Impact of China's 'Zero-markup Policy for Essential Drugs' on patients, county hospital revenue, and government subsidy levels

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Publications

- Z. Zhou, Y. Su, et al. 2015: "The financial impact of the 'Zero-markup Policy for Essential Drugs' on **patients** in county hospitals in western rural China," PLOS ONE.

- Z. Zhou, Y. Su, et al. 2015: "The impact of China's Zero-Markup Drug Policy on **county hospital revenue and government subsidy levels**," Journal of Asian Public Policy.

Preview of results

- Patients
  - Outpatient services: Total expense per visit reduced by 3.12 USD
  - Inpatient services: Total expense per admission reduced by 65.6 USD

- Hospitals
  - Increased health care provision and a sustained total hospital income despite a decrease in drug revenue.

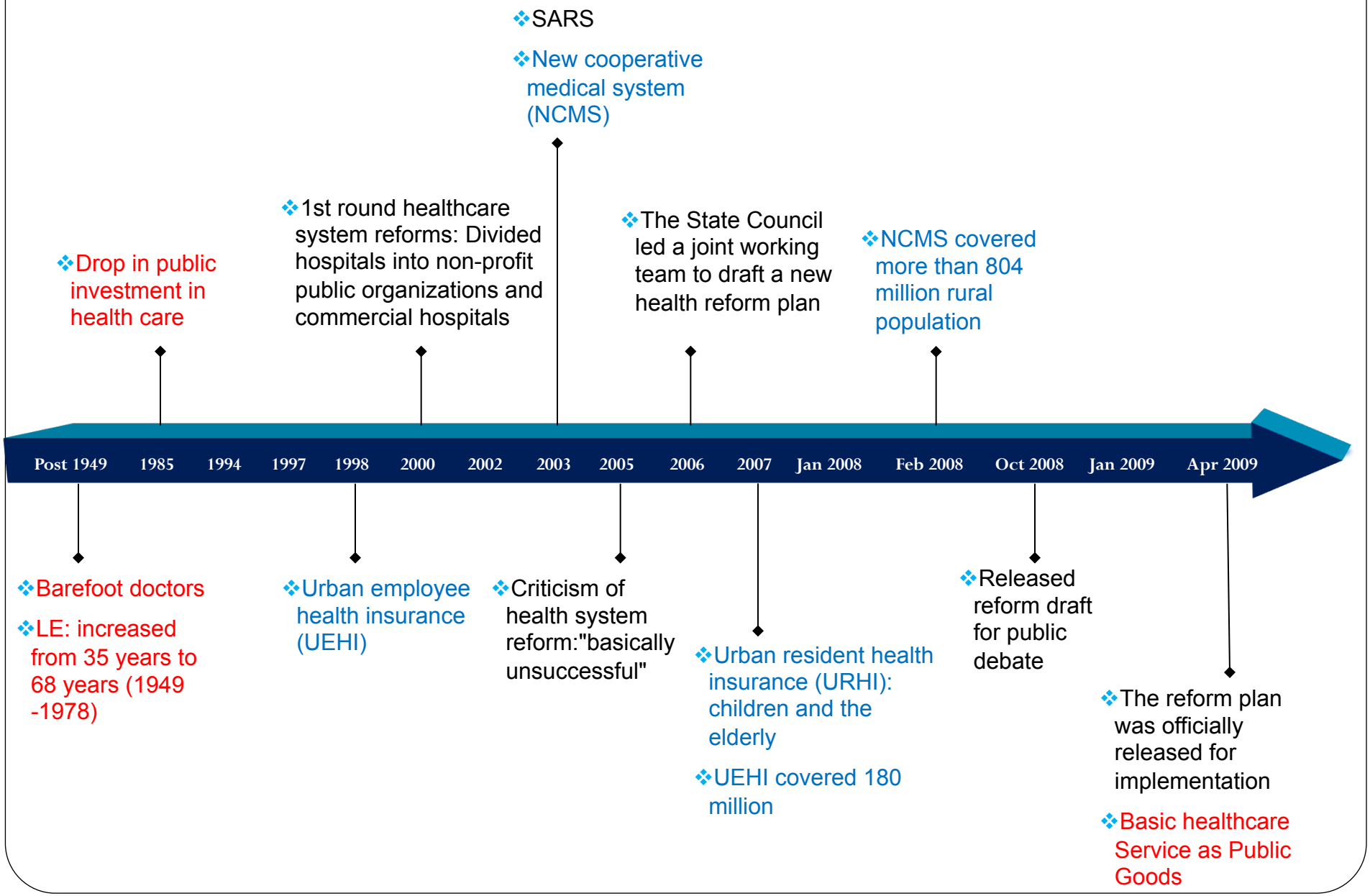
- Governments
  - With minimal or no subsidy, the government can catalyze the zero-markup policy and generate positive outcomes for patients and county hospitals.

Background

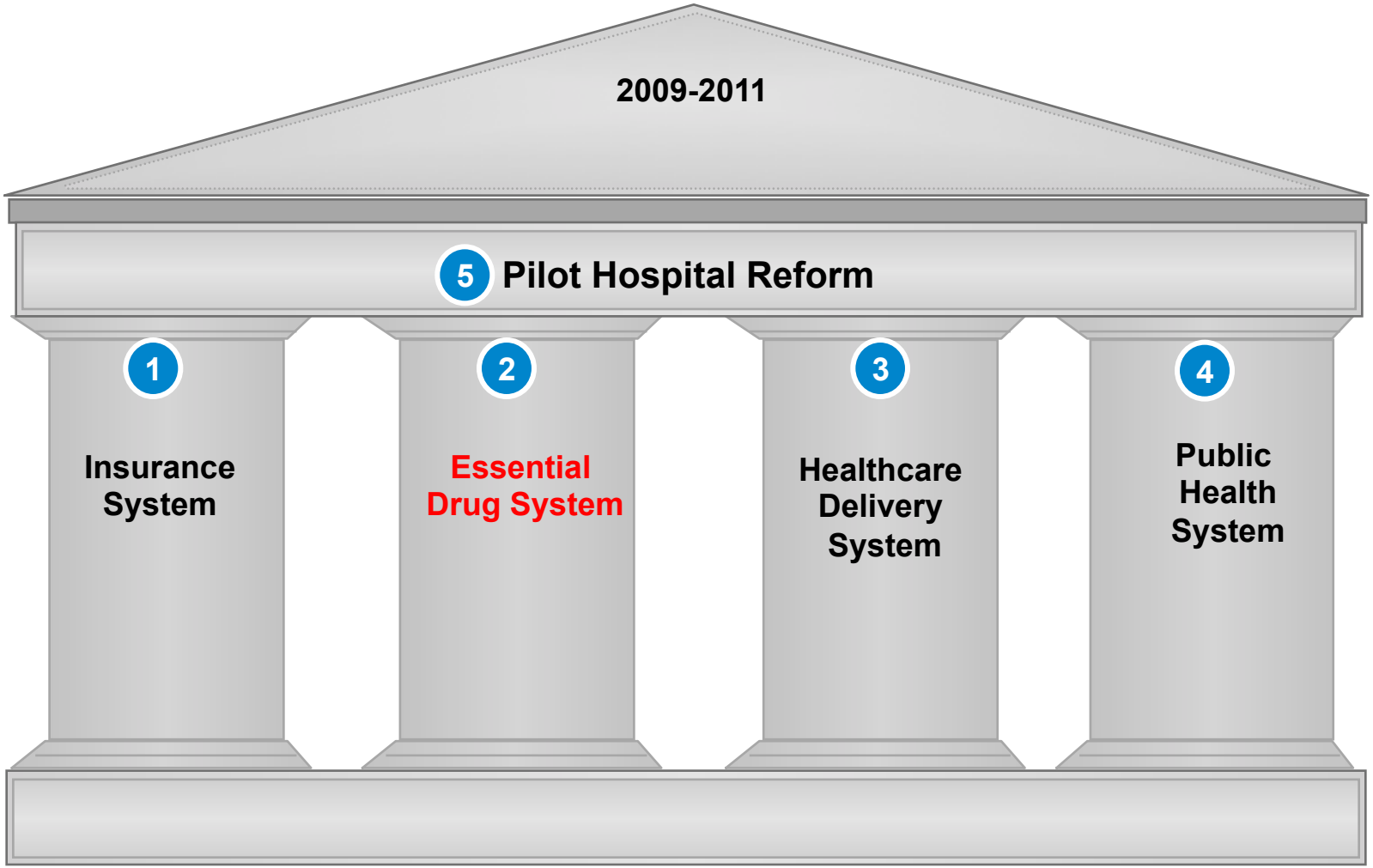
Global drug policies

- 1980s: Cost recovery mechanism
- 1987 Bamako Initiative, the African Ministers of Health conference
  - Drug Revolving Funds (DRFs) in Nigeria
- Sustainable supply of essential drugs
  - Asia experience

China Healthcare Reform over the Years



5 Key Areas of Focus



Goal of HC 2020 Reform and Masterplan

- Goals -2020
  - Everyone will have access to basic health services
  - Safe, effective, convenient, and affordable health services for urban and rural residents

- Goals -2011
  - Improve access to basic health services
  - Reduce financial burden due to healthcare

- 3-year Implementation Plan (2009-2011)
  - Incremental $125 billion investment
  - 5 Reform Programs to address "*Kanbingnan and Kanbinggui*"

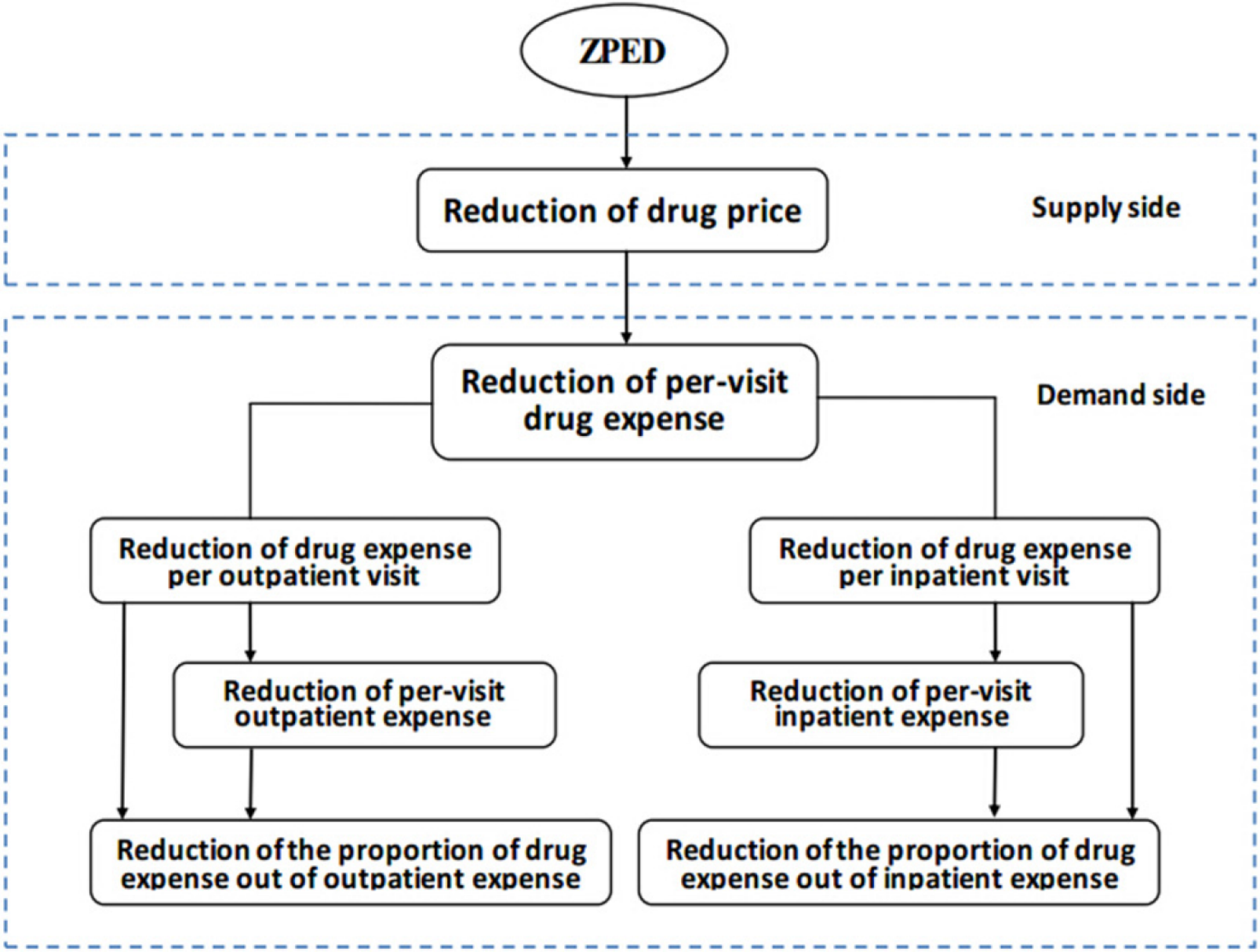
  (inaccessibility and unaffordability of healthcare)

Objectives

Objectives

- Assess Zero-markup Policy for Essential Drugs (ZPED) for county hospitals
  - Patients
  - Hospitals
  - Governments

- Literature:
  - Villages and townships
  - Pre-post comparison or difference-in-differences (Chen et al., 2013)
  - Lack of comprehensive evaluation of stakeholders


ZPED
Reduction of drug price
Supply side
Reduction of per-visit drug expense
Demand side
Reduction of drug expense per outpatient visit
Reduction of drug expense per inpatient visit
Reduction of per-visit outpatient expense
Reduction of per-visit inpatient expense
Reduction of the proportion of drug expense out of outpatient expense
Reduction of the proportion of drug expense out of inpatient expense

Methods

Difference-in-differences

- The treated: Ningshan, 2010
- Control county: Zhenping
- Assessment of DID assumption, using pre-treatment data from 2007 to 2010
- DID with control variables in regressions

Outcome measure

- Patients
  - Outpatient services: Per-visit total expense and drug expense
  - Inpatient services: Per-admission total expense and drug expense
- Hospitals
  - Health care provision
  - Total hospital income
  - Drug revenue
- Governments
  - Subsidy level

Data

Sampling

	Ningshan county	Zhenping county
Administrative district	Ankang, Shaanxi province	Ankang, Shaanxi province
Location	South foot of Qin mountain	North foot of Daba mountain
Acreage	3678 square kilometers	1503 square kilometers
Population	74 thousand	56 thousand
Income per capita for county/town residents	16,609 CNY	16,560 CNY
Income per capita for villagers	4,498 CNY	4,450 CNY
Number of beds per one thousand for hospitalization	3.35	4.36
Number of healthcare professionals per one thousand	3.62	3.43

Sampling cont'd

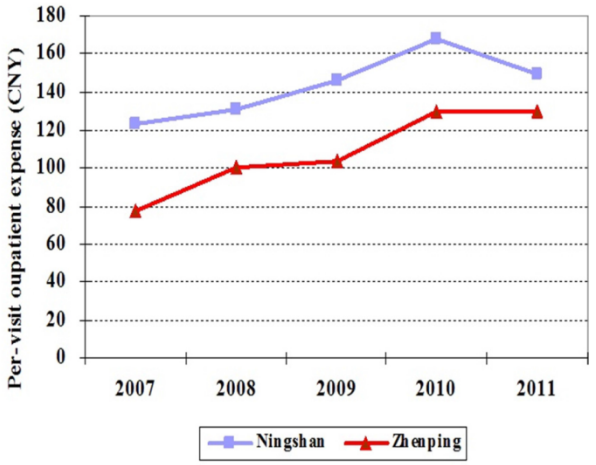
	Ningshan county	Zhenping county
Year of establishment	1950	1950
Hospital certificate	Non-profit secondary generalHospital	Non-profit secondary generalhospital
Floor area	6,492 square meters	15,000 square meters
Clinical departments	Medical department, surgical department, department of gynecology and obstetrics, emergency department, anesthesia department, Chinese medicine department, ophthalmology and otorhinolaryngology, department of stomatology, clinical laboratory, radiology department and functional department	Medical department, surgical department, department of gynecology and obstetrics, pediatrics, Chinese medicine department, ophthalmology, department of stomatology, dermatological department and department of physiotherapy
Number of staff	196	173
Doctors	99	68
Nurses	70	63
Number of beds	151	150

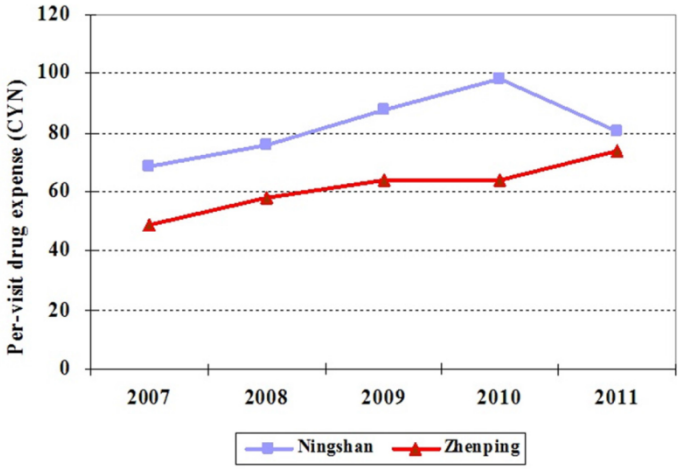
Data

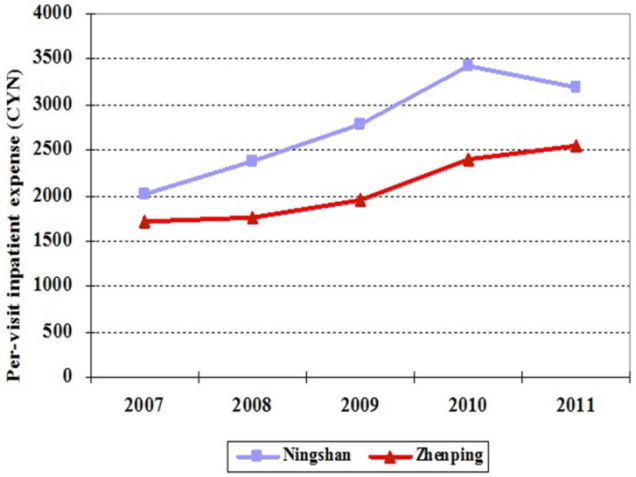
- Hospital-level data
- Individual-level data

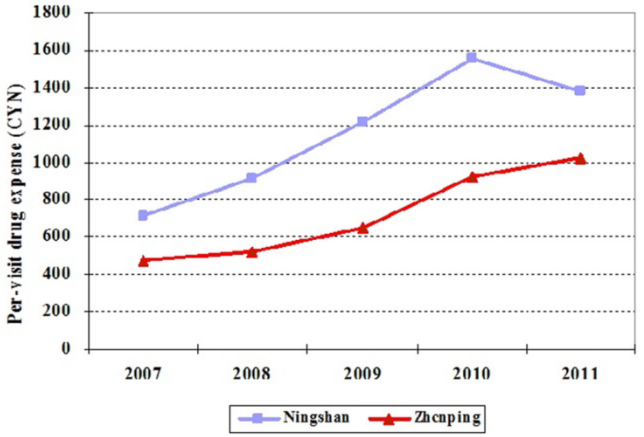
Results

Pre-treatment trends









Main results: medical expenses

	Baseline expense in 2010(CNY)	Absolute change(CNY)	Relative change
Hospital-level DID			
Outpatient expense	168	-19.02	-11%
Inpatient expense	3418.78	-389.11	-11%
Regressions			
Outpatient expense	166.79	-15.32	-9%
Inpatient expense	3482.98	-399.6	-11%

Main results: service provision

	Outpatient service provision		Inpatient service provision	
	Ningshan	Zhenping	Ningshan	Zhenping
2010	33,967	46,955	2729	4416
2011	43,666	46,957	3185	4474
D1	9699	2	456	58
DID	9697		398	

Main results: hospital revenues

	Total revenue (thousand Yuan)		The proportion of drug revenue (%)		The proportion of subsidies (%)	
	Ningshan	Zhenping	Ningshan	Zhenping	Ningshan	Zhenping
2010	19,928.5	20,093.8	38.59	35.20	22.20	14.68
2011	22,467.1	21,731.2	35.05	37.27	24.70	13.57
D1	2538.6	1637.4	−3.54	2.07	2.51	−1.11
DID	**901.2**		**−5.61**		**3.62**	

Main results: government subsidy

- 15% mark-up principle

Government subsidy

= total drug revenue × proportion of revenue of zero-markup drug out of total drug revenue × the markup rate in drug sale

= 7874.7 × 0.158 × 0.15

= 186.7 thousand Yuan

This result is close to the hospital-reported loss due to the zero-markup policy in the year of 2011, which was 194 thousand Yuan.

- Natural growth principle

Discussion

Discussion

- Provider behavior: Non-drug expense increased by 8.18 CNY (1.34 USD) for outpatient services
- Controlling for unobservable confounders vs. observable demographic characteristics
  - Inpatient services
  - Outpatient services

Limitations

- Data:
  - Lack of individual outpatient records in Zhenping
  - Segmented health record system for inpatient service in Zhenping
- All drugs rather than specifically on zero-markup drugs at individual level data
- Short-term vs. long-term impact

Conclusions

Conclusions

- Advancement for patients, hospital, and government
  - Lower cost for patients
  - Higher revenue for hospital
  - Greater access of health care
- Behavioral change of healthcare providers and patients

Thank you!

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PS, Data shared via Harvard Dataverse Network