Household Water Savings and Response to Dynamic Incentives Under Nonlinear Pricing

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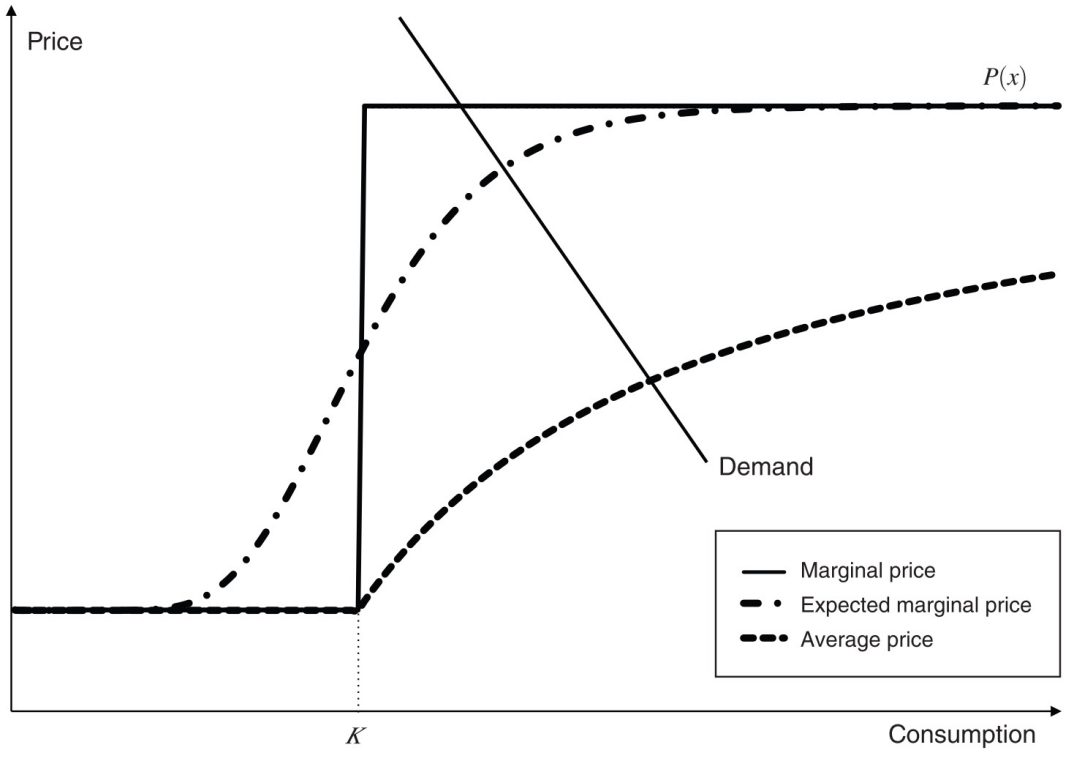
Motivation

- Nonlinear price schedules are widely used in economic policies, such as income tax, health insurance, and electricity, water, and phone usage.
- E.g., $p(x)$: marginal price of x equals
  - Tier-1 rate: $p1$ for $x \leq k$,
  - Tier-2 rate: $p2$ for $x > k$,
  - where k refers to the tier-2 threshold of the budget set.

Nonlinear price schedule

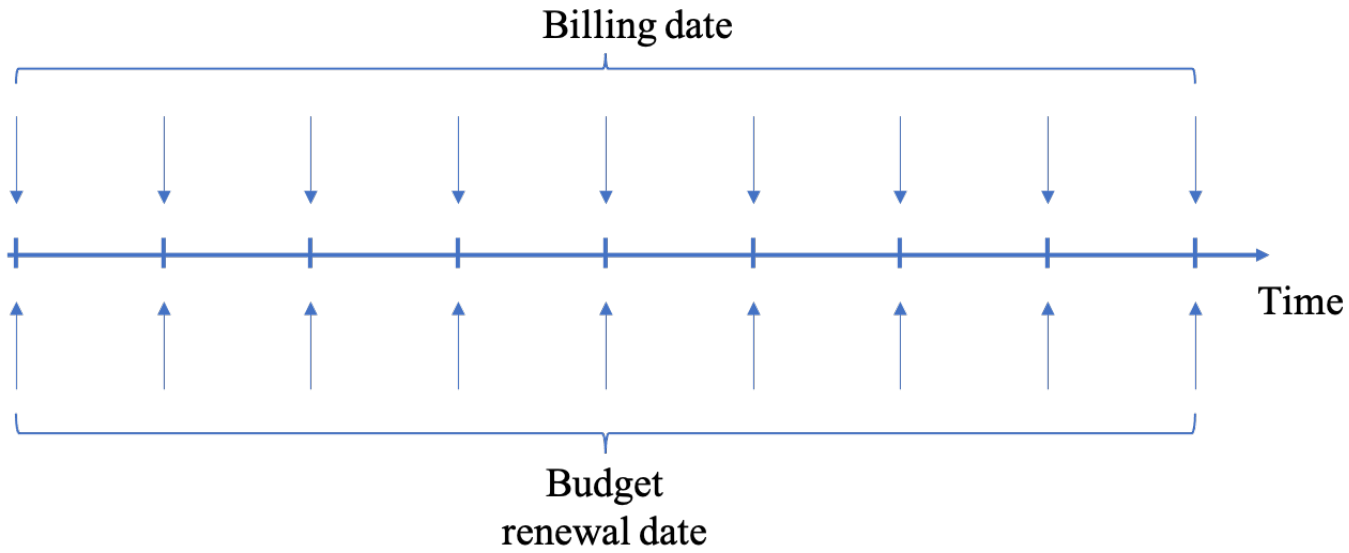
- Q: To which price do consumers respond?
  - Marginal price according to standard economic theory
  - Expected marginal price due to uncertainty about x (Saez, 1999; Borenstein, 2009)
  - Average price due to complexity of $p(x)$ (de Bartolome, 1995; Liebman and Zeckhauser, 2004; Feldman and Katuščák, 2010; Ito, 2014)



Source: Figure 1 Panel A in Ito (2014).

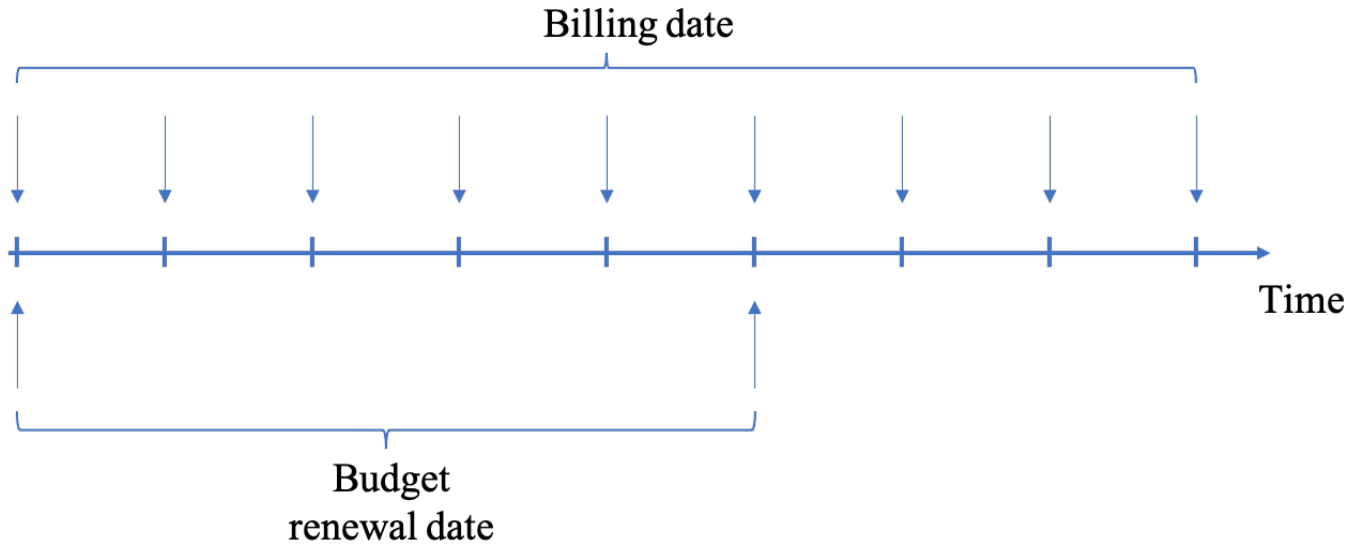
Motivation

- The analysis of demand in the presence of a nonlinear price schedule is typically static.
  - As consumption information is usually only available over a single budget period.
  - E.g., the budget for consumption is renewed monthly on the billing date.



Motivation

- Q: Do consumers respond to dynamic incentives created by nonlinear prices within a single budget period?
  - Evidence limited to health insurance and no consensus (Aron-Dine et al., 2015; Einav et al., 2015; Dalton et al., 2020)
  - Two approaches
    1. Using within-budget-period consumption information
    2. Using dynamic modeling
- Our study takes the 1^{st} approach to investigate an *unconventional* Increasing Block Tariff (IBT).



Research design

- We exploit a natural experiment arising from a water pricing reform beginning in January 2015 in Hangzhou, China, and employ a difference-in-differences (DID) method for estimation.
- Hangzhou
  - Capital city of Zhejiang Province in southeast China
  - Climate: humid subtropical, four seasons
  - Total area: 16,596 km^2
  - Population in 2014: 2.2 million in five urban districts
  - GDP ranking among large and medium-sized cities in 2014: 10th
  - Disposable income per capita in 2014: 44,632 yuan (~US$ 6,796)

Water pricing reform in Hangzhou on Jan 1, 2015

The reform involved a transition from

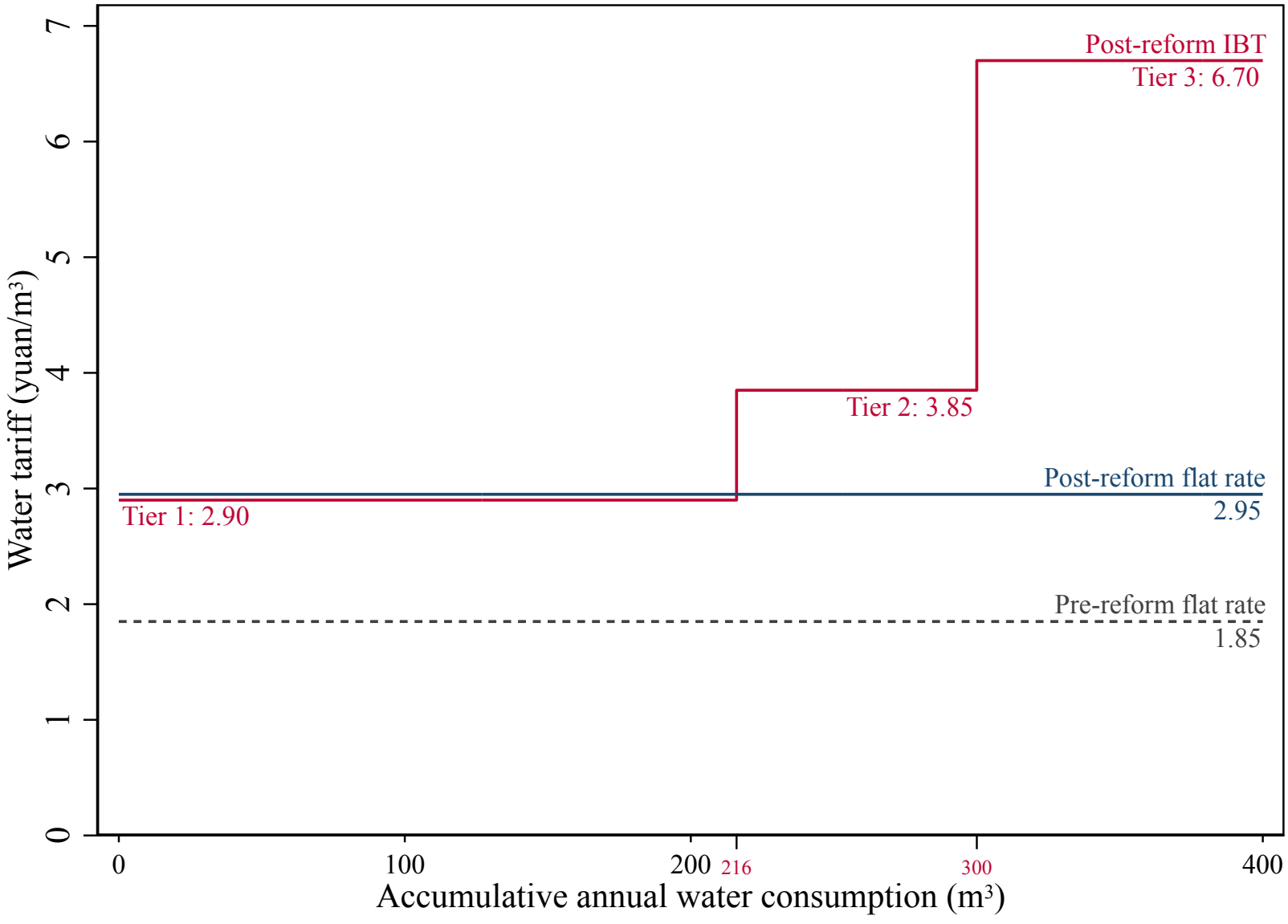
- A flat rate
  - For all households; low; unchanged for ten years

to

- A three-tier IBT for households whose meters were directly administered by the water utility
  - IBT households ▸ bill sample
  - Meters are read every two months (odd or even).
  - The budget of water consumption is reset annually (Nov or Dec) .
  - 570 thousand (58%) in 2015
- A new flat rate (~IBT tier-1 rate) for households whose meters were administered by the community
  - Non-IBT households ▸ bill sample
  - Meters are read every month by the community administrative office.
  - 420 thousand (42%) in 2015

Water tariffs in Hangzhou

by accumulative annual water consumption level



Unique features of the reform in Hangzhou

- The reform comes close to an ideal experiment for whether households responding to dynamic incentives.
  1. The budget of the IBT is renewed annually, while the billing cycle is bimonthly.
     - High users face variation in expected future price over time.
  2. The tier-2 threshold of the IBT is set high.
     - For most households (~93%), current price remains at tier 1.
  3. For households facing the flat rate, the current and expected future prices remain the same and fixed throughout the budget period.
- Focus: moderately high-use households
  - This *unconventional* IBT likely results in a constant current price and a deviation of the future price from the current price.
  - No IBT effect over time if households only respond to current price.

Main findings

- On average, the IBT leads to a mild and insignificant drop in household water consumption (-0.010).
- IBT water savings effect by baseline water consumption level
  - Low-use households: 0.006
  - High-use households: -0.047^{***}
  - Moderately high-use households: -0.022^{**}
- We detect strong evidence that households respond to dynamic incentives.
  - Moderately high-use households: significant water savings effect in the middle of the year
- Present-minded households do not respond to dynamic incentives.

Contributions

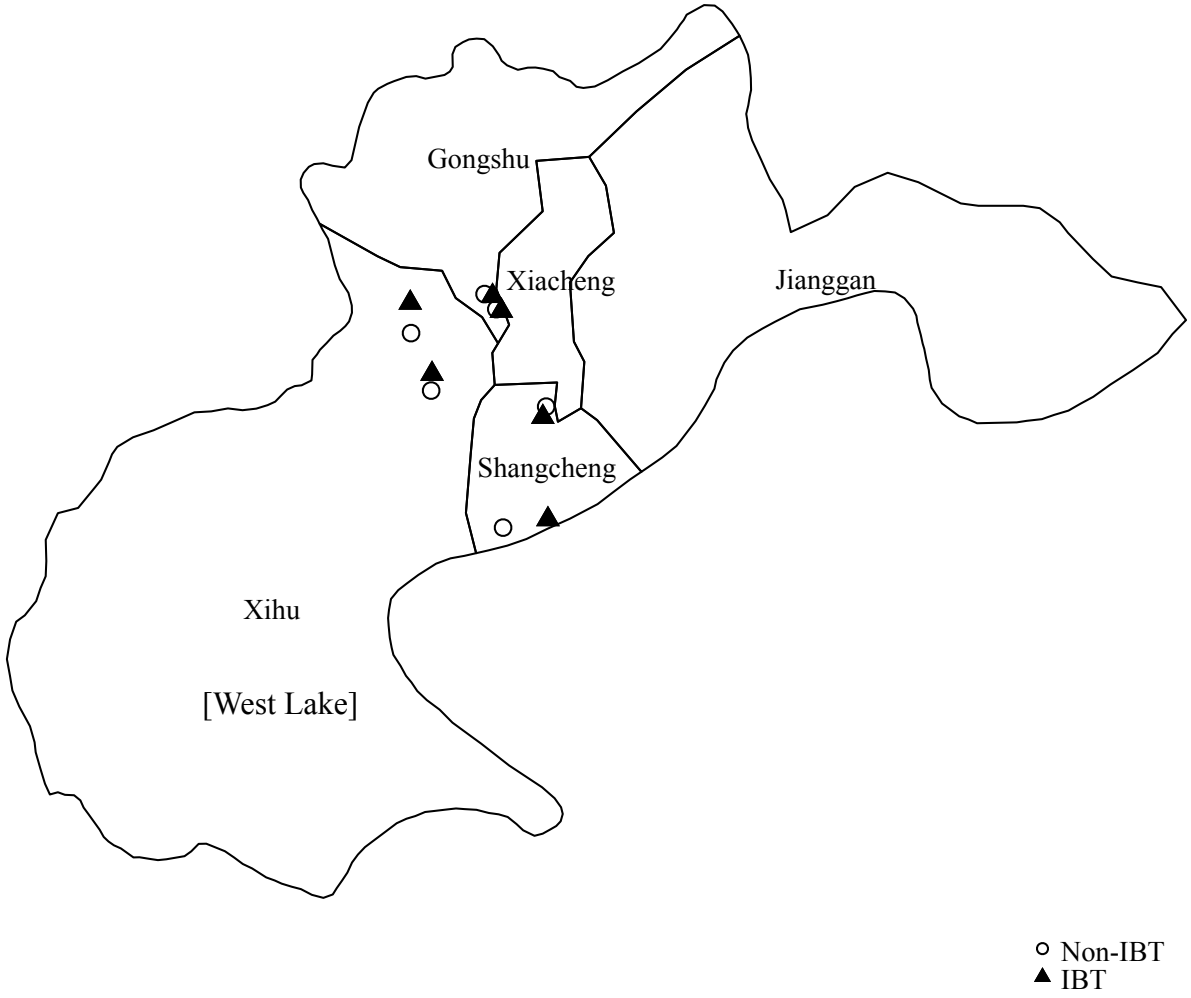
1. Consumers' response to nonlinear budget sets
2. Effect of price/non-price interventions on resource conservation
   - Price interventions
     - Nonlinear pricing (Olmstead, 2009; Szabó, 2015)
   - Non-price interventions
     - Providing information (Jessoe and Rapson, 2014; Allcott and Kessler, 2019; Bollinger and Hartmann, 2020)
     - Changing billing method (Jack and Smith, 2020)
     - Rationing (Mansur and Olmstead, 2012)
   - Interactions of price and non-price interventions (Jessoe et al., 2014; Sudarshan, 2017; Ito et al., 2018)
3. Effect of IBT on water consumption (Nataraj and Hanemann, 2011; Wichman, 2014)
   - First to consider the IBT in which the budget is renewed annually
     - Employed by 21 of the 36 major cities in China in 2019 with a collective population of 146 million

Data

- Data sources
  - A household survey at the end of 2016
    - A multi-stage and stratified sampling: three of five main urban districts → two sub-districts in each urban district → one IBT community and one non-IBT community from each sub-district → roughly 50 households in each community
    - Information collected: water bill identifiers, households' demographic and socio-economic characteristics, and time preferences
  - Administrative water bills
    - Surveyed IBT households: 2013–early 2017 from Hangzhou Water
    - Surveyed non-IBT households: 2014–early 2017 from community administrative offices
- Final data set
  - Balanced panel data of 582 households
    - 282 IBT households + 300 non-IBT households
  - Household-year-bimonth level

Data

Location of sampled communities



Notes: This figure shows the map of the five main urban districts in Hangzhou and the locations of the 12 sampled communities. The map is produced using the data from the County-Level Assembly of the 2010 China Population Census. The locations of the 12 communities are shown with open circles for non-IBT groups and black triangles for IBT groups.

Data

Subsamples

- Baseline water consumption: household annual water consumption in 2014
- Median: 121 m^3
- Three subsamples
  - Low-use households: below median
  - High-use households: above median
  - Moderately high-use households: above median and below 216 m^3

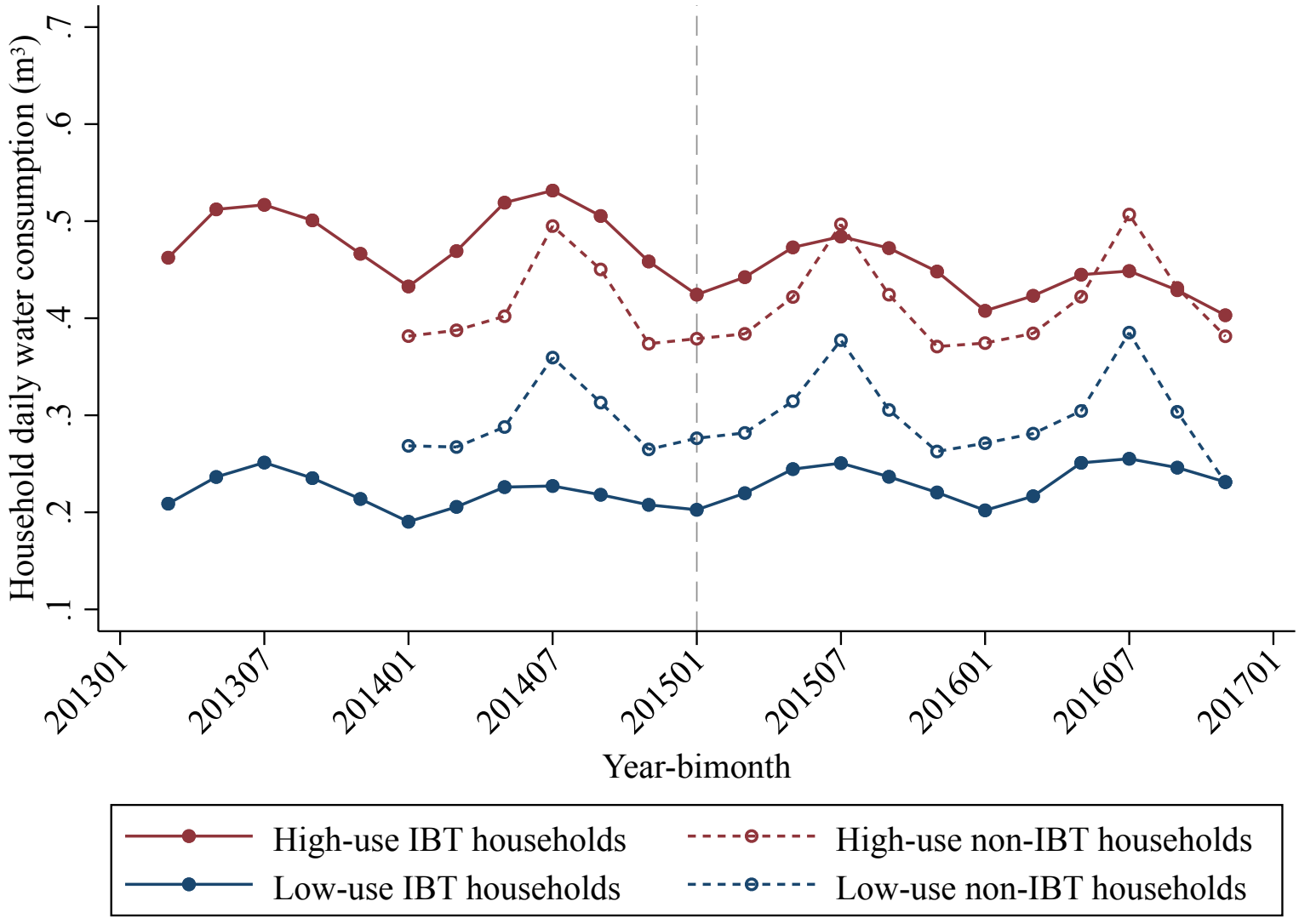
Summary statistics

	All	By household annual water consumption in 2014		
		Low	High	Moderately high
	(1)	(2)	(3)	(4)
IBT group	0.485	0.593	0.373	0.323
	(0.500)	(0.492)	(0.484)	(0.469)
Household annual water consumption (m^3)				
in 2014	124.6	88.95	161.3	151.7
	(48.99)	(26.90)	(38.34)	(22.22)
in 2015	125.5	94.45	156.9	149.1
	(47.72)	(32.02)	(39.82)	(27.42)
in 2016	124.0	94.40	153.7	149.0
	(47.96)	(34.20)	(40.90)	(33.57)
Household daily water consumption (m^3)				
in 2014	0.341	0.244	0.442	0.416
	(0.134)	(0.074)	(0.105)	(0.061)
in 2015	0.344	0.259	0.430	0.408
	(0.131)	(0.088)	(0.109)	(0.075)
in 2016	0.339	0.258	0.420	0.407
	(0.131)	(0.093)	(0.112)	(0.092)
Floor number	5.290	5.224	5.359	5.477
	(3.778)	(3.526)	(4.025)	(4.168)
Number of household members	3.132	2.892	3.380	3.346
	(0.818)	(0.753)	(0.810)	(0.803)
Number of children under age 18	0.711	0.685	0.739	0.727
	(0.524)	(0.534)	(0.513)	(0.526)
Number of members aged above 55	0.357	0.264	0.453	0.427
	(0.669)	(0.626)	(0.697)	(0.680)
Highest years of schooling	14.21	13.81	14.62	14.61
	(3.326)	(3.766)	(2.749)	(2.838)
Housing area per capita (m^2)	22.68	26.40	18.86	18.86
	(9.908)	(11.18)	(6.476)	(6.531)
Observations	582	295	287	260

Notes: This table reports the sample means and standard deviations (in parentheses) for all 582 households and by subgroup. "Low" refers to households with annual water consumption in 2014 below the median level in 2014. "High" refers to households with annual water consumption in 2014 above the median level in 2014. "Moderately high" refers to households with annual water consumption in 2014 above the median level and below the tier-2 threshold of the IBT, 216 m^3.

Trends in household daily water consumption over time

Bimonthly



Model

The average effect of IBT on water consumption

- Common trends assumption: in the absence of the pricing reform, the water consumption of the IBT and non-IBT households should follow common trends.
- Empirical model

$$Y_{iyb} = \beta IBThh_i \times Post_{yb} + \delta_i + \gamma_{yb} + IBThh_i \times \theta_b + \rho_{yb} X_i + \epsilon_{iyb}$$

  - Y_{iyb}: daily water consumption of household i in year y bimonth b
  - $IBThh_i$: 1 for an IBT household, and 0 otherwise
  - $Post_{yb}$: 1 from January 2015 onward, and 0 otherwise
  - δ_i: household FE
  - γ_{yb}: year-bimonth FE
  - $IBThh_i \times \theta_b$: different seasonal patterns between IBT and non-IBT households
  - $\rho_{yb} X_i$: different trends across households with different characteristics

Main results

The average effect of IBT on water consumption

	Dep.var.: Household daily water consumption (m^3)					
	All			By household annual water consumption in 2014		
				Low	High	Moderately high
	(1)	(2)	(3)	(4)	(5)	(6)
IBThh×Post	-0.009	-0.009	-0.010	0.006	-0.047***	-0.022**
	(0.007)	(0.007)	(0.007)	(0.008)	(0.013)	(0.010)
Observations	10,341	10,341	10,341	5,179	5,162	4,676
R^2	0.768	0.777	0.782	0.672	0.669	0.592
Num of clusters (household)	582	582	582	295	287	260
Num of clusters (community-bimonth)	72	72	72	72	72	72
$\bar{Y}_{1,2014}$	0.318	0.318	0.318	0.213	0.486	0.425
$\bar{Y}_{0,2014}$	0.366	0.366	0.366	0.294	0.415	0.410
Household FE	Y	Y	Y	Y	Y	Y
Year-bimonth FE	Y	Y	Y	Y	Y	Y
IBThh×bimonth dummies	N	Y	Y	Y	Y	Y
Household controls × year-bimonth dummies	N	N	Y	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Household controls that are interacted with year-bimonth dummies include the number of household members, number of children under age 18, highest years of schooling among members, and housing area per capita (all in the year of 2014). The standard errors in parentheses are clustered at two levels: household and community-bimonth. $\bar{Y}_{1,2014}$ and $\bar{Y}_{0,2014}$ denote the sample mean of household daily water consumption in 2014 for IBT and non-IBT households, respectively.

Interpretation

The average effect of IBT on water consumption

- Daily water savings of 0.047 m^3 for high-use households
  - ~11% of average daily consumption
  - Consistent with existing studies (Nataraj and Hanemann, 2011; El-Khattabi et al., 2021)
- Annual impacts
  - Household
    - Water savings of 17.2 m^3
  - Hangzhou city (extrapolated)
    - Water savings of 8.5 million m^3
    - Monetary savings of 24.6 million yuan (~US$ 3.7 million)
  - Hangzhou water (extrapolated)
    - Total revenue increase of 121.6 million yuan (~US$ 19.8 million)

Model

Testing household response to dynamic incentives

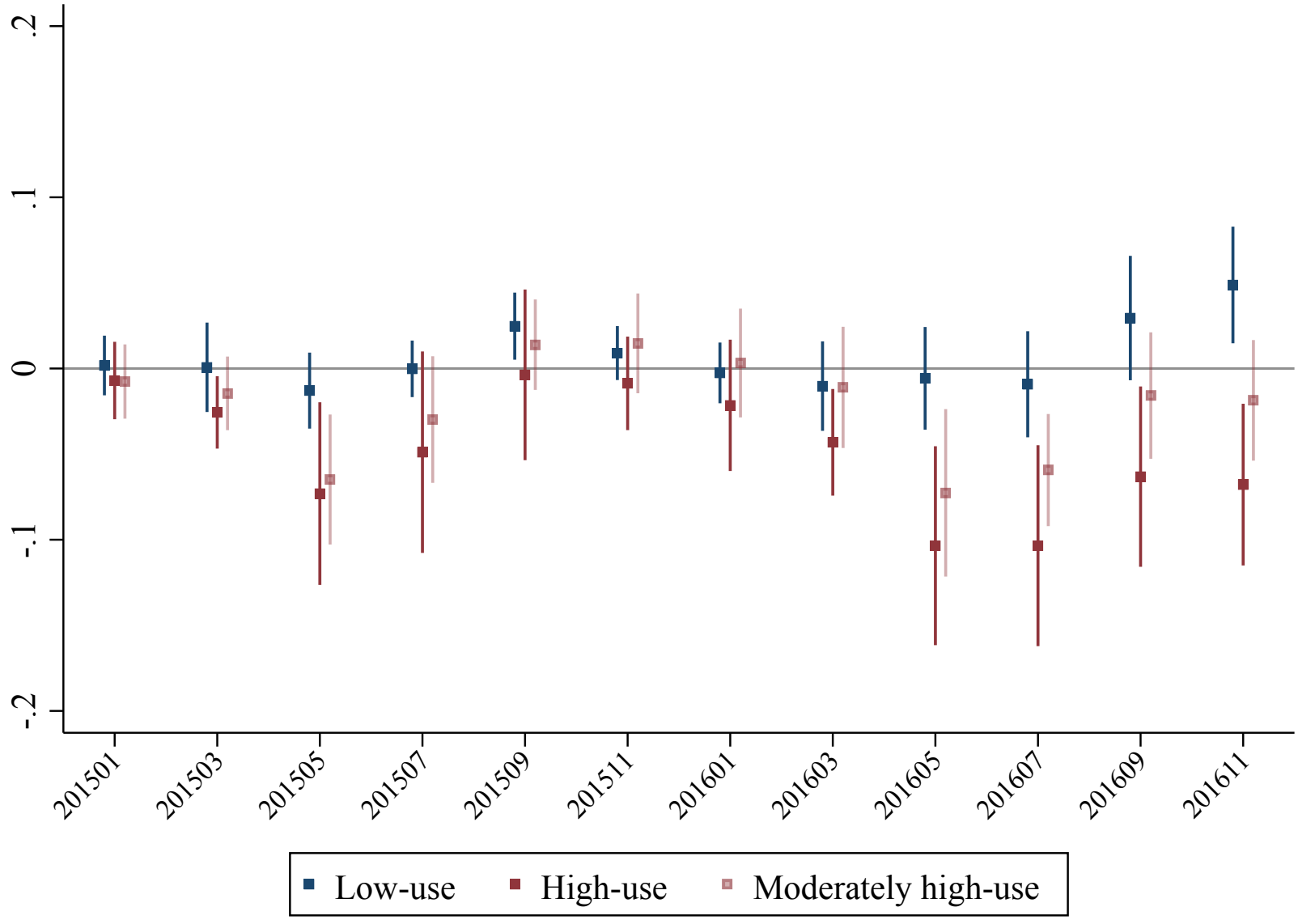
- Empirical model

$$Y_{iyb} = \left(\sum_{\substack{j=2015,\\ 2016}} \sum_{\substack{1 \le d \le 11,\\ odd}} (IBThh_i \times \mu_{jd}) \beta_{jd} \right) + \delta_i + \gamma_{yb} + IBThh_i \times \theta_b + \rho_{yb} X_i + \epsilon_{iyb}$$

  - $IBThh_i \times \mu_{jd}$: interactions of IBT indicator and post-reform year-bimonth dummies
  - β_{jd} captures the IBT effect in the corresponding year-bimonth post reform.

Main results

The effect of the IBT on household daily water consumption across year-bimonth periods



Interpretation

Testing household response to dynamic incentives

- Low-use households
  - Little effect before September in both 2015 and 2016
  - ↑ from September onward
    - Possibly a response to the low chance of entering tier 2 of the IBT, consistent with Brent and Ward (2019)
- High-use households
  - ↓ starting in March in both years
  - Statistically significant ↓ in spring and summer in both years
- Moderately high-use households
  - Non-IBT households: current and future price same and fixed
  - IBT households: current price at tier 1; future price varies over time.
  - Statistically significant ↓ in May–June 2015 and in May–June and July–August in 2016
  - Strong evidence of household incorporating the possibility of higher future prices into their water consumption decisions

Discussion

- Heterogeneity analysis
  - Time preferences
  - Other: by household socioeconomic status, household demographic structure, and housing condition
- Validity of the DID strategy
- Robustness checks
  - Alternative sample restrictions
  - Alternative thresholds for defining high-use households
  - Alternative specifications
  - Data set constructed at the monthly level
  - Measurement error in the meter reading dates for non-IBT households
- Short- and long-term effects of IBT
- IBT effect on the gap between high- and low-use households

Conclusion

Heterogeneity analysis

Time preferences

	Dep.var.: Household daily water consumption (m^3)		
	Low	High	Moderately high
	(1)	(2)	(3)
IBThh×Post	0.008	-0.063***	-0.038***
	(0.009)	(0.015)	(0.014)
IBThh×Post×Present bias	-0.018	0.084***	0.053***
	(0.017)	(0.021)	(0.016)
IBThh×Post×Future bias	-0.004	0.005	0.027
	(0.013)	(0.027)	(0.020)
Observations	5,179	5,162	4,676
R^2	0.672	0.674	0.596
Household FE	Y	Y	Y
Year-bimonth FE	Y	Y	Y
IBThh×bimonth dummies	Y	Y	Y
Household controls × year-bimonth dummies	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-bimonth.

Heterogeneity analysis

Household socioeconomic status

	Dep.var.: Household daily water consumption (m^3)		
	Low	High	Moderately high
	(1)	(2)	(3)
IBThh×Post	-0.001	-0.158***	-0.083
	(0.035)	(0.059)	(0.051)
IBThh×Post× Highest years of schooling	0.001	0.007**	0.004
	(0.002)	(0.004)	(0.003)
Observations	5,179	5,162	4,676
R^2	0.672	0.670	0.593
Household FE	Y	Y	Y
Year-bimonth FE	Y	Y	Y
IBThh×bimonth dummies	Y	Y	Y
Household controls × year-bimonth dummies	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-bimonth.

Heterogeneity analysis

Household demographic structure

	Dep.var.: Household daily water consumption (m^3)		
	Low	High	Moderately high
	(1)	(2)	(3)
IBThh×Post	-0.027	-0.184***	-0.129***
	(0.034)	(0.048)	(0.038)
IBThh×Post×Number of household members	0.011	0.039***	0.031***
	(0.012)	(0.012)	(0.011)
Observations	5,179	5,162	4,676
R^2	0.672	0.672	0.595
Household FE	Y	Y	Y
Year-bimonth FE	Y	Y	Y
IBThh×bimonth dummies	Y	Y	Y
Household controls × year-bimonth dummies	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-bimonth.

Heterogeneity

Housing condition

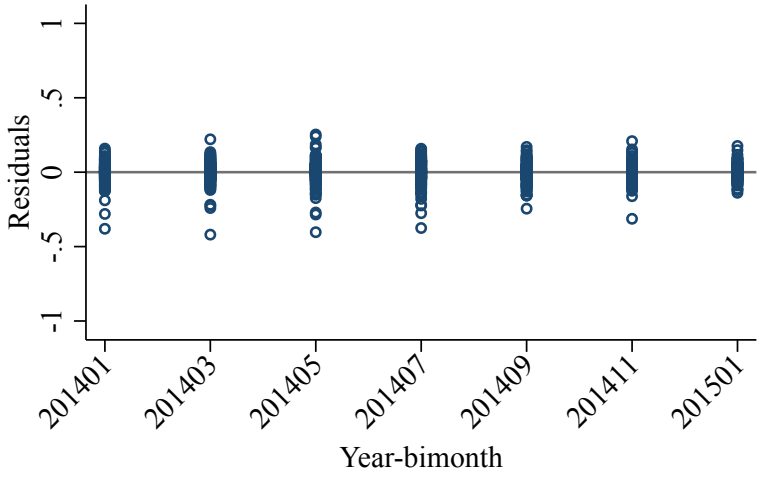
	Dep.var.: Household daily water consumption (m^3)		
	Low	High	Moderately high
	(1)	(2)	(3)
IBThh×Post	-0.006	-0.019	0.039
	(0.016)	(0.033)	(0.029)
IBThh×Post×Housing area per capita/10	0.005	-0.014	-0.031**
	(0.006)	(0.014)	(0.012)
Observations	5,179	5,162	4,676
R^2	0.672	0.669	0.594
Household FE	Y	Y	Y
Year-bimonth FE	Y	Y	Y
IBThh×bimonth dummies	Y	Y	Y
Household controls × year-bimonth dummies	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-bimonth.

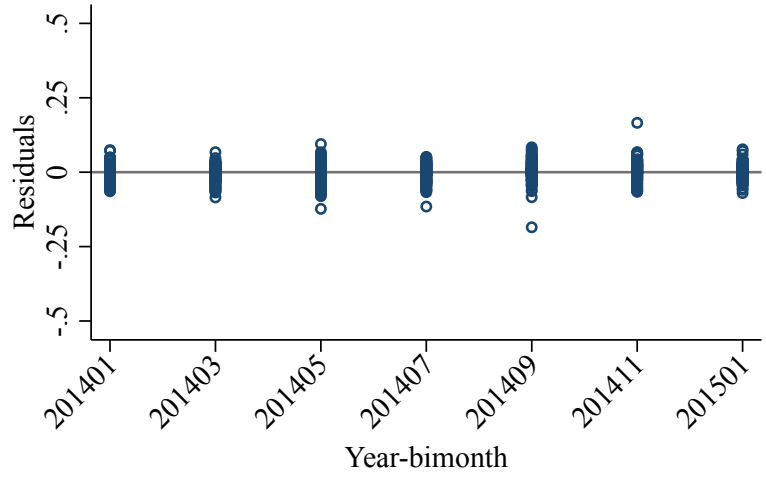
Validity test

Trends of regression residuals in household daily water consumption over time (bimonthly)

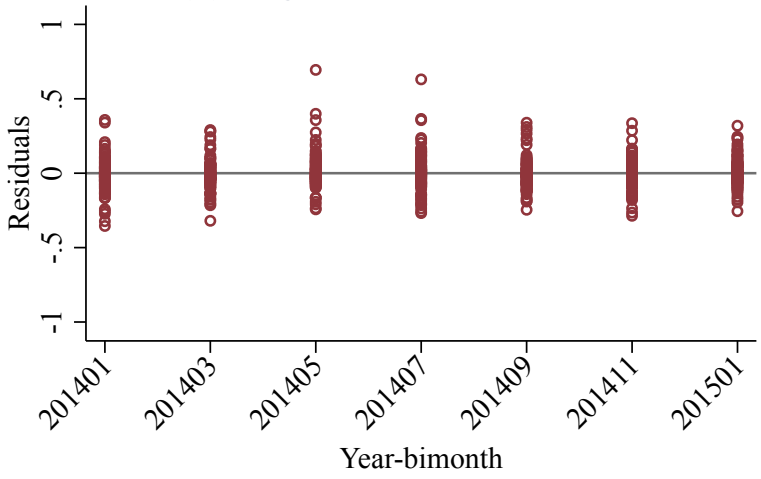
(1) Low-use IBT households



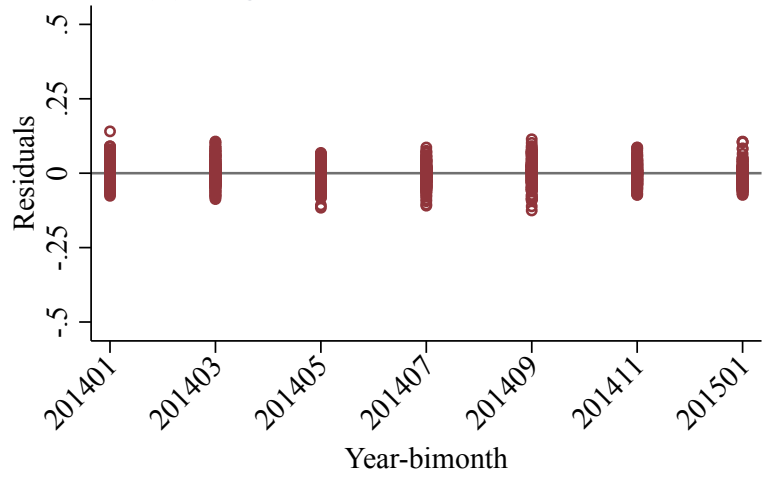
(2) Low-use Non-IBT households



(3) High-use IBT households



(4) High-use Non-IBT households



Short- and long-term effects of IBT

	Dep.var.: Household daily water consumption (m^3)		
	Low	High	Moderately high
	(1)	(2)	(3)
IBThh×Year2015	0.004	-0.028**	-0.015
	(0.007)	(0.012)	(0.010)
IBThh×Year2016	0.008	-0.067***	-0.029**
	(0.010)	(0.017)	(0.013)
Observations	5,179	5,162	4,676
R^2	0.672	0.672	0.593
Num of clusters (household)	295	287	260
Num of clusters (community-bimonth)	72	72	72
$\bar{Y}_{1,2014}$	0.213	0.486	0.425
$\bar{Y}_{0,2014}$	0.294	0.415	0.410
p-value	0.579	0.006	0.237
Household FE	Y	Y	Y
Year-bimonth FE	Y	Y	Y
IBThh×bimonth dummies	Y	Y	Y
Household controls × year-bimonth dummies	Y	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-bimonth.

IBT effect on the gap between high- and low-use households

- Sample: IBT households
- Empirical model

$$Y_{iyb} = \phi Highuser_i \times Post + \sigma_i + \nu_{yb} + Highuser_i \times \tau_b + \mu_{yb} X_i + \xi_{iyb}$$

  - $Highuser_i$: one for households with baseline water consumption above the median
  - σ_i: household FE
  - ν_{yb}: year-bimonth FE
  - $Highuser_i \times \tau_b$: different seasonal patterns of high- and low-use households
  - $\mu_{yb} X_i$: different trends across households with different characteristics

IBT effect on the gap between high- and low-use households

	Dep. var.: Household daily water consumption	
	IBT households 2014–2016	IBT households 2013–2016
	(1)	(2)
Panel A: All IBT households		
High-use hh×Post	-0.078***	-0.073***
	(0.014)	(0.015)
Observations	4,941	6,307
R^2	0.763	0.706
$\bar{Y}$ of high-use households in 2014	0.486	0.486
$\bar{Y}$ of low-use households in 2014	0.213	0.213
Panel B: IBT households with extreme high-use households excluded		
High-use hh×Post	-0.054***	-0.054***
	(0.012)	(0.014)
Observations	4,527	5,778
R^2	0.701	0.632
$\bar{Y}$ of high-use households in 2014	0.425	0.425
$\bar{Y}$ of low-use households in 2014	0.213	0.213
Household FE	Y	Y
Year-bimonth FE	Y	Y
IBThh×bimonth dummies, high-use×bimonth dummies	Y	Y
Household controls × year-bimonth dummies	Y	Y

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The standard errors in parentheses are clustered at two levels: household and community-year-bimonth.

Conclusion

- The IBT has substantial water savings effect for high-use households but does not affect low-use households' water consumption.
- Households incorporate potential future price increases under the IBT into their water consumption decisions.
- Policy implications
  - The targets of improved water conservation and increased revenue are achieved at a relatively low cost by employing a pure price instrument.

Thank you very much!

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Samples of water bills for IBT households in Hangzhou

杭水热线：87826789
水费缴款通知单
分公司
户号：　　口径：20
户名：
地址：
上期抄见：292吨
本期抄见：302吨
换表底数：
本期实用：10吨

	水量	金额	单价
阶梯一：	10.0	29.0	2.90
阶梯二：	0.00	0.0	3.85
阶梯三：	0.00	0.0	6.70

本期金额：29.00元
陈欠次数：　　陈欠金额：
你户因　　，故本次暂计。
本期止剩余年可用分档水量：
第一档：140.0　第二档：84.0
抄表日期：16.12.09
水务APP　杭水微信
敬请按期缴纳水费，客户拖欠水费的失信行为将纳入杭州市公共信用信息平台。
杭水网址：www hzwgc com
杭州市水务控股集团有限公司

杭水热线：87826789
水费缴款通知单
分公司
户号：　　口径：20
户名：
地址：
上期抄见：186吨
本期抄见：246吨
换表水量：
本期实用：60吨

	水量	金额	单价
阶梯	3.0	8.7	2.90
阶梯	57.0	219.5	3.85
阶梯	0.00	0.0	6.70

本期金额：228.15元
陈欠次数：　　陈欠金额：
你户因　　，故本次暂计。
本期止剩余年可用分档水量：
第一档：0.00　第二档：27.0
抄表日期：16.12.08
水务APP　杭水微信
敬请按期缴纳水费，客户拖欠水费的失信行为将纳入杭州市公共信用信息平台。
杭水网址：www.hzwgc.com
杭州市水务控股集团有限公司

Hangzhou Water Hotline: 87826789

Water Bill Payment Notice

XXXX Branch

Household ID:　　Diameter:

Name of head:

Address:

Last period reading:

This period reading:

Reading before changing meter:

Actual consumption this period:

	Water amount	Cost	Rate
Tier 1:			
Tier 2:			
Tier 3:			

Total amount payable this period:

Defaulting times:　　Balance due:

Due to_[reason to be provided]_, this bill is based on estimation.

Balance in each tier by Current Billing Period:

Tier 1:　　Tier 2:

Meter reading date:

[QR code 1]　[QR code 2]　Please pay bill on time. Defaulting will be recorded as dishonest behavior in the Public Credit Information Platform of Hangzhou.

Hangzhou Water website: www.hzwgc.com

Hangzhou Water Group

Sample of water bill for non-IBT households in Hangzhou

1幢2016 [illegible] 电能耗分摊明细表

序号	房号	面积	水费				能耗分摊		合计	上月结余	本月结余	总结余	实收金额	缴费时间
			上期度数	本期度数	实收度数	水损水费	电梯分摊	公用照明水泵分摊						
1	1-101	90.29	240	260	20	59.00	27.09	8.13	94.21	0.03	-94.19	-94.19		
2	1-102	75.55	374	377	3	8.85	22.67	6.80	38.31	-43.69	-82.00	-82.00		
3	1-103	88.55	656	669	13	38.35	26.57	7.97	72.88	-292.42	-365.30	-365.30		
4	1-201	90.29	659	686	27	79.65	27.09	8.13	114.86	-536.13	-651.00	-651.00		
5	1-202	75.55	344	373	29	85.55	22.67	6.80	115.01	-135.14	-250.15	-250.15		
6	1-203	88.55	606	658	52	153.40	26.57	7.97	187.93	-188.96	-376.89	-376.89		
7	1-301	90.29	400	415	15	44.25	27.09	8.13	79.46	-101.20	-180.67	-180.67		
8	1-302	75.55	112	120	8	23.60	22.67	6.80	53.06	-64.18	-117.24	-117.24		
~~9~~	~~1-303~~	~~88.55~~	~~542~~	~~572~~	~~30~~	~~88.59~~	~~26.57~~	~~7.97~~	~~123.03~~	~~284.46~~	~~-407.49~~	~~407.49~~	407.5	12.2
10	1-401	90.29	210	228	18	53.10	27.09	8.13	88.31	322.18	233.86	233.86		
11	1-402	75.55	428	461	33	97.35	22.67	6.80	126.81	-143.88	-270.69	-270.69		
12	1-403	88.55	528	542	14	41.30	26.57	7.97	75.83	0.01	-75.82	-75.82		
13	1-501	90.29	366	406	40	118.00	27.09	8.13	153.21	-163.12	-316.34	-316.34		
14	1-502	75.55	413	422	9	26.55	22.67	6.80	56.01	-70.26	-126.27	-126.27		
15	1-503	88.55	530	552	22	64.90	26.57	7.97	99.43	0.01	-99.42	-99.42		
16	1-601	90.29	329	343	14	41.30	27.09	8.13	76.51	-95.29	-171.81	-171.81		
17	1-602	75.55	76	86	10	29.50	22.67	6.80	58.96	-58.39	-117.35	-117.35		
~~18~~	~~1-603~~	~~88.55~~	~~432~~	~~450~~	~~18~~	~~53.10~~	~~26.57~~	~~7.97~~	~~87.63~~	~~-447.07~~	~~-534.70~~	~~534.70~~	583.7	11.19
19	1-701	90.29	59	60	1	2.95	27.09	8.13	38.16	-85.15	-123.32	-123.32		
~~20~~	~~1-702~~	~~75.55~~	~~267~~	~~290~~	~~23~~	~~67.85~~	~~22.67~~	~~6.80~~	~~97.31~~	~~2.63~~	~~-94.68~~	~~94.68~~	200	12.8
	1-703	88.55	223	244	21	61.95	26.57	7.97	96.48	-97.34	-193.82	193.82		
		~~90.29~~	~~225~~	~~267~~	~~42~~	~~123.90~~	~~27.09~~	~~8.13~~	~~159.11~~	~~0.00~~	~~-159.12~~	~~159.12~~	159.12	11.19
			~~367~~	367	0	0.00	~~22.67~~	~~6.80~~	~~29.46~~	~~-71.42~~	~~-100.88~~	~~100.88~~		
						23.60	26.57	7.97	58.13	-0.02	-58.15	-58.15		

Details of water and electricity sharing in Block 1 in 2016														
No	Room number	Area	Water bill				Shared energy bill		Final bill	Balance last month	Balance this month	Total balance	Paid amount	Payment date
			Last reading	This reading	Billed consumption	Water bill	Elevator	Lighting and water pump						