Real Estate (Government sorted)</i>	1,076	0.42	0.49	0	0	1
<b>Panel B: Portfolio of Congress Members</b>						
<i>Total Assets (mils)</i>	1,809	2,435	2,163	608	1,638	6,002
<i>Log (Total Assets)</i>	1,809	7.46	0.82	6.41	7.40	8.70
<i>Ratio of Real Estate</i>	1,809	0.48	0.24	0.12	0.49	0.80
<i>Ratio of Cash</i>	1,809	0.29	0.17	0.08	0.27	0.56
<i>Ratio of Residential Deposits</i>	1,809	0.12	0.15	0	0.05	0.36
<i>Ratio of Stocks</i>	1,809	0.01	0.03	0	0	0.06
<i>Ratio of Other Assets</i>	1,809	0.07	0.09	0	0.03	0.21
<i>Leverage</i>	1,809	0.22	0.20	0	0.18	0.53
<b>Panel C: Characteristics of Congress Members</b>						
<i>Conservative Party</i>	1,809	0.49	0.50	0	0	1
<i>Terms Served</i>	1,809	2.01	1.12	1	2	4
<i>Primary Sponsor</i>	1,809	0.39	0.49	0	0	1
<i>Age</i>	1,809	58.3	6.47	49	58	67
<i>Female</i>	1,809	0.12	0.32	0	0	1
<i>Education (high school or below)</i>	1,809	0.02	0.13	0	0	0
<i>Education (college)</i>	1,809	0.36	0.48	0	0	1
<i>Education (postgraduate)</i>	1,809	0.62	0.48	0	1	1
<b>Panel D: Decomposing Ratio of Real estate</b>						
<i>Number of Real Estate</i>	1,809	7.01	10.60	1	4	15
By the type of ownership						
<i>Ratio of Owned by Congressmen</i>	1,809	0.27	0.23	0	0.25	0.64
<i>Ratio of Owned by Family</i>	1,809	0.20	0.19	0	0.15	0.50
By the type of real estate						
<i>Ratio of Residential Real Estate</i>	1,809	0.34	0.22	0.02	0.34	0.64
<i>Ratio of Non-residential Real Estate</i>	1,809	0.13	0.19	0	0.04	0.47
By the type of location						
<i>Ratio of Own Electoral District</i>	1,809	0.13	0.19	0	0.03	0.45
<i>Ratio of Other Electoral Districts</i>	1,809	0.34	0.25	0	0.35	0.71
<i>Composition Changes</i>	1,809	0.27	0.45	0	0	1

## Univariate relationship between *Reluctance of Tightening Real Estate* and *Ratio of Real Estate* (F4)



- Average (48%) → 26%; 1 SD above the average (72%) → 27.3%; 1 SD below the average (24%) → 23.9%

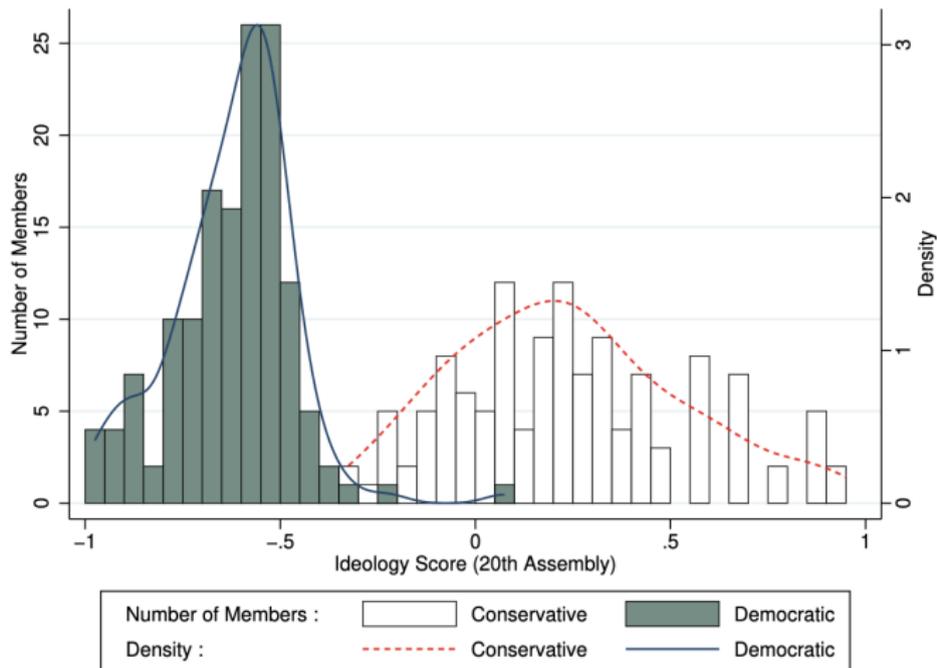
## Reluctance of Tightening Real Estate on Ratio of Real Estate

Panel A: Baseline Regression	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Real Estate</i>	0.162** (2.28)	0.132* (1.66)	0.150* (1.93)	0.165** (2.13)
<i>Log (Total Assets)</i>	0.048*** (3.26)	0.037* (1.73)	0.041* (1.96)	0.028 (1.35)
<i>Leverage</i>	0.007 (0.10)	0.156** (1.98)	0.142* (1.82)	0.121 (1.59)
<i>Ratio of Cash</i>	0.152* (1.65)	0.236** (2.26)	0.264*** (2.60)	0.270*** (2.69)
<i>Ratio of Residential Deposits</i>	0.072 (0.71)	0.094 (0.79)	0.123 (1.05)	0.137 (1.20)
<i>Conservative Party</i>		0.106*** (3.25)	0.093*** (2.91)	0.113*** (3.31)
<i>Age</i>		0.004 (1.60)	0.004* (1.69)	0.004 (1.54)
<i>Female</i>		0.050 (1.19)	0.051 (1.23)	0.049 (1.15)
<i>GDP Growth</i>			5.844*** (7.38)	
<i>HPI Growth</i>			0.211 (0.39)	
Observations	1,809	1,809	1,809	1,809
Adjusted R-squared	0.010	0.136	0.169	0.244
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

- (2): Mian et al. (2010): constituents' interest (*Electoral District FE*) and ideology (*Conservative Party FE*)
- (3): Macro Factors; (4) Year FE

## High correlation between ideology and political party

- The ideology of Congress members in South Korea is starkly divided by their party affiliations.



## Not Constituents' Interest

- Real estate ownership in Congress members' electoral district is closely related to the constituent's economic interest.

<b>Panel B:</b> By Property Location	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Own Electoral District</i>	0.110 (1.33)	0.157 (1.55)	0.172* (1.75)	0.175* (1.78)
<i>Ratio of Other Electoral Districts</i>	0.195*** (2.67)	0.158** (1.97)	0.176** (2.25)	0.188** (2.42)
<i>Log (Total Assets)</i>	0.043*** (2.85)	0.037* (1.68)	0.041* (1.89)	0.028 (1.28)
<i>Leverage</i>	0.009 (0.14)	0.156** (1.99)	0.143* (1.82)	0.121 (1.59)
<i>Ratio of Cash</i>	0.159* (1.76)	0.254** (2.43)	0.280*** (2.76)	0.282*** (2.82)
<i>Ratio of Residential Deposits</i>	0.062 (0.62)	0.113 (0.93)	0.140 (1.19)	0.146 (1.27)
<i>Conservative Party</i>		0.105*** (3.19)	0.092*** (2.84)	0.111*** (3.23)
<i>Age</i>		0.004 (1.56)	0.004 (1.64)	0.003 (1.50)
<i>Female</i>		0.050 (1.19)	0.051 (1.22)	0.048 (1.13)
<i>GDP Growth</i>			5.851*** (7.37)	
<i>HPI Growth</i>			0.203 (0.37)	
Observations	1,809	1,809	1,809	1,809
Adjusted R-squared	0.011	0.136	0.169	0.244
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

# Heterogenous Effects: with Larger Incentive

- Expect a larger effect with larger private interest.

	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Real Estate × Large Number</i>	0.204 (1.62)	0.296** (2.16)	0.283** (2.09)	0.307** (2.39)
<i>Ratio of Real Estate</i>	0.128* (1.68)	0.073 (0.83)	0.092 (1.06)	0.098 (1.12)
<i>Large Number</i>	-0.184** (-2.55)	-0.218*** (-2.77)	-0.199** (-2.54)	-0.198*** (-2.63)
<i>Log (Total Assets)</i>	0.061*** (4.02)	0.042** (1.97)	0.045** (2.12)	0.030 (1.41)
<i>Leverage</i>	0.010 (0.15)	0.163** (2.07)	0.151* (1.92)	0.131* (1.72)
<i>Ratio of Cash</i>	0.140 (1.57)	0.213** (2.05)	0.244** (2.41)	0.251** (2.51)
<i>Ratio of Residential Deposits</i>	0.034 (0.35)	0.044 (0.36)	0.074 (0.61)	0.081 (0.68)
<i>Conservative Party</i>		0.100*** (3.05)	0.088*** (2.74)	0.109*** (3.18)
<i>Age</i>		0.004* (1.72)	0.004* (1.81)	0.004* (1.67)
<i>Female</i>		0.048 (1.16)	0.050 (1.20)	0.048 (1.14)
<i>GDP Growth</i>			5.788*** (7.28)	
<i>HPI Growth</i>			0.239 (0.44)	
Observations	1,809	1,809	1,809	1,809
Adjusted R-squared	0.014	0.138	0.171	0.246
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

# Heterogenous Effects: Entrenched Members

- Expect a larger effect with entrenched Congress members.
- Less concerned with their reelection

<i>Measure of Entrenchment:</i>	(1)	(2)	(3)
	<i>High Votes</i>	<i>Vote Concentration</i>	<i>Party Shares</i>
	<i>Reluctance of Tightening Real Estate</i>		
<i>Ratio of Real Estate × Entrenched</i>	0.274** (2.57)	0.193** (1.98)	0.221** (1.99)
<i>Ratio of Real Estate</i>	0.067 (0.67)	0.126 (1.32)	0.134 (1.48)
<i>Entrenched</i>	-0.129** (-2.32)	-0.120** (-2.29)	-0.106** (-2.00)
<i>Log (Total Assets)</i>	0.029 (1.14)	0.030 (1.19)	0.031 (1.26)
<i>Leverage</i>	0.194** (2.28)	0.185** (2.19)	0.194** (2.33)
<i>Ratio of Cash</i>	0.353*** (3.39)	0.354*** (3.34)	0.350*** (3.33)
<i>Ratio of Residential Deposits</i>	0.210 (1.64)	0.220* (1.70)	0.195 (1.50)
<i>Conservative Party</i>	0.136*** (3.61)	0.129*** (3.47)	0.137*** (3.53)
<i>Age</i>	0.007*** (2.75)	0.007*** (2.75)	0.007*** (2.66)
<i>Female</i>	0.047 (0.88)	0.048 (0.89)	0.055 (1.04)
Observations	1,610	1,610	1,610
Adjusted R-squared	0.238	0.237	0.237
Other Controls	YES	YES	YES
Electoral District FE	YES	YES	YES
Year FE	YES	YES	YES

# Robustness of Results: Independent Variable

<b>Panel A:</b> By Property Ownership	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Owned by Congressmen</i>	0.143*	0.099	0.117	0.142*
	(1.92)	(1.13)	(1.37)	(1.66)
<i>Ratio of Owned by Family</i>	0.132	0.140	0.158*	0.157*
	(1.61)	(1.57)	(1.82)	(1.81)
<b>Panel B:</b> By Property Type	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Residential Real Estate</i>	0.180**	0.137*	0.151*	0.159**
	(2.38)	(1.73)	(1.95)	(2.04)
<i>Ratio of Non-residential Real Estate</i>	0.132	0.186*	0.209**	0.246**
	(1.53)	(1.90)	(2.16)	(2.57)
<b>Panel C:</b> By Type of Changes	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Real Estate × Composition Changes</i>	-0.115	-0.143	-0.133	-0.131
	(-1.17)	(-1.38)	(-1.32)	(-1.41)
<i>Ratio of Real Estate</i>	0.192***	0.160*	0.176**	0.190**
	(2.60)	(1.86)	(2.09)	(2.25)
<i>Composition Changes</i>	0.073	0.104*	0.098*	0.098*
	(1.29)	(1.83)	(1.75)	(1.92)
Observations	1,809	1,809	1,809	1,809
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Macro Controls	NO	NO	YES	NO
Year FE	NO	NO	NO	YES

# Robustness of Results: Dependent Variable (1)

- Alternative categorization of bills: tightening
- Official categorization of bills by Korean Government (2015-)

	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate (Government sorted)</i>			
<i>Ratio of Real Estate</i>	0.246** (2.08)	0.273* (1.73)	0.266 (1.65)	0.308* (1.85)
<i>Log (Total Assets)</i>	0.073*** (3.35)	0.062** (2.15)	0.054* (1.82)	0.063** (2.07)
<i>Leverage</i>	0.011 (0.11)	0.097 (0.78)	0.104 (0.84)	0.056 (0.45)
<i>Ratio of Cash</i>	0.266* (1.73)	0.245 (1.41)	0.210 (1.19)	0.340* (1.89)
<i>Ratio of Residential Deposits</i>	0.293* (1.81)	0.382* (1.93)	0.363* (1.80)	0.415** (2.04)
<i>Conservative Party</i>		0.061 (1.43)	0.083* (1.88)	0.061 (1.38)
<i>Age</i>		0.001 (0.32)	-0.001 (-0.26)	0.003 (0.67)
<i>Female</i>		-0.166*** (-2.62)	-0.176*** (-2.72)	-0.157** (-2.34)
<i>GDP Growth</i>			-43.413*** (-4.01)	
<i>HPI Growth</i>			-6.190*** (-4.06)	
Observations	1,076	1,076	1,076	1,076
Adjusted R-squared	0.014	0.161	0.182	0.278
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

## Robustness of Results: Dependent Variable (2)

- Excluding duplicative bills.
- Similarity score (TF-IDF) and drop bills with high scores.

<i>Measure of Similar Bills:</i>	(1)	(2)	(3)	(4)	(5)	(6)
	Similarity > 0.5				> 0.75	> 0.9
<i>Reluctance of Tightening Real Estate</i>						
<i>Ratio of Real Estate</i>	0.163** (2.24)	0.136* (1.72)	0.153** (1.99)	0.166** (2.06)	0.153** (2.00)	0.163** (2.10)
<i>Log (Total Assets)</i>	0.060*** (4.06)	0.036* (1.76)	0.040** (1.98)	0.029 (1.41)	0.031 (1.47)	0.028 (1.32)
<i>Leverage</i>	0.057 (0.88)	0.222*** (2.80)	0.209*** (2.65)	0.183** (2.37)	0.141* (1.83)	0.116 (1.52)
<i>Ratio of Cash</i>	0.168* (1.85)	0.233** (2.24)	0.260** (2.57)	0.252** (2.45)	0.252** (2.54)	0.262*** (2.60)
<i>Ratio of Residential Deposits</i>	0.141 (1.36)	0.225* (1.93)	0.253** (2.21)	0.246** (2.13)	0.132 (1.16)	0.136 (1.19)
<i>Conservative Party</i>		0.140*** (4.55)	0.128*** (4.20)	0.151*** (4.59)	0.114*** (3.35)	0.115*** (3.35)
<i>Age</i>		0.005** (2.02)	0.005** (2.12)	0.004* (1.85)	0.004* (1.76)	0.004 (1.57)
<i>Female</i>		0.029 (0.74)	0.031 (0.77)	0.030 (0.72)	0.055 (1.27)	0.050 (1.19)
<i>GDP Growth</i>			5.444*** (6.71)			
<i>HPI Growth</i>			0.331 (0.59)			
Observations	1,809	1,809	1,809	1,809	1,809	1,809
Adjusted R-squared	0.010	0.142	0.169	0.224	0.246	0.245
Other Controls	NO	YES	YES	YES	YES	YES
Electoral District FE	NO	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	YES	YES	YES

## Robustness of Results: Dependent Variable (3)

- % of tightening real estate bills to total real estate bills.
- Indicator for above median members.

	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate (Alt)</i>			
<i>Ratio of Real Estate</i>	0.142 (1.47)	0.213** (2.03)	0.210** (2.00)	0.211** (2.00)
<i>Log (Total Assets)</i>	0.020 (1.29)	0.032 (1.48)	0.031 (1.42)	0.029 (1.33)
<i>Leverage</i>	0.037 (0.54)	0.100 (1.09)	0.101 (1.09)	0.120 (1.29)
<i>Ratio of Cash</i>	0.066 (0.59)	0.231* (1.83)	0.230* (1.81)	0.251** (1.97)
<i>Ratio of Residential Deposits</i>	0.091 (0.74)	0.305** (2.15)	0.298** (2.09)	0.296** (2.08)
<i>Conservative Party</i>		0.079** (2.40)	0.083** (2.50)	0.096*** (2.80)
<i>Age</i>		0.008*** (3.15)	0.008*** (3.17)	0.008*** (3.03)
<i>Female</i>		0.068 (1.43)	0.068 (1.42)	0.068 (1.40)
<i>GDP Growth</i>			-1.157 (-1.29)	
<i>HPI Growth</i>			0.542 (0.71)	
Observations	1,809	1,809	1,809	1,809
Adjusted R-squared	0.001	0.035	0.035	0.037
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

## Robustness of Results: Placebo Y

- Other economic policies than real estate
- Politicians' unobservable stance to economic policies

	(1)	(2)	(3)	(4)
	<i>Tightening Economic Policy</i>			
<i>Ratio of Real Estate</i>	-0.046 (-0.81)	0.065 (0.88)	0.041 (0.57)	0.006 (0.09)
<i>Log (Total Assets)</i>	-0.043*** (-4.12)	-0.059*** (-3.99)	-0.063*** (-4.40)	-0.049*** (-3.49)
<i>Leverage</i>	-0.043 (-0.89)	-0.103 (-1.64)	-0.094 (-1.54)	-0.108* (-1.81)
<i>Ratio of Cash</i>	-0.036 (-0.54)	-0.036 (-0.42)	-0.060 (-0.73)	-0.127 (-1.56)
<i>Ratio of Residential Deposits</i>	0.087 (1.14)	0.060 (0.63)	0.023 (0.25)	-0.022 (-0.25)
<i>Conservative Party</i>		-0.071*** (-2.81)	-0.057** (-2.33)	-0.079*** (-3.20)
<i>Age</i>		-0.005*** (-2.79)	-0.006*** (-2.93)	-0.006*** (-3.00)
<i>Female</i>		0.023 (0.67)	0.015 (0.45)	0.008 (0.25)
<i>GDP Growth</i>			-5.936*** (-8.16)	
<i>HPI Growth</i>			0.312 (0.81)	
Observations	1,809	1,809	1,809	1,809
Adjusted R-squared	0.012	0.183	0.230	0.315
Other Controls	NO	YES	YES	YES
Electoral District FE	NO	YES	YES	YES
Year FE	NO	NO	NO	YES

# Robustness of Results: More controls

- Time-varying local socioeconomic conditions: industry composition, education, and poverty level

Panel A: District-level Controls	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Real Estate</i>	0.163**	0.170**	0.164**	0.164**
	(2.09)	(2.16)	(2.07)	(2.07)
<i>Log (Total Assets)</i>	0.028	0.028	0.027	0.027
	(1.33)	(1.34)	(1.27)	(1.29)
<i>Leverage</i>	0.121	0.125	0.116	0.112
	(1.59)	(1.65)	(1.50)	(1.44)
<i>Ratio of Cash</i>	0.269***	0.276***	0.271***	0.268***
	(2.68)	(2.75)	(2.69)	(2.66)
<i>Ratio of Residential Deposits</i>	0.135	0.148	0.152	0.154
	(1.18)	(1.27)	(1.31)	(1.33)
<i>Conservative Party</i>	0.113***	0.115***	0.116***	0.113***
	(3.31)	(3.39)	(3.45)	(3.31)
<i>Age</i>	0.004	0.004	0.004	0.004*
	(1.55)	(1.55)	(1.64)	(1.69)
<i>Female</i>	0.049	0.049	0.046	0.048
	(1.16)	(1.15)	(1.09)	(1.12)
<i>Fraction of Workforce in Financial Industry</i>		2.090	2.887	3.093
		(1.01)	(1.43)	(1.50)
<i>Fraction of Workforce in Real Estate Industry</i>		-4.407	-4.375	-4.570
		(-1.10)	(-1.10)	(-1.14)
<i>Fraction of Under High School</i>			4.122*	4.026*
			(1.90)	(1.83)
<i>Fraction of Graduates</i>			9.566	9.710
			(1.17)	(1.19)
<i>Fraction of People in Poverty</i>				-4.234
				(-0.87)
Observations	1,807	1,807	1,807	1,807
Adjusted R-squared	0.244	0.244	0.246	0.245
Other Controls	YES	YES	YES	YES
Electoral District FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

# Robustness of Results: More controls

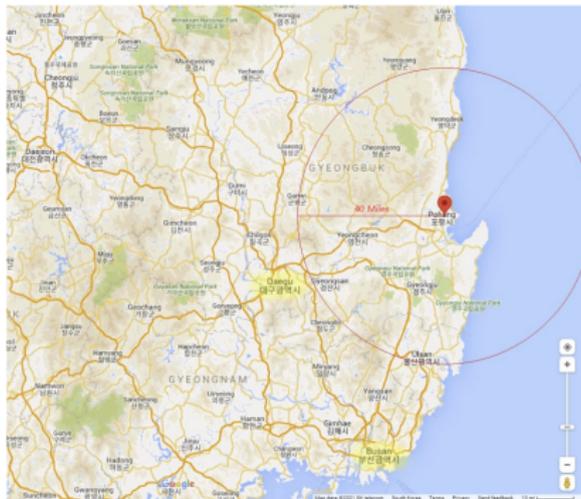
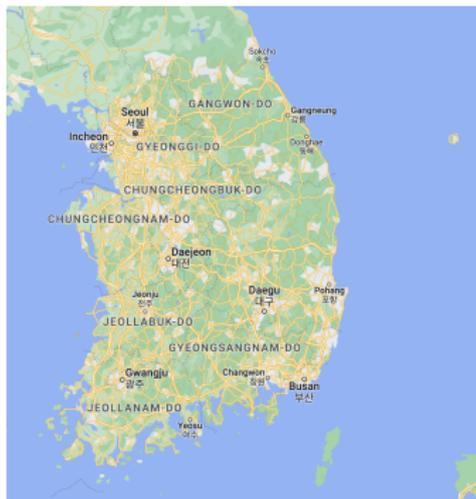
## - Metropolitan area $\times$ year FE

<b>Panel B:</b> Metropolitan $\times$ Year FE	(1)	(2)	(3)	(4)
	<i>Reluctance of Tightening Real Estate</i>			
<i>Ratio of Real Estate</i>	0.162** (2.28)	0.144** (2.42)	0.156*** (2.65)	0.168*** (2.70)
<i>Log (Total Assets)</i>	0.048*** (3.25)	0.030** (2.09)	0.033** (2.26)	0.028* (1.84)
<i>Leverage</i>	0.014 (0.22)	0.092 (1.48)	0.084 (1.36)	0.056 (0.87)
<i>Ratio of Cash</i>	0.157* (1.72)	0.161** (2.03)	0.178** (2.28)	0.173** (2.17)
<i>Ratio of Residential Deposits</i>	0.069 (0.69)	0.096 (1.08)	0.123 (1.42)	0.160* (1.80)
<i>Conservative Party</i>		0.076*** (3.15)	0.068*** (2.81)	0.067** (2.55)
<i>Age</i>		0.002 (0.89)	0.002 (1.08)	0.001 (0.51)
<i>Female</i>		0.057 (1.48)	0.060 (1.55)	0.043 (1.10)
<i>GDP Growth</i>			5.921*** (8.11)	
<i>HPI Growth</i>			0.050 (0.10)	
Observations	1,815	1,815	1,815	1,815
Adjusted R-squared	0.009	0.151	0.183	0.271
Other Controls	NO	YES	YES	YES
Metropolitan FE	NO	YES	YES	NO
Metropolitan $\times$ Year FE	NO	NO	NO	YES

# IV1: Unexpected Earthquake as an Exogenous Shock

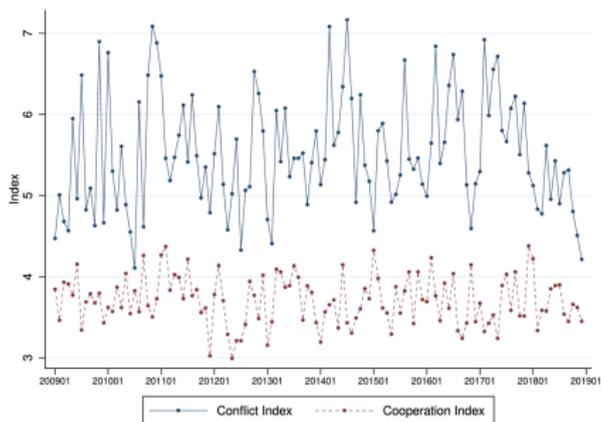
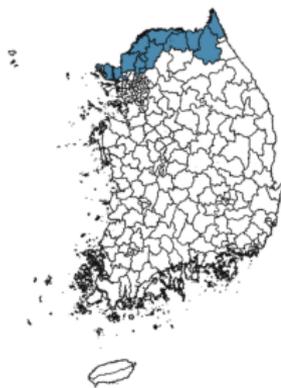
- Known as safe place from seismic activity.
- November 15, 2017: a 5.4-magnitude earthquake occurred at Pohang (Second largest in modern history)
- Pohang suffered from reduced real estate prices, the population outflowed, and local businesses shrank.

Fraction of real estate value within 40 miles from the earthquake.



## IV2: Relationship with North Korea and Bordering Areas

- Two Koreas: different degrees of tensions over years.
- Real estate prices near the border are heavily affected.
- Measuring tension: Global Database of Event, Language, and Tone (GDELT)
- Fraction of their real estate assets in the border area



# Results with Instrument Variables

	IV: Pohang Earthquake		North Korea Tension	
	1st Stage (1)	2nd Stage (2)	1st Stage (3)	2nd Stage (4)
	<i>Ratio of Real Estate</i>	<i>Reluctance of Tightening Real Estate</i>	<i>Ratio of Real Estate</i>	<i>Reluctance of Tightening Real Estate</i>
<i>Ratio Within 40 Miles</i>	-0.146*** (-3.29)			
<i>Conflict Index</i>			-0.232*** (-2.75)	
<i>Cooperation Index</i>			0.319** (2.43)	
<i>Ratio of <math>\widehat{\text{Real Estate}}</math></i>		1.379** (1.98)		0.580** (2.18)
<i>Log (Total Assets)</i>	-0.045** (-2.34)	0.103*** (2.85)	-0.019 (-1.46)	0.034* (1.68)
<i>Leverage</i>	0.130* (1.69)	0.155 (0.92)	0.015 (0.32)	0.024 (0.27)
<i>Ratio of Cash</i>	-0.729*** (-9.17)	1.144** (2.08)	-0.801*** (-17.51)	0.463** (2.16)
<i>Ratio of Residential Deposits</i>	-0.891*** (-14.70)	1.214* (1.74)	-0.938*** (-22.55)	0.525* (1.92)
<i>Conservative Party</i>	0.024 (0.88)	0.025 (0.58)	0.009 (0.49)	0.058 (1.39)
<i>Age</i>	-0.001 (-0.43)	0.004 (1.58)	-0.000 (-0.34)	-0.000 (-0.03)
<i>Female</i>	0.006 (0.22)	0.059 (0.74)	-0.003 (-0.12)	0.093 (1.55)
Observations	457	457	993	993
Other Controls	YES	YES	YES	YES
Metropolitan FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

# Any Aggregate Impact?

## Empirical prediction

- Enough heterogeneity in *Ratio of Real Estate* among Congress members will diversify the effects away and would not have aggregate effect.
- Too much common interest in real estate would generate aggregate impact.

## *Aggregated Ratio of Real Estate*

- Ratio of aggregate real estate asset values in all Congress members' portfolios to the aggregate total asset values of all Congress members.
- Mean of 0.43 with a standard deviation of 0.11

# Aggregated Impact

<b>Panel A: All Congress Members</b>	(1)	(2)	(3)	(4)
	<i>Log # of Tightening Bills Proposed</i>		<i>Log # of Tightening Bills Approved</i>	
<i>Aggregated Ratio of Real Estate</i>	-2.421*** (-4.09)	-2.550** (-3.04)	-2.602* (-2.10)	-2.639** (-2.53)
<i>GDP Growth</i>		-0.785 (-0.53)		-11.422* (-2.19)
<i>HPI Growth</i>		-1.996 (-0.50)		-4.125 (-0.87)
Observations	10	10	10	10
Adjusted R-squared	0.530	0.391	0.252	0.242
<b>Panel B: Leading Party Members</b>	(1)	(2)	(3)	(4)
	<i>Log # of Tightening Bills Proposed</i>		<i>Log # of Tightening Bills Approved</i>	
<i>Aggregated Ratio of Real Estate</i>	-1.558*** (-3.95)	-1.551** (-2.89)	-1.667** (-2.68)	-1.598** (-2.53)
<i>GDP Growth</i>		-1.290 (-0.33)		-11.957 (-1.55)
<i>HPI Growth</i>		-0.259 (-0.05)		-2.306 (-0.37)
Observations	10	10	10	10
Adjusted R-squared	0.644	0.531	0.314	0.312

# Conclusion

- Fraction of real estate assets in Congress members' portfolios decreases their likelihood of proposing tightening real estate bills.
- That is, the private interest of Congress members in real estate matters for their bill proposals.
- Policy implication on the composition of Congress
  - Board diversity improves firm value by lowering volatility and improving firm performance (e.g., Bernile et al (2018)).
  - Diversity of Congress members in their financial positions can balance the legislative decisions enacted by Congress.
  - Suggesting the importance of monitoring politicians' private interests.