

Interaction between Trade, Conflict and Cooperation: the case of Japan and China

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- Context and background
- The trade-conflict literature
- Data
- Linear Granger causality
- Nonlinear Granger causality
- Discussion
- Conclusions and further work

- Japan-China economic relationship
- Cold politics and hot economics
- Taiwan, North Korea, Yasukuni shrine, disputed islands, protests
- China-US?
- Politics-trade?

Some definitions

- Cooperation
 - positive action towards another: eg ODA, security alliance, cultural exchange
- Conflict
 - negative action or stance against another: eg protest, vote against in UN, or even war
- Net cooperation index = cooperation - conflict
- Interdependence
 - vulnerability
 - sensitivity dependence
- Trade or interdependence?

Liberal school of thought

- “Peace is the natural effect of trade” – Montesquieu, 1748
- Positive relationship between cooperation and trade, negative relationship between conflict and trade
- Trade is influenced significantly by politics – trade relationship with allies and won’t trade with the enemy.
- Mutual gains from trade raise opportunity cost of conflict: disputes, sanctions and wars lead to a loss in welfare
- Kissinger’s détente with Soviet Union, Richard Nixon’s opening up to China, formation of EU.

Realist school of thought

- Trade causes increased interactions with higher probability of disputes, trade wars and dispute escalations
- Hirschman, 1945: gains from trade can have unequal distribution within and between nations.
- Asymmetry can cause a shift in power relations which can lead to conflict in the extreme case
- US-Japan in 1980s and US-China now
- Trade or war to acquire resources

Other causes of conflict/cooperation

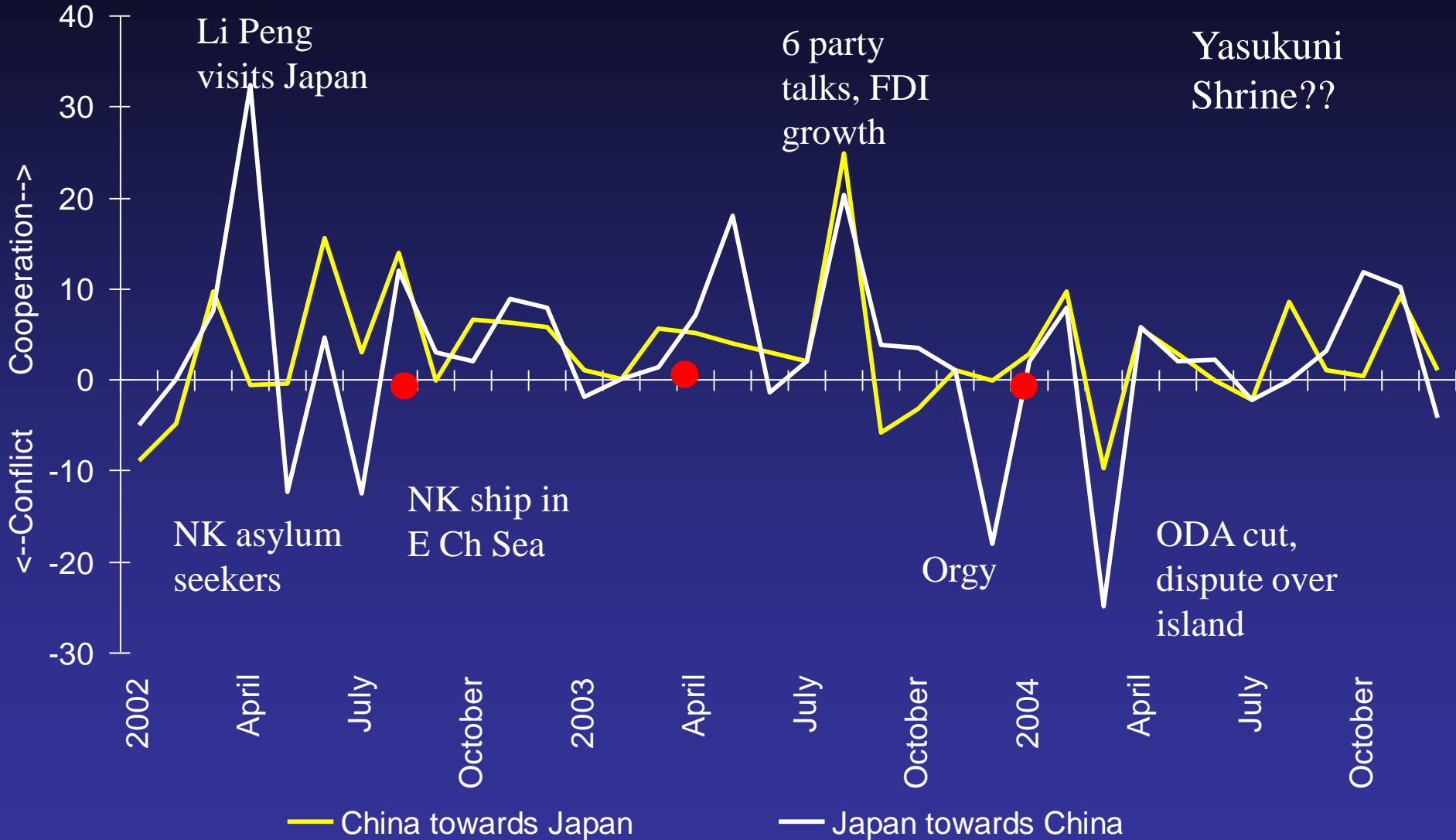
- Distance
- Extent of political liberalisation
- Enduring rivalries
- Counter examples of trade during war, changes in behaviour
- How does trade affect conflict/cooperation and vice versa?
 - trade embargo or war
 - customs union or economic cooperation
 - cumulative low level negative events adds up
 - instantaneous response? Trade contracts are long, statistics are not reported so frequently.

Previous empirical studies

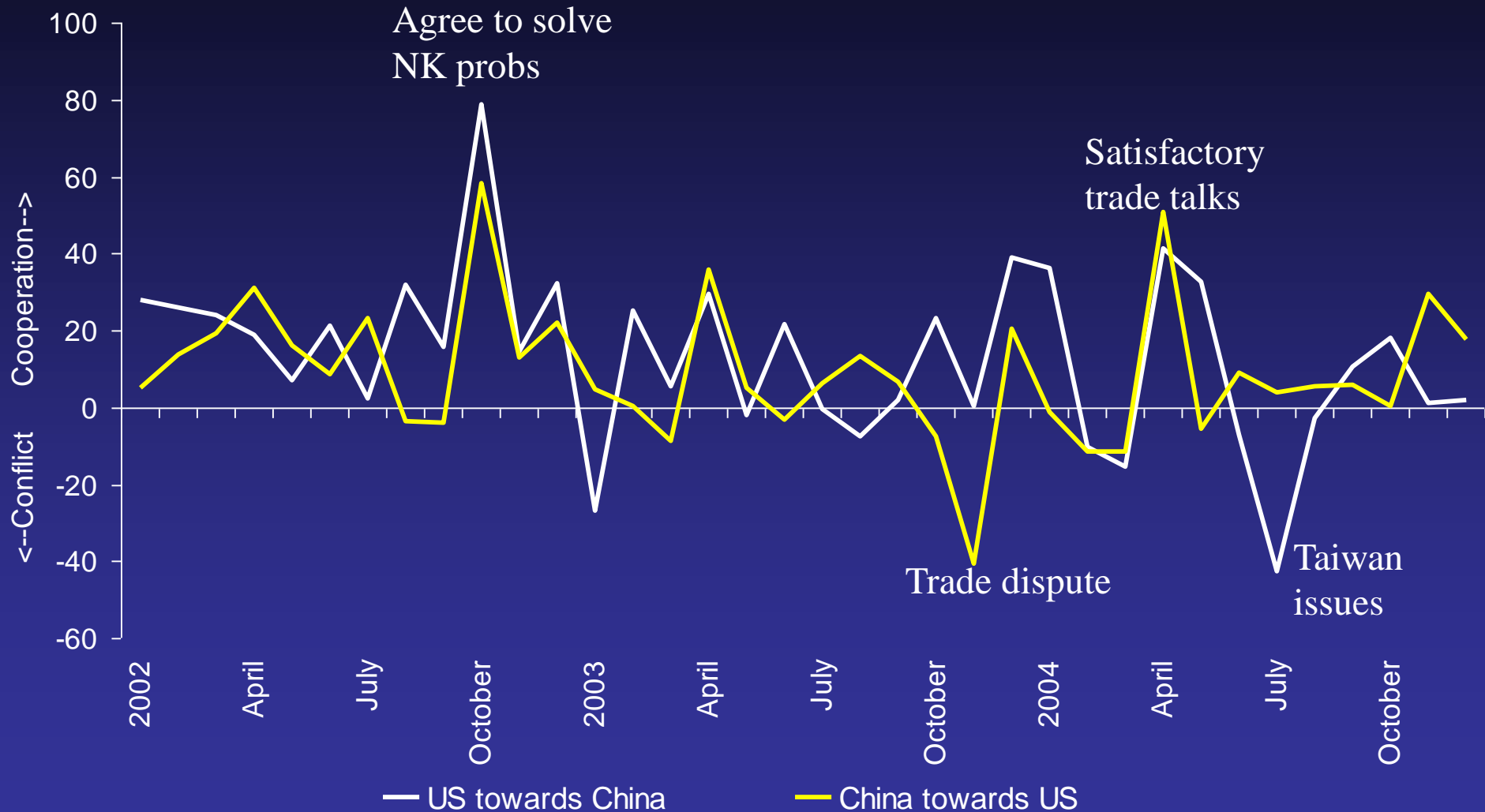
- Mixed results but mainly supporting liberal view
- Recognition of causality running both ways between trade and cooperation/conflict
- Main data sources are COPDAB, WEIS and MID
- Time series and Granger causality in two papers
 - relationship dependent
 - reciprocal
 - quarterly data

- Monthly from 1990-2004
- Trade data
 - exports
 - Hirschman's index of vulnerability and dependence
$$T_{ij} = (X_{ij} + M_{ij}) / (X_{iw} + M_{iw})$$
- Conflict data
 - IDEA dataset from Gary King, coded from Reuters
 - net cooperation = cooperation – conflict
- Japan-China, China-US and US-Japan

Japan-China net cooperation



China-US net cooperation



Linear Granger causality

- VAR:

$$T_t = \sum_{i=1} \alpha_i T_{t-1} + \sum_{i=1} \beta_i C_{t-1}$$

$$C_t = \sum_{i=1} \alpha'_i T_{t-1} + \sum_{i=1} \beta'_i C_{t-1}$$

- Null hypothesis of no Granger causality:
 - β_i 's= 0 in 1st equation, α'_i 's= 0 in 2nd equation
 - X Granger causes Y if lagged values of X help explain values of Y
- Trade de-trended, seasonality controlled for, unit roots tested and series' made stationary

Results: trade-cooperation, 1990-2004

	<u>Lags</u>	<u>Sum of coefficients</u>
a. Japanese exports to China = $f(\text{Chinese net cooperation})$	7***	13.55
	8***	8.72
	9**	6.88
	10***	12.80
	11**	5.87
	12**	0.55
b. Japanese net cooperation = $f(\text{Chinese exports to Japan})$	12*	-0.024
	13*	-0.019
	14*	-0.023

Dependence-cooperation, 1990-2004

	<u>Lags</u>	<u>Sum of coefficients</u>
a. Japanese net cooperation	5**	810
= $f(\text{Chinese dependence on Japan})$	6**	1264**
	7**	1516**
	8***	2244***
	9**	2323***
	10**	1983**
	11**	2719**
	12**	2025*
	13**	2735*
b. Japanese net cooperation	12*	-752
= $f(\text{Japanese dependence on China})$	13*	-180
	14*	286
	15*	622

Trade-cooperation, 1990-97 and 1998-2004

<u>Trade and cooperation</u>	1990-1997		1998-2004	
	<u>Lags</u>	<u>Sum of coeffs</u>	<u>Lags</u>	<u>Sum of coeffs</u>
a. Japanese exports to China = $f(\text{Chinese net cooperation})$	7**	6.30	2*	-0.79
	8**	-1.35	3*	-0.54
	9**	-0.73	7*	22.12
	10***	6.48	12**	8.85
	16*	-12.0	13*	7.44
b. Japanese net cooperation = $f(\text{Chinese exports to Japan})$			12*	-0.07***
			13*	-0.06**
			14**	-0.08***
			15**	-0.08***
			16*	-0.07**
c. Japanese exports to China = $f(\text{Japanese net cooperation})$			12***	24.7
			13**	25.4
			14**	20.5
			15**	22.4
			16*	22.5

Nonlinear Granger causality

- Causality, direction of causality and lag lengths vary by country pair
- Within country pairs the dynamics and interactions change over time?
- Nonlinear relationship such as intensity of relationship different for different levels of cooperation or trade?
- After linear causality stripped from relationship, any remaining structural relationship in residuals from VAR?

Nonlinear Granger causality

- From Baek and Brock (1992) extended by Jones and Hiemstra (1994), used in financial market analysis

$$\Pr\left(\|X_t^m - X_s^m\| < e \mid \|X_{t-Lx}^{Lx} - X_{s-Lx}^{Lx}\| < e, \|C_{t-Lc}^{Lc} - C_{s-Lc}^{Lc}\| < e\right)$$

$$= \Pr\left(\|X_t^m - X_s^m\| < e \mid \|X_{t-Lx}^{Lx} - X_{s-Lx}^{Lx}\| < e\right)$$

$$\frac{C_1(m + Lx, Lc, e)}{C_2(Lx, Lc, e)} = \frac{C_3(m + Lx, e)}{C_4(Lx, e)}$$

e. Trade from Japan to China causes net cooperation from Japan to China

$e = 1.42$

$L_x = L_c$	CS	t-value	
1	0.3	0.341	
2	0.57	0.373	
3	0.48	0.296	
4	0.111	0.648	
5	0.4	0.165	
6	0.105	0.371	
7	0.348	-1.69	**
8	0.389	-1.35	*
9	0.479	-1	
10	0.1085	-1.597	*
11	0.1806	-1.831	**
12	0.2133	-1.684	**
13	0.1821	-1.542	*

f. net cooperation from Japan to China causes trade from Japan to China

$e = 1.25$

$L_x = L_c$	CS	t-value	
1	0.1	0.81	
2	0.335	1.661	**
3	0.306	1.382	*
4	0.123	0.438	
5	0.371	1.84	**
6	0.657	1.584	*
7	0.669	1.344	*
8	0.1241	2.151	**
9	0.2005	3.297	***
10	0.2159	2.997	***
11	0.1965	2.326	**
12	0.1376	0.994	

Conclusions for Japan-China 1

- From linear results:
 - Ch exports to J increases negative political events from J to China
 - Increased Ch dependence on J increases positive political events from J to Ch
 - Rise in positive political events from Ch to J leads to increased trade from J to Ch
- From nonlinear results: (direction of causality known, not direction of effect)
 - increased Ch imports from J causes a reaction from Ch
 - J political events affect trade from Ch to J AND trade from J to Ch
 - Trade from J to Ch cause a reaction from J towards Ch

Conclusions for Japan-China 2

- Which can be summarised....
- Japan's stance towards China has implications for its trade relationship with China (trade both ways)
- Japan's trade flows to China cause potentially mixed reactions from both sides
- Political relationship is constrained by the economic relationship
- Strong evidence of nonlinear causality found for all relationships: importance of testing beyond traditional tests
- 2SLS or 3SLS cross sectional analysis difficult

Trade asymmetry and conclusions

- Huge Chinese trade flows to the United States causes a negative reaction from US
- Low intensity conflict between J-Ch and US-Ch underpinned by a strong stable economic relationship
 - for domestic political gain?
 - fear of China in Japan?
- Growing interdependence and the effect on politics
 - moves to settle differences, SED
 - Recent improved relations

Further work

- FDI flows and services trade
- Causality tests and analysis of conflict and cooperation separately
- Exploring and explaining the nonlinear dynamics
- Restriction of net cooperation variable
- Multi country world, not in a bilateral vacuum
- Structural breaks: WTO, 2005 protests