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**Fertility and Female Labor Force Participation:  
Evidence from One Child Policy in China**

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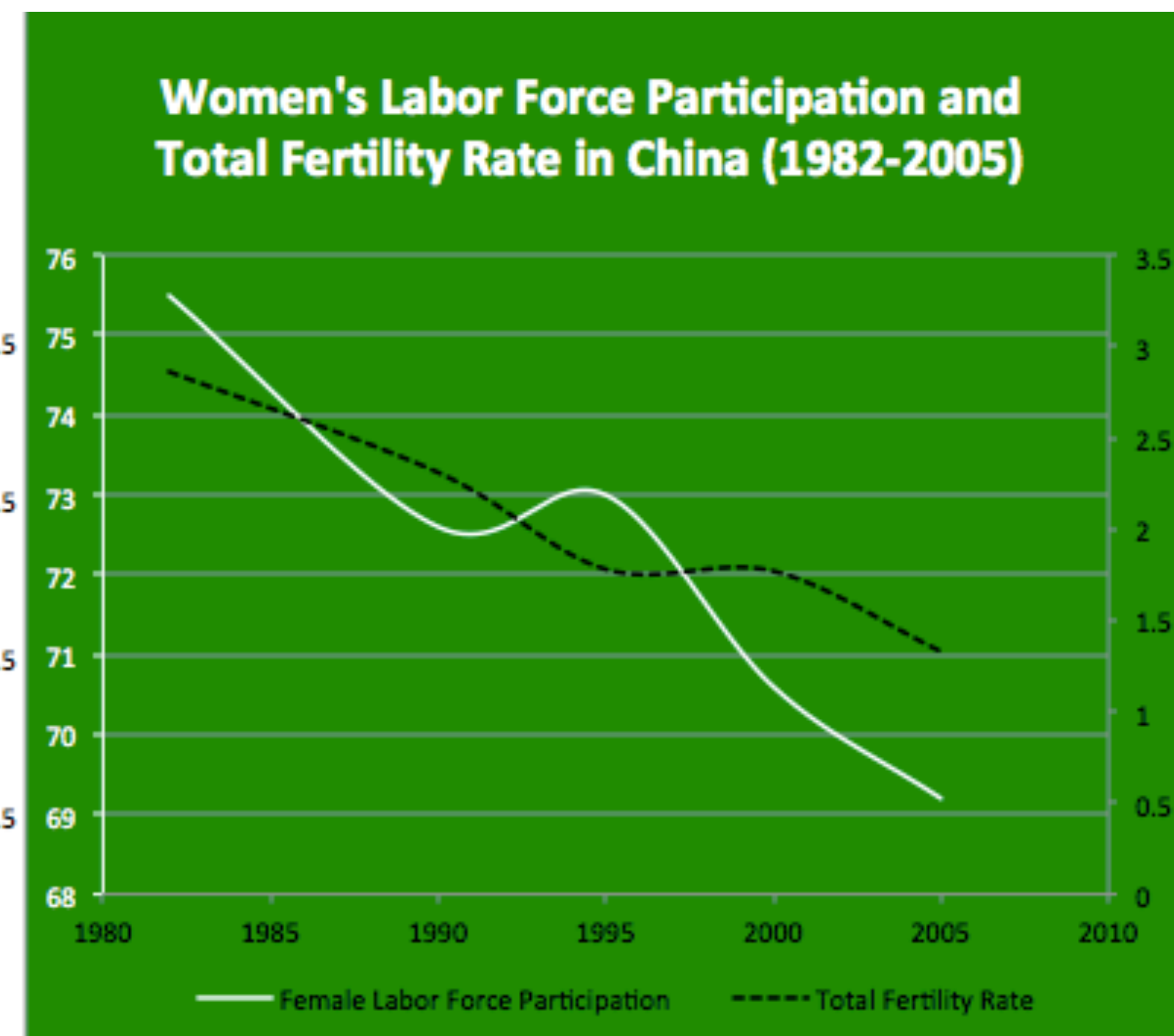
# Family Size and Female Labor Force Participation Evidence from One Child Policy in China

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## Introduction

Women's Labor Force Participation and Total Fertility Rate in U.S. (1960-2005)



Along with the decrease in fertility rate, China witnessed a decrease in female labor force participation while U.S. experienced a continuing expanding in female labor force. Does the difference in trends imply different impacts of fertility in two countries?

## Literature Review

- Endogeneity problem with fertility and labor supply: Willis (1974) shows that female labor force participation and fertility are always jointly determined.
- Using different instruments, Angrist and Evans (1998), Klerman (1999), Levine et al. (1999), Angrist and Evans (2000), all found negative effects of fertility on female labor supply in the U.S.
- Studies in developing countries show mixed results on the effect of fertility on maternal labor supply:

Research	Sign of Effects of Fertility	Country of Data Source
Schultz (2009)	+	Bangladesh
Ebenstein (2009)	-	Taiwan
Porter and King (2010)	ambiguous effects	59 developing countries
Agüero and Marks (2011)	no effects	26 low- and middle- income countries

## One Child Policy in China

- "Later, longer, fewer", 1972: encouraged people to get married and have childbearing at later age, have a longer birth spacing, and recommended couples to have at most 2 children.
- One-Child-Policy (OCP), 1979: One married couple can only have one child in most provinces.
- In 5 provinces, all couples are allowed to have 2 children. Hainan, Yunan, Qinghai, Ningxia, Xinjiang
- OCP was only Applied to Han Chinese before 1988. Applied to Zhuang ethnicity after 1988; applied to Manchu after 1990.
- Relaxation after "Document 7" in 1984. In 19 provinces, rural households are allowed to have second child if the first one is a girl.

## Estimation Strategy

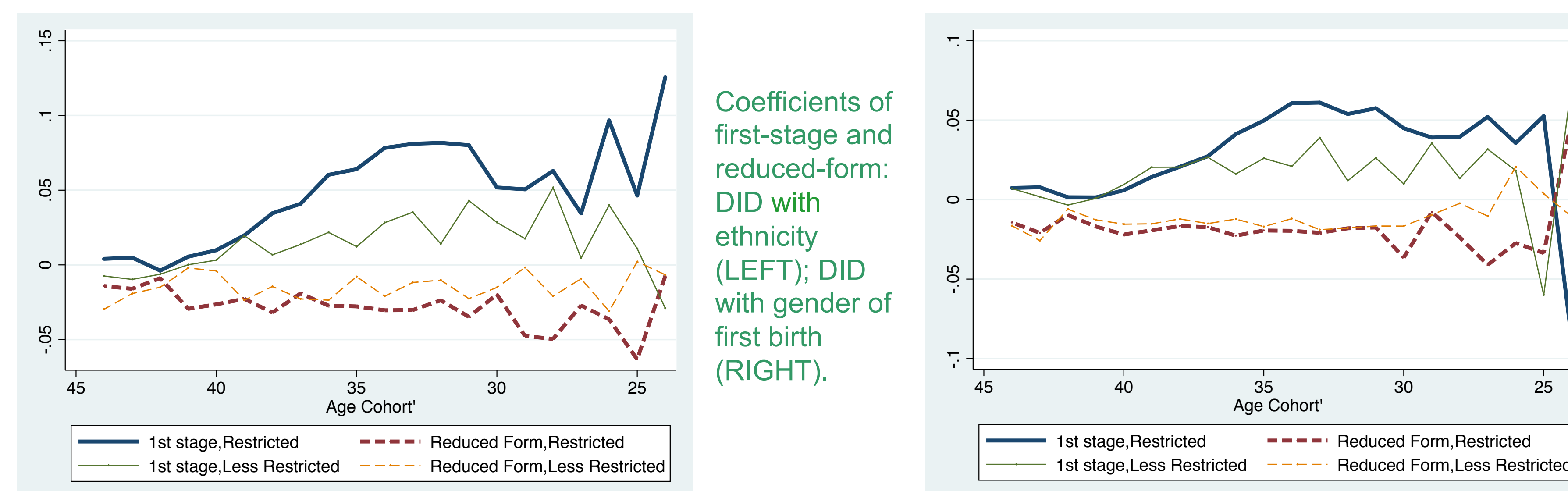
- Main regression model:  $LFP_{ict} = \beta kids2_{ict} + \mathbf{X}'_{ict}\delta + \alpha_1 + \gamma_t + \varphi_c + \varepsilon_{ict}$
- Difference in difference regarding to ethnicity:  
 $(nonHan, After - Han, After) - (nonHan, Before - Han, Before)$   
 $kids2_{ict} = \sum_{l=22}^{44} (nonHan_{ict} \cdot d_l)\rho_l + \mathbf{X}'_{ict}\kappa + \alpha_2 + d_t + \theta_c + u_{ict}$
- Difference in difference regarding to gender of first birth:  
 $(FirstBorn\_Girl, After - FirstBorn\_Boy, After) - (FirstBorn\_Girl, Before - FirstBorn\_Boy, Before)$   
 $kids2_{ict} = \sum_{l=22}^{44} (FirstBorn\_Girl_{ict} \cdot d_l)\phi_l + \mathbf{X}'_{ict}\lambda + \alpha_3 + d_t + \pi_c + v_{ict}$

## Data

- 1% sample of the 1990 Population Census
- The sample is further restricted to women less than or equal to 45 years old (Angrist and Evans, 1998; Cruces and Galiani, 2007) and with first birth in or before 1981.

	Restricted Provinces				1-son-2-girl Provinces			
	Han		non-Han		FirstBorn_Girl		FirstBorn_Boy	
	366,287		26,683		146,304		157,806	
# of Kids	Means	S.D.	Means	S.D.	Means	S.D.	Means	S.D.
Kids2	0.92	0.0004	0.97	0.0010	0.98	0.0004	0.94	0.0006
LFP	0.92	0.0005	0.91	0.0017	0.90	0.0008	0.90	0.0008
Age	37.23	0.0063	37.29	0.0248	37.02	0.0101	37.17	0.0099
Age at 1st Birth	22.78	0.0043	22.91	0.0174	22.76	0.0070	22.65	0.0068
Age at 2nd Birth	25.76	0.0056	25.92	0.0208	25.61	0.0085	25.66	0.0085
non-Han First-Born Girl	n/a	n/a	n/a	n/a	0.08	0.0007	0.08	0.0007
Education	4.42	0.0056	3.95	0.0215	4.34	0.0090	4.31	0.0087
Husband's Educ	6.83	0.0047	6.35	0.0194	6.87	0.0077	6.81	0.0075

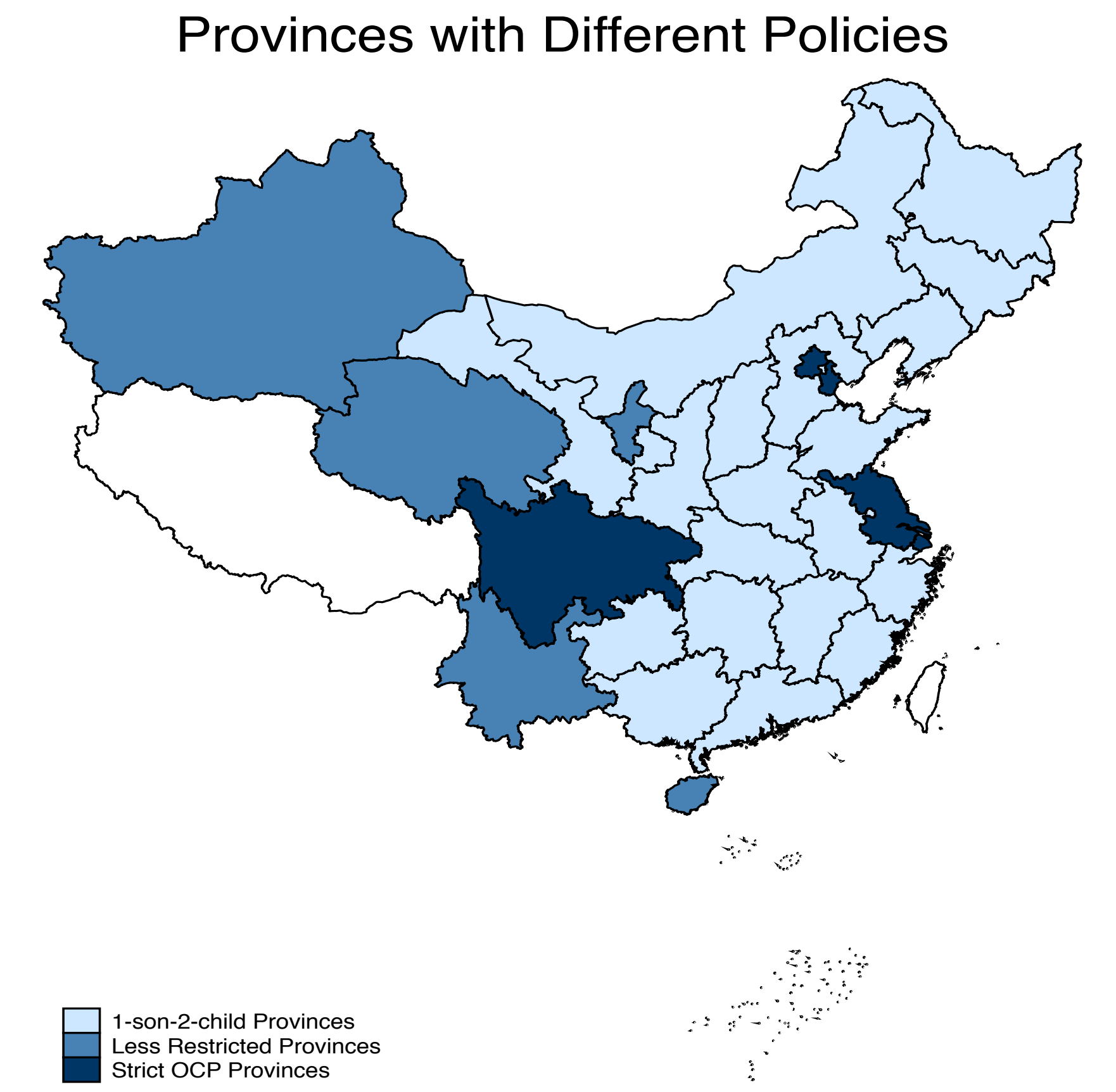
## Results



- 2SLS estimates for effects of "having two or more children" on mother's labor force participation :
- Using DID regarding to ethnicity as IV: -0.15\*\*\*
  - Using DID regarding to gender of first birth as IV: -0.072\*

## Placebo Tests

- The key assumption for our estimation strategy to work: without variations in OCP, the changes in the labor force participation for the Han and non-Han would be the same between 1974 to 1990.
- We can test this assumption with samples from 5 less restricted provinces, where all couples are allowed to have two children.
- The interaction terms for both first-stage and reduced-form regressions are insignificant for the less restricted samples.



## Robustness Checks

	Effects of kids2 on Mother's Labor Force Participation Robustness Check					
	(1)	(2)	(3)	(4)	(5)	(6)
	DID on Ethnicity as IV	Ethnicity_More Obs	DID on Gender as IV	Gender_More Obs	Twinning as IV	Tripple Difference as IV
kids2	-0.15	-0.13	-0.072	-0.055	-0.075	-0.062
(s.e.)	(0.054)***	(0.046)***	(0.040)*	(0.031)*	(0.158)	(0.117)
N	392,949	758,422	304,489	593,792	304,489	304,489

Use "twinning" and triple-difference as instrument to family size.

## Conclusions

- The DID estimates of probability of having two or more children show that One Child Policy does have negative effects on fertility.
- Using this DID estimates as instrument, we find that, having two or more children will decrease mother's labor force participation in rural China in 1990.
- Nowadays in China, there's this call for relaxation of One Child Policy (Feng, 2010). Our paper provide a perspective for the potential effects of policy relaxation on female labor supply. With second or more children, women are more likely to stay at home, rather than work outside, at least in rural areas.