Political Uncertainty and Household Savings

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December 2014

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ABSTRACT

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Despite macroeconomic evidence pointing to a negative aggregate consumption response due to political uncertainty, few papers have used microeconomic panel data to analyze how households adjust their consumption after an uncertainty shock. We study household savings and expenditure adjustment from an unexpected, large-scale and rapidly evolving political shock that occurred largely in May 1989 in Beijing, China. Using monthly micro panel data, we present evidence that a surge in political uncertainty resulted in significant temporary increases in savings among urban households in China. Households responded mainly by reducing semi-durable expenditure and frequency of major durable adjustment. The uncertainty effect is more pronounced among older, wealthier, and more socially advantaged households. We interpret our findings using existing models of precautionary behavior. By focusing on time variation in uncertainty, our identification strategy avoids many of the potential problems in empirical studies of precautionary savings such as self-selection and life-cycle effects.

JEL Classification: D91, J3, E21

Keywords: China, household savings, political uncertainty

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1. Introduction

Major political events, such as the US presidential election in 2000, the 9/11 terrorist attack, and the more recent Arab Spring, can have profound impacts on household consumption. For example, retail sales in the United States dropped by over 2.5% in September 2001, the month when the terrorist attack took place. These political shocks are often accompanied by an increase in policy uncertainty, where a growing literature shows that uncertainty shocks can have substantial economic impacts.[1]

Despite the macroeconomic evidence pointing to a negative aggregate consumption response due to political uncertainty, very few papers have used microeconomic panel data to analyze how households adjust their consumption after an uncertainty shock. A detailed household consumption panel data is essential to understand the channel through which households adjust their consumption and heterogeneity of the adjustments across different types of households. However, most microeconomic data of consumer expenditure are collected at low frequency and have a long recall period.[2] Since uncertainty shocks are usually short-lived, initial impact on household consumption often differs from the impact on future consumption when households gradually adjust to a new steady state. Without high-frequency consumption panels at household level, it is difficult to identify the size of the initial impact of an uncertainty shock and the path of dynamic adjustments afterwards.

Our first contribution is to analyzing household consumption around a time of escalating political uncertainty, using household panel data collected at monthly frequency from China. We exploit an unexpected, large-scale and rapidly evolving political shock that occurred largely in May 1989 in Beijing, China. The event, also known as the Tian'anmen Square Movement, was triggered by the unexpected death of a former leader in mid-April 1989, culminated in May, and faded after the Chinese government took action on June 4 in the same year. The event resulted in a change in political leadership and is widely regarded to mark the end of a period of rapid reform in China.

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[1] See Bloom (2013) for a review of this literature. Empirical evidence suggests that uncertainty shocks have negative effects on growth (Ramey and Ramey 1995), consumer spending (Romer 1990), and investment and hiring (Bloom, 2009).

[2] The Consumer Expenditure Survey, the most commonly used household consumption data in the United States, reports quarterly expenditure from the interview sample. The interview sample follows survey households for a maximum of five quarters. The Panel Study of Income Dynamics collects data on food consumption based on the amount spent on food in an average week. Since interviews are usually conducted around March each year, it has been argued that people report their food expenditure for an average week around that period.

Following Baker, Bloom and Davis (2012) and Bloom (2013), we present two descriptive measures showing increased policy uncertainty associated with the political event.

Our empirical analysis is conducted using monthly micro panel data from a sample of the Urban Household Survey in China. The monthly expenditure is based on detailed daily diary entries covering all types of household expenditures. Our empirical approach is simple: we compare the mean household savings in April, the month immediately before the rise in political uncertainty, and in May of 1989, when the uncertainty shock took place. Differences in savings between these months could still be due to seasonality of consumption and/or income. For the comparison group, we use data from April and May of 1990 to estimate the difference in outcomes and subtract it from the estimate of the effect obtained from the 1989 data (a difference-in-difference estimator). One main advantage of using household panel data is that we are able to document the heterogeneity in the effects of uncertainty shock for different types of households and for different types of consumer expenditure. The micro data also allows us to control for household composition and demographic changes that may contaminate our results.

After adjusting for seasonality, we find that the saving rate increases by 18 percentage points in the month of the uncertainty shock. The increase in savings was larger for households that had older heads, that were wealthier prior to the shock, and that were more socially advantaged. The results are robust to inclusion of a set of household characteristics and to using household balance sheets as an alternative definition of savings. We are able to rule out any shocks to household resources from the political uncertainty, as there is no evidence of changes in average household income or wealth. We also do not find any significant change in idiosyncratic income uncertainty identified from *realized* income streams--neither the variance of permanent shocks nor the variance of transitory shocks change before and after the shock. Interestingly, the increase in savings is entirely due to a sizable reduction in semi-durable consumption (i.e. clothing and footwear) and frequency of major durable adjustment. Non-durable consumption is not affected by the uncertainty shock. Our estimates survive a range of robustness and placebo tests. To the extent that pessimism is concerned with longer term prospects than those arising from short-term uncertainties, our estimates suggest that the effect is more likely due to changes in political uncertainty rather than pessimism per se.

We interpret our findings using existing models of precautionary behavior. Unlike many other uncertainty shocks (such as the Great Recession) which may also affect the balance sheet of

households either directly (through a wealth or income shock) or indirectly (through a credit crunch), we show that the uncertainty shock we study has no direct or indirect impact on household balance sheets. Our estimates on household savings therefore provide new empirical evidence on the strength of the precautionary saving motive, where empirical estimates using microeconomic data have not yet converged.[3] Existing empirical test on precautionary savings behavior almost all rely on cross-section differences in risk within the sample. The key identifying assumption is that the measure of risk must be exogenous; that is, it has to be uncorrelated with any other unobservables that might also determine consumer behavior.[4] However, cross-sectional differences in risks may be correlated with unobservable (and likely heterogeneous) characteristics of the household, such as risk aversion and prudence, which would affect consumption choices directly. Fuchs-Schündeln and Schündeln (2005) show that correcting for self-selection into occupations decreases precautionary savings significantly. In addition, income risk may be correlated with life-cycle profiles of income and expected mean levels of income (Browning, Ejrnæs and Alvarez 2010). This means that the estimated correlation between risk and savings that is coined as the precautionary motive may be contaminated by the life-cycle motive of savings. Unlike previous papers that focused on cross-sectional variation in risk, our identification strategy exploits unanticipated time-variation in uncertainty, which is free from the potential biases caused by either self-selection or life-cycle motives.[5] Our estimates point to strong evidence of precautionary savings that is consistent with a buffer-stock model of consumer behavior (Carroll 1997).

Our findings on the mechanism of expenditure adjustment are also in line with a small set of empirical studies of the effects of microeconomic uncertainty on adjustment decision of durable goods. Foote, Hurst and Leahy (2000) find that the frequency of adjustment in the CEX is negatively related to the imputed variance of household income obtained from regressions

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[3] Existing estimates range from close to zero precautionary savings (e.g. Skinner 1988, Guiso, Jappelli, and Terlizzese 1992, Dynan 1993) to significant precautionary savings accounting for substantial fraction of wealth accumulation (e.g. Carroll and Samwick, 1997, 1998, Fuchs-Schündeln and Schündeln 2005). Browning and Lusardi (1996) contains an excellent review of this literature.

[4] The usual empirical test is to correlate consumption or savings with some measure of risk. Researchers have used cross-sectional variations either in realized income risk across occupations (Skinner 1988, Carroll and Samwick, 1997, 1998) or geographic regions (Carroll, Dynan and Krane, 2003) or in subjective risk expectations (Guiso, Jappelli, and Terlizzese 1992 and Lusardi 1997).

[5] Giavazzi and McMahon (2012) is the only recent paper we know of to study the effect of policy uncertainty on households' savings and labor supply responses. Using micro data from Germany, they explore the closely contested German general election during which there was uncertainty over unemployment and pension rules. The political uncertainty we study is likely to be more severe or extensive. In addition, our monthly household expenditure survey with detailed expenditure diaries allows us to study the channel through which total consumption is adjusted following uncertainty shock.

estimated with PSID data, a proxy that may be contaminated by measurement error in income and by prediction errors due to the small information set available to the econometrician. Using subjective income uncertainty measures as instruments for consumption volatility, Bertola, Guiso and Pistaferri (2005) find that uncertainty leads to smaller adjustments of consumer durables at the extensive margin.[6]

This paper is organized as follows: Section 2 provides theoretical predictions of a buffer-stock model in light of rising uncertainty. Section 3 describes the political events leading to the uncertainty shock and presents descriptive measures of uncertainty during the period. Section 4 describes the data and the sample in use, followed by our main empirical model and results presented in section 5. The final section concludes.

2. Theoretical framework

Theoretical models of buffer-stock saving predict that household consumption would drop when faced with an uncertainty shock (e.g. Zeldes 1989, Caballero 1990, Kimball 1990, Carroll 1997).[7] In an infinite-horizon buffer-stock saving model, Carroll (1992) shows the dynamic adjustment to a *permanent* increase in unemployment risk taking place between years t and t+1. Suppose that, prior to year t, the consumer was at equilibrium levels of consumption, net wealth, and saving ratios. In year t+1, the first year under the higher unemployment risk regime, the buffer-stock model implies that consumption drops sharply and the saving rate rises. Net wealth therefore begins to increase. After the initial adjustment, consumption slowly *increases* and the saving rate steadily *declines* toward their long-run steady states. In the new steady state, the consumption ratio is slightly lower than before the shock, while the saving rate and the net wealth ratio are both higher.[8]

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[6] Also see Parker (1999) and Browning and Crossley (2009) on how households adjust durable and non-durable spending when faced with income shocks.

[7] Models of precautionary savings have focused on one specific type of uncertainty, namely labor income uncertainty. In our context, the political shock may also drive up uncertainty about returns on financial assets. Bank savings accounts are the only type of financial asset consumers invest in. With only one available financial asset, the implication of a rate of return uncertainty is the same as that of an increase in labor income uncertainty (Merton 1969 and Samuelson 1969).

[8] See Figure 6 in Carroll (1992). For implications of uncertainty of consumption over the life cycle, see Gourinchas and Parker (2002). Chamon, Liu and Prasad (2013) show that a sharp increase in income uncertainty in late 1990s, largely due to an increase in the variance in household income attributed to transitory idiosyncratic shocks, could account for two-thirds of the increase in China's urban household saving rate in the same period.

The differences between initial adjustment of consumption and savings and future adjustment paths highlight the need for a high-frequency consumption panel in order to identify the extent of the precautionary saving motive. In the steady state of a buffer-stock saving model, average consumption will approximately equal average income regardless of the level of uncertainty that the consumers face (Carroll and Samwick 1997). If consumption data are collected at low frequency and consumers have already adjusted to the new steady state with the optimal amount of buffer-stock savings, there will be no apparent relation between current consumption or the current saving rate and the uncertainty of income. However, until the optimal buffer stock is achieved, there will be a relation between consumption and uncertainty: the consumer facing higher uncertainty will initially have to depress consumption more in order to build up a larger stock of wealth.

3. The political uncertainty shock

China's economic reforms started in 1978, after Deng Xiaoping came to power. The de-collectivization of the agricultural sector was a huge success, leading to a 6.6 percent annual growth of the sector during the period 1979–1985. However, the reform in urban China starting in 1984 was characterized by cycles of overheating and austerity. Figure 1 shows the annual real GDP growth rate. The Chinese economy has gone through three cycles, with peaks in 1985, 1988 and 1992. Each cycle began with periods of rapid growth, accompanied by accelerating inflation, and followed by prolonged contractions during which the growth rate and inflation declined in tandem (see for example Fan et.al 1996, Brandt and Zhu 2000).

Despite facing an urban inflation rate of 9.1% for 1987 as a whole, the central government announced plans for a comprehensive price reform in June 1988. The justification given for such a price reform was that "long pain is no better than short pain" and that market prices should be put in place at once (Zhao 1999). The price reform immediately resulted in unprecedented pressure on inflation and in panic buying, as documented in Aaberge and Zhu (2001). The government had to make a policy U-turn within three months to stabilize the economy, thus leading to increased unemployment and public discontent. Zhao Ziyang, who oversaw the urban reform as the Premier until becoming Secretary General of the Communist Party in November 1987 (acting since January 1987 following Hu Yaobang's resignation), was blamed for the mismanagement of the price reform and was forced to grant economic authority to the central planners (see Ji (1991)).

The Tian'anmen Movement is widely regarded to mark the end of a period of rapid reform in

China. From then until Deng's visit to southern China in 1992, policies shifted back to the views that had prevailed ten years before: central planning should be the focus, and the market should take on a subordinate role. Next, we first describe the development of the Tian'anmen Movement in detail and then provide empirical evidence of a significant increase in policy uncertainty during the period of the Movement.

3.1. The timeline of the Tian'anmen Square Movement

The Tian'anmen Square Movement began in 1989 as a spontaneous expression of public mourning for Hu Yaobang, the former Secretary General who had died from a heart attack. However, it quickly evolved into nationwide protests supporting political reform and demanding an end to corruption in the Communist Party. The timeline of the developments is as follows:[9]

- April 15, 1989 (the trigger): The sudden death of Hu Yaobang, who suffered from a heart attack a week earlier during a politburo meeting. Hu was forced to resign as the Chinese Communist Party's Secretary General in January 1987 for being too lenient with the widespread student protests that occurred at the end of 1986.

- April 18–22: Students gathered in Tian'anmen Square to mourn Hu's death prior to and during Hu's memorial service on April 22 in the Great Hall of the People, calling for more freedom and democracy. However, their petition of demands and request for a meeting with Li Peng, the Premier, were rejected.

- April 26: (the turning point): The People's Daily's front-page editorial defined the student movement as an anti-party revolt that had to be resolutely opposed. The editorial enraged the student protesters, who fought for it to be retracted.

- April 27–May 19: The student protests escalated, and a hunger strike began on May 13, ahead of the historical visit by Mikhail Gorbachev for the first Sino-Soviet summit in 30 years. The General Secretary of the Communist Party, Zhao Ziyang, ordered the state news media to cover the student demonstrations with unprecedented openness and made several attempts to open up channels for direct dialog between the students and the government.

- May 20–June 2: Martial law was declared in several districts in Beijing on May 20 after Zhao Ziyang, who was accused of sympathizing with the students, was sidelined by hardliners. However, the troops' advancement towards the city center was blocked by over a million workers and citizens.

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[9] Main source: BBC (the timeline): http://news.bbc.co.uk/2/hi/asia-pacific/8057148.stm

- June 3–4: Troops were ordered to put down the "counter-revolutionary riot" by force. Live ammunition was fired as the army tried to break through the barricades, with estimates of civilian casualties ranging from hundreds to thousands. Beijing was under the full control of the army by June 4.

- June 5–9: Protests continued in other cities in mainland China, including Chengdu, the provincial capital of Sichuan, for several days. However, on June 9, the first public appearance and speech in months by Deng Xiaoping, China's de facto leader, signaled the restoration of order and full control over the situation. Martial law in certain areas of Beijing was not lifted until January 10, 1990.

The movement in Beijing also spread to other cities throughout China. In the province where our household sample was collected, pro-democracy demonstrators had been camping out peacefully in Chengdu (the capital of Sichuan province) for several weeks in a scaled-down version of the Tian'anmen protest (Los Angeles Times, June 17, 1989). The security forces in Chengdu undertook two major actions against the demonstrators, one on the night of Sunday 4 June, the other on the following night of Monday 5 June (The New York Times, June 23, 1989).

3.2. Evidence of uncertainty shock

We provide two measures of the evolution of uncertainty during this period, following the work of Baker, Bloom and Davis (2012). The first measure is the media mention of the word "uncertainty". We count the frequency of articles containing the words "China" and "uncertainty" or "uncertain" from three major news sources in Western media, The New York Times, The Financial Times, and The Economist, between February 1 and September 1, 1989. Figure 2 shows the frequency of newspaper articles by month. There is a dramatic increase in the number of articles relating to uncertainty in China from the beginning of May until early June, corresponding to the period of rapid development of the Movement. Thereafter, the numbers decrease and, by August of the same year, return to the same level as in early 1989.

Our second measure is that of stock market volatility around that time. China did not have a stock market in 1989, so we turn to the Hang Seng Index in Hong Kong (a colonial territory of the UK at that time), which is closely connected to China.[10] Figure 3 shows the daily Hang Seng Index from

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[10] The preferred measure of volatility is the market's expectation of volatility over the next 30 days based on option prices, since political uncertainty is priced in the options market in ways predicted by the theory

the beginning of April until the end of June. There were large fluctuations in May and the beginning of June 1989. Each fluctuation corresponds to good or bad news related to Tian'anmen Square. The declaration of martial law resulted in large losses in the index, whereas stock markets reacted positively a day later to a halt in the military crackdown by over a million workers in Beijing. The largest drop took place on June 5, the first Monday following the crackdown, when the Index dropped by more than 20%. The public speech given by de facto leader Deng Xiaoping on June 9, which sent a strong signal of restoration of order and full control of the Communist Party, put an end to a period of strong volatility in the market.

The large and frequent fluctuation of the Hang Seng Index led to significant increase in stock market volatility during the period of the Movement. The standard deviation of daily closing prices from May 1 to June 12 (including the first trading day after Deng's speech) was 382, i.e. six times greater than the standard deviation of daily closing prices in April and in the rest of June (at 53.95 and 54.02, respectively).

4. The data

4.1. Urban Household Survey (UHS)

The annual nationwide Urban Household Survey of China (UHS) is a comprehensive household survey based on complete annual accounts of incomes and outlays of a large number of non-agricultural households. These are supplemented by additional information about family structure, employment, dwelling, ownership of durable goods, etc. for each household.

The data used in this paper is a four-year rotational monthly panel of 270 households in Sichuan province for the time period 1988–1991.[11] Due to the rotational design of the panel (explained below), each household is observed for 12, 24 or 36 months.[12]

(Kelly, Pastor and Veronesi 2014). However, option trading in Hong Kong did not start until 1995 (Hong Kong Securities Market 1999).

[11] To the best of our knowledge, this is the only monthly panel of UHS that has ever been made available to researchers (Aaberge and Zhu, 2001). Typically researchers have to rely on the annual samples from a certain number of provinces.

[12] Sichuan is a mountainous province situated in the south-west of China. The provincial capital, Chengdu, is approximately 1,505 kilometers (935 miles) from Beijing. Sichuan was the largest province in China in terms of population, with 109 million inhabitants at the end of 1991. However, the degree of urbanization is relatively low. The number of non-agricultural residents in urban areas covered by the UHS totaled 7.9 million, or 7.4% of the provincial population in 1988. In 1991, when adjusted for its huge population, its per capita GDP was only 1180 yuan, or 67.7 percent of the national average, ranking only 24th among all 30 provinces, municipalities, and autonomous regions.

The UHS can be described as a multi-stage stratified systematic sampling, with a large one-time sample serving as the basis for annual sampling. Since 1988, the sample has rotated by changing one third each year. Each household member earning an income is required to keep a diary of his/her cash income and non-consumptive expenditure. One diary for the whole household is required for consumptive expenditure. These diaries are collected regularly by enumerators for monthly aggregation.[13] Each enumerator must visit each of the 20 households under his/her supervision at least twice a month. Unlike most expenditure surveys conducted in developed countries,[14] this approach of monthly reporting of all expenditure in the UHS yields high-frequency consumption and income series measured with high precision. This feature is vital to the success of our empirical strategy.

4.2. Definitions of income, consumption, and saving

Total household income can be decomposed into labor income, property income, transfer income, and special income,[15] accounting for 69.3%, 0.5%, 26.1%, and 4.1% of the total respectively in our pooled sample. Almost 80% of property income can be accounted for by interest income, with the rest coming from dividends and rents. This implies that the most important saving vehicle is savings accounts, consistent with under-development of the credit market in China at the time.[16] There is no evidence of any significant change in the composition of real total household income over the sample period.

We disaggregate total household expenditure into three categories by durability of expenditures. Our empirical analysis is performed on each category of expenditure, as well as total household consumption. Non-durable consumption is defined as expenditure on food, medicine and medical supplies, housing and building repairs, health and medical services, and education (school fees). Semi-durables include clothing and footwear. Major durables comprise furniture, mechanical and

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[13] When the respondent suffers from poor literacy or in the case of households with a single person who is elderly, sick or disabled, the enumerator is responsible for the diary records.

[14] For instance, the Consumer Expenditure Survey for the United States and the Family Expenditure Survey (FES) for the UK collect detailed household expenditure information based on two consecutive weekly diary records, supplemented with information about regular payments.

[15] Labor income includes base wage, floating wage, contract income, bonuses and subsidies, and other wage income from state or collectively owned units, income from self-employment, as well as income from re-employment by retired persons. Property income includes interest, dividends, and rents. Transfer income includes income from dependents, retirement income, price subsidies, and other transfer income. Special income refers to income from gifts, lodgers, survey subsidies, and property sales.

[16] China's first stock exchange only began trading in December 1990.

electric goods for cultural and recreational activities, and mechanical and electric goods for daily use. Note that, in the period we study, the housing market was not developed and the majority of the urban households lived in rental housing that was publicly subsidized.

There is no direct measure of savings in the UHS. We define savings as the difference between monthly real total income and monthly real total consumptive expenditure at household level. Following Chamon and Prasad (2010), we do not deduct non-consumptive expenditure (loan interest, personal income tax and other taxes, maintenance/alimony, insurance cover, etc.) from savings. Furthermore, we use an alternative measure of savings based on the household's balance sheet. This alternative measure, which is labeled "changes in financial wealth", is defined as the net changes from the beginning to the end of the month in the stock of financial asset holdings and spot cash. In the absence of non-consumptive expenditure and errors in diary recordings, these two measures should be identical.

Table 1 presents summary statistics of monthly household income, household consumptive expenditure, household size, and saving rate, by year. All monetary figures have been converted into January 1988 constant prices, using monthly CPI series.[17] The average household income is 328 yuan per month, with 71% coming from labor income. The mean monthly household consumptive expenditure is 296 yuan, 73% of which was spent on non-durables, 14% on semi-durables (that is, clothing and footwear) and 13% on major durables. By definition, the purchase of major durables is infrequent, with only 13.5% of households making positive purchases in any given month.

The mean real total household income in 1988 was only marginally higher than the mean real total consumptive expenditure, thus resulting in a saving rate of only 2.9%. This can largely be explained by consumers' switching from financial savings to purchases of durables after the outbreak of hyperinflation of around 20% p.a. in 1988 (see Aaberge and Zhu 2001).[18] The saving

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[17] Monthly and quarterly inflation data for China are available from OECD Statistics. However, prior to 1993, only changes with respect to the same period in the previous year are available. We used an index at quarterly level from an appendix of Feltenstein and Ha (1991) to impute monthly inflation figures. This allowed us to convert all monetary figures into January 1988 constant prices.

[18] The real interest rate for savings in 1988 was around -10% p.a. There was state monopoly of the banking system at the time, with uniform interest rates set by the People's Bank of China for each maturity term of deposits. Nevertheless, the People's Bank of China was forced to change the interest rates several times in order to discourage substantial withdrawals of deposits. For instance, the one-year demand deposit rate was increased from 7.2% to 8.64% on September 1, 1988, and then again to 11.34% on February 1, 1989 as

rate increased significantly to 11.3% in 1989 and to 11.1% in 1990, whereas real incomes remained more or less stagnant. When real income increased by 13.7% in 1991, there was a further increase in the saving rate, to 13.0%.[19] This pattern is consistent with the aggregate urban household saving rates reported in Yang, Zhang and Zhou (2011), derived from the UHS data for six provinces and municipalities including Sichuan.

Figure 4 shows monthly means of total expenditure and household income (both in real values) for 1989 and 1990. There is clear pattern of seasonality in both income and consumption: consumption and income are at their highest at the beginning of the year, particularly in the month of the Chinese Lunar New Year, which can fall between late January and mid-February.[20] For our purpose, it is more important to focus on trends in consumption and income in the months between April and May. From the top panel, it appears that the trends in real income between those months are similar when comparing year 1989 with year 1990. The political uncertainty in Beijing at the time was not an income shock to households in Sichuan province. Despite the similarity in the trends in income, total expenditure trends differ: consumption in May 1989 declines while consumption in May 1990 rises. Our empirical strategy (described below) essentially exploits this distinctively downward trend in total expenditure from April to May of 1989.

5. Empirical results

The main empirical model we use is a difference-in-difference (DID) estimator:

$$y = constant + \pi_1 \times May + \pi_2 \times 1989 + \pi_3 \times May \times 1989 \qquad (1)$$

where y is the outcome of interest for a given household (such as savings), *May* is a dummy equal to one if the calendar month is May, *1989* is a dummy equal to one if the calendar year is 1989, and $May \times 1989$ is an interaction term between dummy variable *May* and dummy variable *1989*. In our baseline specification, the treatment group is year 1989, the control group is year 1990, and

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inflation peaked. As the inflation rate gradually decreased, it dropped to 10.08% on April 15, 1990, then to 8.64% on August 21, 1990, and finally to 7.56% on April 21, 1991.

[19] The alternative measure of saving rate defined by household balance sheet shows a very similar trend, although it has a slightly lower mean.

[20] The Chinese New Year was on February 6 in 1989 and on January 27 in 1990. The timing difference could explain the differential changes in consumption and income (from January to February) between 1989 and 1990. The increase in consumption between August and September can be partly explained by expenditure on school fees since the school year starts in September.

the pre- and post-treatment periods are April and May, respectively.[21] The constant term identifies the mean level of *y* in the control group in the absence of treatment (April of 1990). π_1 captures seasonality in the outcome between May and April in the control group (which is year 1990). π_2 estimates the mean level difference between the treated group and the control group in the absence of treatment (such as macroeconomic growth between the two years). π_3 identifies the treatment effect. We include a set of household characteristics in the regression to control for any potential compositional changes which may be correlated with the treatment.[22]

Under this specification, any differences in the level of outcome variable between 1989 and 1990 are absorbed by the coefficient π_2. Therefore, the model allows for any differences in the macro economy between 1989 and 1990 (such as GDP, real interest rate, etc.) which may affect the average level of *y* (as long as they do not affect the changes in the outcome of interest between April and May). Macroeconomic conditions in years 1989 and 1990 are quite similar (for example, real GNP growth is about 5% in both years) and we find no major policy changes that would influence consumption behavior between April and May in 1990. As a robustness check, we also experimented using both year 1990 and year 1991 as the control group to capture seasonal changes in the outcome of interest between April and May. The estimates are qualitatively similar (see discussion in the section dealing with robustness checks).

5.1. Main results

Table 2 presents the DID estimates for total expenditure, total non-durable expenditure, and total semi-durable expenditure, controlling for key household characteristics such as household (HH) size, female head of household, and a quadratic in the age of the head of household. In order to focus on the extensive margin of the major durable expenditures, we use a dummy for spending at least 25% of household income in any month on major durables as the dependent variable in the last column. Column 1 shows that the shock to political uncertainty led to a significant drop in total household expenditure by around 46 yuan, which is equivalent to a 17% decrease relative to the mean total expenditure of 273 yuan for 1989 as a whole. The effect is statistically significant at the 10% level.

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[21] Year 1988 was the peak year in the second business cycle in the post-reform era, with hyperinflation and panic buying of consumer durables (see Aaberge and Zhu 2001). In addition, there was a comprehensive price reform implemented in June 1988. For these reasons, we did not use 1988 as the control year.

[22] Our results are robust to controlling for additional characteristics of the head such as marital status, occupation, industry, education and ownership of working unit. Our findings remain unchanged even if we completely drop the set of household characteristics from the regression.

In the remaining columns, we disaggregate total consumption into three categories by the durability of the expenditure. Column 2 shows that there is no evidence of a treatment effect on non-durables. Columns 3 and 4 present the effect of the treatment on semi-durable consumptive expenditure as well as on the incidence of making major durable purchases. It is clear that while there is no significant treatment effect on non-durables, expenditure on semi-durables comprising clothing and footwear shows a statistically significant (p<0.01) drop as a result of the political uncertainty (Column 3). The 14.8 yuan decrease represents a 36% reduction of the mean monthly expenditure on clothing and footwear. Column 4 shows that political uncertainty resulted in large decreases in spending on major durables: the probability of making a durable goods purchase decreased by 6.3%, accounting for almost 50% of durable goods purchases at mean level in 1989.

Table 3 focuses on the treatment effect on total household income as well as on its two components, labor income and non-labor income. Looking across the first row, we can see that the point estimates are invariably small and statistically insignificant at any conventional level. We therefore conclude that there is no evidence of any effect of the treatment on total household income or on any of its components. In particular, the small and insignificant estimate on labor income suggests that household labor supply was not affected by the uncertainty shock. We also exploited the panel feature of our data to estimate idiosyncratic household income uncertainty by month. Interestingly, there is no evidence that political uncertainty shock in our context translates into household income uncertainty identified using realized income streams.[23]

Since consumption is adjusted downwards whereas income is not affected, we would expect additional savings due to the uncertainty shock. Turning to the effect of the treatment on saving rates in Table 4, we find that, for savings defined by either the household budget constraint or the household balance sheet, the uncertainty shock results in around 18 percentage point increases in saving rates. The increases are significant at the 5% levels. The stock market volatility from May

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[23] Following Meghir and Pisfaferri (2004), we first regress log of household income on year-month dummies, dummies for household size and a quadratic in the age of the head. We take the predicted residual log income from this regression (r_t) and identify the variance of permanent shocks in year-month t by $E(\Delta r_t(\Delta r_t + \Delta r_{t-1} + \Delta r_{t+1}))$ where Δr_t is change in predicted residual between year-month t and year-month t-1. The variance of transitory shocks (assuming i.i.d for simplicity) in year-month t is identified by $-E(\Delta r_t \Delta r_{t+1})$. The variances of permanent shocks in April and May of 1989 are 0.010(0.012) and 0.002(0.005), respectively (block-bootstrapped standard errors in brackets). The variances of transitory shocks in April and May of 1989 are 0.026(0.006) and 0.018(0.006), respectively. Neither difference in permanent shocks nor transitory shocks is significant at conventional level.

through to the beginning of June is six times greater than the market volatility in April. Consequently, one standard deviation increase in the variability of stock market prices leads to a 3 percentage point increase in household savings.

5.2. Heterogeneity in household responses

The availability of microeconomic consumption data allows us to disentangle the heterogeneity of estimated effects by household characteristics defined before the uncertainty shock. In Table 5, we estimate our empirical model on log non-durable consumption, the incidence of making significant major durable purchases, and log total income and saving rates by age of head of household, by occupation of head of household, and by a proxy of wealth in the period before the uncertainty shock.

The sample is neatly split into two equally-sized halves using a cut-off age of 45 for the head of household. It emerges that the treatment effect on older families is far more pronounced, with a 24 percentage point increase in saving rates and an 11 percentage point decrease in the probability of major durable expenditure, both of which are also significant at the 1% level. While still positive, the effects on major durable purchases and savings for families headed by individuals aged below 45 are smaller in size and statistically insignificant. Younger households may have steeper expected income growth over the life cycle (due to the on-going economic reform) than the elder households have had. Furthermore, for urban households, pension was generously provided by the state (Chamon et. al. 2013). The political uncertainty would also lead to uncertainty over the pension. All these factors may induce the elder household to respond more dramatically to the uncertainty shock.

Our definition of white-collar occupations includes all professionals and technicians, senior and junior government officials, corporate managers and office clerks. Overall, they account for 47% of the occupations of the heads of households in our sample. Blue-collar refers to all remaining occupations. In the period of study, most of the enterprises are state-owned whose managers must be appointed or approved by the state. Government officials are also appointed and not elected by the public. Therefore, one would expect that the uncertainty from the pro-democracy political movement is greater for white-collar households. Indeed, we find larger impact on consumption and savings for white-collar households. For white-collar households, Table 5 shows that the treatment leads to a 30 percentage point increase in saving rates and a 9 percentage point decrease in the probability of major durable consumption, both with significance at the 5% level. For blue-

collar households, the effect is less compared to their white-collar counterparts and not significantly different from zero, even at the 10% level.

We also disaggregate the sample by the amount of financial wealth prior to the uncertainty shock. Looking at the treatment effect by wealth, we can see that the positive effect is driven by wealthier households with pre-period wealth above the median. The mean effects are a 25 percentage point increase in saving rates and a 6 percentage point decrease in the probability of major durable expenditure, with statistical significance at the 1% and 10% levels respectively. By contrast, the treatment turns out to be more dampened and statistically insignificant for the poorer half of households.

To sum up, Table 5 suggests that the treatment effect on major durable purchases and saving rates is largely driven by older, wealthier, and more socially advantaged households. Moreover, in accordance with our main results based on the full sample, we find no evidence of any effect of the treatment on log non-durable consumption and log income in any of the subsamples.

5.3. Dynamic effect

In this section, we estimate our empirical model for six key outcome variables, only this time using June, July or August instead of May as the treatment group. The idea is to shed some light on the dynamics of the uncertainty shock beyond the initial impact. Following Deng's June 9 speech on the restoration of order, the extent of policy uncertainty gradually faded away. The new political leadership seized control of the economy with the ideology that central planning should be the focus, and the market should take on a subordinate role.

With declining policy uncertainty, households should begin to draw on the extra precautionary savings made under the riskier environment and revert to a higher level of consumption. The new steady-state level of consumption could still be lower than the initial steady-state of consumption if policy uncertainty remained permanently higher than previously. Table 6 shows that the magnitude of the decline in consumption (and the increase in saving rate) was much smaller in June compared to the changes in May. While the effects of the treatment on all types of consumption are negative, they are now much smaller. In the case of semi-durables, major durable purchases and savings, the sizes of the treatment effect are roughly halved and become statistically insignificant. Moving into July and August, the overall pattern is that the negative consumption adjustment in response to the uncertainty shock is much smaller (with the exception of semi-durables). This exercise highlights

the importance of having high-frequency data in order to capture the effect of a large but short-lived shock to uncertainty, as in our case. Aggregated data at annual or quarterly frequencies would average out the initial consumption adjustment with subsequent adjustments.

5.4 Robustness checks

We subjected our previous estimates to a range of robustness checks. Table 7A presents further evidence of effect on the incidence of major durable adjustment with respect to different cut-offs, measured either as a share of total household income or as absolute values. Reduction of durable goods expenditures is driven by postponement of purchases of relatively large items of major durables--there is significant reduction in durable goods spending at the extensive margin, for large durables with total values of more than 100 yuan, or those accounting for more than 30% of total household income.

In Table 7B, we present three additional checks. First, in equation (1), we include a dummy variable equal to one if the year of observation falls in 1991 and estimate it using data from April and May of 1989, 1990, and 1991. By doing so, the seasonality of our outcome variables between April and May is identified by changes between consumption in April and May in years 1990 and 1991. The point estimates remain similar when we use both 1990 and 1991 as the control group. Second, we compare outcomes in June-Dec to outcomes in Jan-Mar in 1989, controlling for seasonality with the help of years 1990 and 1991. To the extent that pessimism is concerned with longer term prospects than those arising from short-term uncertainties, this placebo test would enable us to separate the effect of uncertainty from more general pessimism about the future. The results indicate that there is no statistically significant effect when we compare June-Dec to Jan-Mar in 1989, suggesting that the effect is concentrated in April and May in 1989 and hence is more likely due to changes in political uncertainty rather than pessimism per se. Third, we conduct additional placebo test by using the same months (April and May as in our main specification) in years after the political event and calling one year as treatment and the other as control. We do not find any significant differences in any of the outcome variables.

6. Conclusion

We present evidence that a surge in political uncertainty resulted in significant temporary increases in savings among urban households in China. Our study exploits a large-scale unanticipated and rapidly evolving political event that took place in Beijing in 1989. Our estimates also suggest the

channel through which increase in savings is achieved: the increase in savings is driven by reductions in semi-durable and frequency of major durable adjustment. The uncertainty effect is more pronounced among older, wealthier, and more socially advantaged households. We interpret our findings using existing models of precautionary behavior. By focusing on time variation in uncertainty, our identification strategy avoids many of the potential problems in empirical studies of precautionary savings such as self-selection and life-cycle effects. Our findings on the channel of adjustment also coincide with the predictions from models on durable good adjustment combined with income uncertainty. Our findings suggests that political uncertainties are costly: in the Chinese case, households saved more and consumed less due to political uncertainty, even when the increase in uncertainty was temporary in nature. In situations of prolonged political turmoil, the impact on household consumption is likely to be greater.

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Figure 1: Annual GDP Growth

Annual GDP growth
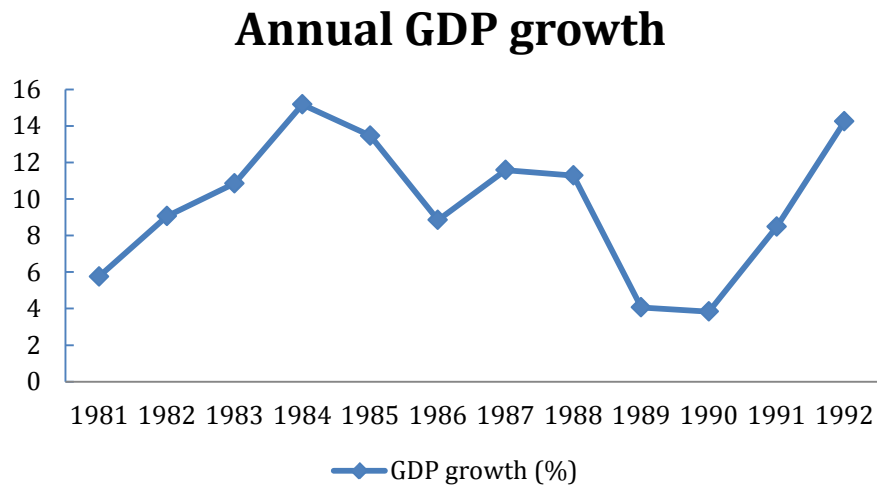
Source: OECD Statistics.

Figure 2: Newspaper Frequency Index

Newspaper Frequency Index
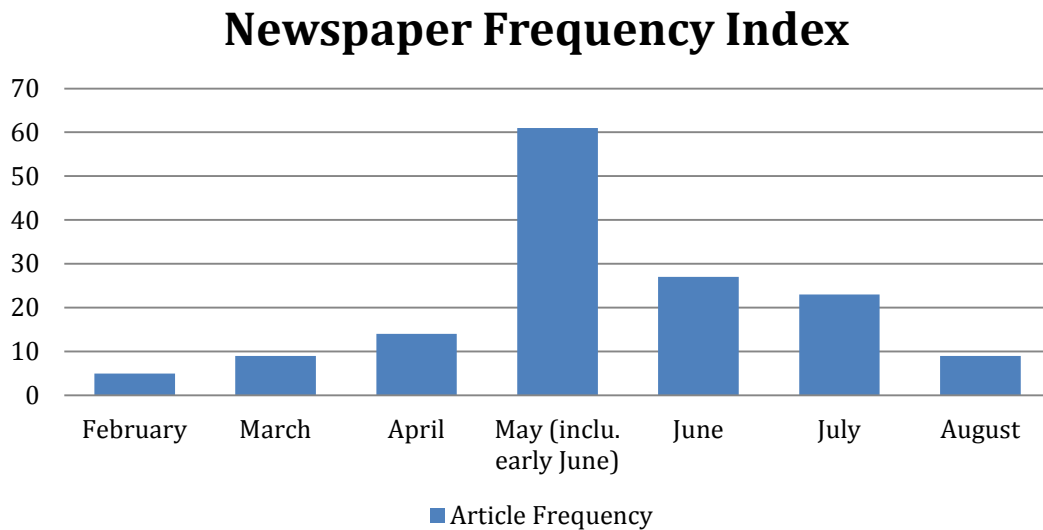
Source: New York Times Archive (accessed through ProQuest), Financial Times, and Economist Archive (accessed through Gale News Vault). The frequency index counts the number of articles containing the following word combinations: China AND (uncertainty OR uncertain). The index in May includes articles appearing from May 1, 1989 up to June 10, 1989.

Figure 3: The Hang Seng Index, April 1–June 30, 1989

Note: The daily Hang Seng Index of the Hong Kong Stock Exchange, from April to June of 1989. The standard deviation of daily closing price from May 1 to June 12 (including the first trading day after Deng's speech) is 382. The standard deviations of daily closing price in April and between June 13 and 30 are 53.95 and 54.02, respectively.

Key trading days and the corresponding political events are marked on the graph in abbreviated form and are explained below:

5/22/1989: Martial law declared in Beijing.
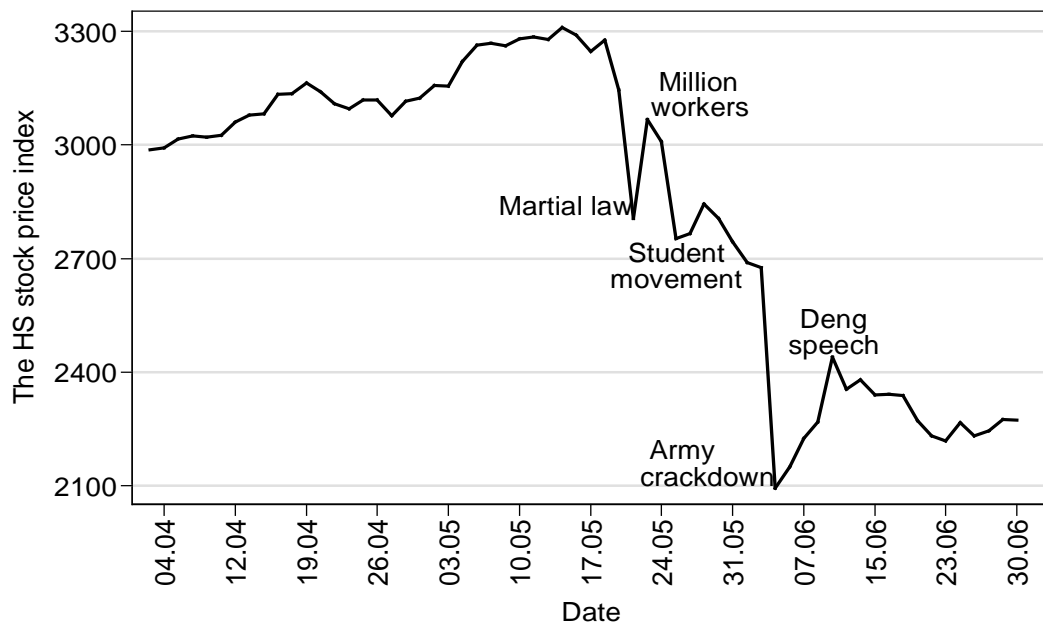
5/23/1989: Over a million workers and citizens were able to halt a military crackdown on pro-democracy movement in Beijing the day before.

5/25/1989: Many conflicting developments in Beijing regarding the student democracy movement.

6/5/1989: June 4 army crackdown on student demonstrations in Tian'anmen Square.

6/12/1989: On June 9, Party leader Deng Xiaoping made his first public appearance in months, signaling the restoration of order.

Figure 4: Mean Monthly Consumption and Income, 1989–1990
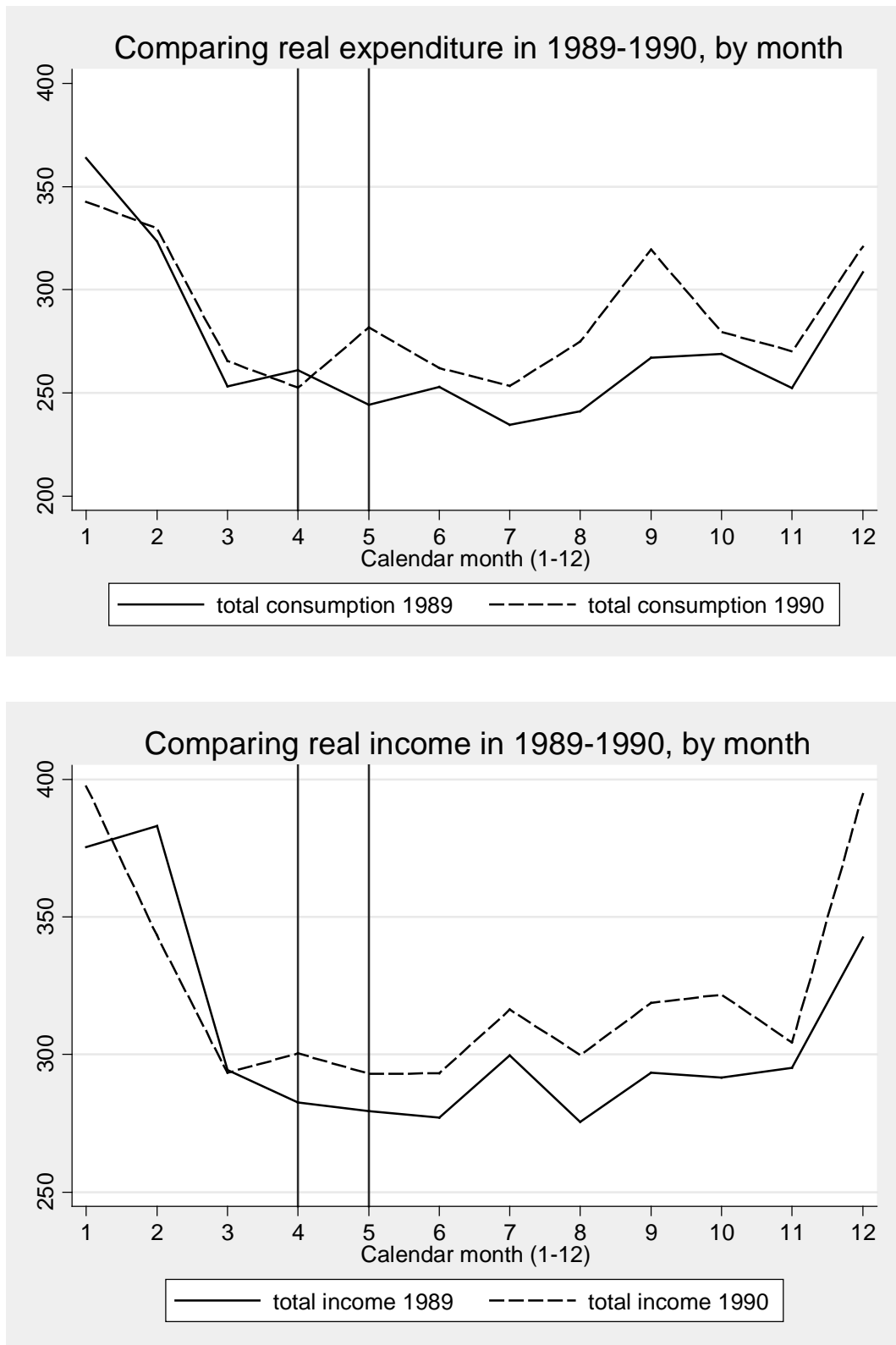
Note: Aggregate time series of monthly consumption and income in 1989 and 1990. Authors' own calculation using a four-year rotational monthly panel of 270 households in Sichuan province for the time period 1989–1990.

Tables

Table 1: Summary statistics, by year

	1988	1989	1990	1991	Total
Total household income	313.8	307.5	323.4	367.3	328.0
Labor income	228.6	217.0	227.1	260.1	233.2
Non-labor income	85.2	90.5	96.3	107.2	94.8
Total household consumptive expenditure	304.8	272.6	287.6	319.5	296.1
[proportion positive values]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
Non-durables	208.5	202.5	213.0	245.5	217.4
[proportion positive values]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
Semi-durables (clothing & footwear) expenditure	44.3	35.5	38.5	45.4	40.9
[proportion positive values]	[0.851]	[0.816]	[0.839]	[0.853]	[0.840]
Major durables expenditure	52.0	34.6	36.21	28.9	37.8
[proportion positive values]	[0.164]	[0.120]	[0.135]	[0.122]	[0.135]
Household size	3.313	3.256	3.192	3.234	3.249
Saving rate	0.029	0.113	0.111	0.130	0.096
Saving rate defined by household balance sheet	-0.038	0.059	0.047	0.066	0.033
Saving rate from the full UHS data [a]	0.056	0.111	0.153	0.138	-

Notes: The data used in this paper consist of a four-year rotational monthly panel of 270 households in Sichuan province for the time period 1988–1991. Due to the rotational panel design, each household is observed for 12, 24 or 36 months. All monetary figures are monthly in January 1988 constant prices.

Non-durables include food, medicine and medical supplies, housing and building materials, health and medical services, and education (school fees).

Semi-durables include clothing and footwear.

Major durables comprise furniture, mechanical and electric goods for cultural and recreational activities, and mechanical and electric goods for daily use.

[a]: Urban household saving rates derived from the UHS data for six provinces and municipalities including Sichuan (Yang et al. 2011, p. 45).

Table 2: Real total household expenditure and non-durable expenditure

	(1) Consumptive expenditure	(2) Non-durable consumption	(3) Semi-durable consumption	(4) Purchase major durable (>25% HH income)
May*1989	-45.543[*]	1.041	-14.793[***]	-0.063[**]
	(25.869)	(10.056)	(5.192)	(0.028)
Year=1989	5.630	-10.003	11.770[***]	0.011
	(18.312)	(7.118)	(3.675)	(0.019)
Month=May	29.617	-11.208	10.744[***]	0.048[**]
	(18.309)	(7.117)	(3.675)	(0.019)
Household size	63.146[***]	34.011[***]	9.444[***]	0.022[***]
	(6.941)	(2.698)	(1.393)	(0.007)
Female head	1.188	6.079	2.125	-0.015
	(13.727)	(5.336)	(2.755)	(0.015)
Head's age	7.601[**]	5.171[***]	1.840[**]	0.004
	(3.662)	(1.423)	(0.735)	(0.004)
Head's age squared	-0.060	-0.041[***]	-0.019[**]	-0.000
	(0.040)	(0.015)	(0.008)	(0.000)
Constant	-164.726[**]	-54.861[*]	-42.374[***]	-0.118
	(81.034)	(31.499)	(16.265)	(0.086)
R^2	0.093	0.172	0.072	0.022
Observations	1078	1078	1078	1078

Note: Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. [*] $p < 0.1$, [**] $p < 0.05$, [***] $p < 0.01$.

Table 3: Real total household income

	(1) Monthly HH income	(2) Real monthly HH labor income	(3) Real monthly HH non-labor income
May*1989	4.637	9.157	-4.521
	(13.084)	(12.400)	(8.826)
Year=1989	-20.646**	-16.304*	-4.342
	(9.261)	(8.778)	(6.248)
Month=May	-6.991	-6.924	-0.067
	(9.260)	(8.776)	(6.247)
Household size	58.907***	40.723***	18.184***
	(3.511)	(3.327)	(2.368)
Female head	14.497**	-11.186*	25.682***
	(6.943)	(6.580)	(4.684)
Head's age	10.141***	18.881***	-8.740***
	(1.852)	(1.755)	(1.249)
Head's age squared	-0.095***	-0.229***	0.134***
	(0.020)	(0.019)	(0.014)
Constant	-145.771***	-267.227***	121.455***
	(40.984)	(38.843)	(27.648)
R^2	0.269	0.347	0.285
Observations	1078	1078	1078

Note: Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4: Saving rates

	(1) Saving rate	(2) Saving rate defined by HH balance sheet
May*1989	0.185**	0.180**
	(0.077)	(0.078)
Year=1989	-0.108**	-0.100*
	(0.055)	(0.055)
Month=May	-0.100*	-0.100*
	(0.055)	(0.055)
Household size	-0.010	-0.006
	(0.021)	(0.021)
Female head	0.040	0.046
	(0.041)	(0.041)
Head'sHH age	0.003	0.000
	(0.011)	(0.011)
Head's age squared	-0.000	-0.000
	(0.000)	(0.000)
Constant	0.109	0.088
	(0.242)	(0.244)
R^2	0.007	0.007
Observations	1078	1078

Note: Saving rate is defined as the ratio of savings to income; saving rate2 is the ratio of changes in financial wealth to income. Regressions control for a treatment group dummy, an after group dummy, and the full set of control variables which include household size, female head of household, as well as a quadratic in the age of the head of household. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Heterogeneity by household characteristics

Treatment effect (May×1989)	Log non-durable consumption	Purchase major durable (>25% HH income)	Log total income	Saving rate
By age of the head of household:				
Head of household aged over 45	0.012	-0.113***	-0.020	0.239***
	(0.069)	(0.039)	(0.068)	(0.089)
Head of household aged 45 or below	0.011	-0.014	0.055	0.133
	(0.061)	(0.039)	(0.059)	(0.125)
By occupation of the head of household:				
Head of household white-collar worker	0.017	-0.089**	0.007	0.298**
	(0.067)	(0.040)	(0.057)	(0.124)
Head of household blue-collar worker	0.009	-0.041	0.028	0.081
	(0.064)	(0.038)	(0.067)	(0.096)
By pre-treatment wealth:				
High wealth (median or above)	0.037	-0.064*	0.049	0.251***
	(0.062)	(0.036)	(0.060)	(0.093)
Low wealth (below median)	0.001	-0.048	-0.033	0.051
	(0.072)	(0.041)	(0.064)	(0.118)

Note: White-collar occupations include all professionals and technicians, senior and junior government officials, corporate managers and office clerks. Blue-collar refers to all remaining occupations. Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Effects of uncertainty shock over time

	(1) Consump-tive expenditure	(2) Non-durable consump-tion	(3) Semi-durable consump-tion	(4) Purchase major durable (>25% HH income)	(5) Monthly HH income	(6) Saving rate
June vs Apr 1989						
treatment	-17.763	-8.214	-7.689	-0.037	1.902	0.087
	(21.159)	(10.675)	(5.009)	(0.028)	(13.110)	(0.072)
July vs Apr 1989						
treatment	-27.406	-8.168	-14.454***	-0.033	1.344	0.128**
	(20.561)	(10.762)	(4.392)	(0.028)	(13.994)	(0.064)
August vs Apr 1989						
treatment	-35.994	-6.106	-12.011***	-0.011	-7.242	0.109
	(22.704)	(12.688)	(4.051)	(0.027)	(13.264)	(0.069)

Note: Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. $^{*}\,p < 0.1,\,^{**}\,p < 0.05,\,^{***}\,p < 0.01$.

Table 7A: Robustness: Major durable expenditures

	(1) Durable spending >10% HH income	(2) Durable spending >30% HH income	(3) Durable spending >50% HH income	(4) Durable spending >100RMB
Treatment (May*1989)	-0.052	-0.063**	-0.044**	-0.052**
	(0.033)	(0.027)	(0.022)	(0.026)

Note: Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. $^{*} p < 0.1$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 7B: Robustness: Alternative specifications

	(1) Consumptive expenditure	(2) Non-durable consumption	(3) Semi-durable consumption	(4) Purchase major durable (>25% HH income)	(5) Monthly HH income	(6) Saving rate
Using years 1990 and 1991 to control for seasonality						
Treatment	-32.075	-0.410	-11.811**	-0.052**	2.698	0.138**
	(21.827)	(10.024)	(4.808)	(0.024)	(12.397)	(0.063)
N	1618	1618	1618	1618	1618	1618
Placebo test: Treatment: 1989, Control: 1990-1991, Before: Jan-Mar, After: June-Dec						
Treatment	-20.737	-3.953	-2.545	-0.001	-5.824	0.033
	(13.047)	(6.731)	(2.985)	(0.012)	(8.367)	(0.031)
N	8090	8090	8090	8090	8090	8090
Placebo test: Treatment: 1990, Control: 1991, Before: April, After: May						
Treatment	27.011	-2.850	5.932	0.023	-3.854	-0.094
	(26.511)	(12.261)	(5.546)	(0.028)	(15.097)	(0.067)
N	1078	1078	1078	1078	1078	1078

Note: Regressions control for a treatment group dummy, an after-group dummy, and the full set of control variables, which include household size, female head of household, and a quadratic in the age of the head of household. Standard errors in parentheses. $^{*} p < 0.1$, $^{**} p < 0.05$, $^{***} p < 0.01$.