

Shifts in second birth timing and quantum following changes in fertility limiting policies in Chinese provinces, 1984-2016

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Background: Fertility decline in China

Low fertility but uncertain estimates since the 1990s

- Different estimates with different method (1.5-1.6?1.8)
- Underestimation in official reports, e.g. census-based reports
(e.g., from 1.26 to 1.05 and 1.24 between 2014-2016)

Policy or social-economic development?

- Discussions on the role of “one-child policy” at national level
- Recent heated debate in *Demography* (Goodkind 2017 & responses)

Very limited literature on

- The diversity of regional context and policy regulations
- **The marriage timing regulations and birth timing/spacing policy**

Framework

Impact of changes in birth timing/spacing policies on:

- Period fertility timing:
policy-driven fertility postponement for second birth?
- Period fertility levels & trends (*tempo effect*)

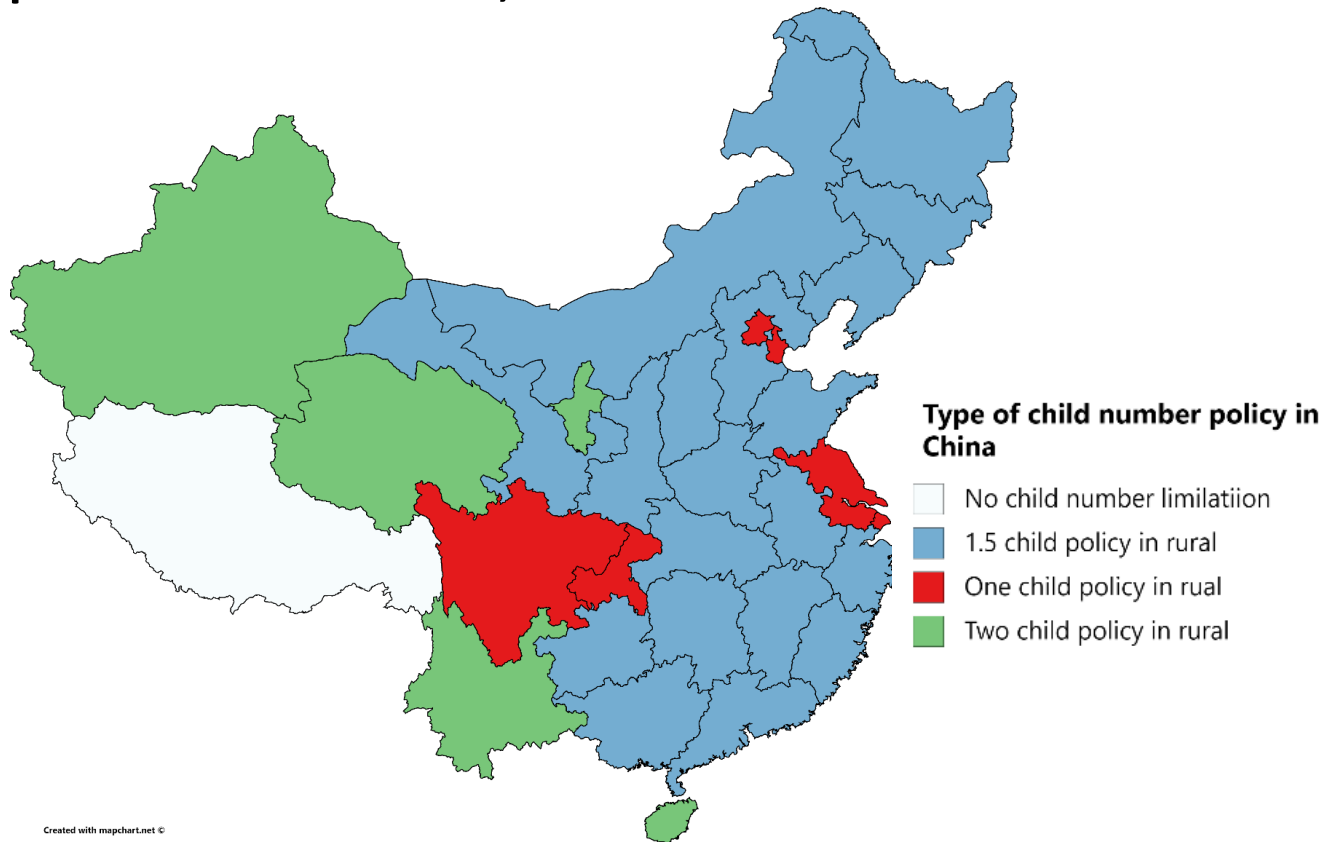
Population Policy in China



Marriage & birth timing Policies



The Child number Policies for people with rural “Hukou” by province in 1984-2013, mainland China



Created with mapchart.net ©

Source: Map developed based on Qin, M., Falkingham, J. and Padmadas, S.S. 2018. “Unpacking the differential impact of family planning policies in china: Analysis of parity progression ratios from retrospective birth history data, 1971–2005.” *Journal of Biosocial Science* (online): 1-23.

Shandong	Hebei	Henan	Beijing	Guangdong	Hunan	Jiangxi	Shanxi	Inner Mongolia	Guizhou	Anhui	Jilin
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1981
1982
1983
1984
1987
1988
1989
1990
1991
1992
1993
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016

Strict one child period

Open a small hole period
(more eligible groups for second birth, moderate spacing requirements)

Tightening period
(Strict implementation and quota control)

Modification period
(most relaxing birth timing/spacing policy)

Cancelation period
(no spacing/timing policy!)

Expected policy effects

	“Open a small hole” period	Tightening period	Modification period	Cancellation period
Timing of 2 nd birth (MAB2)	→later	→later	earlier←	earlier←
2 nd Birth interval	longer→	longer→	←shorter	←shorter
Period fertility (TFR, PPR12)	↑	↓	↑	↑
Age schedule (ASFR2)	Disrupted	Disrupted	return to more regular, symmetric	return to more regular, symmetric

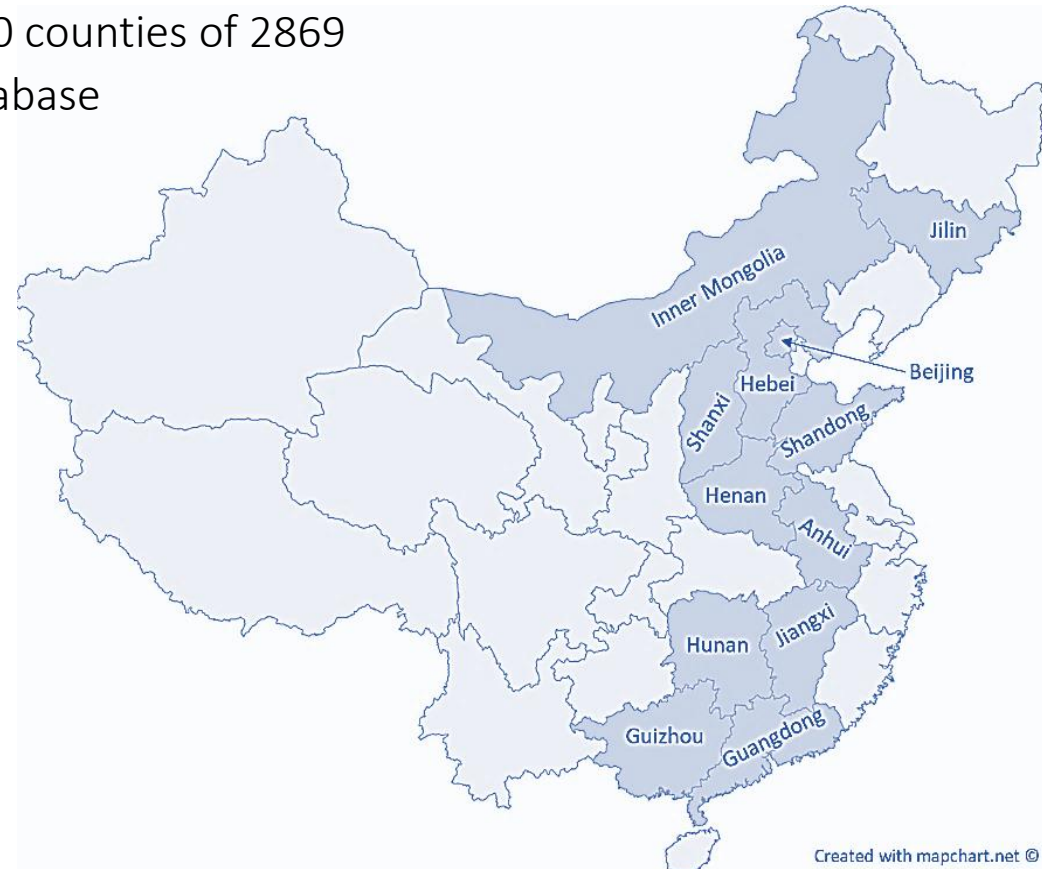
Data

The 120-counties Population Dynamics Monitoring System

- Census-based sampling, 120 counties of 2869
- Micro-level registration database
- 128.4 million in 2016

Our analysis

- Period 1984-2016
- 61 counties/districts/cities
- Total population of 51.47 M
- Focus on women with local household registration (“*hukou*”);



Methods

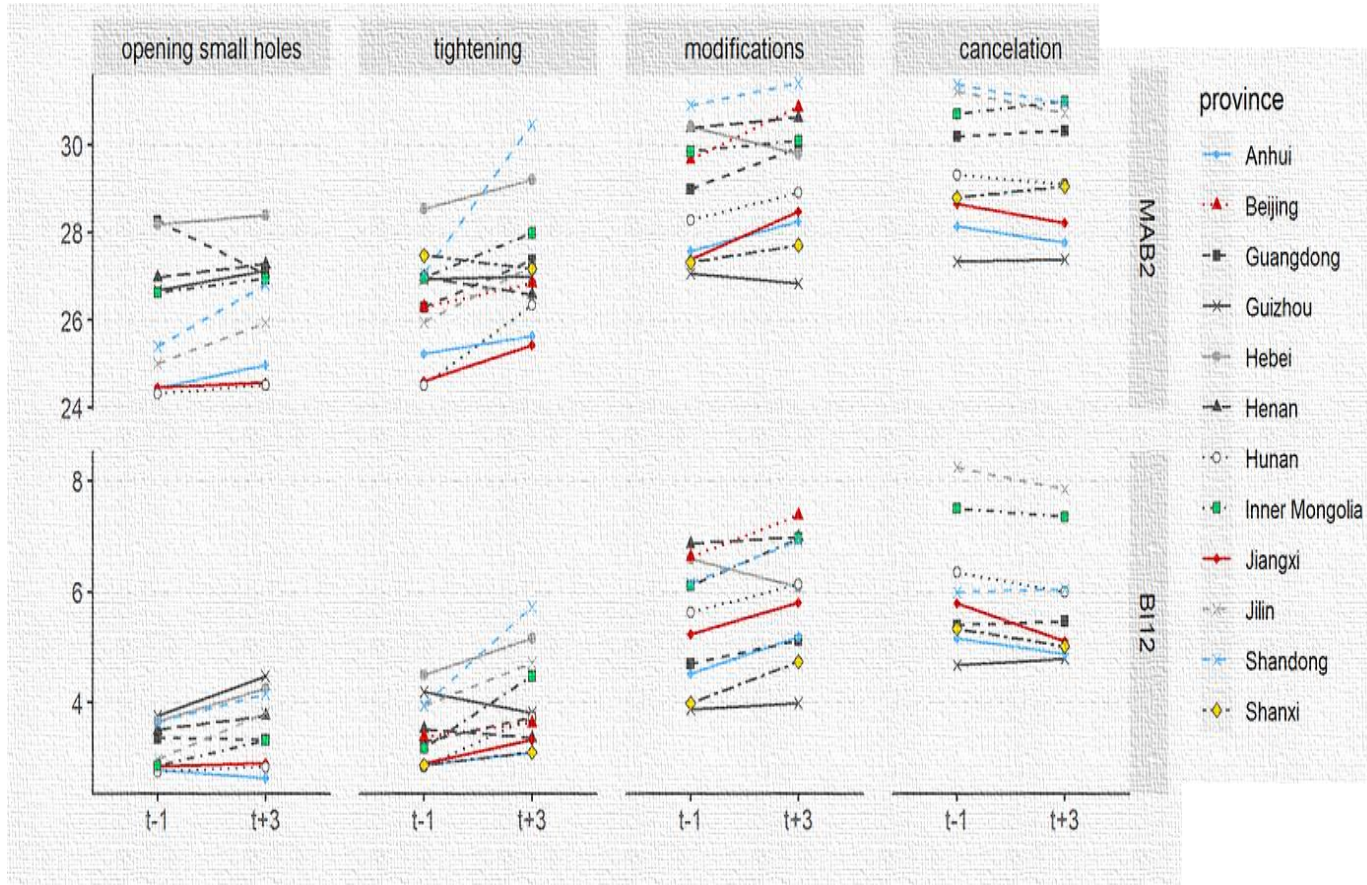
Reconstructing & analysing changes in selected indicators of fertility level, timing and spacing

- Summary indicators: TFR, MAB, PPR12, 2nd birth intervals (2BI)
- Age-specific indicators: ASFRs by birth order;
- Duration-specific second birth rates: PPR12, PPR12-10
 - focus especially on fertility reactions around the year of policy changes (t)
 - compare selected indicators of fertility level, timing and spacing in
 - one year prior to the policy change ($t-1$)
 - three years after the policy change ($t+3$)

Absolute difference: MAB2, 2BI

Relative difference(ratio): TFR, PPR12

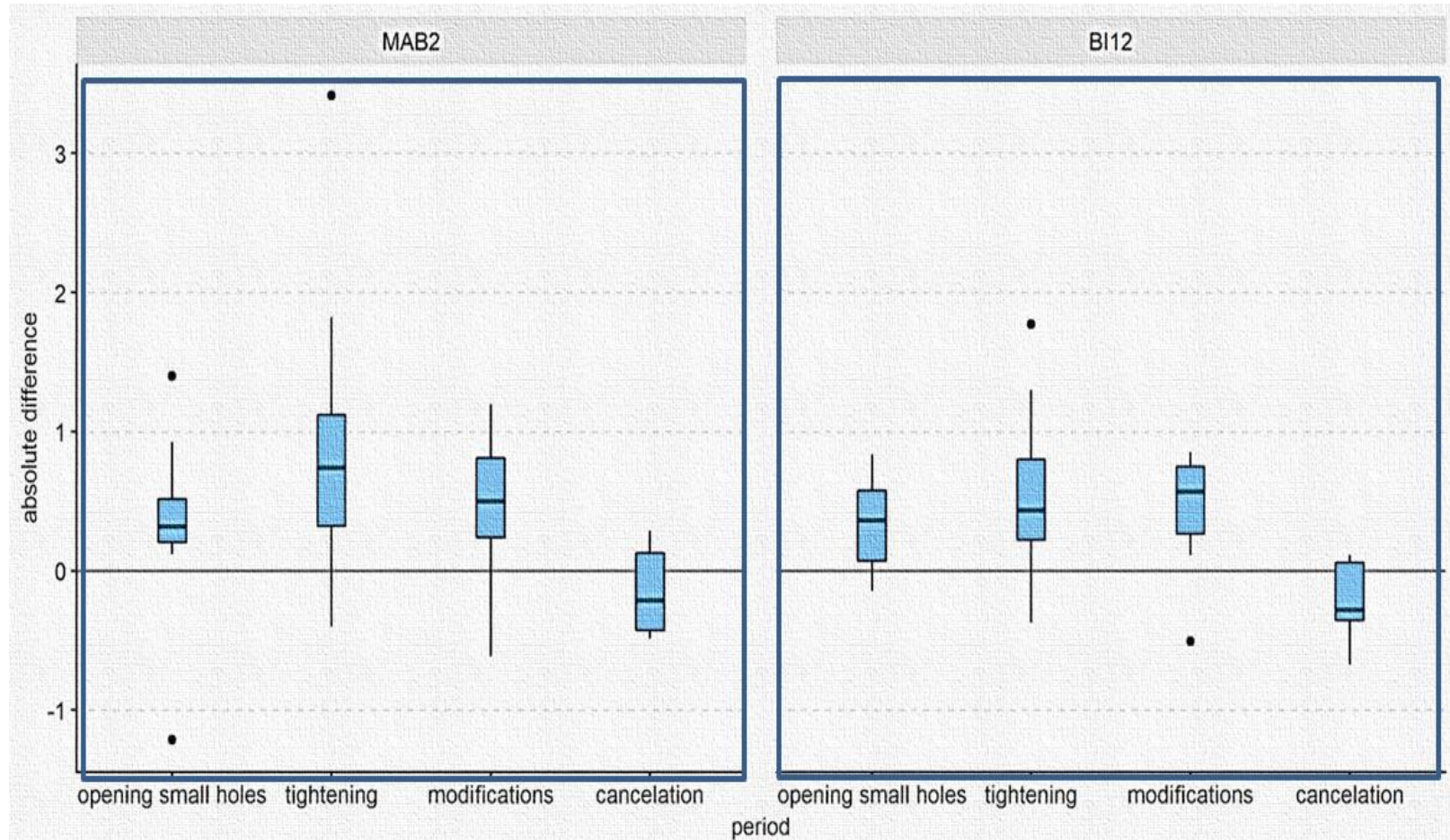
Shifts in birth timing/spacing



Both increased slightly in the 1980s,
continuously accelerated in 1990s;
continued rising in modification period;

BI12 became longer in all provinces by about a year
(reaching between five and seven years); last period
shortened.

Absolute differences in MAB2 and BI2 three years after ($t+3$) and one year before ($t-1$) policy changes delineating four policy periods



Shifts in distribution of second birth by age and duration

'the Tighten period'

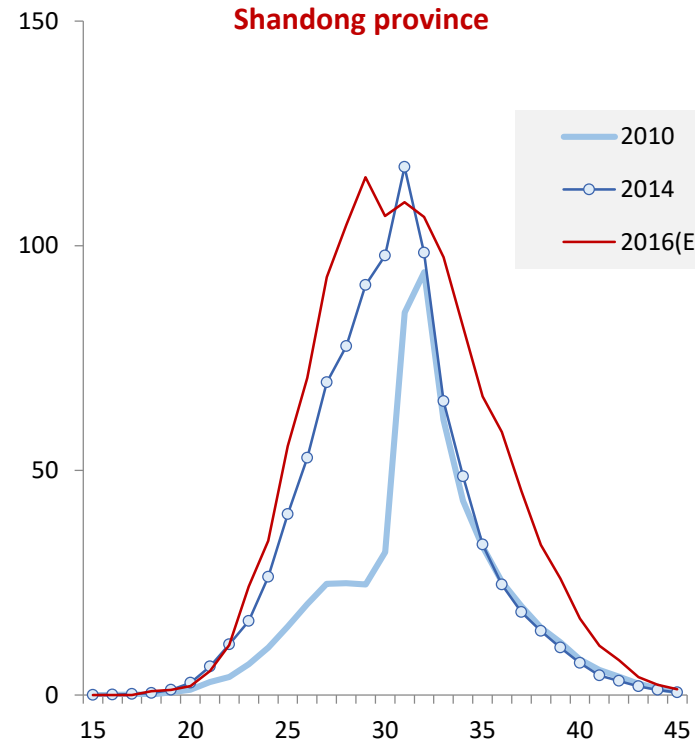
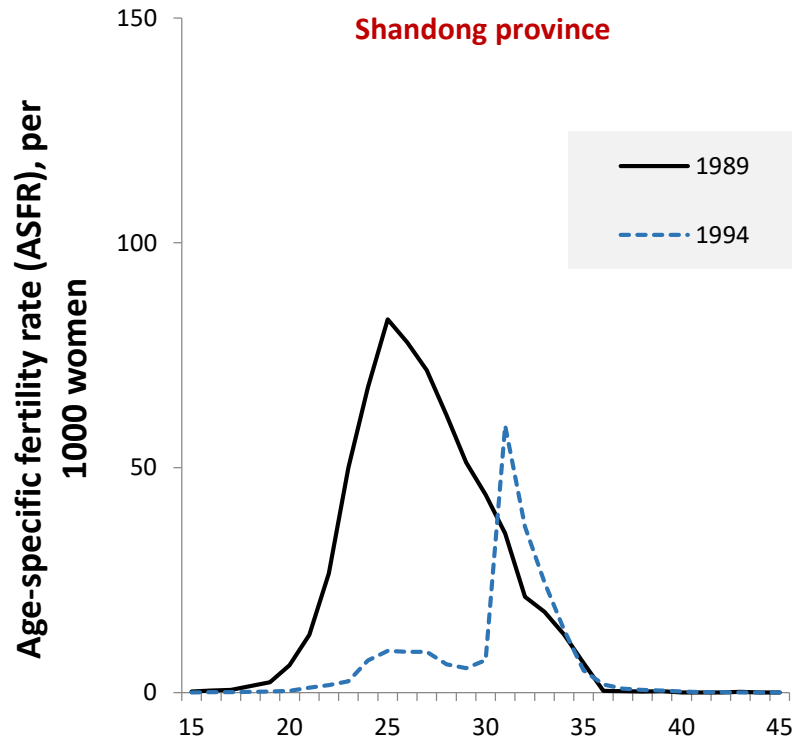
1982-1986

BI 4

1986-2013

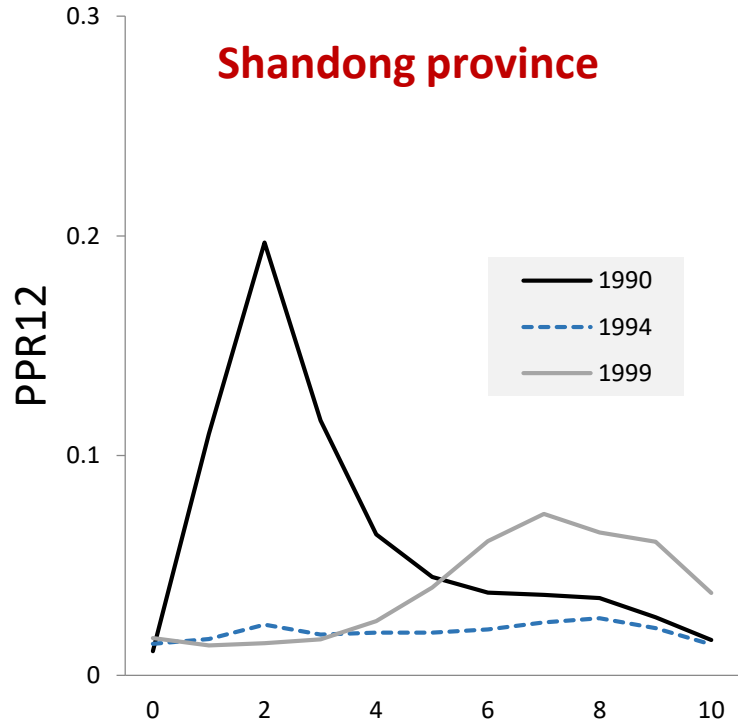
Age 30

'Cancellation period'

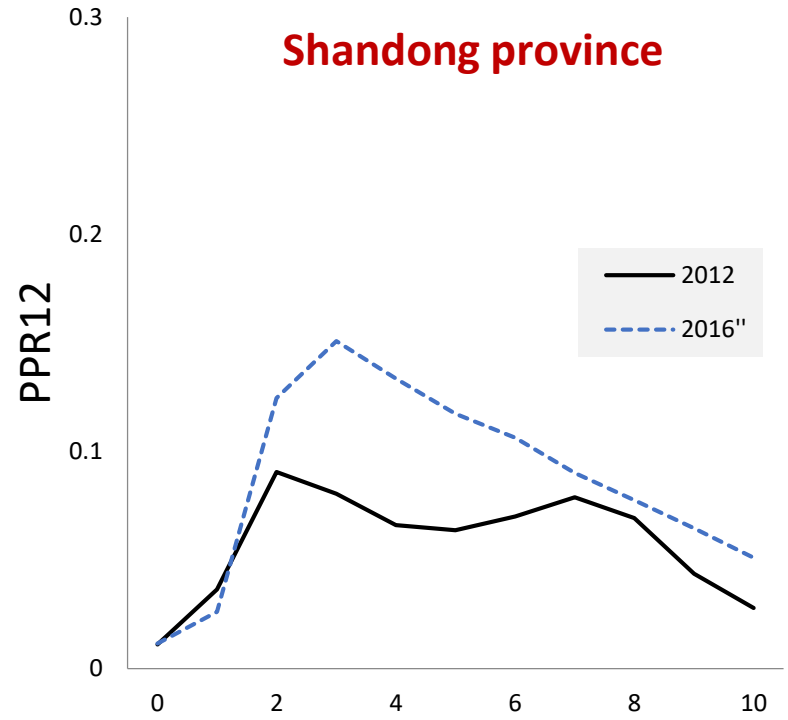


- **Delayed childbearing of second birth: peak shifts**
- **Remarkable restructuring after 1990 :**
- **The distorted pattern weakens in 2000s, disappears after 2010**

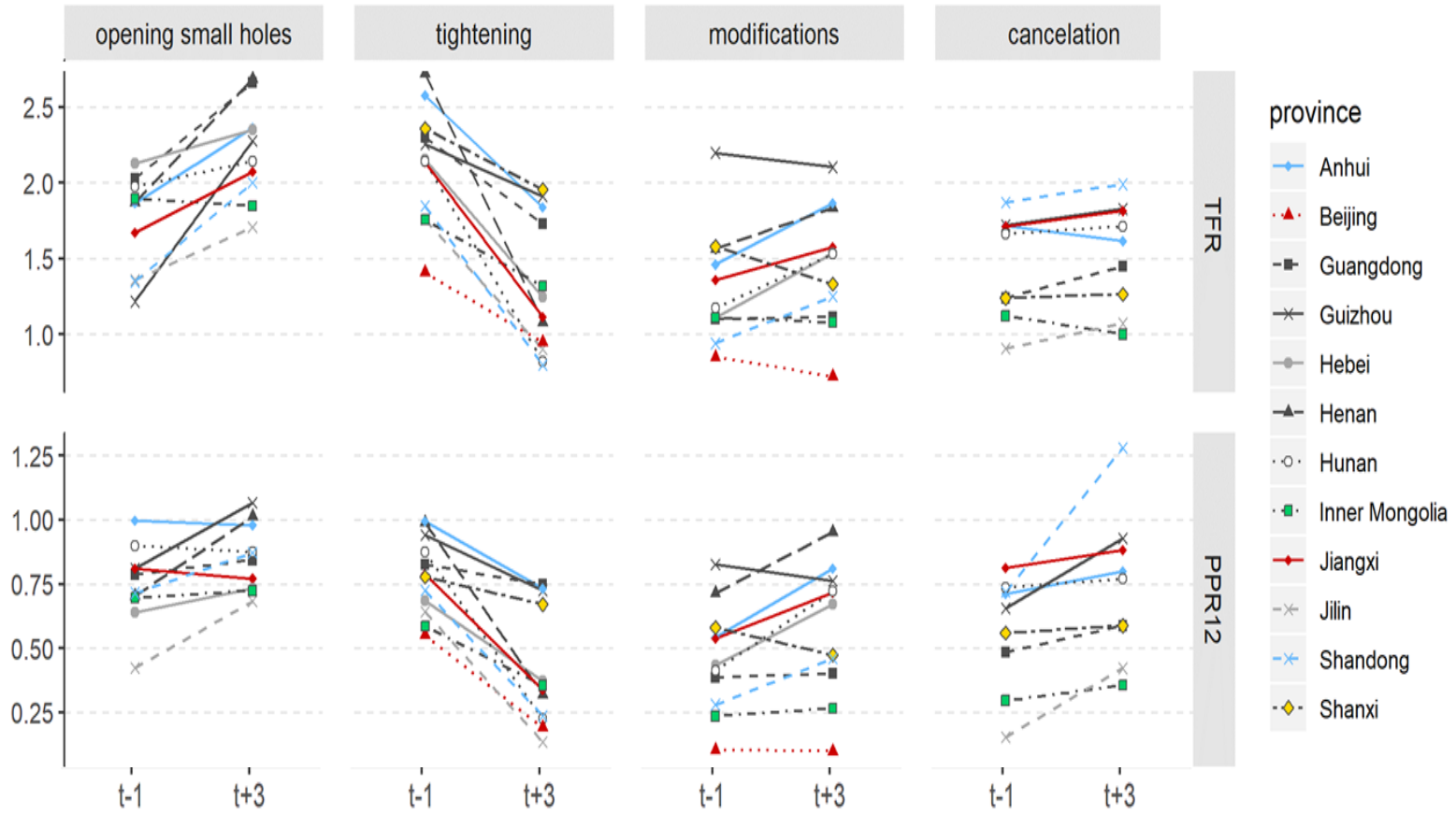
'the Tighten period'



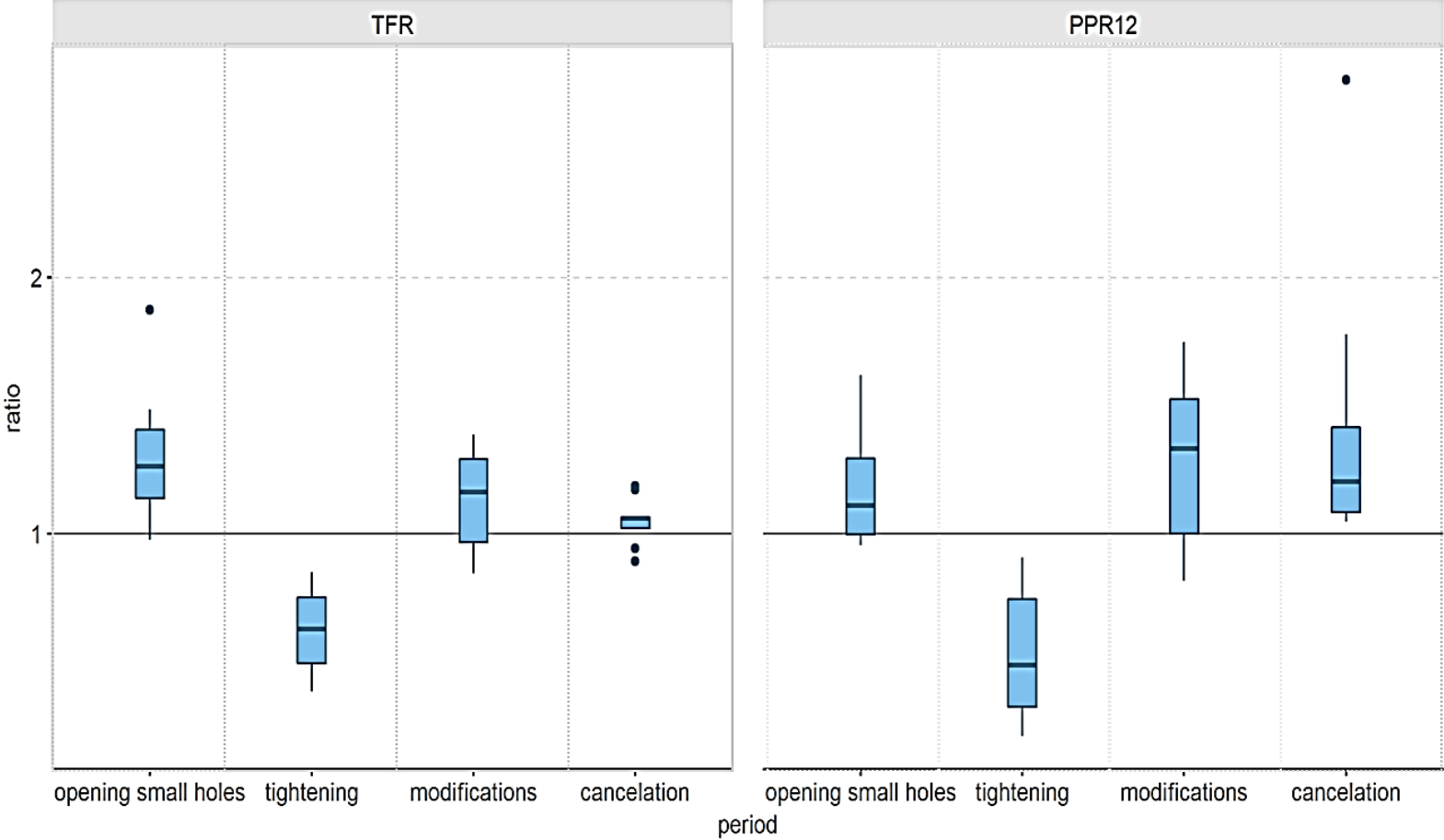
'Cancelation period'



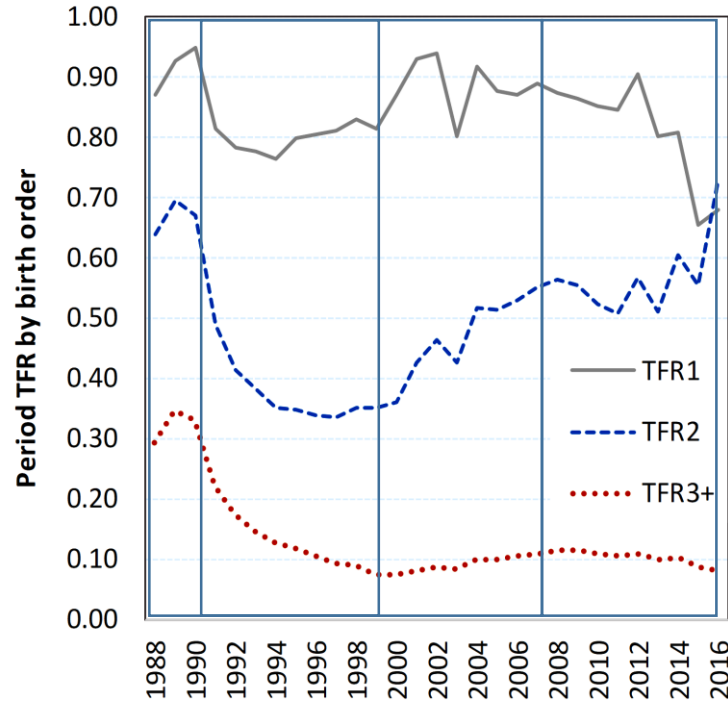
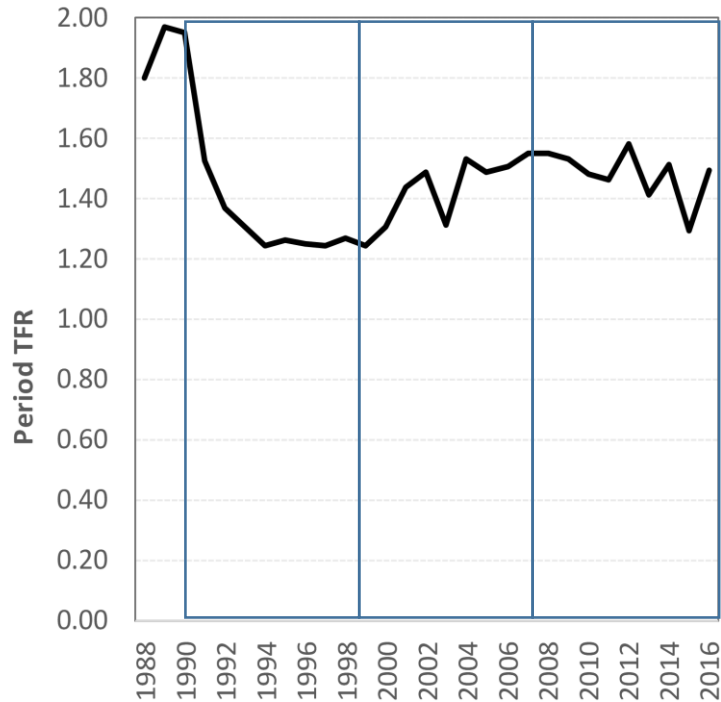
Trends in fertility rates



Ratio of TFR and PPR 12 three years after ($t+3$) and one year before ($t-1$) policy changes delineating four policy periods, boxplots for 12 provinces



Ups and downs in period TFRs



- **TFR reactions to major policy shifts**
- **Early 1990s: TFR at each birth order plummeting to extreme low levels**
- **TFR for each birth order moving in sync except in 2014-16**
- **2014-16: cross-over in TFR1 and TFR2**
- **Birth postponement depressed TFR1, policy-driven jump in TFR2**

Summary & discussion

Key findings

Strong impact of birth timing policy changes on the shifts in period fertility timing & fertility levels

- Fertility reactions followed immediately after policy changes;
- The behavioural responses more significant in the 1980s and 1990s, when similar types of policy changes applied in same period of time;
- Strong second births fluctuations suggest that the decline of TFR2 was probably due to timing;
- All kinds of unusual patterns arguably driven by specific policy requirements and restrictions;
- Regional differentials related to the policy requirements and impacts.

Discussion

- **Neglected role of fertility marriage & birth timing policies**
 - An indispensable tool of exerting "birth number limitation policy";
 - Instability and disruptions in fertility behavior driven by policies;
 - Extreme shifts in the timing, spacing and age schedule of childbearing;
 - The importance of understanding regional context & variation.
- **Reinterpreting fertility changes in China since the 1990s**
 - Strong role of tempo effect in driving steep fertility decline in TFR;
 - Partly reinterpretation of fertility changes in national & provinces level;

Thank you!

Acknowledgement

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